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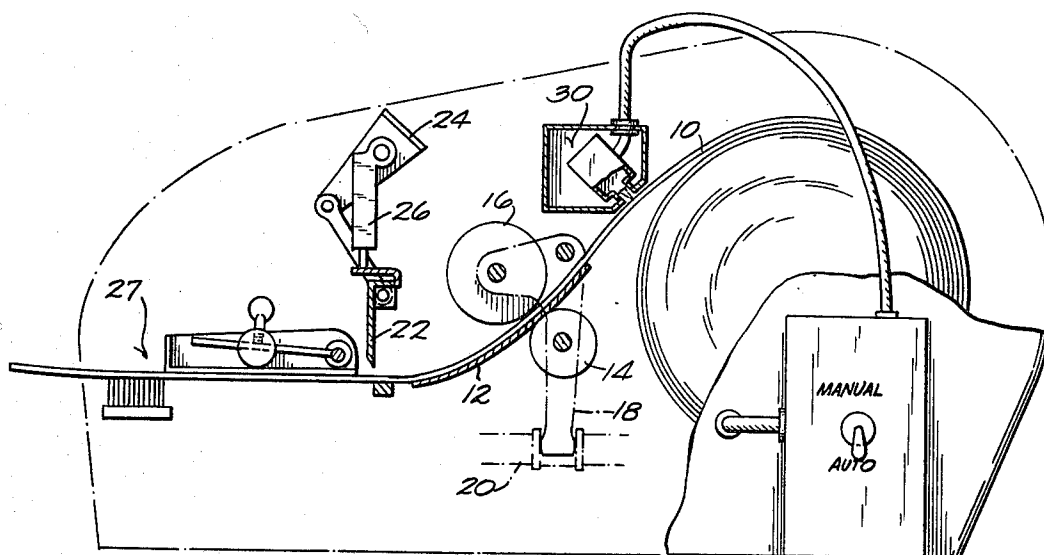
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 2,705,466 4/1955 Sargrove et al. 83/362X
 2,776,833 1/1957 Lakso.
 2,810,437 10/1957 Hoitt.
 2,939,354 6/1960 King 83/210X

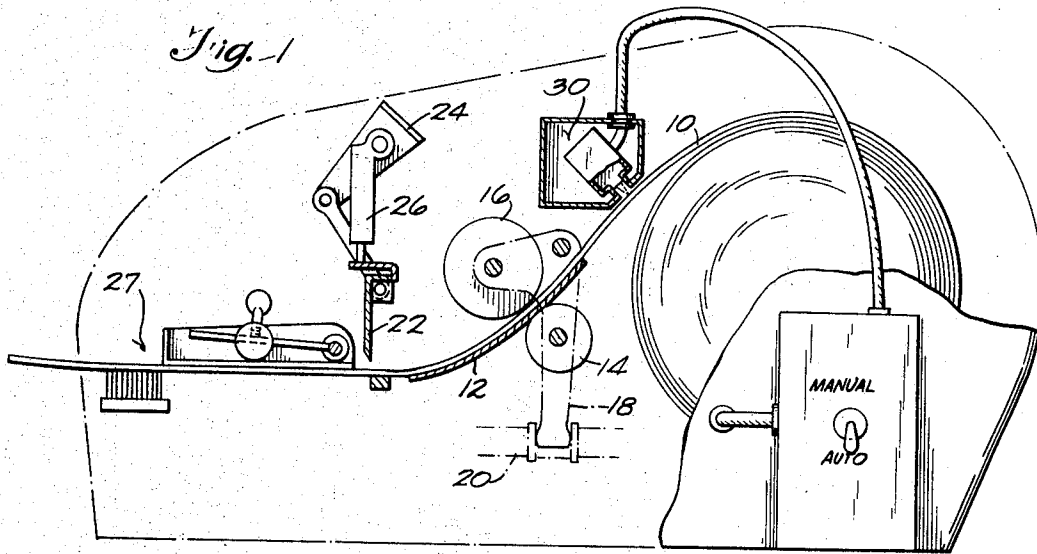
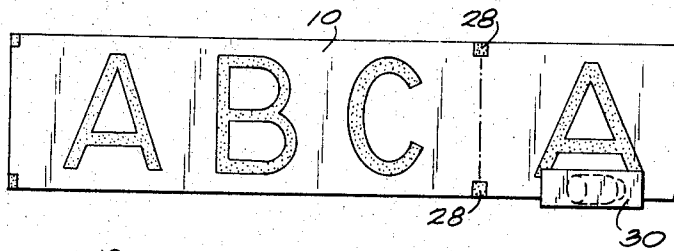
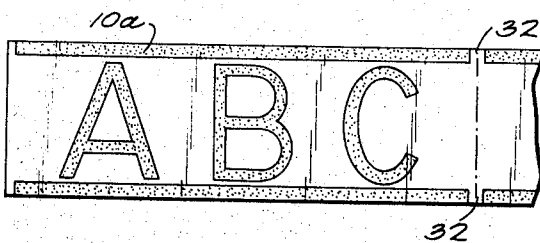
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[54] **AUTOMATIC DISPENSERS OF PRINTED
 GUMMED TAPE**
1 Claim, 3 Drawing Figs.

[52] U.S. Cl. **83/210,**
 83/261, 83/365
 [51] Int. Cl. **B26d 5/22,**
 B26d 5/32
 [50] Field of Search **83/210,**
 209, 365, 261, 203, 204, 205, 371, 362, 363

ABSTRACT: An automatic dispenser of printed gummed tape which includes a signal on the tape out of the area containing printed indicia. This signal motivates a control device which in turn stops the feeding of the tape and energizes a cutting device to cut the tape between each area of repetitious printed indicia with accurate indexing. No reliance is placed on measuring the length of section to be cut off by the rotation of tape feeding rolls.





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AUTOMATIC DISPENSERS OF PRINTED GUMMED TAPE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to automatic dispensers of printed gum tape. Such dispensers measure selected and variable lengths of tape and cut and condition such lengths for adhesion to packages.

2. Description of the Prior Art

In the following U.S. Patents there are shown dispensers which operate both manually and automatically to measure, moisten and cut off selectable lengths of tape:

Nos. 2,333,108, 2,810,437, 2,776,833, and 3,076,586. In all of these patents the length of the tape to be severed is measured by the rotation of the feed rolls. The rotational travel of the feed rolls moves an arm between a start position and a stop position determined by an adjustably positioned micro switch. The trouble with this is that at each starting and stopping of the tape by moving the feed rolls into and out of engagement with it permits slippage between the tape and such rolls. Thus the indexing becomes inaccurate with the result that the severing will no longer take place in the space on the tape between each area of repetitious printed indicia. Thus these machines will not deliver tape in selected lengths with only complete printed indicia areas.

SUMMARY OF THE INVENTION

The essence of this invention is to provide a device which may be added to existing dispensers or incorporated in new dispensers during manufacture which will take away from the feed rolls the function of measuring the selected length of severed tape. The device of this invention utilizes signals on and spaced at predetermined distances on the tape. These signals are scanned by a photoelectric scanner positioned on the dispenser between the supply roll and the cutter. As the signal reaches the scanner an electric control circuit starts the stopping and cutting cycle.

A feature of this invention is to put the signal in the unprinted area between successive areas of printed indicia. This eliminates the possibility of unwanted actuation of the scanner by printed matter. Because of the structural design of the dispenser the scanner cannot be positioned at the cutter. Hence, this invention also includes in the scanner a time delay correlated with the speed of travel of the tape, to permit the scanner to be placed at a convenient place on the dispenser in advance of the cutter. Thus the cutting will take place when the signal on the tape reaches the cutter. Any slippage between tape and feed rolls for this short travel distance is minimal and not cumulative and close tolerances will be maintained for each successive cut.

It is also practical to preset the customary length measuring dial, which is operated by the tape-feeding rolls, say 2 to 3 inches shorter than the final desired length for tape as cut. When the dial reaches this preset length it will energize the electric control circuit so that the scanner will be effective as the signal reaches the scanner. The advantage of this is that no clear track is required along an edge of the tape and printed or coloring material may extend to the edge of tape at least for the major portion of the length of the printed area.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a schematic view in side elevation of an automatic dispenser of printed gummed tape embodying the present invention and showing the placement of the photoelectric scanner with respect to the feed rolls and cutter;

FIG. 2 is a plan view of a section of gummed tape showing one printed area in full and the beginning only of a succeeding identical and repetitious printed area and an opaque spot in the nonprinted area between the printed areas to provide a signal for the photoelectric scanner; and

FIG. 3 is a view similar to FIG. 2 with the exception that the signal for the photoelectric scanner is transparent or consists of an opening through the gummed tape.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings by reference numerals, the automatic dispenser of printed gummed tape is of standard construction. A full and complete description of its structural elements and their functional relationship as well as its operation is contained in U.S. Pat. No. 2,776,833 issued to E. E. Lasko, Jan. 8, 1957 for Automatic Power-Driven Tape-Serving Machine and U.S. Pat. No. 2,810,437 issued to R. W. Hoitt, Oct. 22, 1957 for Tape Dispenser and Cutter Mechanism Therefor.

The following are the essential elements of this dispenser. A roll 10 of gummed tape removably mounted in the housing of the dispenser and guided by a plate 12 so as to pass between a pair of rotary feed rolls 14 and 16. The feed roll 14 is fixed and is continuously driven by an electric motor with a speed reducer. The starting of the tape is accomplished by removing the upper feed roll 16 toward the feed roll 14 to engage the tape between them. The stopping is done by moving roll 16 away from the fixed roll 14. Such movement of the movable feed roller 16 is accomplished by mounting it on a pivoted bellcrank 18. This bellcrank is shifted by an actuator rod 20 electrically and mechanically controlled by a solenoid through a control system of well-known design. The actuator rod 20 also operates the cutter mechanism through a linkage (not shown) with a lost motion connection. The cutter mechanism includes a cutting blade 22 which is reciprocally operated by a carrier yoke 24 and guided by a slide collar 26. As the tape is moved out it slides through a moistener unit indicated generally at 27 to condition it for adhesion to packages.

The standard dispenser thus described is well known to those skilled in this art. It also includes a feed length selector means (not shown) operable over a wide range of length selections. This selector means is associated with the upper feed roll 16 which is the primary measuring member. Thus if there is any slippage between the tape 10 and roll 16 because of starting and stopping, the cutting blade 22 will not sever the tape at the right place. The errors are accumulative and the severing will soon take place at the printed areas. In normal operation of the standard dispenser the automatic cycle is started by energizing the electrical control circuit. The upper feed roll 16 moves toward the lower feed roll 14 to engage the tape and start advancing it. The upper feed roll moves an arm in the length selector means until it opens a microswitch. This deenergizes the electrical control circuit and the actuator rod 20 moves to the left to first disengage the driving pressure of the feed rolls and then to move the cutting blade 22 down to sever the tape. The severing action triggers the reset mechanism to initial starting position.

By this invention the inaccuracies of severing the tape are eliminated. To accomplish this the tape 10 as shown in FIG. 2 is provided with opaque spots 28 on or near an edge of the tape in the unprinted area between each repetitive section of printed matter. For sake of uniformity in appearance and to permit greater flexibility in the positioning of the scanner, dual spots may be placed on opposite edges. A photoelectric scanner of well-known design indicated generally at 30 is mounted on the housing for the dispenser at a position between the roll tape 10 and the feed rolls 14. The beam from this photoelectric scanner is either reflected from or cut by the spot 28 to start the stopping and cutting cycle of the dispenser. The photoelectric scanner includes a time delay so that the electrical energization will not take place until the spot has travelled from the scanning point to the severing point. During this short distance of travel there is no change in the driving relationship between the rollers 14 and 16 and slippage which occurs for this short duration of travel is minimal and noncumulative and will not be of any observable amount. Hence, when the spot or signal reaches the cutting blade 22 the standard operating mechanism of the dispenser will disengage roll 16 and drive the cutting blade downwardly to sever the tape in substantial alignment with the signal spots. When the dispenser is used with this photoelectric control the selection on the standard automatic length control is placed at a greater

distance than the distance between successive spots or signals. Thus, the photoelectric circuit takes over the control of the cutting at the spots without any interruption from the standard length selector mechanism.

It is within the contemplation of this invention that the signal may also be in the form of an opening or other transparent area as shown at 32 in FIG. 3. With such transparent signal the beam operates when a light source reaches the photoelectric scanner as the transparent signal passes between such light source and the scanner. With the opaque signal such as shown at 28 in FIG. 2, the scanner is of the reflector type and the signal is printed from the ink or other material which will reflect the light from the scanner back to the receiving part of the scanner to signal the start of the operation.

It is also within the contemplation of this invention to keep the electrical circuit of the photoelectric scanner 30 open until say 2 or 3 inches short of the length of the tape to be severed. The purpose of this is to eliminate the necessity of a clear track along an edge of the tape and permit the printed indicia or color to extend to both edges of the tape for the major portion of the length of the tape to be severed. This is accomplished by using the customary feed length selector means or dial to close the electrical circuit from the source of power to the photoelectric scanner just 2 or 3 inches short of the desired length. This is done by presetting the selector means 2 or 3 inches short of the desired length so that its arm operates a switch or relay to (a) open the standard circuit to the cut off solenoid, (b) maintain the feed drive circuit, and (c) close the circuit to the photoelectric scanner. The scanner then takes over the control and within the time delay following the scanning of the signal will open the feed drive circuit and close the severing circuit. The elimination of the clear track gives greater flexibility of design for the coloring and printed indicia

on the tape. This arrangement requires the starting of the feed of the tape with the leading edge and preceding signal at the cutting station.

Upon completion of a severing cycle the feed length selector means returns to initial position and the device is ready for the next feeding and cutting cycle.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various modifications and changes may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

We claim:

1. An automatic dispenser of printed gummed tape comprising:

a roll of gummed tape having spaced areas of repetitious printed matter and signals printed on said tape between said areas;

feed means for feeding and stopping the feeding of said tape to and through a cutting station, said feed means including an actuator rod;

length selector means associated with said feed means and presettable to desired lengths;

a cutting station having cutting mechanism operated by said actuator rod for severing said tape when feeding is stopped;

a control device triggered by the passing of a signal on said tape to effectuate the stopping of the feed means and the operation of said cutting mechanism by the actuation of said actuator rod; and

means operated by said selector means to energize said control device after an area of printed matter has passed the trigger area of said control device.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,559,519 Dated February 2, 1971

Inventor(s) Walter A. Wesphal, Mequon; and George N. Baum, Milwaukee

It is certified that error appears in the above-identified patent
and that said Letters Patent are hereby corrected as shown below:

Assignee "Rexford Paper Company" should read

-- Rexford Paper Company, Inc. --.

Signed and sealed this 1st day of June 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR
Commissioner of Patents