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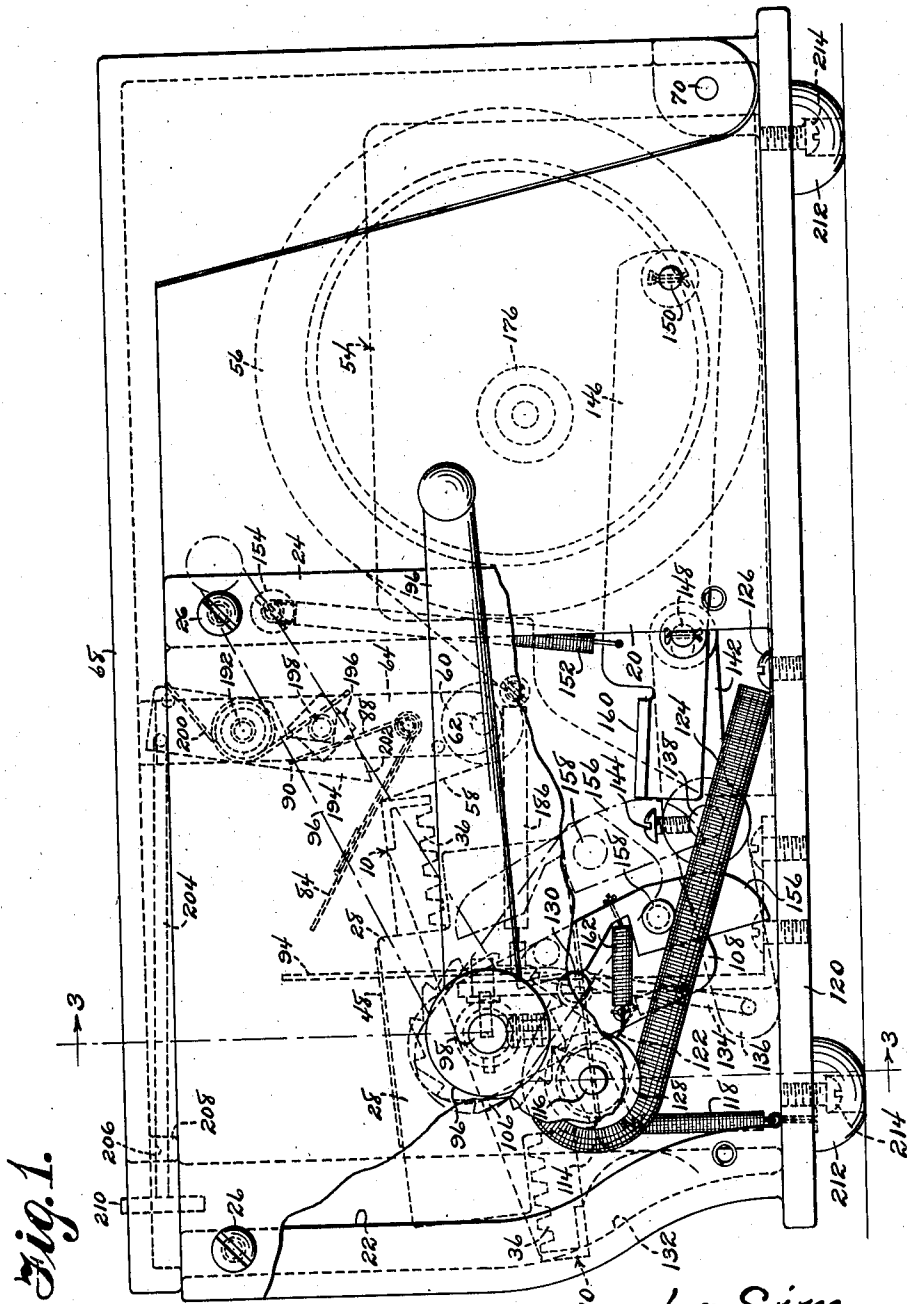
L. SIM

2,260,489

TAPE DISPENSING MACHINE

Filed Dec. 16, 1940

4 Sheets-Sheet 1



LaSim

INVENTOR

BY *Victor J. Evans & Co.*

ATTORNEYS

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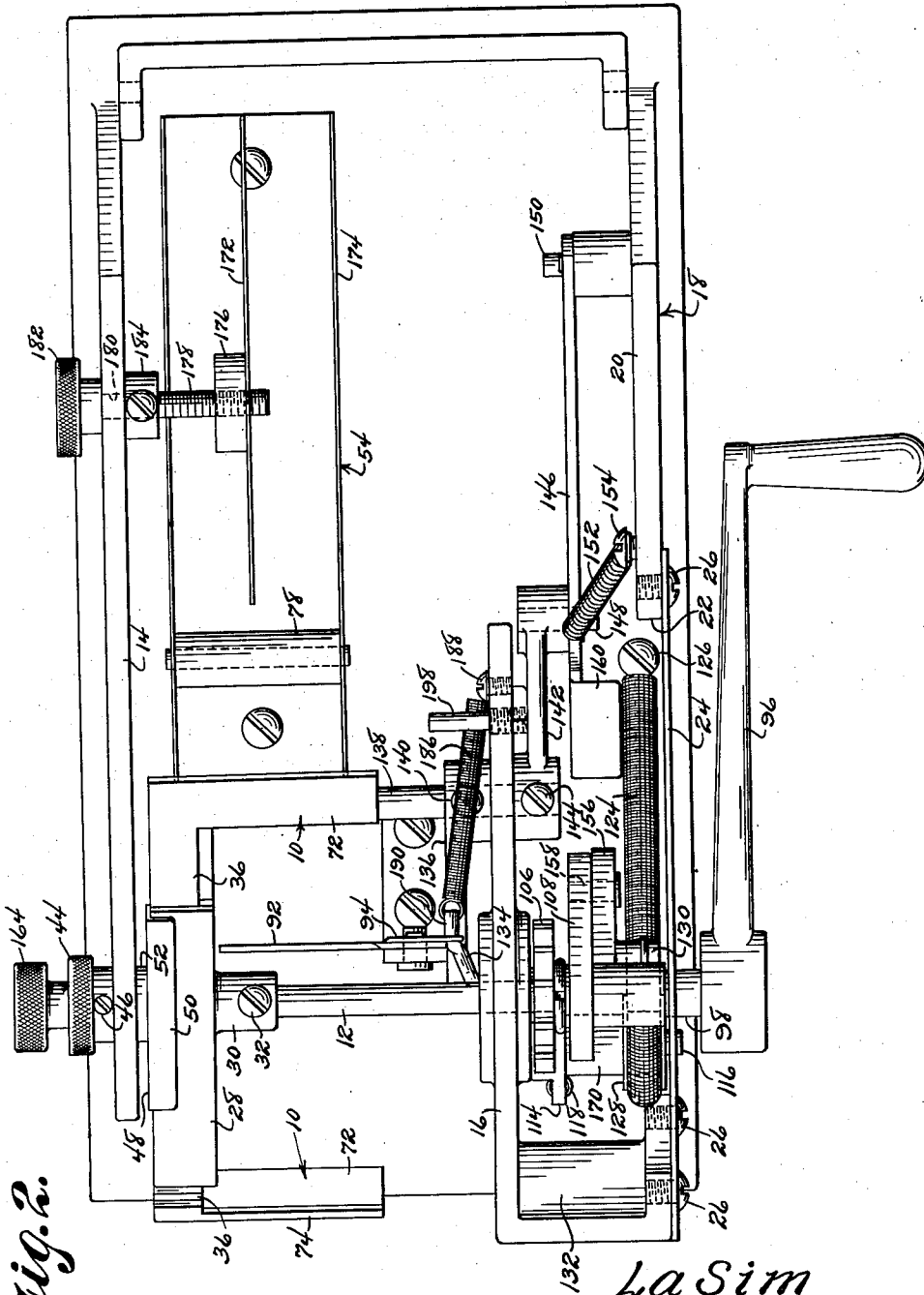


Fig. 2.

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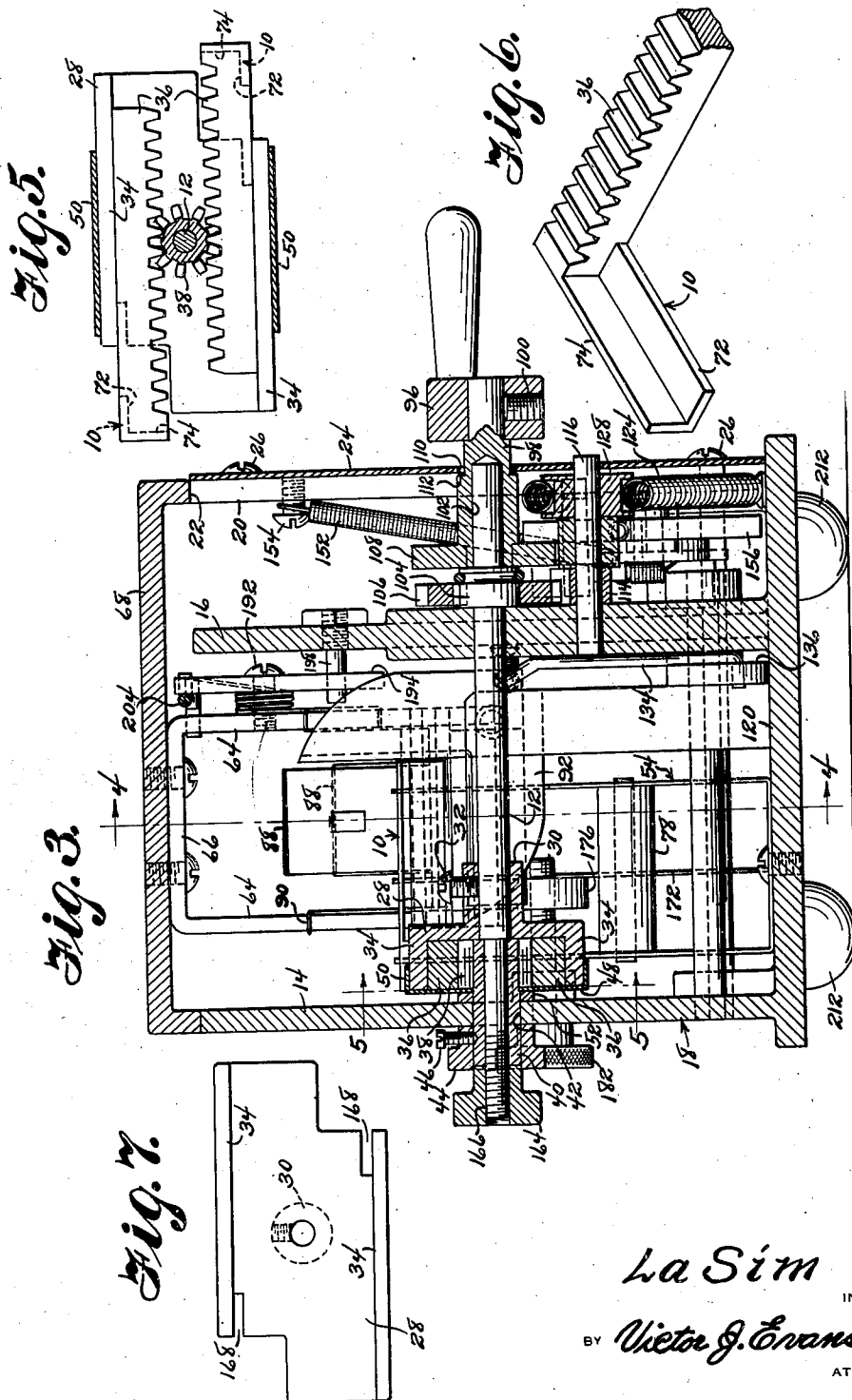
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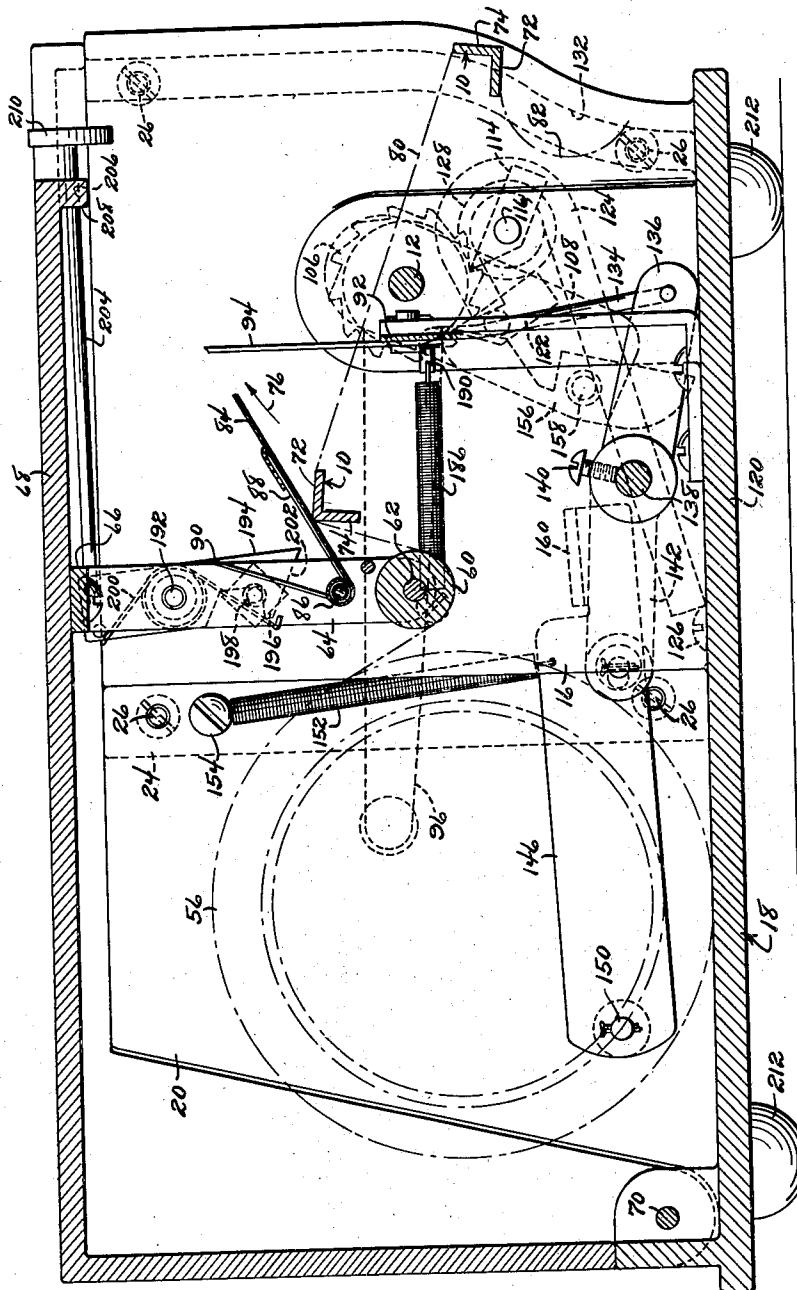
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Fig. 4.



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UNITED STATES PATENT OFFICE

2,260,489

TAPE DISPENSING MACHINE

La Sim, New Orleans, La.

Application December 16, 1940, Serial No. 370,397

6 Claims. (Cl. 164-68)

Gummed tape having a live adhesive, i. e., adhesive which need not be wetted prior to application, embodies many advantages over tapes having an adhesive which must be wetted for adhesive softening purposes. Tapes having live adhesive, known generally in the trade as Cellophane tape, cellulosic tape, Scotch binding tape, etc., are highly efficient in their adhesive properties, but considerable difficulty has heretofore been experienced in handling the tape, particularly in unwinding and cutting pieces of desired length from the roll.

Such tapes are wound in roll formation for distribution to the trade and retail sale, and the convolutions of the roll are adhesively secured one to the other, with the adhesive so arranged as to lie on the side of the unwound length facing the roll. Tapes of this character are difficult to handle from the roll in that the adhesive surface becomes stuck together in the event of overlapping or folding, and the tape is also difficult to separate when so stuck together because of the highly sticky nature of the adhesive.

An object of my invention is to provide a tape unwinding and severing device incorporating novel means for pulling a predetermined length of tape from the roll, and in which novel means are also provided for adjusting the unwinding means to pull different lengths of tape from the roll. The severing means is actuated through the medium of an operating connection with the tape pulling mechanism and is so arranged as to sever the tape after it has been pulled for length, with the unwinding means arranged to support the tape cut from the roll in a readily accessible position.

More specifically, the unwinding mechanism comprises two arms arranged for adhesive connection with the tape as it is pulled from the roll, together with means for rotating the arms as a unit through one-half revolution, with the severing means located to cut the tape intermediate the arms after each length has been pulled from the roll, so that the tape portion severed from the roll will adhere to one arm and the tape end attached to the roll will adhere to the other arm for exerting an unwinding pull on the tape when the arms are again rotated.

In the accompanying drawings:

Figure 1 is a side elevational view with certain parts broken away for the sake of clearness;

Figure 2 is a top plan view with the cover removed;

Figure 3 is a sectional view along the line 3-3 of Figure 1;

Figure 4 is a sectional view along the line 4-4 of Figure 3;

Figure 5 is a view taken along the line 5-5 of Figure 3;

Figure 6 is a perspective view of one of the tape pulling arms; and

Figure 7 is a detail view of a supporting plate for the two tape pulling arms.

In the embodiment selected to illustrate the invention, the tape pulling arms 10 are mounted on a shaft 12 rotatably journaled in one side wall 14 and a partition 16 of the housing 18. The other side wall 20 is provided with an opening 22 closed by a plate 24 detachably secured to the wall by screws 26. Upon the shaft 12 is secured a plate 28 having a hub 30 bored to receive the shaft and fixedly secured thereto by a set screw 32. Fig. 3 illustrates the plate 28 as being provided with right-angular flanges 34 which serve as guides for racks 36 extending at right angles from the tape pulling arms 10, see also Fig. 5.

Racks 36 face each other and are in mesh with a pinion 38 keyed to a sleeve 40 mounted loosely on the shaft 12. Fig. 3 illustrates the sleeve 40 as extending loosely through an opening 42 in the wall 14 for connection with a knob 44 fixed to the sleeve by a set screw 46. A second plate 48 is positioned against the racks 36 opposite the plate 28, with the flanges 50 of the former partly overlapping the outer faces of the flanges 34. Plate 48 is provided with an opening to receive the sleeve 40, and a spacer 52 is positioned between the plate and the inner face of the wall 14. Thus the flanges 34 on the plate 28 hold the racks 36 in meshing engagement with the pinion 38, and the plate 48 and the other plate 28 restrain the racks from relative movement longitudinally of the pinion. Accordingly, rotation of the shaft 12 imparts rotary motion to the tape pulling arms 10.

As illustrated in Fig. 2, the two arms 10 parallel the shaft 12 and are located 180° apart. The arms are located in transverse alignment with a trough 54 adapted to receive a tape roll 56, see Figs. 1 and 4, and the unwound length 58 of the tape extends underneath a roller 60 and is then connected with one of the arms 10. Roller 60 is mounted on a shaft 62 supported at the lower ends of arms 64 having an interconnecting reach 66 secured to the cover 68 pivotally connected at 70 with the housing 18. In Fig. 4, each arm includes flanges 72 and 74

to which the tape is adhesively secured for unwinding purposes. The tape is pressed firmly against the face 72 of the nearest arm 10 and the cover 68 is closed to bring the roller 60 to the position of Fig. 4. Accordingly, rotation of the arms 10 in the direction of the arrow 76 exerts a pull on the tape and unwinds it from the roll 56. Trough 54 is provided with a roller 78 against which the tape roll 56 bears as the tape is unwound therefrom. One-half revolution is imparted to the shaft 12 in the direction of the arrow 76 for each length of tape pulled from the roll. Fig. 4 illustrates such a tape length at 80, which length has an end portion 82 depending from the arm 10 farthest from the tape roll. The tape run 58 is pressed firmly against the flanges 74 of the arms 10 as the arms are rotated.

A pressure plate 84 has an end pivotally mounted on a shaft 86 secured to the leg 64, and a U-shaped spring 88 convoluted about the shaft 86 and hooked at 90 to the leg 64 urges the plate 84 downwardly on the adjacent arm 10 so as to insure sufficient pressure on the tape to effect a good adhesive connection with the arm. Pressure is applied on the tape throughout the full widths of the successive faces 72 and 74 as the arms are rotated for tape pulling purposes. With the tape positioned on the arms 10 in accordance with Fig. 4, the tape extends across a stationary blade 92 and is cut as the movable blade 94 is pivoted downwardly across the tape and in partly overlapping relation with the stationary blade, as in the nature of a scissors. Fig. 4 illustrates the normal positions of the arms 10 after each tape pulling turn.

Means for rotating the shaft 12 comprises a crank 96 secured to a shaft 98 by a set screw 100. Shaft 98 is provided with an axial bore 102 for loose reception of one end of the shaft 12. A flange 104 is secured to the shaft 12 and lies adjacent one face of the partition 16, and a ratchet wheel 106 is keyed to the flange 104. An arm 108 is secured to the shaft 98 closely adjacent the ratchet wheel 106. An opening 110 is provided in the plate 24 for the accommodation of the shaft 98, and the shaft is shouldered at 112 to engage the plate and restrain the shaft from withdrawal from the shaft 12.

In Figs. 1 and 3, a pawl 114 is mounted on a shaft 116 anchored in an opening in the partition 16 and yieldingly held in pressure engagement with the ratchet wheel 106 by a spring 118 having one end connected with the pawl and its other end anchored to the floor 120 of the housing 18. Pawl 114 permits rotation of the ratchet wheel 106 in a counter-clockwise direction when viewing Fig. 1 but restrains the ratchet wheel from rotation in a clockwise direction. Crank 96 is rotated 180° from its full line position of Fig. 1 for tape pulling purposes, which imparts the same degree of rotation to the tape pulling arms 10. While the shaft 98 to which the crank 96 is fixedly connected is loosely related to the shaft 12, a pawl 122 on the arm 108 connects the arm with the ratchet wheel to impart rotation thereto when the crank is turned in a counter-clockwise direction when viewed in Fig. 1. However, the pawl is so angled as to slip on the ratchet wheel when the crank is turned back to its normal position.

One end of a tension spring 124 is attached to the floor 120, as by a screw 126, and the spring is bent about a grooved wheel 128 mounted for rotation on the shaft 116, with the other

end of the spring secured to the arm 108, as at 130. Spring 124 yieldingly supports the crank 96 in its normal position, and rotation of the crank in a counter-clockwise direction when viewing Fig. 1 elongates the spring, with a portion thereof bending reversely about the shaft 98. Engagement of the arm 108 with the narrow front wall 132 of the housing 68 determines the other extreme position of the crank. Spring 124 is preferably of such tension as to pull the crank 96 back to its normal position when it is released after a length of tape has been pulled from the roll.

Movement of the crank 96 back to its normal position brings the movable blade 94 into action so that the tape will be severed only after the tape pulling arms 10 have come to rest. Means for actuating the blade 94 comprises a link 134 pivotally connected at one end with the blade and having its other end pivotally connected with an arm 136 secured to a shaft 138 by a set screw 140. Shaft 138 is rotatably journaled in the side wall 14 and the partition 16. A second arm 142 is fixedly secured to the shaft 138 by a set screw 144, and the arm has its outer end pivotally connected with a lever 146 through the medium of a pin 148 extending through a bore in the lever, the latter having one end pivotally connected with a pin 150 secured to the side wall 20. One end of a tension spring 152 is secured to the lever 146 and the other end is secured to a bolt 154 threaded into the wall 20. Upward pivotal movement of the lever 146 is limited through engagement of the arm 136 with the floor 120, as in Fig. 4.

Upon one side of the arm 108 is positioned a trip 156 and pivotally connected to the arm, as at 158. Normally the trip 156 has its lower end positioned beneath the free end of the lever 146, and the latter is provided with a lip 160 lying in the path of the trip. A tension spring 162 has one end anchored to the arm 108 and its other end connected with the trip 156 to hold the trip in its normal position of Fig. 1, at which time the upper end of the trip rests on the pin 130 to which one end of the spring 124 is connected.

Counter-clockwise rotation of the arm 108 brings the trip 156 into engagement with the lip 160, but the trip is pivoted so as to swing and permit continued movement of the arm and the trip. As the crank 96 returns to its normal position, the trip 156 engages the lip 160 and pivots the arm 146 downwardly for rotating the shaft 138 and actuating the blade 94.

The tape pulling arms 10 are shiftable toward and away from each other so as to vary the length of the tape pulled from the roll, which in turn determines the length of the tape cut by the blades 92 and 94. Referring to Fig. 3, a knob 164 is threadedly connected with the shaft 12, as at 166, and the knob abuts the end of the sleeve 40. Sleeve 40 is fixedly secured to the shaft 12 through tightening of the knob 164. However, a slight reverse turn of the knob 164 frees the sleeve 40 so that it may be turned through the medium of the knob 44, which turning imparts rotary motion to the pinion 38 and simultaneous movement to the racks 36 but in opposite directions. While the racks slide freely, the knob 164 effectively connects the sleeve 40 for rotation as a unit with the shaft 12. Thus the spacing between the two tape pulling arms 10 may be easily and quickly varied through slight rotation of the knob 44. Fig. 7 illustrates

the plate 28 as being provided with slots 168 which accommodate the flanges 72 of the two tape pulling arms when the two arms are moved to their closest spacing.

In the normal position of the crank 96 of Fig. 1, the arm 108 rests on a hub 170 of the grooved wheel 128 so that the crank is restrained from further rotation after reaching its normal position.

Within the trough 54 is positioned a wall 172 which coacts with the side wall 174 of the trough to balance the tape roll 56 in addition to holding the roll in correct alignment with the tape pulling arms 10. A boss 176 is welded to the plate 172 and is threaded for threaded connection with an adjusting screw 178 extending loosely through the bore 180 in the wall 14 and provided with a knob 182 at its outer end. Knob 182 abuts the wall 14 and a collar 184 is fixed to the screw and abuts the other side so as to restrain the screw from relative longitudinal movement. Thus the plate 172 may be moved toward and away from the wall 174 through rotation of the screw so as to provide accommodation for tape of different widths.

One end of a tension spring 186, see Fig. 4, is attached to the partition 16 by a screw 188 and its other end is secured to a pin 190 connected with the blade 94 at a point where the tension of the spring pulls the blade into snug face to face engagement with the fixed blade 92. Thus the two blades are maintained in effective cutting relation.

To one of the arms 64 is attached a pin 192 upon which a latch 194 is pivotally connected intermediate its ends. The latch is provided with a hook 196 which hooks underneath a pin 198 attached to the partition 16 to hold the cover in its closed position. A spring 200 is convoluted about the pin 192 and has one end hooked over the adjacent arm 64 and the upper end of the latch 194 to yieldingly urge the latch underneath the pin 198. A cam edge 202 is provided at the lower end of the latch member for engagement with the pin 198 to pivot the latch member as the cover is brought to a closed position. As the cover is closed, the spring 200 pivots the latch member to position the hook 196 under the pin 198. One end of a shaft 204 is pivotally connected with the upper end of the latch member 194, and the shaft extends slidably through an opening 206 in a flange 208 on the forward end of the cover 68. To the outer end of the shaft is secured a button 210 which facilitates a manual thrust on the shaft for unlatching purposes when it is desired to raise the cover.

Rubber pads 212 are secured to the bottom wall 120 by screws 214 which affords protection, as when the device is placed on counters, tables or the like.

Having thus described certain embodiments of my invention in detail, it is, of course, understood that I do not desire to limit the scope thereof to the exact details set forth except insofar as those details may be defined in the appended claims.

I claim:

1. A device for dispensing rolled adhesive tape comprising a support for the roll of tape, a rotative shaft, a ratchet wheel keyed to said shaft, arms carried by said shaft adapted for pulling the tape from the roll by engaging the adhesive surface thereof, a manually actuated lever loosely mounted on said shaft, pawl means

acting on said lever and said shaft permitting relative movement between the lever and the shaft in one direction but latching the two parts as a unit in the other direction, and severing means operatively connected with said lever to cut the tape after pulling a predetermined length from the roll.

2. A device for dispensing rolled adhesive tape comprising a support for the roll of tape, a rotative shaft, a channel-like member fixed to said shaft, a plate connected with the channel-like member, racks slidably guided between the channel and said plate, said racks having arms adapted for pulling tape from the roll by engaging the adhesive surface thereof, pinion means mounted on said shaft and meshing with said racks for adjusting the latter in opposite directions to vary the spacing between said arms, a manually actuated lever means operatively connected with said shaft for rotating the latter and said arms, a ratchet wheel keyed to said shaft, said lever being loosely mounted on said shaft, and pawl means acting on said lever and said ratchet wheel to positively rotate said shaft in one direction but yielding when the lever is rotated in the opposite direction.

3. A device for dispensing rolled adhesive tape comprising a support for the roll of tape, a rotative shaft, a ratchet wheel keyed to said shaft, arms carried by said shaft adapted for pulling the tape from the roll by engaging the adhesive surface thereof, a lever loosely mounted on said shaft, pawl means acting on said lever and said shaft permitting relative movement between the lever and the shaft in one direction but latching the two parts as a unit in the other direction, severing means operatively connected with said shaft to cut the tape after pulling a predetermined length thereof from the roll, said severing means comprising a stationary blade located underneath the tape pulled by said arms, a movable blade, crank and link means operatively connecting the movable blade with said lever, and a manually operated crank connected with said lever for rotating said shaft and said arms.

4. A device for dispensing adhesive tape from a source of supply comprising a support, a shaft rotatably journaled in said support, spaced tape pulling members connected with said shaft for rotation therewith, said members being adapted to pull tape from the supply by engaging the adhesive surface thereof, said members paralleling the axis of said shaft and arranged at right angles to the tape pulled from the supply, manually actuated means operatively connected with said shaft for rotating the latter and said members in a predetermined degree, means acting on said members for variably spacing and fixedly securing the latter against relative movement, adjustable means for supporting rolled tape of different widths, and a housing including a pivoted cover enclosing the tape.

5. A device for dispensing adhesive tape comprising rotative means for pulling the tape from a source of supply by engaging the adhesive surface thereof, rotative means fixedly connected with said first-mentioned means for actuating the latter, means operatively connected with said second-mentioned means for severing the tape for length, and a rack and gear adjusting means for said first-mentioned rotative means, including a screw lock for securing the pinion against rotation.

6. A device for dispensing rolled adhesive tape comprising a support for the roll of tape, a ro-

tative shaft, arms carried by said shaft for pulling the tape from the roll by engaging the adhesive surface thereof when rotated in a given direction, a manually actuated oscillatory lever for rotating said shaft and said arms in said given direction, means operatively connecting the lever with said shaft for rotating the shaft

in said given direction upon rotation of the lever in the same direction from said normal position but operatively disconnecting the shaft and the lever as the lever returns to said normal position, and stop means limiting the movement of said lever in both directions.

LA SIM.