June 17, 1958 H. F. HANSCOM 2,839,137

MACHINE FOR DISPENSING TAPE

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Fig. 1.

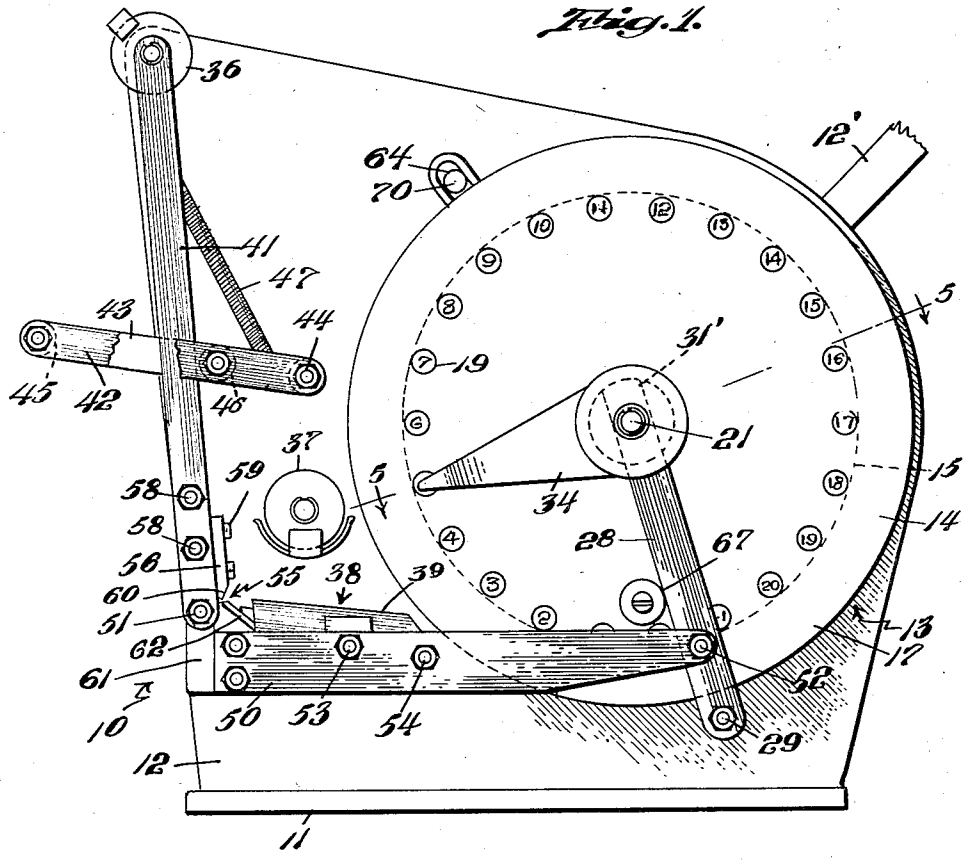


Fig. 6.

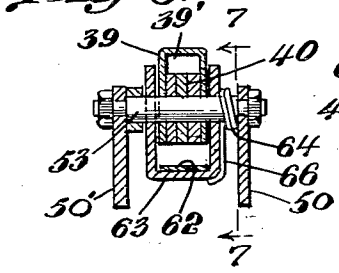
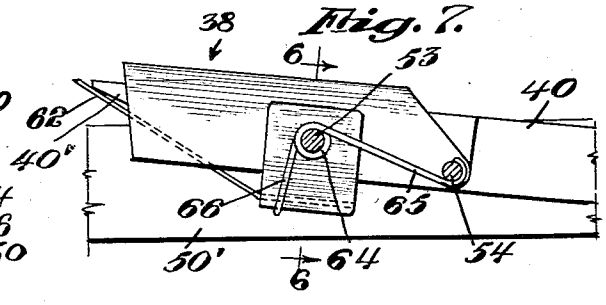


Fig. 7.



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Fig. 2.

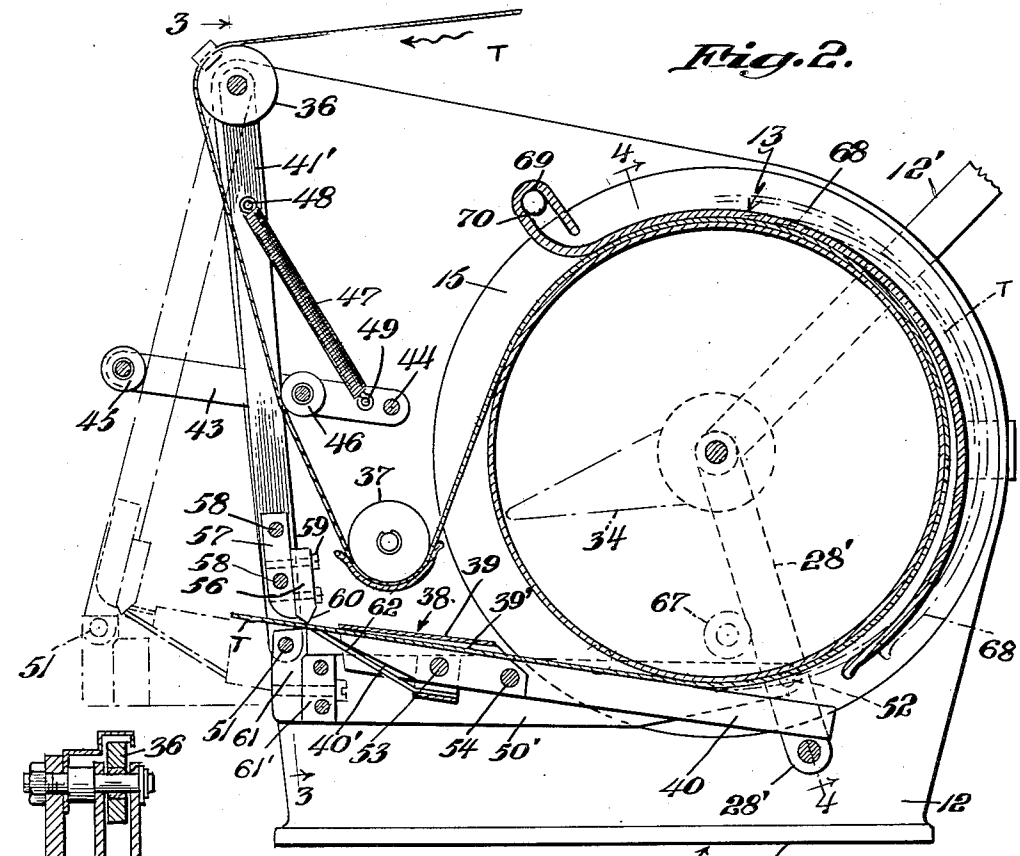


Fig. 3.

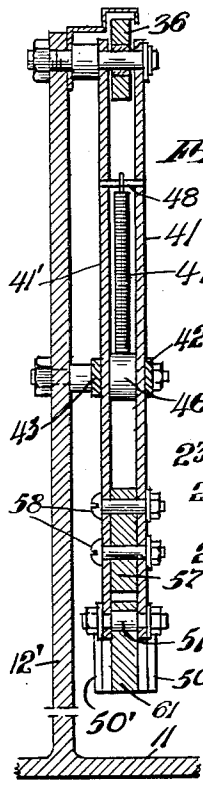
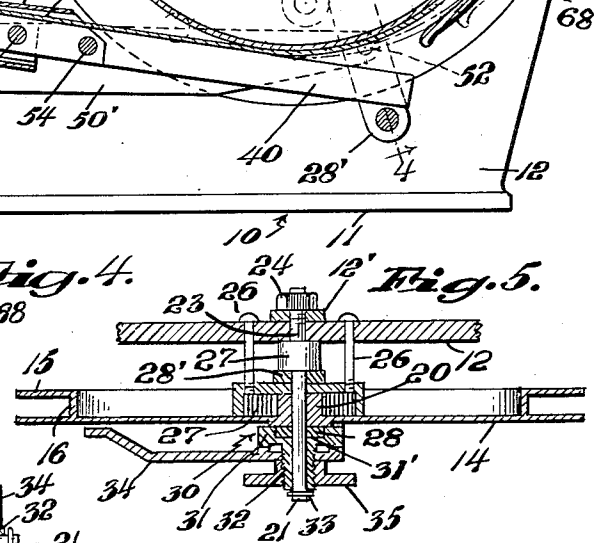


Fig. 4.

Fig. 5.



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MACHINE FOR DISPENSING TAPE

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Application April 16, 1956, Serial No. 578,456

8 Claims. (Cl. 164—43)

The invention relates to a machine for dispensing tying tape in predetermined lengths.

An object of the invention is to provide a machine, for dispensing tape, which is so constructed as to be automatically actuated by movement of the tape through the machine.

Another object of the invention is to provide a machine of the above character operable for severing tape into many varied and predetermined lengths.

Another object of the invention is to provide a machine of the above character in which movement of the metering means will actuate the tape severing means.

Another object of the invention is to provide a machine of the above character so constructed as to be actuated by means of a manual pull on the tape to be dispensed thereby.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a side elevational view of a machine for dispensing a tying tape embodying my invention;

Figure 2 is a similar view partially in section;

Figure 3 is a sectional view taken substantially along line 3—3 of Figure 2;

Figure 4 is a sectional view taken substantially along line 4—4 of Figure 2;

Figure 5 is a sectional view taken substantially along line 5—5 of Figure 1;

Figure 6 is a sectional view taken substantially along line 6—6 of Figure 7; and

Figure 7 is a sectional view taken substantially along line 7—7 of Figure 7.

The machine indicated generally 10 comprises a base 11 having a vertical wall or support 12 on which there is mounted a tape metering means indicated generally 13. The metering means includes a disk or wheel 14 which has an annular groove or recess 15 which extends inwardly at the peripheral edge of the wheel. The bottom wall 16 of the recess provides a metering surface over which the tape T is led to be measured in predetermined lengths as will hereinafter appear. The front side 17 of the wheel carries a plurality of equiangular spaced characters 19, each of which is designated in a consecutive order by consecutive numerals, as by way of example 1 to 22, and which are inch marks of the circumference of wall 16.

The wheel 14 has a hub 20 on the rear side thereof (see Figures 4 and 5) which rotatably amounts the wheel on an axle 21. The axle has an enlarged portion 22 and a screw threaded stem 23. The portion 22 is engaged against the front side of wall 12, and the stem 23 extends through the said wall 12 and is engaged by a clamp nut 24 so as to hold the axle against rotation. A spring casing 25 (see Figure 5) surrounds the axle 21 and is held against rotation by means of screws 26 extending through wall 12 and into the bottom wall of

said casing 25. The open side of the casing faces and frictionally engages the wheel 14 and receives the hub 20 therein. A watch type flat torsion spring 27, enclosed within the casing 25, surrounds the hub 20 and is arranged to secure its ends to said casing and hub so as to bias the wheel to rotate in a counterclockwise direction as seen in Figure 1.

A pair of links 28, 28' are mounted on axle 21 for free swinging movement and normally depends therefrom at substantially right angles to the axis thereof, one on each side of wheel 14 (see Figure 4). The link 28' is positioned between the enlarged portion 22 and the casing 25 and is thereby blocked from axial movement on axle 21. The lower end of the links are connected to each other in parallel relation by a stud and/or the like fastening 29.

A coupling member 30, which has an enlarged head 31 and a screw threaded shank 32, is rotatably mounted on axle 21 at the front side 17 of the wheel 14 in juxtaposition to link 28, a split ring fastening 33 being provided to prevent withdrawal of member 30 from the axle. The head 31 has a diametrical slot 31' in which is snugly received the adjacent portion of the link 28 and through which the links 28 are coupled to member 30 so as to move in unison therewith. An indicator or pointer 34 is rotatably received on the shank 32 and frictionally abuts against the head 31, a clamp nut 35 threaded on shank 32 securing the pointer 34 in adjusted position on member 30. Thus, members 28 and 34 form an adjustable pair of arms wherein any angular spacing between the arms 34 and the arm 28 may be had. The mating surfaces between pointer 34 and head 31 may be each roughened as by means of radial teeth and/or the like so as to assure a positive engagement therebetween.

There is mounted about the pivot of roll 36 a swingable member comprising a pair of depending links 41 and 41' (see Figure 3). These straddle roll 36 and extend in parallel relation and pass between a pair of spaced bars 42, 43 secured to the wall 12 as at 44 and which extend in a generally horizontal direction. Two abutments 45 and 46, which may be formed of any resilient material, as for example, rubber and/or the like, are fastened between the bars 42, 43. These limit the swing of links 41 which are resiliently biased to be normally held against the inner abutment 46 by means of a pull spring 47 which is secured at one end to said links as at 48 and at the other to the bars 42, 43 as at 49.

The lower terminal of links 41 is pivotally connected as at 51 to a block 61 secured to a spacer 61' at one end of a second pair of links 50, 50'. The other ends of links 50 straddle links 28 and are pivotally secured thereto as at 52, which point represents approximately the radius of wall 16. A guide means designated generally 38 is positioned between the links 50 and is attached thereto as by means of stud fastenings 53 and 54 so as to be held and moved with said links 50. The guide means comprises an elongated bar 40 which extends from a position between links 28, 28' and a U-shaped member 39 which embraces one end of the bar 40 to form a channel 39'. As viewed in Figure 2, the tape T is led from a supply such as a spool (not shown) mounted on bracket 12' and passed over a guide roll 36 mounted for rotation at the upper left end portion of the wall 12, thence to the lower side of guide roll 37 and upwardly therefrom on to wall 16 so as to be traveled thereabout in a clockwise direction. The tape is passed about the wall 16 and is led therefrom by a guide means 38. The tape T is led from the guide channel 39' to be passed between links 41 and 41' adjacent to the pivot 51. It will be apparent that in swinging the links 28 in a clockwise direction against

action of spring 27, the motion will be transmitted through the linkage to swing links 41, 41' outwardly to the broken line position shown in Figure 2, and upon release of the force acting on links 28, the spring 47 will return the linkage to the position thereof shown in full line in this Figure 2 and the clock spring 27 will return the wheel to initial position.

The leading portion of the tape is severed by means of a cutter mechanism indicated generally 55 which is actuated through the movement of the above described linkage and comprises a first cutter part 56 which is carried at the lower end of the links 41 and 41' and is secured in position by means of a block 57 positioned in the space between links 41, 41' and secured thereto as at 58. The cutter 56 is secured to the block as by means of cap screws 59. The knife edge 60 of the cutter 56 is arranged to be at a position a slight distance above the path of the tape when pulled past the same. The other or second cutter part comprises a block 61 secured to spacer 61' between links 50, 50'. An elongated blade 62, which lifts the tape above the block 61 after a cut has been effected, is secured to the bight of a U-shaped member 63 (see Figure 6), which is pivotally mounted on the stud fastening 53. The blade 62 extends to position its free end closely adjacent the cutting edge of cutter edge 60 and is resiliently held in position by means of a torsion spring 64 (see Figure 7) having one branch 65 thereof secured to the stud 54 and its other branch 66 anchored beneath the member 63. The bar 40 which forms the lower wall of recess 39 is extended beyond the recess and is undercut on a slant as at 40' to provide an abutment against which the blade 62 abuts in the normal position thereof.

In operation, the tape T is first properly threaded through the machine and with a portion of the tape extending beyond links 41 a distance sufficient so as to provide a purchase thereon by the operator. The pointer 34 is adjusted to be opposite a character 19 indicating the length of the tape to be dispensed. This may be accomplished by loosening clamp nut 35 and manually moving the pointer to the proper character 19. The clamp nut 35 is thereafter turned to secure the pointer in the now adjusted relation on member 30. Assume the pointer 34 has been adjusted to the circle indicated 5 as seen in Figure 1 so as to set the machine to dispense a length of tape five inches long. The free end of the tape which extends beyond links 41 may now be grasped by the operator and pulled. The friction of the tape on the wall 16 will turn the wheel 14 against the spring bias thereon. The wheel 14 has an abutment 67 fixed thereto which moves with the wheel as the same is rotated. During the pull on the tape, the abutment 67 is carried by the turning wheel and will engage the pointer 34 to couple the wheel to the linkage 28, 50, and 41. Further pull on the tape will cause the wheel and pointer to rotate together, and since the links 28 are fixed to pointer 34, they will swing in a clockwise direction about the axle 21. This motion will be transmitted through links 50 to swing links 41 outwardly and lessen the included angle between these pairs of links, thus moving knife edge 60 and block 61 toward each other and severing the tape positioned therebetween, as indicated in broken lines in Figure 1. At the severing of the tape, the links 41, 41' under action of spring 47, and augmented by the action of gravity, will swing in the return direction to initial position to move cutters 56 and 61 apart, the abutment 46 absorbing the shock of the returning links. Additionally, the blade 62 will raise under the action of spring 64 and serve as a guide to feed the tape between the cutters 56 and 61 when they move apart. The spring 27 having been torsioned is now free to act and will return the wheel to initial position, the shock being absorbed by the abutment 67.

Upon severing of the tape, the same will be free of tension and the rotation of the wheel 14 in the counter-clockwise direction will not cause any feedback of tape due to the nearly 180° bend imparted thereto at roller 37 and the lack of driving friction of the tape against wall 16. The cutter part 56 will, however, be in contact with the severed end of the tape. Consequently, during the return swing of links 41, the tape will be pushed and fed back against blade 62, through guide recess 39', and along the bar 40 and then will buckle from the point the bar 40 is tangent to wall 16 reversely around the wall 16 so as to lift a semi-annular weight 68, as shown in broken lines in Figure 2. Upon the cutter part being free of the tape, the same will be free to move to between links 41. In order to advance the fed back tape portion, the semi-annular weight 68 having an enlongated slot 69 is rockably mounted on the wall 12 by means of a pin 70 which projects therefrom at a location slightly above the outer periphery of the wheel, the pin being received in slot 69. The member 68 extends about wall 16, as seen in Figure 2, and normally lies on the tape about the wall 16. As the tape begins to buckle, as above described, member 68 will yield; that is, it will be rocked upwardly to the position shown in broken lines (Figure 2). Upon the tape being free of cutter part 56, the return of weight 68 to its initial position will advance it so as to project through and beyond the links 41 a distance equal to the distance of outward swing of links 41 at the cutter part 56. Thus, the tape will be at a position for another cycle of operation.

It will now be apparent from the above description that the traveling of the tape turns the wheel 14 and the turning of the wheel actuates the cutting mechanism. Thus, the various moving parts of the machine actuated to meter and sever the tape are directly responsive to the action of the tape being pulled through the machine.

In the above description the term "tape" has been employed in a general sense and has reference to any of various types of strands or strip material which has sufficient rigidity to be self-sustained and capable of being advanced through guide 39' by a pushing-like action thereon.

I claim:

1. A machine for dispensing tape and the like in predetermined lengths comprising a rotatably mounted wheel over which the tape passes to be measured, said wheel being rotated in one direction by the tape traveling through said machine, a tape severing means actuated by said wheel and means carried by said wheel for coupling said wheel to said severing means to be actuated thereby during a predetermined angular rotation of said wheel in the said one direction, and means operable to automatically rotate said wheel in the other direction to initial position upon the said severing of said tape.

2. A machine according to claim 1 wherein said wheel is spring biased in one direction of rotation thereof.

3. A machine according to claim 1 wherein said means for coupling said wheel to said severing means comprises a linkage including an adjustable arm which is pivotally mounted for swinging movement about the axis of rotation of said wheel and means carried by said wheel and movable therewith for rocking said arm about its pivot.

4. A machine according to claim 1 wherein said tape severing means comprises a pair of cutter members mounted for pivotal movement about a common axis for movement toward and from each other.

5. A machine for dispensing tape and the like in predetermined length comprising a rotatably mounted tape measuring wheel over which the tape passes and which is rotated in one direction by the travel of said tape through the machine, an abutment carried by said wheel, a cutter mechanism for severing said tape including a pivotally joined linkage operable to actuate said cutter mechanism, said cutter mechanism coupled to said measuring wheel through said abutment for operation thereby upon a predetermined angular rotation of said wheel in the said one direction, and means operable to automatically rotate said wheel in the other direction to initial position upon the said severing of said tape.

6. A machine according to claim 5 wherein said linkage includes an indicating pointer adjustably affixed to one end thereof so that it may be positioned at predetermined angular relation to said wheel to be engaged by said abutment.

7. A machine for dispensing tape and the like in predetermined lengths comprising a rotatable wheel about which the tape extends, said wheel being rotated in one direction by the travel of the tape through the machine, a cutter mechanism actuated by said wheel for severing said tape, said cutter mechanism including a linkage coupled thereto with one portion thereof mounted for rocking movement about the axis of said wheel, and means carried by said wheel for engaging said linkage and coupling said wheel to said cutter mechanism upon a predetermined angular rotation of said wheel.

8. A machine for dispensing tape and the like in predetermined length comprising a rotatable wheel about which the tape extends, said wheel being rotated by the travel of the tape through the machine, a cutter mechanism comprising a pair of tape severing elements between which the tape passes, means pivotally relating said cutter elements comprising a linkage, said linkage including a first link pivotally mounted at one end thereof for rocking movement in a vertical plane, a second link pivotally mounted at one end thereof to the other end of the said first link, a third link pivotally mounted for rocking movement about the axis of rotation of said wheel and having

an end thereof pivotally connected to the other end of the said second link, said cutter elements being carried by the said first and the said second links adjacent to the pivotal connection of said links to each other, and means carried by said wheel for engaging a portion of said third link actuating said linkage to move said cutter elements toward each other so as to sever said tape upon a predetermined angular rotation of said wheel.

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