Nov. 10, 1964 G. H. FRITZINGER 3,156,602

TAPE DISPENSER

Filed Jan. 15, 1962

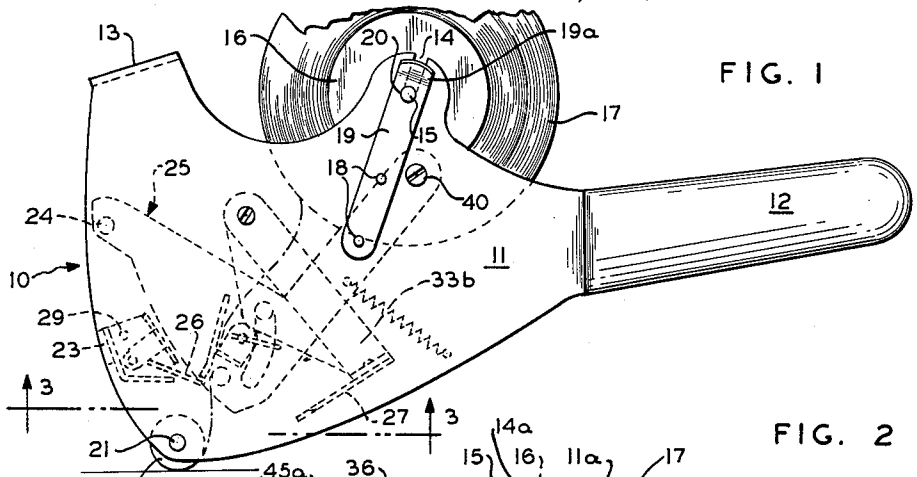


FIG. 1

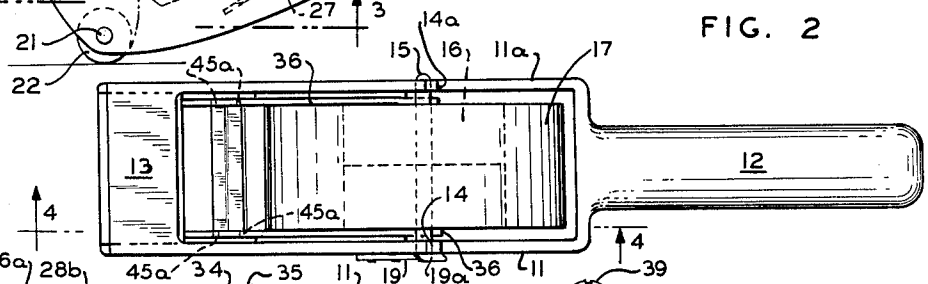


FIG. 2

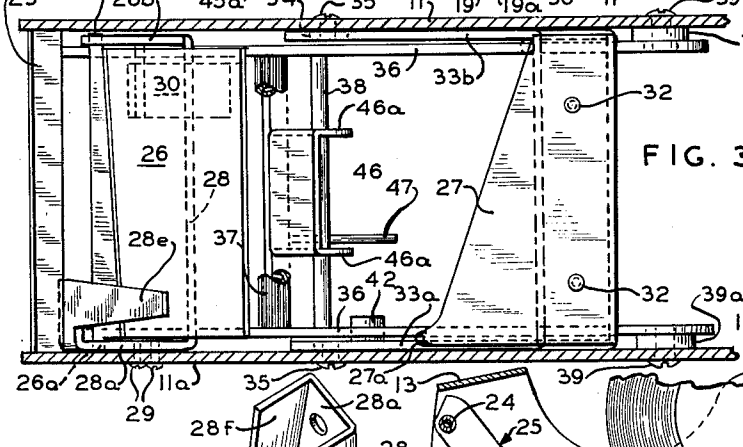


FIG. 3

FIG. 4

FIG. 5

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TAPE DISPENSER

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This invention relates to a manual device for dispensing and applying pressure sensitive tape of wide heavy industrial-size supply rolls.

An object of the invention is to provide a manual type dispenser and applicator which is easy to handle and to operate.

Another object is to provide such dispenser which is easy to load with tape and which is provided with means to safeguard it against accidental unloading during the handling and operation of the device.

Another object is to provide such dispenser which is of very simple and economical construction.

The invention resides particularly in a novel form of industrial dispenser which has a handle at one end to be gripped by one hand and a press bar at the other end for the other hand. The dispenser is open at the top between the handle and press bar to receive a core supporting a supply roll of tape, and at the bottom of the dispenser below the press bar there is an applicator roller for rolling tape into contact with a surface as the tape is dispensed. The dispenser has a trigger operable in one direction to cut the tape and releasable to present a starting length of tape below the applicator roller for a succeeding tape application. A feature of the invention is in locating this trigger below the press bar so that it can be operated by the fingers of the hand in a very convenient manner as the palm of the hand is resting on the press bar.

Other objects and features of the invention will be apparent from the following description and the appendant claims.

In the description of the invention reference is had to the accompanying drawings, of which:

FIGURE 1 is a side elevational view of the present dispenser showing by dotted lines the positioning of the main operating components of the internal mechanism when the machine is in its normal dispensing condition;

FIGURE 2 is the top plan view of the dispenser;

FIGURE 3 is a partial bottom view taken substantially on the line 3—3 of FIGURE 1;

FIGURE 4 is a fractional section taken on the line 4—4 of FIGURE 2 showing the internal mechanism in its operated position; and

FIGURE 5 is a perspective exploded view of the pivoted blade, biasing spring and bracket holder of the tape cutting mechanism.

The present industrial tape dispenser and applicator comprises a one piece housing **10** cast as of aluminum having two spaced parallel side walls **11** and **11***a* which merge into an extending handle **12** at one end and which are joined at the top of the other end by a crossbar **13**, hereinafter often referred to as the press bar. As will appear, in the operation of the machine the handle **13** is gripped by one hand and the palm of the other hand is placed in a resting position on the press bar. Midway between the handle and press bar the side walls have open ended slots **14** and **14***a* for receiving the spindles **15** and **15***a* of a core **16** which carries a supply roll **17** of tape. Secured at **18** to the side wall **11** is a flat cantilever spring **19** extending in line with the respective slot **14** and having an opening **20** near the upper free end thereof positioned to receive the respective spindle **15** when the same is resting on the bottom of the respective slot **14**. By this engagement of one spindle of the core with the spring **19** the core **17** is latched against removal from the housing. To permit easy mounting of the core to the housing the cantilever spring **19** has an upwardly extending portion **19***a* above the hole **20** which is curved outwardly so that the end of the spindle will engage the inner side of the portion **19***a* and cam the latch spring **19** outwardly until the spindle registers with the opening **20**, thereby permitting the core to be placed into a latched mounted position simply by lowering it into its mounted position in the housing. Also, the portion **19***a* serves as a finger piece by which the latch spring can be easily flexed outwardly free of the spindle **15** when it is desired to remove core from the housing.

The housing has a generally triangular shape as viewed from the side with the apex of the triangle at the base of the handle. Bridging the bottom of the housing in line below the press bar **13** is a stud **21** on which is journaled an applicator roller **22**. A short distance above the applicator roller is a narrow reinforcing rib between the side walls of the housing. The entire space between the reinforcing rib and the press bar **13** is however open for insertion of the fingers of the hand therein to operate a trigger **24** in the manner hereinafter described.

The internal mechanism of the dispenser comprises a feed rocker **25** (FIGURE 4) for controlling the path of the tape drawn from the supply roll to a dispensing position past the applicator roller **22**, and for operating the cutting mechanism of the dispenser. This cutting mechanism—which is coupled to the feed rocker **25**—comprises a pivoted blade **26** and a cooperating swinging blade **27** of the character described and claimed in my Patent No. 2,836,-241 dated May 27, 1958. The pivoted blade has two side ears **26***a* at its end opposite its cutting edge which are pivoted in respective holes in side arms of U-bracket **28** (FIGURE 5). This U-bracket **28** spans the distance between the side walls **11** and **11***a* and is positioned above the applicator roller **22** directly back of the reinforcing rib **23**. The side arm **28***a* of the bracket adjacent to the side wall **11***a* of the housing is relatively wide and is secured to this side wall by two set screws **29**. The other side arm **28***b* of the bracket is relatively narrow in the form of a lug bent over from the cross member **28***c* of the bracket so that it can be bent inwardly to secure the blade **26** in the bracket. The cross member **28***c* of the bracket is relatively wide and forms a guide surface for the starting length of the tape after the tape is cut as will later appear. In this cross member extending from one edge of the lug **28***b* is an open-ended slot **28***d* in which is anchored a cantilever spring **30** for biasing the pivoted blade **26** about its pivot axis in the bracket. Responsive to this spring the pivoted blade bears normally against a locating finger **28***e* extending from a lug **28***f* turned inwardly from the side arm **28***a* of the bracket. This lug can be bent by a pliers to adjust the positioning of the pivoted blade. The bias spring **30** is bent at an angle of about 45° along the line where it passes through the slot **28***d* so that the portion of the spring at the outer side of the bracket will lie flat against the cross member **28***c*. Also, the spring has one or more catch elements or ears **30***a* struck inwardly at the bend line so that these will engage the edges of the slot **28***b* and hold the spring from slipping through the slot responsive to the pressure exerted on the spring by the pivoted blade.

The swinging blade **27** is secured by screws **32** to the cross member of a U-shaped lever **33** having side arms **33***a* and **33***b* of triangular shape. This lever spans approximately the full distance between the side wall of the housing and is pivoted to the side walls at its upper ends in bearings **34** secured by screws **35** to the side walls, the bearings having inner flanges **34***a* to retain the side arms of the blade lever in close proximity with the side walls of the housing. The bearings **34** are located about midway between the applicator roller and the axis of the

core 16 but are displaced from the non-adhesive side of the tape drawn from the supply roll so that the blades 26 and 27 will engage at a small angle from a parallel relationship as indicated in FIGURE 4. The pivoted blade has its cutting edge equally distant from its pivot axis but inclined to a plane through the pivot axis by ending the blade on an oblique line 26*b*. The swinging blade is flat but has an inclined cutting edge merging into an extending guide lug 27*a* at its far end so as to permit some latitude in the adjustment of the locating finger 28*f* while still permitting the swinging blade to pick up the pivoted blade as the two blades are engaged responsive to lifting the trigger 24 as will appear.

The feed rocker 25 comprises two generally L-shaped side plates 36 secured in a spaced parallel relationship by a stud at its far end forming the trigger 24 aforementioned and by two studs 37 and 38 at its intermediate portion. The rocker extends through the space between the side arms of the blade lever 33 with suitable clearance. The upper ends of the side plates of the rocker are pivoted on bearings 39 secured by screws 40 to the side walls 11 and 11*a*, these bearings having also inner flanges 39*a* to retain the adjacent portions of the side plates of the rocker in proximity with the side walls of the housing. In one side plate is an arcuate slot 41 engaged by a boss 42 extruded inwardly from the adjacent side arm of the swinging blade lever 33. This forms a coupling between the swinging blade lever and the feed rocker to cause the swinging blade to be operated into engagement with the pivoted blade as the rocker is actuated from its normal position. A tension spring 43 is connected between the feed rocker and the housing to hold the feed rocker and the swinging blade in the positions which they occupy in FIGURE 1, which are also positions in which the feed rocker and the swinging blade are limited in their counterclockwise directions of movement by the intercoupling just mentioned. On the cross stud 37 is journaled a knurled feed and guide roller 44 which in the normal positioning of the feed rocker occupies a position just off from the cutting edge of the pivoted blade. Among other functions, this feed roller contacts the adhesive side of the tape drawn from the supply roll and projects the starting length past the applicator roller for the start of a taping operation. At the non-adhesive side of the tape leading from the supply roll, and spaced from the feed roller is a guide plate 45 located between the side plates of the feed rocker by having extending lugs 45*a* engaging respective holes in these plates. This guide plate forms a slot with the feed roller through which the tape is directed from the supply roll to load the dispenser. Preferably, the threading of the tape through this slot is carried out by first folding the tape back on itself so that it has no exposed adhesive faces, and then by dropping this folded length of the tape through this slot as the supply roll is lowered into a mounted position in the housing.

When the trigger 24 is lifted by fingers of the hand while the palm of the hand is resting on the press bar 13, the guide roller is swept along the pivoted blade past the cross member 28*c* of the bracket 28 to increase the length of the path of the tape from the supply roll to the applicator roller. The arcuate slot in the side plate of the rocker is located so as to move the swinging blade at an increasing speed as the rocker is moved through its forward stroke. In this way the tape is cut after the guide roller has been displaced from the cutting edge of the pivoted blade by the distance desired for the starting length, and moreover the blades are engaged as the rocker is moved through only a small end portion of its forward stroke to avoid cutting the tape on the bias. Upon release of the feed rocker after the tape is so cut the guide roller carries the tape back past the pivoted blade to project the starting length into position for the next application.

The pivot bearings for the feed rocker are preferably positioned below the spindle axis and to the right of the

radius line of the core 16 through the guide roller 44 so that the guide roller will be carried at distances progressively closer to the supply roll as the feed rocker is moved through its forward stroke and at distances progressively farther from the supply roll as the feed rocker is returned to its normal position. This causes the guide roller to be turned about its journal axis by the adhesive contact of the tape length leading to the supply roll as the guide roller is returned to its normal position. By this turning movement of the guide roller on its journal axis during return of the guide roller to normal position after the tape is cut, the starting length of tape in advance of the guide roller is swung from its parallel relationship with the pivoted blade at the time the tape is cut to a right-angular relationship with pivoted blade past the applicator roller when the guide roller has returned to its normal position.

The stud 38 is positioned on the feed rocker 25 above the guide roller 44 at the adhesive side of the tape drawn from the supply roll. Pivoted on this stud is a feed locking member 46 preferably in the form of a bail. This bail has rounded hub edges 46*a* which project into the path of the tape drawn from the supply roll. On the other hand, the guide plate 45 is spaced a small distance from the non-adhesive side of the tape drawn from the supply roll and forms a backing member for the tape as will next appear. In response to the sliding contact of the hub edges 46*a* with the adhesive side of the tape, the locking bail 46 is swung away from the backing plate 45 against a stop finger 47 secured to and extending radially from the stud 38. However, if any back-feeding pull is exerted on the tape the bail is propelled by this adhesive contact of the tape with its hub edges against the adhesive side of the tape to move the tape against the backing plate. This engagement of the bail with the backing plate is with a wedging-like action to lock the tape against back-feeding. Thus, the tape 20 is prevented from being accidentally unloaded from any tugging forces that may be exerted on the supply roll in the use of the dispenser.

During the return stroke of the feed rocker 25 the back-feeding of the tape due to the guide roll 44 moving at an increasing distance from the supply roll 17 will cause the bail 46 to move into its locking position against the backing plate 45. By adjusting the stop finger 47, as by turning the stud 38 on its axis, the back-feeding during the return stroke of the feed rocker can be controlled to cause the dispenser to feed out a shorter or longer starting length of tape. For instance, if the stop finger 47 is turned more in a counterclockwise direction as it appears in the figures a greater amount of back-feeding is permitted during the return stroke of the feed rocker and the starting length will be shorter, and conversely as the stop finger is turned more in a clockwise direction less back-feeding is permitted before the locking bail engages the backing plate and a longer starting length is provided.

The particular embodiment of my invention herein shown and described is intended to be illustrative and not necessarily limitative of my invention since the same is subject to changes and modifications without departure from the scope of my invention, which I endeavor to express according to the following claims.

I claim:

1. A hand applicator for wide heavy rolls of industrial pressure sensitive tape comprising a housing having two laterally spaced side walls merging into an extending handle at one end and joined at the top by a crossbar at the other end with open end space between the walls below said crossbar and with open space at the top between the crossbar and handle, said housing being adapted to be manipulated by gripping the handle with one hand and by placing the palm of the other hand on said crossbar, a core for supply roll of tape journaled between the upper portion of said side walls midway between said handle and crossbar, an applicator roller journaled between said side plates at the bottom of said other end thereof for rolling tape lead from said supply roll on to a surface to

be covered with with tape, a mechanism in said housing for cutting the tape leading from said supply roll on a line just back of said applicator roller, and a rocker mechanism pivoted between said side walls and coupled to said cutting mechanism, said rocker being biased into an unoperated position and being adapted to elongate the path of the free tape from the supply roll to said applicator roller and thereupon to operate said cutting mechanism as the rocker is swung upwardly towards said crossbar from its unoperated position, said rocker mechanism including means for releasably gripping the tape at a distance back from where it is cut by said cutting mechanism when said cutting mechanism is operated whereby to present a starting length of tape past said applicator roller when the rocker mechanism is returned to unoperated position, and said rocker mechanism having a trigger in said open end space at a distance below said crossbar enabling the user to actuate the rocker mechanism by lifting motion of the fingers of said other hand as the palm of the hand is resting on said crossbar.

2. The applicator set forth in claim 1 wherein said supply roll core has extending spindles at its ends and said side walls having slots open at the top for receiving said spindles, including latch means on one of said side walls of the housing for releasably holding the respective spindle against disengagement from the respective slot in the housing.

3. The applicator set forth in claim 2 wherein said latch means comprises a flat leaf spring cantilever mounted at its lower end against the outer side of a wall of said housing and having an apertured upper end portion for engaging the respective spindle of said core and holding the spindle from being disengaged from said housing, said spring having an outwardly curved portion above said aperture forming a cam surface for causing the spring to be cammed outwardly by sliding engagement of the end of the respective spindle thereagainst until the spindle registers with said aperture as the core is lowered into mounted position in the housing, said outwardly curved portion serving as a finger piece for disengaging the latching spring when the core is to be removed.

4. The applicator set forth in claim 1 wherein said rocker mechanism comprises two laterally spaced frame plates pivoted to an upper central portion of said side walls of the housing and joined at their ends remote from their pivot axis by a cross member forming a trigger at an operating distance below said crossbar of the housing, spring means biasing said rocker mechanism into an unoperated position wherein said cross member is at an operating distance below said crossbar, and a guide roller journaled between a lower portion of said rocker frame plates for holding the free end portion of the tape by adhesive contact, said guide roller being positioned to direct a starting length of tape past said applicator roller when said rocker mechanism is in unoperated position.

5. The applicator set forth in claim 4 including a transverse guide plate between said rocker frame plates, said guide plates being extended past said guide roller at a distance therefrom for forming a guide slot through which the tape from the supply roll is threaded to load the applicator.

6. The applicator set forth in claim 5 including a bail pivoted between said rocker frame plates at the adhesive side of the tape above said guide roller, said bail having semi-circular hub edges positioned in the path of the tape as it is drawn from said supply roll past said applicator roller whereby normally to cause the bail to be shifted into a position away from said guide plate, said adhesive contact of the tape with said hub edges of said bail serving to swing the bail into a wedging position against said guide plate when the supply roll is shifted to withdraw the tape whereby to prevent accidental unthreading of the tape from the applicator.

7. In a tape dispenser wherein tape is drawn from a supply roll past a dispensing station; means for limiting movement of the tape only in a dispensing direction comprising a backing member between said station and supply roll at a distance from the non-adhesive side of the tape leading from the supply roll to said station, a pivoted bail having arcuate hub edges extending into the path of the tape and slidably engaging the adhesive side thereof, stop means for limiting movement of said bail from a position wherein the bail extends from its pivot axis along said tape in the direction in which the tape is drawn from the supply roll to a position wherein the bail extends away from said backing member, said adhesive engagement of the tape with the bail causing the bail to be swung against said stop means as the tape is drawn from the supply roll and against said backing member in wedging relation thereto to lock the tape against back-feeding as the tape is drawn in a back-feeding direction.

8. A dispenser for pressure-sensitive tape comprising a housing, means on said housing for freely rotatably supporting a supply roll of tape, means for releasably holding an end portion of the tape drawn from said supply roll in a dispensing position, and a one-way tape feed control means between said supply roll and said holding means comprising a backing member spaced from the non-adhesive side of the tape, a cooperating tape locking member at the adhesive side of the tape freely pivoted adjacent thereto for movement between a position wherein the locking member bears against the adhesive side of the tape backed by said backing member in locking engagement against back-feeding of the tape and another position wherein the locking member extends away from the tape, a stop member for preventing movement of said locking member beyond said other position, and a hub on said locking member extending into the path of the tape and slidably engaging the adhesive side thereof for holding the locking member against said stop member as the tape is drawn from the supply roll and for propelling the locking member into said locking engagement with the tape responsive to pulling the tape in a back-feeding direction.

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