Aug. 27, 1968 P. R. HALSTEAD 3,398,502

DISPENSING APPARATUS FOR WIRE REINFORCED PAPER TAPE

Filed Dec. 23, 1965 2 Sheets-Sheet 1

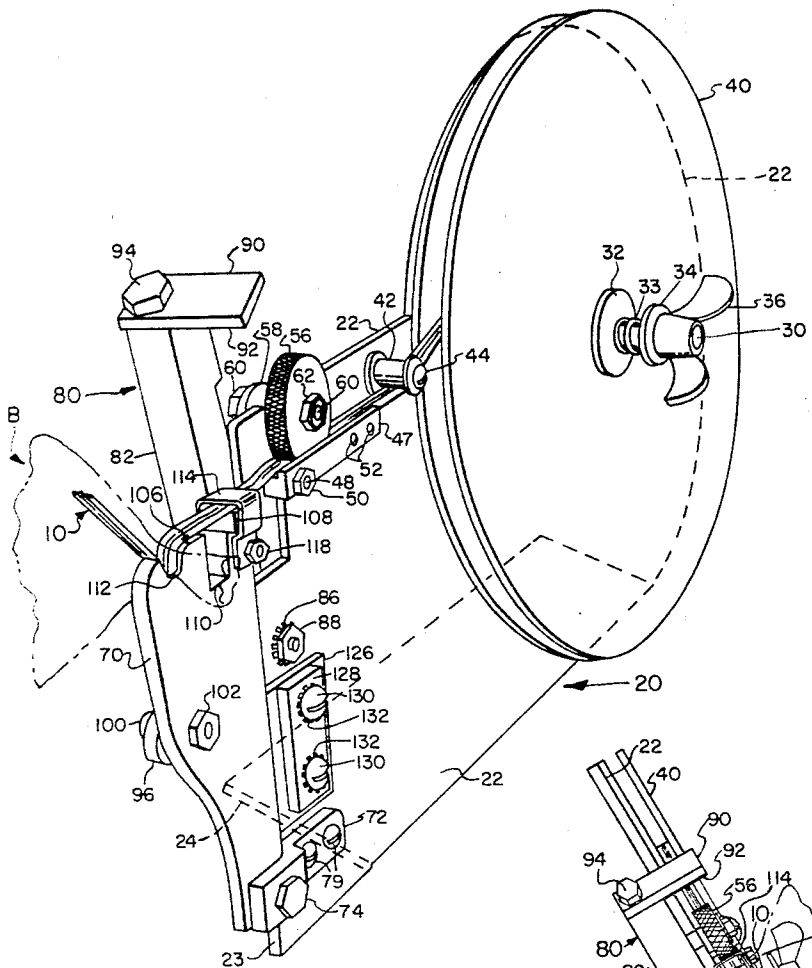


FIG. 1

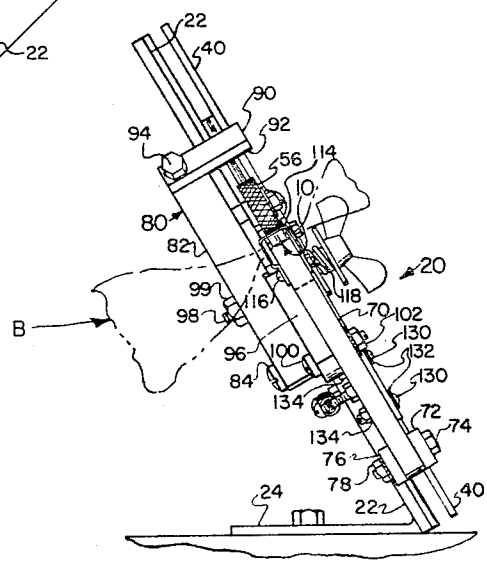


FIG. 2

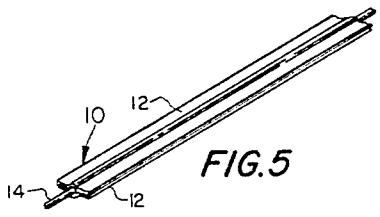


FIG. 5

PAUL R. HALSTEAD
INVENTOR

BY
BUCKHORN, BLORE, KLARQUIST & SPARKMAN
ATTORNEYS

Aug. 27, 1968 P. R. HALSTEAD 3,398,502

DISPENSING APPARATUS FOR WIRE REINFORCED PAPER TAPE

Filed Dec. 23, 1965 2 Sheets-Sheet 2

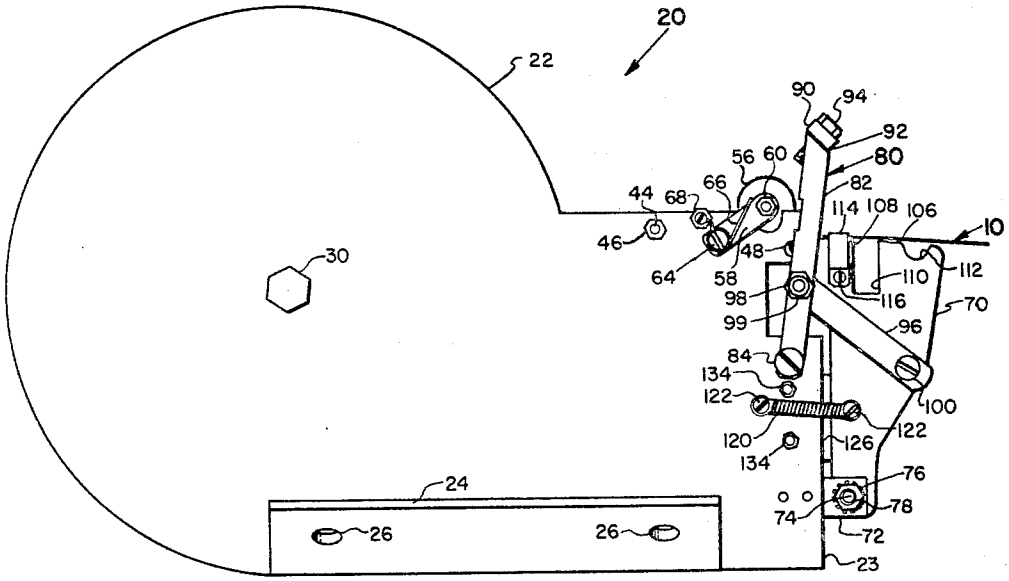


FIG. 3

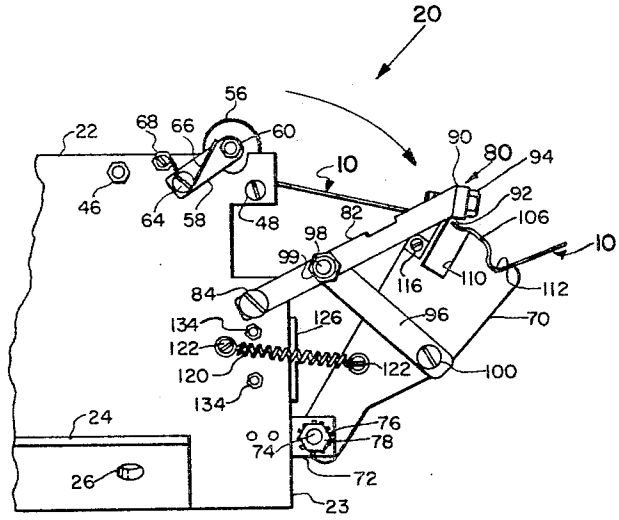


FIG. 4

PAUL R. HALSTEAD
INVENTOR

BY
BUCKHORN, BLORE, KLARQUIST & SPARKMAN
ATTORNEYS

United States Patent Office 3,398,502 Patented Aug. 27, 1968

3,398,502

DISPENSING APPARATUS FOR WIRE REINFORCED PAPER TAPE

Paul R. Halstead, Milwaukie, Oreg., assignor to Package Containers, Inc., Portland, Oreg., a corporation of Oregon

Filed Dec. 23, 1965, Ser. No. 515,959
5 Claims. (Cl. 53—135)

ABSTRACT OF THE DISCLOSURE

An apparatus for placing a prescribed length of wire reinforced paper tape around the neck of a polyethylene bag, having a supporting plate on which is mounted a spool for carrying a supply of the tape, an anvil pivotally mounted on the plate forwardly of the spool and over which the tape is fed, and a knife also pivotally mounted on the plate and linked to the anvil and adapted to strike the anvil at the forward limit of rotation thereof to sever a length of tape after the same has been partially placed about the neck of the bag. The anvil has a depressed upper surface to form a station into which the bag neck is inserted to assist in the placement of the tape thereabout. Downward pressure on the station rotates the anvil forwardly to actuate the knife and to draw an additional length of tape from the spool.

This invention relates to apparatus for dispensing wire reinforced paper tape, such as is commonly used to close the necks of polyethylene bags in which food and other products are packaged. More particularly, the invention relates to apparatus to facilitate the positioning of wire reinforced tape upon the top of a bag or the like.

The tape with which the instant invention is concerned is made of a double layer of paper and has a wire core centrally located therein. As more particularly shown in my prior patent, No. 2,732,001, lengths of such tape are used to tie the ends of bags in which food or other products are packaged and to tie produce together in consumer-sized bundles.

It is thus an object of the present invention to provide a new and improved apparatus for tying the necks of bags with such wire reinforced paper tape.

It is a further object of the present invention to provide such an apparatus that will facilitate the twisting of such tape around the necks of the bags.

It is a further object of the present invention to provide a new and improved apparatus for dispensing such wire reinforced paper tape, and, more particularly, for dispensing such tape in prescribed lengths.

It is another object of the present invention to provide such an apparatus wherein pressure applied by the operator during the tying operation severs a prescribed length of the tape and simultaneously actuates the apparatus, thereby to draw another prescribed length of tape into position for a subsequent tying operation.

Other objects and advantages of the present invention will become more apparent hereinafter.

In accordance with the illustrated embodiment of the invention, the apparatus comprises a supporting plate and means to carry a supply of the wire reinforced paper tape. Pivotally mounted on the supporting plate forwardly of the tape carrying means are anvil means having an upper surface defining an anvil on which the tape can be cut.

The upper surface of the anvil means also has a tying station thereon comprising a depression into which a bag neck may be pressed to effect a partial wrapping of the tape about the neck. The apparatus also comprises cutting means pivotally mounted on the supporting plate and link means connecting the cutting means to the anvil means. With this construction, downward pressure exerted by an operator on the anvil means at the tying station rotates the anvil means forwardly and actuates the cutting means, so that the latter will strike the anvil at the forward limit of rotation of the anvil means, thereby to sever the tape partially wrapped about the bag neck and simultaneously draw an additional length of tape forwardly from the tape carrying means.

For a more detailed description of the invention, reference is made to the accompanying drawings, wherein:

FIG. 1 is a perspective view of the apparatus of the present invention, showing a produce-filled plastic bag (in phantom) in position to be closed at the tying station;

FIG. 2 is a front elevational view of the apparatus of the present invention;

FIG. 3 is a side elevational view of the apparatus of the present invention at the start of a tying operation and prior to the application of downward pressure at the tying station;

FIG. 4 is another side elevational view taken after the application of downward pressure at the tying station; and

FIG. 5 is an enlarged perspective view of a length of the wire reinforced paper tape utilized by the apparatus of the present invention.

Referring to the drawings, the wire reinforced paper tape **10**, which the apparatus of the present invention is designed to utilize is shown in FIG. 5. The tape **10** is formed of a double layer of relatively stiff paper **12**, and has a soft wire core **14**, centrally located therein and passing therethrough. The tape, hence, is readily bendable, although it is relatively stiff longitudinally.

The apparatus of the present invention is shown in FIGS. 1–4, its operation being more clearly indicated in FIGS. 3 and 4. The apparatus, which will be generally referred to by the numeral **20**, includes a supporting plate **22** having an angularly disposed base **24**, whereby the apparatus may be mounted on a bench or table as desired. Bolt holes **26** are provided in the base **24** for this purpose, as shown. The supporting plate **22** is tilted at an angle of about 30° with respect to the vertical, so that a produce-filled bag B can hang freely during the tying operation.

Attached to the rear portion of the supporting plate **22** by means of a bolt **30**, washer **32**, spring **33**, washer **34** and wing nut **36** is a rotatable reel or spool **40** for carrying a supply of the tape **10**. Mounted forwardly of the spool **40** is a roller **42**, which is also attached to the supporting plate **22** by means of a bolt **44** and nut **46** as shown. The tape **10** is designed to come off the spool **40** and pass underneath the roller **42**, as shown.

Positioned forwardly of the roller **42** and also attached to the supporting plate **22** is an L-shaped guide **47**. This is clearly shown in FIG. 1. The guide **47** is attached to the supporting plate **22** by a bolt **48** and nut **50**, and also by two screws **52** received into the plate **22**. After the tape **10** passes underneath the roller **42**, it is supported on the guide **47** as it travels along the supporting plate **22** on its way to the tying station.

Pivotally mounted on the supporting plate **22** above

the guide 47 is a knurled roller 56 for exerting back pressure on the tape 10. The knurled roller 56 is mounted on an arm 58 by means of a bolt 60 and nut 62, as shown. The arm 58 is itself pivotally attached to the supporting plate 22 by a screw 64. A wire spring 66 anchored by means of a screw 68 passes around the bolt 64 and exerts downward pressure on the arm 58, as shown in FIGS. 3 and 4. By this means the knurled roller 56 exerts downward pressure on the tape 10 as the latter is carried forward on the L-shaped guide 47.

Attached to the supporting plate 22 at its forwardmost end 23 is an anvil arm 70. The anvil arm 70 is pivotally attached to an offset bracket 72 by means of a bolt 74, washer 76 and nut 78, as shown. The bracket 72 is itself attached to the supporting plate 22 by means of two screws 79. Since the bracket 72 is laterally offset from the plane of the supporting plate 22, the anvil arm 70 is likewise laterally offset and, hence adapted to support the tape 10 as it comes off the spool 40.

Also pivotally attached to the supporting plate 22 near its forward end 23, but at a position located above the bracket 72, is a knife which will be generally referred to by the numeral 80. The knife 80 includes an arm 82, which is pivotally attached to the supporting plate 22 by means of bolt 84, lock washer 86 and nut 88, as shown. The knife 80 also includes a cutting element of blade 90, which has a sharpened edge 92. The blade 90 is attached to the arm 82 by means of a bolt 94, as shown.

Attached to the arm 82 of the knife 80 above its pivot point is a link 96, which is also attached to the anvil arm 70. The link 96 is attached to the arm 82 by a bolt 98 and nut 99. It is attached to the anvil arm 70 by a bolt 100 and nut 102. The link 96 is so arranged that the knife 80 is caused to pivot forwardly around the bolt 84 when the anvil arm 70 is rotated forwardly about the bolt 74. The length of the arm 82 is such that the blade 90 strikes the upper surface 106 of the anvil arm 70 after the knife 80 has completed its forward motion, as will be more fully described hereinbelow.

The upper surface 106 of the anvil arm 70 is arranged to serve both as an anvil for the knife blade 90 and as a tying station at which partial wrapping of the tape 10 about the neck of the bag B may be accomplished. Accordingly, the upper surface 106 is provided with an anvil 108, on which the tape 10 is cut. Forwardly of the anvil 108 is a recess 110 into which the knife blade 90 passes to complete the cut. Forwardly of the recess 110 is a depression 112 formed in the upper surface 106, which depression serves as a tying station. Affixed to the upper surface 106 rearwardly of the anvil 108 is a strap guide 114, under which the tape 10 passes after it leaves the L-shaped guide 47. The guide 114 is attached to the anvil arm 70 by a bolt 116 and nut 118.

The anvil arm 70 is also attached to the supporting plate 22 above its pivot point by a coiled spring 120, as shown in FIGS. 3 and 4. The spring 120 is attached to the anvil arm 70 and the supporting plate 22 by screws 122.

A resilient bumper 126 it attached to the forward end 23 of the supporting plate 22 above the offset bracket 72, as clearly shown in FIG. 1. The bumper 126 may be made of rubber, neoprene or any other suitable material. The bumper 126 is attached to the supporting plate 22 by means of a retaining plate 128, which is itself attached by means of bolts 130, washers 132 and nuts 134.

The operation of the apparatus of the present invention is shown in FIGS. 3 and 4. To start the operation, a length of the tape 10 is unwound from the spool 40 so that it passes underneath the roller 42, along the L-shaped guide 47 and underneath the knurled roller 56. The tape 10 is extended under the guide 114 and rests on the upper surface 106 of the anvil arm 70, as shown in FIG. 3.

A bag B to be tied with the tape 10 is then placed

with its twisted neck adjacent the tying station at the depression 112. Downward pressure exerted by the operator on the twisted neck of the bag B in the depression 112 causes the end of the tape 10 to rotate upwardly, thereby to effect a partial wrapping of the tape about the neck. The downward pressure also causes the anvil arm 70 to rotate about the bolt 74. This causes the link 96 to rotate the knife 80 forwardly about the bolt 84 until the cutting edge 92 of the blade 90 strikes the tape on the anvil 108 and passes into the recess 110, thus severing the tape 10 cleanly. The forward rotational motion of the anvil arm 70 also draws an additional length of tape from the spool 40, the position of the apparatus now being as shown in FIG. 4. The length of tape severed can then be completely twisted about the neck of the bag B by the operator, thereby to complete the tying operation.

When the bag is removed from the depression 112, the coiled spring 120 returns the anvil arm 70 and the knife 80 to their original position. The knurled roller 56, exerting downward pressure on the tape 10 at the guide 47, together with the strap guide 114, prevent any backing up of the tape, so that the tape drawn forwardly by the action of the apparatus extends across the upper surface 106 of the anvil arm 70, as shown in FIG. 3. This completes the cycle, causing the apparatus to be ready for a second tying operation.

In the foregoing description, the invention has been described with reference to a certain particular preferred embodiment, although it is to be understood that the specific details shown are merely illustrative and that the invention may be carried out in other ways without departing from the true spirit and scope of the following appended claims.

I claim:

1. Apparatus for placing a prescribed length of wire reinforced paper tape around the neck of a polyethylene bag or the like, comprising:
- a supporting plate;
- spool means mounted on said plate for carrying a supply of said tape;
- anvil means pivotally mounted on said plate forwardly of said spool means and over which anvil means said tape is adapted to be fed from said spool means,
  - said anvil means having an upper surface defining an anvil on which said tape can be cut,
  - said upper surface having a station thereon comprising a depression into which a bag neck may be pressed to effect a partial placement of said tape about said neck,
  - downward pressure at said station causing rotation of said anvil means forwardly to draw an additional length of tape from said spool means;
- an arm pivotally attached to said supporting plate;
- a knife blade attached to said arm for cutting said tape; and
- a single elongated member attached at one end to said arm and at the other end to said anvil means to actuate said arm and cause said knife blade to strike said anvil at the forward limit of rotation of said anvil means, thereby to sever the length of tape partially placed about said bag neck.

2. Apparatus as in claim 1, further comprising:
- spring means connecting said anvil means to said supporting plate for returning said anvil means to its initial position upon release of said downward pressure.

3. Apparatus as in claim 1 in which said anvil means is laterally offset from said supporting plate to support said tape fed from said spool means.

4. Apparatus as in claim 1, further comprising:
- guide means mounted on said supporting plate between said spool means and said anvil means for guiding said tape fed from said spool means.

5. Apparatus as in claim 1, further comprising:

a guide mounted on said upper surface of said anvil means rearwardly of said anvil for retaining said tape adjacent said upper surface and in position to be cut on said anvil by said knife blade.

References Cited

UNITED STATES PATENTS

2,466,715	4/1949	Krueger	83—649 X
2,970,416	2/1961	Krueger et al.	53—198
3,039,249	6/1962	Bouchard	53—198
3,141,277	7/1964	Johnston	53—198
3,221,468	12/1965	Casey	53—135 X

FOREIGN PATENTS

831,481	3/1960	Great Britain.

WILLIAM W. DYER, JR., *Primary Examiner.*

N. ABRAMS, *Assistant Examiner.*