



US005668897A

# United States Patent [19]

[11] Patent Number: **5,668,897**

Stolfo

[45] Date of Patent: **Sep. 16, 1997**

[54] **METHOD AND APPARATUS FOR IMAGING, IMAGE PROCESSING AND DATA COMPRESSION MERGE/PURGE TECHNIQUES FOR DOCUMENT IMAGE DATABASES**

5,140,650	8/1992	Casey et al.	382/283
5,182,656	1/1993	Chevion et al.	382/284
5,204,756	4/1993	Chevion et al.	382/284
5,394,487	2/1995	Burger et al.	382/209
5,497,486	3/1996	Stolfo	395/600

### FOREIGN PATENT DOCUMENTS

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2263603	7/1993	United Kingdom	382/284
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[21] Appl. No.: **488,333**

*Primary Examiner*—Jose L. Couso

[22] Filed: **Jun. 7, 1995**

*Attorney, Agent, or Firm*—Mitchell A. Stein; Stein & Associates, P.C.

### Related U.S. Application Data

### [57] ABSTRACT

[63] Continuation-in-part of Ser. No. 259,527, Jun. 14, 1994, which is a continuation-in-part of Ser. No. 224,273, Apr. 7, 1994, abandoned, and a continuation-in-part of Ser. No. 213,795, Mar. 15, 1994, Pat. No. 5,497,486.

A method for processing an image, consisting of a foreground and a background, to produce a highly compressed and accurate representation of the image, including the steps of scanning the image to create a digital image of the image, comparing the digital image against a codebook of stored digital images; matching the digital image with one of the stored digital images of the codebook; producing an index code identifying the background of the stored digital image as having matched the digital image; subtracting the stored digital image from the digital image to produce a second digital image representing the foreground of the stored digital image; and storing the second digital image with the index code. Techniques are also provided to enable merge/purge of the database(s) thereby created.

[51] Int. Cl.<sup>6</sup> ..... **G06K 9/36**

[52] U.S. Cl. .... **382/283**

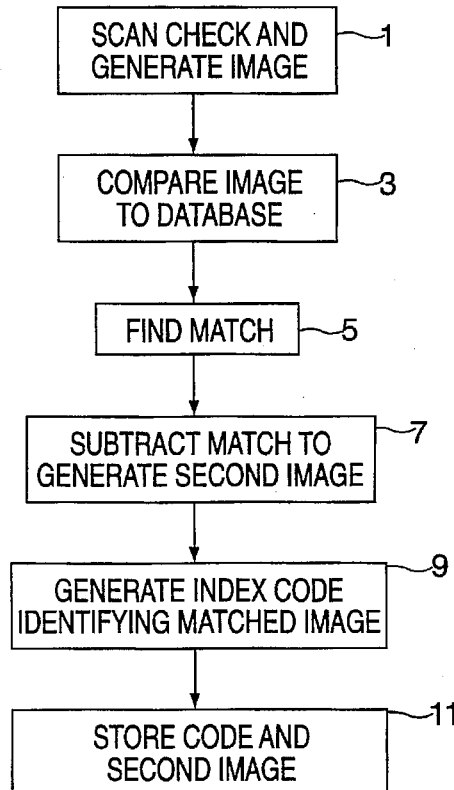
[58] Field of Search ..... 382/135, 137, 382/138, 139, 209, 218, 282, 232, 283, 317, 284; 358/435, 436

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,542,378	9/1985	Suganuma et al.	382/284
4,953,229	8/1990	Abe et al.	382/284
5,001,769	3/1991	Reid-Green et al.	382/283

**18 Claims, 18 Drawing Sheets**



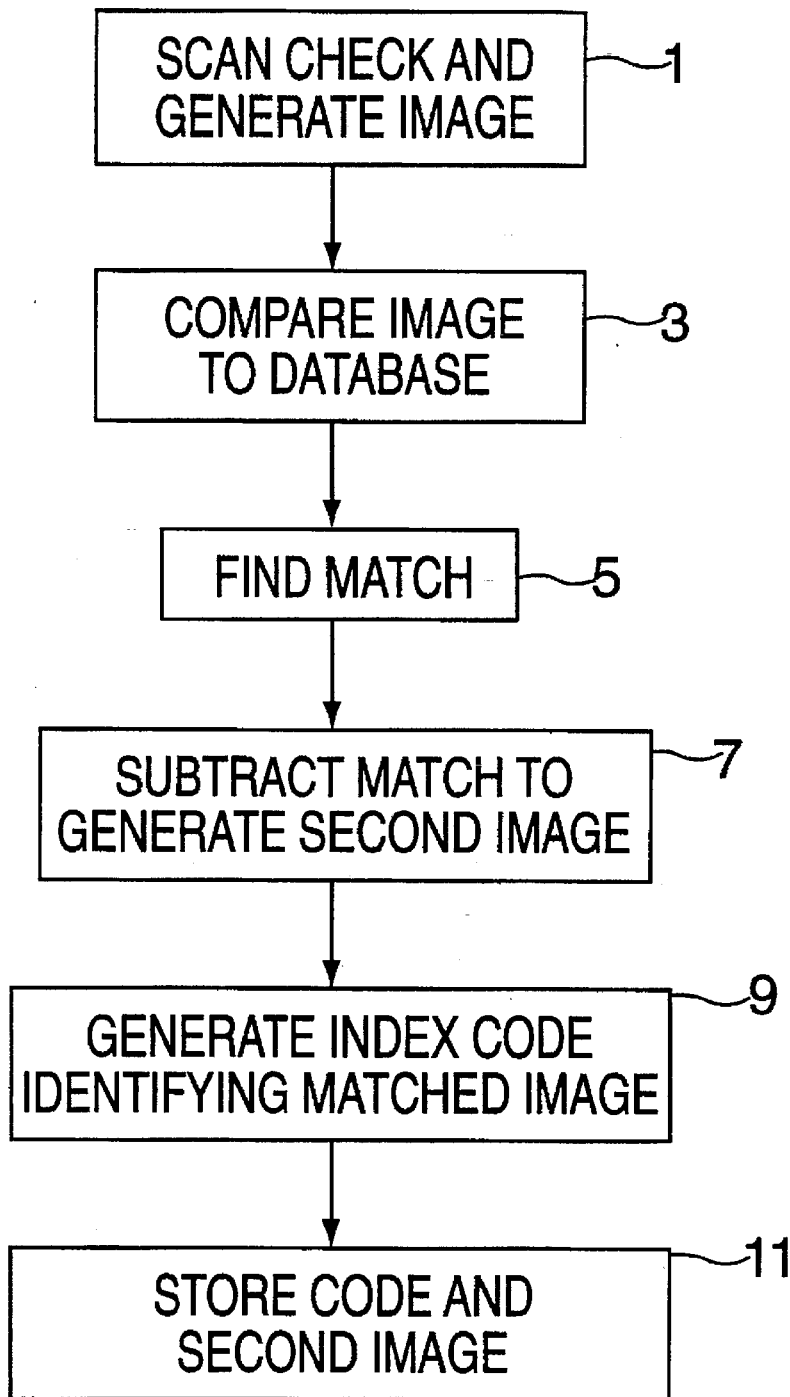


FIG. 1

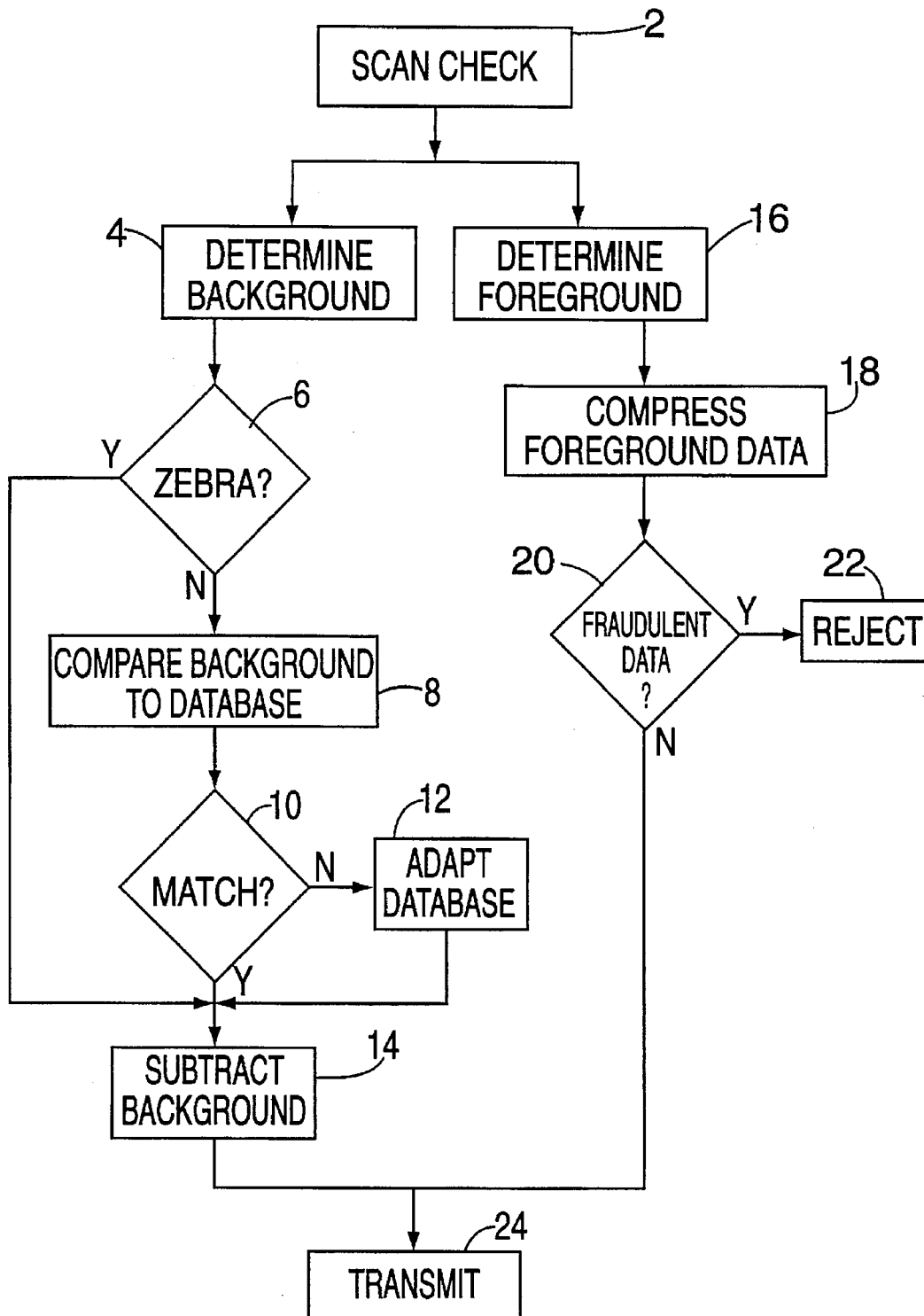


FIG. 2

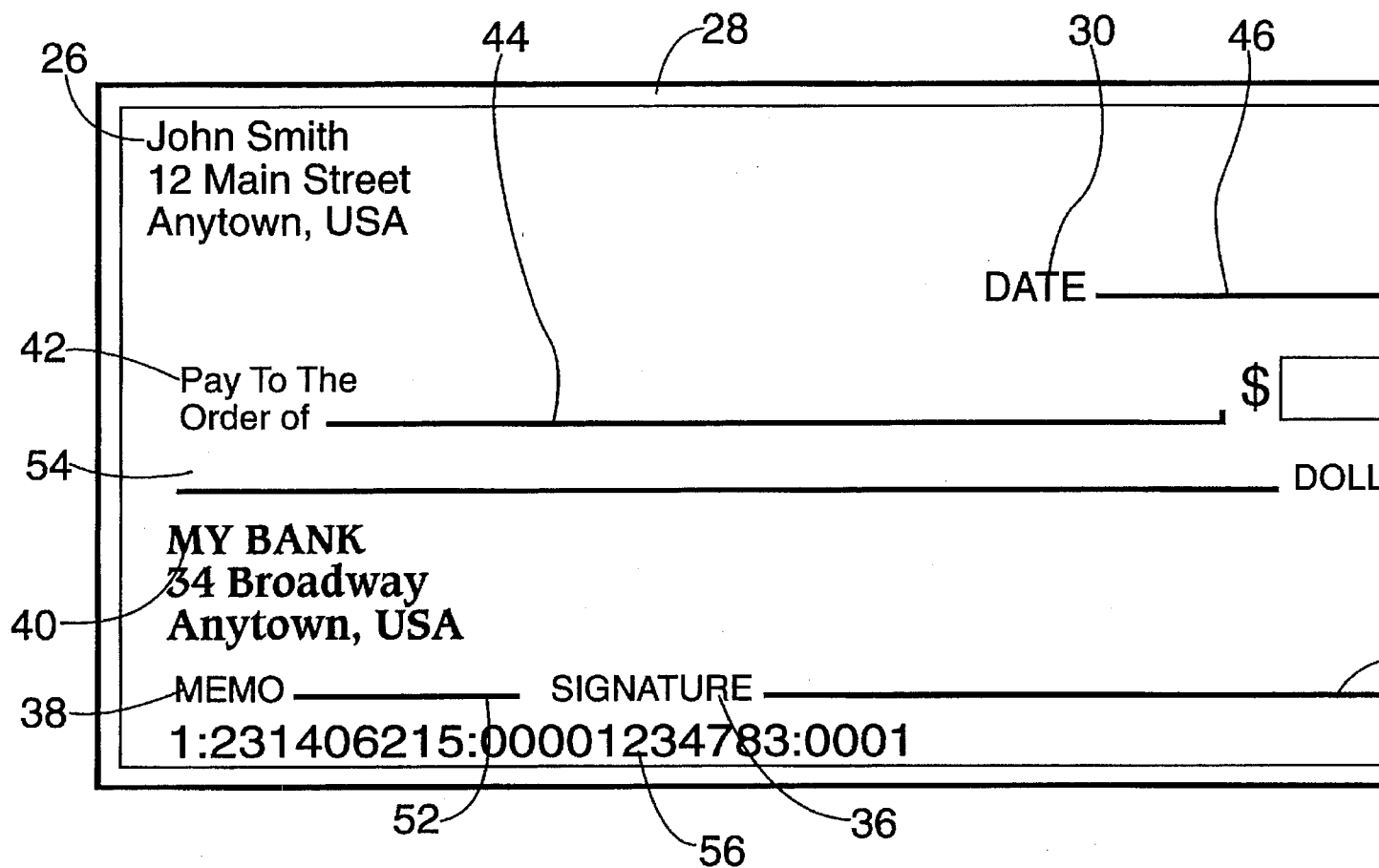


FIG. 3

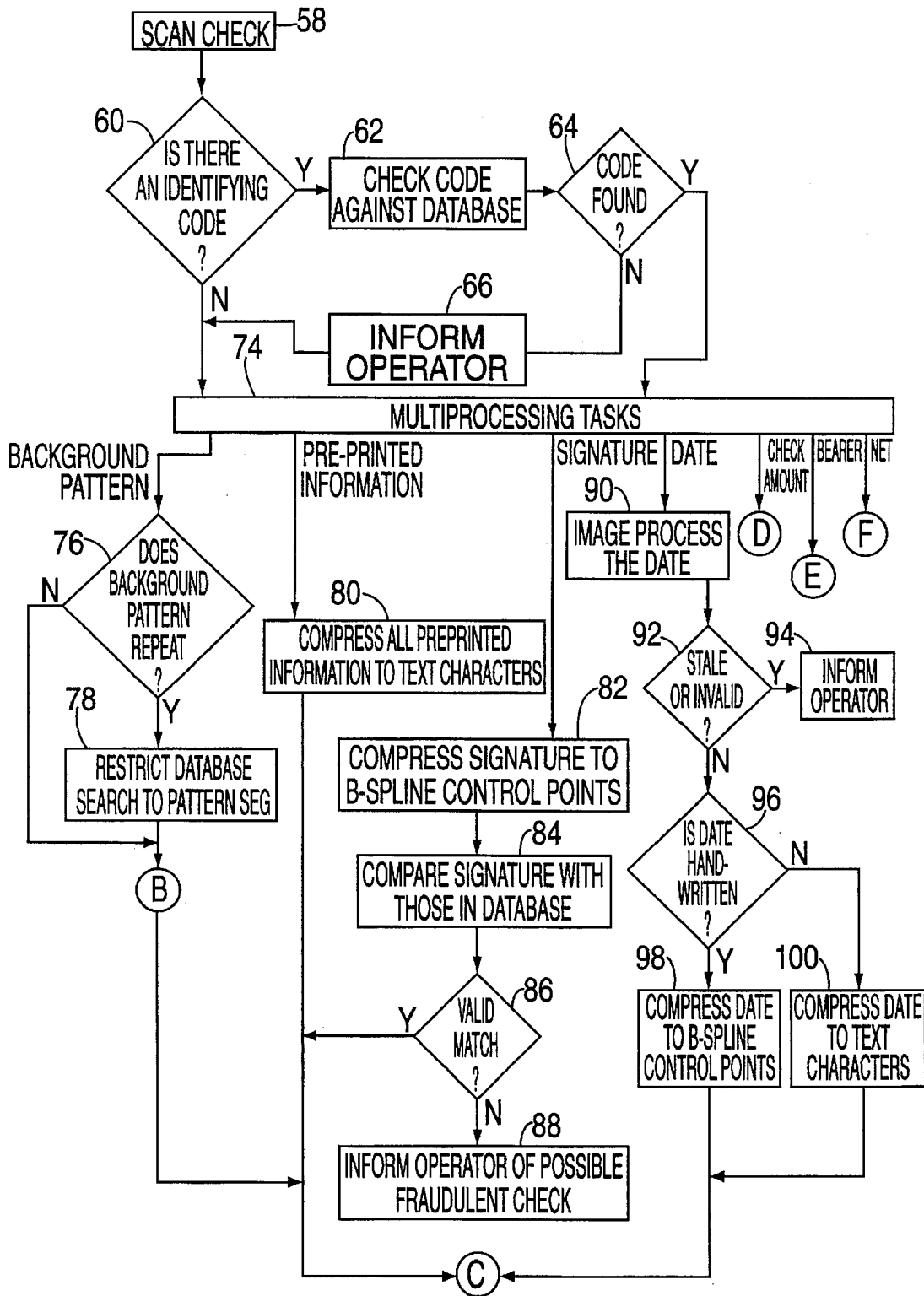


FIG. 4

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