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2,720,262

PRESSURE-SENSITIVE ADHESIVE TAPE DISPENSER

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2 Sheets-Sheet 1

Fig. 1

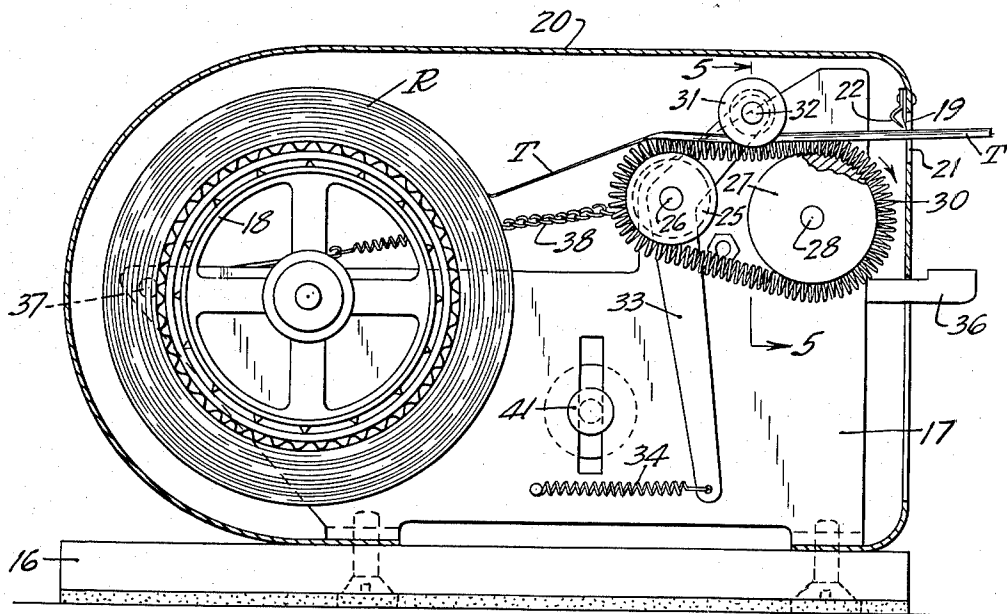
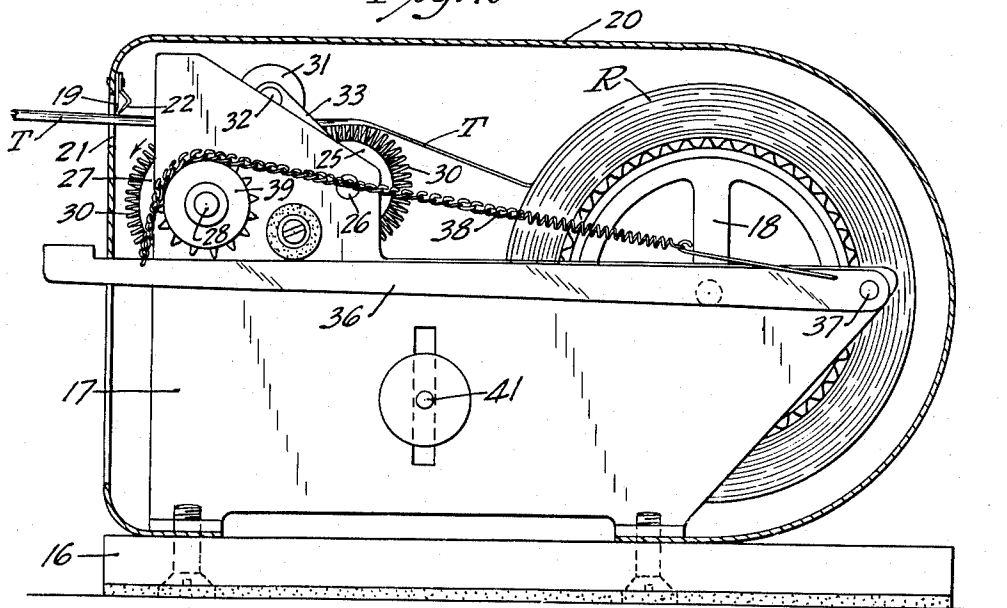


Fig. 2



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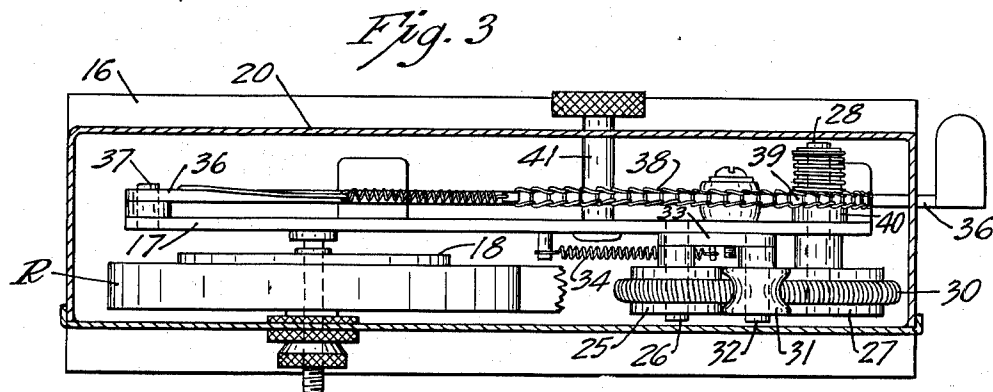
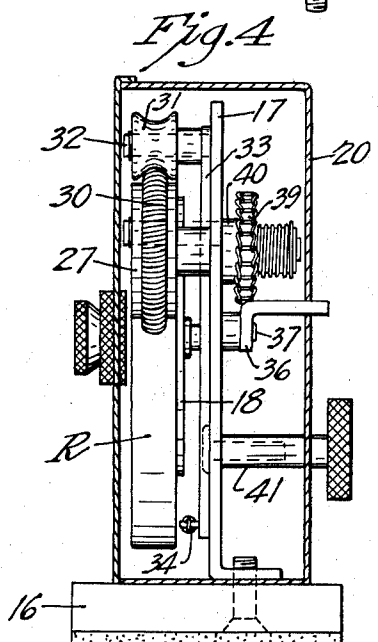
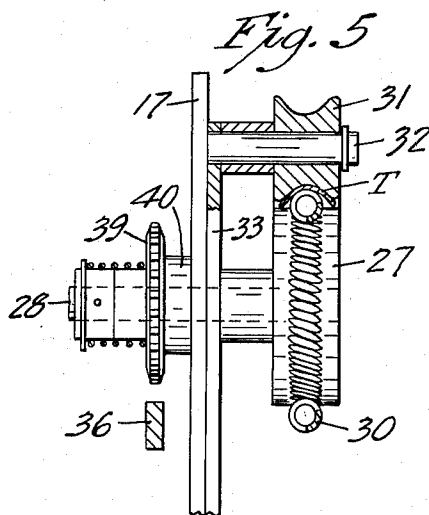
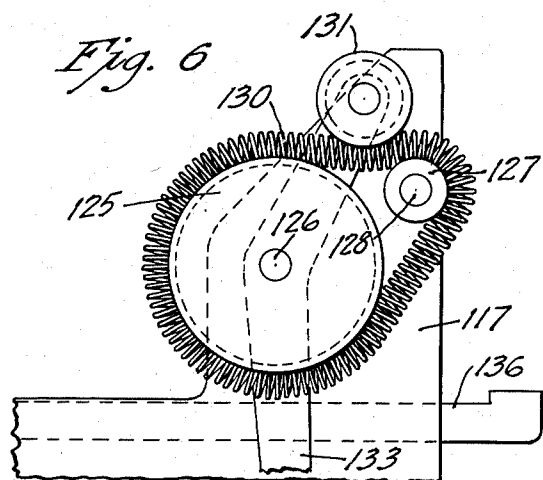
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PRESSURE-SENSITIVE ADHESIVE TAPE DISPENSER

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2 Sheets-Sheet 2



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## PRESSURE-SENSITIVE ADHESIVE TAPE DISPENSER

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1 Claim. (Cl. 164—84.5)

This invention relates to mechanisms for the longitudinal propulsion of normally tacky pressure-sensitive adhesive tape in dispensers and other tape handling devices and machines.

A primary problem in constructing machinery for dispensing, applying and otherwise handling tacky tape, as contrasted with dry tape, is the fact that tacky tape sticks to whatever it touches. Thus when machine parts contact the tacky side of tape in the process of handling it, provision must be made for pulling it loose again.

An objective of the present invention is to provide an improved means for freeing tacky tape from a propelling member to which it has become adhered. Another objective is to provide an improved device for propelling and/or dispensing tape.

The present invention provides a tape propelling mechanism comprising a plurality of pulleys and an endless spiral spring belt mounted on the pulleys. A presser member presses a length of tape extending along a span of the belt into adhesive contact with the segmented perimeter of the belt. As the belt moves, the tape is drawn along with it. The tape remains in adhesive contact with the belt until the belt begins to pass around one of the pulleys, whereupon the segments successively accelerate whereupon the adhesive contact is broken.

Additionally, tape is pressed into adhesive contact with the belt in such a manner that the tape becomes ridged along its length. Such a shaping of the tape stiffens it so that it is thrust and/or held outwardly away from the belt and the pulley when the adhesive contact between the tape and the belt is broken at the turn.

A manually operated dispenser is described and illustrated herein as an illustrative embodiment.

Figures 1 and 2 are left and right side elevations, respectively, of such a dispenser;

Figure 3 is a plan view;

Figure 4 is a front elevation;

Figure 5 is a section taken on the line 5—5 in Figure 1; and

Figure 6 shows an alternative form of pulleys.

To an elongate base 16 is fixed an upright plate or frame 17 which extends longitudinally of the machine.

Towards the rear a drum 18 for holding a supply roll R of normally tacky pressure-sensitive adhesive tape T is rotatably mounted on the frame. At the front a downwardly extending blade having a severing edge 19 is fixed to a casing 20 above a tape discharge port or window 21 that is cut in the front wall of the casing.

A sloping tape guide 22 directs the tape downwardly through the window beneath the knife edge as the tape is thrust forwardly. The guide is made of .005" brass or steel shim stock bent into the form of a flat compression spring, and serves to prevent the tape from remaining in contact with the cutting edge.

Between the severing means 19 and the tape supply holding means 18 is a tape propelling mechanism.

An idler pulley 25 is journaled on a horizontal shaft 26 that is fixed to the frame 17. Forwardly thereof is a

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drive pulley 27 fixed to a horizontal shaft 28 that is journaled in the frame.

An endless spiral spring belt 30 is mounted on the pulleys 25 and 27. The spring from which the belt is formed is circular in cross section. The pulleys and the belt are positioned and aligned so that a length of withdrawn tape extending from the supply R to the knife edge 19 will extend along the perimeter of the upper span of the belt.

By "span" is meant that portion of the belt that extends from the point where it is tangent to the pulley 25 to the point where it is tangent to the pulley 27, both points inclusive.

A presser member in the form of a roller 31 is journaled on a shaft 32 which is fixed on a movable arm 33. The arm, mounted to pivot around the shaft 26, is impelled by a spring 34 to press the roller 31 downwardly against the belt 30 with the tape between the roller and the belt. The periphery of the roller 31 is cut with a groove complementary to the ridged or rounded shape of the perimeter of the belt, and the tape is accordingly pressed by the roller into adhesive contact with the belt for a substantial distance across the width of the tape. This adheres the tape to the belt. It also renders the tape longitudinally ridged along its central portion in conformity to the belt's perimeter (Figure 5).

The presser roller 31 adheres the tape to the belt at a point along the upper straightaway or span of the belt. The segments of the belt are closer together along a span than they are along the portion of the belt that is trained around a pulley.

Thus upon forward movement of the upper span of the belt, with the tape adhered thereto in the manner above described, the segments spread and each one successively accelerates in respect to the succeeding segment and thus tears itself loose from the tape when the belt leaves the straightaway and begins to pass around the pulley 27.

The tape, being ridged as above described, is stiffened by the ridge sufficiently to retain its horizontal position even after the belt coils or segments are torn away, so that continued propulsion of the tape thrusts it through the window 21 under the knife edge 19. After a desired length has thus been thrust out, it may be severed by grasping the end and drawing the tape upwardly against the knife.

The belt is propelled by a downward stroke of an operating lever 36 pivoted at 37. This turns the pulley 27 clockwise (Figure 1) by means of the chain 38, sprocket 39 and one-way clutch 40 (Figure 5). An adjustable stop 41 limits the stroke of the lever and thereby measures or controls the length of tape dispensed.

There are numerous alternatives within the scope of the invention.

For example, the relative size of the pulleys 25 and 27 may vary. Figure 6 shows a propelling mechanism wherein the pulley 127 at which the tape removal takes place, is quite small in relation to the other pulley 125 and to the thickness of the belt 130.

I claim:

A normally tacky pressure-sensitive adhesive tape dispensing mechanism comprising means for holding a supply of tape, a tape severing means spaced from the supply, and a tape propelling mechanism between the severing means and the supply, the said propelling mechanism comprising at least two pulleys, an endless spiral spring belt mounted on the pulleys, the spiral spring of which the belt is formed being circular in cross-section, the pulleys being positioned to permit a length of withdrawn tape extending from the supply to the severing means to extend along the perimeter of a span of the belt, a presser member adjacent the said span with the tape between the presser and the belt to press the tape into adhesive contact with the belt, and means for driving

the belt in a direction to propel the tape outwardly beyond the belt to a point adjacent the severing means, the severing means being in a position to sever the tape after the tape has left the belt.

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