May 10, 1927.

1,627,663

L. H. MORSE

PRINTING MACHINE WITH CHANGEABLE FORM

Filed Jan. 7, 1926

8 Sheets-Sheet 1

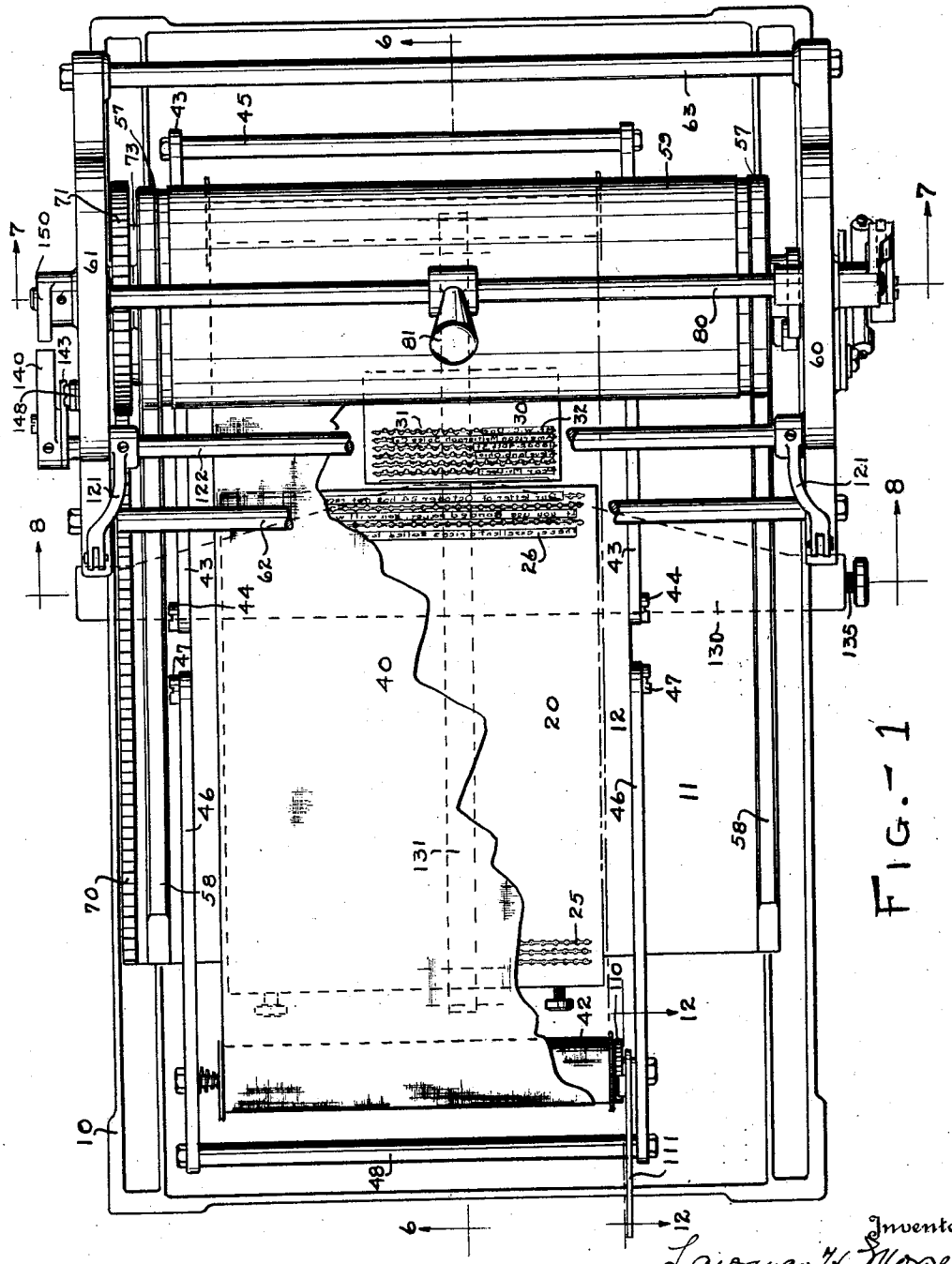


FIG. - 1

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May 10, 1927. 1,627,663

L. H. MORSE

PRINTING MACHINE WITH CHANGEABLE FORM

Filed Jan. 7, 1926 8 Sheets-Sheet 2

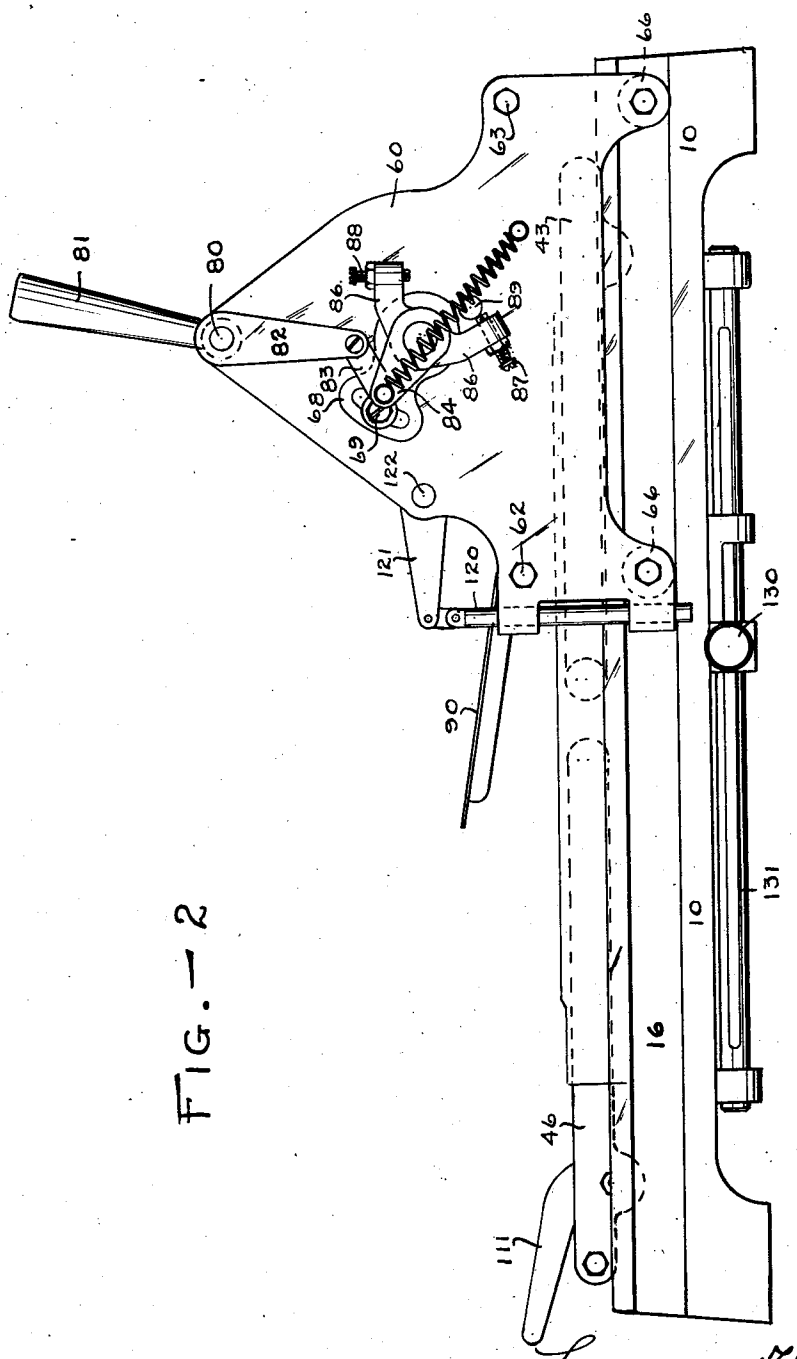


FIG. 2

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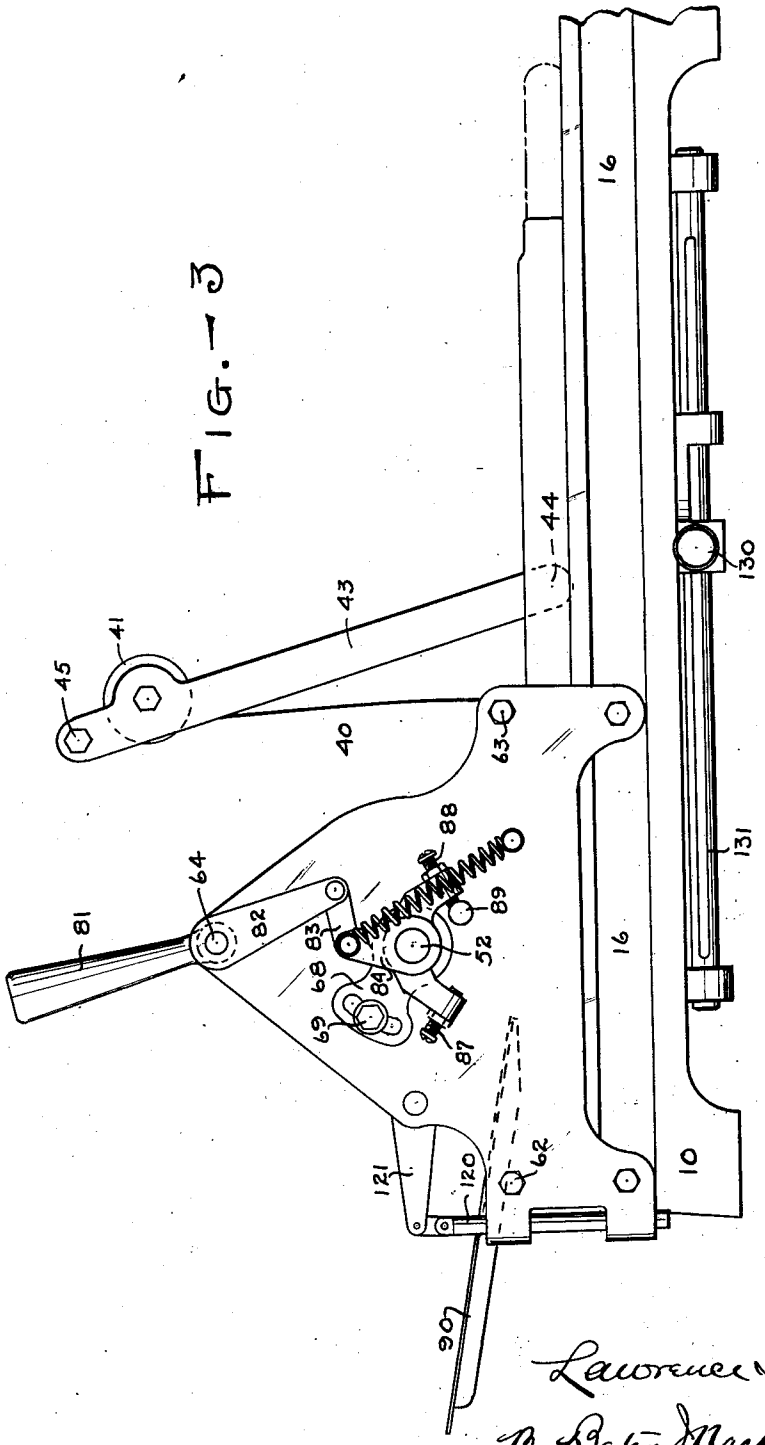
May 10, 1927. 1,627,663

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PRINTING MACHINE WITH CHANGEABLE FORM

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FIG. 3



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L. H. MORSE

PRINTING MACHINE WITH CHANGEABLE FORM

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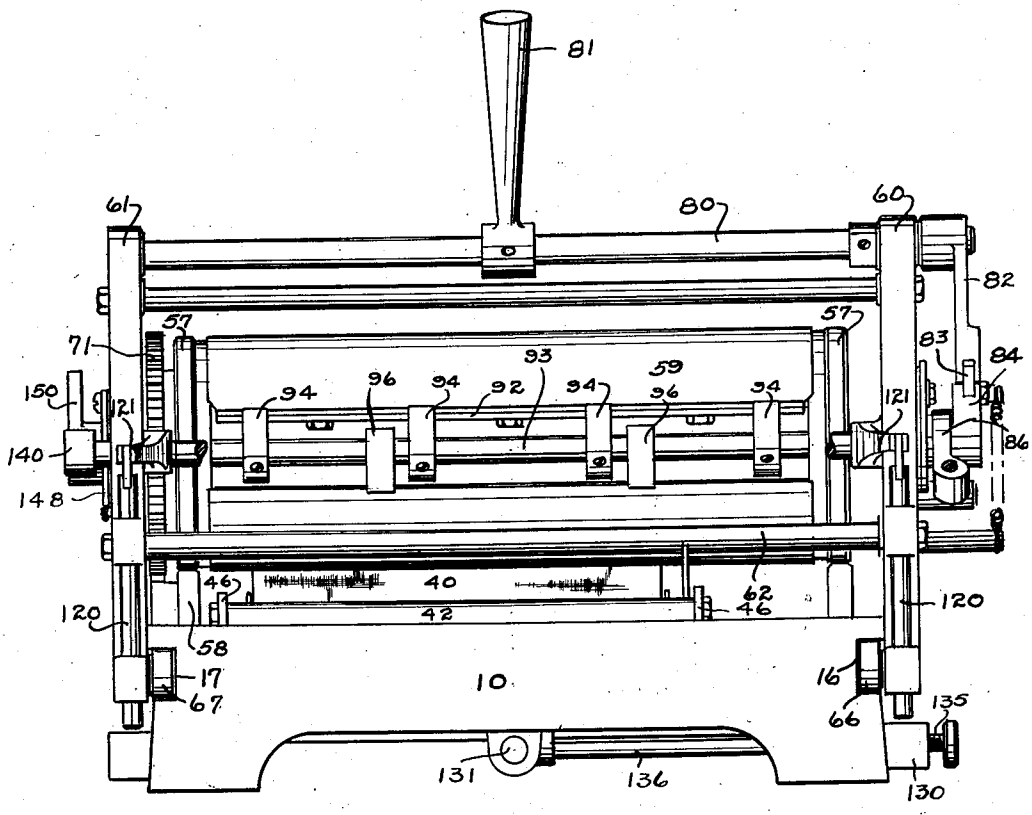


FIG.- 4

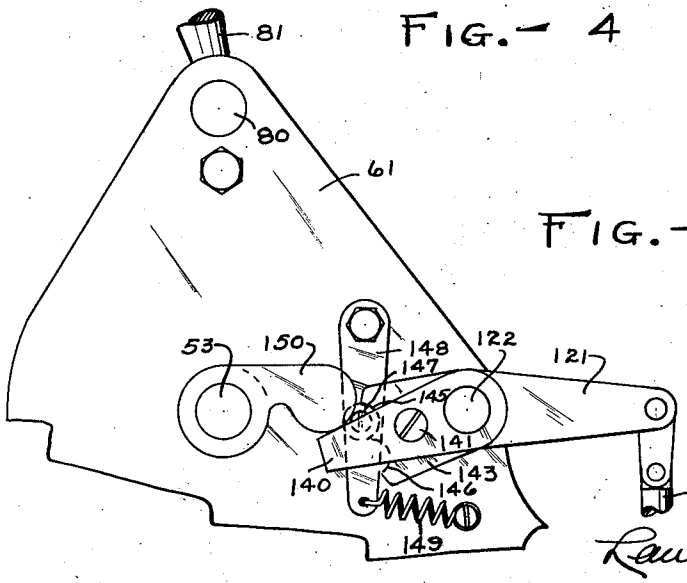


FIG.- 5

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May 10, 1927. 1,627,663

L. H. MORSE

PRINTING MACHINE WITH CHANGEABLE FORM

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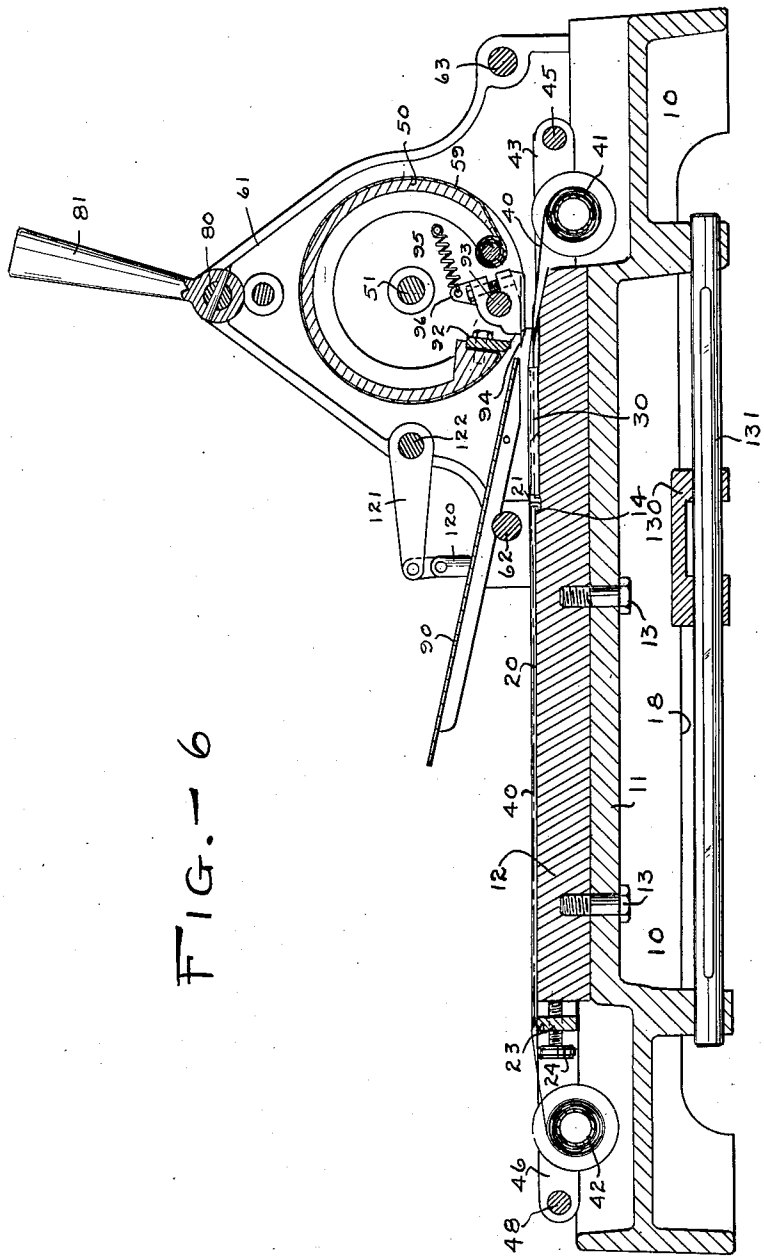


FIG. 1

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May 10, 1927. 1,627,663

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PRINTING MACHINE WITH CHANGEABLE FORM

Filed Jan. 7, 1926 8 Sheets-Sheet 6

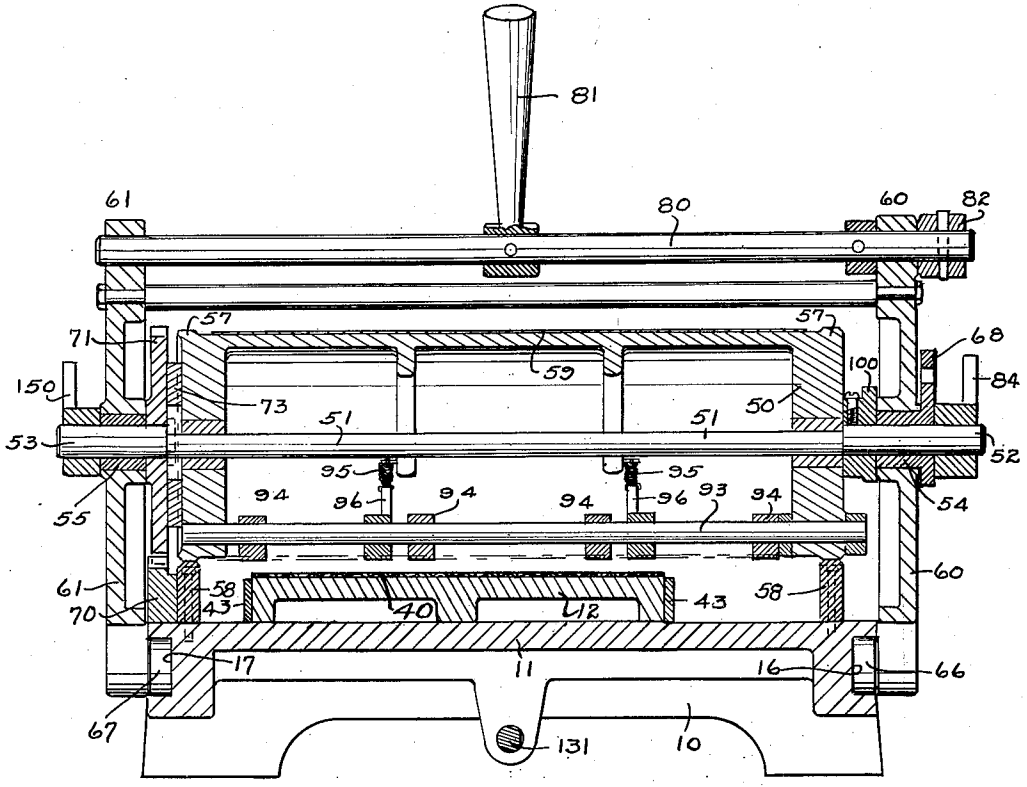


FIG.- 7

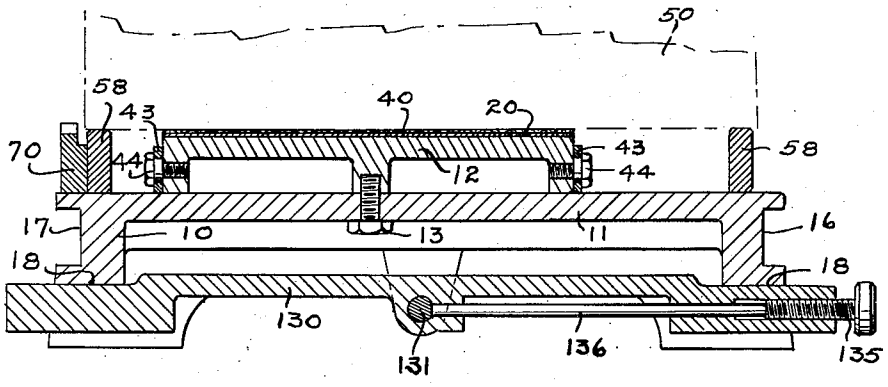


FIG.- 8

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May 10, 1927. 1,627,663

L. H. MORSE

PRINTING MACHINE WITH CHANGEABLE FORM

Filed Jan. 7, 1926 8 Sheets-Sheet 7

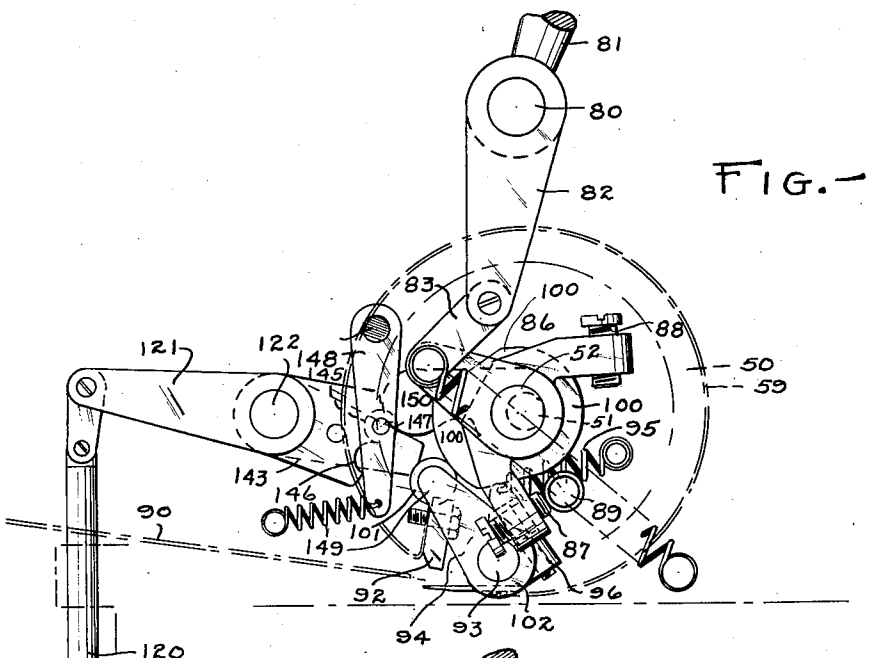


FIG.-9

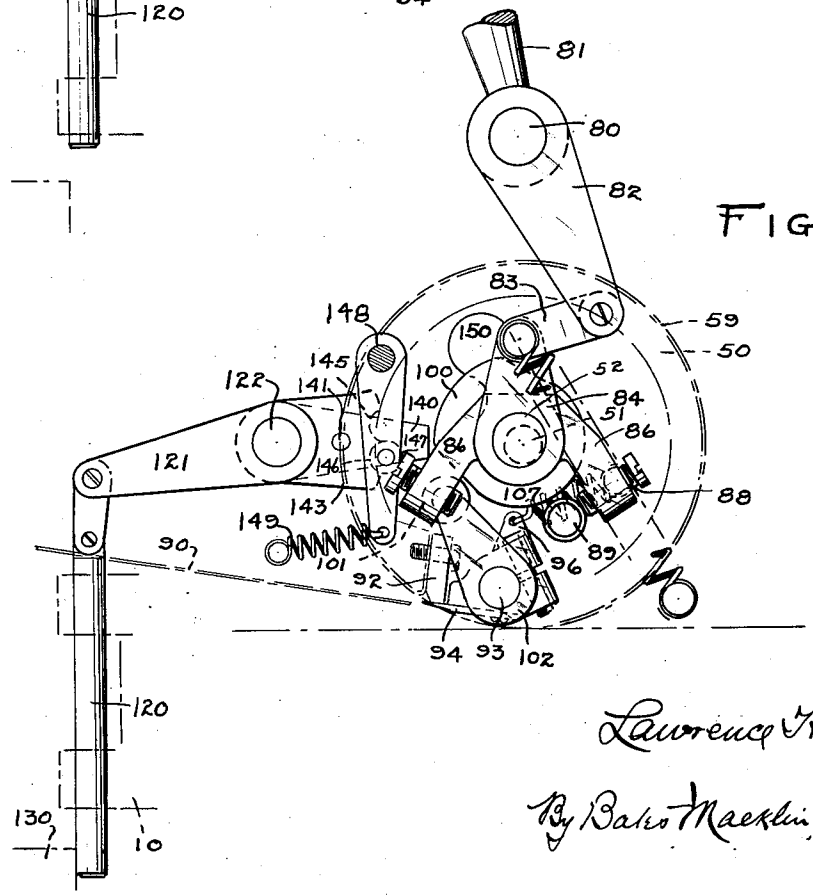


FIG.-10

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PRINTING MACHINE WITH CHANGEABLE FORM

Filed Jan. 7, 1926 8 Sheets-Sheet 8

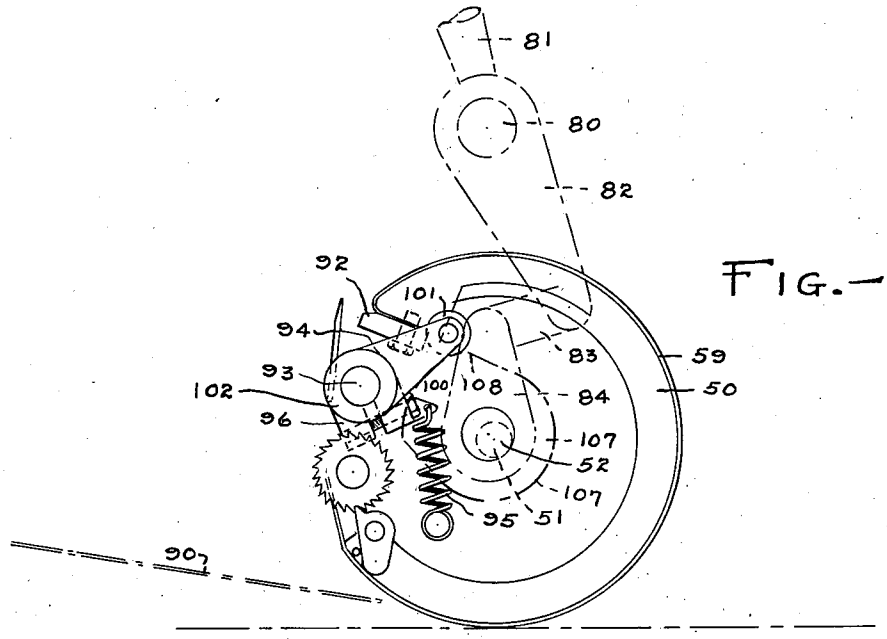


FIG.- 11

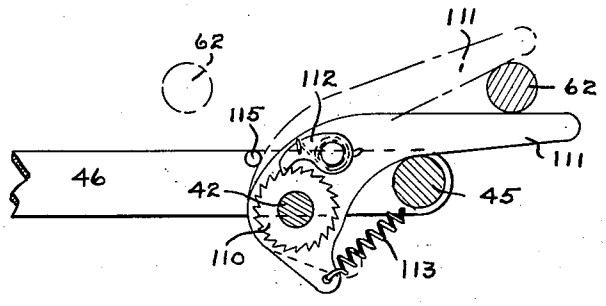


FIG.- 12

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Patented May 10, 1927. 1,627,663

UNITED STATES PATENT OFFICE.

LAWRENCE H. MORSE, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, A CORPORATION OF OHIO.

PRINTING MACHINE WITH CHANGEABLE FORM.

Application filed January 7, 1926. Serial No. 79,731.

One of the objects of this invention is to provide a simple and efficient printing mechanism wherein the printing form or a portion thereof may be readily changed between successive printing strokes.

The machine is well adapted for embodiment in a small hand-operated office printing press adapted for printing circular letters with changeable addresses through an inked ribbon. In this case, one or both of the ribbon spools is carried by means allowing it to be readily lifted to uncover the adjacent portion of the form, so that the changeable portion of the form may be accessible. To this end, I prefer to mount each ribbon spool between the distant ends of a pair of bars, the other ends of which are pivoted to the frame in an intermediate region of the machine, thus enabling substantially either half of the form to be uncovered whenever desired.

The invention is preferably embodied in a flat bed machine having a traveling platen carriage, the platen being a roller which is eccentrically journalled on the carriage so that it may be raised and lowered with reference to the bed. I provide automatically operated mechanism consequent upon the movement of the platen frame to grip the paper and turn down the platen so that the continued stroke of the platen will effect the printing and thereafter release the printed sheet.

My invention also contemplates an adjustable stop mechanism assisting in insuring short strokes for the platen carriage such as would be suitable for printing envelopes for instance. Automatic means is provided for releasing the stopping mechanism after every impression so that the next stroke of the platen may be over both portions of the form.

The above and other features of the invention will be hereinafter more fully described, and the essential novel characteristics set out in the claims.

In the drawings, Fig. 1 is a plan, partly broken away, of one embodiment of my printing machine; Fig. 2 is a side elevation of the machine looking from the right hand side of Fig. 1 and showing the platen carriage at the forward end of its stroke; Fig. 3 is a similar elevation showing the platen carriage at the rear end of the stroke; Fig. 4 is an end elevation of the machine, partly broken away; Fig. 5 is a detail of the mechanism for automatically disengaging the limit stop and being a side elevation looking from the left hand of Fig. 1. Fig. 6 is a vertical central longitudinal section of the machine as indicated by the line 6—6 of Fig. 1; Fig. 7 is a vertical transverse section through the platen shaft as indicated by the line 7—7 of Fig. 1; Fig. 8 is a transverse vertical section on a plan indicated by the lines 8—8 on Fig. 1, illustrating the adjustable stop for limiting the stroke; Figs. 9, 10 and 11 are side elevations, somewhat diagrammatic, of the platen and its operating mechanism showing the parts in three different positions—Fig. 9 showing the position just before the paper is gripped, Fig. 10 after it has been gripped, Fig. 11 after the platen has moved toward the operator sufficiently to print and release the paper; Fig. 12 is a detail of the ribbon feeding mechanism being a vertical section on the line 11—11 of Fig. 1.

As shown in many of the views, 10 indicates the frame of the machine, which may be a suitable rectangular casting with short corner legs and a horizontal web 11, which may carry a separable raised bed 12, shown as secured to the web by screws 13. Different parts of the form may rest on this bed. As shown, a flexible blanket 20 hooked at 21 over a transverse rib 14 of the bed and at its other end hooked onto a bar 23 in which are threaded screws 24 freely rotatable in the end portion of the bed. These screws accordingly operate to draw the bar 23 away from the bed and pull the blanket taut.

The blanket 20 referred to may itself be a printing plate or may suitably carry printing members. As shown, the blanket is provided with rows of upstanding overhanging projections 25 on which are mounted embossed printing strips 26 after the manner of Patent No. 1,438,580 granted December 12, 1922 to my assignee, The American Multigraph Company, as assignee of Clifton Chisholm. Such blanket, or a form substituted therefor, constitutes the portion of the form which is repeated for successive impressions.

The changeable portion of the form is shown at 30 in Figs. 1 and 6. As shown, it comprises a sheet metal plate having rows of upstanding overhanging projections 31

surmounted by embossed flanged printing strips 32 after the manner of the patent referred to and of application No. 76,298, filed December 18, 1925, by Justin W. Macklin and assigned to The American Multigraph Co.

The separable bed 12 is preferably of such height that it supports the printing characters a distance above the frame web 11 corresponding to the standard height of type. Accordingly whenever desired, the separable bed may be removed and replaced by a standard electrotype or individual type. If it is desired to use individual type for the comparatively permanent portion of the form with removable address plates, proper furniture is supplied beneath the address plate to hold it at the standard height-to-paper.

Both portions of the form are covered by a continuous inked ribbon 40. This ribbon is mounted at its ends on a spool 41 and 42. The spool 41 is journaled in a pair of bars 43 pivoted to the sides of the bed at 44 and connected at their free ends by a cross bar 45. Similarly the spool 42 is mounted in bars 46 pivoted at the sides of the bed at 47 near the pivots 44 and braced at their free ends by the cross bar 48.

The normal position of the ribbon holding mechanism is with the bars 43 and 46 horizontal, as shown in Fig. 6. However, to uncover either half of the form it is only necessary to grasp the corresponding rod 45 or 48 and raise it, thus raising the corresponding ribbon spool and with it the adjacent portion of the ribbon. This is specially useful to enable uncovering the forward portion of the form, which in this case constitutes the changeable address. When the platen carriage is in its rearmost position, as illustrated in Fig. 3, it stands beyond the pivots 44, and then the swinging members carrying the spools 40 may readily be turned up into the position behind the line of the pivots as shown in Fig. 3. The parts may then be left standing if desired during the changing of the form normally beneath the forward portion of the ribbon.

It is to be understood, as hereinafter more fully explained, that the paper is placed onto the ribbon overlying the form by the stroke of the platen from the forward position shown in Figs. 2 and 6 into the rearward position shown in Fig. 3, then at the completion of such stroke, the hinged frame for the forward spool may be raised as shown in Fig. 3, and the used plate or other portion of the form removed and a new portion substituted. then the raised spool returned to normal position and thereafter the platen frame returned to its forward position with the platen raised above the ribbon. The mechanism for effecting such movement of the platen will be shortly described.

The platen comprises a roller 50 journaled on a shaft 51 which has eccentric extensions 52 and 53 mounted in bearings 54 and 55 in a traveling platen carriage. This traveling carriage comprises two standards 60 and 61 as shown, connected by three cross rods 62, 63 and 64. On the inner sides of the lower portions of the standards are rollers 66 and 67 which track in grooves 16 and 17 in opposite sides of the frame 10. The platen carriage described, accordingly may be reciprocated, carrying the platen roller over the form surmounted by the inking ribbon and back to the position. The platen roller is preferably provided near its ends with two smooth cylindrical portions 57 which in such movement bear on horizontal bars 58 carried by the frame at opposite sides of the bed, while the intermediate cylindrical surface 59 coacts with the form to effect the printing.

To insure accurate presentation of the platen, the bearing 54 for the platen shaft is eccentrically mounted in the standard 60 and is provided with a suitable extension 68 by which it may be turned, this extension being locked by a screw 69 occupying a slot in the extension and passing into the standard as shown, in Fig. 3. This enables the platen to be accurately leveled.

The platen is automatically rotated as the printing frame travels by means of the stationary rack 70 carried by the platen frame. A gear 71 meshing with such rack and journalled on the portion 53 of the shaft is connected by an Oldham coupling with the platen. This coupling enables a continuous drive of the platen from the gear, although they turn about different axes.

To lower the platen to active position or raise it to inactive position, I provide means for rotating the normally-stationary eccentrically-mounted shaft 51. This means comprises a rock shaft 80 journalled in the traveling frame standards 60 and 61 and provided centrally with a radially extending rigid handle 81 and at one end with a downwardly extending rock arm 82 which is connected by a link 83 and with a rock arm 84 rigid on the shaft extension 52.

The normal position of the lever and linkage system described is that shown in Fig. 2 where the carriage is at the forward ends of its stroke and the platen is elevated. When the operator desires to draw the carriage toward him, he grasps the handle 81 and pulls it. The first result of such action is to turn the rock shaft 80, thus lowering the platen to active position, after which the parts may travel toward him by a continued pull on the handle into the position shown in Fig. 3. The rock arm 84 is provided with a pair of wings 86 (Figs. 2 and 3) which carry adjustable set screws 87 and 88 coacting with a stop pin 89 carried by the standard 60.

This adjustably limits the turning of the platen shaft in either direction.

The platen carriage supports an inclining paper table 90 on which may be placed surmounted sheets of paper fanned out so that they may be fed by the operator's fingers one at a time, downwardly and forwardly to the gripping mechanism carried by the platen. Such gripping mechanism comprises a cross bar 92 on the platen and a rock shaft 93 carrying various fingers 94 adjustably clamped on the rock shaft and adapted to coact with the cross bar. Suitable springs 95 engaging arms projecting from the shaft tend to swing the fingers into coaction with the cross bar 92 as shown in Fig. 10. In the forward standing position of the platen and carriage (Figs. 2, 6 and 9), such action of the spring is prevented by a cam 100 on the shaft portion 52, which cam at this time bears against a roller 101 on a rock arm 102 on the rock shaft 93 carrying the gripping fingers.

The parts being in the position shown in Fig. 9, a sheet of paper may be readily shoved downwardly and forwardly along the table 90 into position beneath the gripping cross bar 92 and above the projecting fingers 94. Now, as the operator grasps the handle 81 and swings it rearwardly, the cam 100 is thereby turned in an upward direction, into the position shown in Fig. 10, whereby it clears the roller 101, thereupon the springs 95 are able to rock the shaft 93, bringing the fingers 94 into coaction with the bar 92 to grip the paper between them, as illustrated in Fig. 10.

During the continued movement of the platen carriage toward the operator, the gearing causes the platen roller to rotate and roll over the form, and thus the gripped sheet of paper is wrapped around the platen and printed line after line as the successive lines of the form are impressed. During such movement, the roller 101 on the gripper rock arm travels around the concentric portion 107 of the cam 100. Just before the stroke is completed, this roller comes onto a portion of the cam having an increasing radius, as shown at 108 in Fig. 11, which opens the gripper, releasing the sheet.

The release of the sheet by the gripper is calculated to take place just after the rear end of the sheet has cleared the line of coaction of the form and platen, so that the sheet is now completely released and may be removed by the operator. In ordinary usage, the sheet is not as long as the available platen surface, and accordingly the release takes place before the end of the stroke of the platen carriage, allowing a somewhat further rotation to the platen roller after the release, which operates to carry the sheet toward the operator, or even to discharge it by momentum.

It will be seen from the above description that as the operator pushes the sheet between the gripper jaws, which he may readily do with his left hand, and then pulls the carriage toward himself with the other hand on the handle 81, the effect will be to grip the sheet, print it and release it after the platen carriage has traveled into position adjacent the operator. This position is behind the pivots 44 of the forward ribbon frame. This frame may then be readily raised by the left hand of the operator, who with his right hand may remove the used idle plate and substitute a fresh one therefor, after which the ribbon frame is lowered and the carriage returned to normal position.

I provide suitable mechanism for feeding the ribbon step by step consequent upon the stroke of the platen carriage. As shown in Figs. 1 and 12, this mechanism comprises a ratchet wheel 110 on the spool 42; a lever 111 pivoted on the bar 46 coaxially with the spool; a pawl 112 on the lever coacting with the ratchet, and a spring 113 acting on the lever. This lever 111 normally stands in a position shown in broken lines in Fig. 12 where it is stopped by engaging a pin 115 carried by the arm 46. As the carriage is approaching the limit of its movement toward the operator the carriage rod 62 engages the lever 111 and cams it downwardly into the position shown in full lines in Fig. 12, thus carrying the pawl 112 back at least one tooth on the ratchet. Then, on the return stroke, after the rod 62 clears the cam lever 111, the spring 113 restores the lever and consequent thereon the pawl 112 turns the ratchet 110, feeding the ribbon.

It is desirable that means be provided whereby the carriage stroke may be stopped just after the carriage has travelled a sufficient distance to print from the changeable portion of the form, for instance, when printing envelopes from the address plate 30. To enable the platen carriage to make alternately a full stroke for the body of a circular letter and the address and a short stroke for the address alone, I provide a stop mechanism, which will now be described.

Mounted on each standard of the carriage on the side facing the operator are a pair of vertical sliding bolts 120 connected by links with rock arms 121 on a suitable rock shaft 122 mounted in the standards. These bolts are normally in the elevated position shown in Figs. 2 and 9, but may be lowered into the position shown in Fig. 10. When lowered, they are in position to abut an adjustable cross bar 130 which forms a suitable abutment. This cross bar is slidably mounted on a stationary fore-and-aft rod 131 and engages the under surfaces 18 of the stationary frame 10. This abutment bar

may be locked in any desired position by means of a thumb screw 135 screwing into one end of the bar and adapted to position a distance rod 136 against the stationary guide rod 131. The abutment bar is normally located in position where the bolts 120 if lowered will engage it just after the platen has cleared the changeable portion of the form.

To allow the bolts 120 to be manually depressed into active position and thereafter automatically raised into idle position, I provide mechanism shown in Figs. 1, 5, 9 and 10. On the rock shaft 122 is a rigid arm 140 which is connected adjustably by a screw 141 with an arm 143 adjustable on the shaft 122. When adjusted, the arms 140 and 143, the shaft 122 and the arms 121 are all rigidly connected and all operate as a unit. In the inner end of the arm 143 are a pair of notches 145 and 146, with either of which coacts a roller 147 carried by an arm 148 pivoted on the carriage standard 61 and drawn at its free end toward the arm 143 by a spring 149. Mounted on the platen shaft 51 is a tappet arm 150, which in the normal standing position of the parts (Fig. 9) engages the arm 140 and shoves it downwardly or maintains it in position with the roller 147 in the upper notch 145, thus holding the bolts 120 in their upper or idle position.

Now, when the lever 81 is tipped toward the operator as the carriage is about to be moved toward him, such movement carries the tappet 150 away from the lever 140 as shown in Fig. 10. This leaves the bolts 120 suspended by the action of the roller 147 in the upper notch 145, but the pressure of the operator's finger downwardly on the free end of one of the arms 121 is sufficient to shove the bolts downwardly into active position, as shown in Fig. 10, and the roller 147 springing over into the other notch 146. The bolts are now in position to engage projecting ends of the stop bar and limit the movement of the carriage.

The limited movement of the carriage just described is effective, for instance, for printing an envelope from the address plate 30. In this case, after the operator has fed the envelope along the table into the bite of the grippers, he grasps the handle and swings it toward himself; then pushes down on one of the arms 121, lowering the bolts 120; then draws the carriage toward himself until it is stopped, thus printing the envelope from the address plate. Thereupon he reverses the handle into the position shown in Fig. 6, which raises the stop bolts, and then draws the carriage further toward himself without swinging the handle. The effect of this is to maintain the platen above the printing form so that there is no further printing on the envelope, but the envelope remains gripped by the platen until the platen is in the position shown in Fig. 11, where the envelope is discharged.

A similar operation is available for printing the addresses only on previously printed letters, even though a body form is mounted in the machine. In such case, the operator feeds the printed letter into the bite of the grippers, swings the handle toward himself, presses down on one of the arms 121, and draws the carriage until the stop engages, thus printing the address, then by reversing the handle and continuing the movement of the carriage with the handle in the position shown in Fig. 6, the shaft is delivered without further printing.

It will be seen from the description given that my machine, among other uses, is readily adapted for printing addressed circular letters and envelopes. The body portion of the circular letter having been installed and the address plate put in place, the operator will readily make a short stroke throwing down the stop pin at the beginning of the stroke and thus print the envelope, then return the carriage, shove forward a sheet of paper to be gripped, and make a normal full stroke to print such sheet with the address and body. At the end of the stroke, he will raise the forward portion of the ribbon frame, remove the address plate and put a new one in its place, depress the ribbon frame, and return the platen to idle position, thereupon the machine is ready for printing another envelope and the associated letter. The envelope may be printed before, or after, the letter as desired.

My machine is comparatively simple and cheap in construction; it is effective in use and after reasonable experience of the operator, may be operated with comparative rapidity, in producing circular letters and their addressed envelopes. It should be understood, however, that the machine is not limited to such use, as many of its features are available for use in printing from a fixed form.

I claim:—

1. In a printing machine, the combination of means for supporting a printing form, a cooperating platen, two pivoted frames each adapted to carry a ribbon spool between which a ribbon may extend over the form, and mechanism acting on one of the spools adapted to wind in the ribbon step by step.

2. The combination of a base frame having an elevated flat bed adapted to support a printing form, two pairs of arms pivoted at their adjacent ends to opposite sides of the raised bed in the intermediate region thereof and extending in opposite directions, two ribbon spools carried respectively between the two arms of a pair at opposite ends of the bed, an inking ribbon carried by said spools and overlying the bed, and a

platen adapted to coact with the ribbon and printing form.

3. In a printing machine, the combination of a horizontal base frame having a raised bed adapted to support a flexible blanket, a blanket carrying embossed printing strips lying on said raised bed, means for anchoring one end of the blanket, means for engaging the other end of the blanket and drawing it taut, the bed being provided with means for supporting an address plate beyond the end of the blanket and adjacent thereto and constituting a changeable portion of the form, means carrying an inking ribbon overlying both portions of the form, and a reciprocating carriage having a platen adapted to coact with the ribbon and form.

4. In a printing machine, the combination of a horizontal base frame having a raised bed adapted to support a comparatively permanent part of the form and a readily changeable part of the form, an inking ribbon overlying both portions of the form, and a reciprocating carriage having a platen adapted to coact with the ribbon and form, a pair of movable frames pivoted at the sides of the bed and carrying spools on which the ends of said ribbon are mounted, whereby either of such spools may be raised to uncover the either portion of the form, and mechanism coacting with one of the spools and operated by the stroke of the carriage for periodically winding in the ribbon..

5. In a printing machine, the combination of a horizontal frame having a bed adapted to support a printing surface, a carriage reciprocable on the frame and comprising a pair of standards and cross bars therefor, said standards having rollers engaging guides at opposite sides of the frame, a rock shaft carried by the standards, a handle on the rock shaft serving the double purpose of turning it and of reciprocating the carriage, a platen between the standards, an eccentric shaft on which the platen is mounted, an operating connection between the platen shaft and said rock shaft..

6. In a printing machine, the combination of a printing bed, a reciprocating carriage having a handle, a roller platen mounted in the carriage, a paper gripper mounted in the platen, and means under the control of the handle for operating the gripper to grip the forward edge of a sheet and wrap it around the platen as the platen travels.

7. In a printing machine, the combination of a flat bed, a reciprocating carriage, a roller platen therein, a pivoted gripper mounted in the platen, an operating handle for the carriage, mechanism whereby movement of said handle relative to the carriage may operate to close the gripper.

8. In a printing machine, the combination of a flat bed, a reciprocating carriage, a roller platen therein, a cam mounted in the carriage, means for moving said cam to close the gripper, the cam thereafter remaining stationary during the travel of the carriage, and means whereby the stationary cam operates to open the gripper at a subsequent portion of the rotation of the platen.

9. The combination of a type bed, a traveling carriage, a roller platen within the carriage, grippers mounted on the platen and adapted to be open to receive the paper, said grippers having movable members mounted on a rock shaft, an arm on said rock shaft, a cam controlling said arm, mechanism for moving said cam to act on the arm to close the grippers, said cam having a concentric portion about which the gripper arm travels with the grippers closed and having a portion of increasing radius adapted to open the grippers.

10. The combination of a flat bed adapted to carry a printing form, a reciprocating carriage mounted thereon, a roller platen eccentrically mounted in the carriage, paper grippers mounted in the platen, said grippers being mounted on a rock shaft which carries an arm having a roller, a cam with which the roller coacts, a lever connected with the eccentric and adapted to lower the platen and also connected with the cam and adapted to move it to act on the gripper arm roller to close the gripper, said cam having a concentric portion about which the roller travels during travel of the platen, and having a portion which operates on the roller during said travel to open the grippers.

11. In a printing machine, the combination of a printing bed, a reciprocating carriage, a platen mounted in the carriage, a paper gripper mounted in the platen, a paper table carried by the carriage and traveling therewith and adapted to support sheets which may be fed into the grip of the gripper, and means for operating the gripper to grip the forward edge of a sheet.

12. In a printing machine, the combination of a flat bed, a reciprocating carriage, a roller platen therein, pivoted grippers mounted in the platen, a paper table on the carriage along which paper may be fed to the bite of the grippers, an operating handle for the carriage, mechanism whereby movement of said handle relative to the carriage may operate to close the grippers.

13. In a printing machine, the combination of a flat bed, a reciprocating carriage, a roller platen therein, a pivoted gripper mounted in the platen, a paper table on the carriage along which paper may be fed to the bite of the gripper, an operating handle for the carriage, mechanism whereby movement of said handle relative to the carriage may operate to close the gripper, a cam mounted in the carriage, means for moving said cam to close the gripper, the cam thereafter remaining stationary during the travel

of the carriage, and means whereby the stationary cam operates to open the gripper.

14. In a printing machine, the combination of a bed, a two part form thereon, a platen adapted to coact by a continuous movement with both parts of the form and controllable means for stopping the platen after it has coacted with the first part only.

15. In a printing machine, the combination of a bed, a relatively permanent printing form thereon, a relatively changeable printing form positionable thereon, a traveling roller platen adapted to coact with both portions of the form, and a settable stop to limit the travel of the platen to the changeable portion of the form.

16. In a printing machine, the combination of a bed, a relatively permanent printing form thereon, a relatively changeable printing form positionable thereon, a platen adapted to coact with both portions of the form, a settable stop to limit the engagement of the platen to the changeable portion of the form, said stop being manually settable, and means for releasing the same.

17. The combination of a bed adapted to support a form for printing the body of a letter and a changeable form for printing the address, a reciprocatory carriage, a roller platen therein adapted to coact with the two portions of the form in succession, a bolt adapted to stop the reciprocation of the platen after the changeable portion has been acted on and before action on the permanent portion, said bolt being manually positionable and mechanism to withdraw the bolt from active position.

18. The combination of a horizontal frame adapted to support a flat printing form, a reciprocable type carriage, a movable bolt carried thereby, an abutment adjustable on the frame adapted to be engaged by said bolt in one position and cleared by it in another, means for tentatively holding the bolt in either its active or inactive position, means for reciprocating the carriage, and mechanism operated by the reciprocating means for restoring the bolt to inactive position.

19. In a printing machine, the combination of a flat bed, a relatively permanent printing form thereon, a relatively changeable printing form positionable thereon, a traveling roller platen adapted to coact with both portions of the form, a settable stop to limit the travel of the platen to the changeable portion of the form, said stop being manually settable, and means for releasing the same.

20. The combination of a horizontal base having a printing bed, a reciprocatory carriage having a roller platen adapted to coact with said bed, a transverse slide beneath the bed, a pair of bolts carried by the carriage normally elevated to travel above the slide, said bolts being mounted on rock arms and adapted to be lowered into position to engage the slide, a handle for reciprocating the slide, and mechanism operable by said handle when moved in the direction to return the carriage after printing to rock said arms to raise the bolts to idle position.

21. The combination of a stationary frame having a raised flat printing bed, a horizontal guide beneath the bed, a transverse slide on said guide projecting beyond the bed, means for locking the slide in various positions, a reciprocatory platen carriage and a pair of bolts carried thereby on opposite sides of the bed and adapted to be lowered into position to engage the projecting ends of the slide or raised to clear such ends.

22. The combination of a bed adapted to support a permanent part and the changeable part of a printing form, a carriage reciprocable along said bed, a roller platen mounted in said carriage, an eccentric mounting for the platen, a handle for the carriage controlling the eccentric mounting, a stop for limiting the movement of the carriage after the platen has coacted with the changeable portion of the form only, and an operating connection between the stop and the handle.

23. The combination of a bed adapted to support permanent and changeable portions of a form, a reciprocating carriage, a roller platen therein, a handle for operating the carriage, grippers on the platen adapted to be controlled by said handle, and a stop for limiting the stroke of the carriage to the changeable portion of the form, said stop adapted to be released by said handle.

24. The combination of a stationary flat bed, means for supporting thereon a permanent portion of a form and also a changeable portion, a reciprocatory carriage, a roller platen therein adapted to coact with both portions of the form, paper grippers on the platen, an eccentric mounting for the platen, a settable stop for limiting the movement of the carriage to the changeable portion of the form only, and a device on the carriage serving the triple purpose of moving the platen into active position, closing the grippers, and thereafter releasing the stop.

25. In a printing machine, the combination of a printing bed, a reciprocable platen carriage, a roller platen eccentrically mounted in the carriage, a handle for reciprocating the carriage, a stationary rack along the bed, a gear meshing with said rack, said gear and platen rotating about different axes, and a coupling connecting the gear and platen, and means whereby the handle may turn the eccentric.

26. In a printing machine, the combination of a base having a raised bed adapted to carry a type form, ribbon spools beyond the

ends of the bed carrying a ribbon overlying such form, a reciprocable platen carriage, a roller platen therein, an eccentric mounting for said platen, a lever pivoted to the carriage and serving as a handle for reciprocating the carriage, a stationary rack along the bed, a gear meshing with said rack, said gear and platen rotating about different axes, a coupling connecting the gear and platen, and means whereby the handle may turn the eccentric.

27. The combination of a flat type bed, a reciprocating carriage, a roller platen within the carriage, a paper table carried by the carriage, grippers mounted on the platen and adapted to be held open to receive paper fed along the table, a stationary rack along the bed, a gear meshing with said rack, said gear and platen rotating about different axes, a coupling connecting the gear and platen, an operating handle for the carriage, and mechanism actuated thereby for closing the grippers and for moving the platen to active position.

In testimony whereof, I hereunto affix my signature.

LAWRENCE H. MORSE.