E. J. GOWDY.

PRINTING PRESS.

APPLICATION FILED MAY 22, 1919.

1,423,792.

Patented July 25, 1922.

4 SHEETS—SHEET 1.

Fig. 1.

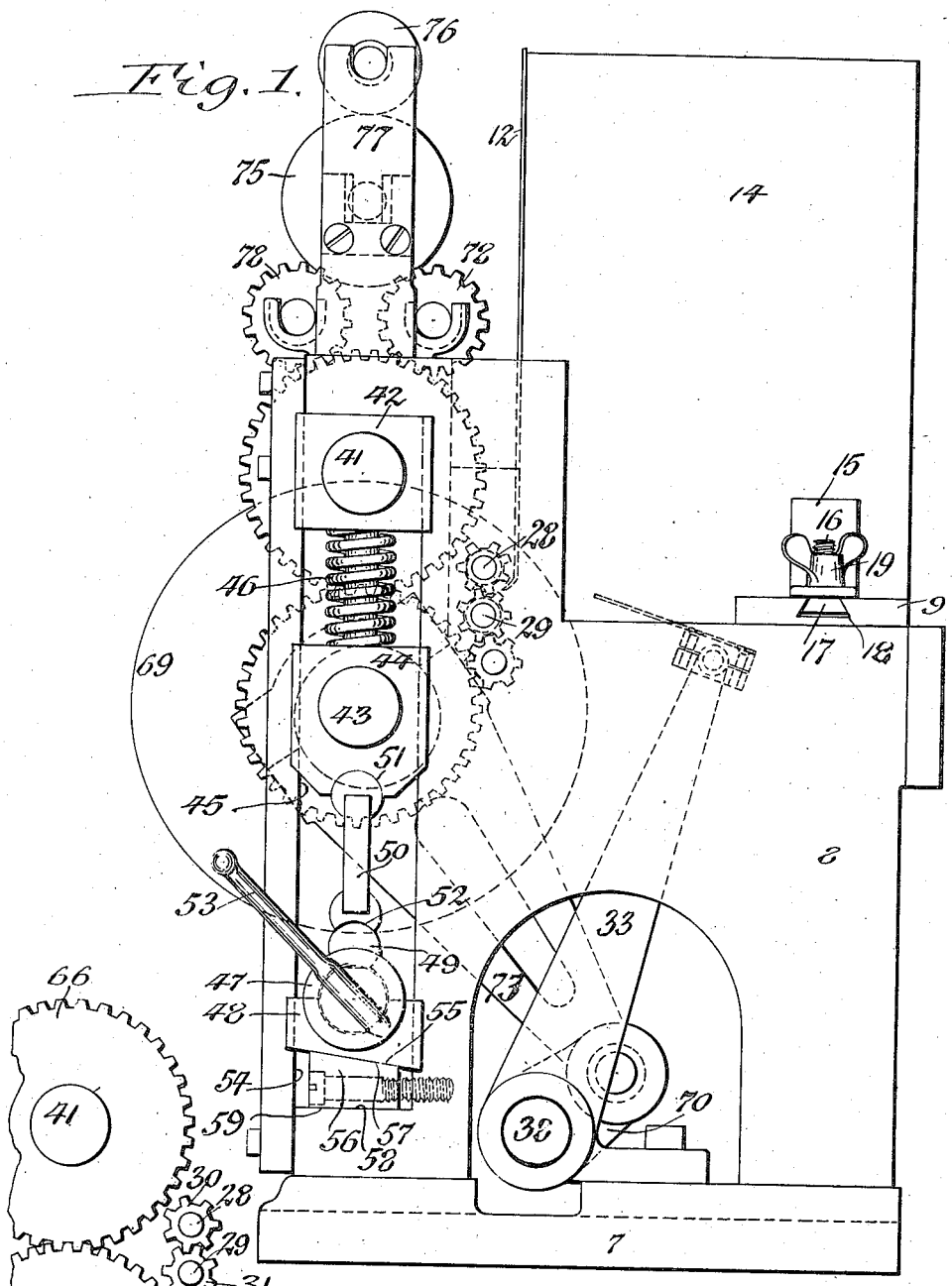


Fig. 2.

Inventor
Edward J. Gowdy
by Geyer & Popp
Attorneys.

E. J. GOWDY.

PRINTING PRESS.

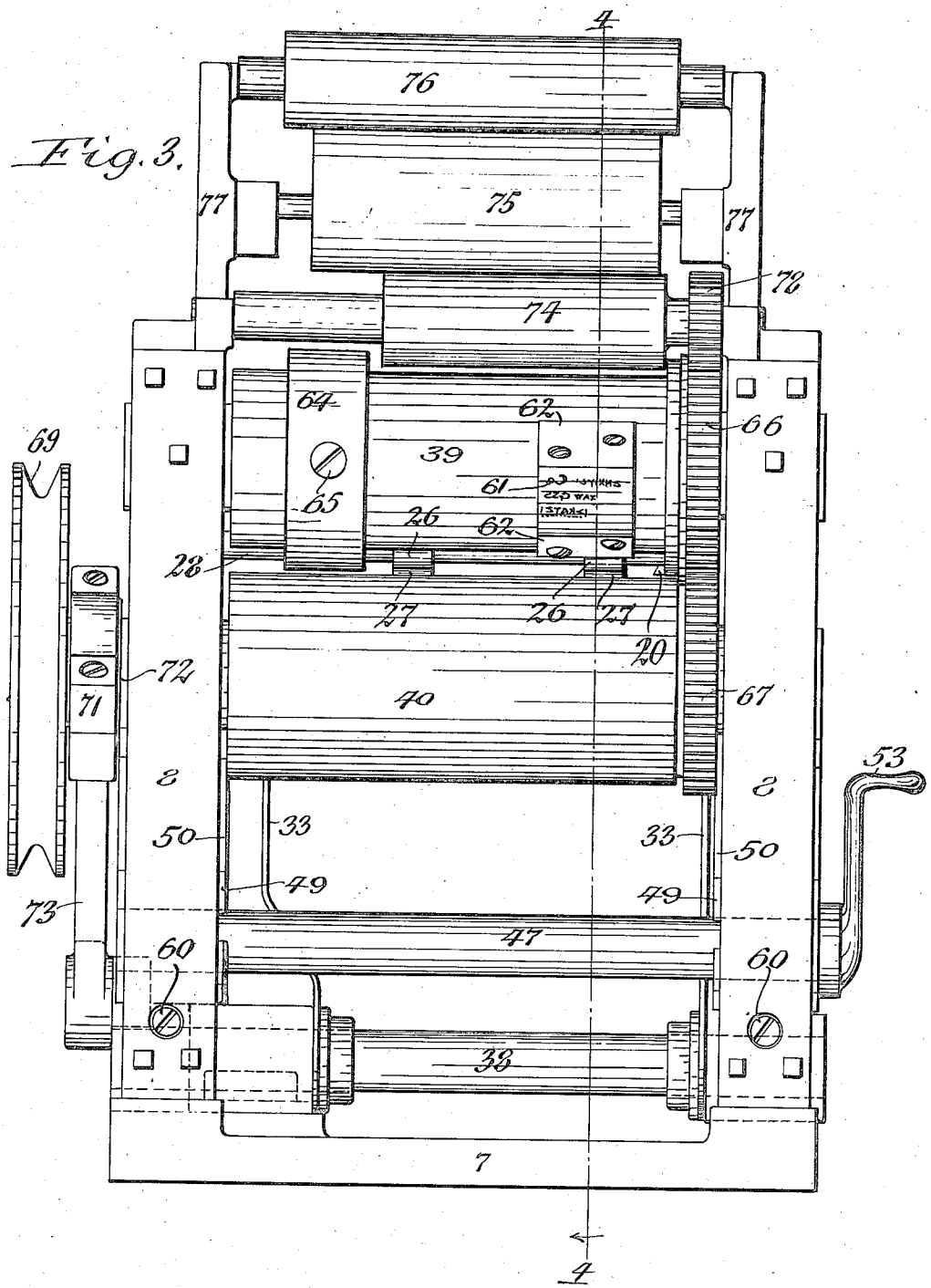
APPLICATION FILED MAY 22, 1919.

1,423,792.

Patented July 25, 1922.

4 SHEETS—SHEET 2.

Fig. 3.



Inventor
Edward J. Gowdy
by Geiser & Popp
Attorneys

E. J. GOWDY.

PRINTING PRESS.

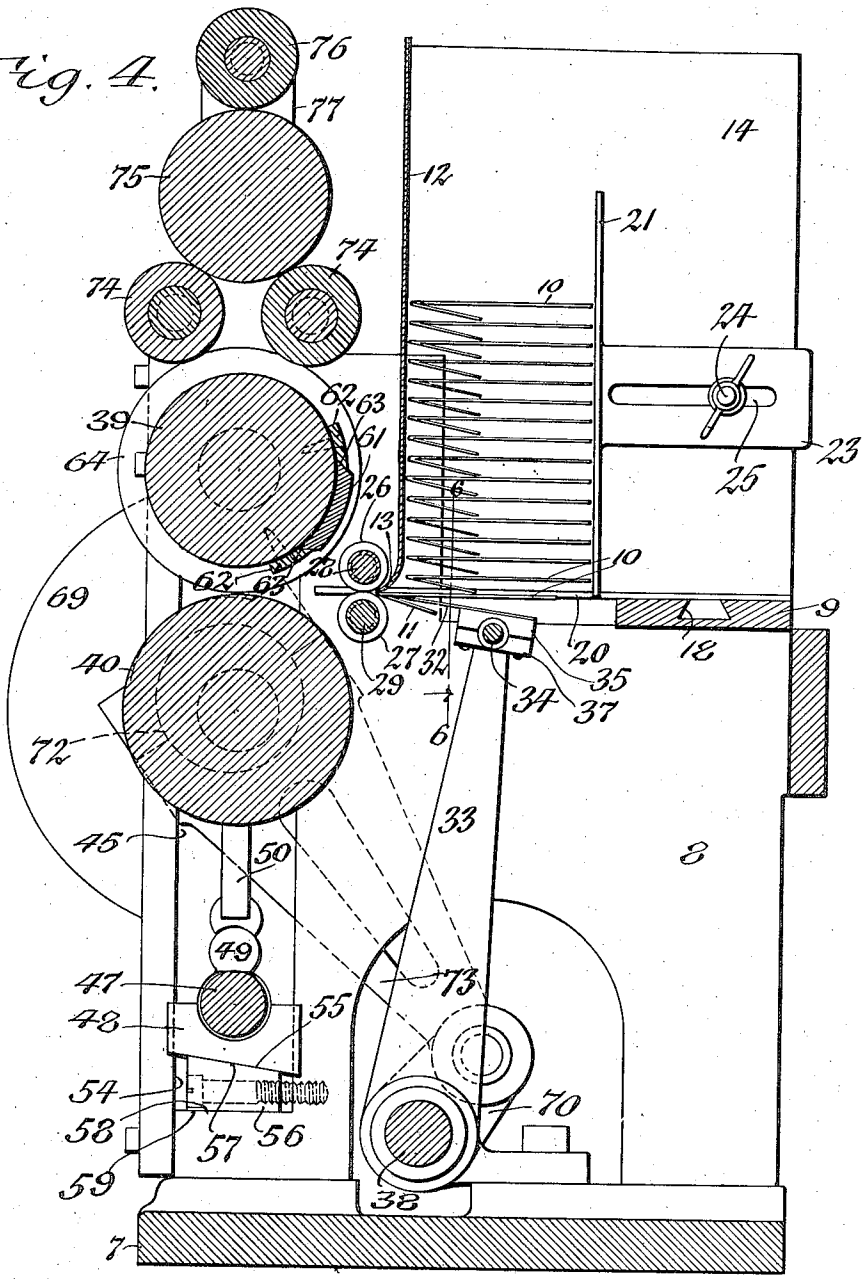
APPLICATION FILED MAY 22, 1919.

1,423,792.

Patented July 25, 1922.

4 SHEETS—SHEET 3.

Fig. 4.



Inventor
Edward J. Gowdy
by Geyer & Popp
Attorneys

E. J. GOWDY.

PRINTING PRESS.

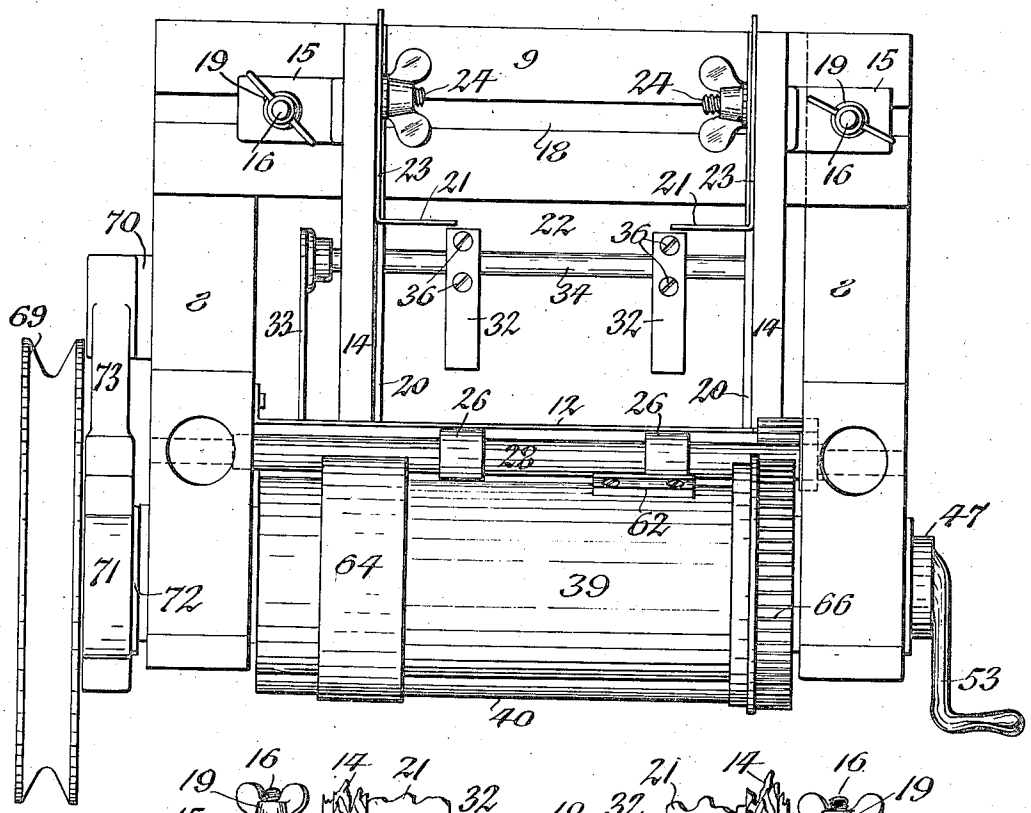
APPLICATION FILED MAY 22, 1919.

1,423,792.

Patented July 25, 1922.

4 SHEETS—SHEET 4.

Fig. 5.



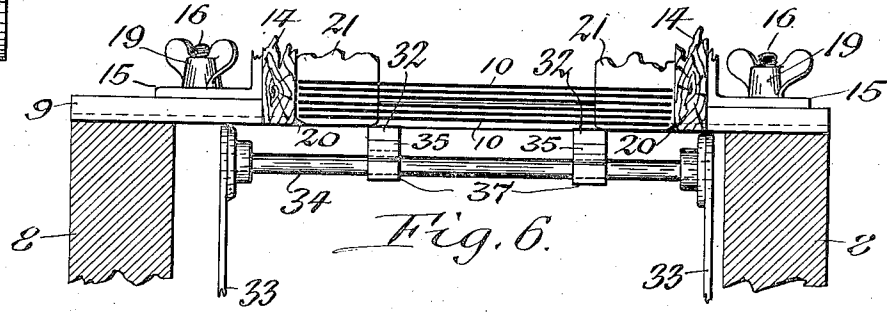


Fig. 6.

Inventor
Edward J. Gowdy
by Geiger & Pope
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD J. GOWDY, OF BUFFALO, NEW YORK.

PRINTING PRESS.

1,423,792. Specification of Letters Patent. Patented July 25, 1922.

Application filed May 22, 1919. Serial No. 298,889.

To all whom it may concern:

Be it known that I, EDWARD J. GOWDY, a citizen of Canada, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Printing Presses, of which the following is a specification.

This invention relates to a printing machine which may be used for printing various kinds of articles, although the same is more particularly designed for automatically printing envelopes, or similar articles having a flap by successively delivering such articles from the bottom of a stack to a printing surface which produces an impression thereon.

It is the object of this invention to provide a machine of this character which is very simple and compact in construction which has the article feeding device arranged so close to the printing device that the latter begins to operate upon such articles while the feeding mechanism is still in engagement with such articles, thereby not only reducing the number of parts required for controlling the feeding and printing operation of the article, but also insuring uniformity in the printing and reducing to a minimum imperfect impressions or waste of material. Furthermore, the elimination of any unnecessary parts in the mechanism of this machine permits of producing the same at low cost and also enables the machine to be operated rapidly with a low expenditure of power, thereby increasing the capacity of the machine and enabling the printing to be done economically.

In the accompanying drawings: Figure 1 is a side elevation of a printing press embodying the preferred form of my invention. Figure 2 is a fragmentary side elevation, showing the gearing whereby the printing device and the rollers of the article feeding mechanism are operated. Figure 3 is a front elevation of the machine. Figure 4 is a vertical longitudinal section thereof taken on line 4—4, Fig. 3, but showing the printing roller in a different position. Figure 5 is a top plan view of the machine with the inking mechanism omitted. Figure 6 is a fragmentary vertical transverse section taken on line 6—6, Fig. 4.

Similar characters of reference indicate corresponding parts throughout the several views.

The main frame of this machine may be of any suitable construction to support the various working parts, but as shown in the drawings, the same preferably comprises a lower horizontal base or plate 7, two upright side pieces or standards 8, 8, arranged lengthwise on opposite sides of the machine and secured at their lower ends to the base, and an upper cross bar 9 connecting the upper rear parts of the standards.

In the rear part of the machine is arranged the magazine which is adapted to contain a vertical pile or stack of envelopes 10 which are being printed, these envelopes being preferably stacked with their sealing flaps 11 turned downwardly and projecting rearwardly from the front edge of the body of the envelop, so as to practically form a hook on each one of the envelopes, as shown in Fig. 4. Although this magazine may be variously constructed, the same is preferably so organized that the same is adjustable within certain limits for receiving envelopes of various sizes. For this purpose the magazine as shown in the drawings, comprises an upright front wall 12 arranged transversely of the machine and secured to any suitable stationary part thereof, for instance, the side pieces 8, as shown in Fig. 5. At its lower edge 13 the front magazine wall is turned or deflected forwardly, preferably on a curve, so that the lowermost envelop in the stack upon engaging this curved surface will be deflected easily underneath the lower edge of this front wall when being fed forwardly from the stack. 14, 14, represent two longitudinal side walls which form part of the envelop or article magazine, these walls being capable of transverse adjustment relatively to each other to suit the length of the envelop which is being fed and printed. The means for effecting this adjustment preferably comprises two angular brackets 15, 15, each of which is secured with its inner, upright flange to the outer rear portion of one of the magazine side walls while its outer horizontal flange rests upon the upper side of the cross bar 9 of the main frame, and a clamping bolt 16 passing through the horizontal flange of each adjusting bracket and having a tapering head 17 which engages

with an undercut groove 18 formed transversely in the cross bar 9, and a screw nut 19 engaging with the upper end of the shank of this bolt and bearing against the upper side of the lower flange on the respective bracket, as shown in Figs. 1, 5 and 6. Upon loosening the nuts 19, the side walls of the magazine may be readily and quickly adjusted transversely of the main frame to suit the length of the envelop which is being printed, and upon then tightening the same these walls will be held rigidly in position.

At their lower edges the side walls of the magazine are provided with longitudinal flanges 20 which project inwardly from these walls and are beveled on their upper sides so as to form shoulders or shelves which converge downwardly and operate to support the lowermost envelop of the stack at its opposite edges as the same are brought successively to the underside of the pile.

The magazine is also provided with a rear wall which is preferably constructed in the form of two upright sections 21, 21, which are separated from each other by an intervening slot or space 22, so as to permit of observing the height of the stack of envelopes in the magazine and enable the same to be conveniently replenished by hand and also permitting of removing surplus envelopes by hand when a run has been finished, or when this becomes desirable for cleaning, inspecting or repairing the machine. These two rear magazine wall sections are preferably capable of horizontal adjustment for adapting the size of the magazine to the width of the envelop which is being printed, and for this purpose each rear wall section is preferably provided with a rearwardly projecting adjusting arm 23 which engages with the inner side of the adjacent magazine side wall and is clamped in various horizontal positions by means of a clamping bolt 24 mounted on the adjacent part of the respective side wall and passing through a horizontal longitudinal slot 25 in the adjusting arm, as shown in Figs. 4 and 5.

Adjacent to the lower end of the magazine are arranged the means whereby the envelops are fed successively from the bottom of the pile and delivered to the printing device. This feeding device comprises two feeding rollers 26, 27 which are arranged one above the other and each of which is preferably constructed of two sections which are spaced apart, as shown in Figs. 3 and 5. These feeding rollers have the bight or pass between them arranged in line with the horizontal path of the lowermost envelop in the stack as the same is fed forwardly from the pile, and these rollers are mounted respectively on upper and lower shafts 28, 29 which are journaled transversely in suitable bearings on the main frame and caused to turn in unison, so that their opposing surfaces move forwardly by means of intermeshing feed gear pinions 30, 31 secured to corresponding ends of these shafts, as shown in Figs. 1, 2 and 5. The feeding off of the envelopes successively from the bottom of the stack between the feeding rollers is accomplished by an oscillating feed blade preferably constructed in the form of two sections 32, 32 which are adapted to pass with their front edges successively into the mouth of the hook which is formed on the front end of each envelop by the sealing flap thereof and carry the same forwardly from the stack into the bight of the feeding rollers, so that the latter will grip the envelop and continue the forward movement of the same for completing the carrying off of the same from the bottom of the stack while the feeding blade sections move rearwardly preparatory to engaging the sealing flap of the next following envelop which is now at the bottom of the stack. For this purpose the feeding rollers are arranged immediately adjacent to the lower front corner of the magazine which contains the stack of envelopes and the bight of the same is in line with the supporting shoulders or shelves 20 at the lower end of the magazine, so that the feeding rollers grasp the envelop while the same is still engaged by the sections of the feeding off blade whereby the envelop is always positively under control and prevented from becoming displaced and interfere with the proper feeding of the same from the stack in the magazine. The oscillating movement of the feed blade sections is preferably effected by mounting the same at their rear ends on a rock arm which preferably consists of two upright sections 33, 33 arranged underneath the magazine and an upper horizontal supporting bar 34 which connects the upper ends of these rock arm sections and has the rear ends of the two blade sections secured thereto, so that the latter are capable of transverse adjustment on this rod to suit the length of the envelop. This adjustment is preferably obtained by securing the rear end of each feed blade sections to an upper clamping block 35 which engages the upper side of the supporting rod and connecting this upper clamping block by means of screws 36 with a lower clamping block 37 engaging with the underside of said supporting rod, as shown in Figs. 4, 5 and 6. By these means the feed blade sections may be adjusted lengthwise of the supporting rod, as required.

The lower ends of the rock arm sections 33 are mounted upon a horizontal rock shaft 38 which is journaled transversely in suitable bearings on the lower part of the main frame and is actuated by means which will presently appear.

39 represents an upper printing roller and

40 a lower or impression platen roller which are mounted on the front part of the machine, so that the pass or bight between the same is in line with the pass between the feeding rollers. The printing roller is mounted on a shaft 41 journaled in bearings 42 which are stationary on the main frame in the normal condition of the machine while the platen roller is mounted on a shaft 43 journaled in bearings 44 which are capable of sliding in vertical ways 45 on the main frame, so as to permit of either bringing the platen roller in close operative relation to the printing roller when printing is to be done and also enabling the platen roller to be moved downwardly away from the printing roller when it is desired to render the printing mechanism inoperative, as for instance when getting the machine ready or when clearing the same from an envelope which may have become crumpled or misplaced between the same. For this purpose springs 46 are interposed between the companion upper stationary bearings 42 and lower movable bearings 44 of these two rollers. These springs tend constantly to move the lower platen roller away from the printing roller. The raising of the platen roller for bringing the latter into its operative position relative to the printing roller may be effected by a variety of means, those which are shown in the drawings being suitable and comprising a horizontal controlling rock shaft 47 journaled transversely in bearings 48 on the lower front part of the machine and provided with two rock arms 49 which project upwardly, and two toggles or links 50 each of which engages by means of a knuckle-joint 51 with the underside of one of the platen-roller bearings 44 while its lower end engages by means of a knuckle-joint 52 with one of the rock arms 49 of the rock shaft 47, as shown in Figs. 1, 3 and 4. Upon turning the controlling rock shaft by means of a crank or handle 53 secured to one end thereof, so that its rock arms project upwardly therefrom, the toggles will be straightened and cause the platen roller to be lifted into its operative position relatively to the printing roller, as shown in Figs. 1 and 4, while upon turning this rock shaft so as to permit the toggles to fold or move out of alinement from said rock arms, then the springs 46 are permitted to depress the platen roller into its inoperative position relative to the printing roller.

For the purpose of adjusting the platen roller relative to the printing roller, each bearing 48 of the controlling rock shaft is mounted in a vertical guideway 54 on the main frame and adjustable vertically therein. Each of the bearings 48 is constructed in the form of an upper bearing block, the underside 55 of which is inclined, and a lower adjusting block 56 interposed between the underside of each upper bearing block and the adjacent lower part of the main frame, which lower adjusting block is provided with an upper inclined surface 57 engaging with the lower inclined surface of the upper bearing block and also with a horizontal lower face 58 which engages with a corresponding horizontal face 59 on the main frame, as shown in Figs. 1 and 4. By moving the two adjusting blocks 56 rearwardly, the controlling rock shaft and the platen roller connected therewith will be raised, while upon moving these lower blocks forwardly, said parts will be lowered. This forward and backward adjustment of each of the lower adjusting blocks 56 may be effected in various ways, for instance, by means of a screw 60 working in each of the lower bearing blocks and engaging a threaded opening in the adjacent part of the main frame, as shown in Figs. 1, 3 and 4.

On its periphery the printing roller is provided with printing type, an electrotype, printing plate or any suitable form of printing surface 61 which is intended to be impressed upon the envelop or other article which is to be printed. As shown in Figs. 3, 4 and 5, this printing surface has the form of a curved plate secured to one end of the printing roller for the purpose of printing certain matter on one end of the envelopes which are fed to the same from the stack in the magazine. This printing plate is preferably detachably connected with the printing roller by beveling the opposite longitudinal edges of the same and retaining it on the printing roller by means of two cleats 62, 62, each of which is secured to the printing rollers and provided at its inner edge with a beveled undercut surface 63 engaging with one of the beveled longitudinal edges of the printing plate, as best shown in Fig. 4.

In order to cause the envelop to move evenly through the pass between the printing and platen roller, a gripping collar 64 is secured to the printing roller at that end thereof opposite to that which carries the printing plate, the collar having a peripheral diameter equal to that of the printing plate, so that both ends of the envelop are gripped between the printing roller and platen roller and caused to move properly between the same. This gripping collar is held in place on the printing roller by means of a screw 65, as shown in Fig. 3, or by any other suitable means.

The printing and platen rollers are arranged sufficiently close to the feeding rollers 26, 27 so that the printing and platen rollers grip the envelop between the same while the feeding rollers are still in engagement with the envelop, thereby insuring a good hold on the envelop during its passa[illegible] from the feeding rollers to the printing a[illegible]

platen rollers and preventing the same from becoming displaced. By this relative arrangement of the printing and platen rollers and the feeding rollers no additional guiding or controlling means are required for keeping the envelopes in their proper position relatively to these rollers, thereby simplifying the construction of the machine and reducing its cost and upkeep accordingly. In order to prevent the envelops from buckling or becoming wrinkled while different parts thereof are engaged by the printing and platen rollers and the feeding rollers, the means whereby the same are rotated are so timed that the surfaces of these several rollers which engage with the envelopes travel at the same rate of speed. The preferred means whereby this is accomplished consists in constructing the printing roller and the platen roller of the same diameter and providing the shafts of these rollers with intermeshing gear wheels 66, 67, which are also of the same diameter. Motion is transmitted to the feeding rollers preferably by means of an intermediate or idle gear pinion 68 which is mounted on a suitable part of the main frame and meshes on one side with the platen gear wheel 67 and on its opposite side with the gear pinion 31 of the lower feeding roller, as shown in Figs. 1 and 2.

Motion may be imparted to the machine in any appropriate manner, for instance, by means of a pulley 69 arranged on one end of the shaft of the platen roller and adapted to receive power by means of a belt from any suitable source.

The rocking motion of the shaft 38 which operates the feeding plate sections is preferably derived from the shaft of the platen roller by means which include an outer rock arm 70 projecting upwardly from the rock shaft 38, and an eccentric strap 71 surrounding an eccentric 72 on the platen shaft and having a link 73 which is connected with the arm 70, as shown in Figs. 1, 3, 4 and 5. By this means the several parts of the printing press are properly timed relatively to each other and motion is imparted to each of the movable elements in the most direct manner so that the fewest possible parts are utilized and a minimum of power is expended for this purpose.

Any suitable and well known means may be provided for inking the printing surface of the printing roller, those which are shown in the drawings being an example of one available for this purpose and as there shown the same comprises two ink delivery rollers 74 arranged above the printing roller and adapted to engage with the printing surface of the latter during each rotation of the printing roller, so that an impression of the printing surface may be produced on the envelopes. Above the ink delivery rollers and in contact therewith is arranged an ink distributing roller 75 and an ink supplying roller 76. Ink is applied to the supply roller from time to time and this is transferred to the distributing roller which spreads the same and in turn delivers the same to the delivery rollers which latter are engaged intermittently by the printing surface of the printing roller.

These several ink rollers are mounted on brackets 77 on the upper part of the main frame and the same are rotated by providing the corresponding ends of the ink delivery rollers with gear wheels 78 which mesh with the upper part of the printing roller gear wheel, thereby positively driving these delivery rollers, but the distributing roller is rotated by frictional contact with the delivery rollers and the supply roller is rotated by frictional contact with the distributing roller.

By operatively connecting the blade 32 of the envelope feed mechanism with the driving shaft 43 of the impression roller and driving the envelope feed rollers 26 and 27 by means of the gears 30, 31 and 68 from the gear wheel 67 of the impression roller, it is possible to separate the impression roller from the printing roller and turn the latter as much as may be desired to secure the proper relative timing of the impression and printing rollers in accordance with the particular job which is being printed, while at the same time maintaining a proper time relation between the impression roller and the envelope feed mechanism so that this last mentioned relation is not disturbed and therefore requires no readjustment when the impression roller is again moved toward the printing roller for starting the printing operation.

As a whole this machine is very compact in construction, the same contains comparatively few parts considering the function which it performs; it is capable of printing envelopes very rapidly and efficiently; it consumes very little power for its operation and the same operates without any attention other than supplying the magazine with envelops and inking the supply roller whenever these require replenishing thereby permitting of producing printed envelops at very low cost.

I claim as my invention:

In a printing press, a printing roller journaled in normally fixed bearings, an impression roller co-operating with said printing roller and journaled in bearings which are movable toward and from the bearings of the printing roller, co-operating gear wheels connected with said printing and impression rollers and adapted to be engaged and disengaged upon moving said impression roller toward and from the printing roller and an article feed mechan-

ism for delivering articles successively to said printing and impression rollers including a pair of co-operating feed rollers adapted to feed articles from a magazine to said printing and impression rollers, a pair of intermeshing gear wheels connected with said feed rollers, an intermediate gear wheel meshing with the gear wheel of one of said feed rollers and also with the gear wheel of said impression roller, and means for feeding the articles successively to said feed rollers and operating in time with said impression roller.

EDWARD J. GOWDY.