UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TARGET CORPORATION
Petitioner

v.

DESTINATION MATERNITY CORPORATION
Patent Owner

Patent RE43,531

Case No. IPR 2013-00530

Case No. IPR 2013-00531

Patent RE43,653

Case No. IPR 2013-00532

Case No. IPR 2013-00533

Date: May 5, 2014

Declaration of David Brookstein, Sc.D.

I, David Brookstein, Sc.D., declare as follows:

1. I have been retained by counsel for the Patent Owner, Destination Maternity Corporation, to offer technical opinions with respect to U.S. Patent No. RE43,531 E ("the '531 patent") and U.S. Patent No. RE43,563 E ("the '563 patent"), and prior art references cited in the *Inter Partes Review* proceedings for the '531 patent and the '563 patent.

2. I was awarded a Bachelor of Textile Engineering from the Georgia Institute of Technology ("Georgia Tech") in 1971, a Master of Science in Textile Technology from the Massachusetts Institute of Technology ("MIT") in 1973, and a Doctor of Science in the field of mechanical engineering from MIT in 1976. My current *curriculum vita* is attached hereto as Exhibit 1.

3. I was a professor of Textile Engineering at Georgia Tech from 1975-1980. I was Associate Director of Albany International Research Co. (formerly Fabric Research Laboratories) from 1980-1994. I was Dean of the School of Engineering and Textiles and Executive Director of Research at Philadelphia University (formerly Philadelphia College of Textiles and Science) from 1994 to 2010. In 2010, I was appointed Executive Dean for University Research at Philadelphia University and served in that position through June 2012. In July 2012, I resigned from Philadelphia University to become Dean of the Science, Technology, Engineering, and Mathematics Division of Montgomery County Community College in Pennsylvania. In May 2013, I retired from academia and I now serve as an independent consultant.

4. At Philadelphia University I was the Principal Investigator for a US Army 8-year funded research and development program titled "Laboratory for Engineered Human Protection". The Laboratory's charter was to create garments that protect American servicemen and women against battlefield hazards, which were also sufficiently comfortable to wear for time periods required by the mission. One of the objectives of the research and development program was to design, develop and produce prototype chemically protective garments with the required comfort using the latest materials produced in collaboration with selected suppliers.

5. I was elected a Fellow of the American Society of Mechanical Engineers in 1995 and a Fellow of the Textile Institute in 1992.

6. I am a named inventor on 12 U.S. Patents dealing with textile materials and textile manufacturing.

7. I have reviewed the following documents for preparation of this declaration:
   - the '531 patent
   - the '563 patent
   - PTAB Case No. IPR2013-00530 Patent RE43,563 - CORRECTED PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*
   - PTAB Case No. IPR2013-00531 Patent RE43,563 - CORRECTED PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*

- PTAB Case No. IPR2013-00532 Patent RE43,563 - CORRECTED PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*
- PTAB Case No. IPR2013-00532 Patent RE43,531 - CORRECTED PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*
- PTAB Case No. IPR2013-00532 Patent RE43,531 - CORRECTED PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *ET SEQ.*
- PTAB Case No. IPR2013-00530 Patent RE43,563-PATENT OWNER'S PRELIMINARY RESPONSE TO CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. RE43,563
- PTAB Case No. IPR2013-00531 Patent RE43,563-PATENT OWNER'S PRELIMINARY RESPONSE TO CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. RE43,563
- PTAB Case No. IPR2013-00532 Patent RE43,531-PATENT OWNER'S PRELIMINARY RESPONSE TO CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. RE43,531
- PTAB Case No. IPR2013-00533 Patent RE43,531-PATENT OWNER'S PRELIMINARY RESPONSE TO CORRECTED PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. RE43,531

- PTAB Case No. IPR2013-00530 Patent RE43,563 – Decision Institution of *Inter Partes Review*
- PTAB Case No. IPR2013-00531 Patent RE43,563 – Decision Institution of *Inter Partes Review*
- PTAB Case No. IPR2013-00532 Patent RE43,531 – Decision Institution of *Inter Partes Review*
- PTAB Case No. IPR2013-00533 Patent RE43,531 – Decision Institution of *Inter Partes Review*
- US Patent No. 6,276, 175 ("the Browder patent")
- US Patent No. 6,669,064 ("the '064 patent")
- US Patent No. 5,034,999 ("the '999 patent")
- US Patent No. 7,089.597 ('the '597 patent")
- Catalog excerpts from JC Penney *ontrend Maternity, Fall/Winter Catalog* (2005) ("JCP-A")
- Merriam-Webster's Collegiate Dictionary, 11th Ed. , 2007
- Clothing Technology, English Edition 1, Verlag Europe-Nourney, Vollmer GmbH & Co, 1996, p. 134.
- Textiles, 5th Edition, Macmillan Publishing, Co., Inc., 1979, p. 188.
- Handbook of Technical Textiles, Woodhead Publishing Ltd., 2000, p. 106
- The Modern Textile Dictionary, Little Brown, 1954.

8. I am being compensated by counsel for the Patent Owner at the rate of $400/hour and my compensation is not dependent on the outcome of either my opinions or the proceedings.

9. My declaration is organized in the following manner:

I. Qualifications of Persons of Ordinary Skill In The Art ("POSA")

II. Overview of the '531 patent including proposed claim construction

III. Overview of the '563 patent including proposed claim construction

IV. Overview of JCP-A

V. Overview of Browder

VI. Rebuttal of Alleged Anticipation of the '531 patent by Petitioner under 35 U.S.C. § 102 by JCP-A

VII. Rebuttal of Alleged Anticipation of the '563 patent by Petitioner under 35 U.S.C. § 102 by JCP-A

VIII. Rebuttal of Alleged Anticipation of the '563 patent by Petitioner under 35 U.S.C. § 102 by Browder

I. Qualifications of Persons of Ordinary Skill In The Art ("POSA")

Based on my experience as a dean and professor in the area of textile engineering and my experience as a research and development laboratory director, it is my opinion that persons of ordinary skill in the art ("POSA") during the time frame of the priority dates of the Patents-in-Suit would possess any of the following: (a) a graduate of a two-year or four-year degree program with an associate's or bachelor's degree in fashion design and at least one to two years of full-time, technical design experience in the commercial garment industry; or (b) an individual with at least four years of

full time, technical design experience in the commercial garment industry; or (c) a baccalaureate degree in textile engineering.

II. Overview of the '531 Patent Including Proposed Claim Construction

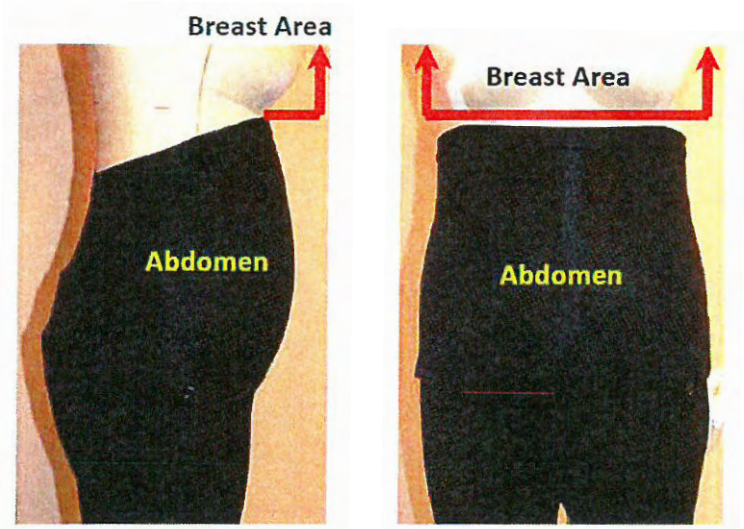
10. The '531 patent entitled "**BELLY COVERING GARMENT**" was filed in the US Patent and Trademark Office ("USPTO") on June 15, 2011 and issued on July 24, 2012. The '531 patent is a reissue of US Patent No. 7,814,575 ("the '575 patent"), which was filed in the USPTO on May 31, 2007, and issued on October 19, 2010. The Patent Owner advertises that its Secret Fit Belly® line of maternity clothes is covered by the '531 patent.[1] The '531 patent discloses a "*garment that adapts to cover and fit a growing abdomen during pregnancy, wherein the garment stays up when worn*". (1:42-44) The invention covered in the '531 patent fulfills an unmet need for a garment **to stay up and fit comfortably** when worn (1:36-37).

11. On October 17, 2013, I examined four Secret Fit Belly® exemplar products (Style 93480-01, Style 96316-42, Style 91401-01 and Style 94278-10) and placed them on AlvaForm Pregnancy Fit Mannequins (3 month pregnancy and 9 month pregnancy). In my opinion, the products met the limitations of claim 1 (the only independent claim) and many of the dependent claims of the '563 patent. The products also met the need for a garment that adapts to cover and fit a growing abdomen during pregnancy, comes up to just beneath the location of the breasts of the wearer, and has a design and structure which enables it to stay up when worn. My examination of the fit

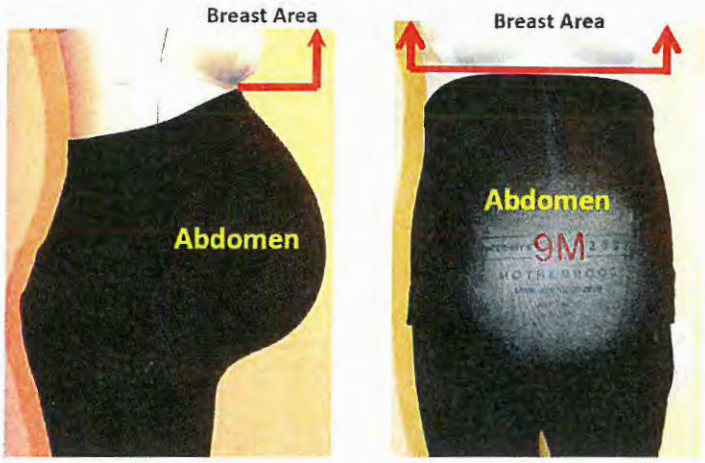
[1] http://www.motherhood.com/maternity/secret-fit-belly.asp

of the Secret Fit Belly® products on the mannequins shows that the belly panel stays up due to the fact that it comes up to just beneath the breast area and, as such, has substantially more coverage over the narrowing part of the abdomen and thus creates more frictional force to hold the garment up while worn. Accordingly, if the garment tried to come down past the upper and relatively narrow portion of the abdomen it would need to circumferentially expand and the stretch nature of the belly panel fabric would prohibit it from passively expanding unless it were actively pulled down by the wearer. Attached, as Exhibit 2, is a report that I prepared showing that Secret Fit Belly® products practice the claimed invention.

Below is a set of photographs of Secret Fit Belly® Style 91401-01 that I took on October 17, 2013, which clearly supports my opinion.



3 month



9 month

12. It is my understanding that, in an *Inter Partes Review* of an unexpired patent, the PTAB gives the claims the "*broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art*". Further, in the USPTO Manual of Patent Examining Procedure (MPEP) it is stated at 2111.01 ¶1 that "*The ordinary and customary meaning of a term may be evidenced by a variety of sources, including the words of the claims themselves, the specification, drawings, and prior art.*"

13. Counsel for the Patent Owner has asked me to propose a broadest reasonable construction as it would be interpreted by a POSA of some of the claim language in Claim 1 of the '531 patent. As such, I am providing my opinion on the meaning and construction of the terms "*just beneath the wearer's breast area*". My opinion is based on 1) the specification of the '531 patent, 2) the language of the claims of the '531 patent, 3) examples of prior art identifying the "*breast area*", 4) prior art patents which use the term "*breast area*" only in the claims, and 5) the dictionary definitions of "*just*" and "*substantially*".

14. The '531 specification does not explicitly discuss the term "*breast area*". However, it is my opinion that there are many instances of implicit discussion in the '531 patent, which supports a broadest reasonable construction by a POSA of "*just beneath the wearer's breast area*" to mean "*beneath the location of the breasts by a very small margin*".

15. Fig. 1 and Fig. 1A of the '531 patent are shown below:

In describing Fig. 1 and Fig. 1A, the specification of the '531 patent discloses that "*In FIG. 1, the garment upper portion **102** has a belly panel **124** to provide an abdomen covering area. The belly panel **124** is expansible, for example, when made of a stretchable fabric, to cover and fit over a growing abdomen during different stages of pregnancy, FIG. 1A.*"

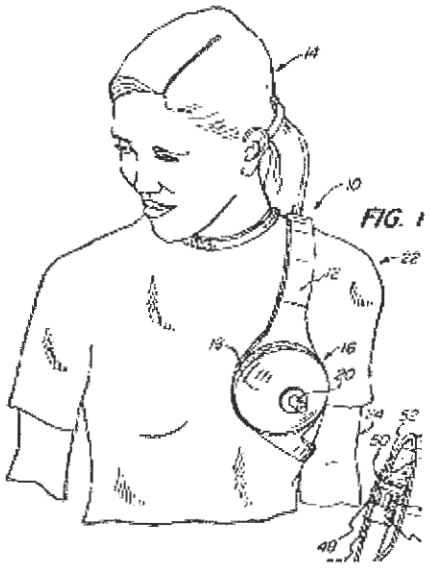
16. In my opinion the claim language in the '531 patent further supports a broadest reasonable construction by a POSA that "*just beneath the wearer's*

breast area" can be construed as "*beneath the location of the breasts by a very small margin*". Claim 1 states that the belly panel *"is expansible to cover and fit over a growing abdomen during different stages of pregnancy"* and has an *"upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy"*. Thus, it is my opinion, based on the claim language, that the wearer's breast area ends before the abdominal area begins. Further, it is my opinion that by using the terms "*breast area*" and "*abdomen*" to describe different locations on the wearer, the wording of claim 1 supports a construction that "*breast area*" is only the location of the breasts and, as such, it excludes a construction of "*breast area*" that includes the abdomen because both terms are used separately to locate the top of the belly panel during all stages of pregnancy.

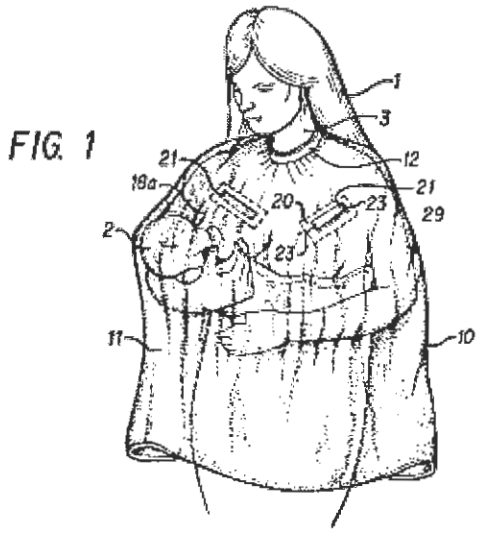
17. The '531 patent Specification discusses the expansible and contractible nature of the stretchable belly panel, which allows the belly panel to reach just beneath the breast area during all stages of pregnancy on wearers with different body types. *"The belly panel 124 comprises a portion of the stretchable fabric. The tubular structure is adaptable to cover and fit different body types by being elastically expansible and contractible."* (3:45-48) *"The tubular structure is elastically expansible to widen the tubular girth at selected locations and amounts where needed to fit a body type, and is elastically contractible to narrow the tubular girth at selected locations and amounts where needed to fit the body type. "* (3:53-57)

18. It is my opinion that even though the Specification and some of the dependent claims discuss different wearer body types, the language should not affect the construction of "*just beneath the wearer's breast area*". The Specification explains that the expansible and contractible nature of the panel allows the garment to cover and fit a growing abdomen even if the wearers have different body types. (3:47-57). As such, the discussion of different body types does not affect the term "*just beneath the wearer's breast area*". Rather, the Specification explains that the garment will still perform its function even when wearers of different body types don the patented garment because the garment expands and contracts to account for more or less girth.

19. The term "*breast area*" has been covered in earlier patents and clearly shows that "*breast area*" is the location of the breasts. For example, U.S. Patent No. 6,669,064 explains that "*Nurser **10** includes a flexible shoulder sling **12** to which is attached, positioned in the **breast area** of user's chest . . the sling holds container **16** in the **breast area** of the user's.*" 4:36-46 (emphasis added). Figure 1 below read with this description shows that the described "breast area" is the location of the breasts.

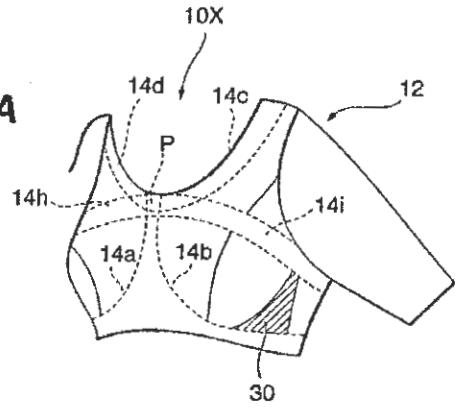


U.S. Patent No. 5,034,999 explains that, during nursing, "*the mother will want to check on his or her progress . . . by opening one of the portals* ***18*** *above each* ***breast area 18a*** *. . . where the child would be nursing, preferably near the infant's head while he is nursing.*" 2:60-67 (emphasis added). Again, Figure 1, shown below, read with this description shows that the described "*breast area*" is the location of the breasts.



Analogous art also shows that the bottom of the *breast area* does not include the abdomen. U.S. Pat. No. 7,089,597 shows that the *breast area* ends at the empire line or inframammary fold. In describing Fig. 2A (reproduced below), the '597 patent states: "*wide fabrics **14a** and **14b** are stitched along lines that extend from a supporting point P at the front center to the armpits, passing **beneath the breast area**.*" 9:34:38 (emphasis added). Coincidentally, the USPTO Primary Examiner for the '597 patent is the same Primary Examiner for the '531 patent.

Fig.2A



20. I conducted a search on the USPTO "Patent Search" web site to see if there were analogous art where the term "*breast area*" is only found in the claims of patents. I found US Patent No. 8,016,640 where in claim 3 it states "*said piece of stretchable material is formed as a sling and is shaped inwardly **from a direction at a center of a breast area at its ends to allow the sling to sit neatly on the breast** while holding the breast with the breast supported from said outside edge.* " (emphasis added) Further I found US Patent No. 4,590,624 where in claim 1 it states "*each of said left and right blouse panels configured when laid flat and without stitching to be larger than the **breast area** of the gown, thereby producing a billowing of the blouse panels*

for accommodating the patient's breasts with the edges of the blouse panels interconnected to the back panel and corresponding skirt panels," (emphasis added)

21. While the word "*just*" is not in the '531 patent specification it does have a known definition that can be found in the Merriam-Webster's Collegiate Dictionary, 11th Edition, 2007 at page 679. "*Just*" is defined, in the context of location, as "*by a very small margin*". This definition of "*just*" corresponds to the remainder of Claim 1 regarding the garment upper portion (belly panel), which requires "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy.*" The Merriam-Webster's Collegiate Dictionary, 11th Edition, 2007 at page 1245 defines "*substantially*" as "*being largely but not wholly that which is specified*". Accordingly, it is my opinion, if a wearer's entire abdomen, during pregnancy, is substantially covered ("*being largely but not wholly that which is specified*"), the top edge of the garment upper portion **must** be below the location of the breasts by a very small margin.

22. It is my opinion that based on 1) the specification of the '531 patent; 2) the language of the claims of the '531; 3) examples of prior art identifying the "breast area"; 4) the prior art patents which use the term "*breast area*" in the claims only; and 5) the dictionary definitions of "*just*" and "*substantially*", the claim term "*just beneath the wearer's breast area*" should have the broadest reasonable construction by a POSA of "*beneath the location of the breasts by a very small margin*".

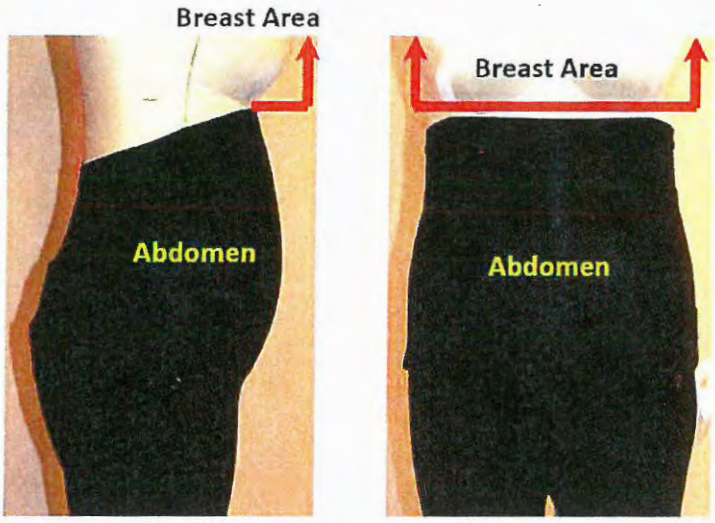
III. Overview of the '563 patent including proposed claim construction

23. The '563 patent entitled "**BELLY COVERING GARMENT**" was filed in the US Patent and Trademark Office ("USPTO") on June 15, 2011 and issued on August 7, 2012. The '563 patent is a reissue of US Patent No. 7,900,276 ("the '276 patent"), which was filed in the USPTO on May 8, 2007 and issued on March 8. 2011. The Patent Owner advertises that its Secret Fit Belly® line of maternity clothes is covered by the '563 patent.[2] The '563 patent discloses "*a garment upper portion has a belly panel that is expansible to cover and fit over a growing abdomen during different stages of pregnancy.*" (1:55-57) The invention covered in the '563 patent fulfills an unmet need for a garment that adapts to cover and fit a growing abdomen during pregnancy, wherein the garment stays up when worn. (1:51-53) As discussed in the '563 patent, this new garment is a comfortable garment that adapts to cover and fit over a wearer's belly region during different stages of weight gains and/or losses, and stays up when worn. (1:55-58, 2:9-11, 3:27-31) The '563 patent discloses that prior to this invention "*women have complained that the maternity garments that existed prior to the claimed invention were difficult to keep in place, and gradually slipped down while being worn.*" (1:34-36) As such, the inventors of the '563 patent recognized a need for a garment that covers and fits a growing abdomen during different stages of pregnancy and would stay up and fit comfortably while being worn. Further, it would stay up when worn over different body types (1:43-47)

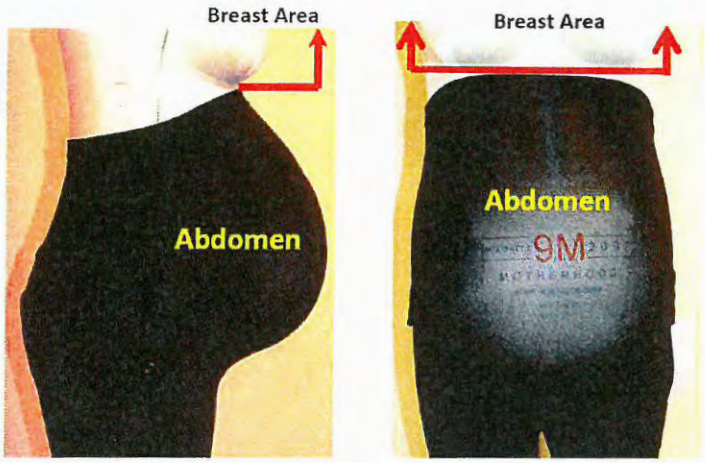
[2] http://www.motherhood.com/maternity/secret-fit-belly.asp

24. On October 17, 2013, I examined four Secret Fit Belly® exemplar products (Style 93480-01, Style 96316-42, Style 91401-01 and Style 94278-10) and placed them on AlvaForm Pregnancy Fit Mannequins (3 month pregnancy and 9 month pregnancy). In my opinion, the products met the limitations of claim 1 (the only independent claim), and many of the dependent claims of the '563 patent. The product also met the need for a garment that adapts to cover and fit a growing abdomen during pregnancy, comes up to just beneath the location of the breasts of the wearer, and has a design and structure which enables it to stay up when worn. My examination of the fit of the Secret Fit Belly® products on the mannequins shows that the belly panel stays up due to the fact that it comes up to just beneath the breasts, and as such, has substantially more coverage over the narrowing part of the abdomen and thus creates more frictional force to hold the garment up while worn. Accordingly, if the garment tried to come down past the upper and relatively narrow portion of the abdomen it would need to circumferentially expand and the stretch nature of the belly panel fabric would prohibit it from passively expanding unless it were actively pulled down by the wearer. Attached as Exhibit 2 is a report that I prepared showing that Secret Fit Belly® products practice the claimed invention.

Below is a set of photographs of Secret Fit Belly® Style 91401-01 that I took on October 17, 2013 which clearly supports my opinion. I have identified the abdomen and breast area, the latter being supported by the above.



3 month



9 month

25. It is my understanding that in an *Inter Partes Review* of an unexpired patent the PTAB gives the claims the "*broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art*". Further, in the USPTO Manual of Patent Examining Procedure (MPEP) it is stated at 2111.01 ¶1 that "*The ordinary and customary meaning*

of a term may be evidenced by a variety of sources, including the words of the claims themselves, the specification, drawings, and prior art."

26. Counsel for the Patent Owner has asked me to propose a construction of some of the claim language in Claim 1 of the '563 patent that would be interpreted by a POSA. As such I am providing my expert opinion on the meaning and construction of the terms "*just beneath the wearer's breast area*". My opinion is based on 1) the specification of the '563 patent (specification identical to the specification for the '531 patent), 2) the language of the claims of the '563 patent, 3) examples of prior art identifying the "breast area", 4) prior art patents which use the term "*breast area*" only in the claims, and 5) the dictionary definitions of "*just*" and "*substantially*".

27. In ¶¶14-21 of my declaration I discussed the claim term "*just beneath the wearer's breast area*" and provided a broadest reasonable construction that would be interpreted by a POSA as "*beneath the location of the breasts by a very small margin*".

28. Counsel for the Patent Owner has asked me to propose a broadest reasonable construction of some of the claim language in Claim 1 of the '563 patent that would be interpreted by a POSA. As such, I am providing a discussion that the claim term "*an expansible belly panel*" can be construed as "*a belly panel that expands to a degree commensurate with covering a pregnant abdomen*".

29. The '563 patent specification supports a construction of "*an expansible belly panel*" as "*a belly panel that expands to a degree commensurate with covering a pregnant abdomen*".

30. When discussing "*expansible*" with regard to the belly panel, the '563 patent routinely discusses that the belly panel must cover and fit over a pregnant abdomen. For example, the Specification identifies a "*belly panel that is expansible to cover and fit over a growing abdomen during different stages of pregnancy.*" (1:55-57), and "*The belly panel **124** is expansible, for example, when made of a stretchable fabric, to cover and fit over a growing abdomen during different stages of pregnancy*" (3:2-5)

31. The '563 patent specification routinely discusses the need for comfort when wearing the garment covered by the '563 patent. For example "*Another embodiment of the invention provides a garment that fits comfortably while being worn*" (1:63-64), "*According to an embodiment of the invention, an expansible tubular upper portion of the garment is seamless to fit comfortably while being worn*" (2:9-12), and "*the stretchable fabric is woven or knitted to form a continuous, seamless tubular structure, such that the garment **100** is comfortable to wear due to the absence of seams that would tend to press against the torso.*" (4:9-12)

32. It is my opinion that, for an expansible belly panel to be comfortable, it must be non-constricting and, as such, not constrict or control the expansion of the abdomen during pregnancy but adapt in a comfortable manner to a growing abdomen.

33. It is my opinion that, based on the specification of the '563 patent, the broadest reasonable construction by a POSA of the claim term "*an expansible belly panel*" should be construed as "*a belly panel that expands to a degree commensurate with covering a pregnant abdomen*".

IV. Overview of JCP-A

34. I have reviewed a section (page 15) of the JC Penney *ontrend Maternity Fall/Winter Catalog* (2005) that the Petitioner has cited and asserts is prior art to the '531 patent and the '563 patent. A product entitled "FOLD-OVER PANEL JEANS" is advertised. JC Penney touts that the jeans have "*a unique fold-over panel design that allows you to wear them before, during and after your pregnancy*". Below is a pictorial excerpt from the advertisement.

The above pictorial excerpt shows at the far left ("*1. over-the-belly coverage*"), a belly panel that, while covering a portion of the abdomen,

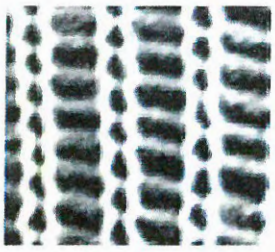
does not come up to just beneath the wearer's breast area. In fact, none of the pictures show the lower part of the wearer's breasts at all. It is my opinion that a POSA would understand that this advertisement is focused on providing a product with its primary feature being a fold-over belly panel that provides comfort during all stages during and after pregnancy by folding and unfolding the panel depending on belly size. In fact, two of the inset picture descriptions are specifically directed to comfort (e.g. "*2. fold once for mid-rise comfort*" and "*3. fold twice for low rise comfort and support*")". A POSA would understand that the garment shown in the advertisement does not provide any feature that would enable it to stay up, without folding it over, during all stages of pregnancy. In fact, JC Penney does not tout this in this reference.

V. Overview of the Browder patent (US Patent No. 6,276,175)

35. The Browder patent entitled "**SEAMLESS TORSO CONTROLLING GARMENT AND METHOD OF MAKING**" was filed in the US Patent and Trademark Office ("USPTO") on April 29, 1999 and issued on August 21, 2001. The Browder patent discloses a control garment and a method for providing additional control to selected portions of a garment. Further, it discloses garments provided with additional control through the use of elastomeric yarn and purpose-specific knitting techniques, and methods for providing such control. (1:6-13) The control area fabric is formed by an alternating tuck stitch knit pattern. The disclosed tuck stitch pattern is a 1 by 1 (1x1) alternating tuck stitch. (2:12-14) The Browder patent specification discloses that the 1x1 alternating tuck stitch pattern **tightens the fabric and increases the modulus of the elastomeric yarn.** Thus, the tuck stitch

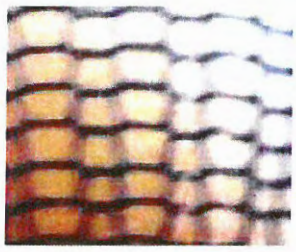
decreases the amount of stretch in the fabric. (2:29-34) This would be understood by a POSA.

36. A POSA would understand that knit fabrics made with tuck stitches are less extensible, and thus less expansible, than jersey knit fabrics such as those I have observed in the knitted expansible belly panel of the Secret Fit Belly® products.[3] Photographs of the stretched jersey knitted expansible belly panels that I examined are shown below in an enlarged view.



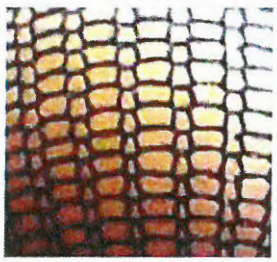
Secret Fit Belly®

94278-10



Secret Fit Belly®

96316-42



Secret Fit Belly®

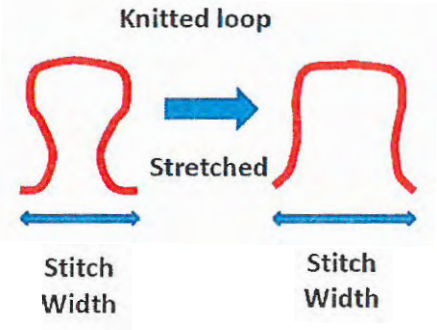
93480-01

Secret Fit Belly®

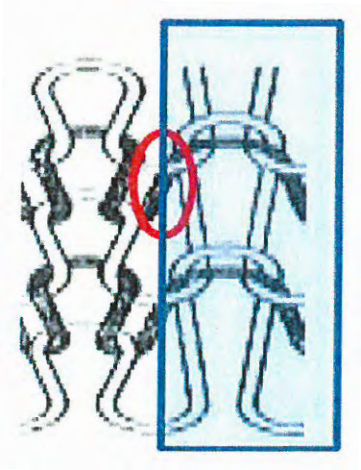
91401-01

[3] Textiles, 5th Edition, Macmillan Publishing, Co., Inc. , 1979, p. 188.

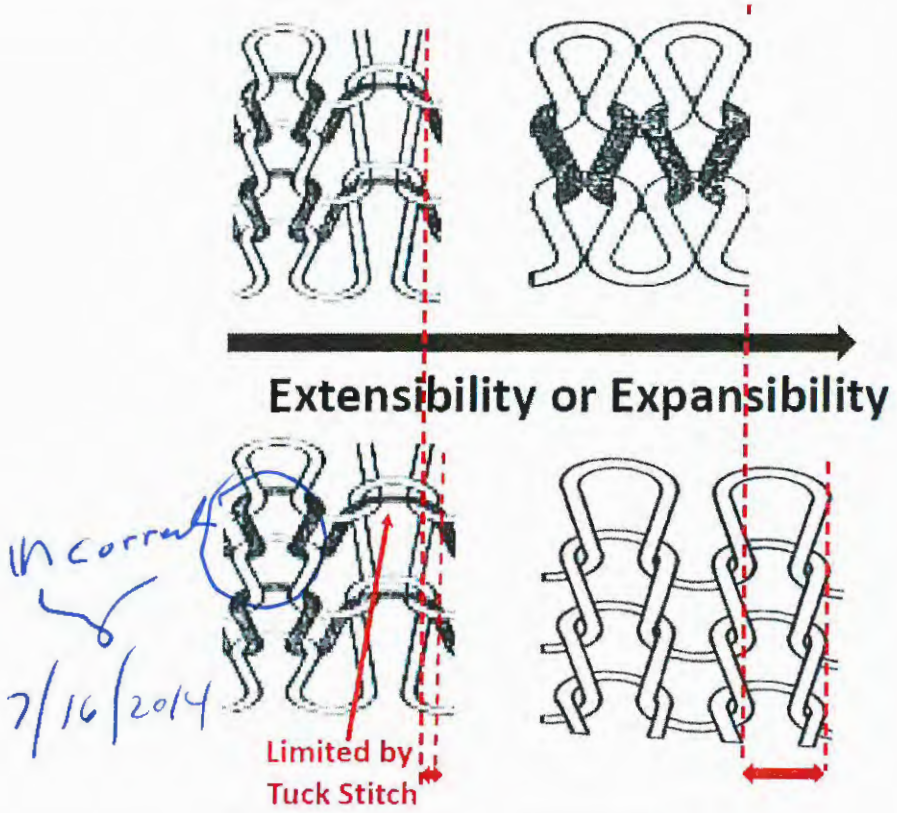
A POSA would understand that, for a jersey knit fabric, the primary mechanism of extension or expansion is a result of the knitted loop reconfiguring to unbend when a tensile load is applied to the fabric. This is shown in the stretched Secret Fit Belly® belly panel photographs that I provided above. To further illustrate, I have drawn the following schematic:



Below is a drawing of a 1x1 alternating tuck stitch pattern such as that disclosed in Browder. The shaded column of stitches (wales) are the tuck stitches. The red circled knit stitch leg of the tuck is already bent or straightened in the knit fabric's relaxed or off-the-machine configuration.



A POSA would understand that the knitted loop configuration found in a 1x1 tuck stitch would have very limited extensibility or expansibility due to the "as knitted" loop's straight or unbent configuration along with the straight portion of yarn at the top of the knitted loop. A diagram showing relative extensibility or expansibility for jersey knit fabrics and tuck stitch fabrics is shown below[4,5]:



For a tuck stitch fabric, such as that disclosed in Browder, the elasticity or expansibility is substantially limited by the relatively straight tuck stitch and

[4] Handbook of Technical Textiles, Woodhead Publishing Limited, 2000, p. 106.

[5] The Modern Textile Dictionary, Little Brown, 1954.

the straightened knit loop leg as shown above. As such, the elasticity or expansibility is substantially less than that found in a jersey stitch fabric. A POSA would not consider a tuck stitch fabric to be extensible or expansible in well-understood textile terms. As such, a POSA would not specify using a tuck stitch knit fabric for any garment design that required a relatively highly expansible fabric, such as the garments disclosed in the Patents-in-Suit.

36. Browder provides drawings of various torso controlling garments. For example, Fig. 1 and Fig. 2 show a "brief", Fig. 3 and Fig. 4 show a "high waist brief", Fig. 5 and Fig. 6 show a "half slip", Fig. 7 and Fig. 8 show a "thigh slimmer", Fig. 10 shows a "body slip", and Fig. 11 shows a "maternity brief". In Fig.1, there is a control area **25** of the undergarment where increased control is desired and is accomplished by using a 1x1 alternating tuck stitch pattern. (3:34-38) The Browder specification discloses that the alternating tuck stitch pattern increases the modulus of the fabric and thus the fabric **stretches less and controls more.** (3:38-42) Browder, in fact, recognizes the balance between comfort and control by disclosing that an 8% increase in fabric modulus is a desirable **compromise** between control and comfort (3:43-45). This disclosed **compromise** reinforces the fact that increased control can lead to decreases in wearer's comfort. The control area for the other garments that are disclosed in Browder are shown in the high waist brief (**35**), the half-slip (**65**), the thigh slimmer (**85**), the body slip (**105**), and the maternity brief (**125**).

37. There is one instance where Browder does disclose fabric covering the stomach portion which is specifically knitted without any control area. This is for the "maternity brief "shown in Fig. 11 and shown below.

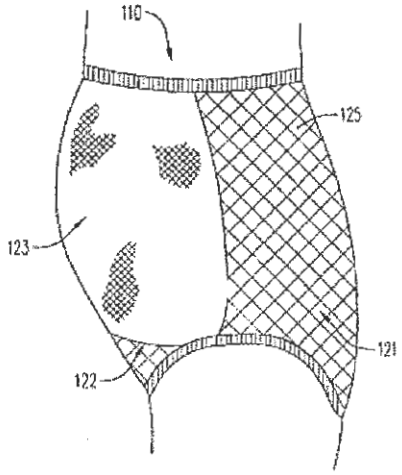


FIG. 11

In Fig. 11, a portion covering the stomach area (**123**) is shown, and does not extend just beneath the breasts and is specifically knitted without any control area to allow the stomach to expand as needed. (4:55-57) Thus, it is my opinion that the comparison of the control portions that are disclosed (**35**, **65**, **85**, **105** and **125**) are not expansible when compared with a portion that is expansible (**123**). It is also my opinion that the Browder control areas are not expansible within the meaning of the '563 patent. In other words, the Browder control areas are not expansible to a degree commensurate with covering a pregnant abdomen.

VI. Rebuttal of Alleged Anticipation of the '531 patent by Petitioner under 35 U.S.C. § 102 by JCP-A

38. I have been informed by counsel for the Patent Owner that to anticipate a claim under 35 U.S.C. § 102 "*a single prior art reference [must] not only disclose all of the elements of the claim within the four corners of the document, but ...also disclose those elements arranged as a claim*" Accordingly, it is my understanding that if even one claim element is missing in the alleged anticipated prior art, there is no anticipation.

39. Claim 1 of the '531 patent recites:

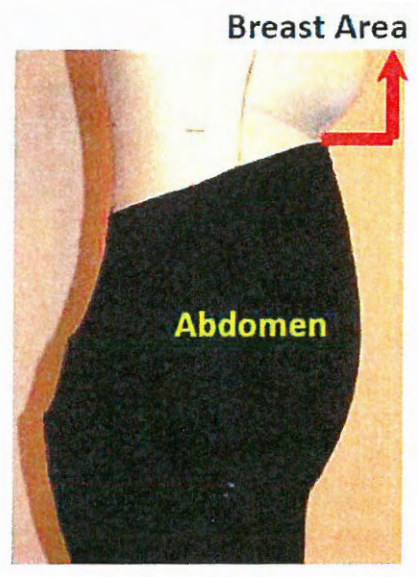
> A garment, comprising:
>
> [a] a garment upper portion having a belly panel that is expansible to cover and fit over a growing abdomen during different stages of pregnancy;
>
> [b] a garment lower portion having a first torso encircling circumference that recedes downward to make way for expansion of the belly panel; and
>
> [c] the garment upper portion having a second torso encircling circumference defining an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy.

40. It is my opinion that JCP-A does not disclose either "*an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast*

area" or "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy*". Further, since it is my opinion that JCP-A does not anticipate claim 1 of the '531 patent and claims 2-29 are dependent on claim 1, JCP-A does not anticipate those dependent claims either.

41. It is my opinion that the catalog excerpts from JC Penney *ontrend Maternity, Fall/Winter Catalog* (2005) p. 15 ("'JCP-A") do not disclose "*an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area*" or "*beneath the location of the breasts by a very small margin*". My examination of the catalog reference shown on page 15 **does not show either the model's breast area or even the top of her belly. The Patent Owner's Secret Fit Belly® product (covered by the '531 patent and the '563 patent) clearly has an upper edge belly panel that encircles a wearer's torso just beneath the wearer's breast.**

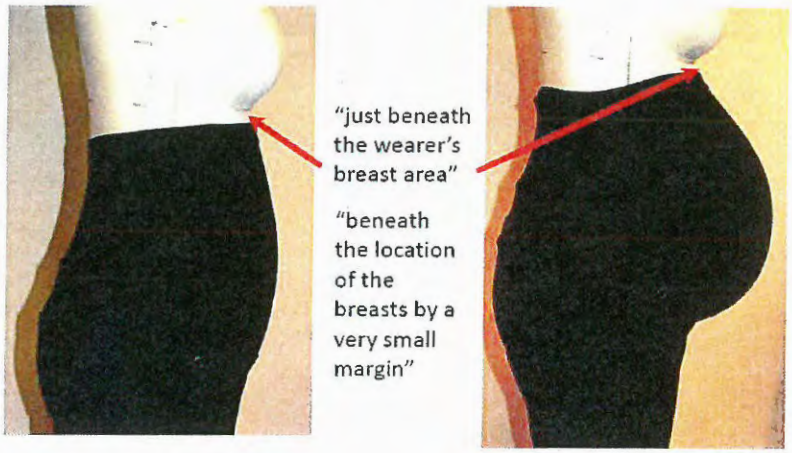
JCP-A



Secret Fit Belly®

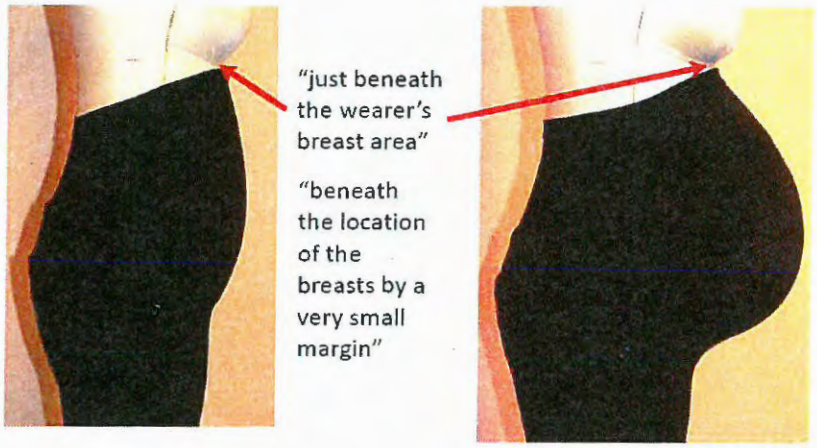
It is my opinion that a POSA would understand that the JCP-A disclosure does not meet the '531 patent claim 1 limitation that there is "*an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area....*" and thus JCP-A does not anticipate Claim 1 of the '531 patent without explicitly showing either the breast area of even the top of the belly. Furthermore, a POSA would understand that the JCP-A and the Secret Fit Belly® are different products and would not confuse them with each other.

42. It is my opinion that the proposed broadest reasonable claim construction by a POSA of "*just beneath the wearer's breast area*" is unaffected by wearer's with different body types. In ¶17 of my declaration, I showed where the Specification discusses the expansible and contractible nature of the stretchable belly panel which allows the belly panel to reach just beneath the breast area during all stages of pregnancy on wearer's with different body types. During my October 17, 2013 examination of exemplars of the Secret Fit Belly® product, I took the following photographs of Secret Fit Belly® Style 91401-01. They show 1) different stages of pregnancy and 2) different body types. The body types are represented by the AlvaForm Motherhood Fit Mannequin and the AlvaForm Mimi Fit Mannequin.



3 month Mimi

9 month Mimi



3 month Motherhood

9 month Motherhood

These fit mannequin measurements, which I made, are shown in the table below and clearly show the dimensions of different body types.

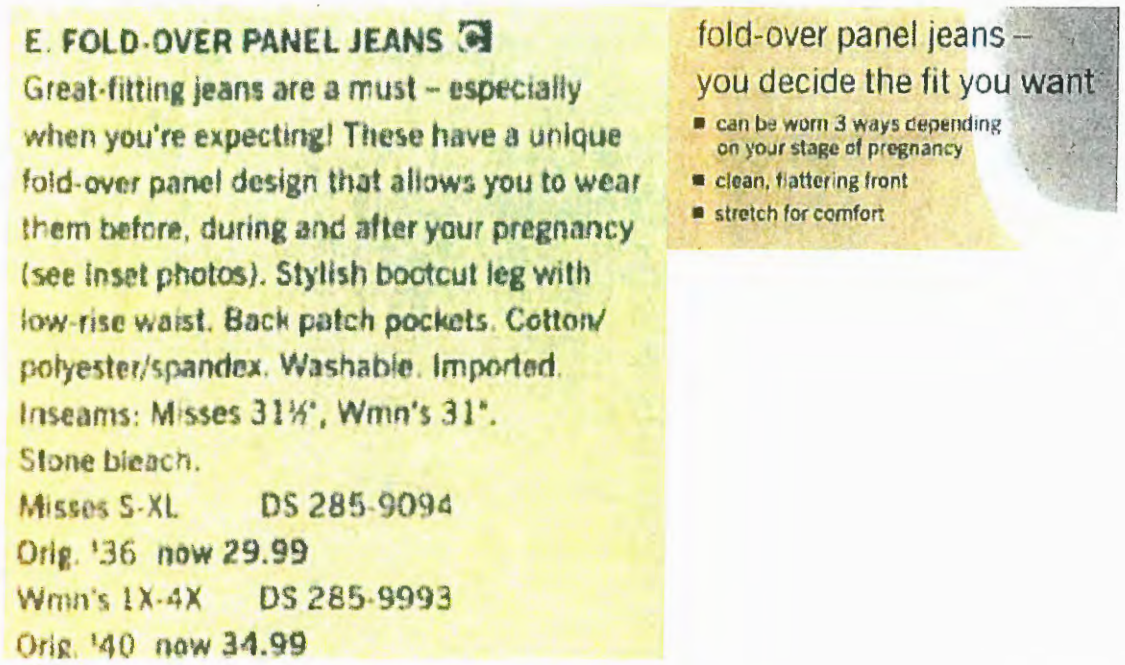
FIT MANNEQUIN	Measured Just Beneath the Breast	Measured at Maximum Girth
MOTHERHOOD 3 Month- Size 8	**31 ¾"**	**40 3/8"**
MOTHERHOOD 9 Month- Size 8	**32 ¾"**	**46 1/8"**
MIMI 3 Month- Size 8	**30 1/8"**	**37 7/8"**
MIMI 9 Month- Size 8	**31 1/8"**	**44 ½"**

43. It is my opinion that it is implicit that the correct size of a garment is worn by the wearer. In fact, in the garment and apparel design industry, a designer designs a particular product for a given "master" size. Once a design is approved, a well-known system of "pattern grading" is used to produce patterns for a wide range of product sizes. Pattern grading is the stepwise increase or decrease of a master pattern piece to create larger or smaller sizes. Pattern grading alters the overall size of the design but not its general shape and appearance.[6] Accordingly, even if the PTAB determines that if a larger size of the JCP-A garment were worn by a smaller model so that it could reach just beneath the breast area, it does not convert the JCP-A into a 35 U.S.C. §102 reference. Further, in the JCP catalog (p.15) the

[6] Clothing Technology, English Edition, Verlag Europa-Lehrmettel, 1996, p. 134

alleged prior art shows that the JCP-A maternity pants are available in a range of sizes Misses S-XL and Wmn's 1X-4X. *See excerpt below:*

44. It is my opinion that the catalog excerpt from JC Penney *ontrend Maternity, Fall/Winter Catalog* (2005) p. 15 ("JCP-A") does not disclose "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy*". Petitioner contends that JCP-A anticipates the claim 1 limitation "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy*" because "The upper edge of the belly panel in JCP-A is above the belly, i.e. at the wearer's upper torso, because the belly panel provides "*over-the-belly coverage*" and holds the garment in place "*before, during and after your pregnancy.*" *See* CORRECTED PETITION FOR *INTER PARTES* REVIEW - *Inter Partes* Review No. 2013-00532. Below is the section from the JCP catalog that Petitioner is referring to:



E. FOLD-OVER PANEL JEANS

Great-fitting jeans are a must – especially when you're expecting! These have a unique fold-over panel design that allows you to wear them before, during and after your pregnancy (see inset photos). Stylish bootcut leg with low-rise waist. Back patch pockets. Cotton/polyester/spandex. Washable. Imported.
Inseams: Misses 31½", Wmn's 31".
Stone bleach.
Misses S-XL DS 285-9094
Orig. '36 now 29.99
Wmn's 1X-4X DS 285-9993
Orig. '40 now 34.99

fold-over panel jeans – you decide the fit you want

- can be worn 3 ways depending on your stage of pregnancy
- clean, flattering front
- stretch for comfort

It is my opinion that the Petitioner has significantly misinterpreted what JC Penney is touting in this reference. The Petitioner has omitted that JCP-A states that the "*fold- over panel design that allows you to wear them before, during and after your pregnancy (see inset photos)*" and that JCP-A "*can be worn 3 ways depending on your stage of pregnancy*". While the Petitioner claims that the JCP-A advertisement touts that the belly panel holds the garment in place "*before, during and after your pregnancy*", there is no mention of this in the advertisement. It is my opinion that it is the JCP-A belly panel "*fold-over*" feature that holds the garment up and in place during certain stages of pregnancy. This, in fact, is vastly different from what is claimed in the '531 patent Claim 1 "*the garment upper portion having a second torso encircling circumference defining an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially*

covering the wearer's entire pregnant abdomen during all stages of pregnancy."

45. As illustrated below, during certain stages of pregnancy the JCP-A "fold-over" feature is required to hold the pants up. Clearly images 2 and 3 do not even come close to "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy*" and image 1 does not cover the wearer's entire pregnant abdomen. Further, image 3 does not even show coverage to the navel, which additionally illustrates that there is no substantial abdominal coverage. Significantly, JCP-A touts that the panel must be folded during certain stages of pregnancy by stating the panel "*can be worn 3 ways* ***depending on*** *your stage of pregnancy*" (emphasis added). As such, JCP-A touts that the configuration of the JCP-A panel is dependent on stage of pregnancy (or belly size). If JCP-A could operate in the image 1 configuration during all stages of pregnancy, it is my opinion that JCP-A would either (a) tout the garment's ability to function in the image 1 configuration throughout pregnancy, or (b) refrain from explicitly directing that the garment's configuration is "*worn 3 ways depending on your stage of pregnancy*". Finally, JCP-A fails to disclose an "*upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy.*" (emphasis added) *See below:*

46. It is my opinion that using the broadest reasonable claim construction by a POSA "*for just beneath the breast area*" as "*beneath the location of the breasts by a very small margin*" and/or the limitation "*substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy,*" JCP-A does not anticipate Claim 1 of the '531 patent under 35 U.S.C §102.

47. I have been informed by counsel for the Patent Owner that a dependent claim that adds additional limitations to a valid independent claim cannot be invalid for anticipation. As shown above, it is my opinion that JCP-A does not anticipate Claim 1 of the '531 patent. Accordingly, the dependent claims below are patentable because each add additional limitations to the valid independent Claim 1 as shown below:

- Claim 2 further limits claim 1 because it requires that the second torso

encircling circumference be "*adjustable in girth in conformance with different body types.*"

- Claim 5 further limits claim 1 because it requires that the garment upper portion include an "*elastic fabric that is contractible elastically to cover an abdomen during different stages of postpartum body changes.*"
- Claim 6 further limits claim 1 because it requires that the garment lower portion include "*a partial waistband extending from side seams of the garment lower portion and extending across a back side of the garment lower portion where the partial waistband widens above a wearer's pelvis.*"
- Claim 10 further limits claim 1 because it requires that the garment upper portion be "*foldable toward the garment lower portion to comprise a folded band on the garment lower portion.*"
- Claim 11 further limits claim 1 because it requires that the garment lower portion include "*a partial waistband extending from side seams of the garment lower portion wherein the partial waistband tapers toward the side seams and widens above a wearer's pelvis across a back side of the garment lower portion.*"
- Claim 15 further limits claim 1 because it requires that the garment upper portion's edge margin be "*folded over and knitted to an inside of the fabric to provide a perimeter hem stitch.*"
- Claim 16 further limits claim 1 because it requires that the garment upper portion's edge margin be "*folded over and sewn or knitted to an inside of the fabric to provide a perimeter hem stitch.*"
- Claim 17 further limits claim 1 because it requires that the second torso encircling circumference include "*stretchable fabric to adjust the girth in conformance with different body types.*"

- Claim 24 further limits claim 1 because it requires that the garment upper portion be "*foldable toward the garment lower portion to provide a folded band on the garment lower portion to be worn as a garment bottom having no top.*"
- Claim 25 further limits claim 1 because it requires that "*the garment lower portion comprises one of a pair of trousers and a skirt.*"
- Claim 26 further limits claim 1 because it requires that "*the garment lower portion comprises denim jeans.*"
- Claim 27 further limits claim 1 because it requires that "*the garment lower portion comprises a zipperless fly.*"
- Claim 28 further limits claim 1 because it requires that the "*first torso-encircling circumference recedes downward with a parabolic shape . . . including a shallow curvature.*"
- Claim 29 further limits claim 1 because it requires that the "*belly panel extends at least partially under the abdomen of the wearer to meet the parabolic receding circumference of the garment lower portion.*"

48. Claims 2 and 17 have a similar limitation that the garment be "*adjustable in girth in conformance with different body types.*" As noted above, the Specification explains that the expansible and contractible nature of the panel allows the panel to reach just beneath the breast area during all stages of pregnancy on wearers of different body types. (3:47-57) The Patent owner's design allows a garment to "*stay up when worn over different body types.*" (1:38-39). Different body types include "*different muscle mass distributions and spinal columns of different curvatures.*" (3:49-50) The PTAB found that JCP-A anticipates the limitations of Claims 2 and 17

because the JCP-A "jeans appear to meet these limitations, as they are made of '[c]otton/polyester/spandex' and described and illustrated as stretchable." PTAB Feb. 19, 2014 Dec. Paper 10, at 12. However, JCP-A does not disclose that the garment is adjustable to conform to different body types. Quite the opposite; the only JCP-A adjustment requires that the panel be folded-over depending on stage of pregnancy. This folding requirement moves the top of the JCP-A garment well below the breast area to below the navel. Finally, the mere fact that something can expand to some degree does not equate to expanding to a degree needed to conform to different body types as required by Claims 2 and 17.

49. Claim 5 requires that "*the garment upper portion comprises an elastic fabric that is contractible elastically to cover an abdomen during different stages of postpartum body changes*." JCP-A fails to disclose an elastic fabric that encircles a wearer's torso just beneath the wearer's breast area thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy, which is also contractible elastically to cover an abdomen during different stages of postpartum body changes, as claim 5 requires. JCP-A does not explicitly disclose that its panel is contractible. JCP-A states that the product can "*stretch for comfort*," has "*a unique fold-over panel design that allows you to wear them before, during and after your pregnancy*" and unknown amounts of "Cotton/polyester/spandex" fibers or yarns. As such, JCP-A does not disclose the elements of claim 5. Although the PTAB found that expansion and contraction may be reciprocal movements, it is my opinion that JCP-A does not disclose either the degree of expansion and contraction or how the product can be worn "*after your pregnancy*." As noted above, the JCP-A garment engages its "*fold-over*

panel" feature to hold the garment up and in place during certain stages of pregnancy. It follows that folding the JCP-A garment is needed to produce compression that would not otherwise be available if the JCP-A garment were in an unfolded position. In other words, unless the product is folded-over, the JCP-A garment appears incapable of providing sufficient compression to hold the garment up and in place during different stages of postpartum body changes. As such, JCP-A fails to disclose an elastic fabric that encircles a wearer's torso just beneath the wearer's breast area thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy, which is also contractible elastically to cover an abdomen during different stages of postpartum body changes.

50. Claim 10 requires that "*the garment upper portion is foldable toward the garment lower portion to comprise a folded band on the garment lower portion.*" Although JCP-A is described and illustrated as foldable, the pictured images of JCP-A do not overlay any portion of the jeans. As such, JCP-A fails to disclose the limitations of Claim 10. Even assuming, for argument sake, that JCP-A may be folded to a position creating a folded band on the garment lower portion, there is no indication in JCP-A that the pants would function in such a position. As noted above, the JCP-A garment engages its "*fold-over panel*" feature to hold the garment up and in place during certain stages of pregnancy. As such, the added belly girth of a pregnancy may be needed along with a fold-over at a lower portion of the belly for JCP-A to function.

51. Claim 24 requires that "*the garment upper portion is foldable toward the*

garment lower portion to provide a folded band on the garment lower portion to be worn as a garment bottom having no top." Although it is my opinion that JCP-A is described and illustrated as foldable, the pictured images of JCP-A neither overlay any portion of the jeans nor provide a garment bottom with no top. In fact, nothing in JCP-A shows that the pants would even be capable of operating in this manner. As such, JCP-A fails to disclose the limitations of Claim 24. In particular, assuming, for arguments sake, that JCP-A may be folded to a position creating a folded band located completely on the garment lower portion, the JCP-A pants would not function in such a position. As noted above, the JCP-A garment engages its "fold-over panel" feature that is placed directly on the belly to hold the garment up and in place during certain stages of pregnancy. As such, the added belly girth of a pregnancy would be needed along with a fold-over at a lower portion of the belly for JCP-A to function.

VII. Rebuttal of Alleged Anticipation of the '563 patent by Petitioner under 35 U.S.C. § 102 by JCP-A

52. I have been informed by counsel for the Patent Owner that to anticipate a claim under 35 U.S.C. § 102 "a single prior art reference [must] not only disclose all of the elements of the claim within the four corners of the document, but ...also disclose those elements arranged as a claim" Accordingly, it is my understanding that if even one claim element is missing in the alleged anticipated prior art, there is no anticipation.

53. Claim 1 of the '563 patent recites:

A garment portion having an attached belly panel portion comprising:

[a] an expansible belly panel adapted to substantially cover a wearer's entire belly region, said belly region comprising an area beginning just beneath the wearer's breast area and extending over the wearer's abdomen to a lower abdomen region beneath the wearer's belly, said belly panel comprising:

[b] an upper edge portion defining a first encircling circumference about a wearer's torso that is at or above the wearer's upper abdomen region, and

[c] and a lower edge portion spaced from the upper edge portion and defining a second encircling circumference about the wearer's lower abdomen region; and

[d] a garment lower portion, in communication with the lower edge portion, having a torso encircling circumference that recedes downward to make way for expansion of the belly panel.

54. It is my opinion that JCP-A does not disclose "*an expansible belly panel adapted to substantially cover a wearer's entire belly region, said belly region comprising an area beginning just beneath the wearer's breast area*". Further, since it is my opinion that JCP-A does not anticipate the claim 1 of the '563 and claims 2-21 are dependent on claim 1, JCP-A does not anticipate those dependent claims either.

55. In ¶¶14-21 above, I provided a broadest reasonable claim construction by a POSA for "*just beneath the wearer's breast area*" as "*beneath the location of the breasts by a very small margin*".

56. In ¶43 above, I showed how JCP-A does not have a belly panel that is just beneath the wearer's breast area. It is my opinion that, using the broadest reasonable claim construction that would be interpreted by a POSA "*for just beneath the breast area*" as "*beneath the location of the breasts by a very small margin,*" JCP-A does not anticipate under 35 U.S.C §102 the '563 patent.

57. I have been informed by counsel that a dependent claim that adds additional limitations to a valid independent claim cannot be invalid for anticipation. As shown above, it is my opinion that JCP-A does not anticipate Claim 1 of the '563 patent. Accordingly, the dependent claims below are patentable because each add additional limitations to the valid independent Claim 1 as shown below:

- Claim 2 further limits claim 1 because it requires that the garment portion "*further compris[es] a pair of trousers attached to said lower edge portion.*"
- Claim 3 further limits claim 1 because it imports the limitations of claim 2 and requires that the "*trousers comprise denim jeans.*"
- Claim 4 further limits claim 1 because it imports the limitations of claim 3 and requires that the "*denim jeans comprise one or more pockets and a sewn zipperless fly front.*"
- Claim 6 further limits claim 1 because it requires that the belly panel be "*adapted to cover the wearer's belly region during different stages of weight gains and losses.*"

- Claim 7 further limits claim 1 because it requires that the belly panel be "a*dapted to substantially cover and fit over different body types*."
- Claim 8 further limits claim 1 because it requires that the belly panel be "*elastically expansible and contractible*."
- Claim 10 further limits claim 1 because it requires that the belly panel be "*foldable to comprise a folded band.*"
- Claim 11 further limits claim 1 because it requires that the belly panel be "*woven or knitted with elastic, stretchable strands.*"
- Claim 12 further limits claim 1 because it requires that the top edge margin of the belly panel be "*folded over and sewn or knitted to an inside of the belly panel fabric.*"
- Claim 13 further limits claim 1 because it requires that the belly panel include "*a double layer tubular structure.*"
- Claim 14 further limits claim 1 because it requires that the belly panel include "*a partial waistband extending across a back side of the lower edge portion and extending down into side seams of an article of clothing connected thereto.*"
- Claim 16 further limits claim 1 because it requires that the lower edge portion "*extend downward with a parabolic shape to accommodate the wearer's expanding belly region.*"
- Claim 20 further limits claim 1 because it requires that the belly panel "*defines a tubular structure that is shaped and formed as a hyperboloid cylinder to fit a body type having a tapered torso.*"

58. Claim 7 of the '563 patent requires that the belly panel be "*adapted to substantially cover and fit over different body types.*" As noted above, the

Specification explains that the expansible and contractible nature of the panel allows the panel to reach just beneath the breast area on wearers of different body types. (3:47-57) The Patent owner's design allows a garment to "*stay up when worn over different body types*." (1:36-39) Different body types include "different muscle mass distributions and spinal columns of different curvatures." (3:49-50) The PTAB found that JCP-A anticipates the limitations of Claims 2 and 17 because the JCP-A "panel can change size and shape by stretching [and JCP-A] can be worn before, during, and after pregnancy, as well as during different stages of pregnancy." PTAB Feb. 14, 2014 Dec. Paper 13, at 12. However, it is my opinion that JCP-A does not disclose that the garment is adjustable to conform to different body types. Quite the opposite, the only JCP-A adjustment requires that the panel be folded-over depending on stage of pregnancy. This folding requirement moves the top of the JCP-A garment well below the breast area to below the navel. Finally, there mere fact that something can expand to some degree does not equate to expanding to a degree needed to conform to different body types as required by Claim 7.

59. Claim 8 requires that "*the belly panel is elastically expansible and contractible*." It is my opinion that JCP-A fails to disclose a panel that reaches just beneath the wearer's breast area thereby substantially covering the wearer's entire belly region, which is also contractible elastically, as claim 8 requires. I do not see an explicit disclosure in JCP-A that its panel is contractible. JCP-A states that the product can "*stretch for comfort,*" *has "a unique fold-over panel design that allows you to wear them before, during and after your pregnancy*" and unknown amounts of

"*Cotton/polyester/spandex*" fibers or yarns. As such, it is my opinion JCP-A does not disclose the elements of claim 8.

VIII. Rebuttal of Alleged Anticipation of the '563 patent by Petitioner under 35 U.S.C. § 102 by Browder

60. I have been informed by counsel for the Patent Owner that to anticipate a claim under 35 U.S.C. § 102 " a single prior art reference [must] not only disclose all of the elements of the claim within the four corners of the document, but ...also disclose those elements arranged as a claim". Accordingly, it is my understanding that if even one claim element is missing in the alleged anticipated prior art, there is no anticipation.

61. Claim 1 of the '563 patent recites:

A garment portion having an attached belly panel portion comprising:

> [a] an expansible belly panel adapted to substantially cover a wearer's entire belly region, said belly region comprising an area beginning just beneath the wearer's breast area and extending over the wearer's abdomen to a lower abdomen region beneath the wearer's belly, said belly panel comprising:
>
> [b] an upper edge portion defining a first encircling circumference about a wearer's torso that is at or above the wearer's upper abdomen region, and

[c] and a lower edge portion spaced from the upper edge portion and defining a second encircling circumference about the wearer's lower abdomen region; and

[d] a garment lower portion, in communication with the lower edge portion, having a torso encircling circumference that recedes downward to make way for expansion of the belly panel.

62. It is my opinion that Browder does not disclose either (1) "*an expansible belly panel*" or (2) "*a garment lower portion, in communication with the lower edge portion, having a torso encircling circumference that recedes downward to make way for expansion of the belly panel.*" Further, since it is my opinion that Browder does not anticipate the claim 1 of the '563 and claims 2-21 are dependent on claim 1 Browder does not anticipate those dependent claims either.

63. In ¶¶28-32 above, I provided a broadest reasonable construction by a POSA of the '563 patent that "*an expansible belly panel*" can be construed as "*a belly panel that expands to a degree commensurate with covering a pregnant abdomen.*" It is my opinion that Browder fails to disclose an expansible belly panel that expands to a degree commensurate with covering a pregnant abdomen. For example, in ¶¶35-39 of my declaration, I provided an opinion that the control portion that is disclosed would not be considered by a POSA to be expansible. It is my opinion that the control area shown in Fig. 10 is specifically designed to tighten, rather than expand, unlike the

garment portion of the Secret Fit Belly® products claimed in the '531 patent and the '563 patent. In fact, the only knit fabric, disclosed in Browder, that would be considered by a POSA to be expansible, is the stomach covering portion (**123**) of Fig. 11 of Browder. And while indeed that fabric covering portion is expansible, it does not come up to just beneath the breasts since it does not cover the abdomen as discussed in ¶37 of my declaration.

64. I respectfully disagree with the PTAB argument that since the Browder fabric stretches some amount a POSA would consider it as expandable.

> Browder states that the control area has a tightened fabric pattern such that it —stretches less and controls more‖ (than it would if not tightened during manufacture). Ex.1004, col. 3,ll. 39–41. Thus, it —stretches some amount, and, therefore, is expandable. *See* PTAB Feb 14, 2014 Dec. Paper 13 at 21-22.

A POSA would understand that all fabrics do stretch to some degree. But in the case at hand **Browder clearly teaches a POSA away from expansibility** since the disclosed fabric (a 1x1 alternating tuck stitch fabric) is designed to constrict and not expand to a degree commensurate with a covering a pregnant abdomen. *See* ¶36

65. It is my opinion that the nature of the fabric that Browder discloses does not permit "*a garment lower portion ...that recedes downward to make way for expansion of the belly panel*". A POSA would understand that the Browder invention is essentially a "girdle" or "shape wear" garment. Like all girdles and shape wear garments, the "control area" (**35**) of Browder tightens, rather

than expands to a degree commensurate with covering a pregnant abdomen. (3:53:57)

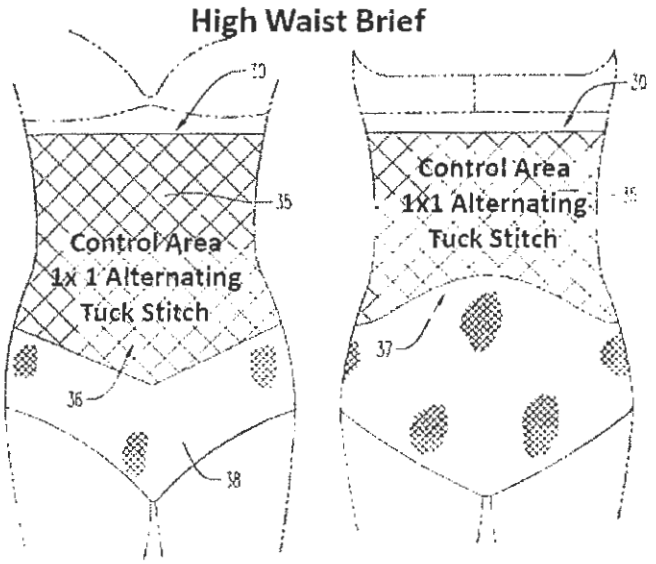


FIG. 3 FIG. 4

As shown above, a POSA would understand that Browder's control area 35 prevents expansion in the waist due to the use of a 1x1 alternating tuck stich, rather than promotes it. Because the Browder girdle or shape wear garment fails to allow expansion to a degree commensurate with covering a pregnant abdomen, Browder fails to disclose either "an expansible belly panel" or "a garment lower portion . . . that recedes downward to make way for expansion of the belly panel." As such, it is my opinion Browder does not anticipate Claim 1 of the '563 patent.

66. Claim 20 of the '563 patent requires that the belly panel "*defines a tubular structure that is shaped and formed as a hyperboloid cylinder to*

fit a body type having a tapered torso." In its Institution Decision, the PTAB stated:

> Browder appears to meet this additional limitation, as its control area (or belly panel) is tapered into an hourglass shape. *See* PTAB Feb. 14, 2014 Dec. Paper 10, at 28.

Even assuming, for argument's sake, that Browder Figs. 3-4 disclose an hourglass-shaped control area, the shape is pictured on a wearer:

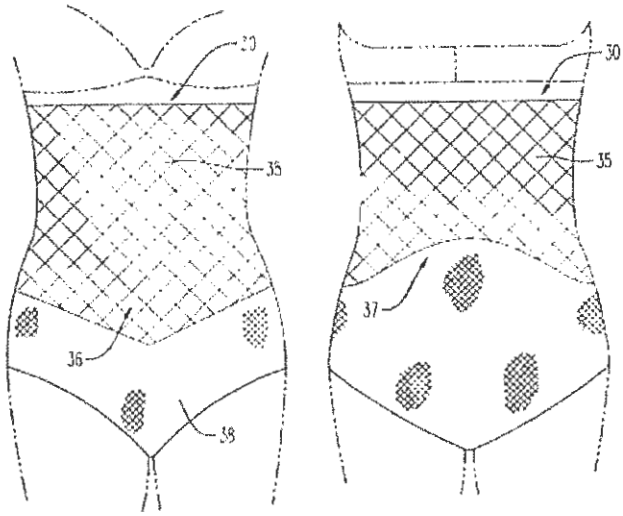
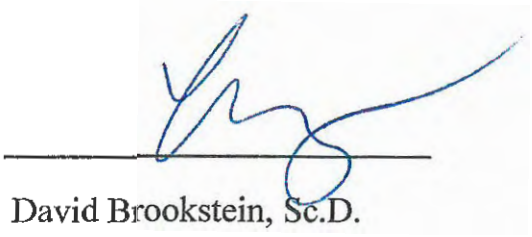


FIG. 3 FIG. 4

If the PTAB finds that Browder is expansible and contractible, Browder cannot meet the limitations of claim 20 for the same reasons the limitation was not met by JCP-A. Browder does not disclose that the control area was *shaped and formed* in the required shape because the girdle is pictured on a wearer.

I declare that the foregoing is true and correct to the best of my knowledge.

Executed on May 5, 2014 at Fort Washington, Pennsylvania.



David Brookstein, Sc.D.

EXHIBIT 1

David Brookstein, Sc.D.

Curriculum Vitae

Professional Experience:

Brookstein Consulting LLC.

Engineering and Litigation Consultant in Fields of Textiles, Garment Systems, Fibers, Fabrics and Composites

2000-present

IFC Mercantile

2013-present — Director of Market Development
Responsible for Technical and Market Development of antimicrobial, antifungal and flame resistant textile fabrics. Development of new fabric systems for flame-resistant garments.

Montgomery County Community College (PA)

2012-2013 — Dean for Science, Technology, Engineering and Mathematics (STEM)

Philadelphia University

2010 – 2012 — Executive Dean for University Research
Professor of Mechanical Engineering

1994 – 2010 — Dean and Professor of Mechanical Engineering
School of Engineering & Textiles

2007 – Executive Director of Institute for Textile and Apparel Product Safety

2008 – Executive Director of Pennsylvania Advanced Textile Research and Innovation Center including Biomedical Textile Structures Laboratory

2005- Executive Director of Research for Philadelphia University

2004-2012 – Principal Investigator – DoD Funded program – Laboratory for Engineered Human Protection (LEHP) –program focused on working with US Army to develop new garment-based soldier protection systems. The research and development program was to design, develop and produce prototype chemically protective garments with the required comfort using the latest materials produced in collaboration with selected suppliers.

Chief academic, administrative and fiscal officer for a school with undergraduate and graduate majors in industrial and systems engineering, architectural engineering, mechanical engineering, composites engineering, textile engineering technology, textile design (knitted, woven, and printed) fashion design and fashion industry management.

MAG Indutrial Automation Systems

2009-2012 – Engineering consultant to worldwide manufacturer of engineering automation systems for the aerospace industry

Harvard University

2002 – 2003 Visiting Scholar (sabbatical)
Harvard University Center for Textile and Apparel Research (Division of Engineering and Applied Sciences and Harvard Business School) – Studied trends in patent applications involving textile structures

Albany International Research Co. - Mansfield, MA

1992 - 1994	Associate Director
1983 - 1992	Assistant Director
1980 - 1982	Senior Research Associate

Directed all activities of the professional engineering group responsible for contract research, development, and manufacture of advanced composite materials and technical polymeric materials and fabrics. Accomplishments include the working with NASA to develop new garment systems for astronauts, invention and development of the multilayer interlock braiding system for producing three-dimensionally reinforced fibrous preforms for aerospace structures, the development

of implantable biomedical devices such as sutures, vascular prostheses, orthopedic implants (knitted and woven) and the development of unique textile-based civil engineering structures. Engineering innovations led to 12 US patents and many other inventions protected by trade secret. Member of the senior management staff of the organization.

Northeastern University - Boston, MA
1981-1983 Adjunct Professor in Mechanical Engineering

Taught undergraduate courses in statics, dynamics, and mechanics of deformable bodies and material science.

Georgia Institute of Technology, College of Engineering
1975 - 1980 Assistant Professor of Textile Engineering

Taught and conducted research in the fields of textile and composites engineering with special emphasis on improving the energy efficiency of manufacturing systems. Obtained substantial funding from US DOE and US DOD. Active participant in College of Engineering co-op undergraduate programs.

Education:

- Doctor of Science in the field of Mechanical Engineering, Minor Studies in Management from Sloan School of Management, Massachusetts Institute of Technology, 1976.
- Master of Science in Textile Technology, Massachusetts Institute of Technology, 1973.
- Bachelor of Textile Engineering, Georgia Tech, 1971.
- Harvard Business School Summer Program on Research Management, 1990.
- Harvard University Graduate School of Education MLE Program, 1998.
- Massachusetts Institute of Technology Professional Institute - Data and Models in Engineering, Science and Business, 2006
- Harvard University Graduate School of Education Institute for Education Management, 2007.
- Massachusetts Institute of Technology Professional Institute - Nanomaterials for Biological and Pharmaceutical Technologies – 2008
- MIT Sloan School Executive Education Program "Product Design, Development, and Management" – 2009

- MIT Professional Institute, "From Technology to Innovation: Putting Ideas to Work" - 2010

Outside Professional Activities:

- Founding Member of the Greater Philadelphia University Council of Engineering Deans
- Chairman of the National Textile Center (NTC) Operating Board (2006-2007). NTC is a federally funded research consortium consisting of Georgia Tech, North Carolina State, Auburn, Clemson, Cornell, UMASS-Dartmouth, UC Davis and Philadelphia University.
- Advisory Board of the College of Engineering, Georgia Tech (1990-1995).
- President, The Fiber Society (1996)
- Chairman, Textile Engineering Division-American Society of Mechanical Engineers (1994-1996)

Memberships:

- American Society for Engineering Education (member of Engineering Deans Council)
- Institute of Industrial Engineers
- ASME - Textile Engineering Division, Chairman, 1980, 1994
- American Conference of Academic Deans
- The Fiber Society - Fiber Society Lecturer, 1986-1987, 1993-1994, President 1996
- SAMPE - Society for Advanced Materials and Process Engineering
- The Textile Institute (United Kingdom)

Awards and Honors:

- American Society of Mechanical Engineers (ASME) – Fellow, 1995
- ASME - Textile Engineering Division, Chairman, 1980, 1994
- The Fiber Society - Fiber Society Lecturer, 1986-1987, 1993-1994, President, 1996
- The Textile Institute (United Kingdom) – Fellow, 1992
- Georgia Tech Academy of Distinguished Engineering Alumni, 1999
- Techtextil Innovation Prize, 1993 (Germany)
- ASTM Harold Dewitt Smith Award, 1998

Publications:

"Deductions about the False-Twist Process from Observations of the Variation of Torque on Detwisting at Heat Set Yarn," with Backer, S., and Thwaites, J.J., Journal of the Textile Institute, 67, p. 183-186, 1976.

"Transient Threadline Behavior in False-Twist Texturing," with Thwaites, J.J., and Backer, S., Journal of the Textile Institute, 67, 1976.

"Mechanics of Texturing Thermoplastic Yarns: Part III. Experimental Observations of Torsional Behavior of the Texturing Threadline for Pre-Drawn PET Yarns," with Backer, S., Textile Research Journal, 46, pp. 802-908, 1976.

"Mechanics of Texturing Thermoplastic Yarns: Part V. Steady State Mechanics of Drawing Texturing," Textile Research Journal, 47, p. 256-266, 1977

"Material-Process Interactions During False-Twist Texturing," with Backer, S., Journal of Applied Polymer Science: Applied Polymer Symposium, 31, p. 63-82, 1977.

"Mechanics of Texturing Thermoplastic Yarns: Part VI. Transient Mechanics of Draw Texturing," with Backer, S., Textile Research Journal, 48, p. 198-218, 1978.

"On the Mechanics of Draw Texturing," Journal of Applied Polymer Science: Applied Polymer Symposium, 33, p. 197-202, 1978

"Energy Consumption and Conservation: Textile Drying," ACS Symposium Series, 107/17, 1979

"All That Glitters is Not Gold," Textile World, October 1979

"Energy Conservation in the Textile Industry," ERDA - Phase I Report, DOE, April, 1977, Quarterly Reports, 1976 to 1977, Final Report.

"Processing of Pitch-Based Staple Carbon Fiber," Union Carbide Corporation, November 1977, Final Report.

"Low Thermal Conductivity of PAN-Based Carbon Fiber, Hercules, Inc., Monthly Reports and Final Report

"Development and Demonstration of Energy-Conserving Drying Modifications to Textile Processes," U.S. DOE Monthly Reports.

"Optimization of Sucker Rod Pumping Using Novel Material-Systems Concepts," with Skelton, J. and Dent, R., Proceedings of the Sixth Symposium of Engineering Applications of Mechanics, Petroleum Society of CIM, 1982

"Mechanical Characterization of Braided Cylinder," with Tsiang, T.H., and Dent, J., Proceedings of the 29th SAMPE Meeting, 1984.

"Design and Development of a High Stability Truss Chord," with Helmke, R., and Kominos, C., Proceedings of the 30th SAMPE Meeting, 1985.

"Load-Deformation Behavior of Composite Cylinders with Integrally-Formed Braided and Machined Circular Holes," with Tsiang, T.H., Journal of Composite Materials, 19, September 1985.

"Braided Composites: Attachment Considerations, Proceedings of the Composites in Manufacturing, Los Angeles, CA, January 1986.

"Foam Assisted Drying,: with Skelton, J., Petterson, D.R., and Lauchenauer, F., Proceedings of the International Drying Symposium, Cambridge, MA, August 1986

"Joining Methods of Advanced Braided Composites," Composite Structures, 6, p. 87-95, 1986

"Structural Applications of Advanced Braided Composites," Proceedings of the SPE Advanced Polymers Composites Division, November 1988.

"Processing Advanced Braided Composite Structures," Proceedings of the WAM of ASME, Materials Division, November 1988.

"Interlocked Fiber Architecture: Braided and Woven," Proceedings of the 35th SAMPE Meeting, April, 1990.

"Evolution of Fabric Preforms for Composites," Journal of Applied Polymer Science: Applied Polymer Symposium, 47, p. 487-500, 1991.

"A Comparison of Multilayer Interlocked Braided Composites with Other 3-D Braided Composites," 3rd International Techtextil Symposium, 14-16, May 1991, Frankfurt.

"On the Mechanical Behavior of 3-D Multilayer Interlock Braided Composites," with Preller, T., and Brandt, J., DASA-Deutsche Aerospace, Proceedings of NASA Fiber-Tex '92.

"The Evolution of 3-D Composites," Fifth European Conference on Composite Materials," 7-10 April 1992, Bordeaux.

"The Solid Section Multilayer Interlock Braiding System," 4th International Techtextil Symposium, 4 June 1992, Frankfurt.

"On the Mechanical Properties of Three-Dimensional Multilayer Interlock Braided Composites, TECHTEXTIL Symposium, 1993, Frankfurt.

"3-D Braided Composites-Design and Applications," Sixth European Conference on Composite Materials," 20-24 September 1993, Bordeaux

"Concurrent Engineering of 3-D Textile Preforms for Composites," International Journal of Materials and Product Technology, Vol. 9, Nos 1/2/3, 1994.

"Advanced Textile Airbeams for Temporary Shelters, 6th TECHTEXTIL Symposium, 1994, Frankfurt.

"Physical Properties of Twisted Structures" with Ning Pan, Physical Properties of Twisted Structures II Industrial yarns, cords and ropes, Journal of Applied Polymer Science, V 83, 610-630.

"A New Multidisciplinary Engineering Education Initiative", with Govindaraj, M and Tovia, F, American Society of Engineering Education, AC 2007-1064, 2007.

"Multi-component Multiple-layer Woven Textiles for Electronic Applications."Govindaraj, Muthu, and Brookstein, David. Ambience 08 Smart Textiles-Technology and Design. Proc. of Ambience 08 International Scientific Conference. Boras, Sweden: The Swedish School of Textiles, University College of Boras, 2008. 72-78.

"On Current Research Associated with Textile and Apparel Product Safety", with Govindaraj, M and Pierantozzi, J , Proceedings of the 86th Textile Institute World Conference, Hong Kong 2008.

Written testimony to the US Senate Subcommittee of Consumer Protection, Product Safety and Insurance – "Formaldehyde in Textiles and Consumer Products", April 28, 2009

"Factors Associated with Textile Pattern Dermatitis Due to Contact Allergy to Dyes, Finishes, Foams and Preservatives" , Dermatologic Clinics, July 2009.

"Textile-Templated Electrospun Anisotropic Scaffolds for Tissue Engineering and Regenerative Medicine", Institute of Electrical and Electronic Engineers, Engineering in Medicine and Biology Society Annual Conference, Buenos Aires, September 2010.

"Creating an Infrastructure for Compressed Natural Gas Delivery for Automotive Transportation" - Industry Studies Association of the Alfred P. Sloan Foundation, Pittsburgh, May 2012

"Textile-Templated Electrospun Anisotropic Scaffolds for Regenerative Cardiac Tissue Engineering, Tissue Engineering Journal (submitted for publication-2014) H. Gözde Şenel Ayaz*, Anat Perets, Hasan Ayaz, Kyle D. Gilroy, Muthu Govindaraj, David Brookstein and Peter I. Lelkes

PATENTS Consisting of Original Contributions to field of engineering:

1. U.S. Patent 4,290,170 "Device for Aligning and Attenuating Fiber Mats," A device for producing aligned carbon fiber webs for use in composites.

2. U.S. Patent 4,497,866 "Sucker Rod," An elliptical cross-section braided composite rod for pumping oil.

3. U.S. Patent 4,602,892 "Sucker Rod," A braided composite rod and coupling for pumping oil.

4. U.S. Patent 4,841,613 "Pressure Developer or Press Roll Containing Composite Material," A composite press roll with variation of radial stiffness.

5. U.S. Patent 4,909,127 "Braiders," A braider with non-circular braider tracks and a unique package carrier for use with braider.

6. U.S. Patent 5,004,474 "Prosthetic Anterior Cruciate Ligament Design," An artificial ligament device having a tubular woven ligament and being adapted for joining the ends of two bones.

7. U.S. Patent 5,357,839 "Solid Braid Structure" A 3-D system for producing braids.

8. U.S. Patent 5,358,758 "Structural Member" A fiber reinforced structural member produced from a complex woven fabric.

9. U.S. Patent 5,411,463 "Composite Roll and Method of Making" A fiber reinforced roll for papermaking.

10. U.S. Patent 5,501,133 "Apparatus for Making a Braid Structure" A novel manufacturing system for producing 3-D multilayer interlock braided textile and fiber reinforced composite structures.

11. U.S. Patent 5,697,969 "Vascular Prosthesis and Method for Implanting" A fibrous synthetic vascular graft with a combination of resorbable and non-resorbable layers.

12. U.S. Patent 7,144,830 B2 "Plural Layer Woven Electronic Textile, Article and Method"

13. U.S. Patent Application 2013/0131830 "Textile-Templated Electrospun Anisotropic Scaffolds for Tissue Engineering and Regenerative Medicine"

Non-patentable trade secret inventions developed at Albany International Research Co.

1. Fiber-reinforced composite rocket igniter for Small ICBM and Pegasus Air-Launched Vehicle
2. Specialty vascular grafts and bio-absorbable orthopedic implants
3. Flexible air-beam for military structures
4. New method for drying paper during the papermaking process
5. Complex, reduced delamination rocket motor exit cones

EXHIBIT 2

On October 16, 2013 and October 17, 2013, I examined the Destination Maternity Corporation ("DMC") Secret Fit Belly® Products listed below, provided to me by counsel for DMC, and took the photographs that are in this report.

DMC Secret Fit Belly® Product	Garment Type
Style 93480-01	Trouser
Style 96316-42	Denim Jeans
Style 91401-01	Trouser
Style 94278-10	Skirt

I placed each of the Secret Fit Belly® products on AlvaForm maternity fit mannequins with detachable bellies that are shown in the AlvaForm web site[1] I used the 3 month (Size 8) pregnancy and 9 month (Size 8) pregnancy detachable bellies for two different body types associated with DMC's product lines: MOTHERHOOD and MIMI. I measured the circumference of each fit mannequin at the maximum girth and just below the breast.

1 http://www.alvanon.com/assets/files/AlvaForm_Catalog_(v3.0)_12X27_[SOFT]_24APR2013.pdf

FIT MANNEQUIN	Measured Just Beneath the Breast	Measured at Maximum Girth
MOTHERHOOD 3 Month- Size 8	31 5/8"	40 3/8"
MOTHERHOOD 9 Month- Size 8	32 1/4"	46 1/8"
MIMI 3 Month- Size 8	30 1/8"	38 3/8"
MIMI 9 Month- Size 8	31 1/8"	44 ½"

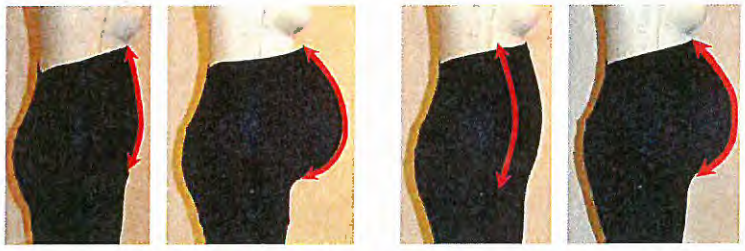
It is my opinion that the above listed DMC Secret Fit Belly® Products meet the independent claim limitations of U.S. Patent No. RE43,531 E titled "Belly Covering Garment," (hereinafter referred to as the "'531 Patent"), and U.S. Patent No. RE43,563 E titled "Belly Covering Garment" (hereinafter referred to as the "'563 Patent"). The DMC Secret Fit Belly® Products also meet the limitations of certain dependent claims of the '531 Patent and the '563 Patent that are at issue before the Patent Trial and Appeal Board ("PTAB"). The below charts identify the claims-at-issue that each product embodies. For both the'531 Patent and the '563 Patent, the only independent claim is Claim 1.

Summary Claim Chart for the '531 Patent

	Independent Claim				Claims								
DMC Secret Fit Belly® Product	1	2	5	6	10	11	15	17	24	25	26	27	28	29
Style 93480-01														
Style 96316-42														
Style 91401-01														
Style 94278-10														

Summary Claim Chart for the '563 Patent

	Independent Claim				Claims							
DMC Secret Fit Belly® Product	1	2	3	4	6	7	8	10	12	14	16	21
Style 93480-01												
Style 96316-42												
Style 91401-01												
Style 94278-10												

<table>
<tr><td>Claim 1</td><td colspan="2">DMC Secret Fit Belly® meets the limitations of the '531 Patent</td></tr>
<tr><td>1. A garment comprising:</td><td colspan="2"></td></tr>
<tr><td>[a] a garment upper portion having a belly panel that is expansible to cover and fit over a growing abdomen during different stages of pregnancy;</td><td colspan="2">These DMC Secret Fit Belly® garments comprise a garment upper portion having a belly panel that is expansible to cover and fit over a growing abdomen during different stages of pregnancy. For example:</td></tr>
<tr><td></td><td>Style 93480-01</td><td> 
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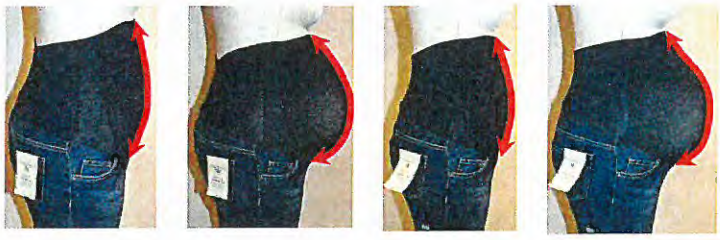
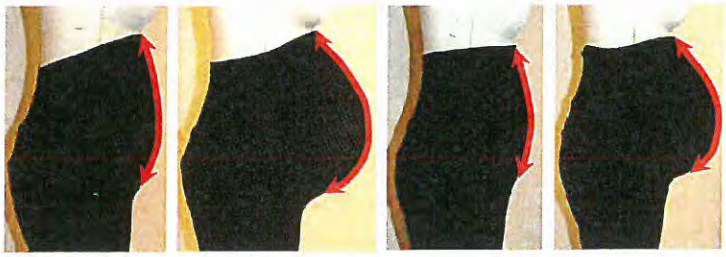
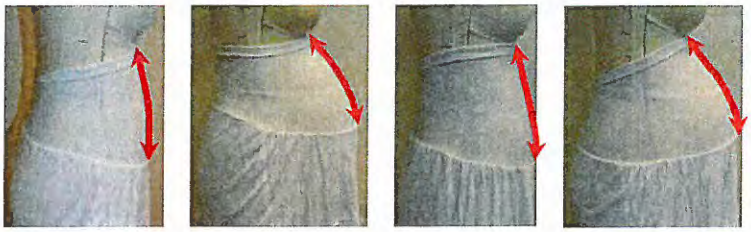
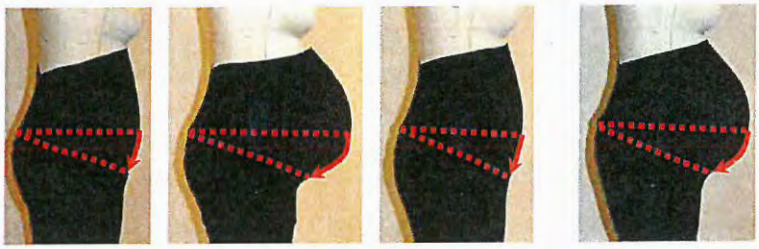
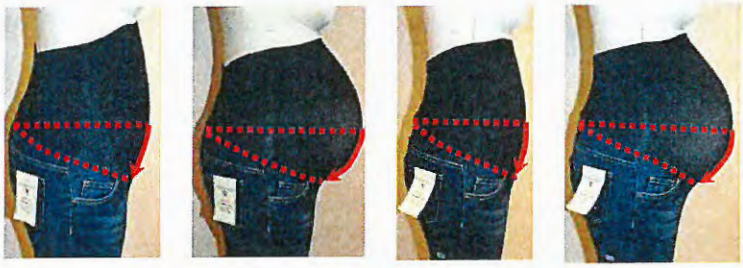
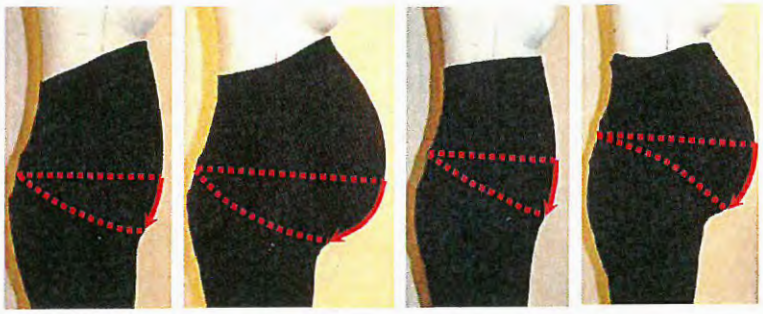
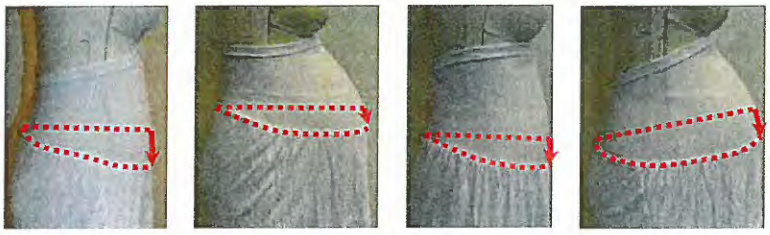
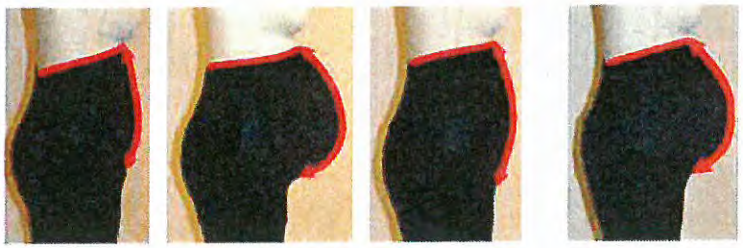
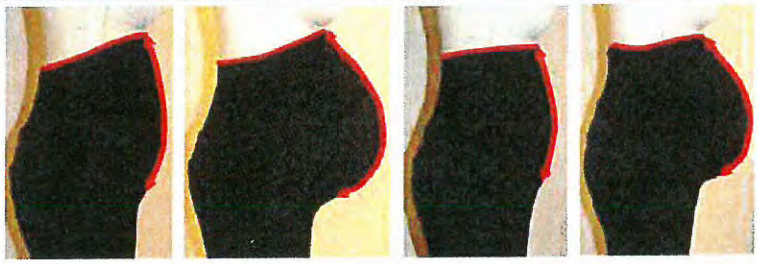
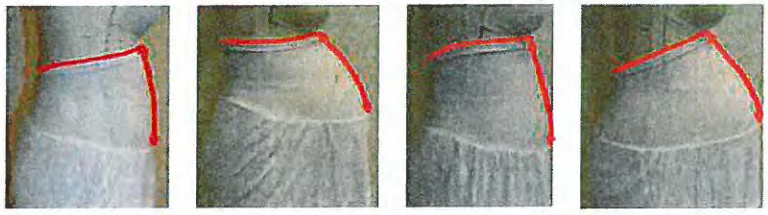
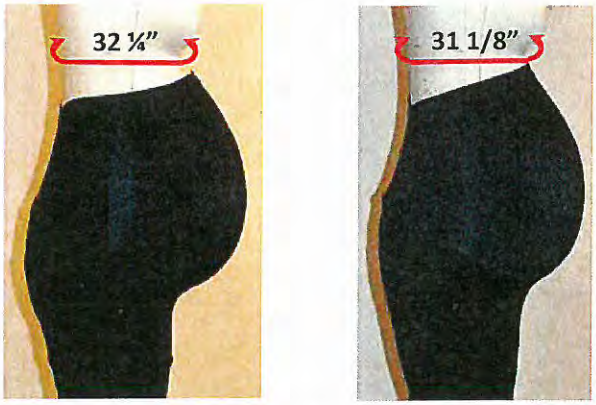
<tr><td></td><td>Style 96316-42</td><td> 
<table><tr><td>3 month Motherhood</td><td>9 month Motherhood</td><td>3 month Mimi</td><td>9 month Mimi</td></tr></table></td></tr>
</table>

<table>
<tr><td></td><td>Style
91401-01</td><td> 
<table>
<tr><td>3 month
Motherhood</td><td>9 month
Motherhood</td><td>3 month
Mimi</td><td>9 month
Mimi</td></tr>
</table></td></tr>
<tr><td></td><td>Style
94278-10</td><td> 
<table>
<tr><td>3 month
Motherhood</td><td>9 month
Motherhood</td><td>3 month
Mimi</td><td>9 month
Mimi</td></tr>
</table></td></tr>
<tr><td>Claim 1</td><td colspan="2">DMC Secret Fit Belly® meets the limitations of the ‘531 Patent</td></tr>
<tr><td>[b] a garment lower portion having a first torso encircling circumference that recedes downward to make way for expansion of the belly panel; and</td><td colspan="2">These DMC Secret Fit Belly® garments comprise a garment lower portion having a first torso encircling circumference that recedes downward to make way for expansion of the belly panel. For example:</td></tr>
</table>

	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

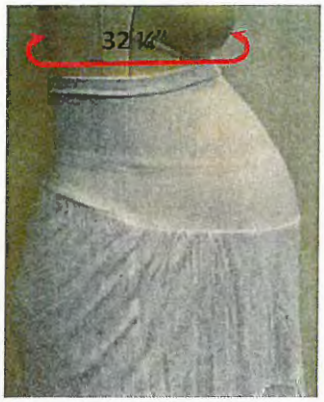
	Style 94278-10	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
Claim 1	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
[c] and the garment upper portion having a second torso encircling circumference defining an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially covering the	These DMC Secret Fit Belly® garments comprise a garment upper portion having a second torso encircling circumference defining an upper edge of the belly panel that encircles a wearer's torso just beneath the wearer's breast area configured to hold the garment up and in place about the torso in a position of a location of maximum girth of the abdomen thereby substantially covering the wearer's entire pregnant abdomen during all stages of pregnancy. For example:	

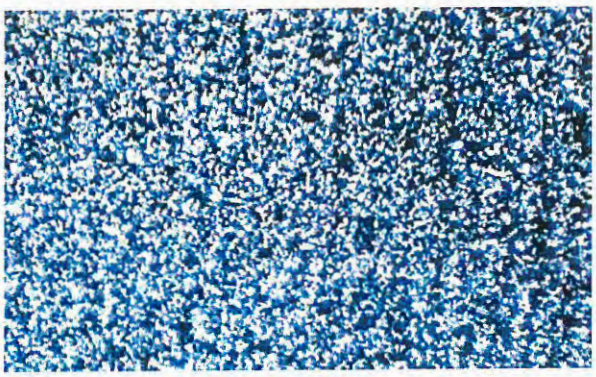
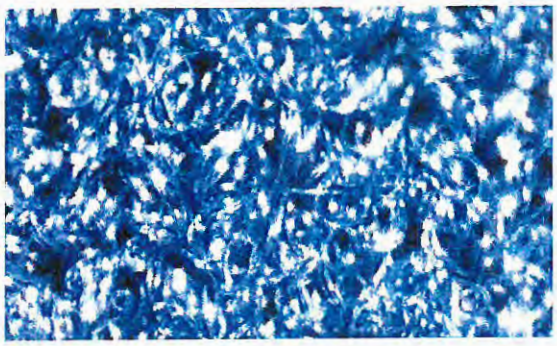
wearer's entire pregnant abdomen during all stages of pregnancy		
	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 91401-01	

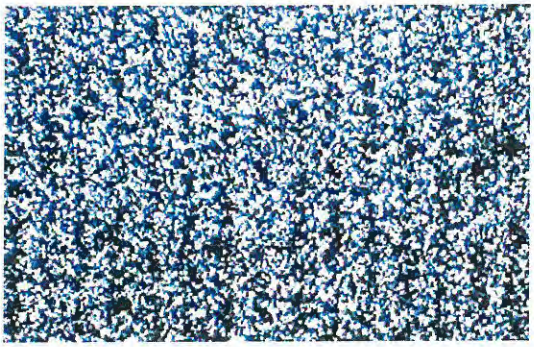
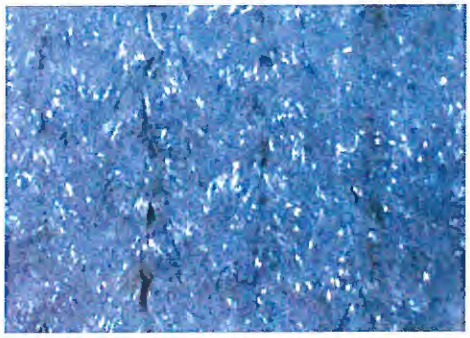
<table>
<tr><td></td><td></td><td>
<table>
<tr><td>3 month Motherhood</td><td>9 month Motherhood</td><td>3 month Mimi</td><td>9 month Mimi</td></tr>
</table>
</td></tr>
<tr><td></td><td>Style 94278-10</td><td>

<table>
<tr><td>3 month Motherhood</td><td>9 month Motherhood</td><td>3 month Mimi</td><td>9 month Mimi</td></tr>
</table>
</td></tr>
<tr><td>Claim 2</td><td colspan="2">DMC Secret Fit Belly® meets the limitations of the ‘531 Patent</td></tr>
<tr><td>2. The garment of claim 1,</td><td colspan="2">See claim 1 above.</td></tr>
<tr><td>[a] wherein the second torso encircling circumference is adjustable in girth in conformance with different body types.</td><td colspan="2">These DMC Secret Fit Belly® garments include all of the elements of Claim 1and have a second torso encircling circumference which is adjustable in girth in conformance with different body types.
For example:</td></tr>
<tr><td></td><td>Style 93480-01</td><td>


<table>
<tr><td>9 month Motherhood</td><td>9 month Mimi</td></tr>
</table>
</td></tr>
</table>

	Style 96316-42	  9 month Motherhood | 9 month Mimi
	Style 91401-01	  9 month Motherhood | 9 month Mimi

	Style 94278-10	  9 month Motherhood | 9 month Mimi
Claim 5	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
5. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the garment upper portion comprises an elastic fabric that is contractible elastically to cover an abdomen during different stages of postpartum body changes.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1and comprise a garment upper portion which comprises an elastic fabric that is contractible elastically to cover an abdomen during different stages of postpartum body changes. For example:	

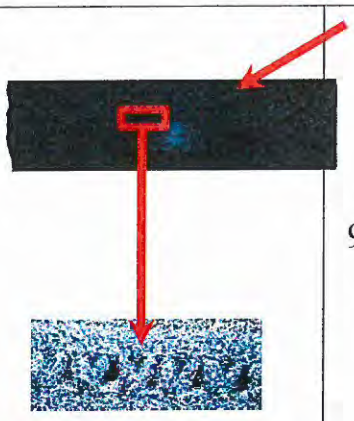
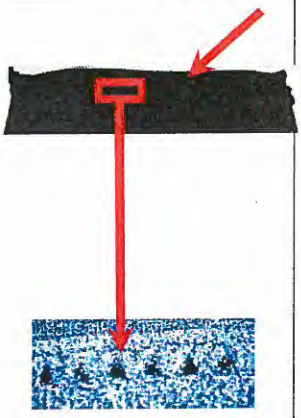
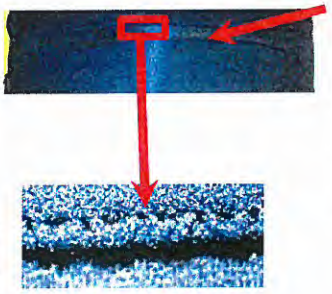
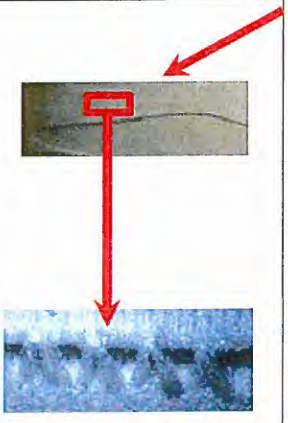
	Style 93480-01	 Knitted elastic fabric which is contractible elastically
	Style 96316-42	 Knitted elastic fabric which is contractible elastically

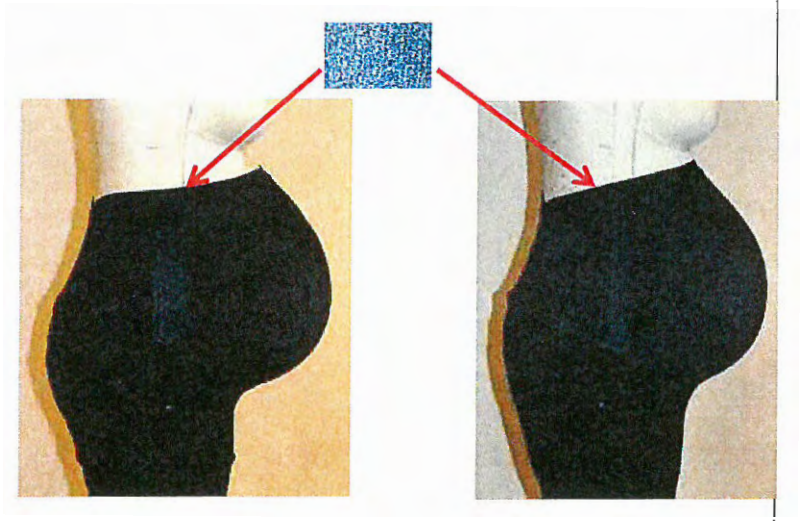
	Style 91401-01	 Knitted elastic fabric which is contractible elastically
	Style 94278-10	 Knitted elastic fabric which is contractible elastically
Claim 6	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
6. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the garment lower portion has a partial waistband	This DMC Secret Fit Belly® garment includes all of the elements of Claim 1and a garment lower portion which has a partial waistband extending from side seams of the garment lower portion and extending across a back side of the garment lower portion where the partial waistband widens above a wearer's	

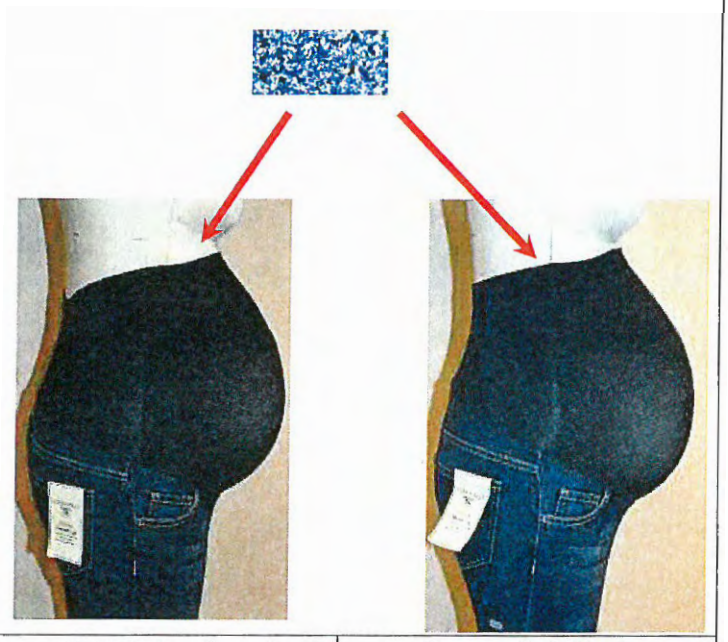
extending from side seams of the garment lower portion and extending across a back side of the garment lower portion where the partial waistband widens above a wearer's pelvis.	pelvis. For example:	
	Style 96316-42	
Claim 10	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
10. The garment of claim 1,	*See* claim 1 above.	

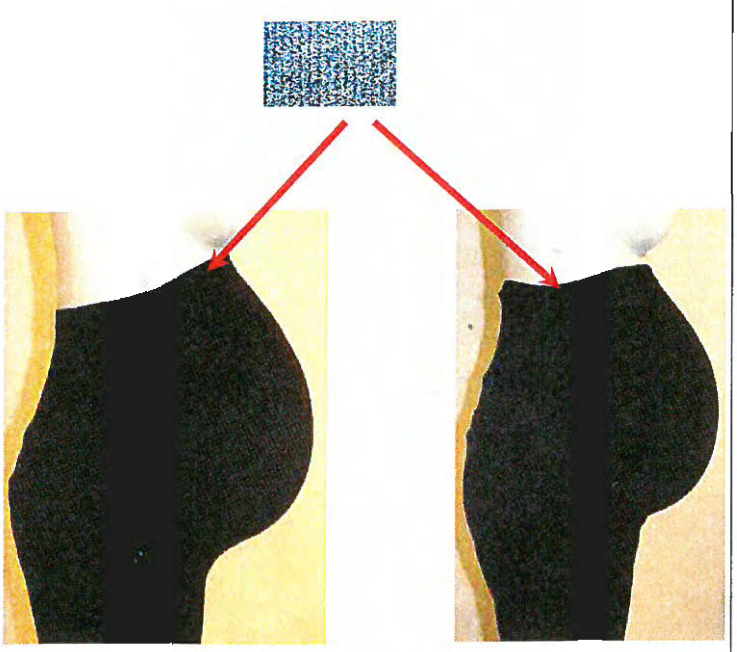
<table>
<tr><td>[a] wherein the garment upper portion is foldable toward the garment lower portion to comprise a folded band on the garment lower portion.</td><td colspan="4">These DMC Secret Fit Belly® garments include all of the elements of Claim 1and comprise a garment upper portion which is foldable toward the garment lower portion to comprise a folded band on the garment lower portion. For example:</td></tr>
<tr><td></td><td>Style 93480-01</td><td>  </td><td>Style 91401-01</td><td>  </td></tr>
<tr><td></td><td>Style 96316-42</td><td>  </td><td>Style 94278-10</td><td>  </td></tr>
<tr><td>Claim 11</td><td colspan="4">DMC Secret Fit Belly® meets the limitations of the ‘531 Patent</td></tr>
<tr><td>11. The garment of claim 1,</td><td colspan="4">*See* claim 1 above.</td></tr>
<tr><td>[a] wherein the garment lower portion has a partial waistband extending from side</td><td colspan="4">This DMC Secret Fit Belly® garment includes all of the elements of Claim 1 and comprise a garment lower portion which has a partial waistband extending from side seams of the garment lower portion wherein the partial waistband tapers toward the side seams and widens above a wearer's pelvis across a back side of the garment lower portion. For example:</td></tr>
</table>

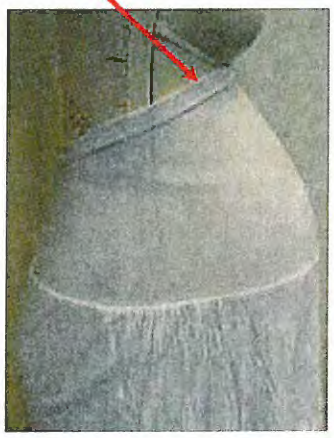
seams of the garment lower portion wherein the partial waistband tapers toward the side seams and widens above a wearer's pelvis across a back side of the garment lower portion.		
	Style 96316-42	
Claim 15	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
15. The garment of claim 1,	*See* claim 1 above.	
[a] wherein an edge margin of the garment upper portion is folded over and knitted to	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise an edge margin of the garment upper portion is folded over and knitted to an inside of the fabric to provide a perimeter hem stitch. For example:	

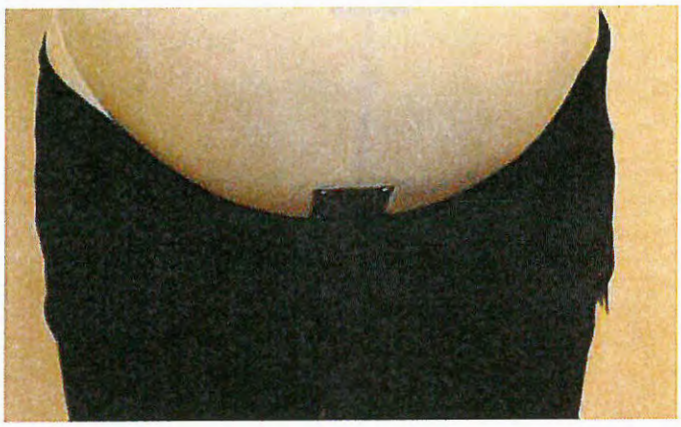
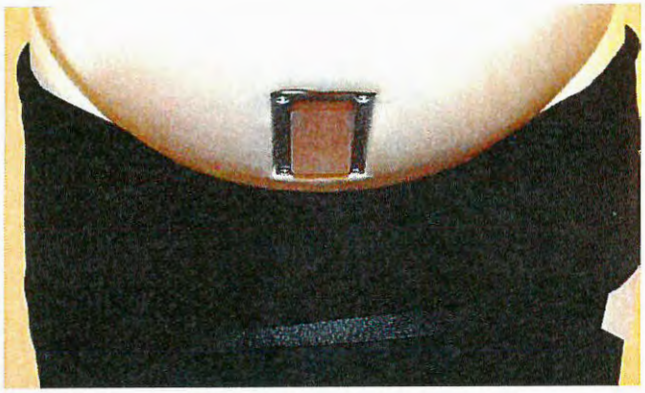
an inside of the fabric to provide a perimeter hem stitch.				
	Style 93480-01		Style 91401-01	
	Style 96316-42		Style 94278-10	
Claim 17	DMC Secret Fit Belly® meets the limitations of the '531 Patent			
17. The garment of claim 1,	*See* claim 1 above.			
[a] wherein the second torso encircling circumference comprises	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a second torso encircling circumference which comprises stretchable fabric to adjust the girth in conformance with different body types. For example:			

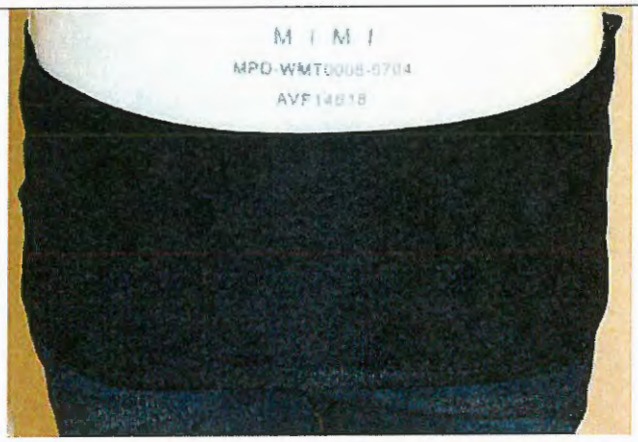
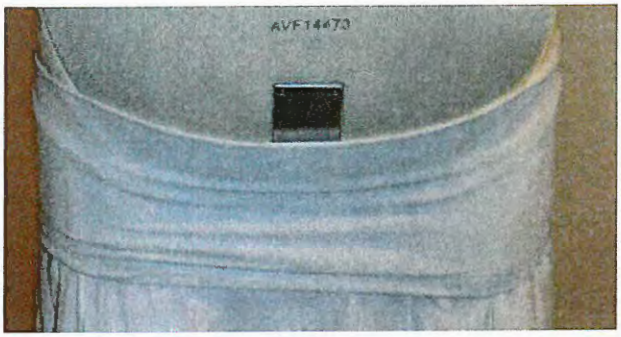
stretchable fabric to adjust the girth in conformance with different body types.		
	Style 93480-01	knit stretchable fabric  9 month Motherhood | 9 month Mimi

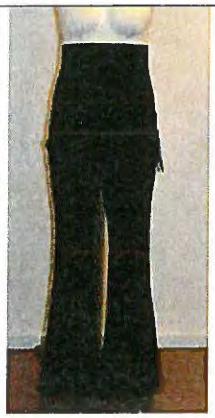
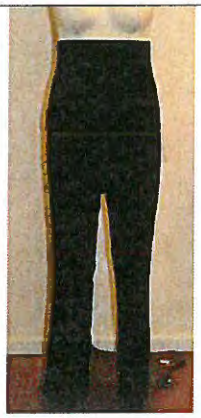
	Style 96316-42	knit stretchable fabric  9 month Motherhood | 9 month Mimi

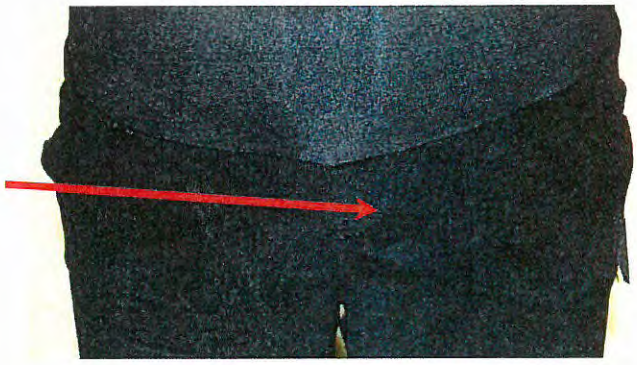
	Style 91401-01	knit stretchable fabric  9 month Motherhood | 9 month Mimi

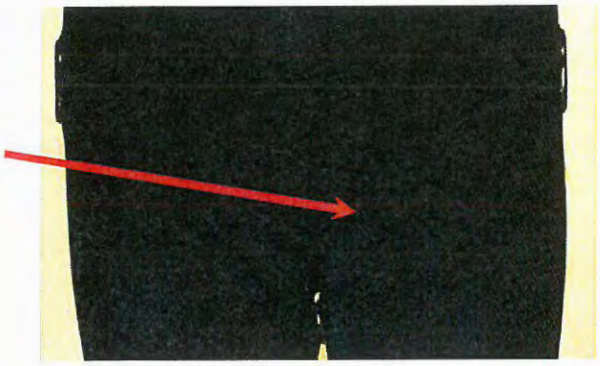
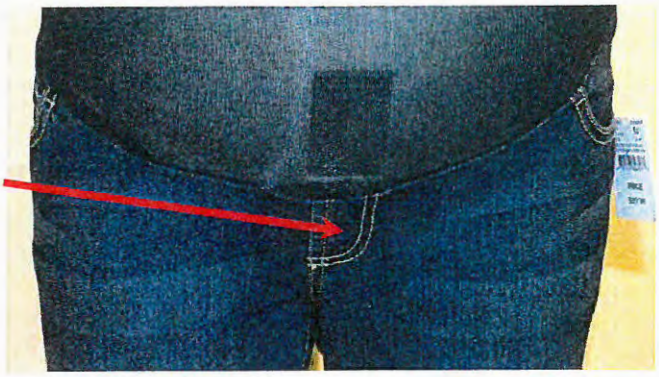
	Style 94278-10	knit stretchable fabric    9 month Motherhood | 9 month Mimi
Claim 24	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
24. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the garment upper portion is foldable toward the garment lower portion to provide a folded band on the garment lower portion to be worn as a garment bottom having	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a garment upper portion which is foldable toward the garment lower portion to provide a folded band on the garment lower portion to be worn as a garment bottom having no top. For example:	

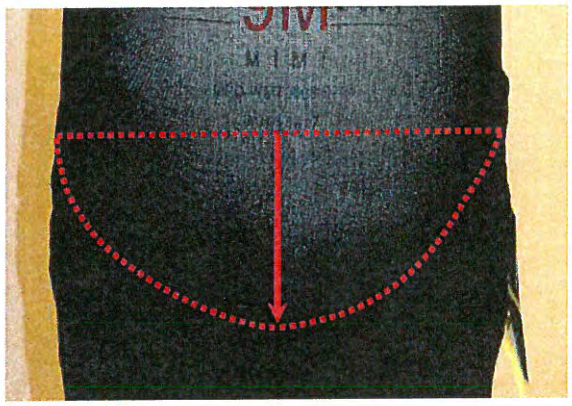
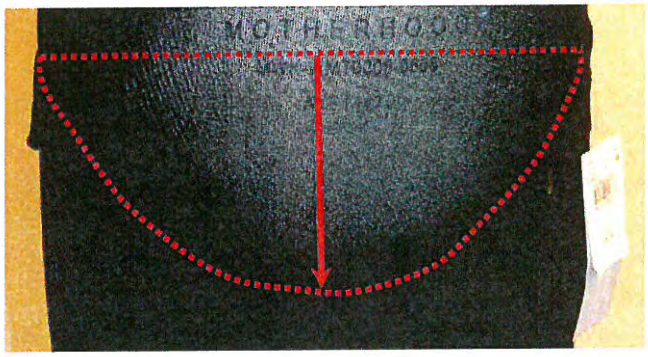
no top.		
	Style 93480-01	
	Style 91401-01	

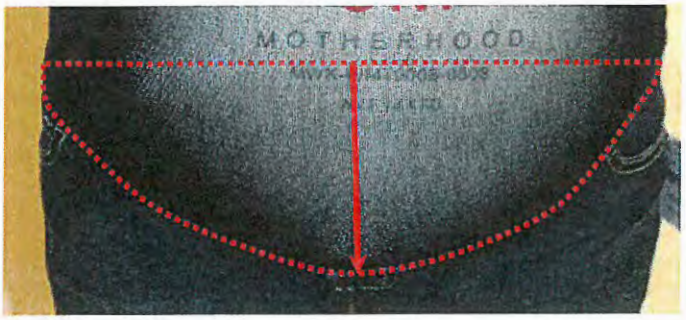
	Style 96316-42	
	Style 94278-10	
Claim 25	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
25. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the garment lower portion comprises one of a pair of trousers and a skirt.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a garment lower portion which comprises one of a pair of trousers and a skirt. For example:	

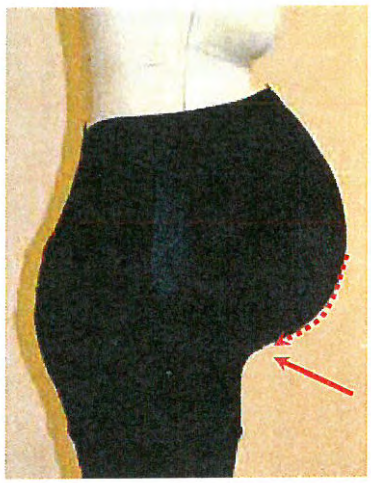
	Style 93480-01		Style 91401-01	
	Style 96316-42		Style 94278-10	
Claim 26	DMC Secret Fit Belly® meets the limitations of the '531 Patent			
26. The garment of claim 1,	*See* claim 1 above.			
[a] wherein the garment lower portion comprises denim jeans.	This DMC Secret Fit Belly® garment includes all of the elements of Claim 1and comprise a garment lower portion which comprises denim jeans. For example:			

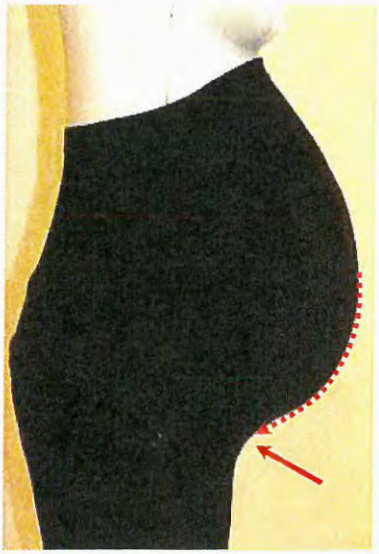
	Style 96316-42	
Claim 27	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
27. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the garment lower portion comprises a zipperless fly.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a garment lower portion which comprises a zipperless fly. For example:	
	Style 93480-01	

	Style 91401-01	
	Style 96316-42	
Claim 28	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
28. The garment of claim 1,	*See* claim 1 above.	
[a] wherein the first torso-encircling circumference recedes downward with a parabolic shape, said shape including a	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 wherein the first torso-encircling circumference recedes downward with a parabolic shape, said shape including a shallow curvature. For example:	

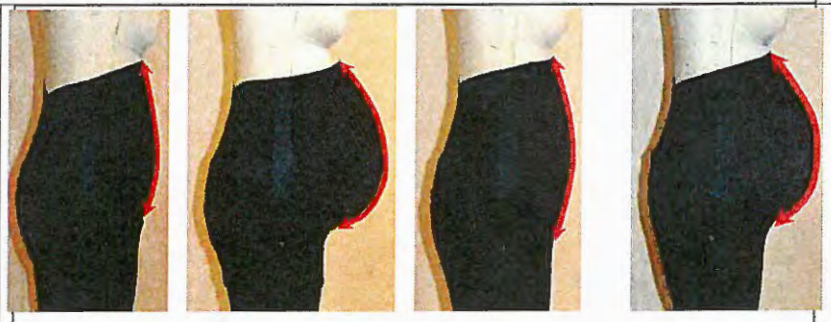
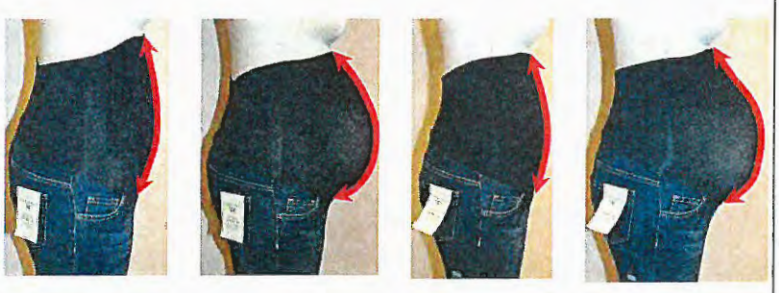
shallow curvature.		
	Style 93480-01	
	Style 91401-01	

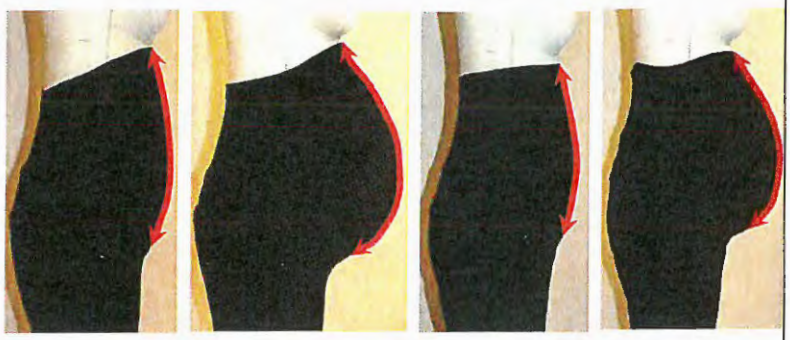
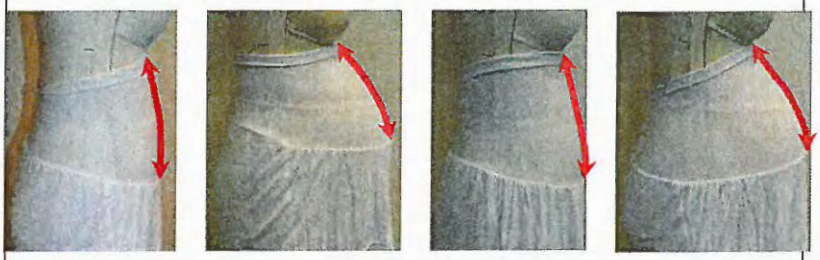
	Style 96316-42	
Claim 29	DMC Secret Fit Belly® meets the limitations of the '531 Patent	
29. The garment of claim 28,	*See* claim 28 above.	
[a] wherein a belly panel that extends at least partially under the abdomen of the wearer to meet the parabolic receding circumference of the garment lower portion.	These DMC Secret Fit Belly® garments include all of the elements of Claim 28 and comprise a belly panel that extends at least partially under the abdomen of the wearer to meet the parabolic receding circumference of the garment lower portion. For example:	

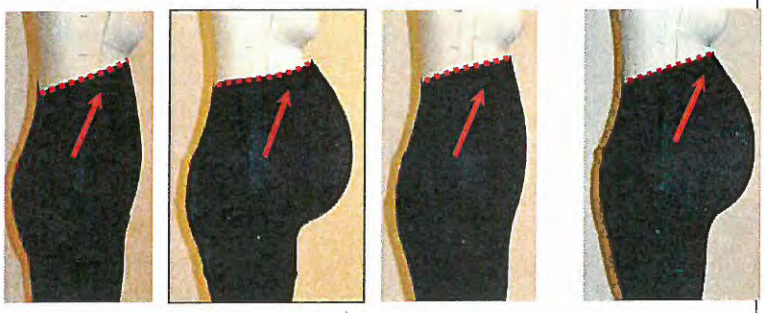
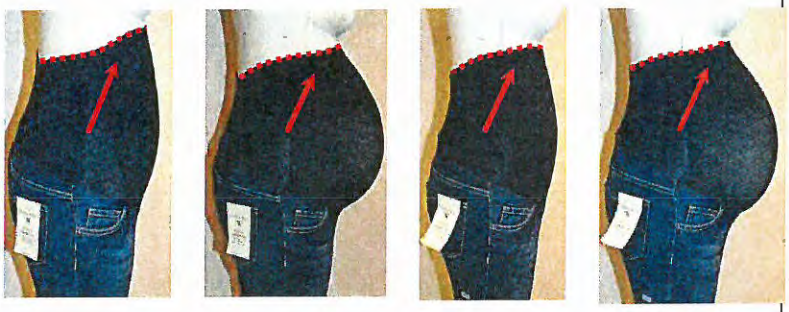
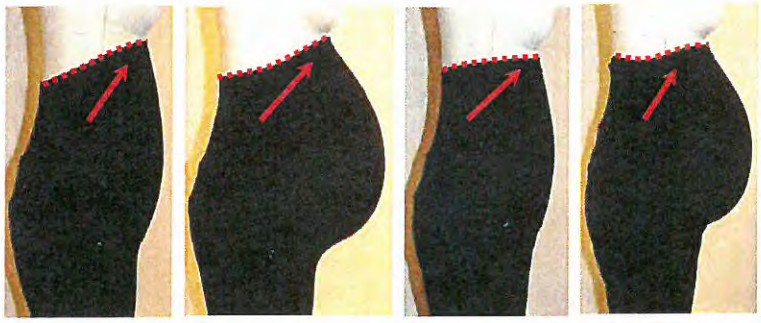
	Style 93480-01	
	Style 96316-42	

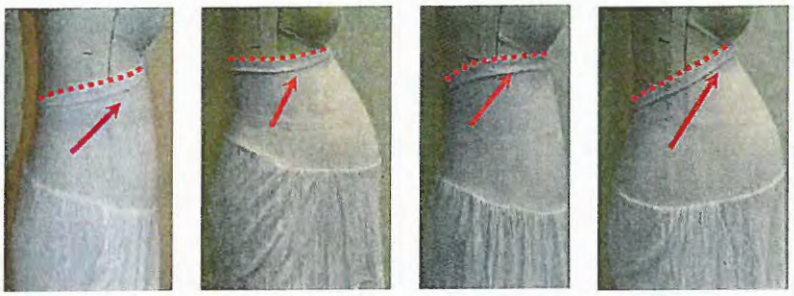
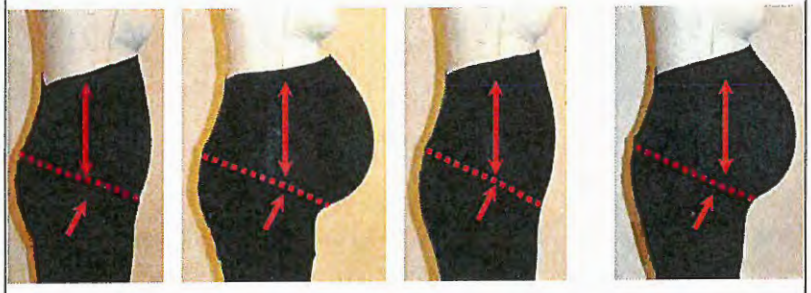
	Style 91401-01	

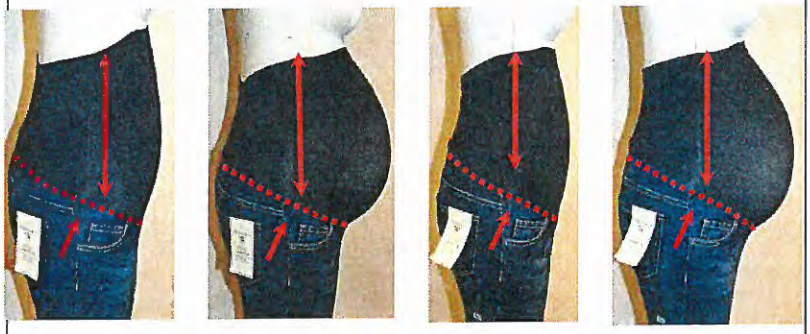
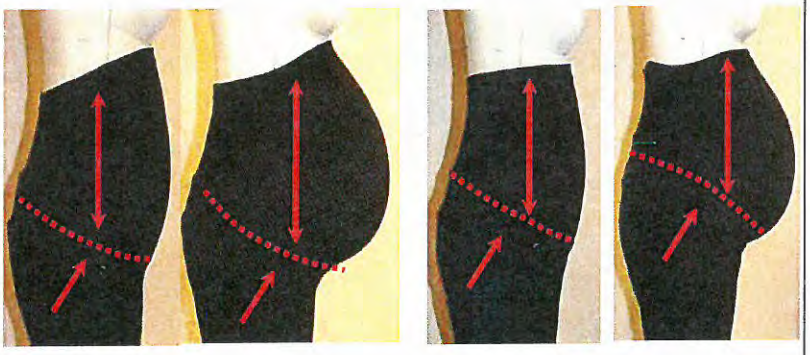
Claim 1	DMC Secret Fit Belly® meets the limitations of the '563 Patent
1. A garment portion having an attached belly panel portion comprising:	
[a] an expansible belly panel adapted to substantially cover a wearer's entire belly region, said belly region comprising an area beginning just beneath the wearer's breast area	These DMC Secret Fit Belly® garments include an expansible belly panel adapted to substantially cover the wearer's entire belly region comprising an area beginning just beneath the wearer's breast area and extending over the wearer's abdomen to a lower abdomen region beneath the wearer's belly. For example:

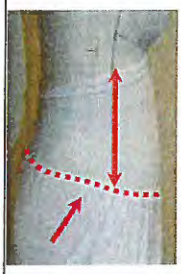
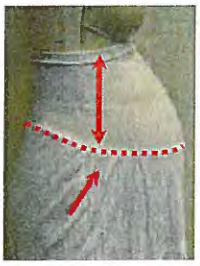
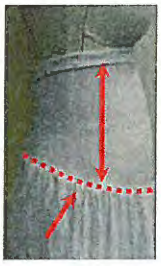
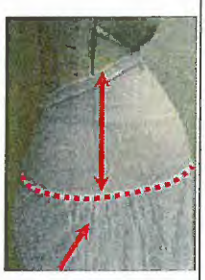
and extending over the wearer's abdomen to a lower abdomen region beneath the wearer's belly, said belly panel comprising;	
	Style 93480-01 
	3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42 
	3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

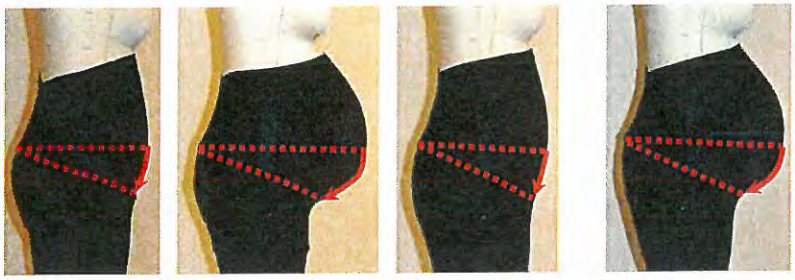
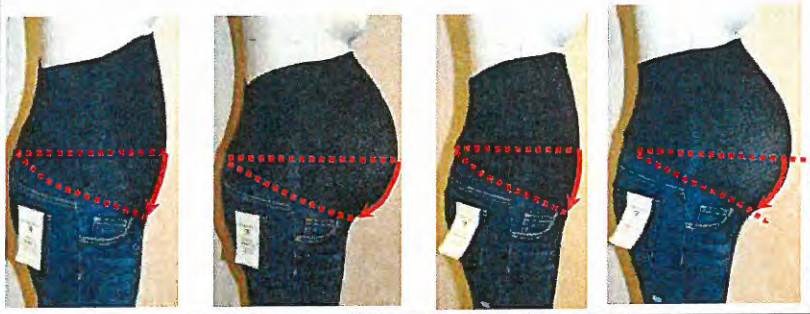
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 94278-10	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
Claim 1	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
[b] said belly panel comprising an upper edge portion defining a first encircling circumferenc e about a wearer's torso that is at or above the wearer's upper abdomen	These DMC Secret Fit Belly® garments include a belly panel comprising an upper edge portion defining a first encircling circumference about a wearer's torso that is at or above the wearer's upper abdomen region For example:	

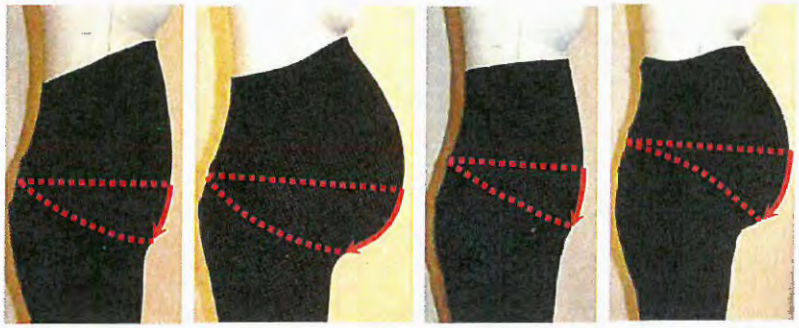
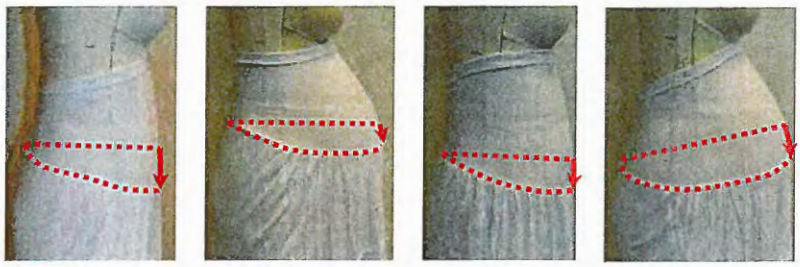
region and		
	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

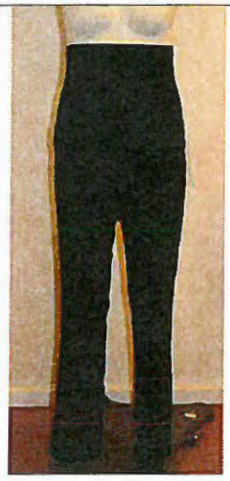
	Style 94278-10	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
Claim 1	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
[c] a lower edge portion spaced from the upper edge portion and defining a second encircling circumferenc e about the wearer's lower abdomen region; and	These DMC Secret Fit Belly® garments include a lower edge portion spaced from the upper edge portion and defining a second encircling circumference about the wearer's lower abdomen region. For example:	
	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

	Style 94278-10				
		3 month Motherhood	9 month Motherhood	3 month Mimi	9 month Mimi
Claim 1	DMC Secret Fit Belly® meets the limitations of the '563 Patent				
[d] a garment lower portion, in communi-cation with the lower edge portion, having a torso encircling circumferenc e that recedes downward to make way for expansion of the belly panel.	These DMC Secret Fit Belly® garments include a garment lower portion, in communication with the lower edge portion, having a torso encircling circumference that recedes downward to make way for expansion of the belly panel. For example:				

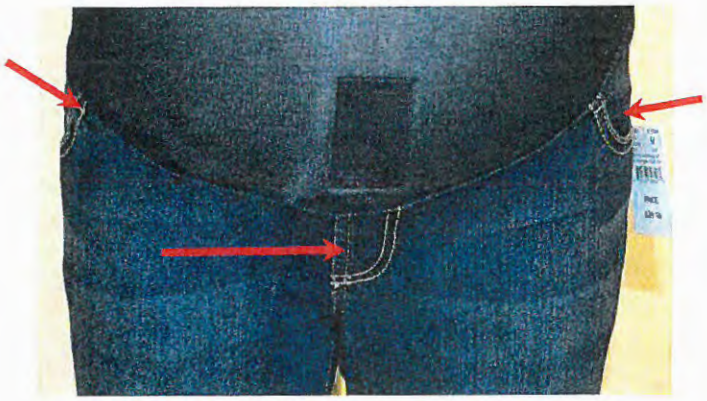
	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

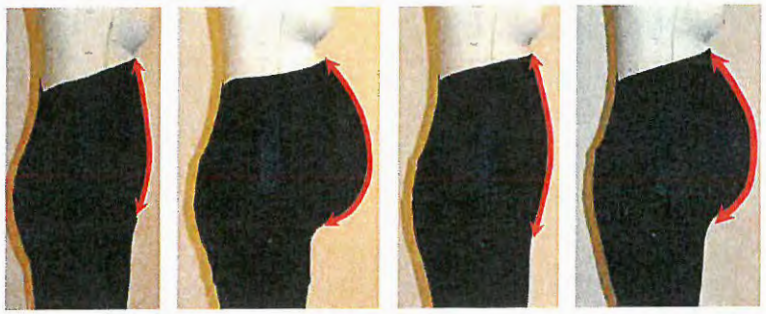
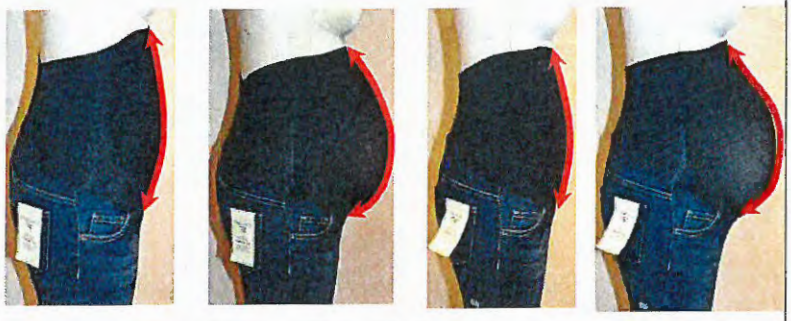
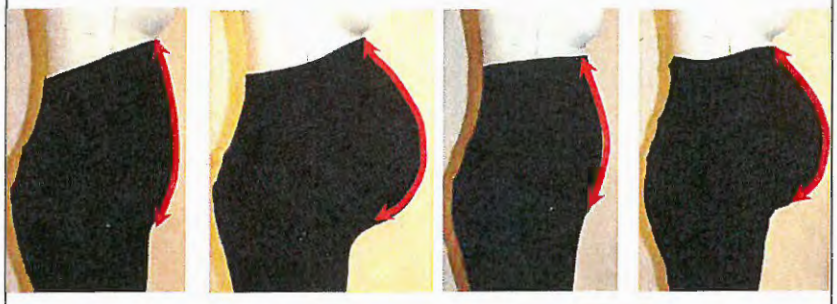
<table>
<tr><td></td><td>Style
91401-01</td><td> 
<table><tr><td>3 month
Motherhood</td><td>9 month
Motherhood</td><td>3 month
Mimi</td><td>9 month
Mimi</td></tr></table></td></tr>
<tr><td></td><td>Style
94278-10</td><td> 
<table><tr><td>3 month
Motherhood</td><td>9 month
Motherhood</td><td>3 month
Mimi</td><td>9 month
Mimi</td></tr></table></td></tr>
<tr><td>Claim 2</td><td colspan="2">DMC Secret Fit Belly® meets the limitations of the ‘563 Patent</td></tr>
<tr><td>2. The garment portion of claim 1, further comprising</td><td colspan="2">See claim 1 above.</td></tr>
<tr><td>[a] a pair of trousers attached to said lower edge portion.</td><td colspan="2">These DMC Secret Fit Belly® garments comprise all of the claim elements of Claim 1 and a pair of trousers attached to said lower edge portion.
For example;</td></tr>
</table>

	Style 93480-01		Style 96316-42	
	Style 91401-01			

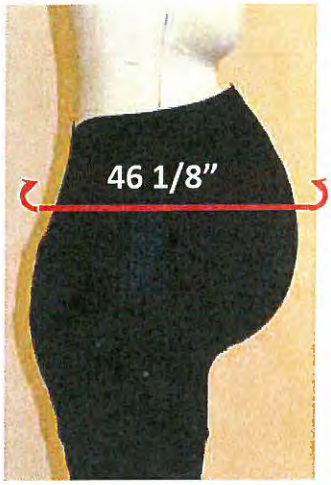
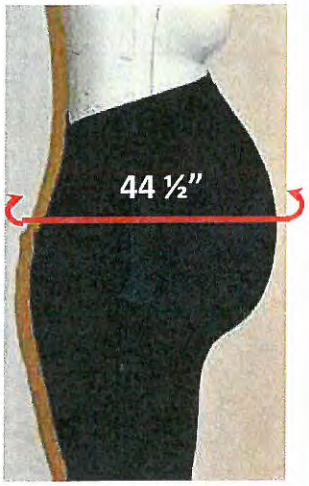
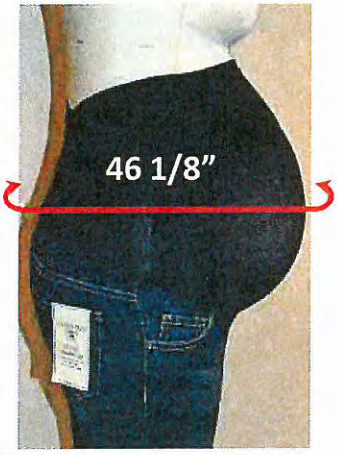
Claim 3	DMC Secret Fit Belly® meets the limitations of the '563 Patent
3. The garment portion of claim 2,	*See* claim 2 above.
[a] wherein said trousers comprise denim jeans.	This DMC Secret Fit Belly® garment includes all of the Claim elements of claim 2 and have trousers comprising denim jeans attached to said lower edge portion. For example:

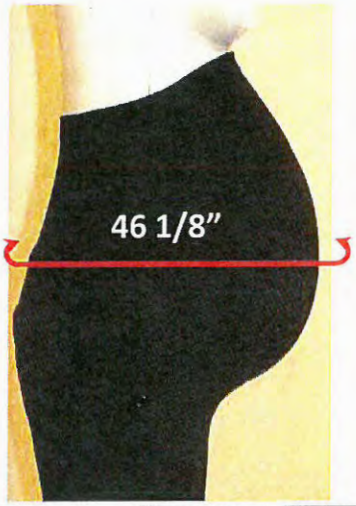
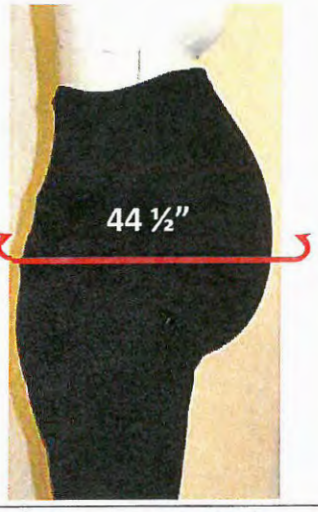
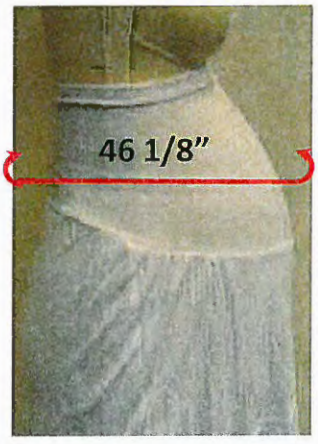
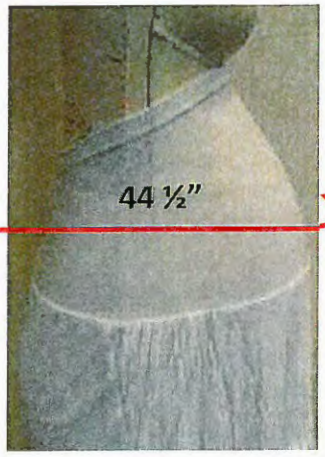
	Style 96316-42			
Claim 4	DMC Secret Fit Belly® meets the limitations of the '563 Patent			
4. The garment portion of claim 3,	*See* claim 3 above.			
[a] wherein said denim jeans comprise one or more pockets and a sewn zipperless fly front.	This DMC Secret Fit Belly® garment includes all of the elements of Claim 3 and comprise a belly panel which is adapted to cover the wearer's belly region during different stages of weight gains and losses. For example:			

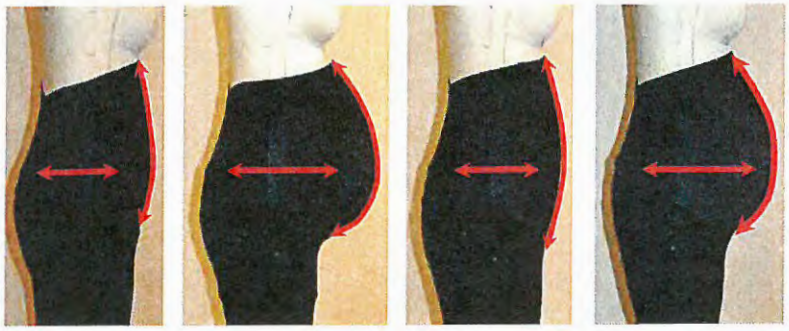
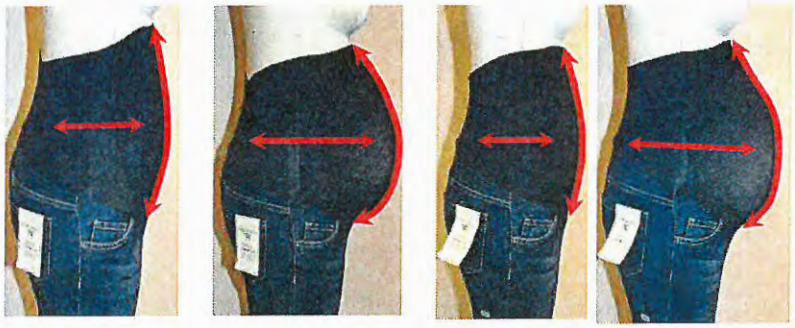
	Style 96316-42	
Claim 6	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
6. The garment portion of claim 1,	*See* claim 1 above.	
[a] wherein said belly panel is adapted to cover the wearer's belly region during different stages of weight gains and losses.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a belly panel which is adapted to cover the wearer's belly region during different stages of weight gains and losses. For example:	

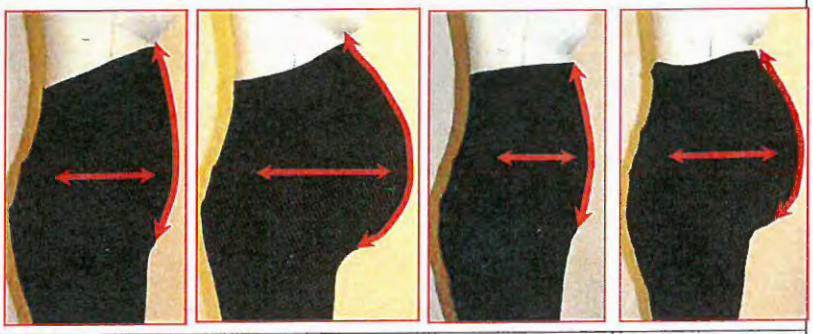
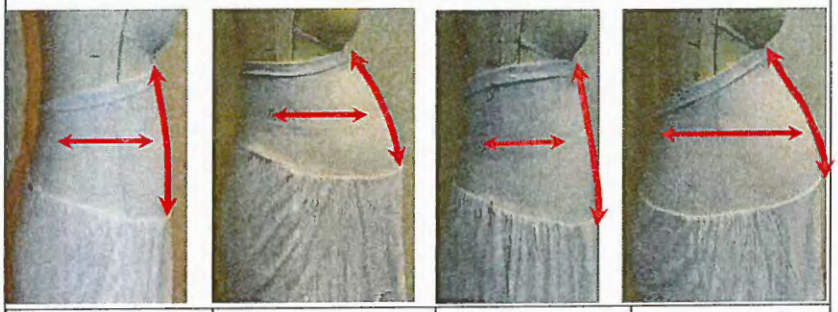
	Style 93480-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 96316-42	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi

	Style 94278-10	    3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
Claim 7	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
7. The garment portion of claim 1,	*See* claim 1 above.	
[a] wherein said belly panel is adapted to substantially cover and fit over different body types.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a belly panel which is adapted to substantially cover and fit over different body types. For example:	

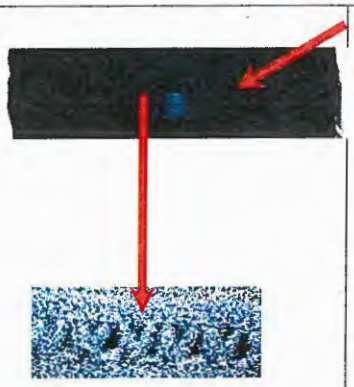
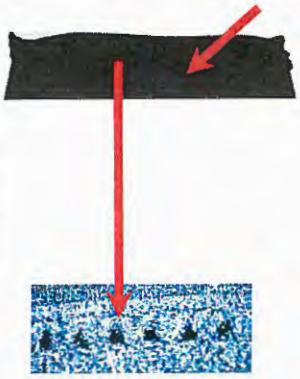
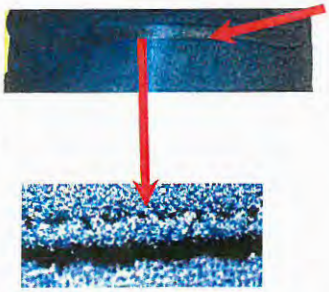
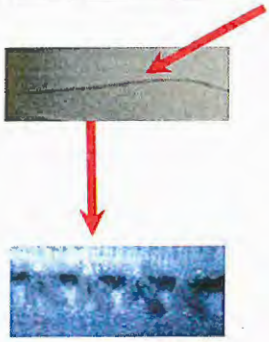
	Style 93480-01	  9 month Motherhood | 9 month Mimi
	Style 96316-42	  9 month Motherhood | 9 month Mimi

	Style 91401-01	  9 month Motherhood | 9 month Mimi
	Style 94278-10	  9 month Motherhood | 9 month Mimi
Claim 8	DMC Secret Fit Belly® meets the limitations of the ‘563 Patent	
8. The garment portion of claim 1,	*See* claim 1 above.	

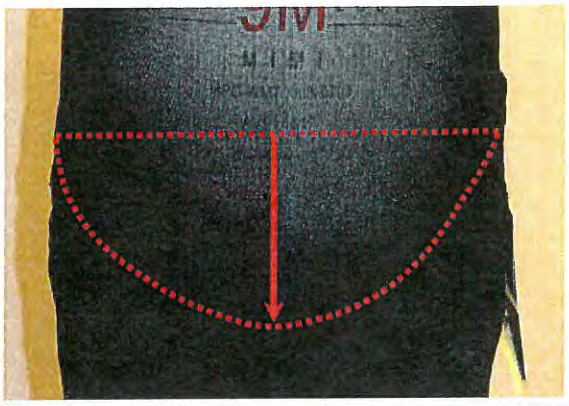
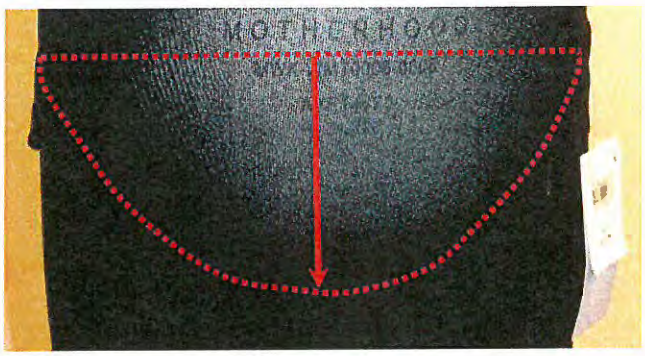
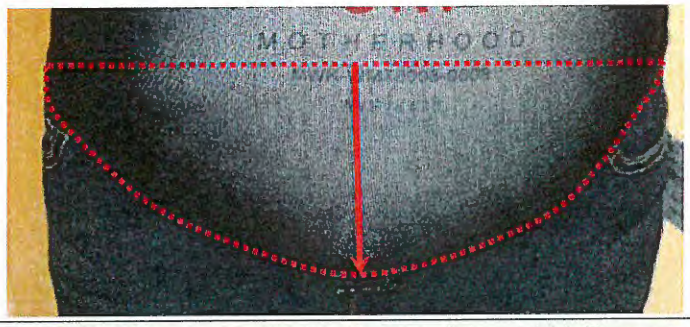
<table>
<tr><td>[a] wherein the belly panel is elastically expansible and contractible.</td><td colspan="2">These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a belly panel which is elastically expansible and contractible. For example:</td></tr>
<tr><td></td><td>Style 93480-01</td><td> 
<table><tr><td>3 month Motherhood</td><td>9 month Motherhood</td><td>3 month Mimi</td><td>9 month Mimi</td></tr></table></td></tr>
<tr><td></td><td>Style 96316-42</td><td> 
<table><tr><td>3 month Motherhood</td><td>9 month Motherhood</td><td>3 month Mimi</td><td>9 month Mimi</td></tr></table></td></tr>
</table>

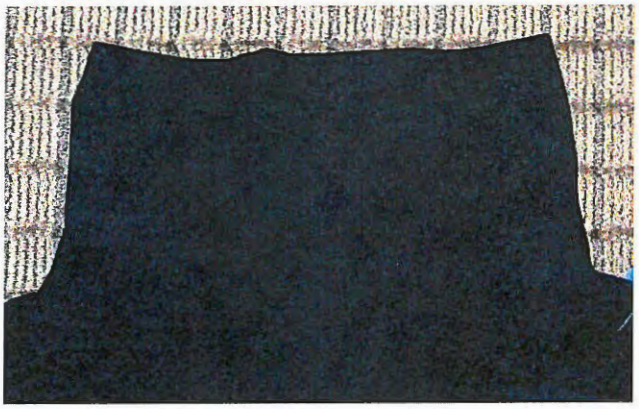
	Style 91401-01	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
	Style 94278-10	 3 month Motherhood | 9 month Motherhood | 3 month Mimi | 9 month Mimi
Claim 10	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
10. The garment portion of claim 1,	*See* claim 1 above.	
[a] wherein the belly panel is foldable to comprise a folded band.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and comprise a belly panel which is foldable to comprise a folded band. For example:	

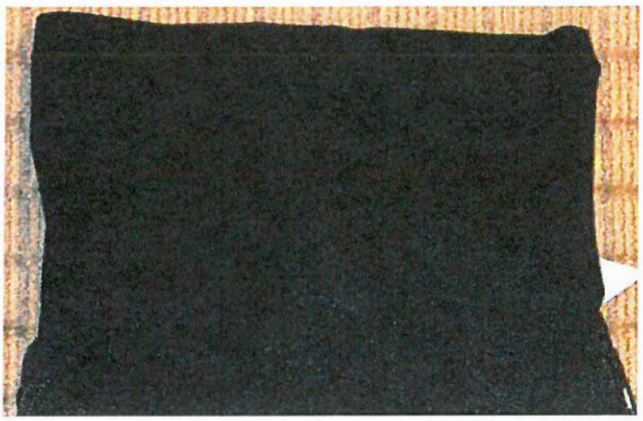
	Style 93480 -01		Style 96316- 42	
	Style 91401 -01		Style 94278- 10	
Claim 12	DMC Secret Fit Belly® meets the limitations of the '563 Patent			
12. The garment portion of claim 1,	*See* claim 1 above.			
[a] wherein a top edge margin of the belly panel is folded over and sewn or knitted to an inside of the belly panel fabric.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and include a top edge margin of the belly panel which is folded over and sewn or knitted to an inside of the belly panel fabric. For example:			

	Style 93480 -01		Style 91401 -01	
	Style 96316 -42		Style 94278 -10	
Claim 14	DMC Secret Fit Belly® meets the limitations of the '563 Patent			
14. The garment portion of claim 1,	*See* claim 1 above.			
[a] wherein the belly panel further comprises a partial waistband extending across a back side of the lower edge portion and extending down into side seams of	This DMC Secret Fit Belly® garment includes all of the elements of Claim 1 wherein the belly panel further comprises a partial waistband extending across a back side of the lower edge portion and extending down into side seams of an article of clothing connected thereto. For example:			

an article of clothing connected thereto.		
	Style 96316-42	
Claim 16	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
16. The garment portion of claim 1,	*See* claim 1 above.	
[a] wherein the lower edge portion is configured to extend downward with a parabolic shape to accommodate the wearer's expanding belly region.	These DMC Secret Fit Belly® garments include all of the elements of Claim 1 and include a lower edge portion which is configured to extend downward with a parabolic shape to accommodate the wearer's expanding belly region. For example:	

	Style 93480-01	
	Style 91401-01	
	Style 96316-42	
Claim 21	DMC Secret Fit Belly® meets the limitations of the '563 Patent	
21. The garment portion of claim 1,	*See* claim 1 above.	
[a] wherein the belly panel defines a tubular structure that	These DMC Secret Fit Belly® garments include all of the elements of Claim 1and include a belly panel defined by a tubular structure that is shaped and formed as straight-sided cylinder to fit a body type having a correspondingly shaped torso. For example:	

is shaped and formed as straight-sided cylinder to fit a body type having a correspondingly shaped torso.		
	Style 93480-01	
	Style 96316-42	

	Style 91401-01	
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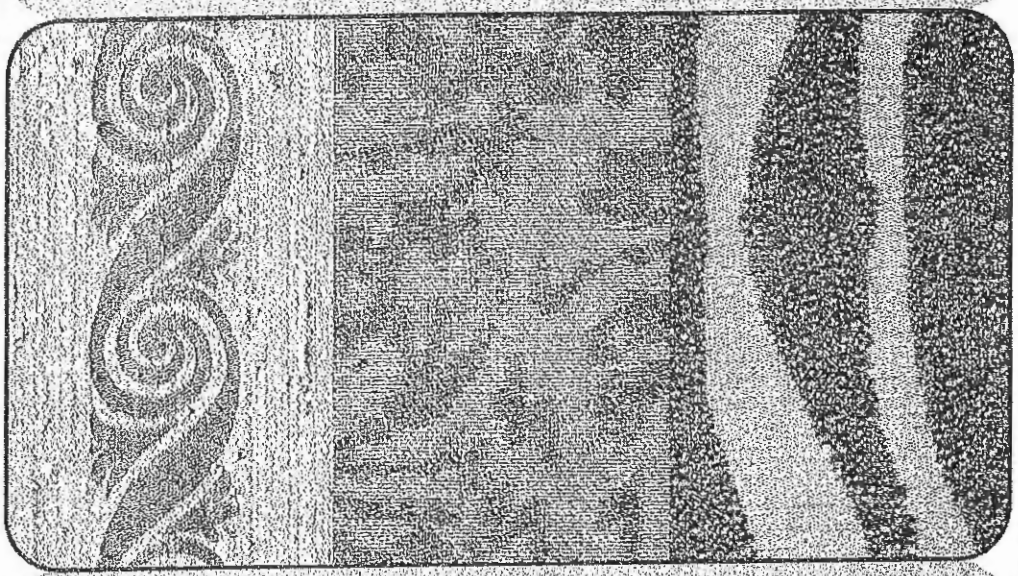

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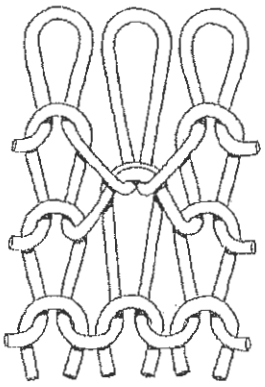

Fig. 25-8 Tuck stitch. (*Courtesy of* Knitting Times, *official publication of National Knitted Outerwear Association.*)

The word *jersey* comes from the Isle of Jersey in the English Channel. It is applied to (1) the plain weft-knit stitch, (2) a single-knit fabric—either warp or weft knit, and (3) a pullover sweater.

The single jersey structure or plain knit is widely used because it is the fastest method of weft knitting and is made on the least complicated knitting machine.

End uses for plain knit structures include hosiery, underwear of cotton or blends, shirts, T-shirts, dresses, and sweaters.

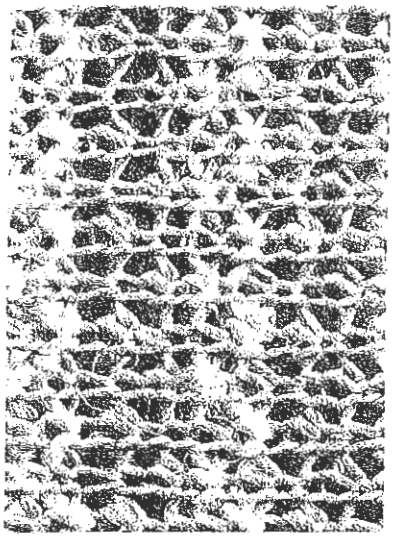

Fig. 25-9 Fabric knitted with tuck stitch.

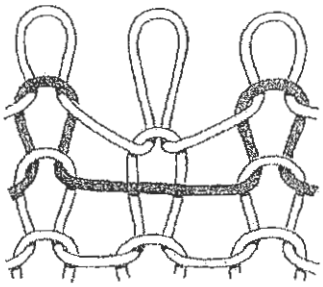

Fig. 25-10 Float or miss stitch. (*Courtesy of* Knitting Times, *official publication of National Knitted Outerwear Association.*)

Variations in plain knit are made by programming the machines to knit stitches together, to drop stitches, and to use colored yarns to form patterns or vertical stripes. Extra yarns or slivers are used to make terry cloth, velour, and fake fur fabrics.

Two stitches commonly used to make jersey variations are tuck stitch and miss stitch. *Tuck stitch* receives a new yarn on a needle but does not lose its old loop and the accumulated yarns are knitted off later (Figure 25-8). Fabrics have a lofty appearance and soft hand. Fabrics are less extensible. Tuck stitch is used to create blisters or special effects and to secure laid-in yarns or long floats of yarns on the wrong side of the fabric. Figure 25-9 shows tuck stitches in fabric. *Miss stitch* or float stitch results when a needle is held in a nonworking position as the yarn is placed on the working needles. As the yarn is carried past the working needles a float (much like that in woven fabrics) is made (Figure 25-10). It is used to carry colored yarn on the back of fabric for knitted-in designs. Miss stitches make fabrics much less extensible.

Rib Structure. A rib structure is made of face wales and back wales. The lengthwise ridges are formed on both sides of the fabric by pulling loops first to the face and next to the back of the cloth. In hand knitting, ribs are made by knitting and purling. These may be in various combinations 1×1, 2×2, 2×3, and so on (Figure 25-11). Figure 25-12 shows a T-shirt fabric in rib knit.

Rib knits have the following properties: (1) they have the same appearance on the face and back, (2) the fabric has twice the extensibility crosswise as that of single jersey, (3) they do not curl at the edges, (4) they run, (5) they unravel

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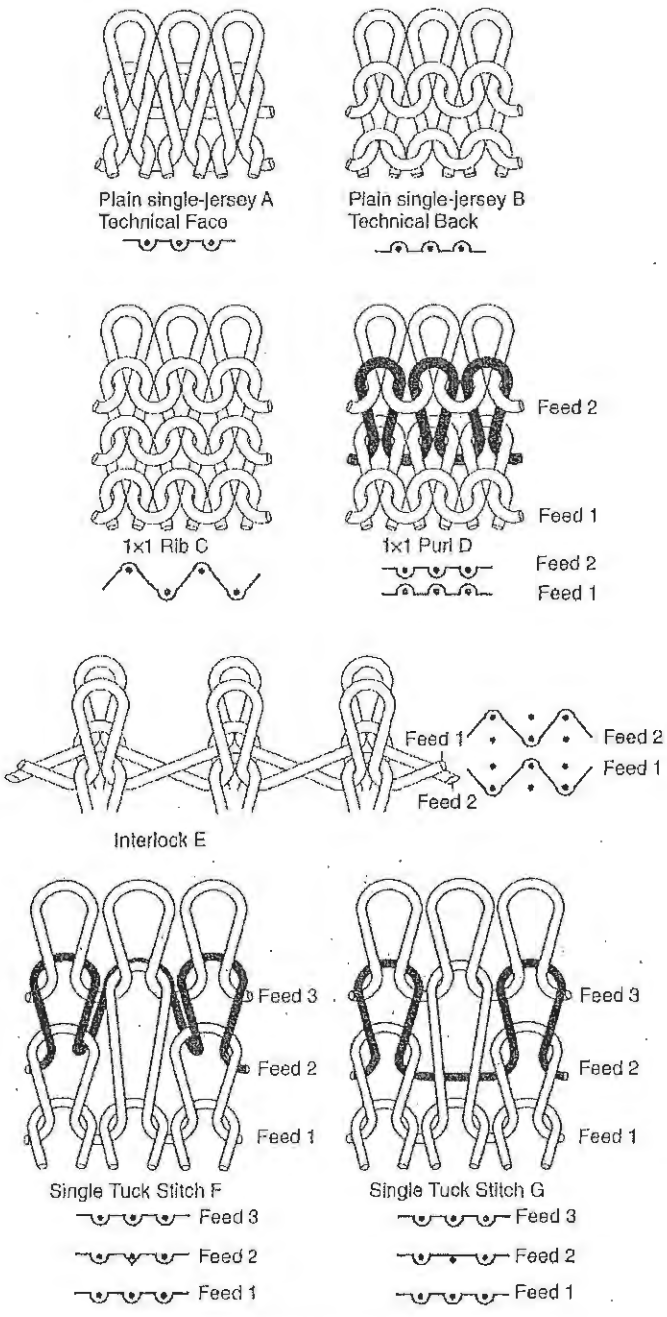

5.14 Weft-knitted structures (A–G).

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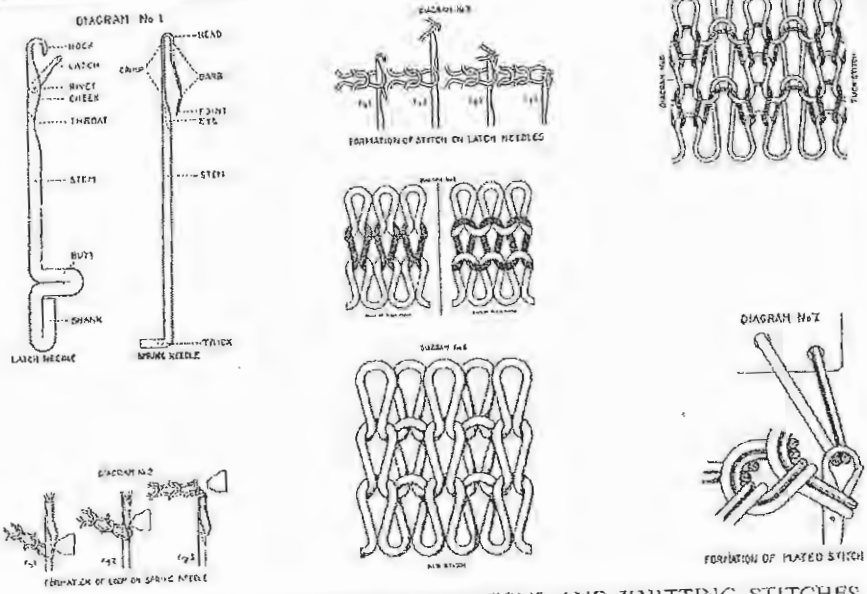
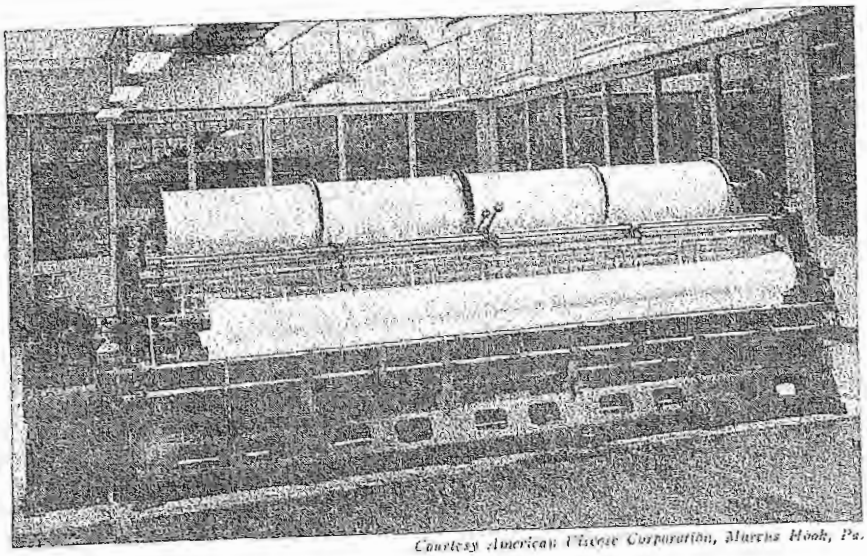
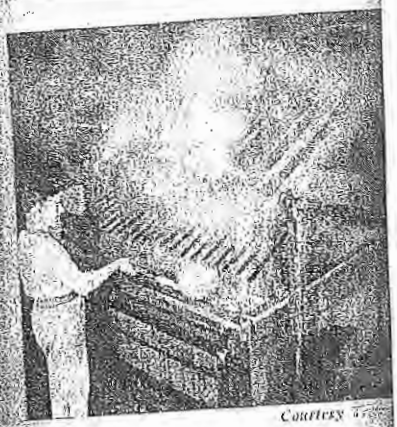


KNITTING NEEDLES AND LOOP FORMATIONS AND KNITTING STITCHES



Courtesy American Viscose Corporation, Marcus Hook, Pa.

TRICOT KNITTING MACHINE,
168 inches wide



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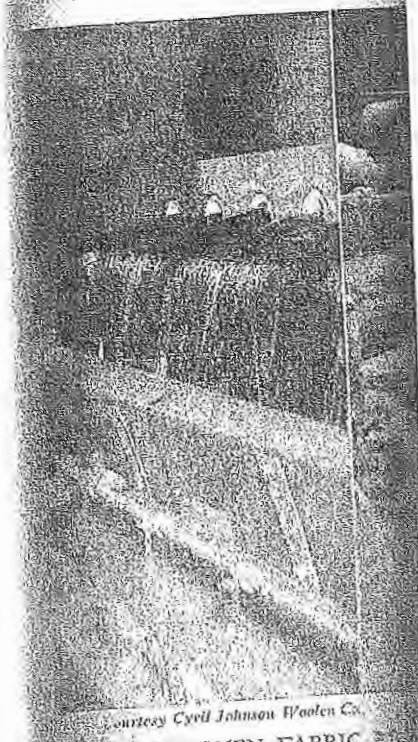

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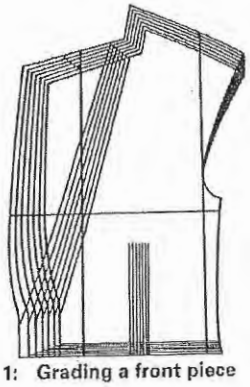
8.2.2 Grading

Grading means the stepwise increase or decrease of a master pattern piece to create larger or smaller sizes. The starting point can be the smallest size or the middle size. Grading alters the overall size of a design but not its general shape and appearance. Computer-aided grading systems utilise internal calculation algorithms (grading rules) for pattern construction.

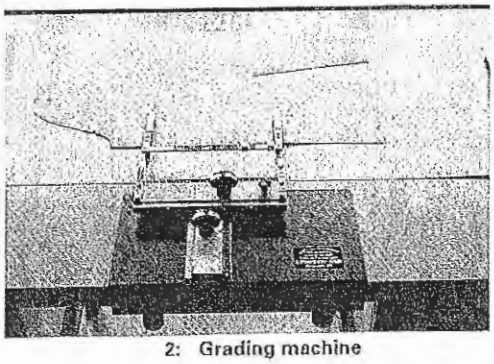
Manual Grading



1: Grading a front piece

The desired range of sizes is created, one by one, using a pattern template. Marks are made around the master pattern at the appropriate distances and the marks are later joined up to form the enlarged pattern.

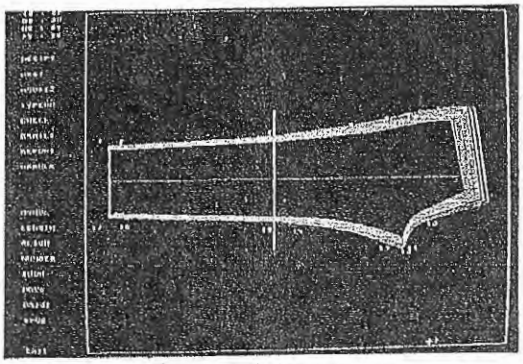
In this way a full set of templates, the "pattern set", is generated.



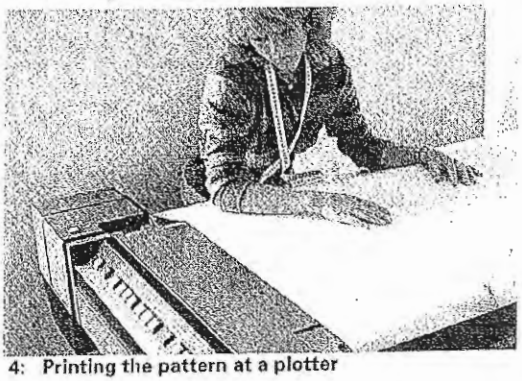
2: Grading machine

A grading machine eases the task of creating the pattern set. The device grips the master pattern and displaces it by a precise vertical and horizontal distance, after which the appropriate edge can be traced.

Computer-aided Grading



3: Grading on the computer screen



4: Printing the pattern at a plotter

Computer based grading systems operate in one of two ways:

1. The grading increments are fed into the computer and the different sizes are generated automatically using the same method as applied for manual grading.
2. The pattern for each individual size is calculated separately starting from the data in the size charts.

   The resulting nest of patterns can be displayed to scale on the computer monitor for visual assessment and, if necessary, adjustment.

Once the pattern set has been generated on the computer, it may be used in various ways, depending on the level of automation in the factory.

In a fully automated system, the garment parts will be sorted automatically and arranged into a lay plan which can then be transmitted in the form of a control program to the automatic laying and cutting system. Alternatively, the patterns can be sent to a large plotting device where they will be drawn at full scale to serve as paper patterns for manual cutting. The patterns can also be used in an automatic device for cutting templates from more durable material.