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Sept. 4, 1934. C. D. McCARTHY 1,972,851

TAPE DISPENSER

Filed June 18, 1932 3 Sheets-Sheet 1

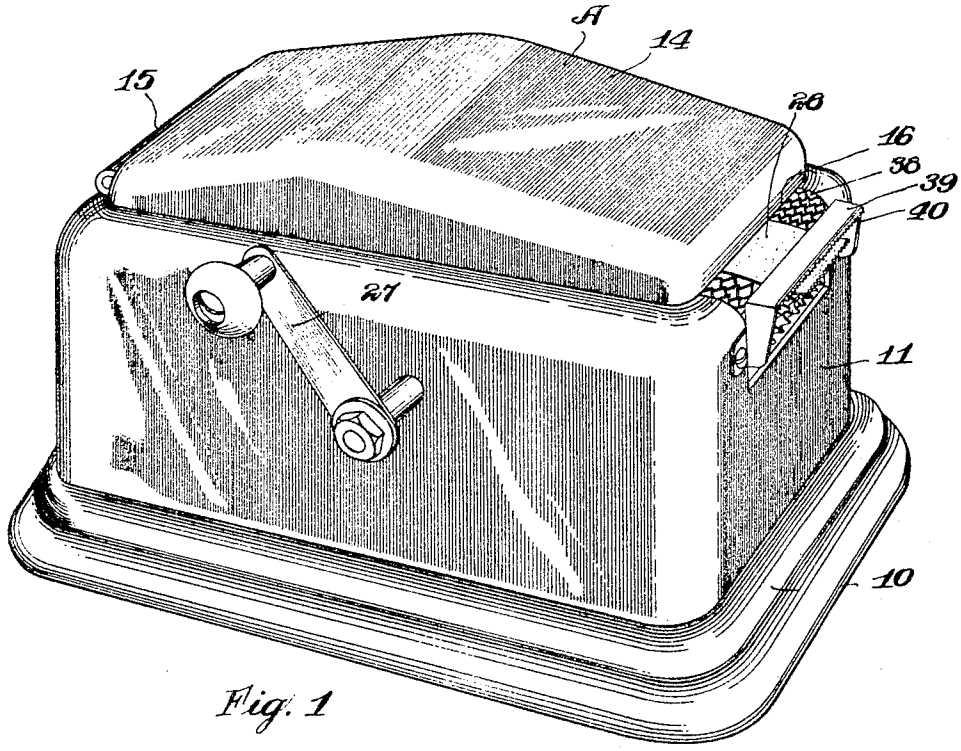


Fig. 1

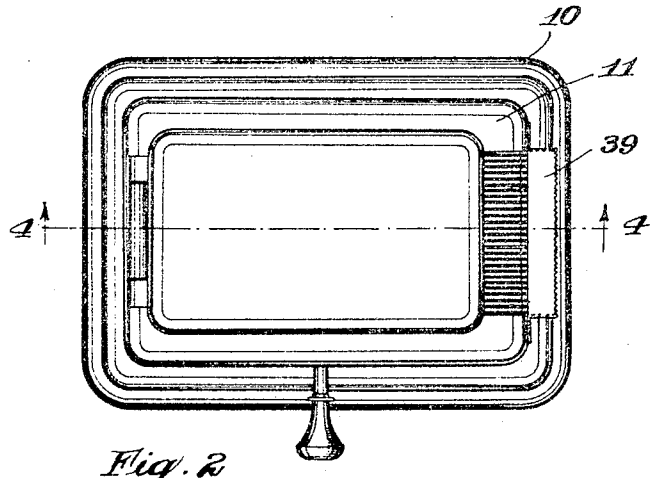


Fig. 2

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TAPE DISPENSER

Filed June 18, 1932 3 Sheets-Sheet 2

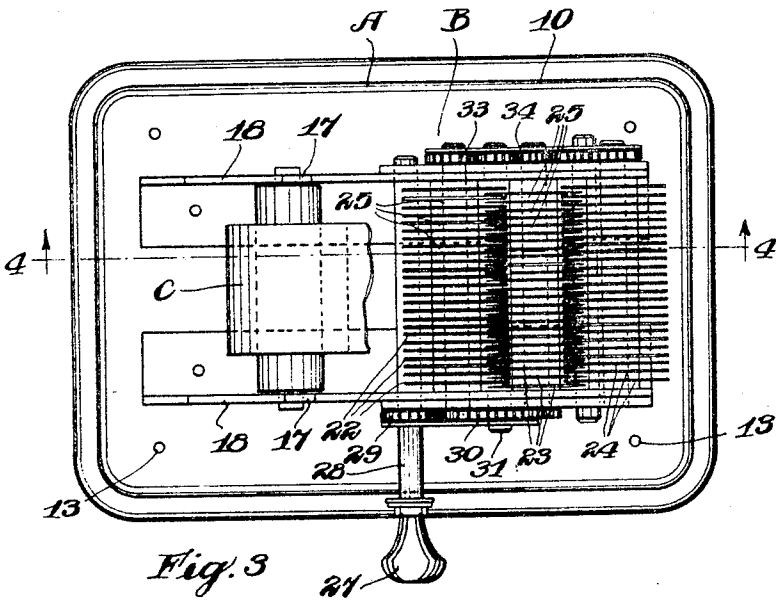


Fig. 3

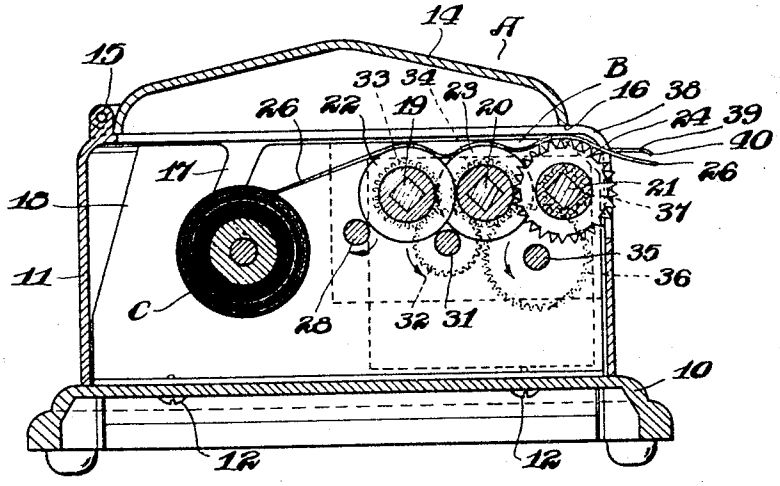


Fig. 4

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TAPE DISPENSER

Filed June 18, 1932 3 Sheets-Sheet 3

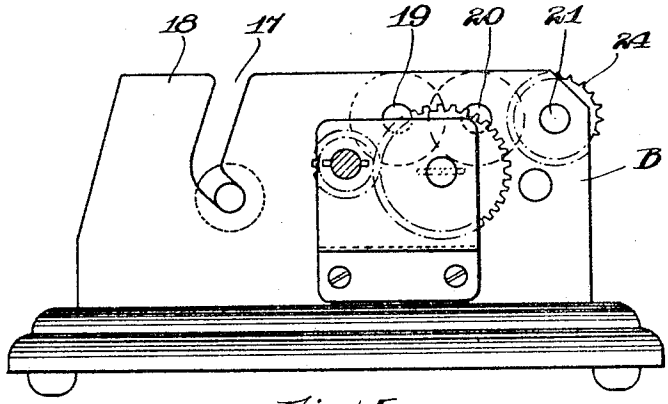


Fig. 5

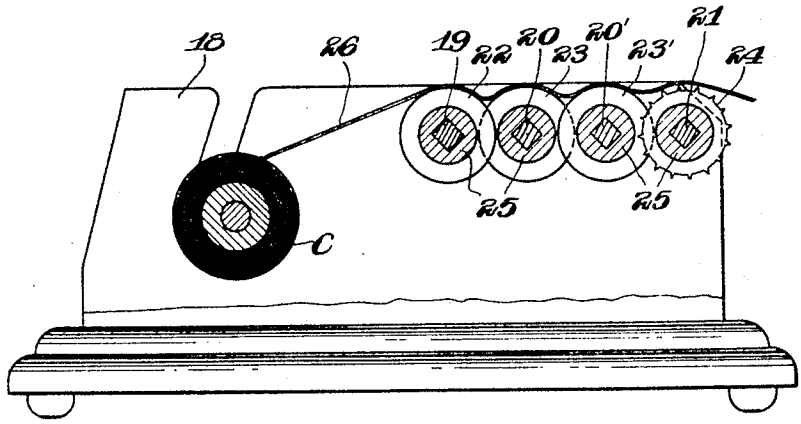


Fig. 6

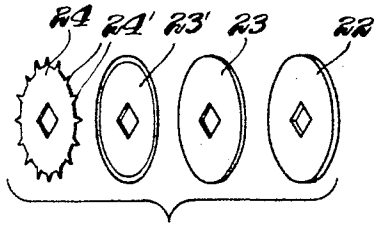


Fig. 7

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OR DELIVERING.
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Patented Sept. 4, 1934

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UNITED STATES PATENT OFFICE

1,972,851

TAPE DISPENSER

Charles D. McCarthy, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn., a corporation of Minnesota

Application June 18, 1932, Serial No. 617,973

4 Claims. (Cl. 242—55.2)

This invention relates to a tape dispenser designed to support the supply roll of the tape concealed within the dispenser and to provide means for drawing the tape from the supply roll and projecting it out of an opening in the side of the dispenser so that the tape may be cut off in the desired lengths.

A primary feature resides in a tape dispenser which is adapted to handle tape of the character of "adhesive" or other hospital tapes where the tape is medicated and the adhesive surface is of a nature which heretofore has been hard to handle owing to the fact that it has a live adhesive surface which does not dry quickly. Tapes of this character are not easily handled from the roll because if the adhesive surface of the tape gets stuck together, or overlaps, it is difficult to separate the same owing to the powerful sticky nature of the adhesive surface.

Further, heretofore insofar as I know, no practical means has been provided for handling hospital tapes so that they may be dispensed out free of the supply roll in any desired length. My dispenser is provided with a hand operated crank or lever which causes the tape to be drawn from the supply roll and includes freely disposed kicker discs which are speeded up and which force the tape out free of the dispensing machine so that it may be readily engaged and cut off in the desired lengths.

It is a feature to provide a dispenser wherein a series of freely disposed discs which intermesh are formed with engaging surfaces adapted to contact with the adhesive surface of the tape being dispensed, each series of these discs having a lesser contacting engagement with the adhesive surface of the tape. Thus the final kicker discs which travel faster than the other discs have the least contacting surface with the adhesive side of the tape. This is an important feature of my dispenser for it provides a means wherein a strong pulling power is provided for the first series of discs so that they may pull the tape from the supply roll. The next set of discs have a lesser contacting surface with the tape, and so on, until the final discs contact with a very small area of the tape, in fact, the final engagers which are termed the kicker discs, engage the surface of the tape being dispensed only on the points of little teeth which project from this series of teeth, and which teeth are staggered in relation to each other.

A further feature of my tape dispenser resides in means wherein a series of tape engaging discs act to pull the tape from the supply roll and carry it out of the dispenser, these discs being arranged on supporting shafts in a series so as to form a series of rolls made up of these discs held on the respective supporting shafts, and each disc being separated from each other by washer-like members which are smaller than the diameter of the discs and while the discs are keyed on the supporting shaft to rotate together, they are freely disposed and not bound tight by the spacer washers but having lateral play. This is an important feature of the mounting of the respective roll discs which are positioned with the discs of one roll intermeshing with the discs of the adjacent roll, because it permits the discs to move laterally in the dispensing of tape being pulled off of the supply roll by these disc rolls, causing the discs to align with the tape and the tape to align with the discs, and overcoming the tape being dispensed or pulled out by the disc rolls skew-geeing to one side or the other, but being carried straight out of the dispenser in a very advantageous manner.

The various features, details, and advantages together with other objects will be more fully set forth.

In the drawings forming part of this specification:

Figure 1 is a perspective view of my tape dispenser.

Figure 2 is a plan view of the same.

Figure 3 is a plan view with the top casing removed.

Figure 4 is a section on the line 4—4 of Figure 2.

Figure 5 is a side elevation of Figure 3 partly in section.

Figure 6 is a diagrammatic side sectional elevation, showing another form of the dispenser, the casing being removed.

Figure 7 illustrates diagrammatically the progression of operation of the engaging discs of the modification of Figure 6 to show the first disc with a broader engaging surface, the second with a lesser engaging surface, the third with still a lesser engaging surface, and the fourth with the least engagement in the form of a disc with pointed teeth. One of these discs is eliminated in dispensers where only three types of discs are required.

My tape dispenser A is provided with a base portion 10 which is adapted to support the operating mechanism B of the same.

The operating mechanism B of the dispenser A is covered by the upright casing 11 which is mounted on the base by the screws 12 which extend through the openings 13 formed in the base

10. The casing 11 has a cover 14 which is hinged at 15 having a free edge 16. This permits the cover to be raised readily so that the operating mechanism and the supply roll are exposed when the cover is open. When the cover 14 is opened the tape supply roll C may be removed or a new roll inserted through the slots 17 formed in the side walls 18 which provide the frame for supporting the mechanism B to the base 10.

A series of shafts 19, 20 and 21, are journaled in the side frame members 18. The central portion between the sides 18 have a squared nature and are adapted to receive the tape engaging discs 22, 23, and 24, respectively. The discs 22, 23 and 24 are adapted to intermesh as illustrated in Figure 4, and they are held on the respective shafts 19, 20 and 21 with free or lateral play, owing to the fact that the respective discs are not clamped together on the respective shafts but are held spaced apart by a series of spacing washers 25 which are also free to move laterally, giving a free lateral movement to each operating roller formed by the discs 22, 23 and 24. This free mounting of the discs which make the respective operating rolls for drawing the tape 26 from the supply roll C, causes the tape to align perfectly with the respective rolls and the discs to move into position to align with the tape, and thus the tape 26 may be carried out of the dispenser A without working from one side to the other of the same, but being pulled virtually straight through the machine as it is operated. This is important particularly in the handling of tape of the character of adhesive and other similar tapes where the adhesive surface has a powerful gripping nature and does not dry readily.

The shafts 19, 20 and 21 are adapted to be operated by the hand lever 27 which rotates the shaft 28 to cause the gear 29 to rotate the intermeshing gear 30 positioned on one side of the frame wall 18 of the dispenser A, as illustrated in Figure 3. The gear 30 is mounted on the transverse shaft 31 which extends between the side walls 18 below the shafts 19, 20 and 21. Opposite to the side which supports a gear 30, the shaft 31 operates a gear 32. This gear meshes with the gears 33 and 34 which are mounted on the ends of the respective shafts 19 and 20 so that these shafts are rotated in the same direction to rotate the respective discs carried by these shafts.

A shaft 35 extends between the sides 18 and is adapted to support the larger gear 36 mounted below the gears 33 and 34 and the gear 36 is adapted to mesh with the gear 34 and is driven thereby. The gear 36 meshes with a pinion 37 mounted on the end of the shaft 21 and which pinion is smaller than the gears or pinions 33 and 34, so that the shaft 21 will be rotated faster than either of the shafts 19 or 20 in the operation of the mechanism B.

In the operation of my tape dispenser A, the supply roll C of adhesive tape, such as is used in hospitals or in any place where it is desired to dispense a tape of the character set forth, is mounted freely in the slots 17. The tape 26 is then carried up from this supply roll over the first roller made up by the discs 22, then over the roller made up of the discs 23, and across the roller made up of the discs 24. The tape 26 extends out of the dispenser A under the free edge 16 of the cover 14 through the opening 38 formed in the casing 11 below the free edge 16 of the cover 14 and under the cutting plate 39 which is provided with a serrated or cutting edge 40. Then as the lever 27 operates the shaft 28, the gears 29, 30, 33 and 34 will in turn be operated. The gear 34 operates the gear 36, and in turn drives the pinion 37 to rotate the shaft 21 faster than the shafts 19 and 20, and the tape 26 will be pulled by the primary discs 22 being picked up by the secondary draft discs 23 from which the tape 26 is picked up by the kicker discs 24 which are operated at a higher rate of speed and which are formed with teeth 24' so that the tape 26 will be kicked free of the discs 24 and carried out under the cutting blade 39.

The respective discs 22, 23 and 24, which provide the pulling or draft wheels to the respective rolls made up by the discs have a character wherein the primary discs 22 are formed with a comparatively broad gripping surface on the periphery of the same against which the adhesive surface of the tape 26 engages. This provides a strong pulling power to the primary discs which make up the first pulling roll of the dispenser A. This roll with its freely disposed discs 22 acts to pull the tape 26 from the supply roll C. From the roll made up by the discs 22 the tape 26 passes on to the roll made up by the discs 23. These discs have a gripping surface of a lesser area on their periphery than the discs 22 and thus do not adhere so tightly to the adhesive surface of the tape 26. As the tape passes from the roll made up by the discs 23 it is engaged by points of teeth 24' of the discs 24. The points of these discs are set in staggered relation across the roll made up by these discs and here too the discs are freely disposed so as to be self-adjusting just the same as the discs 22 and 23. The respective discs 22, 23 and 24, intermesh in the spaces formed by the spacer washers 25 as illustrated in Figure 3, so that the tape 26 is carried readily over the respective rolls made up of these discs and is disengaged from one roll by the next or adjacent or succeeding roll. Thus it will be apparent that the contacting surface of the discs becomes less as the tape 26 is dispensed out of the machine A. The discs 24 wih their teeth 24' act as kickers to virtually kick the adhesive tape 26 free of the teeth 24', causing the tape to extend out free so that it may be engaged and cut off into the desired length under the plate 39.

The dispenser A is very adaptable for hospital adhesive tape as it provides a means for supporting and dispensing the tape of a sanitary nature, so that the supply roll of adhesive tape may be held concealed within the same. The base 10 and the casing 11 with its cover 14 may be white enameled, as hospital supplies usually are, making it easy to keep clean and sanitary and it is not necessary for the operator to touch the supply roll, but only to engage the operating handle or lever 27 and rotate it until the desired amount of tape 26 has been dispensed out of the machine A. The operator may engage the freely extending end of the tape 26, such as is illustrated in Figure 1, while operating the handle 27 to support the tape as it is carried out of the dispenser A, and then it may be cut off quickly and readily by the plate 39. Another advantage of my dispenser A resides in the unrolling of the tape 26 in a manner to cause the same to extend comparatively flat and be held entirely free of the supply roll. The draft rolls made up by the respective discs of the mechanism B seem to act to straighten the tape as it is pulled from the supply roll C.

It is apparent that my dispenser may be used for any desired purpose in handling and dispensing adhesive tapes where the adhesive sur-

face is formed with a powerful gripping nature. Any width of tape may be carried in the dispenser A and a series of units similar to the mechanism B may be arranged in the same dispenser A if it is desired, with an operating crank for each unit so as to permit the tape of the desired width to be dispensed from the same.

In some cases it will be desirable to have several rolls of secondary discs 23 and I have illustrated in Figure 6 and in the diagrammatic outline in Figure 7, such a series of discs 23' which are disposed between the discs 23 and the discs 24. It will be apparent that these discs may be carried on the respective shafts 19, 20 and 20' and 21, as illustrated in Figure 6, and even more intermediate rolls made up of the secondary discs 23 or 23' may be provided in machines where a longer pull is preferred from the supply roll C.

The dispenser A is compact, easily and quickly operated, does not have any operating parts which will get out of order, may be kept sanitary, and is very desirable for hospital adhesive tapes and the like, and may be used equally well for commercial use of an adhesive tape of a character where the adhesive surface does not readily dry but remains tacky even when exposed to the air so that the tape may be readily used for various purposes, and the dispenser is disposed to easily eject the tape for use. I believe my dispenser A provides a machine of a character long desired for this purpose and fulfills a practical nature.

In accordance with the patent statutes I have described the principles of my dispenser and while I have illustrated the same in a particular form and of a nature to handle the adhesive tape from the supply roll, the dispenser may be varied and applied to uses other than those above set forth and within the scope of the following claims.

I claim:

1. A draft means for adhesive tape comprising, a series of rolls each of which is made up of a series of uniformly formed thin sheet-like discs spaced apart in a manner to freely move laterally and keyed to rotate in unison, means for supporting said discs of the respective rolls in overlapping relation, means for rotating some of said rolls in unison and simultaneously rotating others faster, the peripheries of the discs of said rolls acting as self-aligning engaging means with the adhesive surface of the tape to dispense the same from a source of supply, the fast operated rolls acting as kicker means, freeing and dispensing the adhesive tape therefrom.

2. A draft means for pulling adhesive tape from a source of supply including, a series of rolls formed of thin discs keyed together and freely disposed to move laterally in relation to each other, means for supporting said rolls with the respective discs intermeshing and overlapping, the first roll acting as the primary pulling means for engaging the adhesive surface of the tape to pull the same from the source of supply and the discs thereof having a comparatively broad engaging surface on the periphery of the discs to contact with the adhesive surface of the tape, the surfaces of the next adjacent draft roll having a lesser contacting peripheral surface, and the next succeeding rolls having a lesser peripheral engaging surface with the adhesive surface of the tape, and so on until the last roll of said draft means has the least engagement with the adhesive surface of the tape, and means for operating said rolls in unison, with the last roll thereof operating at a faster speed than the other rolls to virtually kick the adhesive tape free therefrom and dispense the same.

3. A draft means for pulling adhesive tape from a source of supply by engaging the adhesive surface thereof, comprising primary, secondary and final engaging rolls, each roll including a series of freely disposed thin discs keyed to rotate together, means for rotating said discs, pointed teeth formed on the discs of said final roll whereby the adhesive tape is pulled by contact with its adhesive surface and finally ejected off of the teeth of said final roll to dispense the same.

4. A draft unit for pulling adhesive tape from a source of supply including, a series of rollers held adjacent each other, means for rotating said rollers in unison, the first of said rolls to engage the adhesive tape having the widest peripheral tape engaging surface and the peripheral engagement of the next succeeding rolls diminishing until the final roll has the least engagement with the adhesive surface of the tape, and means for operating the final roll faster than the remainder of the rolls to eject the adhesive tape therefrom.

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