

Oct. 22, 1935.

W. H. ROST

2,017,920

PRINTING MACHINE

Filed Jan. 30, 1935

3 Sheets-Sheet 1

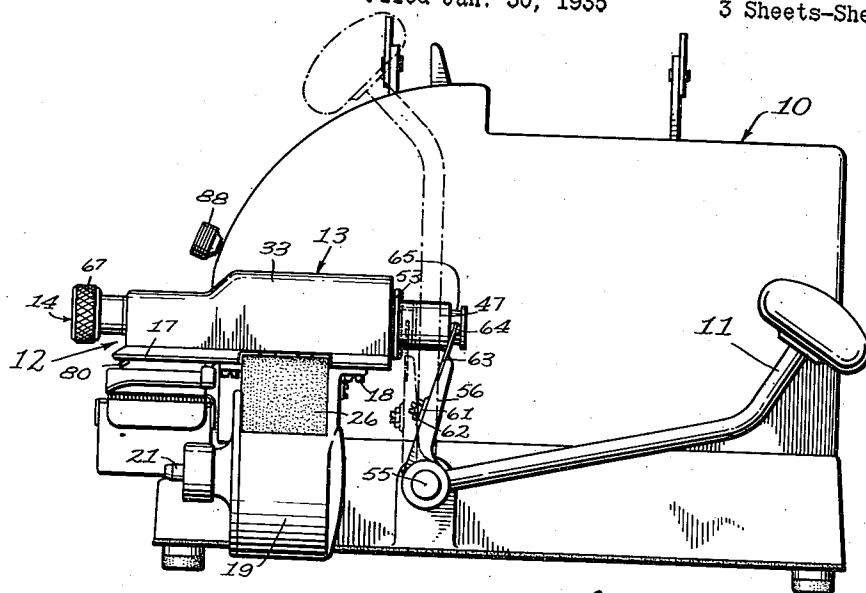


Fig. 1.

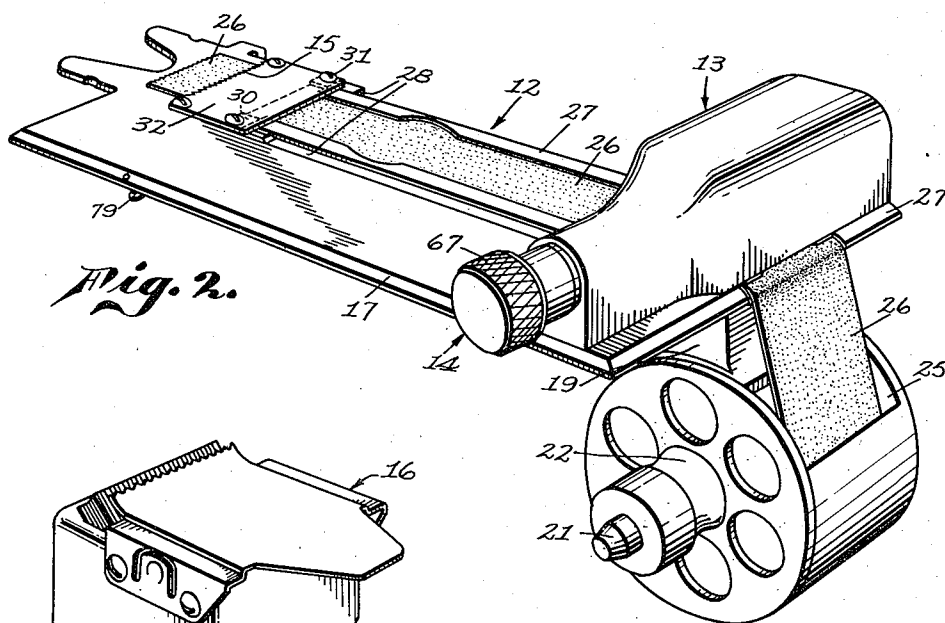


Fig. 2.

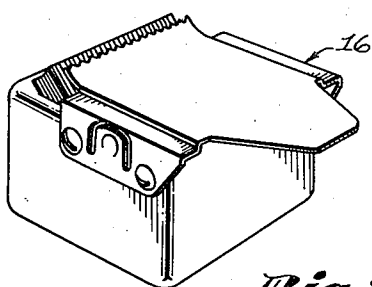


Fig. 3.

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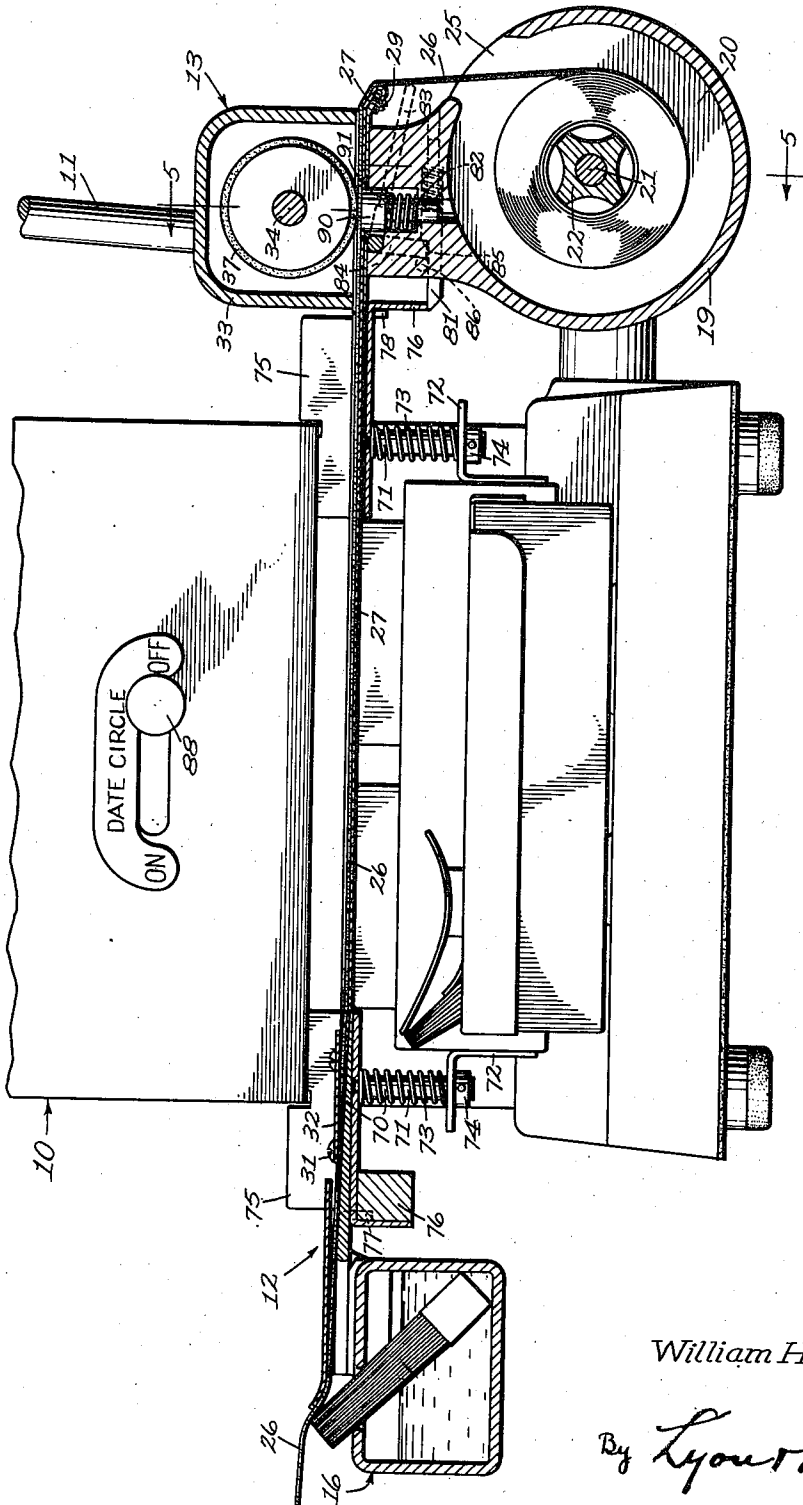


Fig. 4.

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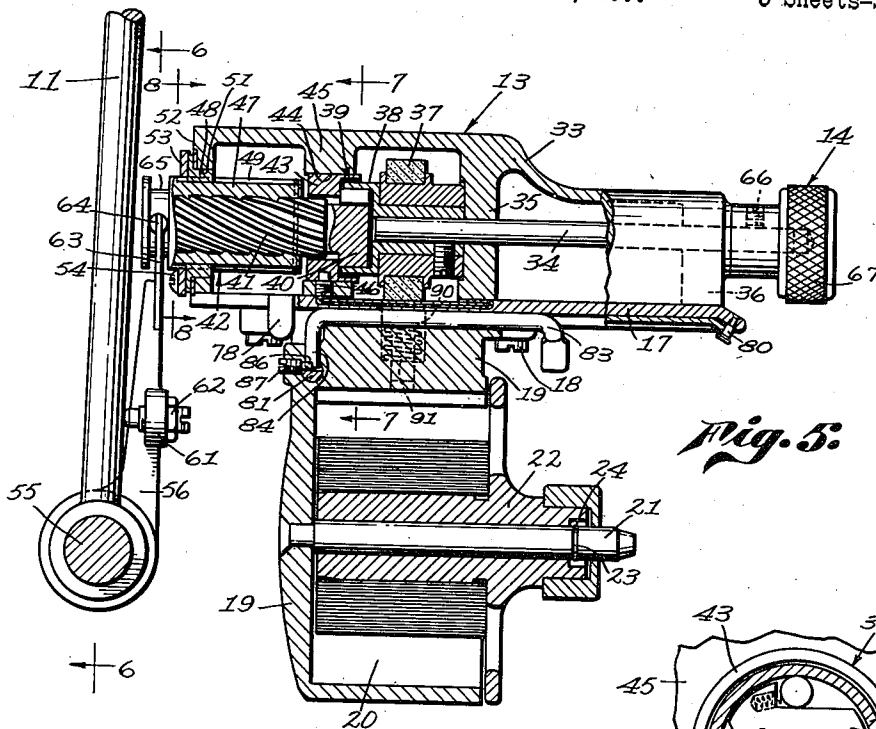
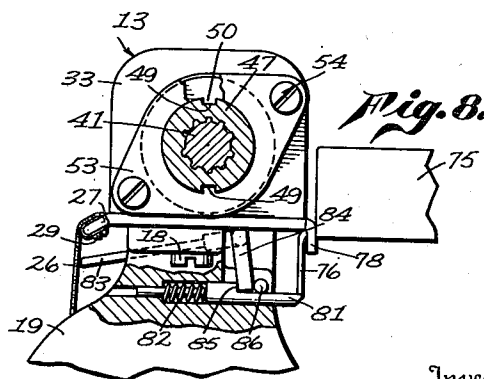
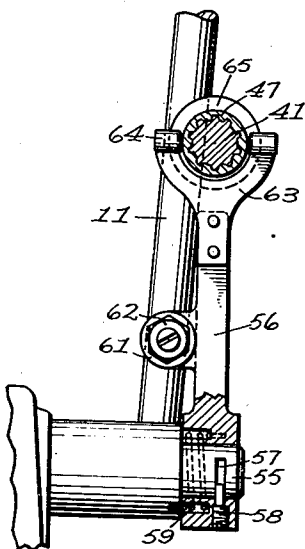
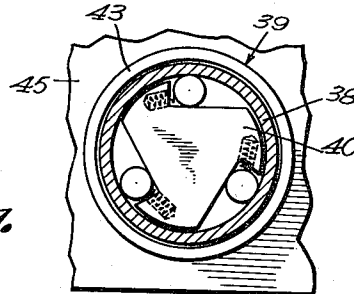


Fig. 7.



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UNITED STATES PATENT OFFICE

2,017,920

PRINTING MACHINE

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Application January 30, 1935, Serial No. 4,062

6 Claims. (Cl. 101—288)

This invention relates to a printing machine and especially to the means associated therewith for feeding gummed tape into printing position.

One of the principal objects of this invention is to provide a printing machine of the reciprocating type, with a gummed tape feeding means, which means may be either permanently or detachably mounted upon the machine and operable for automatically advancing the tape a predetermined distance between each printing operation.

It is a further object to provide the tape feeding mechanism with a driving mechanism including a helicoidal driving and clutch means for transposing the reciprocatory motion of the operating handle of the machine into a unidirectional rotary motion for turning the tape feeding rollers to advance the tape a predetermined distance for each operation of the machine and for providing manually operable means for actuating the feed rollers for advancing or retracting the tape.

It is a further object to provide means for slidably supporting and yieldingly resisting rotation of the helicoidal driving member whereby during the driving stroke of this member it may slide through said means without rotation but when the feeding means is manually operated to retract the tape the member may be rotated therewith.

A further object is to arrange the tape feeding device as a unit which may be easily attached to or removed from the machine.

Other objects and advantages of the invention will become apparent as the nature of the same is more fully understood from the following description and accompanying drawings, wherein is set forth what is now considered to be a preferred embodiment. It will be understood, however, that this particular embodiment of the invention is shown principally for the purpose of exemplification and that variations therefrom in details of construction or arrangement of parts may equally be effected and yet remain within the spirit and scope of the invention as the same is set forth in the appended claims.

In the drawings:

Figure 1 illustrates a side elevational view of the printing machine showing the gummed tape feeding device attached thereto.

Figure 2 illustrates, on enlarged scale, a perspective view of the attachment removed from the machine.

Figure 3 illustrates in perspective the gummed tape moistening device which is detachably mountable upon the end of the tape handling attachment.

Figure 4 illustrates a fragmental front view of the printing machine with the tape handling attachment mounted thereon and showing the attachment in longitudinal section.

Figure 5 illustrates a sectional view of the tape feeding mechanism taken substantially in the plane of the broken line 5—5 of Fig. 4.

Figure 6 illustrates a sectional view taken substantially in the broken line 6—6 of Fig. 5.

Figure 7 illustrates a fragmental sectional view of the unidirectional clutch taken substantially in the plane of line 7—7 of Fig. 5; and

Figure 8 illustrates a fragmental sectional view taken substantially in the plane of line 8—8 of Fig. 5.

The postal machine 10 may be generally of the type illustrated and described in the application for United States Letters Patent Serial No. 673,639 filed by Commodore D. Ryan on May 31, 1933.

The machine of the Ryan application is arranged to be manually operated as by means of crank handle 11 for printing postage stamps upon mail matter. Each operation of handle 11 will operate the machine through one complete printing cycle.

For many postal uses it is desirable to print the postage stamps upon gummed tape for application to parcel post packages or overweight mail matter.

To adapt the Ryan postal machine to this use, a gummed tape handling attachment 12 may be removably mounted thereon.

It will be understood, of course, that the tape handling attachment may be made as a permanent part of the machine but for the purpose of illustration the demountable form of device has been selected.

The tape handling attachment is provided with a tape feeding mechanism 13 (Fig. 5), which is operatively connected to the crank handle whereby during the return stroke of the handle after the completion of a printing operation this mechanism will be actuated to automatically advance the tape for the reception of the next stamp to be printed. It will be appreciated that any number of stamps may be serially printed upon the tape and after the printing of each stamp the tape will be advanced just the correct distance to receive the next stamp.

When the required amount of postage has been printed upon a strip of tape, the tape may be advanced by the manually operable tape advancing means 14 until the last stamp has passed the serrated tearing edge 15 located at the discharge end of the tape guideway. Before the first stamp

is to be printed, the tape may be retracted from the tearing edge 15 to an appropriate printing position by reversing the operation of the manually operable means 14.

- 8 If the printed tape is to be immediately applied to postal matter, the moistening cup 16 (Figs. 3 and 4), may be attached to the attachment in the manner illustrated in the drawings. The moistening cup is of conventional design and forms no part of this invention and, therefore, need not be described in detail.

Tape handling attachment

- 15 The tape handling attachment 12 will now be described in detail.

- To the right end under surface of the attachment base plate 17, as viewed in Figure 2, may be mounted by suitable screw means 18 a bracket casting 19. The bracket casting may be provided with an open sided cavity 20 having centrally mounted therein an axle 21 for journally supporting the tape supply reel 22. The tape reel may be releasably retained upon the axle by providing adjacent the distal end thereof a relative deep groove 23 for freely supporting a spring snap ring 24, which ring will compress into its groove to permit the tape reel to be mounted upon the axle and to expand and thereby releasably lock the reel in operative position when the outer end of the reel passes thereover (Fig. 5). In the same way the reel may be removed from the axle. This is not an important feature as many other means may be provided for mounting the tape reel upon the axle.

- 35 The attachment base plate terminates shortly beyond the bracket casting and substantially directly below the end thereof the bracket casting is provided with an opening 25 for the passage of tape 26 from the reel to the entrance end of the tape guideway 27 (Fig. 4). The tape guideway may be formed of relatively thin metal stock and of sufficient width to permit of its longitudinal edges being folded in to form a groove along each side thereof along which the tape may be fed. As may be observed in Figures 2 and 5, the guideway flanges do not extend entirely across the tape but leave a sufficient portion of the tape exposed to receive the impression of the stamp to be printed thereon.

- 50 The base plate 17 may be cut as at 28 whereby the guideway only extends over the printing platen of the machine, thus permitting sufficient flexibility of the tape to insure a clear sharp impression to be printed thereon.

- 55 The flanges of the guideway do not extend for the full distance thereof and for this reason the right hand end of the guideway, as viewed in Figure 4, may be formed around and under the terminal end of the base plate and fastened thereto by screw means 29. The opposite end of the guideway may be provided with outwardly struck ears 30 having holes for screws 31 which clamp the guideway ears between the tearing plate 32 to the base plate.

- 60 The tape is automatically fed along the guideway by the tape feeding mechanism 13, which mechanism is operable upon the return stroke of the printing machine crank handle for advancing the tape into position for the printing of the next stamp.

Tape feeding mechanism

- 70 The major portion of the tape feeding mechanism 13 may be operatively mounted within a suitable housing 33, which housing may be in the form of a casting and fastened to the base

plate adjacent the right hand end thereof in any appropriate manner, not shown.

As may be observed in Figure 5, shaft 34 may be journaled in the housing walls 35 and 36 and may carry fastened upon its inner end the rubber tired feed roller 37. Also fastened upon the inner end of shaft 34 is the driven member 38 of the unidirectional clutch means 39. The clutch means 39 is of the conventional overrunning type and need not be described in detail as any form of clutch or similar means which will transmit motion in one direction of rotation only may be utilized.

The driving member 40 of clutch 39 may be formed integral with the driven member 41 of the helicoidal driving means 42 and may be maintained in operative relation with driven member 39 of the clutch by means of bushing 43 keyed in bore 44 of the housing wall 45 by means of set screw 46.

20 The periphery of the cylindrical surface of the helicoidal driven member 41 may be provided with one or more relatively steep pitched helical grooves or threads, while the helicoidal driving member 47 may be slidably mounted upon the cylindrical surface of the helicoidal driven member and may be provided with thread or key means adapted to mesh with the threads or grooves of said driven member whereby a reciprocatory motion of the driving member will cause a rotary motion of the driven member.

30 Rotation of the helicoidal driven member in one direction will be transmitted through the unidirectional clutch to in turn rotate roller 37 to feed tape while a reverse rotation of the driven member of the helicoidal drive will not be transmitted through the unidirectional clutch and thus by this mechanism tape may be fed in one direction only.

40 The helicoidal driving member 47 may be slidably mounted in bushing 48 so as to permit a free reciprocation of this member through the bushing and may be prevented from rotating in the bushing by providing the helicoidal driving member with one or more longitudinal key-ways 49 and the bushing with cooperating keys 50.

45 The bushing 48 may be journally mounted in bore 51 of the housing outer wall 52 and may be provided with a flange held in frictional contact with the end wall of the housing by friction plate 53, which plate may be adjustably maintained in its correct operative position as by suitable screw means 54. By this arrangement, the helicoidal driving member may be freely reciprocated and may be yieldingly retained against rotation by the friction means.

55 In this application of the driving mechanism, wherein the operating stroke of crank handle 11 greatly exceeds the operating stroke of the helicoidal driving mechanism, a lost motion means must be provided in forming an operative connection between the helicoidal driving member and the crank handle and for this purpose the crank handle shaft 55 has been extended to journally support a lever arm 56 and is provided adjacent its outer end with an annular groove 57 into which the point of set screw 58 extends to maintain the lever arm in operative position thereon (Fig. 6). The lever arm may be yieldingly connected to the crank arm by means of torsional spring 59 and may carry stop screw 60 screw threaded through boss 61 of the arm and locked in its adjusted position by lock nut 62. The stop screw may be adjusted to correctly position lever arm 56 with relation to the crank arm

- 75 the form of a casting and fastened to the base

while in their inactive positions as illustrated in broken lines in Figure 1 and in full lines in Figures 5 and 6.

The free end of the lever arm may be provided with a yoke 62 and the cylindrical portion 64 of each yoke arm may be operatively mounted within the annular groove 65 formed in the outer end of the helicoidal driving member, thus forming an operative connection between the crank handle and the helicoidal driving means.

Means for manually operating the tape feeding means

The means 14 for manually operating feed roller 37 may include extending shaft 34 beyond the housing front wall 36 and by means of set screw 66 fastening a knurled hand wheel 67 thereon.

The hand wheel may be rotated in a clockwise direction, as viewed in Figure 2, to advance the tape and during this operation the overriding or unidirectional clutch 39 will permit this rotation without rotating the helicoidal driving means but when the hand wheel is rotated in a counterclockwise direction to retract the tape the clutch means will not permit this rotation unless the helicoidal driving means is also rotated and it is for this reason that the bushing 48 is mounted for rotation. The resistance of the friction means for the bushing is easily overcome. It will be understood that the friction means for bushing 48 will not permit the helicoidal driving member to rotate when it is being reciprocated during the operating cycle of the machine. It is only by manual force applied to hand wheel 67 that there will be sufficient rotative force to overcome this resistance and yet the resistance need not be as great as to require appreciable effort to actuate the feed means to retract the tape.

Means for demountably attaching tape handling attachment to postal meter

The table 70 may be yieldingly mounted upon the postal machine as by means of posts 71 slidably supported in brackets 72 and yieldingly urged by springs 73 to maintain the table in its uppermost position. Collars 74, secured to the free ends of posts 71, prevent the table from rising above its proper operating position. The table may be flanged upwardly along its rearward edge as at 75, and flanged downwardly at each end as indicated at 76.

The tape handling attachment 12 may be removably mounted upon table 70. For this purpose the attachment base plate 17 may be provided with a pair of downwardly struck flanges 77 and 78. These flanges may be located along the rear edge and adjacent the opposite ends of the base plate (Figs. 2, 4, 5 and 8). As may be noted in Figure 4, the rear flange 75 does not extend for the full length of the table and the base plate flanges 77—78 are arranged to be hooked against the rear edge of the table closely adjacent the ends of flange 75 to thereby prevent longitudinal or forwardly shifting of the attachment with relation to the table. The forward edge of the base plate may be provided with a pair of spaced depending rivets 79—80 (Figs. 2 and 5), positioned to engage the front edge of the table when the base plate flanges 77—78 are hooked over the rear edge of the table.

A spring weighted latch 81 (Figs. 4 and 8), may be provided to latch under the right hand table end flange 76 (Fig. 4) for securely locking the attachment to the table of the machine.

Latch member 81 may be slidably mounted in bracket casting 19 and may be provided with spring 82.

When it is desired to remove the attachment from the machine, the latch may be withdrawn by means of lever 83 carried by rock shaft 84 journally mounted in the bracket casting 19 for rocking arm 84 in a clockwise direction as viewed in Figure 8. The free end of arm 84 is normally maintained in engagement with shoulder 85 of the latch member and through this engagement the latch will be withdrawn upon the actuation of lever 83. A stop pin 86 carried upon the inner end of grub screw 87 (Fig. 5) will act to stop the latch member and rock arm when returned to their initial positions under the influence of spring 82.

Operation

When it is desired to print postage stamps upon gummed tape, the tape handling attachment may be readily mounted upon the machine table in the manner described. If the tape reel 22 is not charged with a roll of gummed tape, it will be easier to place the roll in the attachment and to thread the free end of the tape through the guideway before mounting the attachment upon the machine.

With the attachment mounted upon the machine, and the tape threaded into printing position, the machine may be actuated. It is advisable to shift the date circle knob 88 (Figs. 1 and 4) to its on position to bring about the printing of the customary date circle with the printing of the first stamp and upon the completion of this first printing operation the date circle knob should be shifted to its off position and thereafter any number of stamps may be printed upon the tape as may be required for the particular piece of mail matter to which the tape is to be attached. After all of the stamps required for this piece of tape have been printed, the tape may be advanced until the last stamp is beyond the tearing edge 15 and by means of this edge the tape may be nicely torn from the main supply.

If desired, the tape may now be retracted by the manually operable tape feeding means 14.

With each operation of the machine to print a stamp, the correct amount of tape will be automatically fed to the printing position.

The printing of the stamp takes place during the initial stroke of crank handle 11, that is from its broken line position to its full line position as illustrated in Figure 1, and during this stroke the crank arm 56 will act to slide the helicoidal driving member 47 to its extended position. The outward movement of member 47 will cause the helicoidal driven member 41 to rotate but, due to the unidirectional clutch, this rotation of member 41 will not be transmitted to the tape feeding roller 37. As the movement of member 47 is relatively short as compared to the full swing of crank 11, arm 56 may stop in its full line position as illustrated in Figure 1 due to the spring connection between these two cranks.

During the return swing of crank handle 11, the printing means will return to its initial starting position and the tape feeding mechanism will be actuated when crank 11 engages stop screw 60 and thereby will swing arm 56 to its initial starting position. The return swing of arm 56 will push the helicoidal driving member 47 back into housing 33, this motion causing the helicoidal driven member to rotate, and this rotation will be transmitted through the unidirectional clutch

to in turn rotate the tape feeding roller 37. By this arrangement, it will be appreciated that tape will be advanced only after the printing means have been retracted.

- 5 To insure an accurate feeding of the tape, it may be yieldingly urged into tractive engagement with feed roller 37 by means of plunger 90 (Figs. 4 and 5). This plunger may be operatively mounted in the bracket casting 19 and may be
10 yieldingly pressed into engagement with the tape feeding roller by suitable spring means 91.

Having fully described a preferred form of the invention, it is to be understood that the foregoing description is for illustrative purposes only
15 and I do not desire to be limited by any of the details shown or described, except as defined in the appended claims.

I claim:

1. In a printing machine, printing means, handle means operable through one portion of its
20 operating cycle for actuating the printing means and through another portion of the cycle for returning to its initial starting position, a guideway for directing gummed tape to the printing means,
25 roller means for feeding tape along the guideway, helicoidal drive means for the rollers including driving and driven members, a unidirectional clutch means interposed between the rollers and
30 helicoidal drive means, friction means arranged to slidably support and yieldingly resist rotation of the helicoidal driving member, and means for operatively connecting the helicoidal driving member with the handle means for driving the
35 feed rollers during the other portion of the operating cycle of said handle.

2. In a printing machine, a printing means, handle means operable through one portion of its
operating cycle for actuating the printing means and through another portion of the cycle for
40 returning to its initial starting position, means for directing gummed tape to the printing means, roller means for feeding tape along the directing means, helicoidal drive means for the rollers including driving and driven members, a unidirectional
45 clutch means interposed between the rollers and helicoidal drive means, friction means arranged to slidably support and yieldingly resist rotation of the helicoidal driving member,

means for operatively connecting the helicoidal driving member with the handle means for driving the feed rollers during the other portion of the operating cycle of said handle, and means operable for manually driving the feed rollers. 5

3. In a driving mechanism, unidirectional clutch means, shaft means operatively connected to one side of said clutch, helicoidal drive means having driving and driven members, said helicoidal driven member being operatively connected
10 to the other side of said clutch, and means arranged for slidably supporting and for yieldingly resisting rotation of the helicoidal driving member.

4. In a driving mechanism, unidirectional
15 clutch means, shaft means operatively connected to one side of said clutch, helicoidal drive means having driving and driven members, said helicoidal driven member being operatively connected to the other side of said clutch, means arranged
20 for slidably supporting and for yieldingly resisting rotation of the helicoidal driving member, and means for reciprocating the said driving member with relation to said driven member.

5. In a driving mechanism, unidirectional
25 clutch means, shaft means operatively connected to one side of said clutch, helicoidal drive means having driving and driven members, said helicoidal driven member being operatively connected to the other side of said clutch, means arranged
30 for slidably supporting and for yieldingly resisting rotation of the helicoidal driving member, and manually operable means for rotating said shaft independently of said helicoidal drive means. 35

6. In a driving mechanism, unidirectional clutch means, shaft means operatively connected to one side of said clutch, helicoidal drive means having driving and driven means, said
40 helicoidal driven member being operatively connected to the other side of said clutch, means arranged for slidably supporting and for yieldingly resisting rotation of the helicoidal driving member, means for reciprocating said driving member with relation to said driven member, and
45 manually operable means for rotating said shaft independently of said helicoidal drive means.

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