Feb. 17, 1942. J. A. STROTHER 2,273,294

TAPE CONTROL PRINTING DEVICE

Filed March 9, 1940 3 Sheets-Sheet 1

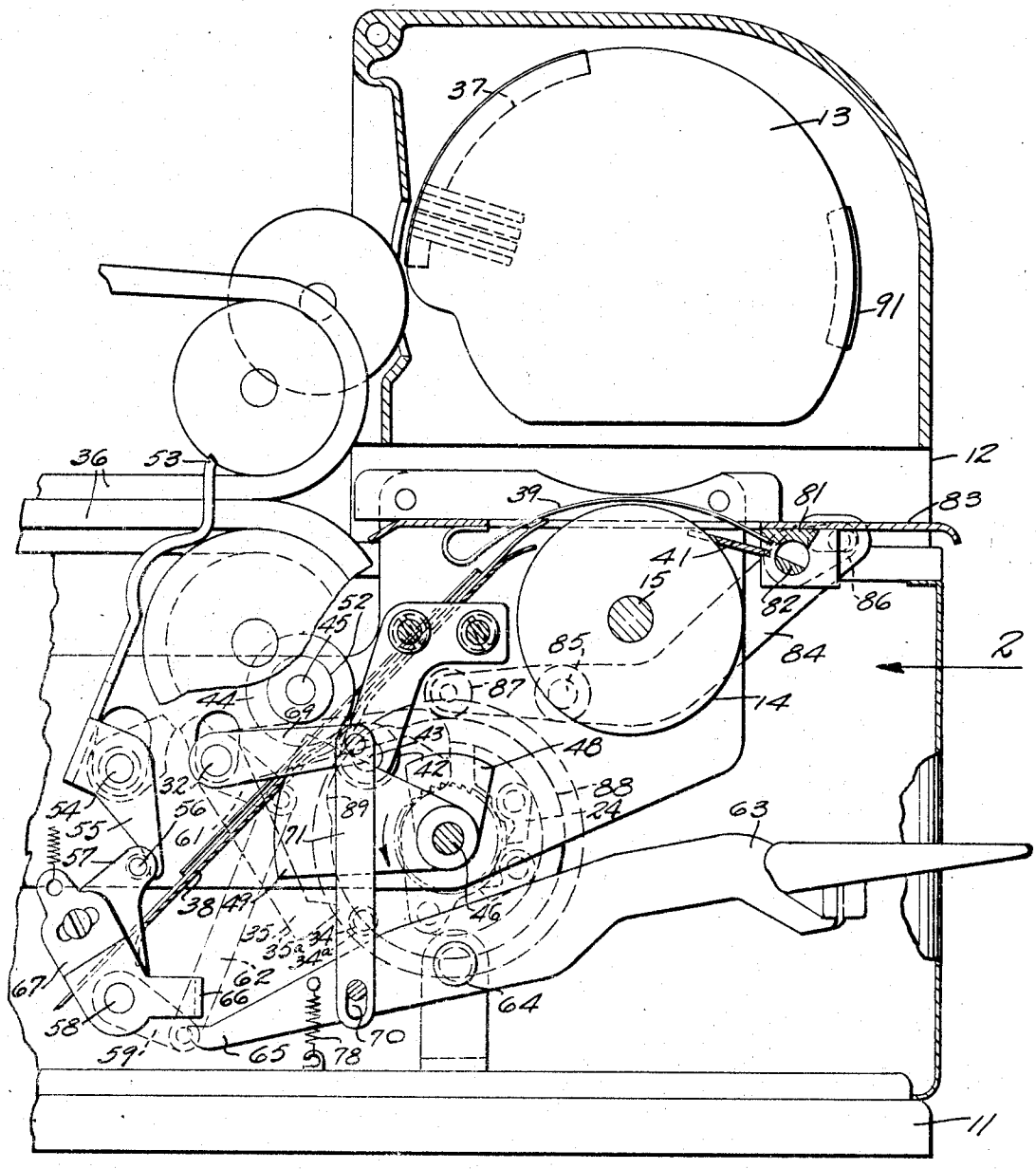


FIG. 1.

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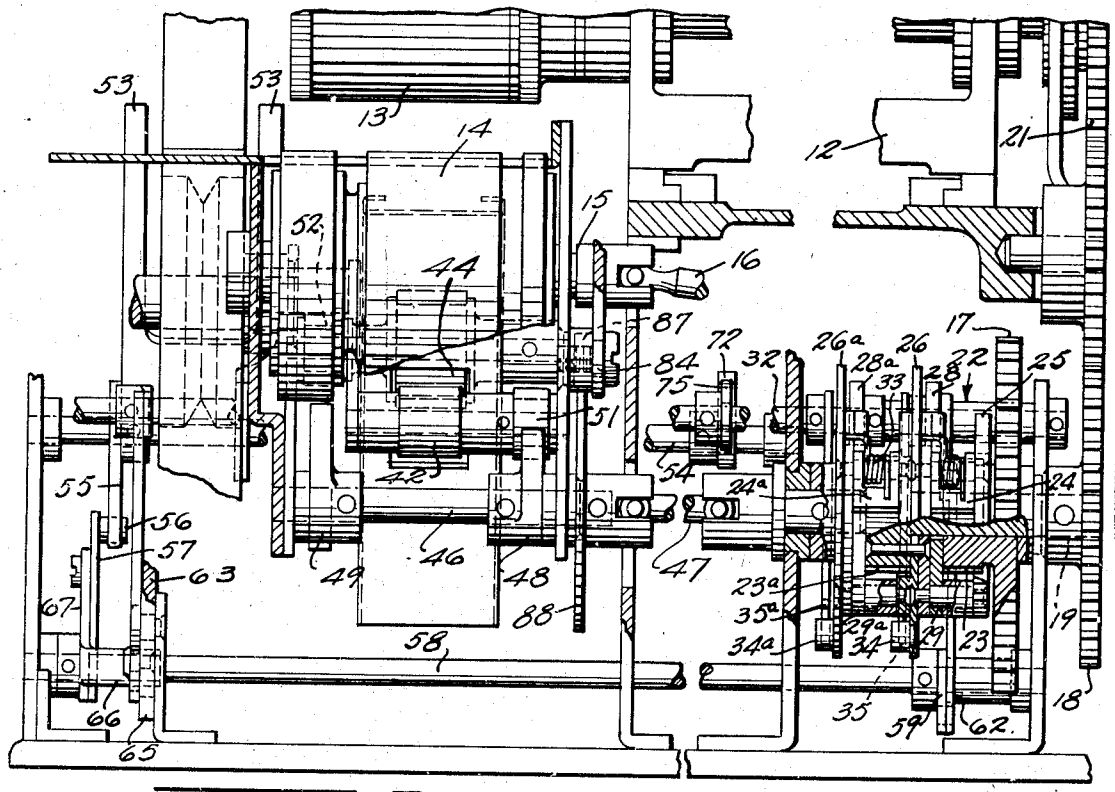
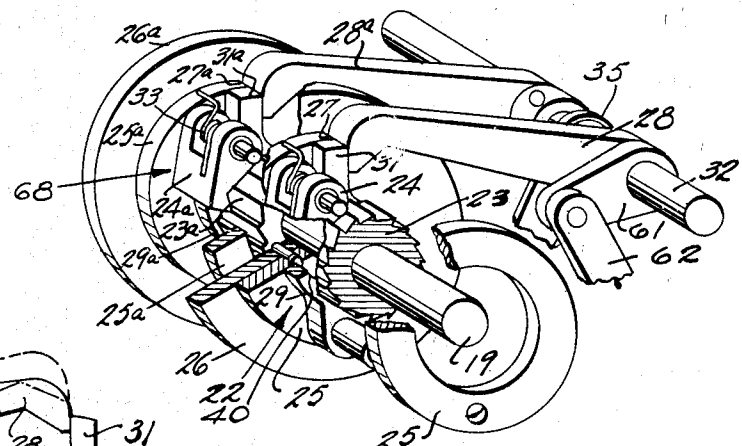


FIG. 2.



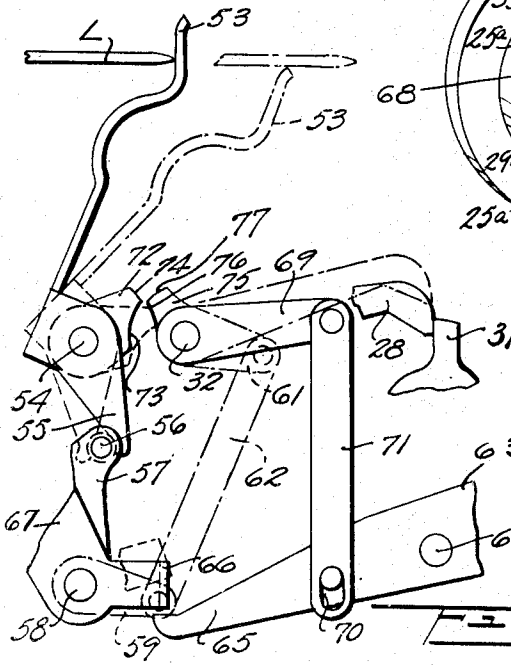


FIG. 3.

FIG. 4.

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FIG. 5.

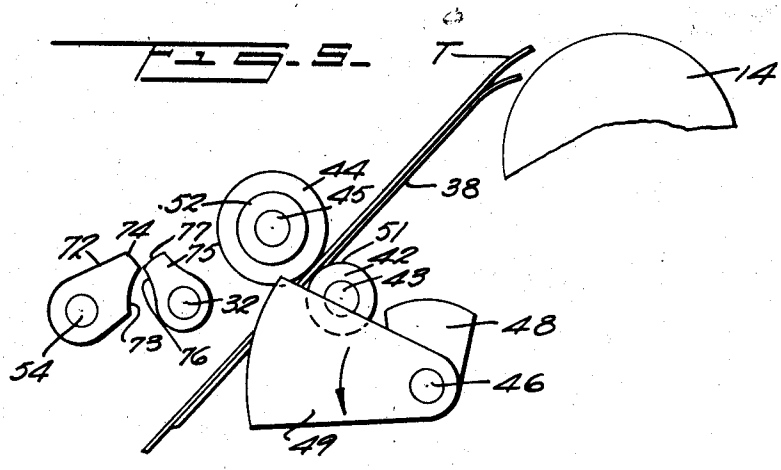


FIG. 6.

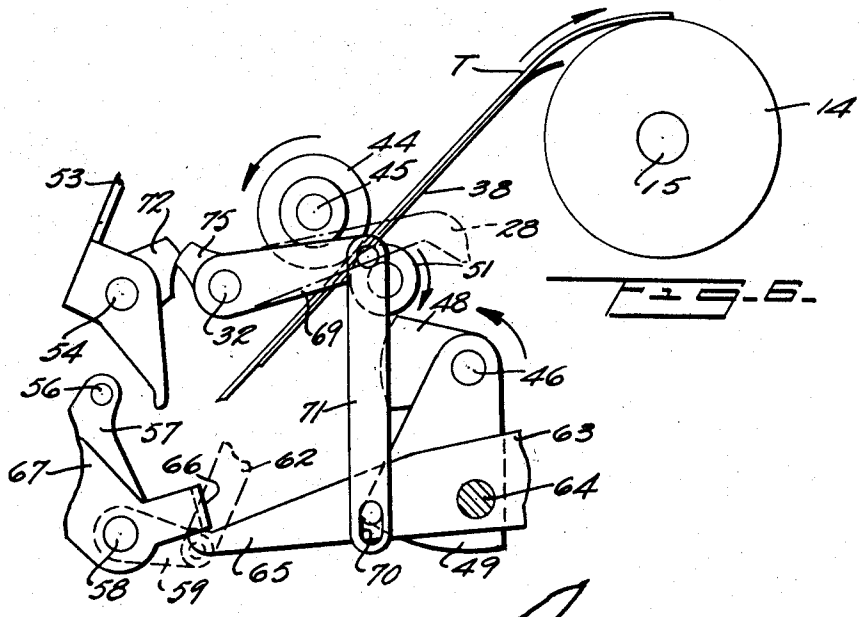
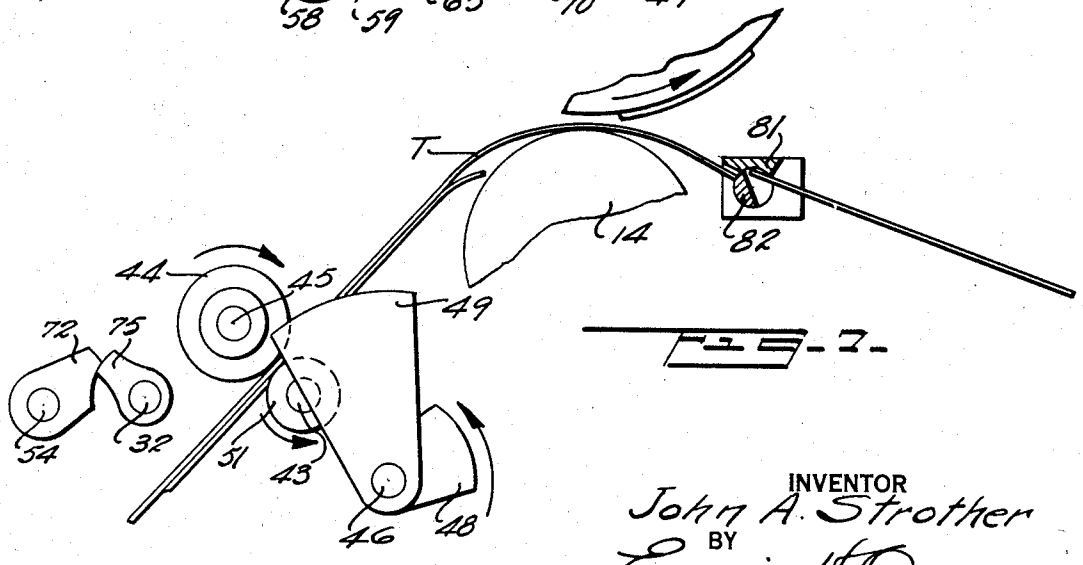


FIG. 7.



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UNITED STATES PATENT OFFICE

2,273,294

TAPE CONTROL PRINTING DEVICE

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Application March 9, 1940, Serial No. 323,109

5 Claims. (Cl. 101—235)

This invention relates to a machine for printing upon separate pieces of matter and upon tape at a single printing position and more particularly to means whereby the printing may be effected directly upon either the separate pieces of matter or tape without resorting to any manually selective pre-setting means.

The machine to which the invention is particularly adapted is a metered mailing machine, which prints postage stamp impressions upon letters and tape. In such machines it is now the practice to provide manually controlled selective devices whereby the machine is pre-set for the printing of either letters or tape before a tripping operation is effected.

It is the principal object of this invention to provide in a letter and tape printing machine having a single printing point, means whereby the tripping operation for either letters or tape automatically conditions the machine for printing on the article desired.

It is a further object to provide means whereby the tape will be maintained out of the path through which the letters are moved when the machine is at rest, and to further provide means whereby, when printing on tape is to be effected, the act of pressing the tape trip member will first cause the tape to be moved from a non-printing to a printing position.

It is a further object of the invention to provide means whereby the tape, after being printed and cut, is returned to the normal non-printing position to thus leave the machine in condition for printing on letters.

It is another object to provide interlocking means whereby the operation of the tape trip is prevented when a letter tripping operation is effected and whereby the operation of the letter trip is prevented when a tape tripping operation is effected.

It is also an object to provide means whereby the tape may be advanced and retracted by the action of a rotary device while said device moves through one revolution in the same direction.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein;

Fig. 1 is a front elevational view with parts broken away showing a portion of a metered mailing machine;

Fig. 2 is a detail side elevational view of Fig. 1, looking in the direction of the arrow 2, with parts broken away and parts in section;

Fig. 3 is an enlarged perspective detailed view of the clutch drive units, looking from the right-hand end of Fig. 2;

Fig. 4 is a detail operation view showing a letter tripping operation and its effect upon the interlock portions;

Fig. 5 is a detail operation view showing the tape in the normal position when the machine is at rest;

Fig. 6 is a detail operation view showing the advancement of the tape to a printing pick-up position which is effected upon actuating the tape trip; and

Fig. 7 is a detail operation view showing the leading end of the tape in a cutting position and the tape retracting member ready to effect a retracting operation to return the tape to the position of Fig. 5.

Referring now to the drawings in detail, the machine comprises a base portion 11 and a detachable meter unit 12, the latter containing a printing drum 13. An impression or platen roller 14 is suitably mounted upon a shaft 15, directly beneath the printing drum 13, and is adapted to be connected by means of a flexible shaft 16 to a power driven gear unit 17. The printing drum 13 is also adapted to be driven from said power drive gear 17, there being a gear 18 on a drive shaft 19, which is connected with the printing drum 13 through gearing 21.

A one revolution clutch member is provided as generally shown at 22, Figs. 2 and 3, and includes a ratchet 23 which is an integral part of the power drive gear 17 and rotates continuously therewith about the shaft 19. Pawls 24 are pivotally mounted upon rings 25—25 and are urged toward the ratchet 23 by springs 33. Said rings 25—25 are normally supported by a clutch disc 26, one ring being cut away to provide a stop lug 27 which is normally adapted to engage the end of a clutch stop arm 28. The arm 28 is pivotally mounted on a shaft 32. The pawls 24 are normally maintained out of engagement with the ratchet 23 by means of a cam 29, pivotally mounted at 30, and having an enlarged opening 40 therein to permit rocking movement. A finger portion 31 on said cam is also adapted to nor-

mally bear against the end of the clutch stop arm 28. When said clutch stop arm 28 is rocked about its supporting shaft 32, in a manner which will be later described, the cam 29 will rock about its pivot 30 and the pawls 24 will move into contact with the ratchet 23, as a result of the force provided by springs 33, and thereby effect a drive of the shaft 19 and rotation of the printing drum through one revolution. The one revolution of the clutch is controlled by the engagement of a pin 34, on the clutch disc 26, with an arm 35, which forms a part of the clutch stop 28 on shaft 32, and thereby rocks said clutch stop 28 into the path of the stop lug 27 and cam finger 31.

During each rotation of the printing drum, a postage stamp impression will be imprinted upon either the letters or tape passed therebeneath.

Letters L may be presented for printing by hand or by means of driven belt members indicated at 36—36 which direct the letters to the printing drum 13 for printing. A suitable printing die 37 is provided in said printing drum. The tripping of the clutch 22, which effects the drive of the printing drum will be later described.

Provision is made for presenting tape T to the printing drum 13, and comprises a tape guide 38 which directs the tape to the impression roller; a tape guide 39, which directs the tape over the impression roller; and another guide 41 which both strips the tape from the platen roller 14 and cooperates with the tape guide 39 in directing the leading end of the tape to a cutting position.

Tape feeding and retracting means is provided to advance the tape from a non-printing to a printing pick-up position, then after a cutting operation is effected, to return the tape to a non-printing position. Said means comprises a pressure roller 42, which is suitably mounted upon a shaft 43, and is adapted to engage the undersurface of the tape opposite a pressure roller 44, suitably supported upon a shaft 45, which is adapted to engage the upper surface of the tape. Fixed on a shaft 46, as best shown in Fig. 2, is a segment 48 and a segment 49. The shaft 46 is connected with the drive shaft 19, by means of a flexible shaft connection 47 and a second clutch member generally indicated at 68. The segment 48 is adapted to engage a roller 51, fixed to one end of the pressure roller shaft 43, immediately upon the start of a cycle of operation to thereby rotate the roller 42 in a clockwise direction, as viewed from Fig. 1, and effect movement of the tape to the printing pick-up position before the printing die 37 reaches the printing position, as best shown in Fig. 6. Before the end of a cycle of operation the segment 49 is adapted to engage with a roller 52 on shaft 45, to thereby drive said shaft 45 and pressure roller 44 in a counter-clockwise direction as viewed from Fig. 1 and effect retraction of the tape to a non-printing position or that position shown in Fig. 5. The beginning of the retraction operation is best shown in Fig. 7.

The tape normally lies in the non-printing position shown in Figs. 1 and 5. Therefore, the machine is normally arranged for the continuous printing of letters, which may be fed to the printing drum without interruption from the tape devices. During the feeding of a letter by means of the belts 36—36, the leading end thereof will engage a trip finger 53 to effect the trip of the clutch 22. The trip finger 53 is mounted upon a shaft 54 and has a downwardly projecting arm 55 engaging a pin 56. Said pin 56 is carried by an arm 57, mounted on a shaft 58, and when the trip lever 53 is rocked, the shaft 58 is adapted to be rocked. Also fixed to said shaft 58 is an arm 59 which is linked to another arm 61 on shaft 32 by means of a link 62. As previously stated, the clutch stop 28 is mounted upon the shaft 32. Therefore, when said shaft 32 is rocked, clutch stop 28 is rocked to a clutch releasing position to start a cycle of operation.

When it is desired to print upon tape instead of letters, the operator will press a tape trip lever 63, Fig. 1, to rock same about a supporting pivot 64. Also during the latter operation, an oppositely disposed end 65 of said lever 63 will engage a toe 66 of a lever 67 to thereby rock said lever 67 and arm 57 secured thereto. The rocking of said arm 57 will thereby rock the shaft 58 and consequently rock the shaft 32 in the manner previously described by means of the link connection 62 with arms 59 and 61. This will release the clutch stop 28, to effect a cycle of operation.

Simultaneous with the tripping of the clutch 22 during a tape trip operation, the second clutch member 68 is also tripped. Said clutch 68 is for all purposes the same as that of clutch 22 and the parts which are identical will be marked with the same character but with an additional exponent *a* to distinguish same. Said clutch 68 therefore, comprises a ratchet 23*a* which is fixed to the drive shaft 19 and rotates therewith when driven. Ratchet pawls 24*a* are carried between the rings 25*a*, 25*a* and are spring urged toward the ratchet 23*a*. One of said rings 25*a* is secured to a clutch disc 26*a* and further has one end cut back to form a stop lug 27*a*. A cam 29*a*, which normally holds the pawls 24*a* disengaged from the ratchet 23*a*, has a finger 31*a*, which with the stop lug 27*a*, bear against the end of a clutch stop 28*a*.

The clutch stop 28*a* is fixed to the shaft 32 and is adapted to be rocked out of the path of the finger 31*a* and stop lug 27*a* when the tape trip lever 63 is depressed. Said operation is effected through the connection of an arm 69, fixed on shaft 32, with a portion of the end 65 of lever 63, by means of link 71. When said lever 63 is depressed, the link is forced upwardly to rock the arm 69 and shaft 32, also the clutch stop 28*a*. A clutch stop return arm 35*a*, on shaft 32, will return the clutch stop to its normal stopping position when a pin 34*a* on disc 26*a* engages same at the end of a cycle. A slotted connection 70 is provided between the end of link 71 and member 65, to permit the return of trip key 63 after tripping is effected. A spring 78 is provided to return the trip lever 63 to its normal position.

A simplified form of interlocking means is provided which, after a tripping operation is performed by the engagement of a letter with the trip finger 53, will prevent the depression of the tape trip lever 63, or when a tripping operation is effected through said lever 63, operation of the trip 53 will be prevented. Said means comprises an arm 72 fixed on the shaft 54 which has an arcuate edge 73 in the free end thereof and a curved outer surface 74. A similar arm 75 is fixed to the shaft 32 which also has an arcuate portion 76 and curved outer surface portion 77. Said arms 72 and 75 are so arranged that the curved outer surface of one will pass inside of the arcuate surface of the other, thus limiting the movement to only one of said arms.

A tape cutting knife is provided, which comprises a stationary knife member 81 and a rotary knife member 82, the same being mounted be-

neath a letter guide plate 83 adjacent the platen roller 14. A lever 84 is pivotally mounted at 85 and has one end connected with a short arm 86, fixed to the rotary knife 82. A roller 87 at the opposite end of said lever engages a cam 88 on shaft 46. Said shaft 46 is driven through one revolution when the clutch 68 is tripped by means of the tape tripping lever 63. After the printing and feeding of the tape to a cutting position, a raised portion 89 on the cam 88 will engage the roller 87, thereby rocking the lever 84 and arm 86, which in turn will rock the rotary knife 82. The rocking of said knife will cut the printed portion of the tape which is normally guided between the rotary knife and stationary knife portions during the cycle of a printing operation. The tape is normally fed during a printing operation by the printing die portion and after said printing is completed a shoe 91 on the drum 13 will advance the tape sufficiently to bring the entire printed portion beyond the cutting edges of the knife. Retraction of the leading end of the tape to a non-printing position is then effected by means of the segment 49 in the manner previously described.

A reversal of the order described above, i. e. to normally have the tape remain in a printing pick-up position and to effect withdrawal thereof when tripping by means of a letter, may readily be accomplished by associating the letter trip with the second clutch member and altering the tape segments accordingly.

Having described the invention, what is claimed is:

1. In a machine of the class described for printing upon either letters or tape at the same printing position, a rotary printing member, a platen member, tripping means to control tape printing, tripping means to control letter printing, means to direct letters to said printing and platen members, means to direct tape to said printing and platen members, said tape normally being disposed in a non-printing position and being movable to a printing position upon initiating a trip and tape printing operation, interlocking means operable by the tripping means associated with tape printing to prevent printing on letters when printing on tape, and interlocking means operable by the tripping means associated with the letter printing to prevent printing on tape when printing on letters.

2. In a machine for printing on either letters or tape, a printing member, a one revolution clutch drive to rotate said printing member, a trip associated with letter printing, a trip associated with tape printing, each of said trips being connected with the one revolution clutch drive to initiate a printing operation, means to supply tape with the free end thereof in a non-printing position, tape advancing and retracting means to advance the tape to a printing position before printing and to retract the tape after printing, and a second clutch drive means connected with said tape advancing and retracting means and with the tape trip to initiate operation of the tape advancing means.

3. In a machine for printing on either letters or tape, a printing member, a one revolution clutch drive to rotate said printing member, a trip associated with letter printing, a trip associated with tape printing, each of said trips being connected with the one revolution clutch drive to initiate a printing operation, means to supply tape with the leading end thereof in a non-printing position, tape advancing and retracting means including a frictional tape engaging member to advance the leading end of the tape to a printing position before printing and to retract the tape after printing, and a second clutch drive connected with said tape advancing and retracting means, said second clutch drive also being operable by means of the tape trip to initiate operation of the tape advancing means.

4. In a machine for printing on either letters or tape, a printing member, a drive to rotate said printing member, a trip associated with letter printing, a trip associated with tape printing, each of said trips being connected with the drive to initiate a printing operation, means to supply tape with the leading end thereof in a non-printing position, tape advancing and retracting means including a frictional tape engaging member to advance the leading end of the tape to a printing position before printing and to retract the tape after printing, and a drive adapted to be connected by said tape trip with said tape advancing and retracting means to initiate operation of the tape advancing means.

5. In a machine for printing on either letters or tape, a printing member, a drive to rotate said printing member, a trip associated with letter printing, a trip associated with tape printing, each of said trips being connected with the drive to initiate a printing operation, means to supply tape with the leading end thereof in a non-printing position, tape advancing and retracting means including a frictional tape engaging member to advance the leading end of the tape to a printing position before printing and to retract the tape after printing, a drive adapted to be connected by said tape trip with said tape advancing and retracting means to initiate operation of the tape advancing means, interlocking means operable by the tripping means associated with tape printing to prevent printing on letters when printing on tape, and interlocking means operable by the tripping means associated with the letter printing to prevent printing on tape when printing on letters.

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