Jan. 15, 1952 T. W. BERRIDGE ET AL 2,582,813

DISPENSER FOR PRESSURE-SENSITIVE TAPE

Filed Sept. 23, 1947

2 SHEETS—SHEET 1

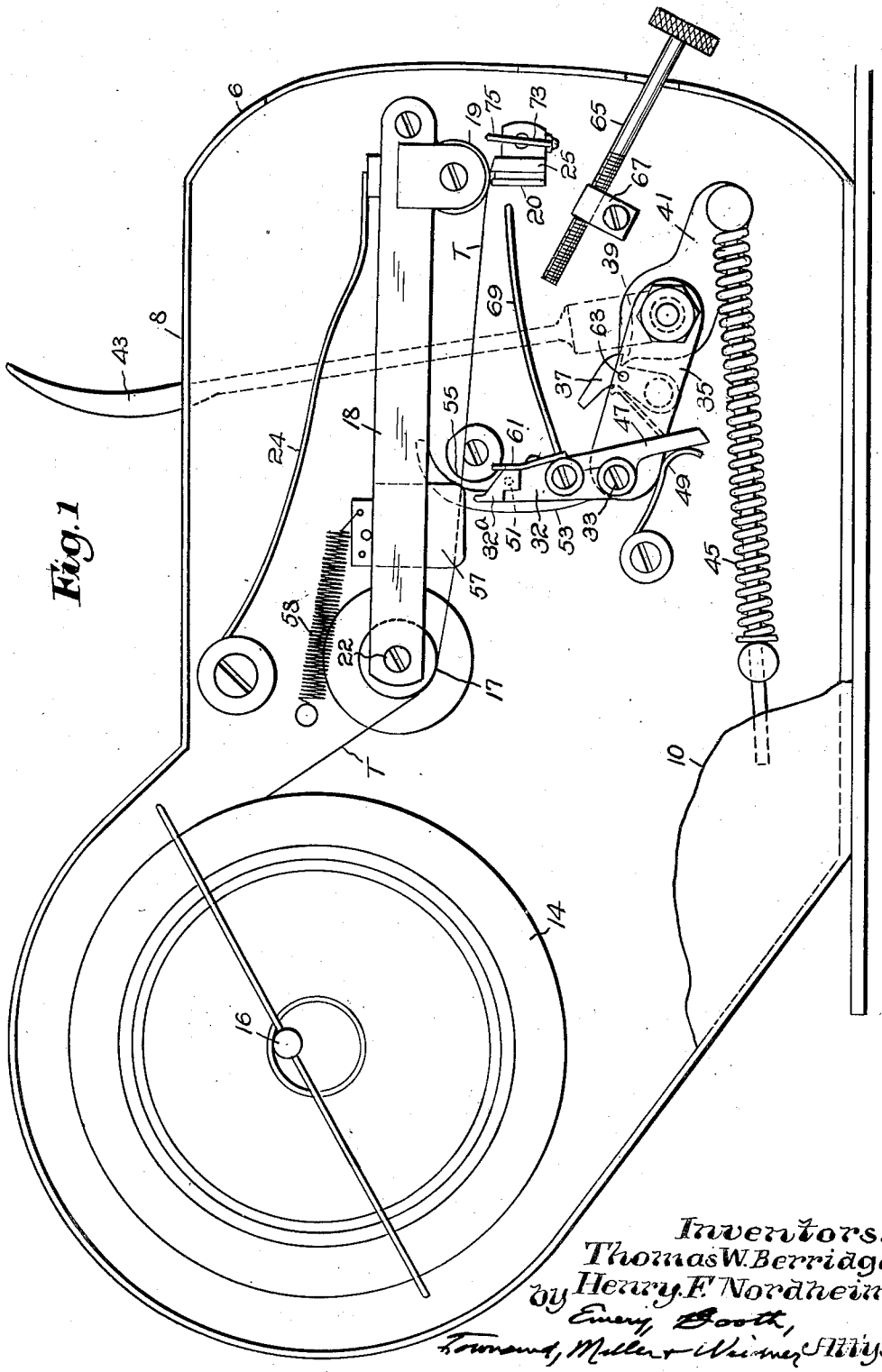


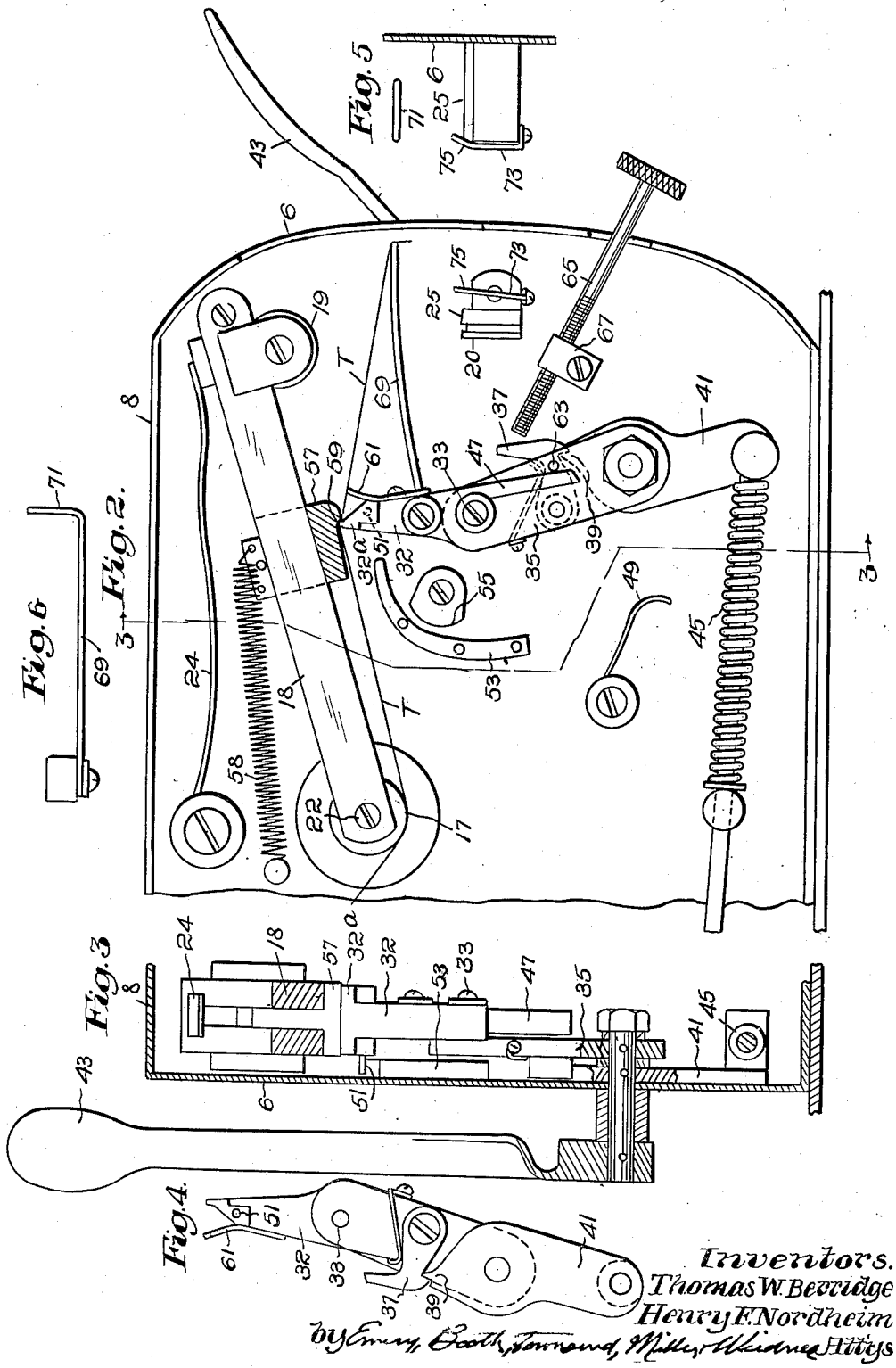
Fig. 1

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DISPENSER FOR PRESSURE-SENSITIVE TAPE

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9 Claims. (Cl. 271—2.5)

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This invention relates to a machine for dispensing adhesive tape, in particular so-called pressure-sensitive tape, and the object is to provide a simple and effective mechanism for drawing a length of such tape from a roll or similar supply in response to an actuating impulse, conveniently manually effected or manually initiated, and delivering it in position for severance. In one aspect thereof the invention may be considered as an improvement and development of the construction described in the patent to Thomas W. Berridge No. 2,364,051, dated December 5, 1944.

Our invention will be well understood by reference to the following description taken in connection with the accompanying drawings wherein by way of example we have shown an embodiment of the machine adapted for positioning on a desk or counter for operation by a hand lever. In these drawings:

Fig. 1 is a side elevation of the machine with the cover plate removed from the nearer side;

Fig. 2 is a view showing the right-hand portion of Fig. 1 with the parts in another position;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is an elevation of one of the parts shown in Fig. 1 viewed from the other side;

Fig. 5 is a fragmentary view showing certain elements as they would appear if viewed from the right of Fig. 2; and

Fig. 6 is a plan view of an element.

Referring now to the drawings, the machine shown embodies a vertical base plate 6 on which various elements about to be described are mounted in overhanging relation, the plate having a peripheral flange 8 against which may be received a cover plate 10 (see Fig. 1) to form a chamber or casing enclosing the mechanism.

The supply of tape T which we have illustrated, and will hereinafter refer to, as a roll 14 since pressure-sensitive tape at the present time is usually packaged in that manner, is mounted on the plate 6 on a spindle 16 and thence may extend around a fixed guide roll 17 along the under side of an elongated support 18, the end of the tape being received between a roll 19 mounted on the right-hand end of plate 18 and an abutment block 20 located toward the right-hand end of the machine as illustrated, which is the discharge or delivery side for the tape. The support 18 is here shown as pivoted, concentrically with the roll 17, to the base plate 6 on pivot 22 remote from the abutment 20 and the roll 19 on the left-hand end thereof is pressed down

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against the abutment by the spring 24. We may consider in Fig. 1 that any end portion of the tape which at one time may have been to the right of the abutment has been severed from the main supply in the manner hereinafter to be more fully described. The machine as shown in Fig. 1 is then in what may be considered normal position and ready for operation.

The sticky side of the pressure-sensitive tape faces downwardly, viewing Fig. 1, and it will be noted that as in the Berridge patent above referred to the space between the guide roll 17 and the abutment 20 is open and free of parts with which the lower face of the so extended tape may make contact. As in that patent, the tape is gripped at a point remote from its end and adjacent the inner end of support 18 by means of a feeding finger 32 having an orbital or four-motion feed, this finger lifting support 18 to release the end of the tape at the location of the abutment 20 and also gripping the tape at a point remote from that abutment to draw a length thereof from the supply roll at the left as the finger traverses the under side of the support 18, thus forwarding the extended length of tape which underlies the support outwardly over the abutment to the exterior of the machine. At the conclusion of its feeding movement when the finger leaves the tape and retreats to its initial position in the manner hereinafter to be more fully described, it releases support 18 to the spring 24 and roll 19 falls with a hammer blow and in the present instance cooperates with a knife 25 mounted on the abutment with its edge just outward of the tape-supporting surfaces thereof to sever the projecting portion of the tape.

The operation of the feeding finger 32 as herein shown will next be described. This finger is pivoted on center 33 on a rocker arm 35 which is latched by means of a pivoted spring-pressed latch pawl 37 (see Fig. 4) to a nose portion 39 on a lever 41 adapted to be rocked by means of the hand lever 43 at the exterior of the casing. A spring 45 normally returns lever 41 to the position of Fig. 1 when the handle is released. The finger has a tail portion 47 extending below the center 33 which in the position of Fig. 1 makes contact with a fixed spring 49, holding the finger erect as shown in Fig. 1 and with the pin 51 (see Fig. 4) which projects laterally therefrom (to the rear, viewing Fig. 1) bearing against the right-hand side of the guide 53, best shown in Fig. 2.

As the handle 43 is depressed and the arm 35

swung clockwise with lever 41, the finger 32 moves upwardly and pin 51 moves along the guide 53 in the track between the same and the opposed guide 55. As the finger is raised it is pressed against the under side of the tape T, which herein leads over a sliding carriage 57 movable along the support 18, and normally retracted to the position of Fig. 1 by spring 58. The lower face of this carriage or slide 57, as best seen in Fig. 2, has a shoulder 59 behind which the transversely extended terminal edge portion 32a of feed finger 32 engages. The finger may also carry a projection 61 spaced forwardly from this edge to engage the tape at the right-hand side of the slide to kink it slightly about shoulder 59 and insure effective gripping engagement between the finger end 32a and the rearwardly facing portion of the shoulder. The finger 32 and slide 58 act as two jaws gripping the tape at a portion of its extended length remote from abutment 20 and adjacent the intake or receiving end of the support 18.

After the finger engages the tape its continued upward motion lifts the support 18 against the action of its spring 24. This swings the finger counterclockwise on its pivot 33 until its tail portion 47 engages stop pin 63. The arm 35 and the finger 32 then move as one. The pin 51 has risen above guide 55 and arm and finger swing clockwise with lever 41 and they move to the right through the position of Fig. 2, the end of the finger and its cooperating slide 57 traversing along the raised support 18 to the vicinity of the abutment 20.

When the feeding stroke is completed so that a predetermined length of tape has been advanced, the tail of latch pawl 37 strikes a suitable stop, herein the end of a screw 65 adjustably mounted in a block 67, and the pawl is released from the nose 39 of lever 41. The center 33 is still to the left of the point of engagement of the end of the finger with the tape and the center on which lever 35 is pivoted. The toggle formed by the finger and the lever 35 thus collapses, aided by the pressure of spring 24, and the parts return to the position of Fig. 1, the pin 51 passing beneath guide 55. When the feeding mechanism collapses in this manner, support 18 swings downward from a position similar to that of Fig. 2 under the action of a spring 24, the roll 19 strikes against knife 25, severs the portion of the tape which projects beyond the same and clamps the new end of the main supply against abutment 20 just inward of the knife edge. The slide 57 is released to its spring 58 and resumes the position of Fig. 1. When the handle is released, lever 41 returns to the position of Fig. 1 under the action of spring 45 and the latch pawl 37 is again engaged with the nose 39 of this lever.

The movement of the end of the feeding finger 32 is an orbital one or may otherwise be described as a four-motion feed. That is, there is an up movement when the pin traverses between the guides 53 and 55 into contact with slide 57, an outward movement as it traverses the lower surface of the support 18, a downward movement as the toggle collapses, and a rearward movement as the parts resume the position of Fig. 1 with the pin passing below guide 55.

While the tape T is drawn forward from the supply roll by the mechanism just described, which acts on the proximal (left-hand) portion of the extended length underlying the support 18, we herein provide another orbitally movable device which supports and advances the distal or extreme end in correlation with this feeding movement. Herein this device is shown (see Figs. 2, 5 and 6) as a wire 69 extending at one side of the path of the tape from the finger 32 and having an inturned end or finger 71, best shown in Fig. 6, extending across the path of the tape. As the feeding mechanism is operated, this transverse portion 71 moves up just inside of the abutment 20 and makes adhesive contact with the sticky side of the tape. The pressure is light and the area of contact small and the integrity of the adhesive coating is not adversely affected. The adhesive joint, if it may be so called, would not be effective to carry any substantial load, but herein this device is merely utilized to support and guide the free end of the tape as it is fed forward by the substantial grip of the feeding finger 32. The transverse finger 71 formed by the inbent end of the wire moves forward over the abutment with the end of the tape, then drops, leaving the tape, and finally retreats below the abutment to the position of Fig. 1.

At the side of the abutment 20 which is traversed by the body of arm 69 in its movement (see Fig. 5) we provide a positioning device, herein shown as a wire finger 73 having its end 75 extending above the same and somewhat incurved over the abutment. As arm 69 descends, it wipes over this curved portion 75 which acts as a cam laterally positioning the end of the tape supported by the transverse finger 71 of this element, as shown in Fig. 6, and lowering the body of the tape in proper alignment over the abutment and the knife 25. Thus in each feeding movement the end of the tape which is supported by the abutment is rearranged and properly positioned. This permits the mechanism to the left of the abutment, referring to Fig. 1, to be less accurately constructed than would otherwise be required.

We are aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and we therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, as is in fact clear in several matters from the description itself. Reference is to be had to the appended claims to indicate those principles of the invention exemplified by the particular embodiment described and which we desire to secure by Letters Patent.

We claim:

1. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, a reciprocating feeding device having jaws moving between a point remote from the abutment and a point adjacent the same, the jaws closing to grip the tape during advancing movement and opening to free the same during retreating movement, and a finger for engaging the sticky side of the end of the tape to adhere thereto and mechanism for operating said finger in timed relation with said feeding device effective to move it into such en-

gagement and then to move it with the thereto adhering tape end forward over the abutment as the bight is fed forward.

2. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, in combination with means acting on the bight of the tape for drawing a length from the roll, a finger, a driving mechanism for operating said finger on an orbital path and effective to move it into adhesive relation to the sticky side of the tape adjacent the abutment and to advance the tape end so engaged with the finger over and beyond the abutment as the tape is fed forward and, continuing around the abutment back to its initial position.

3. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, in combination with means acting on the bight of the tape for drawing a length from the roll, an arm extending in a plane lateral of the abutment and having a finger extending transversely of the tape and means for moving the arm to press said finger against the sticky side of the tape adjacent its end to adhere thereto to advance the end of the tape across the abutment and to retract beneath the same.

4. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, in combination with means acting on the bight of the tape for drawing a length from the roll, an arm extending in a plane lateral of the abutment and having a finger extending transversely of the tape and means for moving the arm to press said finger against the sticky side of the tape adjacent its end to adhere thereto to advance the end of the tape across the abutment and to retract beneath the same and means cooperating with the arm in its retracting movement laterally to position the finger and the tape carried thereby.

5. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also

having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, in combination with means acting on the bight of the tape for drawing a length from the roll, an arm extending in a plane lateral of the abutment and having a finger extending transversely of the tape and means for moving the arm to press said finger against the sticky side of the tape adjacent its end to adhere thereto to advance the end of the tape across the abutment and to retract beneath the same and means cooperating with the arm in its retracting movement laterally to position the finger and the tape carried thereby comprising a cam surface on the side of the abutment along which the arm wipes.

6. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, a tape gripping device and means for actuating the same to close it on the tape along a substantially linear transverse zone remote from the abutment, then to advance it toward the abutment, then to open it to release the tape and finally to retract it to initial position, and cooperating means operating in substantially timed relation to the feeding device for moving forwardly the end of the tape as a length thereof is drawn by the gripping device from the roll comprising an engaging element which is moved into contact with the sticky face of the tape closely inwardly of the abutment, moves outwardly over the abutment and retracts beneath the same.

7. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, two orbitally movable feeding devices, one for acting on the bight of the tape remote from the abutment to draw it from the roll and the other for acting on the extremity of the tape closely adjacent the abutment, and actuating means for said devices effective for imparting thereto movements through their orbits respectively comprising an increment of movement into contact with the tape, an increment of forward feeding movement, an increment of retreat from the tape and an increment of retraction to initial position in a path spaced from the tape the orbit of said other device

which acts on the end of the tape encircling the abutment.

8. In a tape dispenser applicable for use with pressure-sensitive tape comprising a casing having means for supporting a roll of tape and also having remote therefrom adjacent the exterior of the casing an abutment to support the end of a length of tape withdrawn from the roll with said length extended between the roll and abutment, over which abutment the end of the tape is fed to the outside of the dispenser for severance and removal, the space between the roll and abutment being open and free of parts with which the lower face of the so extended tape may make contact, a tape gripping and feeding device remote from the abutment acting on the bight of the tape to draw it from the roll and feed a length thereof into said space, a finger having a narrow portion to which the tape may adhere and means for moving the finger simultaneously with the gripping device first into contact with the lower face of the tape just inwardly of the abutment whereby to sustain the terminal portion of the same as it is advanced by the gripping device, then outwardly over the abutment and finally back below the abutment to initial position.

9. A machine for dispensing pressure-sensitive tape comprising a support for a roll of such tape, an abutment to which the end of the tape is

adhered, a movable pressure device opposite the abutment bearing against the back of the tape to hold its adhesive face against the abutment, means for lifting the pressure device from the back of the tape, a tape-end moving mechanism including a portion to engage and adhere to the sticky side of the tape, and actuating means for operating said mechanism in timed relation with the pressure device and effective to lift said portion against the tape at the rear of the abutment as the pressure device is raised and to continue its movement in an orbital path forwardly, over and beyond the abutment hence downwardly and then below the abutment to initial position.

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