

J. R. LUMPKIN.
PRINTING MECHANISM.
APPLICATION FILED JULY 12, 1912.

1,069,446.

Patented Aug. 5, 1913.

5 SHEETS—SHEET 1.

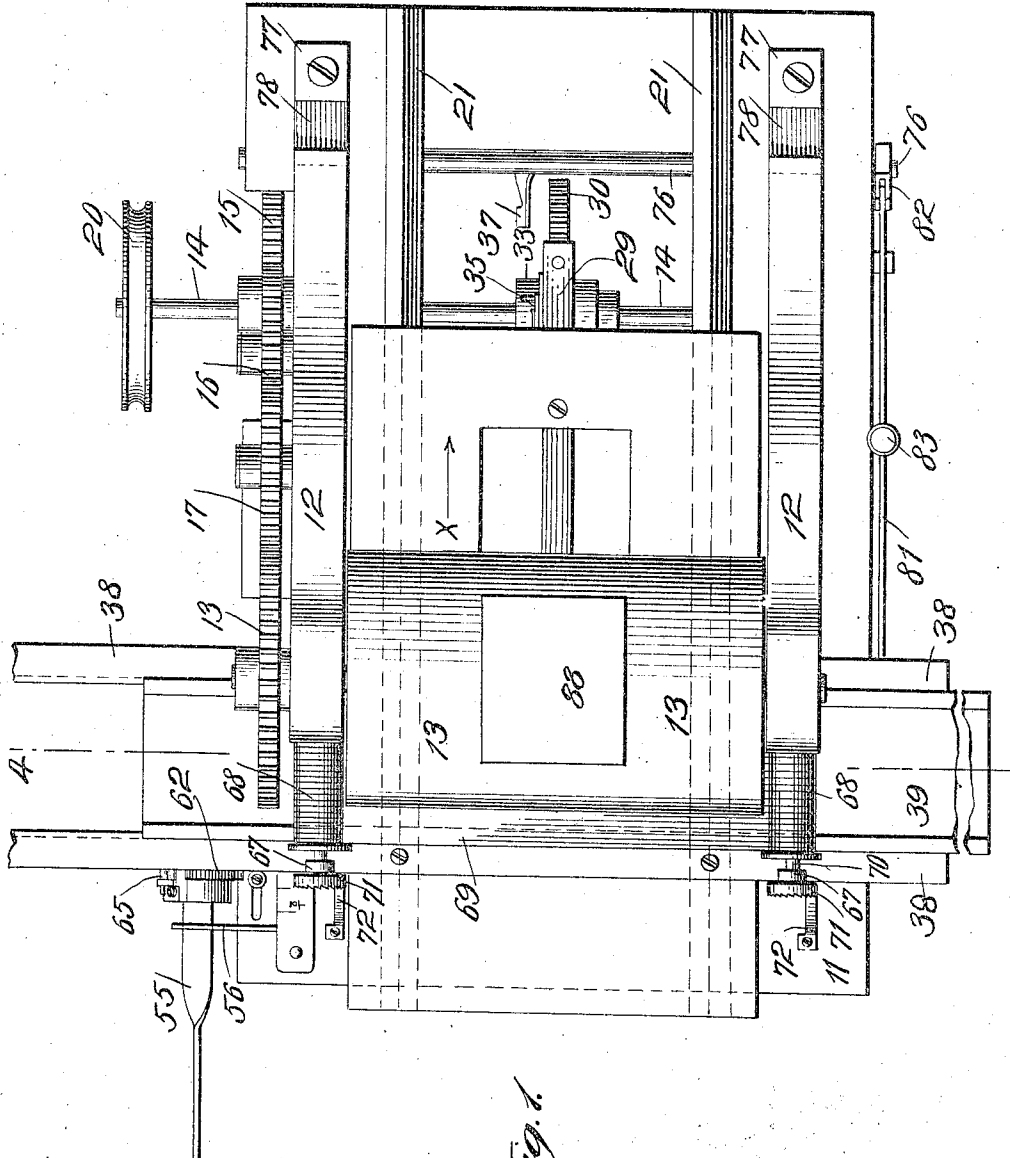


Fig. 1.

WITNESSES:

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INVENTOR

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Attorney

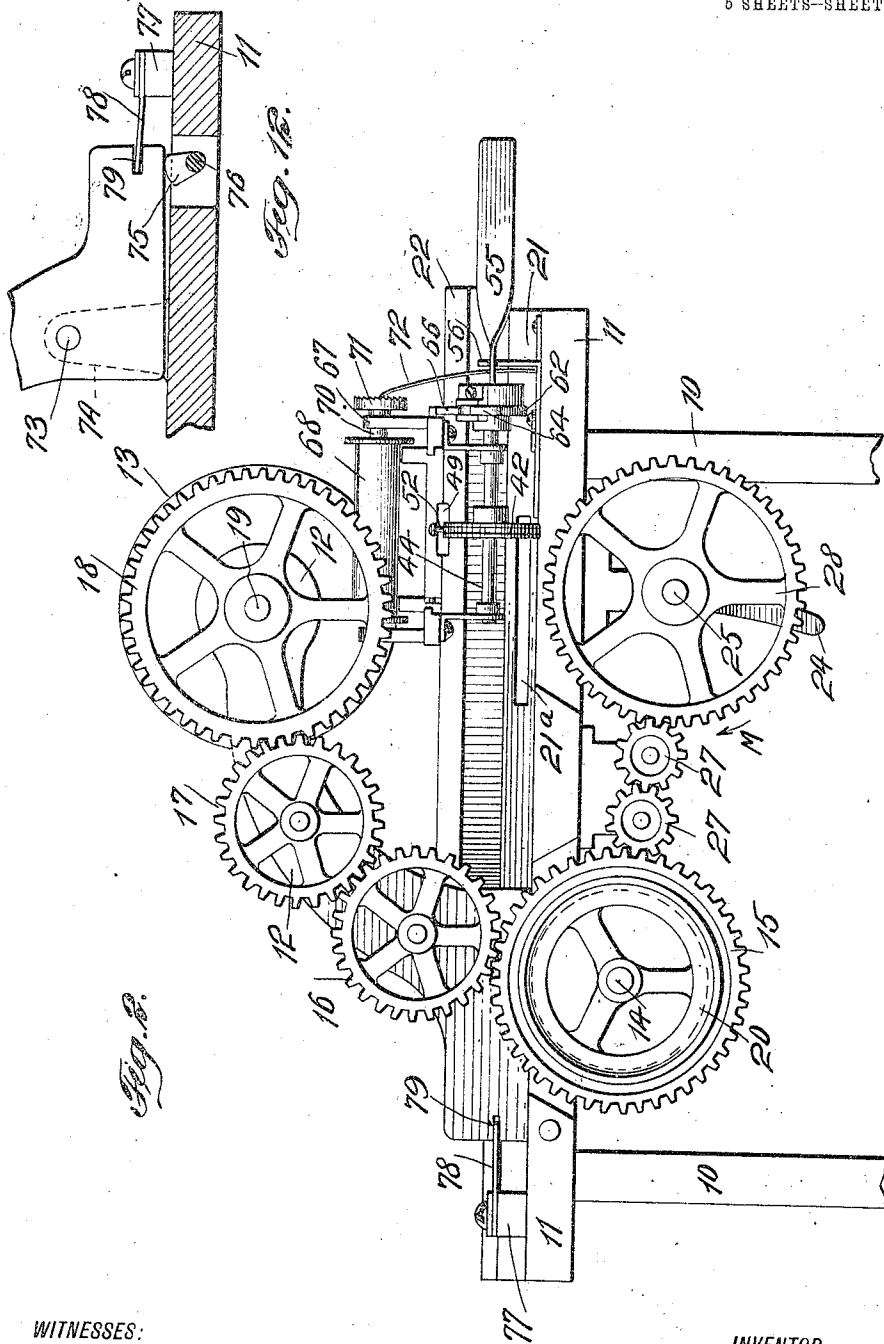
ATTORNEY

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5 SHEETS-SHEET 2.



WITNESSES:
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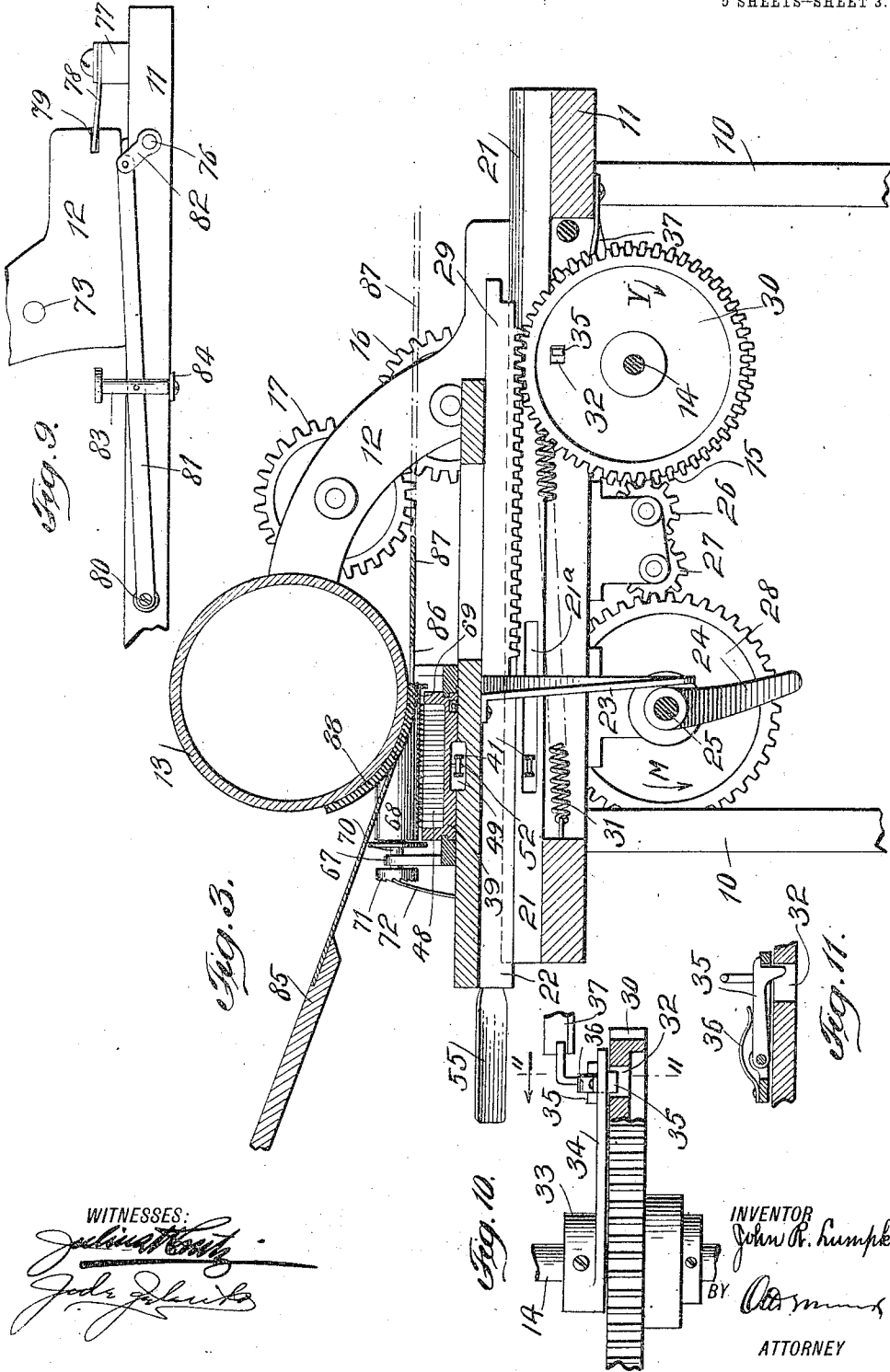
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5 SHEETS-SHEET 3.



WITNESSES:
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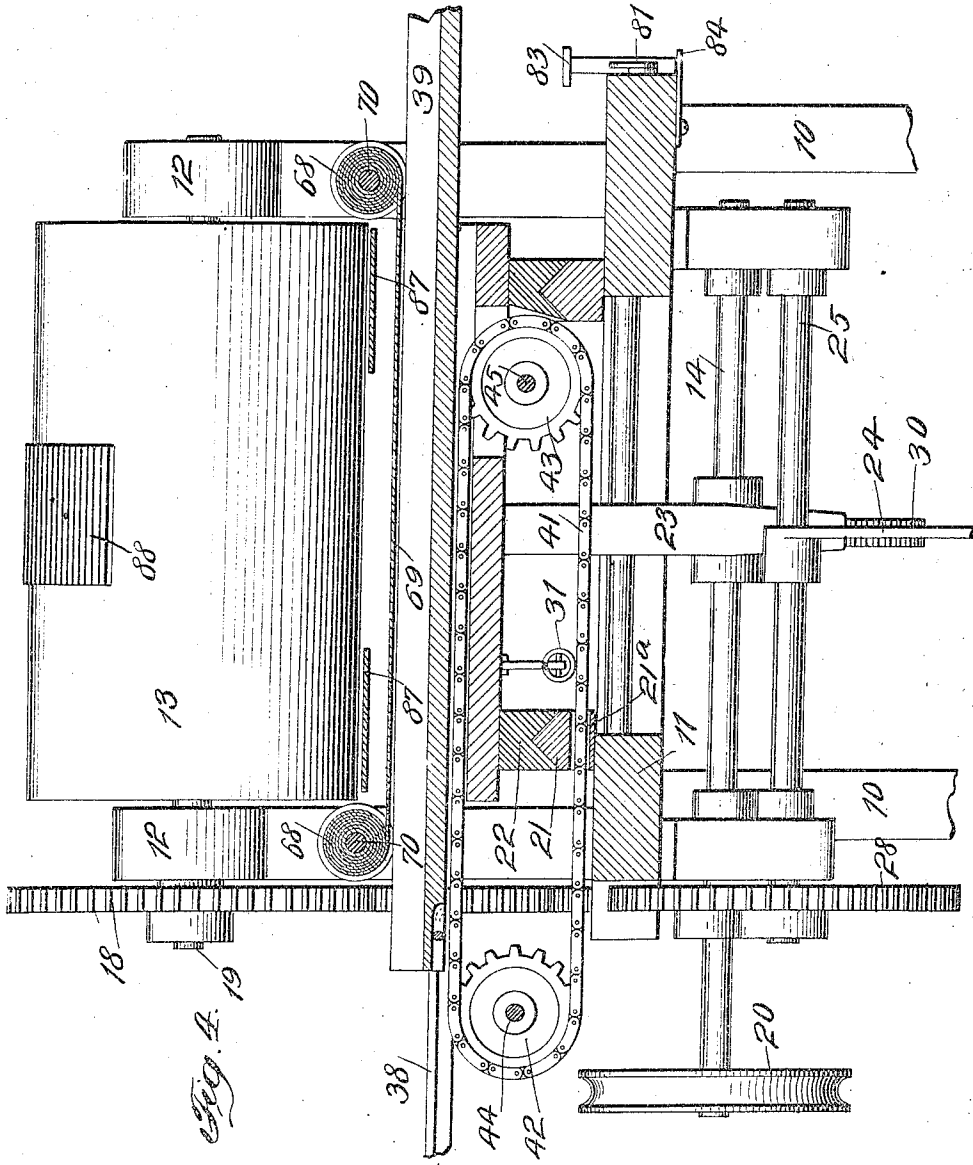


Fig. 2.

WITNESSES:
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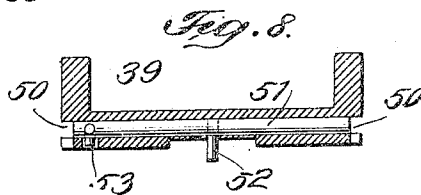
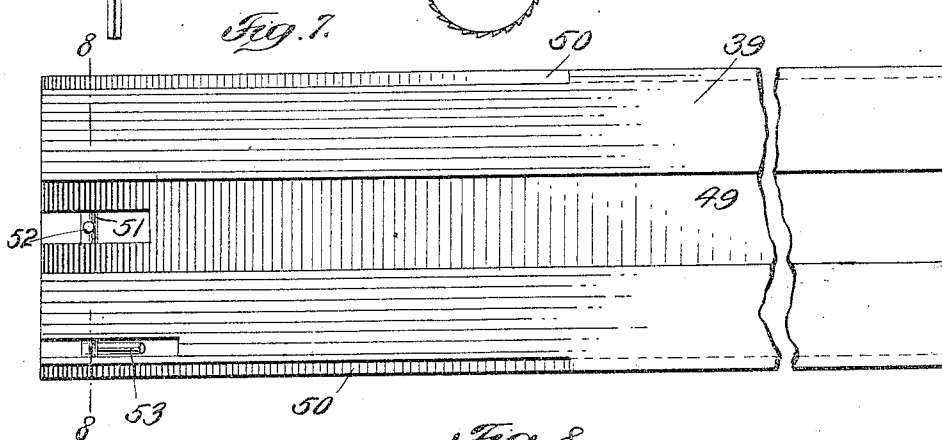
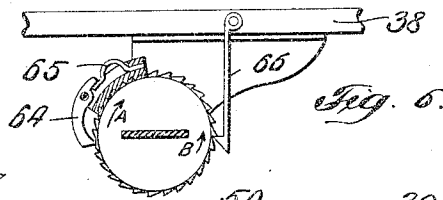
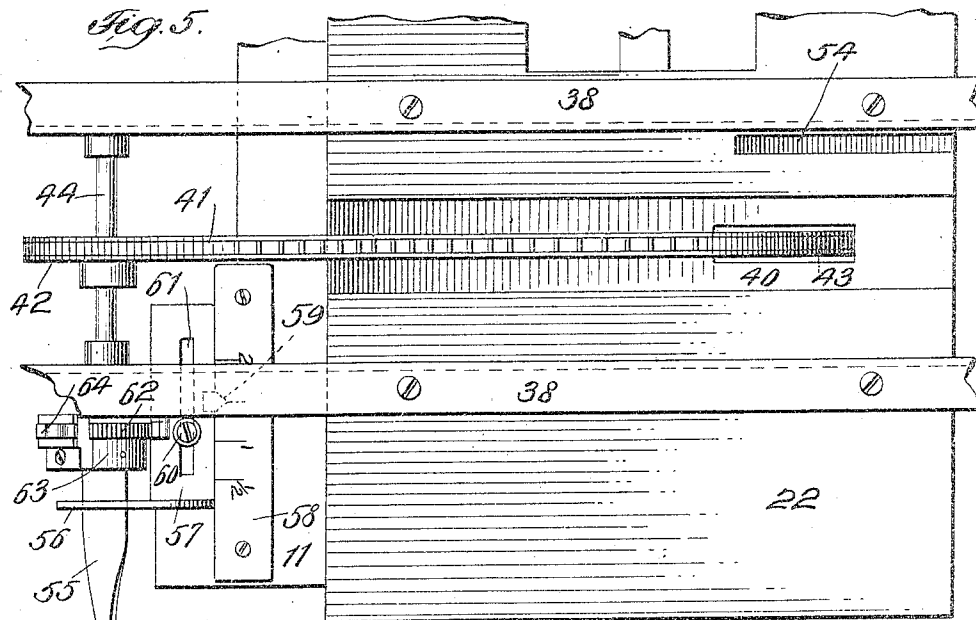
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

JOHN R. LUMPKIN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO HEEMAN H. OPPENHEIMER, OF NEW YORK, N. Y.

PRINTING MECHANISM.

1,069,446.

Specification of Letters Patent.

Patented Aug. 5, 1913.

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To all whom it may concern:

Be it known that I, JOHN R. LUMPKIN, a citizen of the United States of America, residing at Brooklyn, New York, have invented certain new and useful Improvements in Printing Mechanism, of which the following is a specification.

My invention relates generally to printing mechanism, and has reference, more particularly, to mechanism for quickly addressing envelopes, letters and the like in quantities.

The mechanism contemplated by the present invention is one in which a suitable support for type, such as a galley, containing type, is automatically fed into operative position in relation to means for making an impression through the agency of the type.

One object of the invention is to provide a simply constructed machine by means of which any desired number of envelopes, letters, or the like may be successively addressed in a relatively short time.

A further object of the invention is to provide a machine of this character wherein the length of the automatic feed of the galley in relation to the impression platen or cylinder may be adjusted to correspond with the length of the particular address or line or lines of type to be printed.

A further object of the invention is to provide means for automatically intermittently feeding the galley, containing the type, in relation to the impression cylinder whereby different or the same addresses or the like may be printed in quick succession.

A further object of the invention is to provide simple and effective means whereby the speed of the return movement of a reciprocatory carriage employed in this construction, is made uniform with the positive advance movement of said carriage, said means tending to prevent backward snapping of said carriage under spring tension and the avoidance of damage to the mechanism through shock or jar.

A still further object is to provide means for raising the impression platen or cylinder out of contact with the type should this action become necessary or desirable.

A still further object is to provide simple inking mechanism for the type in a machine of the kind herein referred to.

Other objects of the invention, its advantages and detail structure, will be fully dis-

closed in the following specification, reference being had to the accompanying drawing, wherein—

Figure 1 is a top plan view of a printing or addressing machine embodying the several features of my invention; Fig. 2 is a side elevational view seen from the left hand side of Fig. 1; Fig. 3 is a vertical, central, sectional view, looking in a direction opposite to the side appearing in Fig. 2; Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a detail plan view of the means for feeding the galley, and for adjusting the length of each feed stroke; Fig. 6 is a detail elevational view of a pawl and ratchet mechanism used in the galley feeding means shown in Fig. 5; Fig. 7 is a bottom plan view of the form of galley preferably employed; Fig. 8 is a cross sectional view taken on the line 8—8 of Fig. 7; Fig. 9 is a fragmentary detail view of means for raising the impression cylinder out of contact with the type in the galley; Fig. 10 is a fragmentary detail view, parts being shown in section, of means for effecting the rearward movement of the galley carriage; Fig. 11 is a cross sectional view on the line 11—11 of Fig. 10; and Fig. 12 is a cross sectional detail view of the parts shown in Fig. 9.

The mechanism illustrated in the drawing discloses the preferred embodiment of the invention wherein I provide a galley adapted to receive one or more forms of type, this galley being fed intermittently, transversely of a carriage and in a direction parallel to the printing or impression roller, the carriage itself being moved, with the galley thereon, in a direction at right angles to the longitudinal axis of the impression roller to cause a printing impression to be made. The length of each feed stroke of the galley along and transversely of the carriage and parallel to the longitudinal axis of the impression roller, is adjusted, by suitable means, to correspond to the length of the type forms carried by the galley.

Having thus given a general statement of the character of my invention I will proceed to a detail description thereof, reference being made to the drawings in which—

10 denotes a suitable supporting frame of any approved type, said frame being designed to support the operative parts of

the mechanism. Extending upwardly from the bed 11 of the frame is a pair of forwardly projected standards 12 carrying the power driven impression cylinder or platen 13, the latter being held by the standards over the bed at a point near the feeding end of the machine. The cylinder 13 is driven from the main power shaft 14 through the intermediary of the gear train 15, 16, 17 and 18, the last mentioned gear being fixed on the shaft 19 to which the impression cylinder is fixed. Fixed upon the shaft 14 is a pulley 20 which is belt driven from any suitable source of power.

Extending lengthwise of the bed 11 on the upper face thereof is a pair of guide rails or tracks 21 on which a carriage, designated generally as 22, is designed to have limited reciprocatory movement. Depending from the lower face of the carriage at nearly the median part thereof is an arm or bar 23 which is adapted to be engaged by the cam lever 24 fixed to the shaft 25, the latter being rotated from the shaft 14 through the gear train 15, 26, 27 and 28. The direction of rotation of the gear wheel 28 is indicated by the arrow M in Figs. 2 and 3, and at each revolution of the wheel 28 the convex edge or face of the lever 24 engages and acts against the bar 23 and prevents forward snapping of the carriage under the action of retractile springs as more fully hereinafter described.

Fixed to the lower end of the carriage 22 and extending longitudinally thereof at approximately its middle line is a rack bar 29, the teeth of which are designed to mesh with the teeth of a gear wheel 30 loosely mounted on the pulley shaft 14. The gear wheel 30 is solid except for a recess 32 formed therein, and fixed to the shaft 14 adjacent the wheel 30 is a hub 33 (Figs. 10 and 11) carrying a latch arm 34 provided at its free end with a pivoted latch 35 normally pressed toward the wheel 30 by means of the spring 36. The latch arm 34, constantly rotates with the shaft 14 as it is fixed to the latter, but the gear wheel 30 is not revolved (it being loose on the shaft 14) until the latch 35 is pressed into the recess 32 and then both arm 34 and wheel 30 rotate together in the direction of arrow Y (Fig. 3), the rotation continuing until the hooked end of latch 35 is tripped out of the recess 32 by a bent plate 37 fixed to a suitable part of the bed 11. At this time the cam lever 24 has been moved into substantially horizontal position by the continued rotation of shaft 25, and said lever is in position to engage the arm 23 and control the retractile movement of the carriage. When the carriage has completed its rearward travel under the action of the latch 35 engaging in the recess 32, the carriage is retracted to initial position by a pair of fairly

powerful coiled springs 31, which have been tensioned during the rearward movement of the carriage each spring having one end thereof attached to the rear end of the carriage and its other end attached to a point near the forward end of the machine frame 10. As the pull of these springs is powerful the carriage would be likely to snap forwardly at a greater speed than its rearward travel, unless means to prevent this be provided. To prevent such forward snapping of the carriage and the attendant danger of damage to the machine, and to cause the speed of forward and rearward travel to be uniform I provide the coacting lever 24 and arm 23. The lever 24 holds the arm 23 for a barely appreciable space of time, while the latch is being freed from the recess 32, and then the convex surface of the lever 24 glides over the face of arm 23 and thus causes the carriage to glide smoothly and easily back to initial position under the action of the retractile springs.

Secured to and extending transversely of the carriage 22 near its forward end is a pair of spaced tracks or guides 38 (Fig. 5) for the galley designated generally as, 39 and illustrated in Figs. 7 and 8. Intermediate the tracks 38 the carriage is provided with a groove or depression 40 serving as a path for the travel of an endless chain 41 which passes over sprocket wheels 42 and 43 (Fig. 4) fixed, respectively, on the revolvable shafts 44 and 45, the shaft 44 being supported by the tracks 38 below the plane thereof, and the shaft 45 being supported at the opposite end of the carriage 22, below the plane thereof. One of the track members 21 is provided with an elongated slot 21^a to allow for the rotary and longitudinal travel of the chain 41.

The preferred form of galley for receiving the type forms 48 (Fig. 3) is preferably trough shaped in cross section, its lower face being grooved out at 49 to provide clearance for the chain 41. The lateral faces of the galley are slotted at 50 to engage, and be guided by, the tracks 38 in the reciprocatory carriage 22. Near one end, the forward end, the galley is provided with a pivotally mounted cross pin 51, having a central stud 52 adapted to engage the links of the chain 41 under certain conditions, and a lateral arm 53 designed to abut against the wall of a slot 54 (Fig. 5) formed in the carriage 22. Both stud 52 and arm 53 extend at right angles to the longitudinal axis of the cross pin, but the stud and arm are arranged at an angle of substantially 45 degrees to each other, so that when the arm 53 hits against the edge of the slot 54 this arm will rotate the pin 51 about its own longitudinal axis whereby the arm will be turned into horizontal position while the stud will be moved into the position shown in Fig. 8, that is per-

pendicular to, and in condition to be engaged by, the links of the chain 41.

At one end of the shaft 44 there is provided a worm or cranked flat bar 55 slidable in a bifurcated guide plate 56 attached to a sliding bracket 57. This sliding bracket is arranged adjacent a graduated scale 58 fixed to the machine bed 11 and the bracket has attached thereto a pointer or index 59 which, with the bracket and guide plate 56, may be moved relatively to the scale 58, the latter being preferably graduated to indicate inches and fractions thereof. The bracket 57 may be fixed in adjusted position by the set screw 60 passing through a slot 61 in the bracket into the bed 11. Fixed on the shaft 44 immediately adjacent the worm 55 is a ratchet wheel 62, and fixed to the worm 55 immediately adjacent the ratchet wheel 62 is a hub 63 carrying a pawl 64 pressed by the spring 65 into engagement with the teeth of the ratchet wheel 62. A pawl 66, depending from one of the tracks 38, prevents reverse rotation of the ratchet wheel 62. When the carriage 22 is moved rearwardly in the direction of the arrow X in Fig. 1, the worm 55 gliding in the bifurcated guide plate 56 is caused to turn and with it the hub 63 turns. In this action the pawl 64 glides over the teeth of the ratchet wheel 62 in the direction of arrow A in Fig. 3, and the ratchet wheel is not revolved. When the carriage is retracted, the worm 55 is again turned by the guide plate 56 but in an opposite direction to its former turning motion, and the hub 63 also turns in an opposite direction causing the pawl 64 to bite into the teeth of the ratchet wheel and revolve the latter (direction of arrow B, Fig. 3) to an extent corresponding to the position of the pointer 59 on the scale 58. By the rotation of the ratchet wheel 62 the shaft 44 is revolved, thus moving the chain 41 and feeding the galley 39 forward a suitable distance. The pointer 59 is adjusted on the scale 58 so that it will point to the number of inches which equal the width of the forms of type in the galley, so that the latter is fed, each time, a distance equal to the width of the forms in the galley. The length of each feed stroke of the galley is dependent upon the extent of revolution of the ratchet wheel 62, and the extent of revolution of the latter is, in turn, dependent upon the position of the guide plate 56 in which the worm 55 works. It will be understood that when the stud 52 is positioned as in Fig. 3 the links of the chain 41 will engage this stud and thus advance the galley in a step by step movement.

Projecting upwardly from opposite lateral edges of the carriage 22 are brackets 67 in each of which is journaled a spool 68 over which the inking or printing ribbon 69 (Fig. 4) is wound. At one end of each shaft 70 on which the spools are mounted, is fixed a

ratchet wheel 71 cooperating with a constantly tensioned spring pawl 72 secured to and extending upwardly from the bed 11 to rotate the spools at each reciprocation of the carriage. As the carriage 22 moves in the direction of arrow X in Fig. 1 the ratchets 71 are released from the pawls 72, but on the return movement of the carriage the ratchet teeth engage the pawls 72, and force the same backwardly, whereby the pawls will turn the ratchet wheel the desired number of revolutions.

In Figs. 9 and 12 I have shown in detail the manner of supporting the standards 12, and means for raising the impression roller from the type should this be desirable or requisite. Normally the impression roller is canted toward the type, but conditions may arise which make it necessary or desirable to raise the roller away from the type during a printing operation, and for this reason I make use of the mechanism about to be described. Near its rear end each standard is pivotally supported at 73 upon a bracket 74 which extends upwardly within the feet of the standard, and tending to cant the standards and the impression cylinder toward the front end of the machine are cams or lugs 75 fixed to a rotary shaft 76 traversing the rear part of the machine. Supported on blocks 77 are flat tension springs 78 engaging slots 79 in the feet of the standard and having a normal tendency to move the feet of the standards flat against the bed plate 11. The upward pressure exerted by the cams 75 is greater than the downward pressure exerted by the springs 78. Pivoted to one lateral edge of the bed plate 11 at 80 is a link 81, its opposite end being pivotally connected to the short link 82 which is fixed to one projecting end of the shaft 76. Fixed intermediate the ends of the link 81 is an elongated push button 83 which is normally forced upwardly by a flat spring 84 secured to the bottom of the bed 11 and acting against the under end of the button. By the construction just described, it will be noted that the lugs 75 exert a normal upward pressure on the standards 12 tending to move the impression roller down against the type forms. If, now, it be desired to raise the roller from the forms, the button 83 is pushed downwardly whereby the cam surfaces of cams 75 are moved out of engagement with the feet of the standards, and the springs 78 are free to depress the feet and thus elevate the impression cylinder.

Suitably supported above the machine bed is a feed board 85 which is centrally orificed at 86 and is provided with the discharge extension 87. The feed board 85 is inclined in the direction of the impression cylinder so as to permit a downward feed of the envelopes or other articles to be printed upon. The central orifice is designed to correspond ex-

actly in width with a pad of flexible material 88, such as rubber, which is secured by any suitable means to the cylinder. The pad 88 is removable and the particular pad used at any time is as wide as the type form then being used is long. The opening 86 in the feed board 85 is adjustable as to size by means which it has not been deemed necessary to show or describe.

In the foregoing description I have, in a general way, outlined the operation of certain parts or subcombinations of the machine, and I will now proceed to describe the operation of the entire mechanism.

Assuming the pulley 20 to be revolving, the impression cylinder will rotate as will also the shaft 25 carrying the cam lever 24. Assume further that a galley with type forms has been properly positioned so that the stud 52 is engaged by the links of the chain 41, and that an envelop, for example, has been fed to the board 85. As the gearing revolves the carriage with the galley are drawn rearwardly. The envelop, or other article to be printed upon, is drawn inwardly by the impression cylinder and as the type form with its superposed ribbon is moved to a point directly under the orifice 86, the cylinder will cause a printing impression to be made on the envelop and the latter is discharged at 87. The carriage is then retracted, and in this retractile movement the worm 55 glides in the guide plate 56 causing rotation of the ratchet wheel 62 and consequent forward feed of the galley, whereby the type form immediately following that printed from is placed into printing position.

It is of course understood that galley after galley of type may be employed, the operation of the machine being continuous, and its speed being limited practically only by the speed imparted to the pulley wheel 20.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A printing mechanism, embodying therein impression means fixed relatively to the machine bed, a carriage mounted on the machine bed and reciprocal relatively to said impression means, type form supporting means arranged on said carriage and adapted to advance thereon transversely to the longitudinal axis of said carriage, means for reciprocating said carriage and said type form supporting means, and cooperating means carried, respectively, by the machine frame and by the carriage, and becoming operative upon the return of the carriage to initial position, to advance said type form supporting means a predetermined distance on said carriage, in a direction at right angles to the reciprocation of the carriage.

2. A printing mechanism, embodying therein revoluble impression means fixed

relatively to the machine bed, a carriage having ways therein extending in a direction at right angles to the longitudinal axis thereof, type form supporting means adapted to be advanced in said ways, means for reciprocating said carriage and said type form supporting means on the machine bed, and cooperating means carried, respectively, by the machine frame and by the carriage, and becoming operative upon return of the carriage to initial position, to advance said type form supporting means in said ways a predetermined distance.

3. In a machine of the character specified, the combination with a revoluble impression roller fixed relatively to the machine bed, of a carriage reciprocal in a plane parallel with the longitudinal axis of said roller and at right angles thereto, a galley supported by said carriage, said galley being adapted to contain type forms, means for simultaneously moving said carriage and galley into and out of operative relation with said roller, and cooperating means including a member fixed to the machine frame and a second member movable with said carriage, operative when said galley is out of operative position in relation to said roller, to automatically advance said galley transversely on said carriage intermittently in a rectilinear path.

4. In a machine of the character specified, the combination with impression means fixed relatively to the machine bed, of means for supporting type forms, means for moving said supporting means longitudinally of the machine bed into operative relation with said impression means, means for advancing said supporting means transversely of the machine bed after each printing impression, said longitudinal and transverse movements being in the same plane, and means for adjusting the length of each advance of said supporting means to correspond with the length of the type forms carried by said supporting means.

5. In a machine of the character specified, the combination with impression means fixed relatively to the machine bed, of means for supporting type forms, means for reciprocating said supporting means longitudinally on the machine bed, and an endless flexible member for advancing said supporting means intermittently in relation to said impression means in the same plane as that in which said supporting means is reciprocated.

6. In a machine of the character specified, the combination with impression means fixed relatively to the machine bed, of means for supporting type forms, means for reciprocating said supporting means longitudinally on the machine bed, an endless flexible member for advancing said supporting means intermittently in relation to said im-

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pression means in the same plane as that in which said supporting means is reciprocated and in a direction at right angles to the reciprocating motion, and means carried by said supporting member for automatically engaging, and becoming disengaged from, said flexible member.

7. In a machine of the character specified, the combination with impression means, of means for supporting type forms, means for reciprocating said supporting means longitudinally on the machine bed, an endless flexible member for advancing said support intermittently in relation to said impression means in the same plane as and in a direction at right angles to the reciprocating motion of said supporting means, and means for adjusting the length of each advance movement of said support to correspond with the length of the type forms carried by said supporting means.

8. In a machine of the character specified, the combination with impression means, of means for supporting type forms, means for reciprocating said supporting means longitudinally on the machine bed, an endless flexible member for advancing said support intermittently in relation to said impression means in the same plane as and in a direction at right angles to the reciprocating motion of said supporting means, means pivotally carried by said supporting means for automatically engaging, and becoming disengaged from, said flexible member, and means for adjusting the length of the intermittent travel of said flexible member to correspond with the length of the type forms carried by said supporting means.

9. In a machine of the character specified, the combination with impression means, of means for supporting type forms, a flexible member for advancing said supporting means in relation to said impression means, means pivotally supported by said supporting means for automatically engaging and becoming disengaged from said flexible member, and a pawl and ratchet mechanism having adjustable operative strokes for causing intermittent travel of said flexible member.

10. In a machine of the character specified, the combination with impression means, of means for supporting type forms, a flexible member for advancing said supporting means in relation to said impression means, pawl and ratchet mechanism for actuating said flexible member, and means for adjusting the operative stroke of said pawl and ratchet mechanism, said last named means

including a worm slidable in a bifurcated guide plate.

11. In a machine of the character specified, the combination with impression means, of means for supporting type forms, shafts carrying sprocket wheels, a chain meshing with the teeth of said sprocket wheels, a ratchet wheel mounted on one of said shafts, a pawl mounted adjacent said ratchet wheel and adapted to actuate the latter to revolve said shaft, and a worm and bifurcated guide plate for controlling the action of said pawl.

12. A machine of the character specified, embodying therein an impression cylinder revolubly mounted over the machine bed, a carriage mounted to reciprocate on said machine bed, type form supporting means movable transversely on said carriage, means for moving said carriage rearwardly on said machine bed to place the type forms in operative relation to said impression cylinder, means for retracting said carriage to initial position, and means for braking the retractile movement of said carriage.

13. A machine of the character specified, embodying therein an impression cylinder revolubly mounted over the machine bed, a carriage mounted to reciprocate on said machine bed, type form supporting means on said carriage, gearing for moving said carriage in one direction to place the type forms in operative relation to said impression cylinder, retractile springs for returning said carriage to initial position, and a cooperating arm and cam lever for braking the retractile movement of said carriage.

14. A machine of the character specified, embodying therein an impression means over the machine bed, a carriage mounted to reciprocate on said bed, type form supporting means on said carriage, a rack on the carriage, a power shaft and a gear wheel loose on the shaft, said rack and gear being adapted to engage, a latch on said shaft adapted to cause said rack and gear wheel to operatively engage to move the carriage in one direction on said bed and place the type forms in operative relation with said impression cylinder, means for retracting said carriage to initial position, and means to brake the retractile movement of said carriage.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN R. LUMPKIN:

Witnesses:

OTTO MUNK,
EUGENE WENING.