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(54) Pre-marked coin wrapper.

(57) A coin wrapper, suited for use in an automated wrapping mechanism, provides information concerning a coin stack wrapped therein while minimizing the amount of material needed to securely wrap the coin stack. To provide information concerning the denomination and value of coins within a wrapped coin stack, a reference line and rows of indicia are arranged along the length of a flexible substrate. A stack of coins is rolled along the width of the coin contacting side of the substrate which has a coating of adhesive thereon. The length of the substrate which is wrapped about the stack of coins is equal to or slightly greater than the length of the stack of coins, and the width is selected to provide about 1.5 revolutions about the largest diameter coins to be wrapped. Each row of indicia is spaced from the reference line by a distance correlative to the circumferential measurement of a respective coin stack, so that when a stack is wrapped, the reference line underscores the row of indicia which provides information concerning the coins within the wrapper.

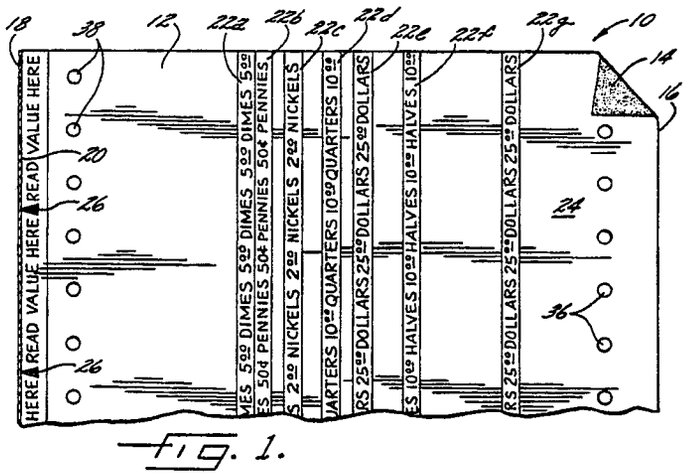

fig. 1.

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PRE-MARKED COIN WRAPPER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to coin wrappers, and more particularly to coin wrapping paper for denoting the denomination and value of coins wrapped therein.

2. Description of the Related Art

Many types of coin wrappers have been or are being used to enclose a plurality of coins for handling purposes. These wrappers range from simple paper tubes, which are typically filled manually with the proper denomination of coins, to elaborate, selectively perforated, plastic and foil wrappers having indicia thereon, which are used in conventional wrapping machines.

Presently, businesses which handle large quantities of coins, such as financial institutions and casinos, are quite cost sensitive. Since manual wrapping typically incurs higher costs than automatic wrapping, these businesses currently favor automatic wrapping machines. Moreover, these businesses recognize the value of their employees' time as it impacts service and overall throughput. Therefore, the resulting wrapped coin rolls should convey information quickly, and should easily release coins when needed.

The coin handling industry considers these needs when servicing these various business concerns. First, the wrapper should be inexpensive to manufacture and use, and should be designed for use in an automatic wrapping machine. Second, the wrapper should convey information to the end user, i.e., a bank teller, and should quickly and easily release the coins when needed, while holding the coins securely together during rough handling.

Moreover, it is not uncommon for certain types of businesses to require special rolls. Casinos and mass transit systems commonly utilize tokens which they offer in rolls of varying value and size. For instance, "half wraps" are coin rolls which contain half as many coins as a full roll. Since the "half wraps" are wrapped with paper sized to wrap a full roll, a considerable amount of wrapping material is wasted.

Previous wrappers have fallen short of accommodating the above needs. Paper tubes, which have a diameter corresponding roughly to the diameter of the denomination of coin to be placed therein, while being inexpensive to manufacture, are not conducive to automated wrapping. At the other end of the spectrum, plastic and foil wrappers, as exemplified by U.S. Patent No. 3,799,428 issued March 26, 1974 to Lamming, provide many user oriented features, such as indicia which communicates the denomination and value to the end user, and perforations for ease of coin removal. However, the plastic and foil construction requires expensive manufacturing processes. Many other wrappers attempt to provide an optimum coin package, such as U.S. Patent No. 4,546,875 issued October 15, 1985 to Zweber which discloses a coin wrapping paper having a releasable adhesive on one side. The length of a particular paper roll is selected to be slightly longer than the length of a selected coin stack, and it is preferable to encompass the coin stack two or three times to provide a sturdy roll. The wrapping paper provides no indicia for the user, but is easily unrolled for coin removal and relatively inexpensive to manufacture. U.S. Patent No. 673,373 issued April 30, 1901 to Youmans discloses a paper wrapper which has a pair of openings positioned to coincide with a printed denomination and value determined by the circumference of the particular denomination being wrapped. Different denominations and values are printed in a spaced apart relationship at distances corresponding to the differences in the circumferential measurements of the coins indicated by the respective printed numbers. However, no attempt is made to optimize the amount of paper used to roll a stack of coins, nor is automation contemplated. U.S. Patent No. 4,674,260 issued June 23, 1987 to Rasmussen et al. provides a coin wrapping mechanism with a unique wrapping material feed portion which minimizes wrapping material usage. The wrapping material is fed upwardly into a wrapping cylinder in a direction perpendicular to the rolling movement of the coin stack. This feeding method allows the wrapping material to be selectively cut to fit the length of the stack of coins to be wrapped. However, there is no mention of providing a wrapping material which communicates information to the end user regarding the denomination or value of coins in a wrapped stack.

The present invention is directed to overcoming one or more of the problems listed above.

SUMMARY OF THE INVENTION

It is the primary object of the present invention

to provide a coin wrapper for use in an automatic wrapping machine which automatically indicates the value and denomination of coins wrapped therein.

It is an important object of the present invention to provide a method for minimizing the amount of wrapping material used for selected denominations and values of coin.

It is another object of the present invention to provide a coin wrapper which is inexpensive to manufacture.

It is yet another object of the present invention to provide a coin wrapper which wraps coins of varying denominations.

It is still another object of the present invention to provide information at a glance concerning the value and denomination of coins within a wrapper.

It is a further object of the present invention to provide a coin wrapper from which coins are easily removed without striking or the use of tools.

In accordance with one aspect of the present invention, there is provided a wrapper for wrapping a stack of coins, which includes a flexible substrate having a width and a length and having a coin contacting side and an outer side. A means, such as adhesive, secures the substrate about the stack of coins. A reference line is formed along the length of the substrate, and is viewable from the outer side. Indicia is arranged in lines along the length of the substrate, and is viewable from the outer side. Each of the lines of indicia provide information about a respective coin stack having a predetermined circumferential measurement and being spaced from the reference line by a distance correlative to the circumferential measurement of the respective coin stack.

Preferably, there is provided a means for feeding a selected length of wrapping material in a direction perpendicular to the direction of the rolling movement of the coin stack and parallel to the longitudinal axis of the coin stack. The feeding means includes means for adjusting the selected length to permit the wrapping of coin stacks having different lengths.

In accordance with another aspect of the present invention, there is provided a method for wrapping a stack of coins. The method includes feeding a selected length of wrapping material slightly longer than the length of the stack of coins onto a wrapping surface. The wrapping material has a reference line and indicia arranged in lines along its length in the direction of feed. Each of the lines of indicia provide information about a respective coin stack having a predetermined circumferential measurement and being spaced from the reference line by a distance correlative to the circumferential measurement of the respective coin stack. The stack of coins is rolled in a direction perpendicular to the direction of the feeding movement of the wrapping material, and the length of wrapping material is cut off of a continuous wrapping material supply roll is advance of the rolling of the stack of coins over the selected length.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparant upon reading the following detail description and upon reference to the drawings in which:

Fig. 1 illustrates a portion of the wrapping material of the present invention;

Fig. 2 illustrates a stack of coins wrapped by wrapping material of the present invention; and

Fig. 3 is a perspective view of a paper feed system for a coin wrapping mechanism suited for use with the wrapping material of the present invention.

While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and will be described in detail herein. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to Fig. 1, the wrapper 10 is made of a flexible substrate 12, such as paper or plastic, which allows the wrapper 10 to encase a stack of coins. A stack of coins is wrapped along the width of the coin contacting side 14 of the substrate 12 from a leading edge 16 to a trailing edge 18. To secure the substrate 12 about a stack of coins, the coin contacting side 14 has selected portion coated with adhesive. The type of adhesive used and the preferable locations of the adhesive will be discussed in greater detail in conjunction with the method of operation of the wrapping mechanism shown in Fig. 3.

To provide information concerning the denomination and value of coins within a wrapped coin stack, a reference line 20 and rows of indicia 22 are arranged along the length of the substrate 12. The reference line 20 and indicia 22 are viewable from the outer side 24 of the substrate 12, so that

after the substrate 12 is wrapped about a stack of coins the reference line 20 and at least some of the indicia 22 may be easily seen. The reference line 20 is positioned along the trailing edge 18, and is preferably bold or otherwise easily discernable. Each row of indicia 22 is generally parallel to the reference line, and is spaced from the reference line 20 by a distance correlative to the circumferential measurement of the coin stack about which the indicia provides information. As shown in Fig. 1, the bottom of the first row of indicia 22a is closest to the reference line 20, so that the distance therebetween is approximately equal to the circumferential measurement of the smallest coin to be wrapped by the wrapper 10. Likewise, the bottom of the last row of indicia 22g is furthest from the reference line 20, so that the distance therebetween is approximately equal to the circumferential measurement of the largest coin to be wrapped by the wrapper 10. As the substrate 12 is wrapped about a stack of coins, the reference line 20 underscores the row of indicia 22 which provides information about the wrapped stack of coins, as shown in Fig. 2.

The indicia 22 on the illustrated wrapper 10 contains information concerning U.S. currency, so each row of indicia 22a-22g is spaced from the reference line 20 by a distance approximately equal to the circumferential measurement of the respective U.S. coins. These distances are as follows: 2.215 inches for dimes, 2.356 inches for pennies, 2.623 inches for nickels, 3.000 inches for quarters, 3.277 inches for "Susan B. Anthony" dollars, 3.786 inches for half dollars, and 4.712 inches for "Eisenhower" dollars. The indicia 22 provides information concerning the denomination and value of the U.S. coins. For instance, the first row of indicia 22a contains the indicia "$5 DIMES" repeated along the length of the substrate 12. Therefore, when a stack of dimes having a total value of five dollars is wrapped, the reference line 20 underscores the first row of indicia 22a to communicate to the end user that there are five dollars of dimes, or fifty dimes, wrapped therein. As an aid to the end user, an arrow 26 followed by the words "READ VALUE HERE" appears beneath the reference line 20. This further directs the users attention to the row of indicia 22 for quick ascertainment of the value and denomination of the coins within the wrapper 10.

The words or symbols in each row are repeated along the length of the substrate 12, so that the wrapper 10 can be used to wrap coin stacks of varying lengths. As mentioned in the "Background" section, many businesses provide coin stacks of various lengths. Therefore, at least one set of words and symbols in each row of indicia 22 are discernable on any of the various lengths. Moreover, the words and symbols may denote more than one value for a particular denomination. In this case, both sets of words and symbols are discernable on any of the various lengths. For instance, banks, which usually provide only full wraps of quarters, would use indicia similar to "... $10 QUARTERS $10 QUARTERS ...." The symbol "$10" and the word "QUARTERS" should appear at least once on every wrap. Alternatively, casinos, which provide half and full wraps of quarters, would use indicia similar to "... $10 QUARTERS $5 QUARTERS ...." In this case, the symbols "$10" and "$5" and the word "QUARTERS" appear at least once on every wrap. To further communicate the actual value of quarters using this type of indicia, a circle may be placed around the proper symbol, $5 or $10, after the stack is wrapped.

Color standards provide information "at a glance", and may be used instead of or in conjunction with words or symbols in the rows of indicia 22. For instance, the color green designates dimes, and the color red designates pennies. Therefore, the reference line 20 underscores a green row of indicia when the wrapper 10 contains dimes, and underscores a red row of indicia when the wrapper 10 contains pennies. End users obtain information quickly and easily by glancing at the underscored color, thus improving efficiency and reducing the possibility of selecting the wrong coin roll.

Preferably, the substrate 12 is opaque and covers rows of indicia which provide information about coin stacks having circumferential measurements which are larger than the circumferential measurement of the wrapped coin stack. A paper substrate having the reference line and indicia printed thereon produces an opaque and inexpensive wrapper. This type of wrapper 10 is preferable to a clear plastic wrapper because fewer rows of indicia 22 are visible to the user of the wrapped stacks. As Fig. 2 shows, the wrapped stack 28 contains nickels, since the reference line 20 underscores the row of indicia 22c which designates nickels. The rows of indicia 22d-22g, which designate coins having larger circumferences, are covered by the substrate 12. Therefore, only three rows of indicia 22a-22c are visible to the user.

To minimize the amount of wrapping material used to wrap coin stacks of varying lengths, the length of the substrate 12 is adjusted according to the length of the coin stack to be wrapped. A coin wrapping device 30, shown in Fig. 3, utilizes a method for adjusting the length of the wrapping material. The substrate 12 is withdrawn from a supply roll 32 by a pair of "three-dimensional" sprocket belts 34 meshing with two corresponding rows of sprocket holes 36,38 in the substrate 12. A "three-dimensional" sprocket belt is a commerically available item comprising a flexible metal cable

having polymeric sprockets fastened to the cable at equal intervals along the length thereof. Each sprocket has four lugs projecting therefrom at 90° intervals around the axis of the cable. Each of the sprocket belts 34 is trained around a set of six sprocket wheels 39-44, with the wheel 39 being driven by an electric drive motor 46. The motor and sprocket arrangement drives the substrate upwardly onto a wrapping surface 48.

Preferably, the coin contacting side 14 of the substrate 12 is coated with a pressure-sensitive, releasable adhesive, such as the adhesives disclosed in U.S. Patent No. 4,418,120 as having good tack and shear properties, but low peel adhesion to stainless steel. The adhesives adheres quickly to the outer surface of a stack of coins, and possesses sufficient shear strength to hold the stack of coins together during handling, and yet demonstrates a peel adhesion low enough to permit the substrate 12 to be readily peeled off of the coin stack without leaving any substantial residue of adhesive on the coins. The adhesive coating is preferably continuous along the full length of the coin contacting side 14, and across the full width except for the strips which contain the rows of sprocket holes 36,38, which may be left uncoated to facilitate punching of the sprocket holes. This type of adhesively backed substrate can be substantially equal to the length of the coin stack, and need be no more than about 3 millimeters longer than the coin stack, to hold the coins within the wrapper 10.

The substrate 12 is fed into the wrapping mechanism and onto the wrapping surface 48 in a direction perpendicular to the direction of rolling movement of the coin stack during wrapping (e.g., parallel to the axis of the coin stack). There is no need to provide extra lengths of paper at opposite ends of the coin stack for "crimping" as is required with conventional wrappers, because the adhesive coating on the substrate 12 obviates the crimping operation. However, to allow for variations in ooin thickness due to wear and manufacturing tolerances, the length of the substrate 12 which is fed onto the wrapping surface 48 is selected to be slightly longer than the stack of coins to be wrapped. Since crimping requires about 1.5 centimeters of additional length of each end of the coin stack, a significantly greater amount of material is required to wrap each coin stack. During the wrapping of the coin stack, a knife, or similar cutting means, cuts the selected length L of substrate 12 across its width along a cutting line 49. Preferably, the knife is located on the leading side of the coin stack so that the substrate 12 is cut ahead of the coin stack, thereby detaching the selected length of substrate 12 from the supply roll so that the selected length can be wrapped around the coin stack as the stack is rolled along the adhesively coated coin contacting surface 14 of the substrate 12.

The arrangement of the reference line 20 and the rows of indicia 22 on the substrate 12 allow the substrate to be cut at the optimum length to fit a stack of coins, while providing accurate information regarding the coins within the wrapper 10. Therefore, cutting the substrate 12 to be substantially equal to the length of the coin stack, as described above, is conducive to automated wrapping.

To minimize the amount of wrapping material used to wrap coin stacks of varying sizes, the width of the substrate 12 is optimized. If the coin contacting side 14 of the substrate is coated with a pressure-sensitive, releasable adhesive, the width of the wrapper 10 is selected to be about 1.5 times the circumferential measurement of the largest coin to be wrapped. For instance, U.S. currency ranges from a dime having a circumferential measurement of 2.215 inches to an "Eisenhower" dollar having a circumferential measurement of 4.712 inches. A substrate 12 having a width of 6.500 inches produces 1.4 revolutions about the "Eisenhower" dollar, and produces 2.9 revolutions about the dime. This width provides adequate support for coins of all denominations within the U.S. currency system. However, the vast majority of coins in circulation are dimes, pennies, nickels and quarters. Therefore, the amount of wrapping material is further minimized by providing a roll of wrapping material having a width of 4.500 inohes. The material is wide enough to adequately secure quarters and all other smaller coins.

Other objects and advantages may be found through a study of the drawings and the appended claims.

Claims

1. A wrapper for wrapping a stack of coins, comprising:
a flexible substrate having a width and a length and having a coin contacting side and an outer side;
means for securing said substrate about said stack of coins;
a reference line along the length of said substrate, said reference line being viewable from said outer side; and
indicia arranged in rows along the length of said substrate, said indicia being viewable from said outer side, each of said rows of indicia providing information about a respective coin stack having a predetermined circumferential measurement and being spaced from said reference lines by a distance correlative to the circumferential measurement of said respective coin stack.

2. The coin wrapper, as set forth in claim 1, wherein said indicia is in the form of characters which designate the denomination of coins within said respective coin stacks.

3. The coin wrapper, as set forth in claim 1, wherein said indicia is in the form of characters which designate the value of the coins within said respective coin stacks.

4. The coin wrapper, as set forth in claim 1, wherein the indicia is in the form of colors which designate the denomination and value of coins within said respective coin stacks.

5. The coin wrapper, as set forth in claim 1, wherein said substrate is paper.

6. The coin wrapper, as set forth in claim 1, wherein said securing means includes an adhesive coating on said coin contacting side of said substrate.

7. The coin wrapper, as set forth in claim 6, wherein said adhesive coating is a pressure-sensitive, releasable adhesive.

8. The coin wrapper, as set forth in claim 6, wherein said substrate contains at least one row of sprocket holes therethrough which are adapted to be engaged by a driven sprocket mechanism meshing with said sprocket holes.

9. The coin wrapper, as set forth in claim 8, wherein said adhesive coating is substantially continuous except for said rows of sprocket holes.

10. The coin wrapper, as set forth in claim 1, wherein said stack of coins is rolled along the width of said substrate.

11. The coin wrapper, as set forth in claim 1, wherein said reference line underscores the row of indicia which provides information about said coin stack when said substrate is wrapped about said coin stack.

12. The coin wrapper, as set forth in claim 1, wherein said substrate is opaque and covers rows of indicia which provide information about coin stacks having circumferential measurements which are larger than the circumferential measurement of the wrapped coin stack.

13. The coin wrapper, as set forth in claim 1, wherein said substrate is formed into a continuous roll.

14. The coin wrapper, as set forth in claim 13, wherein said substrate is cut from said continuous roll into any lengths without effecting the information provided by said indicia when said substrate is wrapped about a coin stack, in that said reference line underscores the line of indicia which provides information about said wrapped coin stack.

15. The coin wrapper, as set forth in claim 13, wherein said substrate is cut from said continuous roll into selected length which is correlative to the length of a stack of coins to be wrapped.

16. The coin wrapper, as set forth in claim 1, wherein said indicia is printed on said substrate.

17. The coin wrapper, as set forth in claim 1, wherein said substrate is fed into a coin wrapping mechanism perpendicular to the direction of the rolling movement of the coin stack and parallel to the longitudinal axis of the coin stack.

18. The coin wrapper, as set forth in claim 15, wherein said selected length is slightly greater than the length of a stack of coins to be wrapped.

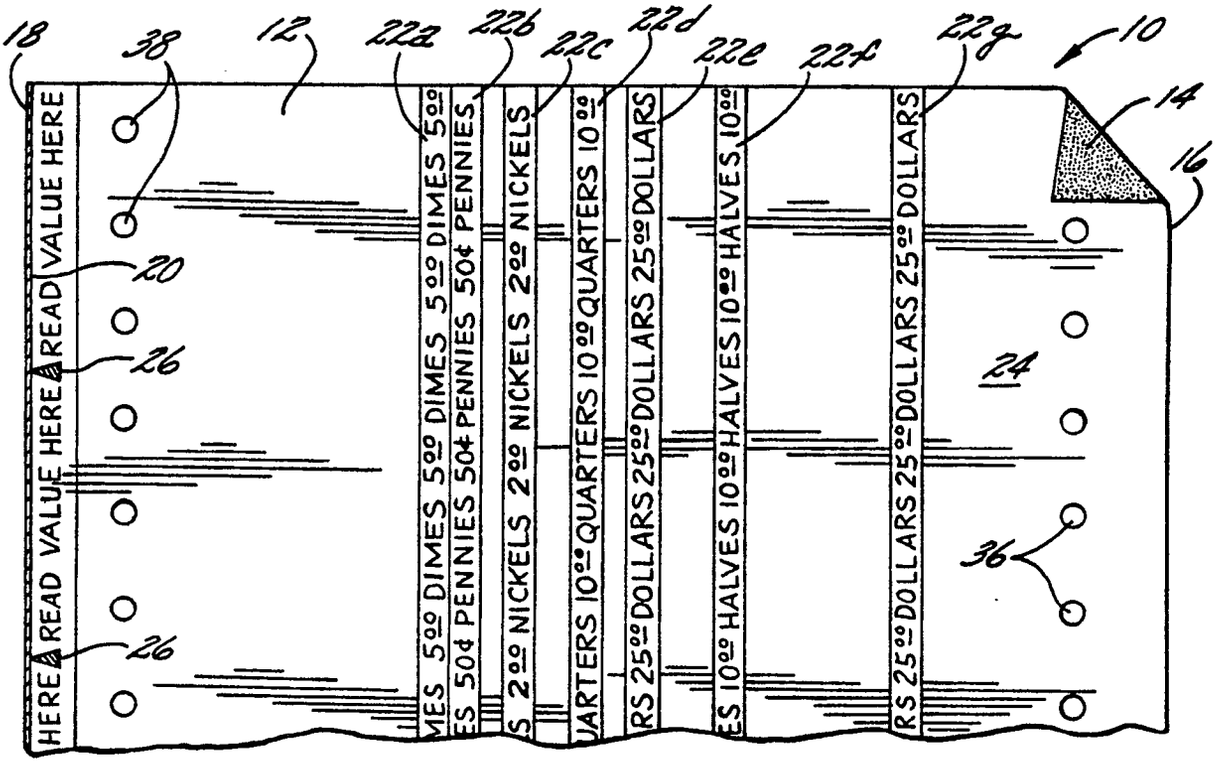

Fig. 1.

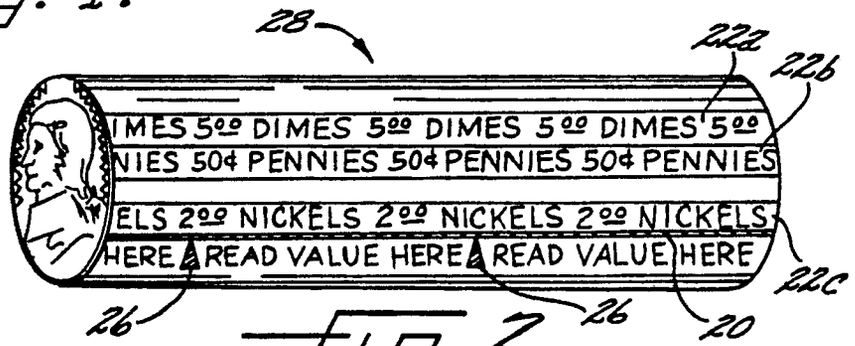

Fig. 2.

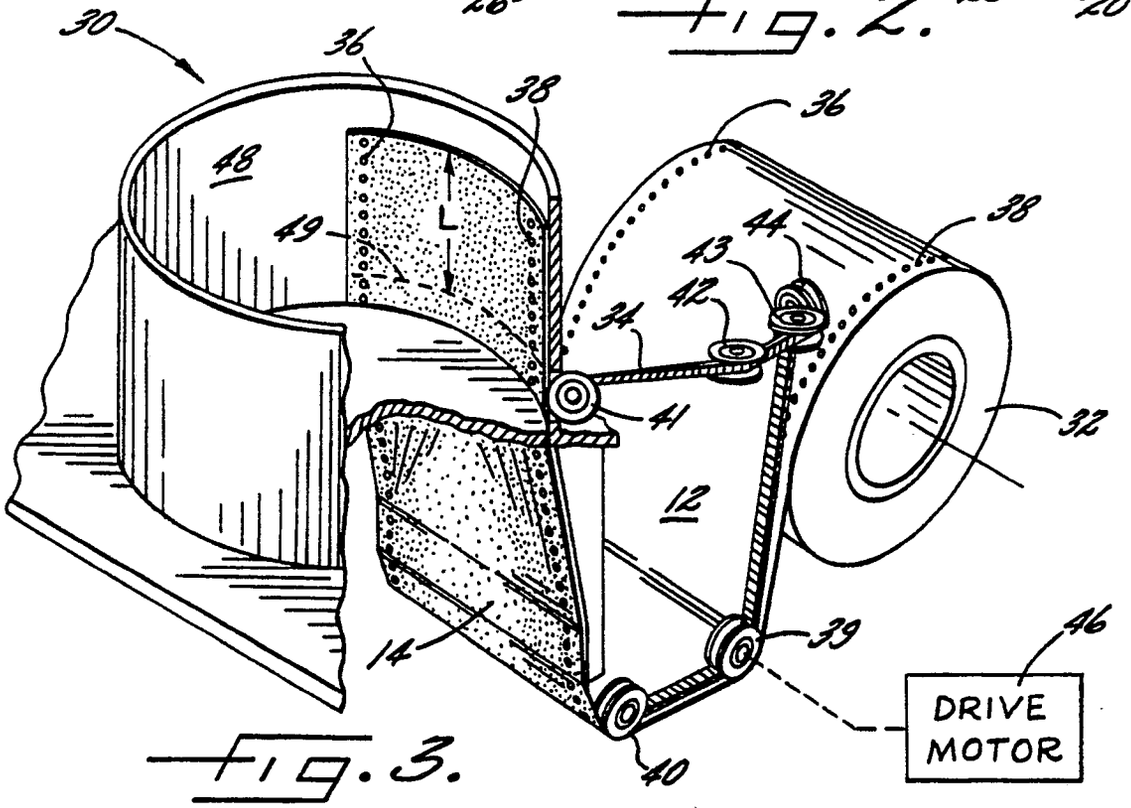

Fig. 3.