Dec. 5, 1950 S. H. BOBROV ET AL 2,532,597

TAPE DISPENSER AND APPLIER

Filed July 14, 1949

Fig. 1.

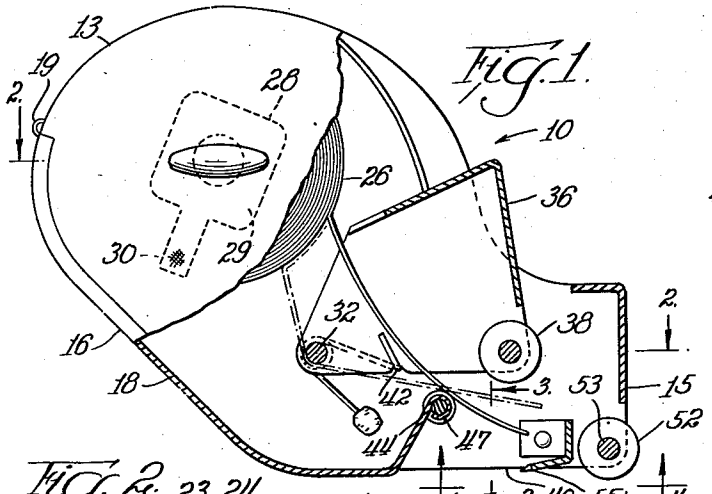


Fig. 3.

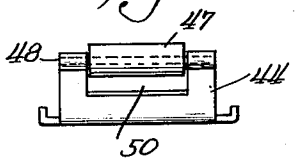


Fig. 2.

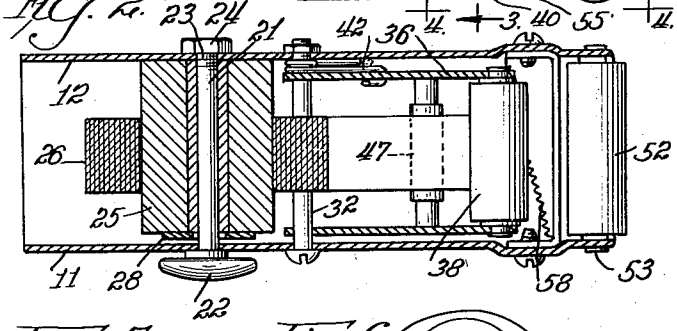


Fig. 4.

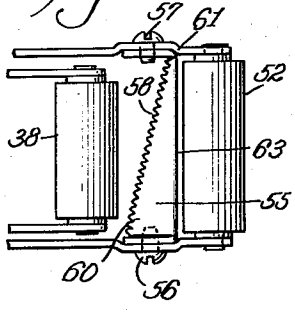


Fig. 5.

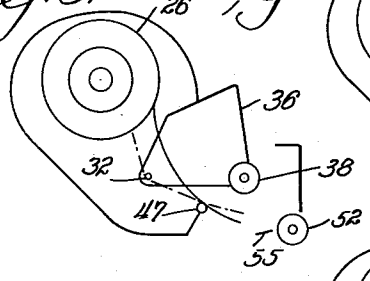


Fig. 6.

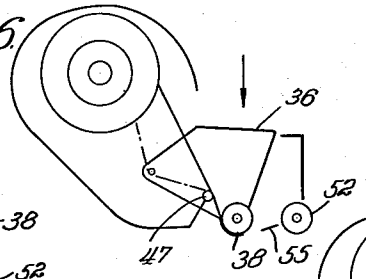


Fig. 9.

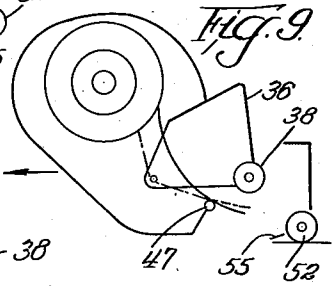


Fig. 8.

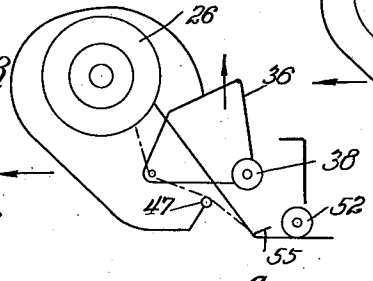
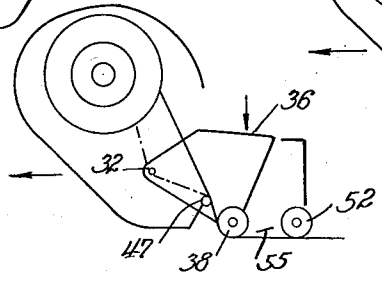


Fig. 7.



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TAPE DISPENSER AND APPLIER

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Application July 14, 1949, Serial No. 104,784

5 Claims. (Cl. 216—33)

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This invention relates to a tape dispenser and applier machine and particularly to a machine dispensing and applying pressure sensitive tape. Pressure sensitive tape of the type that remains tacky at all times and does not require any preparation, such as moistening, is well known and used for a wide variety of purposes. Such tape, as a rule, comes in rolls and must be cut to desired length when needed. As a rule, such tape is difficult to handle by conventional means and methods.

This invention provides a dispenser and applier or taper which may be used for retaining a roll of tape and from which any desired length of tape may be dispensed, applied and severed with minimum of trouble and effort. The invention hereinafter described is an improvement upon the invention described and claimed in the co-pending application of Samuel H. Bobrov, Serial No. 3315, filed January 20, 1948. In the above identified application, a dispenser and taper is described and claimed wherein an end of the tape is always available for starting a taping operation. Such a structure is applied to the surface to be taped by laying the same on the surface while depressing or operating a suitable handle for releasing the tape. The dispenser and taper is then moved rearwardly of the tape end, the tape unwinding and being applied as the device is moved. When it is desired to cut the tape from the roll, the lever or handle is released while still moving the dispenser and taper, the rearward motion of the device now serving to sever the used tape and press the same against the surface to be covered. In another form of the invention described in the above identified application, a device is disclosed wherein the article is moved rather than the dispenser, the underlying principle however, remaining the same.

In the dispenser described and claimed in the above identified application, the tape severing means consists of a number of spines or thorns of various shape and length which are forced into the tape and cause the tape to rip across the length of the strip. The device forming the subject matter of the present invention improves upon the earlier construction in providing a different tape severing and holding means and also providing some modification of the dispenser structure in order to permit proper cooperation between the tape and the various portions of the structure including the severing means so that proper cutting action of the tape will occur.

A structure embodying the present invention is characterized by simplicity and economy in

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manufacture as well as ruggedness and certainty in use. In general, the improvement provides a more or less conventional cutting means such as a saw-toothed tape cutting edge such as used, for example, in hacksaw blades or the like. The cutting means is disposed to cooperate with holding means in a novel manner so as to cooperate with the tape to provide proper severance and leave a depending tape end which may be readily available for use in a new taping operation.

For a more complete description of the invention, reference will now be made to the drawings wherein Figure 1 is a side view with certain parts broken away of a dispenser and taper embodying the present invention. Figure 2 is a section upon broken line 2—2 of Figure 1. Figure 3 is a sectional detail upon line 3—3 of Figure 1. Figure 4 is a detail from the bottom of the machine along line 4—4 of Figure 1. Figure 5 is a diagrammatic showing of the device shown in Figure 1 in normal condition. Figure 6 shows the device of Figure 5 being used to start a taping operation by depressing or actuating the control lever. Figure 7 is a diagrammatic view showing the device feeding and applying tape. Figure 8 is a diagrammatic view of the device when tape feeding is to be terminated and the lever is being released to initiate the tape cutting part of the cycle. Figure 9 is a diagrammatic view of the device after the tape has been cut.

Referring to Figures 1 to 4 inclusive, the dispenser and taper comprises a housing generally indicated by numeral 10, the housing being of any rigid material, either metal or plastic. Housing 10 comprises side walls 11 and 12 of the shape shown connected together by transverse wall 13. For convenience, the device will be assumed to be in the normal position shown in Figure 1, with the front of the dispenser indicated by 15 and the rear of the dispenser indicated by 16.

The bottom of housing 10 has the two side walls connected by cover 18 pivoted at 19 for transverse movement. Side walls 11 and 12 carry spindle 21 having handle 22 and threaded end 23 with which is adapted to cooperate nut 24 carried by the housing. Spindle 21 passes through the side walls, handle 22 being on one side of the housing and nut 23 being on the other side of the housing. Rotatively disposed over spindle 21 is spool 25 of wood, cardboard or any other suitable material. This spool has roll 26 of pressure sensitive tape tightly disposed thereon.

In order to provide a frictional drag upon

feeding of the tape, brake means are provided. The means shown consists of apertured flat spring 28 through which spindle 21 passes and which is adapted to bear against the side of spool 25. Spring 28 includes leaf 29 rigidly attached at 30 to the inside of one of the housing sides, in this instance side 11. It is understood that other well-known means for securing and maintaining a roll of tape and imposing a frictional drag upon the feeding of the tape may be provided. While the device can operate without tension on the tape, satisfactory and assured operation will require tape tension.

Carried by sidewalls 11 and 12 is smooth guide 32. It is not essential that guide 32 be rotatable although in some instances this may be preferable. The diameter of the guide is unimportant within substantial limits.

Pivoted coaxially with guide 32 is presser frame 36 of any desired shape. This presser frame preferably has a portion extending or projecting above the housing through a suitable slot. Presser frame 36 carries tapering roller 38. Roller 38 is pivotally secured on a pin carried by the presser frame so that the roller may turn easily. While the roller may be made of any desired material, rubber or other flexible material is particularly desirable.

Roller 38 is movable in a generally vertical direction. The upward limit of movement is shown in Figure 1 and may be determined by the edge of the housing slot acting as a stop for presser frame 36. This top position of taping roller 38 is generally unimportant and may be varied to suit requirements. Taping roller 38 is movable downwardly, as seen in Figure 1, so that the roller will project outside of the region or space defined by the housing, the housing being open at 40 to provide an opening through which tape may extend for application.

It is understood that roller 38 is at least as wide as the tape and is always located above the non-adhesive side of the tape. The position of taping roller 38, when moved downwardly, is such that it is forward of guide 32. It is not necessary that presser 36 pivots around guide 32 and it is not even necessary that the motion of roller 38 be arcuate around any particular point.

Presser frame 36 and the roller are normally biased in an upward position as shown in Figure 1 by coil spring 42 disposed around guide 32 at one side thereof and having the ends of the coil spring anchored respectively to the presser frame and housing. Other means for obtaining this biased position of the presser frame may be utilized.

Opening 40 of the housing is in part defined by end portion 44 of hinge portion 18. End portion 44 extends inwardly and upwardly of the housing and at its end carries a holding roller. This roller may be constructed in any one of a number of ways and, as shown here, consists of sleeve 47 rotatable on pivot pin 48. Pivot pin 48 is supported at the end of the hinge portion by bending the metal over, the hinge portion itself being slotted at 50 to provide clearance for idler 47. Roller 47 normally contacts the tacky side of the tape. The axis of roller 47 is forward of the axis of guide 32. However, the axis of guide 32 is above and to the rear of the axis of roller 38 when in its lower tape applying position. In the upper position of taping roller 38, holding roller 47 retains the free tape end elevated.

Carried at the forward end and at the bottom of the dispenser housing is tape pressing means

such as roller 52 preferably of flexible material such as rubber. Roller 52 may be rotatably secured on pin 53 carried by the housing. Roller 52 functions to press the tape home and may be replaced by a shoe, runner or other suitable means. Adjacent to roller 52 and to the rear thereof is tape cutter 55 rigidly supported at its ends by bolts 56 and 57 carried by the sides of the dispenser housing. Tape cutter 55 is preferably of metal and most conveniently of steel having teeth 58 of any desired size and shape. The cutter and teeth may consist of hacksaw stock or similar material. A simple knife edge may also be used. The cutting edge faces rearwardly. Preferably, though not necessarily, the row of teeth 58 extends obliquely across the dispenser housing so that end 60 of the cutter is wider than end 61 of the cutter. Rear edge 63 of the cutter may be straight and is preferably disposed adjacent to tape pressing roller 52.

It will be noted in Figure 1 that the plane defined by the flat portion of hinge portion 18 at the bottom of the dispenser has cutting teeth 58 therein, although this may be varied with the cutting teeth being disposed somewhat above or below this plane.

As shown in Figure 4, taping roller 38 in its bottom position has a portion thereof in close proximity to at least part of the teeth of the tape cutter. Thus wide portion 60 of the cutter has the teeth spaced adjacent to taping roller 38 when in its tape applying position. The closeness of spacing between the cutter teeth and roller 38 will depend in a substantial manner upon the design of the dispenser and the geometry of the various parts. In the event that cutter teeth 58 extend transversely straight across the housing, it is preferred to have all the teeth in substantial proximity to roller 38.

It is possible to feed the tape in either of two ways, one path of the tape being shown in full lines and the other path of the tape being shown in dotted lines. The principal difference between the two paths relates to the position of the tape with reference to guide 32. Thus in the full line position of the tape, guide 32 is not used at all whereas in the dotted line position of the tape, the tape is moved around the bottom of the guide as shown.

By proper proportion of the position and height of roller 47 above the bottom of the housing and proper location of the tape cutter as well as selection of the downward position of roller 38, it will be found that there will be a strip of tape always projecting forwardly of holding roller 47 and clear of the bottom of the device. Thus referring to Figure 5, when the dispenser is placed upon a surface to be taped, this end portion of the tape will be poised in the housing above the desired surface.

In order to enable the starting of a taping operation, the length of this end portion of the tape projecting beyond holding roller 47 should at least be equal in length to the sum of the perpendicular distance from the top of holding roller 47 to the base of the machine plus half the diameter of tape applying roller 38.

As previously explained, the object of holding roller 47 is to maintain the projecting end of the tape strip in an elevated position above the base of the machine after a cutting operation, in order to avoid the possibility of accidental fouling of the tacky tape against outside surfaces. By referring to Figures 1 and 5 it will be seen that each of the two methods of threading the

tape in the machine result in a somewhat different degree of elevation of the projecting tape ends. Thus, when the tape is threaded around guide **32**, as indicated by the dotted line, the tape span stretching between guide **32** and holding roller **47** maintains its free end somewhat higher than when the tape is threaded as indicated by the solid line. Thus while under normal conditions holding roller **47** alone will suffice to maintain the projecting tape end at satisfactory elevation, unusual conditions may arise, such as high atmospheric temperatures, or poor tape quality, when it may be advisable to employ the alternate dotted line method of threading the tape around guide **32** and obtain a resulting higher elevation of the projecting tape end.

Guide **32** may be omitted when the tape is threaded as shown in solid lines.

In Figure 6, presser frame **36** is shown as depressed, this forcing the free strip of tape down through the mouth of the dispenser and against the paper or other surface to be taped. The tacky bottom surface of the tape will engage the surface to be taped and thus anchor the tape in preparation for a taping operation. As seen in Figure 7, with presser frame **36** still depressed, the dispenser is moved rearwardly as shown by the arrows, the tape being paid out. When it is desired to cut the tape, presser frame **36** is released, the dispenser still being moved rearwardly along the surface to be taped. With taping roller **38** elevated, the tape will be forced against the teeth of cutter **55** by rearward movement of the machine and a transverse tear will be started across the tape. In the meantime, the dispenser is still being moved rearwardly so that the severed end of the tape on the paper or other surface will be pressed downwardly by roller **52**. The free end of tape will assume either of the positions shown in Figure 9 with the release of tension upon the tape. In each position, the end of the tape is well within the housing. Thus the dispenser may be left in any position upon any surface with the assurance that no sticking of the tape to any article will occur when not desired.

What is claimed is:

1. A machine for holding a roll of pressure sensitive adhesive tape and applying desired lengths of such tape to an object, said machine comprising a housing having a mouth at the housing bottom, means in said housing for supporting said roll so that tape may be paid out, said housing having a bottom portion defining the rear of said mouth, said bottom portion and applied tape defining a plane, a cutter supported across the mouth opening near the forward portion of the mouth, said cutter having its edge facing rearwardly of the housing above said plane, a tape applier having at least an edge for cooperation with the non-adhesive side of tape, means for mounting said applier so that it normally rests above said plane but is freely movable generally vertically so that the applying edge at least reaches said plane to the rear of said cutting edge, at least one holding tape guide disposed between the tape roll and applier within the housing and well above said plane, said applier and guide normally contacting the non-adhesive and adhesive sides respectively of the tape during taping with the applier being clear of the tape during tape severing and stand-by conditions.

2. The structure according to claim 1 wherein said holding tape guide includes a roller.

3. A machine for holding a roll of pressure sensitive adhesive tape and applying desired lengths of such tape to an object, said machine comprising a housing having a mouth at the housing bottom, means in said housing for supporting said roll so that tape may be paid out, means at the forward end of the housing defining the forward end of the mouth and including at least an edge transverse to the mouth for pressing tape against said object, said housing having a bottom portion defining the rear of said mouth, said bottom portion and tape pressing edge defining a plane, a cutter supported across the mouth opening near the forward portion of the mouth, said cutter having its edge facing rearwardly of the housing above said plane, a tape applier having at least an edge for cooperation with the non-adhesive side of tape, means for mounting said applier so that it normally rests above said plane but is freely movable generally vertically so that the applying edge at least reaches said plane to the rear of said cutting edge, at least one holding tape guide disposed between the tape roll and applier within the housing and well above said plane, said applier and guide normally contacting the non-adhesive and adhesive sides respectively of the tape during taping with the applier being clear of the tape during tape severing and stand-by conditions.

4. A machine for holding a roll of pressure sensitive adhesive tape and applying desired lengths of such tape to an object, said machine comprising a housing having a mouth at the housing bottom, means in said housing for supporting and braking said roll so that tape may be paid out under tension, means having at least an edge across the mouth at the forward end of the housing defining the forward end of the mouth for pressing tape against said object, said housing having a bottom portion defining the rear of said mouth, said bottom portion and tape pressing means defining a plane, a cutter supported across the mouth opening near the forward portion of the mouth, said cutter having its edge facing rearwardly of the housing above said plane, a tape applier having at least an edge for cooperation with the non-adhesive side of tape, means for mounting said applier so that it normally rests above said plane but is freely movable generally vertically so that the applying edge at least reaches said plane to the rear of said cutting edge, at least one holding tape guide disposed between the tape roll and applier within the housing and well above said plane, said applier and guide normally contacting the non-adhesive and adhesive sides respectively of the tape during taping with the applier being clear of the tape during tape severing and standby conditions.

5. A machine for holding a roll of pressure sensitive adhesive tape and applying desired lengths of such tape to an object, said machine comprising a housing having a mouth at the housing bottom, means in said housing for supporting and braking said roll so that tape may be paid out under tension, means including a roller at the forward end of the housing defining the forward end of the mouth for pressing tape against said object, said housing having a bottom portion defining the rear of said mouth, said bottom portion and tape pressing portion of the roller defining a plane, a cutter rigidly supported across the mouth opening near the forward portion of the mouth, said cutter having its cutting

edge facing rearwardly of the housing above said plane, a tape applier having at least an edge for cooperation with the non-adhesive side of tape, means for mounting said applier so that it normally rests above said plane but is freely movable generally vertically so that the applying edge at least reaches said plane to the rear of said cutting edge, at least one holding tape guide disposed between the tape roll and applier within the housing and above said plane, said applier and guide normally contacting the non-adhesive and adhesive sides respectively of the tape during taping with the applier being clear of the tape during tape severing and stand-by conditions.

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