

June 7, 1955

L. F. BIRKMANN

2,710,060

TAPE SLITTER WITH SPRING-PRESSED KNIVES

Filed May 20, 1952

2 Sheets-Sheet 1

Fig. 2.

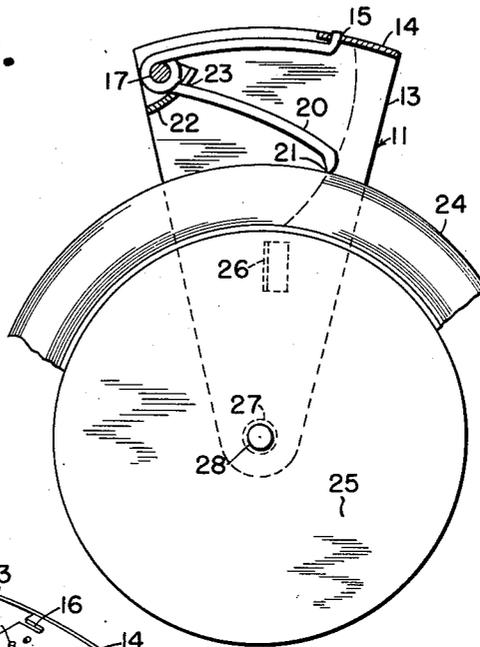
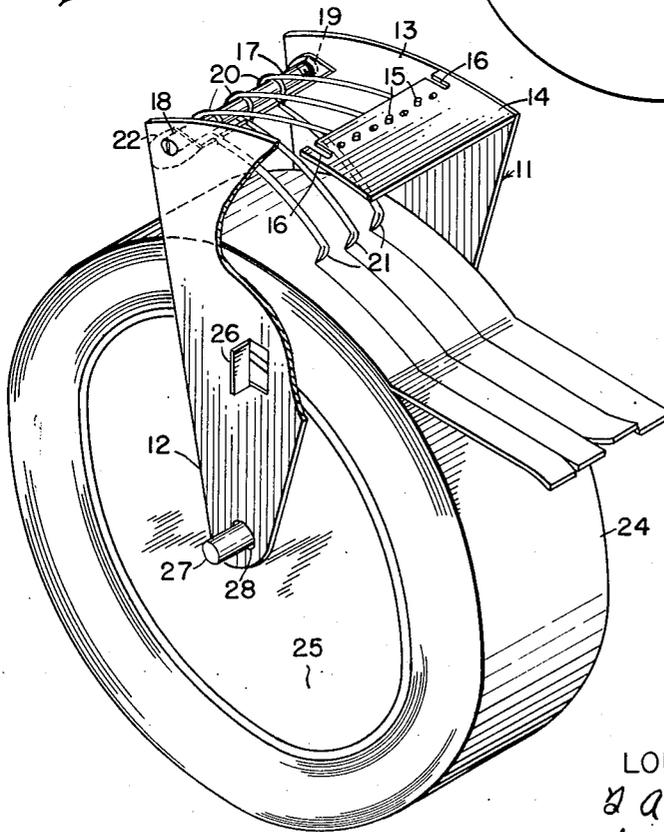


Fig. 1.



BY

INVENTOR
LOUIS F. BIRKMANN
W. A. Sequist
W. Bier

ATTORNEYS

June 7, 1955

L. F. BIRKMANN

2,710,060

TAPE SLITTER WITH SPRING-PRESSED KNIVES

Filed May 20, 1952

2 Sheets-Sheet 2

Fig. 4.

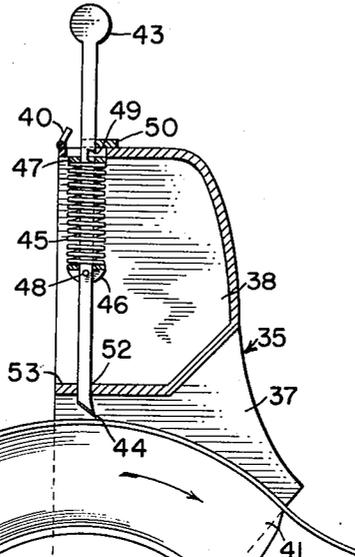
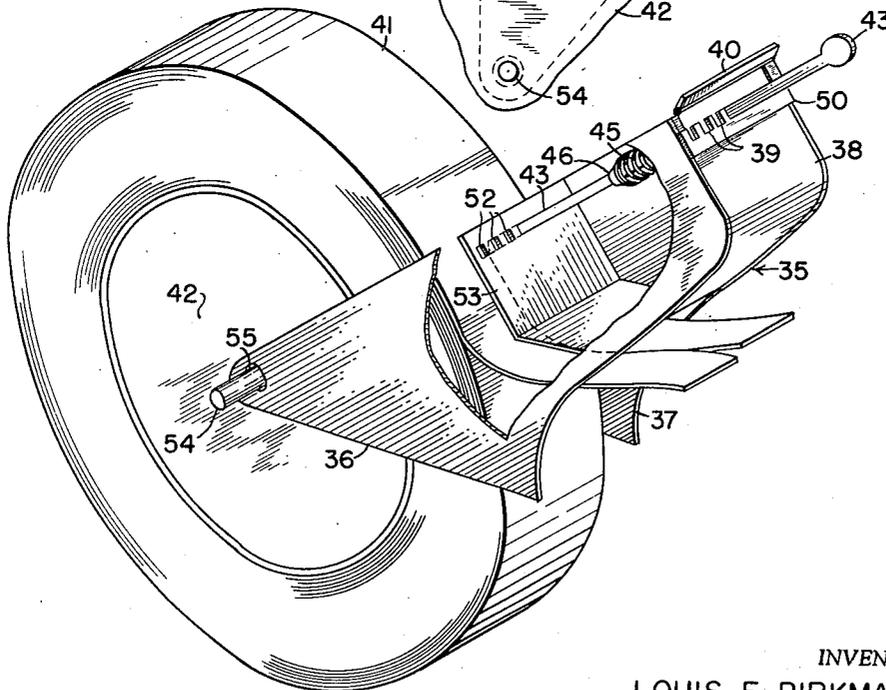


Fig. 3.



INVENTOR
LOUIS F. BIRKMANN

J. A. Sequist
W. Bier

BY

ATTORNEYS

1

2,710,060

TAPE SLITTER WITH SPRING-PRESSED KNIVES

Louis F. Birkmann, Lincoln, Nebr.

Application May 20, 1952, Serial No. 283,990

5 Claims. (Cl. 164—36)

(Granted under Title 35, U. S. Code (1952), sec. 266)

A non-exclusive, irrevocable, royalty-free license in the invention herein described, for all governmental purposes, throughout the world, with the power to grant sublicenses for such purposes, is hereby granted to the Government of the United States.

This invention relates to tape slitters and has among its objects the provision of a tape slitter which is simple to operate and is economical to construct. Other objects will be apparent from the description of the invention.

According to the invention, a tape slitter having a frame which carries at least one cutting blade is provided. Means are provided for rotatably mounting a storage roll of tape on an axis fixed relative to the frame and a spring resiliently urging the blade substantially radially towards the axis into cutting engagement with the outer layer of the tape while the tape is on the roll, whereby the tape is slit by the blade as it is unwound from the roll.

In the accompanying drawing

Figure 1 is a tri-dimensional view of a tape slitter illustrating one embodiment of the invention;

Figure 2 is a detail side view of the slitter with parts cut away;

Figure 3 is a tri-dimensional view of a second embodiment of the invention; and

Figure 4 is a longitudinal sectional view of this second embodiment.

Referring to Figures 1 and 2 of the drawing, the tape slitter provides a frame 11 having sides 12 and 13 secured to each other by a crossplate 14. The crossplate contains a series of notches 15 and escape slots 16, the functions of which will be explained hereinafter.

The slitter further provides a screw rod 17 which loosely passes through an aperture 18 in side 12 and is screwed into threaded aperture 19 in side 13. Horizontally slidably mounted on this rod are resilient springs 20 in the form of a coil of spring wire surrounding the rod, the lower ends of which are fashioned into downwardly-extending blades having cutting edges 21 and the upper ends of which are fixed in the notches 15 and thus to the frame. The lower ends of the springs are prevented from sliding sideways by means of a plate 22 disposed under the screw rod and extending between arms 12 and 13, this plate having slots 23, aligned with notches 15, in which the lower ends of the springs rest. The notches 15 and slots 23 thus are the means for lateral adjustment of the springs to a desired position for cutting the outer layer of the storage roll of tape 24 on spool 25. When it is desired to remove the outer springs from engagement with the tape, they may be moved over to the ends of crossplate 14 where their upper ends pass through escape slots 16. In this position, the lower ends of the outer springs rest loosely in aligned slot 23 in plate 22. Spring adjustments can be made by placing the finger underneath the screw rod 17 and raising up on the bottom of the spring until it clears plate 22. The spring can then be moved sideways to a desired slot 23 in plate 22. Likewise, by pressing down on the upper end of the spring until it clears notches 15, the upper part of the spring

2

may be moved sideways to the desired notch 15 and there aligned with the first adjustment.

Tabs 26, protruding from sides 12 and 13, are also provided for association with a conventional dispenser (not shown) having vertically slotted sidewalls for receiving the tabs. These tabs function to fix the slitter in operative position and to render it substantially immobile. Axle 27, received in aperture 28, supports spool 25. The ends of the axle project beyond sides 12 and 13 and are also received in the vertically slotted sidewalls of the conventional dispenser (not shown).

In operating the device, the slitter is first mounted on the dispenser (not shown) by means of tabs 26 and axle 27. Springs 20, mounted on screw rod 17 which extends substantially parallel to the axis of rotation of the roll of tape 24, are laterally adjusted to the desired position and fixed in such position by means of notches 15 and slots 23. As the outer layer of the tape is then unwound, it is slit by cutting edges 21.

Referring to Figures 3 and 4, the embodiment shown therein provides a frame 35 having sides 36 and 37 secured together by a crossplate 38. The crossplate contains apertures, such as notches 39 and has a lock device 40 attached thereto, the purposes of which will be explained hereafter.

A blade assembly for cutting the tape 41 wound on spool 42 is also provided. This assembly comprises a substantially straight blade rod 43 having a knife edge 44, a compression coil spring 45, springseat 46, washer 47, and pin 48. The spring is biased on its upper end against crossplate 38 and on its lower end by the spring-stop as exemplified by the springseat 46 and pin 48. The blade rod has a recess 49 near its upper end, this recess being adapted for engaging a baseplate 50 when it is desired to disengage and hold the knife edge out of contact with the tape. Although only one blade rod and associated parts have been shown any number of such assemblies may be used.

In preparing the device for operation, the blade rod and associated parts is assembled, as shown in Figure 4, the upper end of the blade rod passing through notch 39 of crossplate 38 while the lower end having knife edge 44 passes through an aligned aperture 52 in flatplate 53 which is secured to crossplate 38 and transversely positioned thereto. In this position, the knife edge contacts the outer layer of tape 41. Figure 3 illustrates the device in operative position.

An axle 54, received in aperture 55, supports spool 42 in the same manner as the axle of the first embodiment and is adapted for association with a conventional dispenser (not shown) as in the first embodiment.

In operating the device, the blade rod assembly (or assemblies if more than one is to be used to cut varying widths of tape) is positioned in a selected notch 39 and aligned aperture 52 in flat plate 53 with the spring 45 in expanded position whereupon knife edge 44 is pressed against the outer layer of the tape 41. As this layer is unwound from the roll, it is cut by the knife edge. When it is desired to disengage the knife edge from the tape, the blade rod is pulled upwardly compressing the spring 45 and the entire blade assembly then held in such disengaged position by means of recess 49 in the blade rod engaging baseplate 50. When all of the blade rod assemblies are in such disengaged position, they may be so held by means of lock device 40.

I claim:

1. A tape slitter comprising a frame, means for rotatably mounting a storage roll of tape on an axis fixed relative to the frame, at least one cutting blade carried by the frame, and a spring resiliently urging the blade substantially radially towards the axis into cutting engagement with the outer layer of the tape while the

3

tape is on the roll, whereby the tape is slit by the blade as it is unwound from the roll.

2. A tape slitter comprising a frame, means for rotatably mounting a storage roll of tape on an axis fixed relative to the frame, a rod, carried by the frame, extending substantially parallel to the axis of rotation of the roll of tape, and a spring, carrying a cutting blade, resiliently urging the blade substantially radially towards the axis into cutting engagement with the outer layer of the tape while the tape is on the roll, said spring being in the form of a coil of spring wire surrounding the said rod with one end of the spring wire being in fixed engagement with a part of the frame and the other end extending towards the roll and carrying the blade, whereby the tape is slit by the blade as it is unwound from the roll.

3. A tape slitter comprising a frame, means for rotatably mounting a storage roll of tape on an axis fixed relative to the frame, a pair of transverse plates, carried by the frame, each of which has an aperture, a substantially straight rod, one end of which carries a cutting blade, slidably receivable in the apertures, and a spring resiliently urging the blade substantially radially towards the axis into cutting engagement with the outer layer of the tape while the tape is on the roll, said spring being a compression coil spring surrounding the said rod between the transverse plates, being biased on one end against one of the plates, and being biased on the other end against a spring stop carried by the rod, whereby the tape is slit by the blade as it is unwound from the roll.

4. A tape slitter comprising a frame, means for rotatably mounting a storage roll of tape on an axis fixed relative to the frame, a pair of transverse plates, carried by the frame, each of which has a plurality of apertures aligned with the apertures of the other, a plurality of substantially straight rods, each of which carries a cutting blade at one end and is slidably receivable in a pair of the aligned apertures, a plurality of springs, each of which is a compression coil spring surrounding a rod between the transverse plates, being biased on one end against one of the plates, being biased on the other end against a springstop carried by the said rod, and resiliently urging the blade associated therewith substantially radially

4

towards the axis into cutting engagement with the outer layer of the tape while the tape is on the roll, and means associated with each blade for withdrawing and temporarily holding the said blade from contact with the tape, whereby the tape may be slit by the blades into selective widths as it is unwound from the roll.

5. A tape slitter comprising a frame, means for rotatably mounting a storage roll of tape on an axis fixed relative to the frame, a pair of transverse plates, carried by the frame, each of which has a plurality of apertures aligned with the apertures of the other, a plurality of substantially straight rods, each of which carries a cutting blade at one end and is slidably receivable in a pair of the aligned apertures, a plurality of springs, each of which is a compression coil spring surrounding a rod between the transverse plates, being biased on one end against one of the plates, being biased on the other end against a springstop carried by the said rod, and resiliently urging the blade associated therewith substantially radially towards the axis into cutting engagement with the outer layer of the tape while the tape is on the roll, and means associated with each blade for withdrawing and temporarily holding the said blade from contact with the tape, said last-named means comprising a recess in the side of the rod carrying the blade near where the rod slides through an aperture in one of the plates so that in the withdrawn position of the blade the recess may be slipped over the plate at the edge of the aperture to temporarily hold the blade from contact with the tape, whereby the tape may be slit by the blades into selective widths as it is unwound from the roll.

References Cited in the file of this patent

UNITED STATES PATENTS

223,475	Brombacher	Jan. 13, 1880
1,637,784	Oyler	Aug. 2, 1927
1,652,149	Pappano	Dec. 6, 1927
1,806,412	Olsen	May 19, 1931
1,926,340	Kniep	Sept. 12, 1933
2,399,154	Antrim et al.	Apr. 23, 1946
2,540,697	Staples	Feb. 6, 1951
2,593,154	Judelson	Apr. 15, 1952