



US 20040071869A1

(19) **United States**

(12) **Patent Application Publication**
Gilliam et al.

(10) **Pub. No.: US 2004/0071869 A1**

(43) **Pub. Date: Apr. 15, 2004**

(54) **METHOD OF COATING A TAPE MEASURE
BLADE**

(52) **U.S. Cl. 427/180; 427/458**

(76) Inventors: **Edgar T. Gilliam**, Franklinton, NC
(US); **James M. Critelli**,
Fuquay-Varina, NC (US)

(57) **ABSTRACT**

Correspondence Address:
COATS & BENNETT, PLLC
P O BOX 5
RALEIGH, NC 27602 (US)

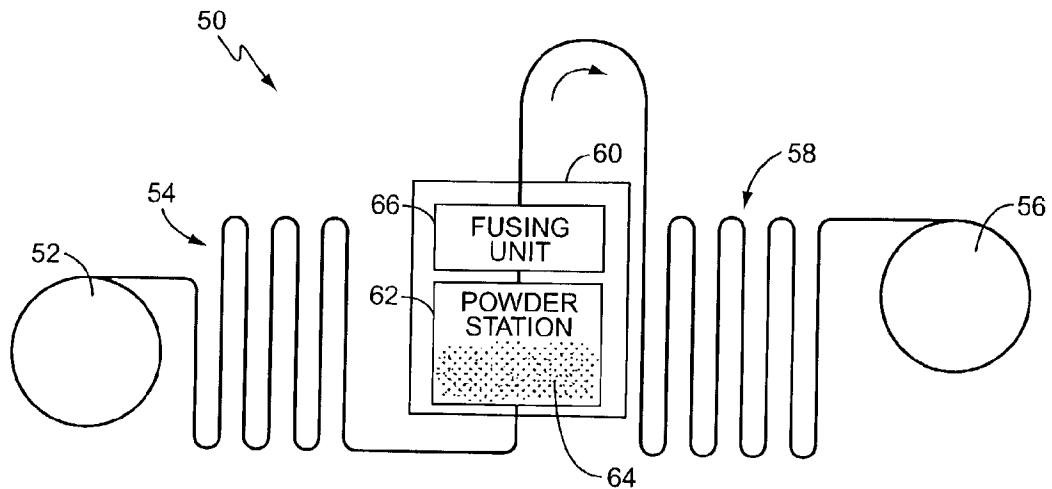
A metallic tape blade may be substantially coated with a powder and then passed through an induction unit to heat the powder and form a coating on the blade, with the blade having a concavo-convex cross-section when passing through the induction unit. Alternatively, the metallic tape blade is substantially covered with a powder consisting essentially of nylon having a particle size of 20 microns or less and then passed through an induction unit to heat the blade and form a nylon coating derived from the powder thereon. Alternatively, a nylon coating is applied to the metallic tape blade, with the coating having a thickness of not more than 0.0015 inches and an abrasion resistance according to ASTM D968-81 of at least 30 liters of sand. One or more of these aspects may be combined to form a tape blade having a protective coating thereon.

(21) Appl. No.: **10/268,432**

(22) Filed: **Oct. 10, 2002**

Publication Classification

(51) **Int. Cl.7 B05D 1/12**



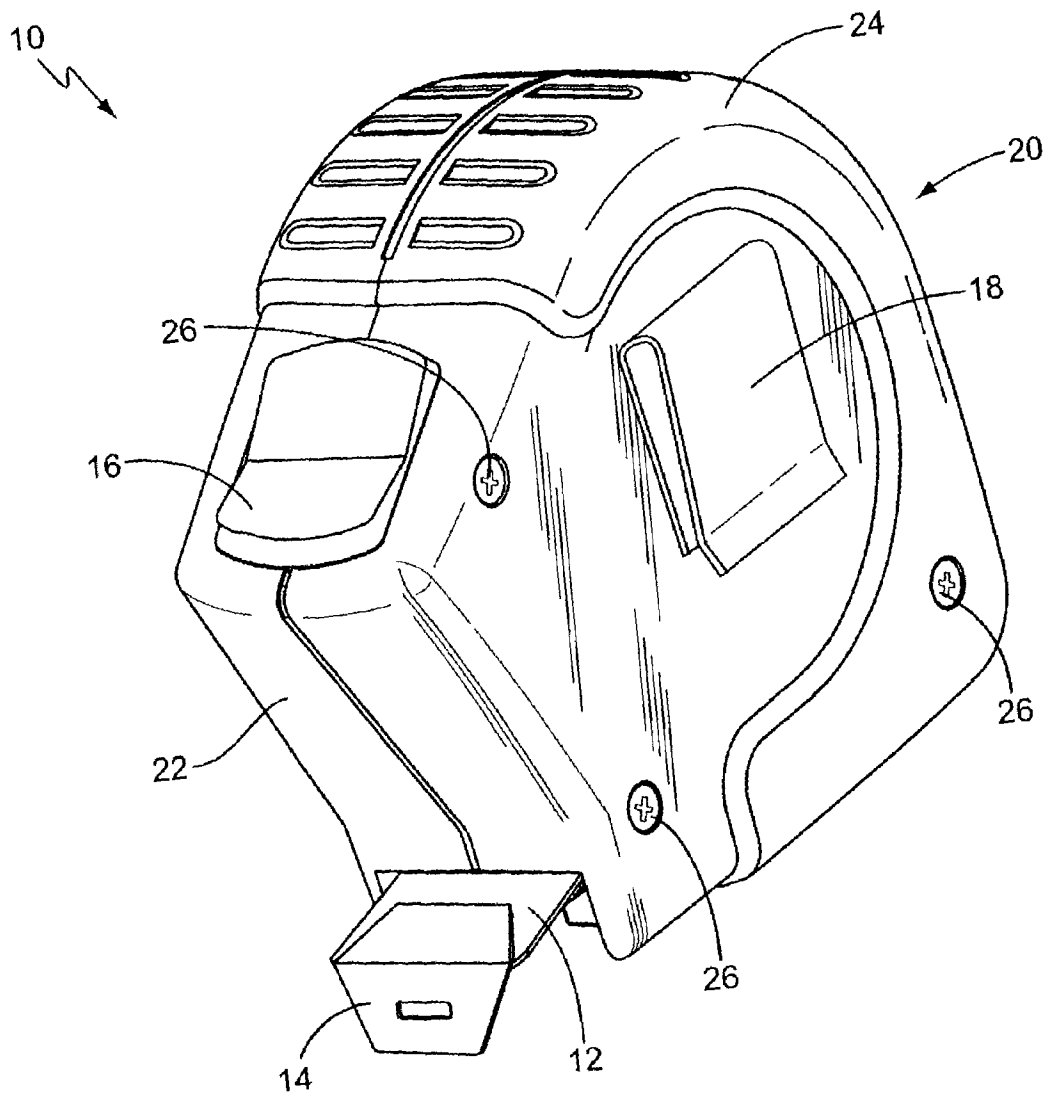


FIG. 1

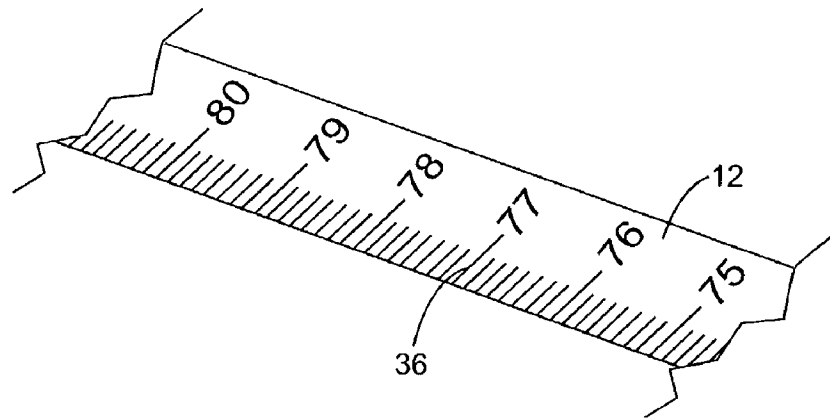


FIG. 2

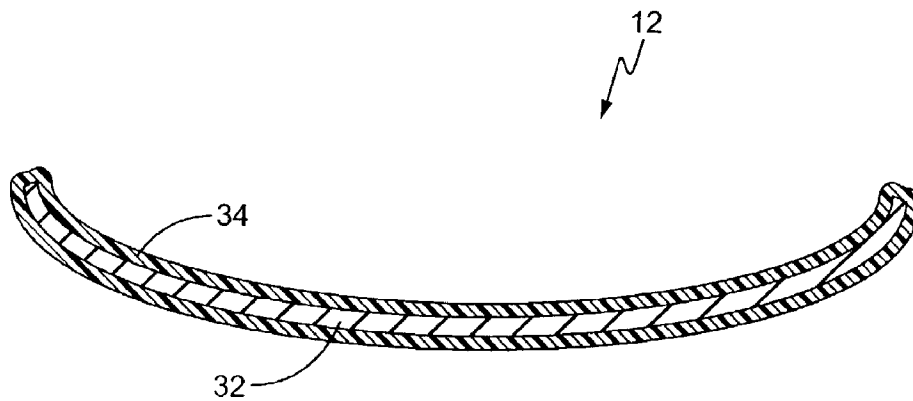


FIG. 3

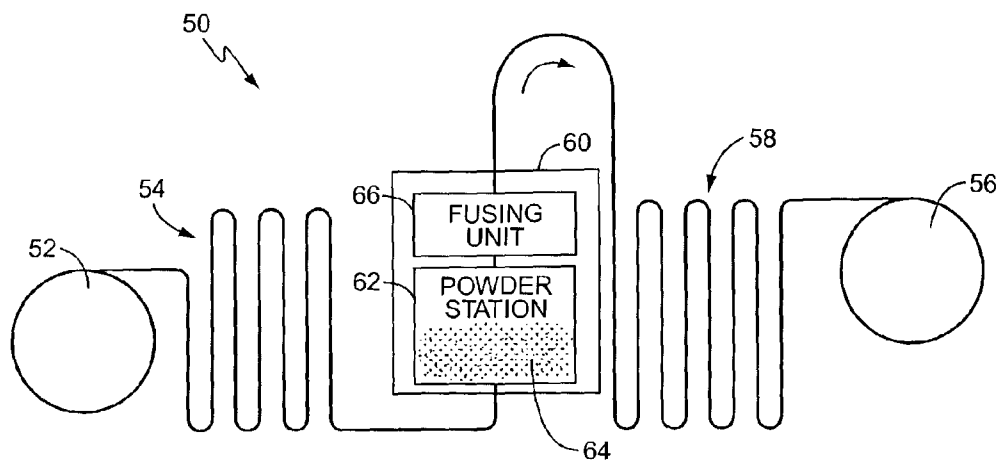


FIG. 4

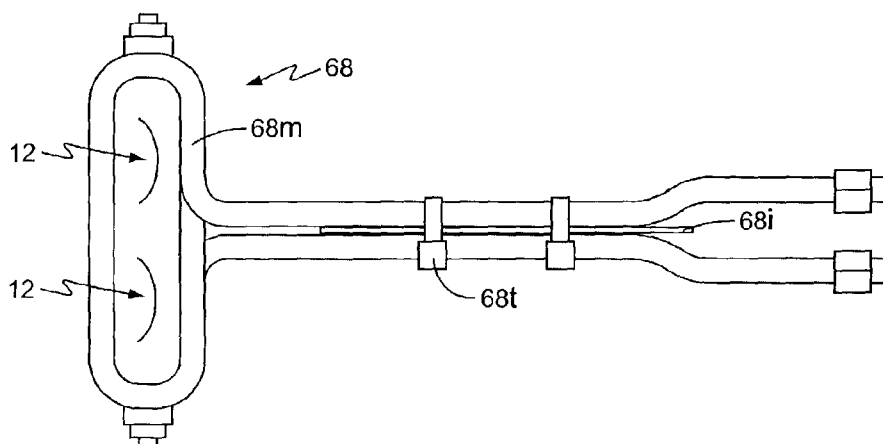


FIG. 5A

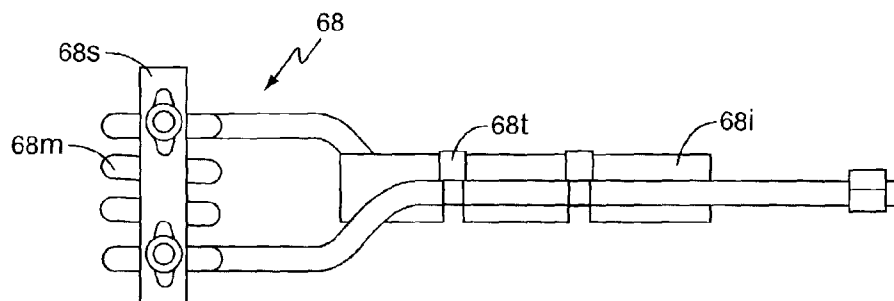


FIG. 5B

METHOD OF COATING A TAPE MEASURE BLADE

FIELD OF THE INVENTION

[0001] The present invention is directed generally to tape measures and, more particularly, to a coated tape measure blade and a method of making the same.

BACKGROUND OF THE INVENTION

[0002] Modern power return tape measures (or "tape rules") typically include a coiled tape that is spring-biased towards a retracted position. A housing generally surrounds protects the tape and biasing spring and includes an opening through which a distal end of the tape extends. The distal end of the tape is pulled away from the housing during use, and when released, the spring pulls the tape back into the housing so that the tape returns to the retracted position.

[0003] The tape blades for such devices are typically formed from a metal ribbon that assumes a concavo-convex configuration when outside the housing, but that is wound into a revolute coil inside the housing with each layer of the coil having a flat cross-section. While the base material of the blade is typically metal, the surface of the blade material is rarely bare metal. Instead, the blade material is typically painted, printed with length indicia, and then coated with a polymer coating to improve abrasion resistance and/or reduce friction. This polymer coating is typically applied by passing the ribbon material over a coating roller and then through an oven to cure the coating.

[0004] Obviously, increasing the blade coating thickness has the beneficial effect of increasing the abrasion resistance; however, increasing the coating thickness increases also the space consumed by the coiled blade, thereby deleteriously increasing the overall size of the tape measure.

[0005] Separately, the conventional technique of applying the polymer coating to the blade material—using a coating roller—has proved somewhat problematic, particularly in forming a coating of a relatively uniform thickness without undesirable voids.

[0006] As such, there remains a need for alternative methods of coating a tape measure blade. While it is not required, it is preferred that the alternative methods address one or more of the problems discussed above.

SUMMARY OF THE INVENTION

[0007] The present invention is directed to a coated tape measure blade and a novel method of making the same. In one embodiment of the invention, a metallic tape blade is substantially coated with a powder and then passed through an induction unit to heat the powder and form a coating on the blade, with the blade having a concavo-convex cross-section when passing through the induction unit. In another embodiment, the metallic tape blade is substantially covered with a powder consisting essentially of nylon having a particle size of 10-20 microns or less and then passed through an induction unit to heat the blade and form a nylon coating derived from the powder thereon. In yet another embodiment, a nylon coating is applied to the metallic tape blade, with the coating having a thickness of not more than about 0.001 inches or less per side and an abrasion resistance according to ASTM D968-81 of at least 30 liters, and more

preferably at least 40 liters, of sand. In still other embodiments, one or more of these aspects are combined to form a tape blade having a protective coating thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a power return tape measure that may employ a tape blade constructed in accordance with the present invention.

[0009] FIG. 2 is a perspective view of a concavo-convex tape blade.

[0010] FIG. 3 is a cross-sectional view of the tape blade of FIG. 2.

[0011] FIG. 4 shows a process line for forming a coating on the tape blade of FIG. 2.

[0012] FIG. 5A shows a top view of a coil having a non-circular shape suitable for the induction unit of the process line of FIG. 4.

[0013] FIG. 5B shows a side view the coil of FIG. 5A.

DETAILED DESCRIPTION OF THE INVENTION

[0014] As the present invention relates to a coated tape measure blade, particularly for so-called power return tape measures, a brief discussion of such devices may be helpful in understanding the present invention. As illustrated in FIG. 1, a power return tape measure, generally designated 10, typically includes a coilable measuring tape or blade 12 and an associated housing 20. The distal end of the tape 12 may include an end hook 14 to prevent it from being retracted into the housing 20. A tape-biasing device (not shown), such as a spring, is operatively connected to the tape 12 to bias it towards a retracted orientation. A locking mechanism, including a toggle 16 or similar actuator is provided to aid in controlling the movement of the tape 12 into and out of the housing 20. One or both sides of the housing 20 may include a clip 18, as desired. The housing 20 may include a main case or shell 22 and a grip element 24 mounted on the shell 22. Shell 22 is preferably made from a durable material such as a hardened plastic (e.g., ABS, polycarbonate, or the like) and may be constructed from two portions joined together by suitable screws 26, as is known in the art. The housing 20 is preferably sized to fit within a user's hand, and also conveniently stored on a work belt or in a toolbox. As the present invention primarily relates to the tape blade 12, additional details of the construction of the tape measure 10 are not necessary for one of ordinary skill in the art to understand the present invention. If additional details are desired, see U.S. Pat. Nos. 4,527,334; 4,976,048; 6,349,482, and U.S. patent application Ser. No. 10/174,629, filed Jun. 19, 2002, which are incorporated herein by reference.

[0015] The tape blade 12 is typically formed from a relatively thin metal ribbon 32 shaped to form the desired concavo-convex cross-sectional shape (as shown in FIGS. 2-3) when extended from the housing 20, and the desired flat cross-section when coiled inside the housing 20. The underlying metal ribbon 32 is typically a steel alloy, such as medium to high carbon steel (e.g., 1095 steel or 1050 steel), with a thickness in the general range of 0.004 to 0.0055 inches. While not required, the ribbon 32 forming the core

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.