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July 21, 1942. D. R. BLACK ET AL 2,290,223

TAPE CUTTER

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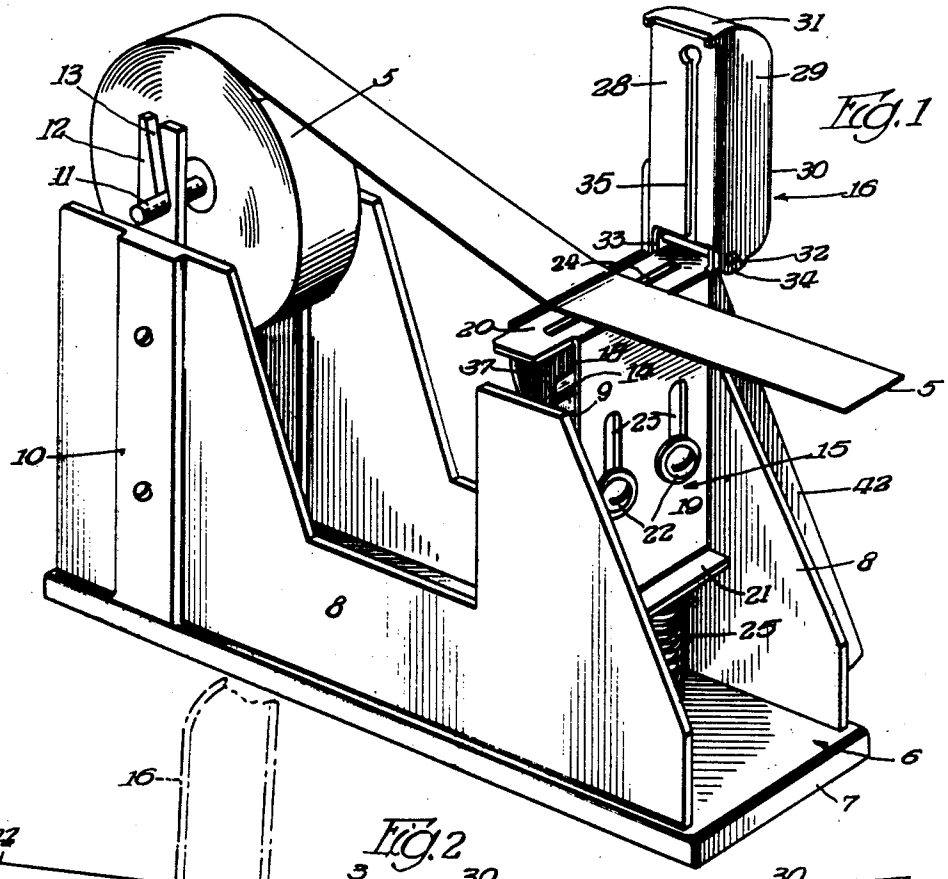


Fig. 1

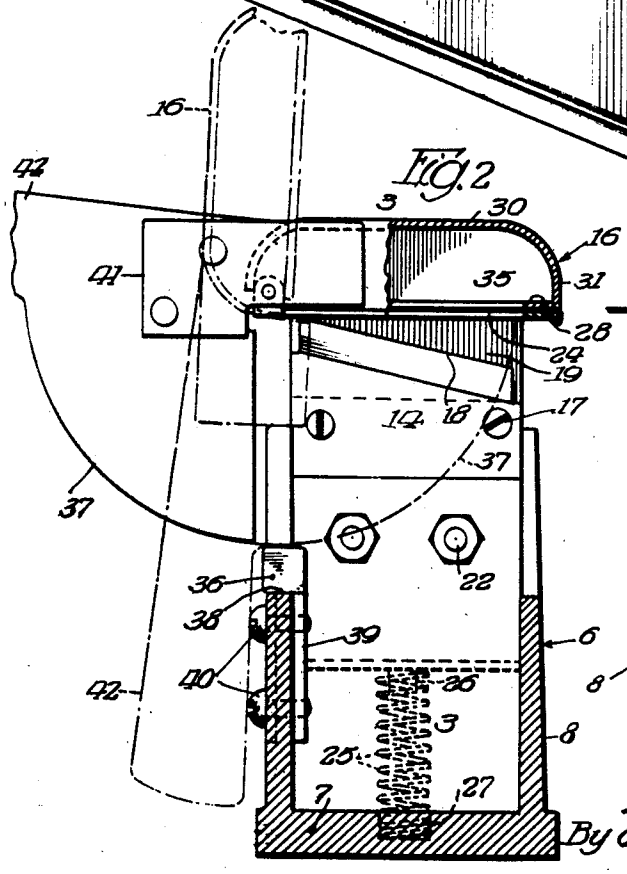


Fig. 2

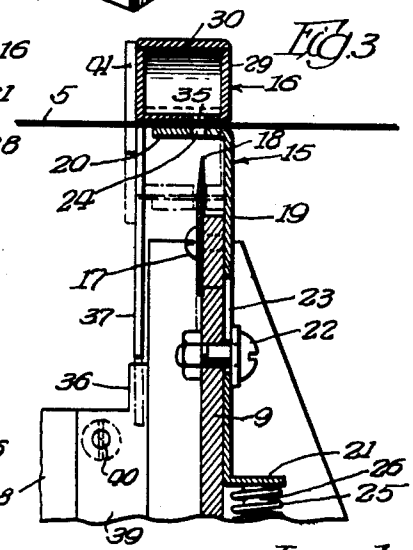


Fig. 3

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SHEETS & BARS

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UNITED STATES PATENT OFFICE

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TAPE CUTTER

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6 Claims. (Cl. 164—36)

The present invention relates generally to cutters for tape. More particularly the invention relates to that type of cutter which is primarily designed for use in connection with, and as a part of, a tape dispenser, comprises as its main or primary parts a fixed knife and a movable coacting cutting head, and operates when a part or piece of the tape is placed between the knife and the cutting head and the head is thereafter moved relatively to the knife to cut or sever the tape.

One object of the invention is to provide a tape cutter of this type which not only is an improvement upon and has certain advantages over previously designed cutters of the same general character but also is safer to use by reason of the fact that it includes a novel guard member which prevents the operator or user of the cutter from contacting the knife when the cutting head is in its inoperative or open position.

Another object of the invention is to provide a tape dispenser cutter of the aforementioned type and character in which the guard member is slidably mounted to move to and from the knife and has a slot therein for accommodating and exposing the knife when it is shifted in the direction of the knife and also has a spring whereby it is urged away from the knife into a normal or knife guarding position, and the cutting head is hollow, embodies a slot in one wall thereof for entry of the knife and is pivotally connected to the guard member in such manner that it may be swung back and forth between an open position wherein the tape may be placed between its slotted wall and the guard member, and a closed position wherein it is adjacent to, and in parallel relation with, the guard member and is adapted to be shifted toward the knife in order to bring the knifethrough the slot in the guard member and its slotted wall and thus effect cutting of the tape.

A further object of the invention is to provide a tape dispenser cutter of the character under consideration having simple and novel means whereby the guard member is locked against shifting movement in the direction of the knife except when the hollow cutting head is in its closed position.

A still further object of the invention is to provide a tape dispenser cutter which is efficient in operation and not only may be operated with ease or facility but also is constructed and designed that it may be manufactured at a comparatively low cost.

Other objects of the invention and the various advantages and characteristics of the present tape cutter will be apparent from a consideration of the following detailed description.

The invention consists in the several novel features which are hereinafter set forth and are more particularly defined by claims at the conclusion hereof.

In the drawing which accompanies and forms a part of this specification or disclosure and in which like numerals of reference denote corresponding parts throughout the several views:

Figure 1 is a perspective of a tape dispenser having associated therewith a cutter embodying the invention;

Figure 2 is a vertical transverse section illustrating in detail the construction and arrangement of the means for locking the guard member against shifting movement in the direction of the knife except when the cutting head is in its closed position; and

Figure 3 is a vertical longitudinal section taken on the line 3—3 of Figure 2 and showing or illustrating in detail the manner in which the knife of the cutter passes through the slot in the guard member and the slotted wall of the cutting head for tape cutting purposes which the head and guard member are shifted bodily in the direction of the knife.

The cutter which is shown in the drawing constitutes the preferred embodiment of the invention. It is illustrated in connection with, and is designed primarily to form a part of, a dispenser for a roll of tape 5 and operates, as hereinafter described, to cut the tape into sections or pieces of the desired length as it is unwound from the roll. The dispenser, except for the cutter, is of standard or conventional design. It is adapted to be placed upon a table or other support and comprises a frame 6. The latter is preferably in the form of a onepiece casting and consists of a bottom wall 7, a pair of upstanding laterally spaced side walls 8 and a cross wall 9. The bottom wall is flat and rectangular and serves to hold the side walls in laterally spaced relation. The side walls are parallel and embody at one end of the frame vertically extending outwardly disposed reenforcing ribs 10. The cross wall 9 is located at the other end of the frame and extends between, and is joined to, the adjacent portions of the side walls 8. It extends vertically and serves, as hereinafter described, as a supporting medium for the cutter. The roll of tape 5 is rotatably mounted on a spindle 11 which is carried by a pair of laterally spaced vertically extending bars 12. The latter

are bolted or otherwise fixedly secured to the portions of the side walls 8 having the reenforcing ribs 10 and have slots 13 at their upper ends for the ends of spindle 11. The tape 5 is adapted to be unwound by grasping the outer end and then pulling it in the direction of the cross wall 9 of the frame 6. During pulling of the tape the roll rotates about the spindle 11, as well understood in the art.

The improved cutter comprises a knife 14, a guide member 15 and a cutting head 16.

The knife 14 is in the form of a plate and extends vertically. It is positioned adjacent the upper end of the cross wall 9 and is removably secured to the inner face of the cross wall by a pair of screws 17. The upper portion of the knife projects above the top or upper edge of the cross wall 9, as shown in Figures 2 and 3, and has an inclined and beveled edge 18.

The guard member 15 of the cutter is in the form of a metallic stamping and consists of a vertically extending intermediate part 19, a horizontally extending upper part 20 and a horizontally extending lower part 21. The intermediate part 19 fits against the outer face of the cross wall 9 of the dispenser frame 6 and is held in place by means of a pair of bolts 22. The latter extend through and are carried by the cross wall. They project through a pair of laterally spaced vertically extending slots 23 in the central portion of the intermediate part 19 of the guard member and together with the slots form a connection whereby the guard member is permitted to slide vertically to limited extent relatively to the cross wall 9. The horizontally extending upper part 20 of the guard member projects inwards and is in overhanging relation with the knife 14. It has a central longitudinally extending slot 24 for receiving the cutting edge 18 of the knife when the guard member is depressed or urged downwards in the direction of the knife. The horizontally extending lower part 21 of the guard member projects or extends outwards in parallel relation with the bottom wall 7 of the dispenser frame 6. A compression spring 25 is disposed between the part 21 and the subjacent portion of the bottom wall 7 and urges the guard member upwards into normal knife guarding position wherein the horizontally extending upper part 20 overlies the knife 14. The upper end of the spring extends around a depending stud 26 on the bottom portion of the horizontally extending lower part 21 of the guard member and the lower end of the spring is seated in a socket 27 in the bottom wall 7 of the dispenser frame. When the cutter is to be used the tape 5 is pulled out to the desired length and then placed on the upper part 20 of the guard member. Thereafter, as hereinafter described, the guard is shifted downwards against the force of the compression spring 25 so as to cause the knife 14 to penetrate the slot 24 and engage the tape at the point at which it is to be cut. At the conclusion of the cutting operation the guard member is released with the result that the spring 25 shifts it upwards into its normal knife guarding position. In such position the upper part 20 overlies the knife, as shown in full lines in Figure 3, and prevents the operator or user of the cutter from engaging or contacting the knife.

The cutting head 16 coacts with the guard member and knife to effect cutting of the tape in connection with depression or downward shift of the guard member. It is elongated and hollow and consists of a bottom wall 28, a pair of side walls 29, a top wall 30 and a pair of end walls 31. Preferably the cutting head is in the form of a metallic stamping. One end of the cutting head is pivotally connected to one end of the horizontally extending upper part 20 of the guard member 15 by way of a pivot pin 32 in order that the head may be swung back and forth between an open or inoperative position wherein it extends vertically, as shown in Figure 1, and an operating or cutting position wherein the bottom wall 28 thereof overlies said upper part 20 of the guard member. The pivot pin 32 extends through a pair of upstanding apertured ears 33 on the upper part of the guard member and also extends through a pair of apertured ears 34 on the side walls 29 of the cutting head. The bottom wall 28 of the cutting head is provided with a longitudinally extending slot 35 and this corresponds in length to, and is adapted to register with, the slot 24 in the upper part 20 of the guard member when the cutting head is in its operating position. As shown by dotted lines in Figure 3 of the drawing, the slot 35 is adapted to have the cutting edge 18 of the knife 14 pass through it into the interior of the cutting head when the cutting head and the guard member are depressed or urged downwards in connection with a tape cutting operation. In connection with such an operation the cutting head is swung into its operating or closed position after placement of the tape on the horizontally extending upper part 20 of the guard member. Thereafter it, together with the guard member, is shifted downwards. During downward shift of the cutting head and guard member the cutting edge 18 of the knife passes through the slots 24 and 35 and serves to sever or cut the tape. During the cutting operation the portion of the tape to be cut is firmly held or clamped between the upper part 20 of the guard member and the bottom wall 28 of the cutting head. When pressure on the cutting head is released after a tape cutting operation the compression spring 25 shifts the guard member and head upwards. When the cutting edge 18 of the knife is disposed in the interior of the cutting head after downward movement of the head and guard in connection with a tape cutting operation it is surrounded by the side walls 29, the top wall 30 and the end walls 31 of the head and hence there is no likelihood of the operator or user of the cutter contacting or engaging the blade. At the conclusion of a cutting operation the cutting head 16 is swung upwards into its open position in order to release the cut or severed portion of the tape 5.

In addition to the knife 14, the guard member 15 and the cutting head 16, the cutter comprises means for locking the guard member against depression or downward shift except when the cutting head is in its operating or closed position. Such means, as shown in Figure 2, consists of a stop lug 36 and a quadrant shaped plate 37. The stop lug 36 is located in a cutout 38 in one of the side walls 8 of the dispenser frame 6 and is vertically aligned with the inner end of the pivot pin 32. It has a downwardly extending extension 39 and is fixedly held in place by means of screws 40 which extend through the extension and the side wall with which the stop lug is associated. The plate 37 is connected to the inner side wall of the cutting head 16 by way of an attaching plate 41. It is arranged so that its central portion is concentrically positioned with respect to the pivot pin. When the cutting

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head is in its open position the stop lug **36** and the quadrant shaped plate **37** are in vertical alignment, as shown by dotted lines in Figure 2, and the peripheral portion or the curved edge of the plate coacts with the lug to prevent downward shift of the cutting head and the guard member. During swinging of the cutting head into its closed position the plate **37** swings away from the stop lug **36** until finally when the guard reaches its fully closed or operating position it is out of alignment with the lug and hence the head and guard member are permitted to be shifted downwards for tape cutting purposes. As soon as the head is swung upwards relatively to the guard member the plate **37** is swung inwards into a position wherein it coacts with the stop lug to lock the guard member against depression or downward shift. The lug **36** and the plate **37** constitute a safety device or means for so controlling the guard member that it is locked against downward movement except when the cutting head is in its closed position. When the head is in such position and the head and guard member are shifted downwards in connection with a tape cutting operation the cutting edge **18** of the knife is fully guarded by the guard member and head and hence cannot injure in any way the operator or user of the cutter.

In order automatically to swing the cutting head **16** into its open position after a tape cutting operation a handle-like weight **42** is provided. This weight is connected to, and formed integrally with, one of the corner portions of the quadrant shaped plate **37** and projects away from the proximal end of the cutting head. It is of such length and weight that when the head is released after a cutting operation it swings the head upwards into its open position. As shown by dotted lines in Figure 2, the weight **42** is adapted when the cutting head extends vertically, that is, at right angles with respect to the upper part **20** of the guard member, to abut against the dispenser frame side wall having the stop lug **36** and thus limit further opening of the head. The weight **42** is of such design or construction that it operates in response to gravity to swing the cutting head into its fully open position upon release thereof at the conclusion of a cutting operation.

When it is desired to use the cutter for tape cutting purposes the outer end of the tape **5** is pulled from the roll, as heretofore pointed out, and is then placed on the horizontally extending upper part **20** of the guard member **15**. Immediately thereafter the operator or user of the dispenser grasps the cutting head **16** with his or her hand and swings it downwards into its closed position. As soon as the cutting head reaches its fully closed position and the operator places further downward pressure on the head the head, together with the guide member, moves downwards, as shown by dotted lines in Figure 3. During downward movement or shift of the head and guard member the cutting edge **18** of the knife passes through the slots **35** and **24**, as heretofore pointed out, and cuts that portion of the tape which is clamped or firmly held between the upper part **20** of the guard member and the bottom wall **28** of the head. At the conclusion of a tape cutting operation the operator releases the head **16**. As soon as the head is released the spring **25** urges the guard member upwards into its knife guarding position and the weight **42** operates in response to gravity to swing the cutting head upwards into its open position. When the cutting head is in its open position or in a partially open position the stop lug **36** and the quadrant shaped plate **37** coact, as heretofore pointed out, to prevent downward shift of the guard member relatively to the knife.

The herein described tape dispenser cutter consists of but a small number of parts and hence may be manufactured at a comparatively low cost. It is extremely effective in operation and in addition may be used without any likelihood of the operator sustaining any injury.

Whereas the cutter has been described as being primarily designed or adapted for use in connection with a tape dispenser it is to be understood that it may be used in other capacities. It is also to be understood that the invention is not to be restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention what we claim as new and desire to secure by Letters Patent is:

1. A cutter comprising a fixed knife, a guard mounted to move back and forth between a normal knife guarding position away from the knife and an inoperative position in close proximity to the knife, a hollow slot-equipped cutting head connected to the guard to move back and forth between open and closed positions with respect to the guard and adapted when it is in its closed position and the guard is in its normal position to be shifted towards the knife in order to bring the guard into its inoperative position and the knife into the slot for cutting purposes, and means for automatically locking the guard in its normal position except when the head is in its closed position.

2. A cutter comprising a support, a knife on the support, a guard mounted on the support adapted to move back and forth between a knife guarding position away from the knife and an inoperative position beyond the edge of the knife, a hollow slot-equipped cutting head pivotally connected to the guard to swing back and forth between open and closed positions with respect to the guard and adapted when it is in its closed position and the guard is in its normal position to be shifted towards the knife in order to bring the guard into its inoperative position and the knife into the slot for cutting purposes, and means between the support and the cutting head for automatically locking the guard in its normal position except when the head is in its closed position.

3. A cutter comprising a support, a knife on the support, a guard for the knife mounted on the support to slide back and forth between a normal knife guarding position away from the knife and an inoperative position beneath the edge of said knife, a hollow slot-equipped cutting head pivotally connected to the guard to swing back and forth between open and closed positions with respect to the guard adapted when it is in its closed position and the guard is in its normal position to be shifted towards the knife in order to bring the guard into its inoperative position and the knife into penetrating relation with the slot for cutting purposes, and means in the form of a stop lug on the support and a coacting sector shaped plate on the head for automatically locking the guard in its normal position except when the cutting head is in its closed position.

4. A cutter of the character described compris-

ing a support, a knife mounted on the support and provided with an upwardly facing cutting edge, a guard mounted on the support to slide vertically back and forth between a normal knife guarding position wherein it overlies the knife and an inoperative position wherein it is disposed beneath the edge of the knife, a hollow slot-equipped cutting head pivotally connected to the guard to swing back and forth between an open position wherein it is above the guard and a closed position wherein it overlies the guard, and adapted when it is in its closed position and the guard is in its normal position to be shifted towards the knife in order to bring the guard into its inoperative position and the knife into the slot for cutting purposes, means in the form of a stop lug on the support and a coacting sector shaped plate on the cutting head for automatically locking the guard in its normal position except when the head is in its closed position, and a weight applied to the plate and arranged and adapted automatically to swing the head into its open position when it is released after a cutting operation.

5. A cutter comprising a support, a knife mounted fixedly on the support, a guard having an elongated flat wall with a longitudinal knife receiving slot therein, of but slightly greater width than the knife and mounted on the support to slide truly rectilinearly back and forth between a normal knife guarding position wherein said flat wall overlies the knife and an inoperative position wherein the knife projects through the slot, a spring between the guard and the support for urging the guard into its normal position, and a hollow cutting head embodying an elongated flat wall with a longitudinal knife accommodating slot therein of substantially the same width as the slot in the flat wall of the guard, and provided with a pivotal connection between one end of its flat wall and one end of said flat wall of the guard whereby it is permitted to swing back and forth between an open position away from the guard and a closed position wherein its flat wall is in lapped and parallel relation with the flat wall of the guard and its slot is in registry with the slot in the guard, said head being adapted when it is in its closed position and the guard is in its normal position to be shifted truly rectilinearly with the guard so as to bring the guard into its inoperative position and the knife into penetrating relation with the two slots.

6. A cutter of the character described comprising a support, a knife mounted in an upstanding manner on the support and provided at the upper portion thereof with a straight full length inclined cutting edge, a guard having an elongated flat wall with a longitudinal knife-receiving slot therein of but slightly greater width than the knife, and mounted on the support to slide truly vertically back and forth between a normal knife guarding position wherein said flat wall overlies the knife and an inoperative position wherein said flat wall is disposed beneath the knife edge and the latter projects through said slot, means for urging the guard into its normal position, a hollow cutting head having an elongated flat wall with a knife accommodating slot therein of substantially the same width as the slot in the flat wall of the guard, pivotally connected to the guard to swing back and forth between an open position wherein it is above the guard and a closed position wherein its flat wall is in lapped and parallel relation with the flat wall of the guard and its slot is in registry with the slot in the guard, and adapted when it is in its closed position and the guard is in its normal position to be shifted truly vertically towards the knife in order to bring the guard into its inoperative position and the knife into the two slots for cutting purposes, and means for urging the cutting head into its open position.

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