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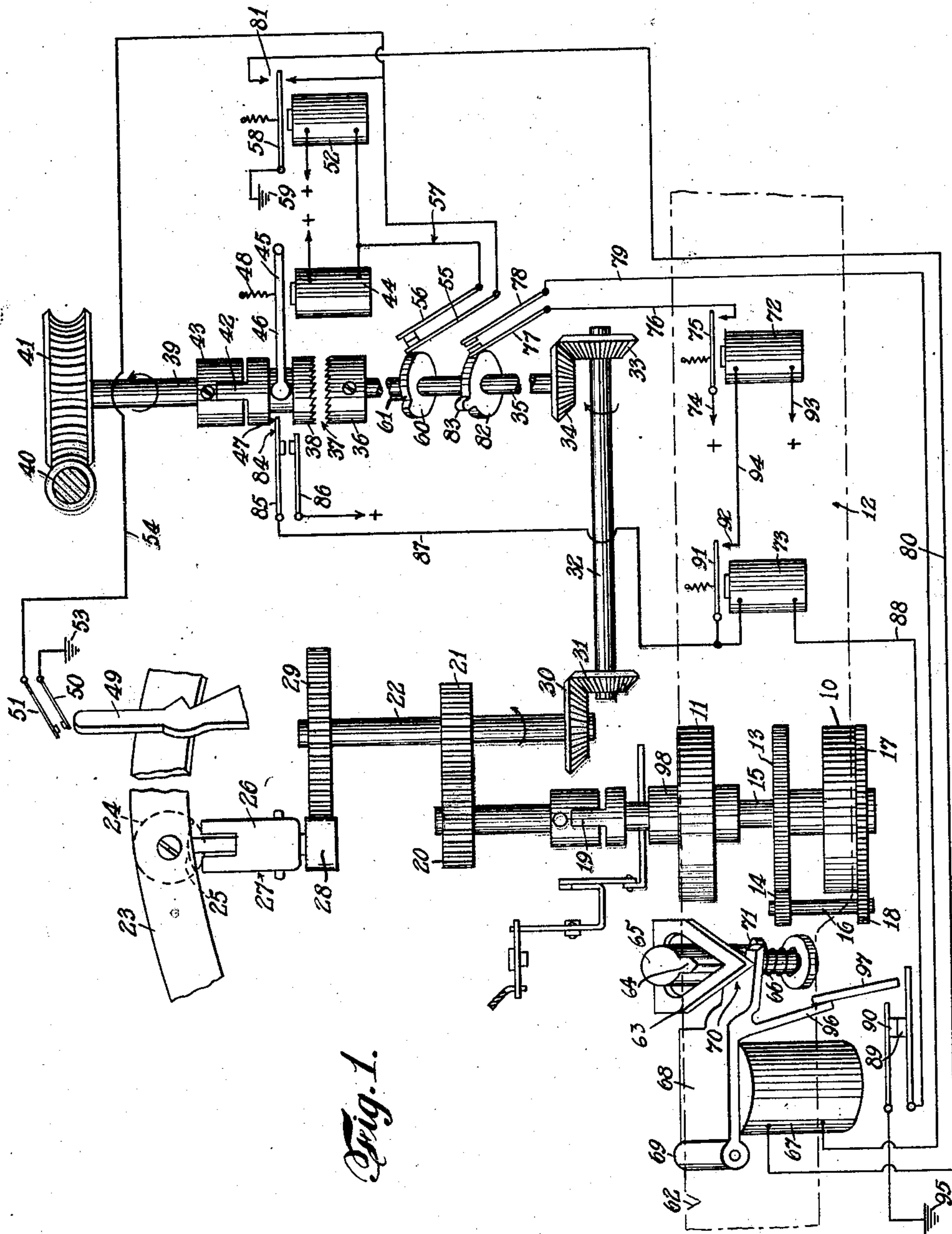
F. J. HAUPT ET AL

1,774,971

COUPON PRINTING TELEGRAPH MACHINE

Filed Aug. 3, 1929

2 Sheets-Sheet 1



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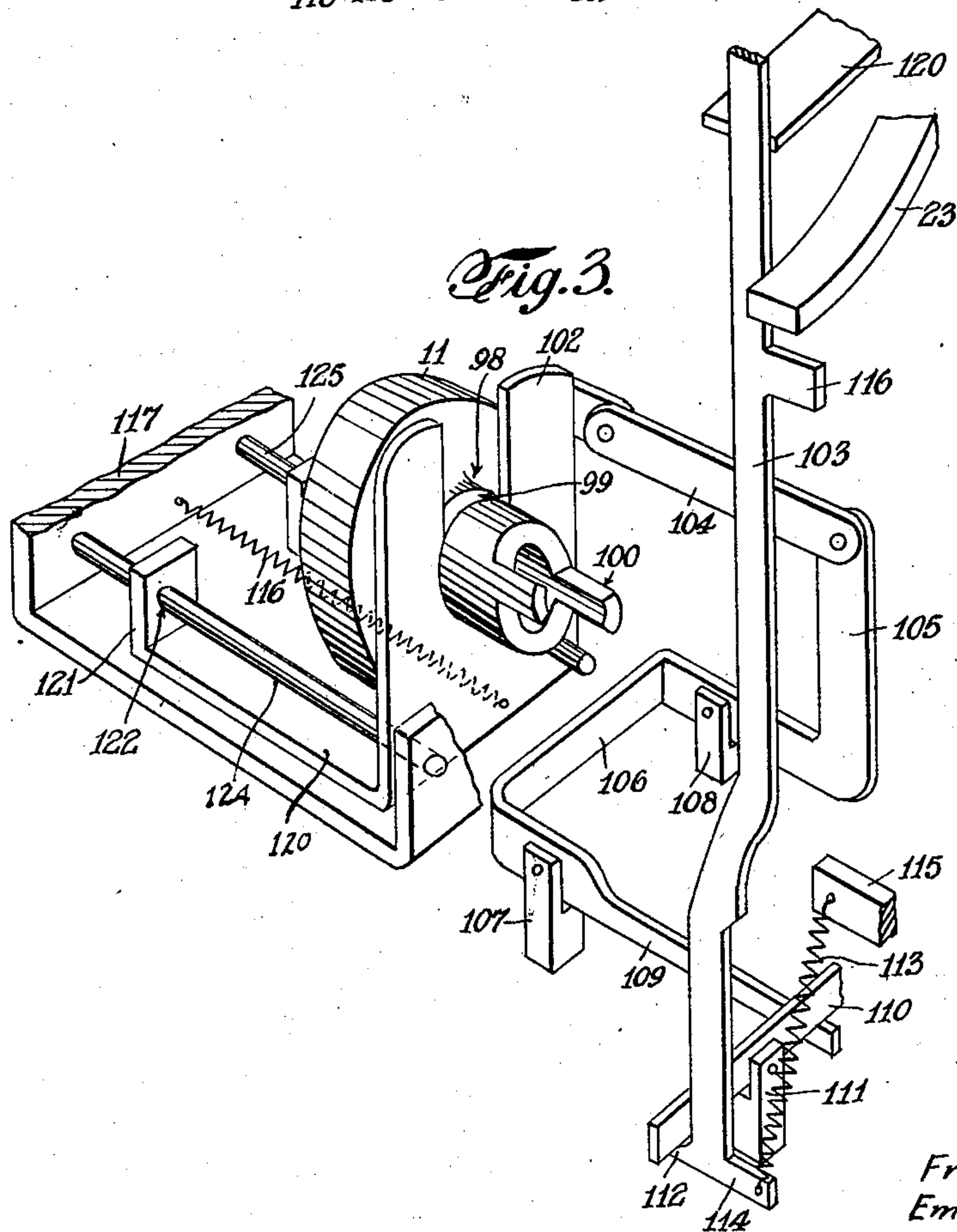
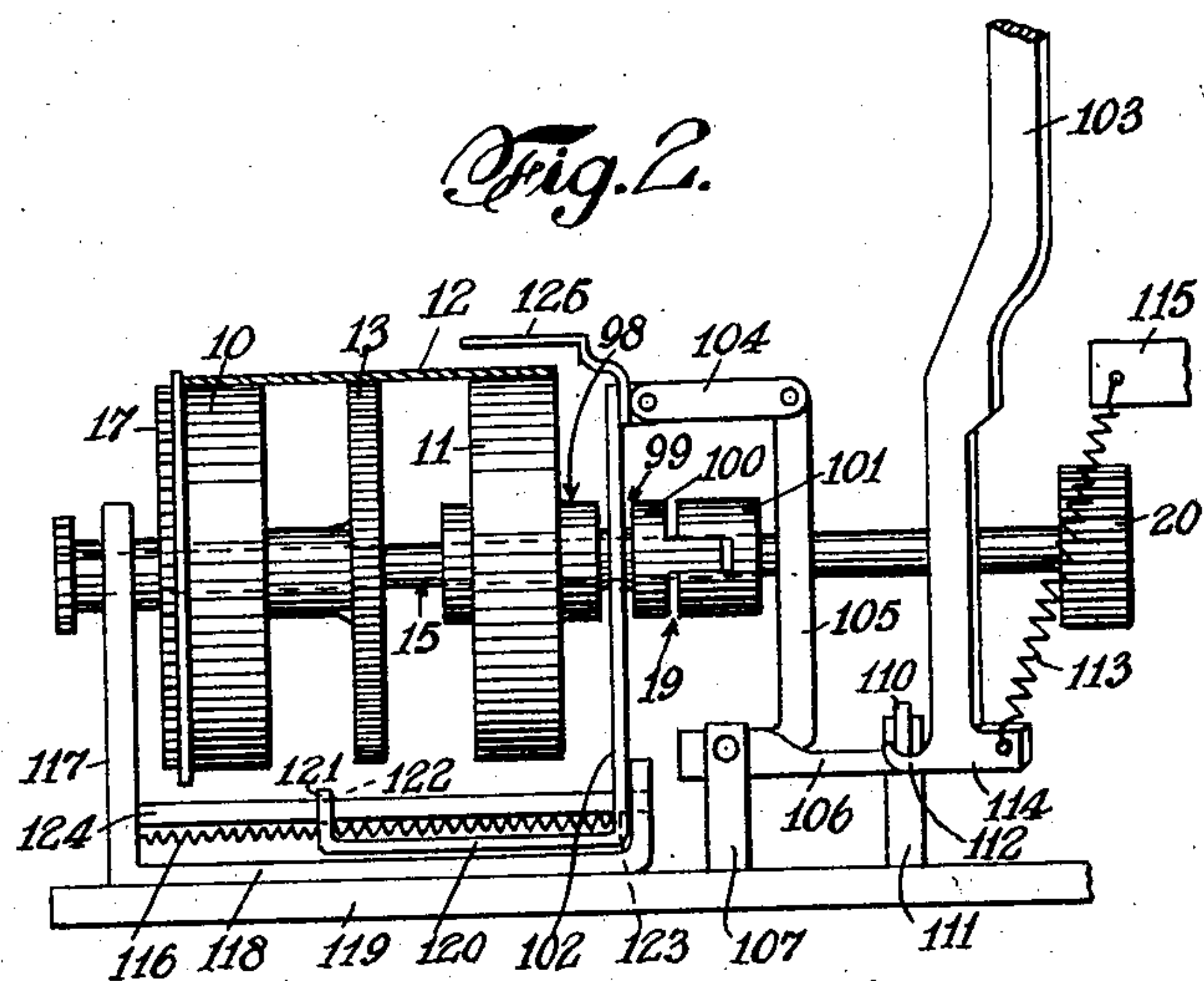
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UNITED STATES PATENT OFFICE

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COUPON-PRINTING TELEGRAPH MACHINE

Application filed August 3, 1929. Serial No. 383,230.

This invention relates to printing telegraph machines of the type in which the selection of the printing character is determined by a combination of electrical impulses and more particularly to a coupon paper feed attachment for a printer of this nature.

In printing telegraph systems employing machines of this type it is usual to use, at the transmitting station, a keyboard transmitter which, when a definite character key is depressed, sends out a combination of electrical impulses, usually of five or six units, which are transmitted to the receiving station where the selecting mechanism of an automatic printing unit selects the particular type-bar on which the desired printing character is mounted. The selected type-bar is then moved against the paper and the tape advanced one letter space.

The present invention is especially concerned with the printing unit wherein the mechanism embodying the invention is under the control of the operator at the transmitting station through the keyboard transmitter.

Telegraph printing machines as heretofore constructed, have been adapted only for continuous writing, i. e., for each signal combination transmitted the paper is advanced a single letter space only. It is desirable, however, in certain kinds of business such as brokerage houses, mail order concerns, banks and the like to transmit, from a distant point, individual orders or messages consisting of only a few characters and in order to facilitate the handling and filing of such orders it is desirable that they be received on individual slips or coupons of uniform size somewhat larger than that required for the order or message alone.

The invention is particularly adaptable to brokerage houses in which a large portion of the telegraphic traffic consists of "buy" and "sell" orders of only a few characters in length.

In an application of Long and Sortore, filed July 27, 1929, Serial No. 381,567, a coupon printing telegraph machine of the above nature is described and the present invention is in some respects an improvement

upon the machine described in such application. Briefly, the invention disclosed in said prior application comprises a telegraph printing unit having, in addition to the regular, step by step, feeding mechanism controlled by the transmitted message, an auxiliary paper feed mechanism which is set into operation after the message has been completed, by the actuation of a definite key-lever of the keyboard transmitter to feed the paper automatically an additional distance, such that the coupons will be of the same length, in each case, irrespective of the length of the message. The actuation of the auxiliary tape feed key-lever of the keyboard transmitter causes a predetermined signal combination to be transmitted to the printing unit, which through the regular type-bar selecting mechanism of the printer causes an electrical contact to be closed, thus completing a circuit through a magnet which operates a clutch mechanism for connecting the shaft of the auxiliary paper feed mechanism to a source of power. The shaft of the auxiliary paper feed mechanism rotates the paper feed rollers to advance the tape through the printer. This auxiliary paper feed mechanism after it is once set into operation, continues to feed the paper until its operation is discontinued by an automatic timing device controlled by the extent of movement of the paper or paper feed mechanism. The timing device is actuated by both the main paper feed mechanism and the auxiliary paper feed mechanism so that it discontinues the operation of the auxiliary paper feed mechanism when a definite length of paper has been advanced through the machine, irrespective of the length of the message.

At the completion of the feeding operation, a paper severing device is operated to cut off the printed portion of the paper from the unprinted portion thereof. This mechanism operates periodically irrespective of whether the machine is being employed to print coupons or continuous messages and therefore interferes, to some extent, with the normal use of the machine receiving continuous messages.

One of the objects of the present invention

is to overcome this difficulty and to provide a coupon tape printing machine in which the coupon severing or indicating apparatus is operated only in response to the coupon tape feed signal combination.

Another object is to provide an attachment for a tape printing telegraph machine for producing coupons of uniform size which does not interfere with the normal functioning of the machine when employed for other than coupon printing operations.

A further object is to provide a shift mechanism for a tape printing machine to enable either upper or lower case characters to be printed, in which the paper remains laterally stationary and the platen is shifted relative thereto.

A further object is to provide a paper feed mechanism for the tape which is independent of the platen shifting mechanism.

Other objects and advantages will hereinafter appear.

In accordance with our invention we control the operation of the paper severing or indicating device by means of an electrical circuit which is normally open and which is prepared through mechanism operating only in response to the automatic tape feed signal, the circuit being subsequently completed by a timing device which has a definite cycle of operation independent of whether continuous messages or coupon feeding signal combinations are transmitted.

Preferably we do not completely sever the coupon from the unprinted portion of the tape but indicate the end of the coupon by a marginal V-shaped notch. In order that the notch-punching mechanism will properly register with the margin of the tape, irrespective of whether upper or lower case characters are being printed, the paper is held laterally stationary and the platen is shifted relative thereto. The tape feed is made independent of the active or shifting portion of the platen so as not to interfere with the operation thereof.

In order that the invention may be more fully understood reference will be had to the accompanying drawings in which:

Fig. 1 is a diagrammatic view of apparatus embodying our invention.

Fig. 2 is an elevational view of the platen and platen shifting mechanism, and

Fig. 3 is a perspective view of the platen shifting mechanism. The printing unit to which our invention applies, employs a group of type bars arranged in a semi-circle and striking downward. The type bars are selected in the usual manner by a group of semi-circular notched code bars controlled by selecting cams, in response to the received combination of electrical impulses, to bring a single set of notches in the code bars into alignment, whereby a pull bar, corresponding to the selected character, will be pulled into

the aligned notches and thus brought into a position to be engaged by the operating bail of the printer on upward movement thereof. The operation of the pull bar actuates the corresponding type bar. After each movement of the operating bail, the paper is stepped ahead one letter space preparatory for the succeeding printing signal.

This form of printing telegraph machine is well known in the art, and the above described mechanism forms no part of the present invention, except in so far as it operates in conjunction with the paper feed mechanism, the platen shift mechanism and the punch mechanism and controls the operation thereof through the received signal combination. Therefore, it is deemed unnecessary to describe the same in detail, for a proper understanding of the present invention.

Referring now to Figure 1, we have shown a paper supporting roller 10 and a platen roller 11, spaced apart to permit the use of a relatively wide tape 12, shown in dotted lines. The tape passes from a reel, not shown, from right to left over the rollers 10 and 11 and between feed rollers 13 and 14. The feed roller 13 is fixed to the shaft 15 of the platen so as to rotate therewith, and the opposed feed roller 14 is mounted upon a shaft 16. The roller 14 is pressed against the roller 13 by a spring, not shown, so that the paper will be moved forward during rotation of the platen shaft 15. The shaft 15 is provided with a gear 17 meshing with a gear 18 fixed to the auxiliary shaft 16 so that the feed rollers are driven in unison. The roller 10 is rigid with the shaft 15 and the platen 11 is shiftable longitudinally therewith to enable either upper or lower case characters to be printed. It is keyed to the shaft 15 by a key and slot connection 19 so that it rotates therewith during the forward feed of the tape. An inking ribbon, not shown, is disposed immediately above the platen roller 11.

Platen shaft 15 has a driving gear 20 on its inner end mating with a gear 21 secured to a main paper feed shaft 22 disposed parallel to the platen shaft 15.

The normal forward feed of the tape during the printing of the order or message is accomplished through the usual ratchet and pawl paper feed mechanism controlled by the operating bail 23. The operating bail is mounted upon a vertical plunger 24 having a cam face 25 which engages a roller on upper end of a bell crank lever 26, pivoted at 27. Upon upward movement of the plunger, the roller of the bell crank lever moves out of the depression formed by the cam surface of the plunger, and through the lower arm of the bell crank lever moves the pawl 28 downward. The pawl is arranged so as to engage one of the teeth of the spacing ratchet wheel 29 upon the downward movement thereof. The upward movement of the

pawl, to rotate the ratchet wheel, occurs when the operating plunger is returned to its normal position. Rotation of the ratchet wheel advances the paper through the machine through the rotation of the feed rollers 13 and 14.

In addition to this regular paper feed mechanism an auxiliary paper feed mechanism is provided which is set into operation after the completion of the message by the depression of a special "tape feed" key lever of the key board transmitter. This auxiliary paper feed mechanism continues the feeding of the paper until a predetermined length thereof has been advanced through the machine.

A gear 30 mounted upon an extended part of the main paper feed shaft 22 opposite the spacing ratchet 29 meshes with a bevel gear 31 mounted on the end of an intermediate shaft 32. The shaft 32 is driven by bevel gears 33 and 34 from the auxiliary paper feed shaft 35. A driven member 36 of a clutch 37 is disposed at the opposite end of the shaft 35 from the gear 34. The driving member 38 of the clutch is secured to a shaft 39, driven by a motor, not shown, through a worm 40 and worm wheel 41.

The clutch 37 may be of any convenient type and as shown consists of two crown gears 36 and 38, the gear 36 being fixed on its shaft 35 and the gear 38 being slideable longitudinally on its shaft 39 but connected by a key and slot connection 42, to a fixed element 43 secured to the shaft 39 so as to rotate therewith. The driving element 38 of the clutch may be moved into engagement with the driven member 36 to transmit motion to shaft 35. The operation of the clutch is controlled by a magnet 44, the armature 45 of which has a yoke 46 attached thereto. The legs of the yoke engage in an annular recess 47 of the driving clutch member 38 and move the two clutch members into engagement and disengagement upon energization or deenergization of the magnet. A spring 48 disengages the clutch upon deenergization of the magnet. In the foregoing mechanism, it will be noted that the paper may be fed forward either by the normal feed mechanism including the pawl and ratchet 28 and 29 or by the auxiliary paper feed mechanism controlled by the clutch 37.

The energization of the magnet 44 for initiating the operation of the auxiliary paper feed mechanism is controlled through the key board transmitter. At the conclusion of the transmission of the order or other message during which a definite quantity of tape has been fed, if it is desired to cause enough blank tape to be automatically and additionally fed out as to give a uniform length of coupon, the transmitting operator depresses the auxiliary "tape feed" key to transmit a signal combination which will operate one of the

pull bars 49 which is disposed so as to engage a pair of normally open contacts 50 and 51 to close the same and thus complete a circuit through the magnet 44 and a locking relay 52, from the ground 53, said contacts 50 and 51, conductor 54, a pair of timing contacts 55 and 56 and a conductor 57 to the winding of the clutch magnet 44 and the locking relay 52. The relay through its armature 58 completes a locking circuit through the clutch magnet and locking relay from the ground 59, armature 58, conductor 54, contacts 55 and 56 and conductor 57. The clutch may thus remain energized to continue the paper feed operation until the contacts 55 and 56 are opened.

The contacts 55 and 56 form part of a timing device the purpose of which is to discontinue the operation of the auxiliary paper feed mechanism after the desired length of tape has been fed, to form the coupon. These contacts are controlled by a cam 60 mounted upon a shaft 35. The cam 60 has a recess 61 in one side thereof which at the beginning of the operation of printing a coupon is disposed opposite the contact 55 so as to enable the contacts 55 and 56 to be open. Upon the printing of the first character of the order or message, the normal tape mechanism is operated through the pawl and ratchet 28 and 29 through the gears 30 and 31, intermediate shaft 32 and the gears 33 and 34. The rotation of the cam 60 in response to the first printing signal, causes contacts 55 and 56 to close. The cam moves around with each subsequent printing signal.

After the auxiliary tape feed mechanism is set into operation by actuation of the auxiliary "tape feed" lever, it continues to operate until the cam 60 makes a complete revolution and the recess 61 again comes into position opposite the contact 55, at which time the contacts open and thus break the circuit through the clutch magnet 44 and the locking relay 52. The retractile spring 48 causes the disengagement of the clutch 37.

The length of the coupon is definitely determined by the cam 60, which being actuated by both the main paper feed mechanism and the auxiliary paper feed mechanism, causes the coupon to be of uniform length, regardless of the number of characters of which the message is composed.

At the completion of the tape feeding operation, the coupon may be severed from the unprinted portion of the tape, but preferably we merely indicate the length of the coupon by making a V shaped notch or serration 62 in the margin. This is accomplished by passing the tape as it leaves the printing platen over a stationary die plate 63 and under a V shaped punch 64. The punch 64 is affixed to a vertical plunger 65 which is normally biased to its upper position by a surrounding spiral spring 66. The operation of the

punch is effected by a punch magnet 67 having an armature 68 pivoted at 69. The free end of the armature has an extension 70 normally resting upon a shoulder 71 of the plunger so that upon energization of the punch magnet, the plunger and punch are moved downwardly to cut the marginal notch in the paper. These parts 63 to 71 have been shown twisted slightly forward in perspective to more clearly illustrate the same.

The circuit for operating the punch magnet 67 is provided with a relay 72 through which the circuit is prepared, and a locking relay 73 for maintaining the relay 72 energized during the tape feeding operation. Relay 72 and locking relay 73 are not operated by the main paper feed mechanism, but only upon the actuation of the auxiliary paper feed mechanism. Consequently, the punch magnet 67 is rendered inoperative except when a coupon feeding signal is received.

The circuit for the punch magnet extends from a source of power 74 through the armature 75 of the relay 72, conductor 76, a pair of normally open contacts 77 and 78, conductor 79, winding of punch magnet 67, conductor 80, contact 81 of the clutch locking relay 52 and armature 58 to the ground at 59.

The contacts 77 and 78 are controlled by a cam 82 on the auxiliary paper feed shaft 35. The cam 82 has a projection 83 on its periphery which engages the contacts 77 and 78 to close the same once each revolution of the paper feed shaft and thereby to complete the circuit through the punch magnet, providing the circuit has been properly prepared through the operation of the armature 75 of the relay 72 and the release of the armature 58 of the clutch locking relay 52. The position of the projection 83 is such relative to the recess 61 of the timing cam 60 that the contacts 77 and 78 close immediately after the termination of the auxiliary paper feed operation. The contact 81 of the clutch locking relay 52, through which the punch magnet circuit is prepared, in part, insures that the punch magnet will not operate until the movement of the tape has been arrested by the opening of the clutch circuit.

The function of the relay 72 is to enable the punch magnet operating circuit to be prepared only in case the auxiliary paper feed mechanism has been set into operation. Upon operation of the clutch 37, to feed the coupon to the printer, one wall of the annular recess 47 of the clutch engages the contact arm 84 to close a pair of normally open contacts 85 and 86, to energize the locking relay 73 through conductors 87 and 88, and a pair of normally closed contacts 89 and 90. This causes the armature 91 of the locking relay 73 to engage contact 92 and complete a locking circuit for the relay 72 through a source of power 93, winding of relay 72, conductor 94, armature 91, winding of relay 73, conduc-

tor 88 and contacts 89 and 90 to the ground 95, thus moving and holding the armature 75 of the relay 72 against its lower contact and preparing, in part, the punch magnet circuit. The relay 72 remains energized until released by the operation of the punch magnet. The punch magnet has a downward extension 96 provided with a strip of insulation 97 which, on the operation of the punch magnet, engages contact 89 and opens the circuit, thus releasing the armature of the relay 72. The punch magnet cannot be again operated by the continued rotation of the cam 82 until after the circuit has again been prepared through operation of the auxiliary paper feed mechanism.

It will be noted that with the mechanism and circuit arrangement described, upon transmission of an auxiliary paper feed signal, the paper is automatically fed forward a variable number of spaces depending upon the length of the message previously transmitted, to produce a coupon of uniform length, and each initiation of the operation of the auxiliary paper feed mechanism prepares, in part, the circuit for the punch magnet, which circuit is further prepared through the release of the armature of the clutch locking relay 52, the circuit being subsequently completed by the closing of the contacts 77 and 78. Since the completion of the punch magnet circuit is dependent upon the operation of the auxiliary paper feed mechanism, it does not interfere with the operation of the printing unit for receiving continuous messages.

Referring to Figures 2 and 3, we have shown the platen 11 and shift mechanism whereby the paper is maintained laterally stationary and the platen roller is shifted to effect the printing of the upper or lower case characters. The platen roller 11 is free upon the shaft 15 so as to slide longitudinally thereon, beneath the tape 12, the paper being engaged by the feed rollers 13 and 14 and thereby held laterally stationary. The platen roller 11 is provided on its inner surface with a hub 98 having an annular recess 99 therein, the hub being provided with one element 100 of the key and slot connection 19, the opposed element 101 of which is fixed to the shaft 15. A plate or yoke shaped member 102 engages in the annular recess 99 to shift the platen 11. The yoke is actuated by a shift pull bar 103 controlled by the selecting mechanism of the printing unit. The yoke is connected by a link 104 with a vertical arm 105 of a U-shaped bell-crank lever 106 pivoted to posts 107 and 108. The horizontal arm 109 of the lever is disposed beneath one end of a horizontal lever 110 pivoted, intermediate its ends to a post 111. The opposite end of the lever 110 is engaged by the hooked end 112 of the shift pull-bar 103. The pull-bar is normally urged

upward by a retractile spring 113 secured between a heel piece 114 of the pull-bar and a fixed part of the machine 115. Near its upper end, the shift pull-bar is provided with a rearward extension 116 which is positioned beneath the operating bail 23 of the machine. In Figures 2 and 3 the operating bail 23 and pull bar 103 are shown in their upper position, in which position the yoke 102 and the platen 11 are shifted to their extreme right hand position. On the downward movement of the operating bail to its normal position, the pull bar is moved downward away from the lever 110, and the yoke 102 and platen 11 are returned to their left hand positions, by a retractile spring 116 fastened to the yoke and to one side 117 of a U-bracket 118 which is secured to the base 119. The movement of the pull bar 103 with each operation of the operating bail 11 to shift the platen is controlled by a code bar 120 operating in response to a shift signal. In the normal or left hand position of the platen, the code bar 120 extends across the top of the pull bar and prevents upward movement thereof, and upon receipt of a shift signal the code bar is moved away from the pull bar to allow it to follow the upward movement of the operating bail and thus to shift the platen.

The yoke 102 and a horizontal extension 120 provided with an upturned end 121. The yoke and upturned end 121 are provided with aligned openings 122 and 123 having sliding engagement with guide rods 124 and 125 disposed, one on each side of the center line of the shaft 15. The guide rods are secured in the vertical arms of the bracket 118. A ribbon guide 125 is mounted upon the upper end of the yoke 102 so as to move the ribbon with the platen 11.

The paper remains laterally stationary during the printing of both upper and lower case characters which permits the punch 64 to be permanently positioned adjacent the margin of the paper and thus eliminates the necessity of providing for the relative movement of the punch and paper.

While we have shown a serrating punch operated by the magnet 67, it is to be understood that in place thereof a paper severing device may be employed or other paper engaging means for indicating the length of the coupon.

In place of the punch 64, we may employ a numbering device, for numbering the coupons in sequence or a timing stamp for indicating the exact time of the reception of the order, such devices being rendered operative only upon the actuation of the auxiliary paper feed mechanism, and in the appended claims we intend to include by the term stamping device, all devices of this character.

Obviously many changes and modifications will occur to those skilled in the art, and we

do not desire to be limited to the exact details described and illustrated except in accordance with the following claims.

What is claimed is:

1. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper stamping device, means for starting the operating of the auxiliary paper feed mechanism, means for stopping the operation of the said auxiliary paper feed mechanism after a pre-determined length of paper has been fed through the machine, and means for operating the paper stamping device, said latter means being prepared for operation upon the starting of said auxiliary paper feed mechanism and being operated by the stopping thereof.

2. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, an electrically operated stamping device, means for starting the operation of the auxiliary paper feed mechanism, means for stopping the operation of said auxiliary paper feed mechanism after a pre-determined length of paper has been fed through the machine, a circuit for said electrically operated stamping device, said circuit being prepared, prior to the stopping of the auxiliary paper feed mechanism and being completed upon the stopping thereof.

3. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper stamping device, an electric control circuit for said stamping device, a relay and means actuated upon the starting of the auxiliary paper feed mechanism for energizing said relay, said relay when energized preparing, at least in part, said electric control circuit and means for subsequently completing said circuit.

4. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper stamping device, an electric control circuit for said stamping device, a relay and means actuated upon the starting of the auxiliary paper feed mechanism for energizing said relay, said relay when energized preparing, at least in part, said electric control circuit, and means operating after the termination of the auxiliary tape feed operation, to complete said control circuit to bring said stamping device into engagement with the paper.

5. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper stamping device, an electric control circuit for said stamping device, a relay and means actuated upon the starting of the auxiliary paper feed mechanism for energizing said relay, said relay when energized preparing, at least in part, said electric control circuit, and means operating after the termination of the auxiliary tape feed operation to complete said control circuit, to bring said stamping device into en-

gagement with the paper, and to open the circuit to said relay.

6. In a printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper serrating device, means for starting the auxiliary paper feed mechanism into operation, a timing device for automatically discontinuing the operation of the auxiliary paper feed mechanism after a predetermined length of paper has been fed through the machine by the main and auxiliary paper feed mechanisms, a circuit for said paper serrating device, a relay for preparing said circuit, at least in part, an auxiliary circuit for said relay and a locking relay in said auxiliary circuit, said relays being energized upon the actuation of the auxiliary paper feed mechanism and means controlled by the operation of the serrating device for opening the circuit to said relays.

7. In a tape printing telegraph machine, a main and auxiliary tape feed mechanism, an electrically operated stamping device, circuit for said stamping device, a relay for preparing said circuit, in part, a second relay for further preparing said circuit, said first relay operating to prepare said circuit upon the starting of the auxiliary paper feed mechanism, and said second relay operating to prepare said circuit further upon the stopping of the auxiliary paper feed mechanism.

8. In a coupon printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a stamping device, an electro-magnetic device for controlling the operation of said auxiliary paper feed mechanism, a locking circuit therefor, a second electro-magnetic device for operating said stamping device, a circuit therefor, a relay for preparing said last mentioned circuit, in part, upon energization of said first electro-magnetic device, said circuit being further prepared upon opening of said locking circuit, and a timing device for completing said circuit.

9. In a coupon printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a stamping device, an electro-magnetic device for controlling the operation of said auxiliary paper feed mechanism, a locking circuit therefor, a second electro-magnetic device for operating said stamping device a circuit therefor, a relay for preparing said last mentioned circuit, in part, upon energization of said first electro-magnetic device, a locking circuit for said relay, means for opening said first locking circuit after a predetermined operation of said auxiliary paper feed mechanism, means for further preparing the circuit for said second electro-magnetic device upon opening of said first locking circuit, means for subsequently completing the circuit to the second electro-magnetic device, to operate the same, and means for opening said second locking circuit

upon operation of said second electro-magnetic device.

10. In a coupon printing telegraph machine, a main paper feed mechanism, an auxiliary paper feed mechanism, a paper serrating punch, a magnet for controlling the operation of said auxiliary paper feed mechanism, a locking relay for said magnet, a second magnet for operating said punch, a circuit for said magnet, a relay and means functioning upon energizing of said first magnet for energizing said relay to prepare, in part, said punch magnet circuit, and means functioning upon deenergization of said locking relay for further preparing said circuit, and a timing device operating after the termination of the auxiliary paper feed operation, to complete said circuit to operate said paper serrating punch.

11. In a tape printing telegraph machine, a printing mechanism having upper and lower case characters, a platen, a platen shaft, a paper feeding roller, said paper feeding roller being fixed to said platen shaft, and said platen being longitudinally movable thereon, relative to the paper feed roller.

12. In a tape printing telegraph machine, a printing mechanism having upper and lower case characters, a platen, a shaft therefor, a feed roller fixed to said shaft independently of said platen, means for rotating said shaft to rotate the platen and feed roller and means for shifting said platen relative to the feed roller to effect the printing of either upper or lower case characters.

In testimony whereof we affix our signatures.

FRANK J. HAUPT.
EMERSON J. SORTORE.