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E. E. SHARPE
DISPENSER FOR MEASURED LENGTHS
OF PRESSURE SENSITIVE TAPE

2,454,844

2 Sheets-Sheet 1

Fig. 1.

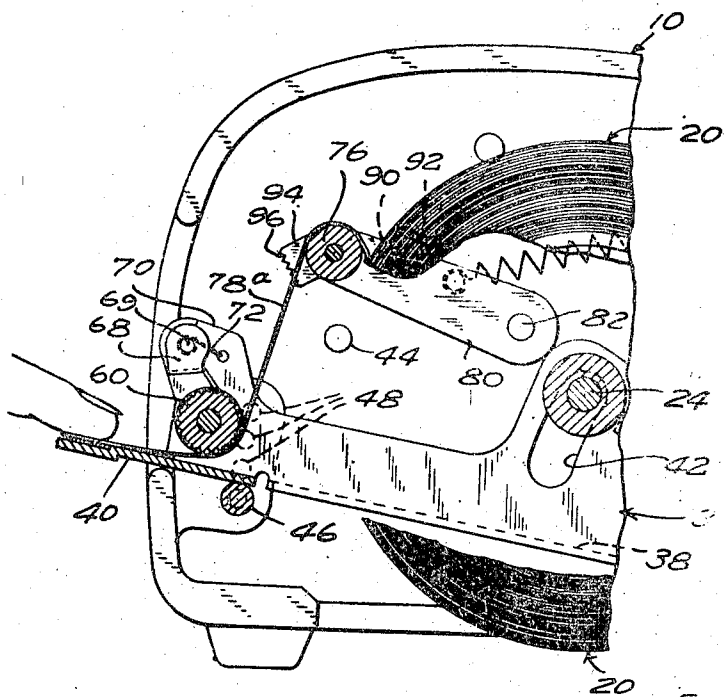
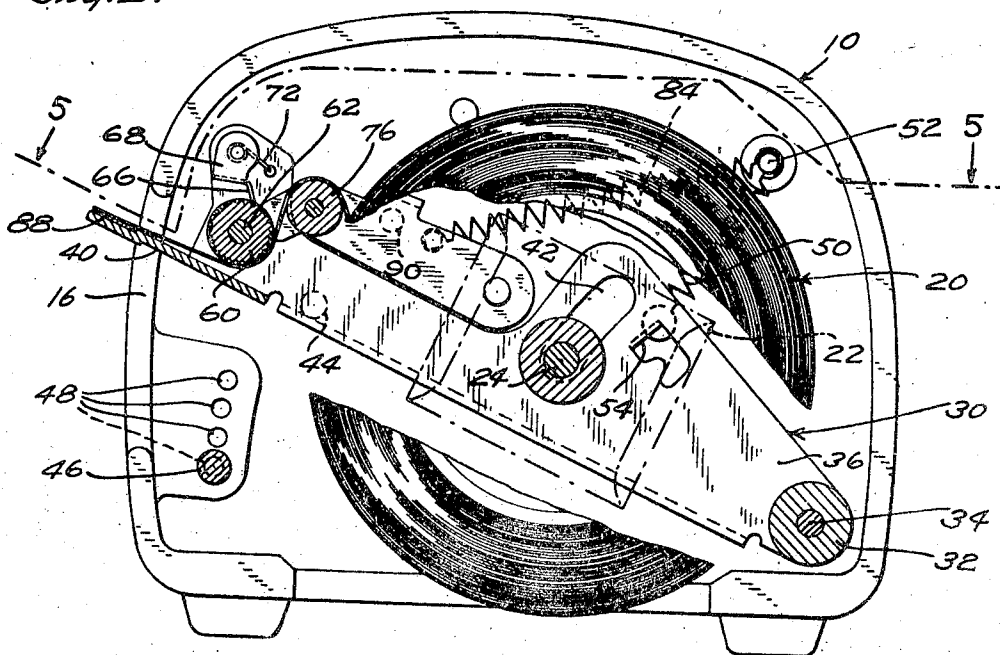


Fig. 2.

INVENTOR
EVERETT E. SHARPE

BY

Moses, Nolta, Cress & Berry
ATTORNEYS

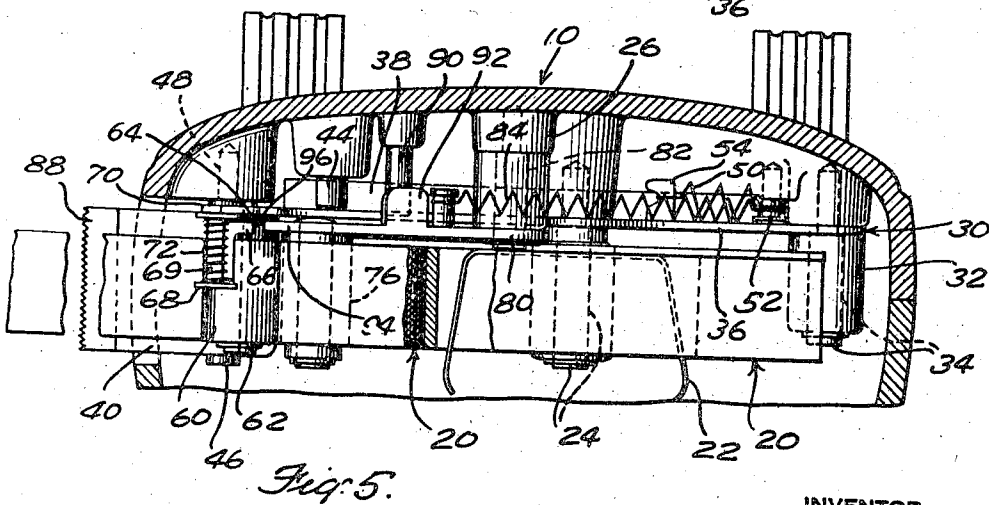
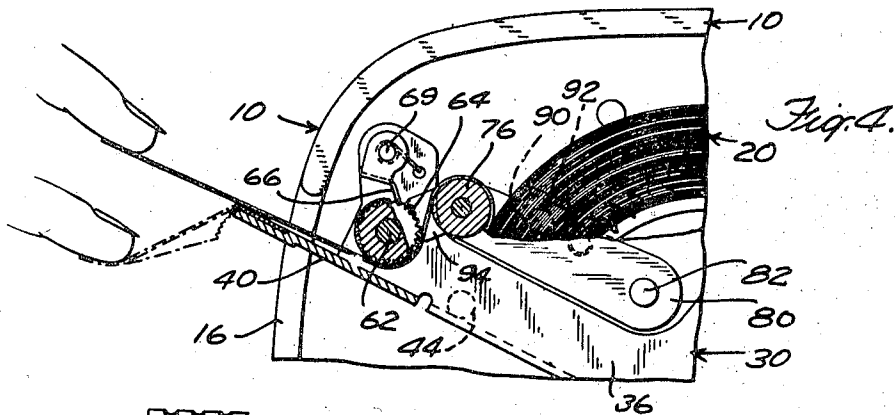
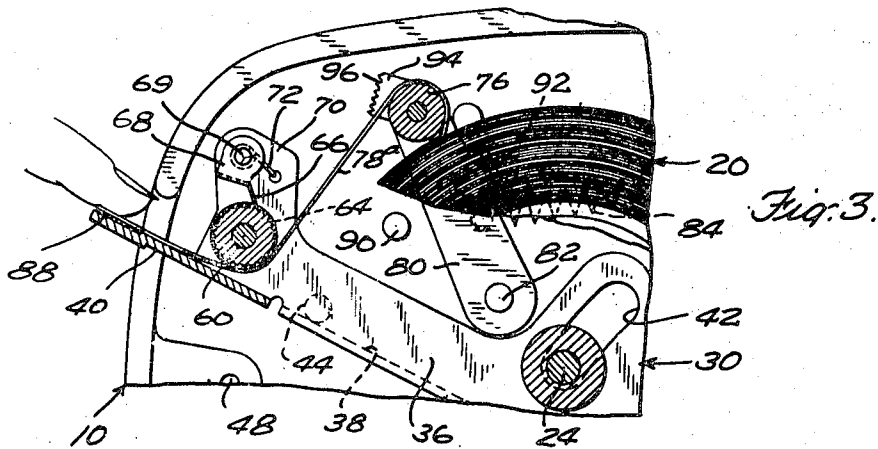
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BY

Moses, Nolte, Crews & Berry
ATTORNEYS

UNITED STATES PATENT OFFICE

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DISPENSER FOR MEASURED LENGTHS OF
PRESSURE SENSITIVE TAPE

Everett E. Sharpe, Shelton, N. Y., assignor to
Better Packages Incorporated, a corporation of
New York

Application September 7, 1946, Serial No. 695,422

6 Claims. (Cl. 271—2.4)

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This invention relates to dispensers for adhesive tape and particularly to dispensers for normally tacky or pressure sensitive adhesive tape which will adhere to whatever it is applied to without preliminary moistening, heating or other treatment. Tape of this character is commonly supplied in rolls, and a characteristic of such rolls of tape is that each layer adheres to the layer beneath it so that some force is required to unwind the tape from the roll.

The present invention is particularly applicable to dispensers having a movable member such as a movable adhesion roller to which the tape adheres, which may be moved so as to unwind tape from the roll of tape by movement of a manually operated member, the length of tape withdrawn then being pulled out of the machine by the operator and cut off. One type of machine of this character is shown in the application of Theodore H. Krueger, Serial Number 683,866, filed July 16, 1946, and the example of the present invention illustrated in this application is particularly designed as an improvement on the dispenser of said application. While the dispenser of said application will dispense measured lengths of tape, difficulty is sometimes experienced where the tape used has relatively low adhesive properties so that it can be pulled from the roll with the application of limited force or where the tape does not unwind evenly from the roll but unwinds in jerky fashion. When the machine of said Krueger application is used with such tapes, more tape is sometimes pulled out by the operator than had been previously measured off by the movement of the movable adhesion roller. This is so because the resistance of unwinding the tape from the roll is relied upon to limit the length of tape dispensed to that which had been previously unwound from the roll by the measured movement of the adhesion roller. If the tape unwinds too easily from the supply roll, however, the resistance to unwinding may not prevent the operator from pulling out more than the intended length. In accordance with the present invention, means are provided for positively limiting the amount of tape which can be dispensed to the length which had been measured off by the previous movement of the adhesion roller. Thus the length of tape which can be dispensed at one operation of the machine is limited with certainty to the measured length, and possible overfeed and wastage are prevented.

In the accompanying drawings which show one form of the invention as applied to a machine of

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the character shown in said Krueger application, Serial Number 683,866:

Fig. 1 is a longitudinal vertical section of the dispenser with the parts shown in the position which they occupy prior to dispensing a length of tape;

Fig. 2 is a view similar to Fig. 1, parts being broken away and showing the first step of the dispensing operation;

Fig. 3 is a view similar to Fig. 2 showing the second step of the dispensing operation;

Fig. 4 is a view similar to Figs. 1, 2, and 3 showing in full lines the measured piece of tape drawn out and showing in dotted lines the piece of tape being cut off; and

Fig. 5 is a horizontal sectional view of the dispenser taken on line 5—5 of Fig. 1, parts being broken away.

Referring to the drawings in detail:

The dispenser is shown as contained in a casing 10. In the front of the casing is an opening 16 through which the tape is dispensed. Mounted in the casing is a tape roll 20 which may be carried by a spindle or reel 22 which is rotatably mounted on a shaft 24 secured to a boss 26 formed on one side of the casing.

Pivotally mounted in the casing is a table beam 30. This is shown as fixed at its rear end to a bearing sleeve 32 which is pivotally mounted upon a pivot pin 34 fixed in the casing near the lower rear end thereof.

The beam 30 is preferably made of sheet metal and comprises a vertical portion 36 which may be stiffened by a laterally-projecting flange 38 extending throughout the major part of its length. At the forward end of the beam, however, there is a table portion 40 projecting laterally in the opposite direction from the flange 38, this table portion being of a width sufficient to support the maximum width of tape within the capacity of the dispenser. The beam portion 36 is slotted at 42 to receive the pin 24 and permit swinging movement of the beam about its pivot 34. A stop pin 44 is provided in one side of the casing which is engaged by the flange 38 on the beam to limit the upward movement of the beam. Downward movement of the beam is limited by a stop pin 46. Preferably a series of sockets 48 are provided in one side of the casing to receive the stop pin 46 so that the latter may be mounted in any one of a number of positions. Thus the range of movement of the beam is adjustable which permits varying measured lengths of tape to be dispensed, as will be described below.

A spring 50 is provided connected to a fixed stop

32 on the casing and an ear 54 on the beam for biasing the beam in an upward direction so that normally it is held in the fully raised position shown in Fig. 1.

Mounted on the beam above and slightly spaced from the table 40 is an adhesion roller 60. The adhesion roller is pivoted on the bearing pin 62 fixed in the beam and is preferably provided with a ratchet portion 64 adapted to be engaged by a pawl 66 on a tilting bracket 68 pivoted on a pin 69 mounted on an ear 70 projecting upwardly from the beam. A spring 72 holds the pawl in engagement with the ratchet teeth. The adhesion roller 60 is thus free to turn in a clockwise direction (Fig. 1) except when such motion is prevented as hereinafter explained, but cannot turn in the opposite direction. A guide roller 76 is provided for guiding the tape 78 from the roll 20 to the adhesion roller 60, the guide roller being pivoted upon a swinging arm 80 which is pivoted at its rear end by a pivot 82 to the casing 10. A spring 84 connected to the fixed support 52 on the casing and at its other end to the arm 80 is provided for biasing the arm 80 in a clockwise direction so as to at all times urge it to move in a direction tending to lift the guide roller 76 away from the adhesion roller 60 except when it is constrained by the tension of the tape itself. The downward movement of the arm 80 is limited by means of a stop pin 90 mounted in the casing and engaged by an ear 92 on the arm.

The construction thus far described is substantially that of the dispenser of Krueger application, Serial Number 683,866. The novel feature of the present invention is the provision of means for positively limiting the length of tape which may be dispensed to that drawn off the roll of tape by movement of the beam 30 and adhesion roller 60. In the construction shown, this is accomplished by providing means for positively locking the adhesion roller against rotation when the measured length of tape has been dispensed. For this purpose, the arm 80 is provided with an extension lug 94 having teeth 96 which mesh with the teeth of ratchet 64 when the arm is drawn down into proximity to the adhesion roller to the position shown in Figs. 1 and 4.

In operation, the end of the tape is drawn from the roll 20 and threaded over the guide roller 76 and under the adhesion roller 60 with its end lying on top of the table 40 with the adhesive side of the tape facing upwardly away from the table. The position of the machine prior to operation is as shown in Fig. 1. The operator now places his finger upon the upwardly exposed adhesive end of the tape over the table 40 and pushes downwardly on the table. This swings the beam to the downward position shown in Fig. 2. As the tape passing under the adhesion roller 60 adheres to the surface thereof and as the adhesion roller cannot rotate in a counterclockwise direction, the downward movement of the adhesion roller will exert a pull on the end of the tape which will unwind the tape from the roll 20. The ear 92 on the arm 80 carrying the guide roller 76, however, engages the stop pin 90 in the side of the casing so that this arm and the guide roller 76 are held in the position shown in Fig. 2 and a length of tape 78a is held in stretched position between the guide roller 76 and the adhesion roller 60. The operator now permits the beam and table 40 to be drawn up by the spring 50 to the position shown in Fig. 3. As the adhesion roller moves up, the guide roller 76 also moves up under the influence of spring 84, thus holding the length of tape 78a taut as shown

in Fig. 3. The operator then pulls out the free end of the tape as shown in Fig. 4. In performing this operation he does not have to exert the force necessary to unwind the tape from the roll 20, but the only pull required is that necessary to overcome the force of the light spring 94 and the slight pull necessary to break the adhesion between the sticky surface of the tape and the adhesion roller 60. This pull is very much less than the pull necessary to withdraw the tape from the roll 20. The force necessary to draw the tape from the roll was provided by the downward push on the table 40 in swinging the beam and table from the upper to the lower position.

As the downward movement of the beam and adhesion roller is limited by the pin 48, the length of tape unwound from the roll is a measured length. The length may be adjusted by placing the pin 48 in one or another of the holes 46.

To insure that no more than this measured length can be withdrawn by the operator when pulling out the tape as shown in Fig. 4, the toothed lug 94 is provided on the arm 80. The withdrawal of the measured length swings down the arm 80 and brings the teeth 96 into engagement with the ratchet teeth on the adhesion roller and prevents further rotation of that roller so that further withdrawal of tape is positively prevented. Thus the adhesive force holding the tape in the roll 20 against withdrawal does not have to be relied upon to limit the amount of tape dispensed and there is no danger of feeding more than the desired amount in cases where a character of tape is used in which such adhesive force is not very strong or is irregular in action.

When feeding the next length of tape, the movement of the beam and table downwardly by the operator carries the adhesion roller 60 downwardly so that the adhesion roller is freed from its engagement with the teeth 96 on the arm 80. This engagement is not re-established until the measured length of tape has been pulled out and the arm drawn downwardly by the tape to the position shown in Fig. 4.

Preferably, the stop pin 90 is so placed that there is a slight clearance between it and the ear 92 on the arm 80 when the teeth 96 are in engagement with the teeth on the adhesion roller 60. Such clearance is shown in Figs 1 and 4 and insures that the teeth can come into proper engagement with the ratchet.

As the tape is pulled out of the machine, it is severed in any suitable manner, preferably by being drawn downwardly across a serrated severing blade 98 as shown in dotted lines in Fig. 4. The spring 50 is made strong enough to hold the beam and table in upward position while the tape is severed.

While I have illustrated and described in detail one preferred embodiment of my invention, I do not wish to be understood as limiting myself to the use of such embodiment, as I realize that changes within the scope of the invention are possible, and I further intend each element or instrumentality recited in any of the following claims to be understood to refer to all equivalent elements or instrumentalities for accomplishing substantially the same result in substantially the same or equivalent manner, it being my purpose to cover my invention broadly in whatever form its principles may be utilized.

Having described my invention, what I claim is:

1. A dispenser for tacky tape of the kind in which the outer layer of the roll adheres to the

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layer under it, comprising a support for a supply roll of tape, a tape feeding member having an adhesion surface of such character that the tape will adhere thereto and cause the tape to be pulled from the roll when the feeding member is moved in a direction to increase the length of tape extending from the adhesion surface to the roll, and movable carrying means for said feeding member permitting movement of the same in a direction to draw tape from the roll and in a direction to decrease the distance from the adhesion surface to the roll so as to provide a loop of tape which may be dispensed by movement with respect to the adhesion surface without unwinding additional tape from the roll, and mechanical devices for positively preventing such unwinding when dispensing the tape in said loop.

2. A tacky tape dispenser comprising a support for a supply roll of tape, an adhesion roller, a movable support for the adhesion roller permitting movement of the adhesion roller in a direction to draw tape from the supply roll and in a reverse direction, means for preventing rotation of the adhesion roller by the tension of the tape being drawn from the supply roll when the adhesion roller is moved in a direction to draw tape, and means for preventing rotation of the adhesion roller in the opposite direction after the length of tape previously drawn from the supply roll has been dispensed.

3. A tacky tape dispenser comprising a support for a supply roll of tape, a movable support for the adhesive roller permitting movement of the adhesion roller in a direction to draw tape from the supply roll and in a reverse direction, means for locking the adhesion roller against rotation in one direction while the adhesion roller is moving in a direction to draw tape from the supply roll, said means permitting free rotation of the adhesion roller in the other direction so that tape may be dispensed freely over the adhesion roller, and means for stopping rotation of said adhesion roller after a measured length of tape has been dispensed.

4. A tacky tape dispenser comprising a support for a supply roll of tape, an adhesion roller, a movable support for the adhesion roller permitting movement of the adhesion roller in a direction to draw tape from the supply roll and in a reverse direction, means for preventing rotation of the adhesion roller by the tension of the tape being drawn from the supply roll when the adhesion roller is moved in a direction to draw tape, a guide roller over which the tape passes between the supply roll and the adhesion roller, a

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movable support for the guide roller, means for biasing said support in a direction to cause the guide roller to take up the slack tape between the supply roll and the adhesion roller when the adhesion roller is moved in the reverse direction, and cooperating means on said movable support and on said adhesion roller for stopping further rotation of said roller when the length of tape between the guide roller and adhesion roller has been dispensed.

5. A tacky tape dispenser comprising a support for a supply roll of tape, a beam movable about a pivot at one side of said tape roll, an adhesion roller carried by said beam at the other side of said tape roll, a tape supporting table carried by said beam adjacent to said adhesion roller, ratchet means permitting rotation of said adhesion roller in one direction only, a pivoted arm carrying a guide roller, means for biasing the said arm to cause the same to move in a direction to move the guide roller away from the adhesion roller, and means on the arm for engaging the adhesion roller and locking it against further rotation when the arm is drawn into juxtaposition to the adhesion roller by the dispensing tape.

6. A tacky tape dispenser comprising a support for a supply roll of tape, an adhesion roller having ratchet teeth thereon, a movable support for the adhesion roller permitting bodily movement of the adhesion roller in a direction to draw tape from the supply roll and in a reverse direction, a pawl carried by the movable support and engaging the ratchet teeth on the adhesion roller for preventing rotation of the adhesion roller by the tension of the tape being drawn from the supply roll when the adhesion roller is moved in a direction to draw tape, a guide roller over which the tape passes between the supply roll and the adhesion roller, a movable support for the guide roller, means for biasing said support in a direction to cause the guide roller to take up the slack tape between the supply roll and the adhesion roller when the adhesion roller is moved in the reverse direction, and teeth carried by said movable support adapted to be brought into engagement with the ratchet teeth on the adhesion roller for preventing rotation of said adhesion roller when the length of tape between the guide roller and adhesion roller has been dispensed.

EVERETT E. SHARPE.

No references cited.