No. 699,686. Patented May 13, 1902.

W. G. JOHNSTON.

ENVELOP PRINTING PRESS.

(Application filed Apr. 12, 1901.)

(No Model.) 3 Sheets—Sheet 1.

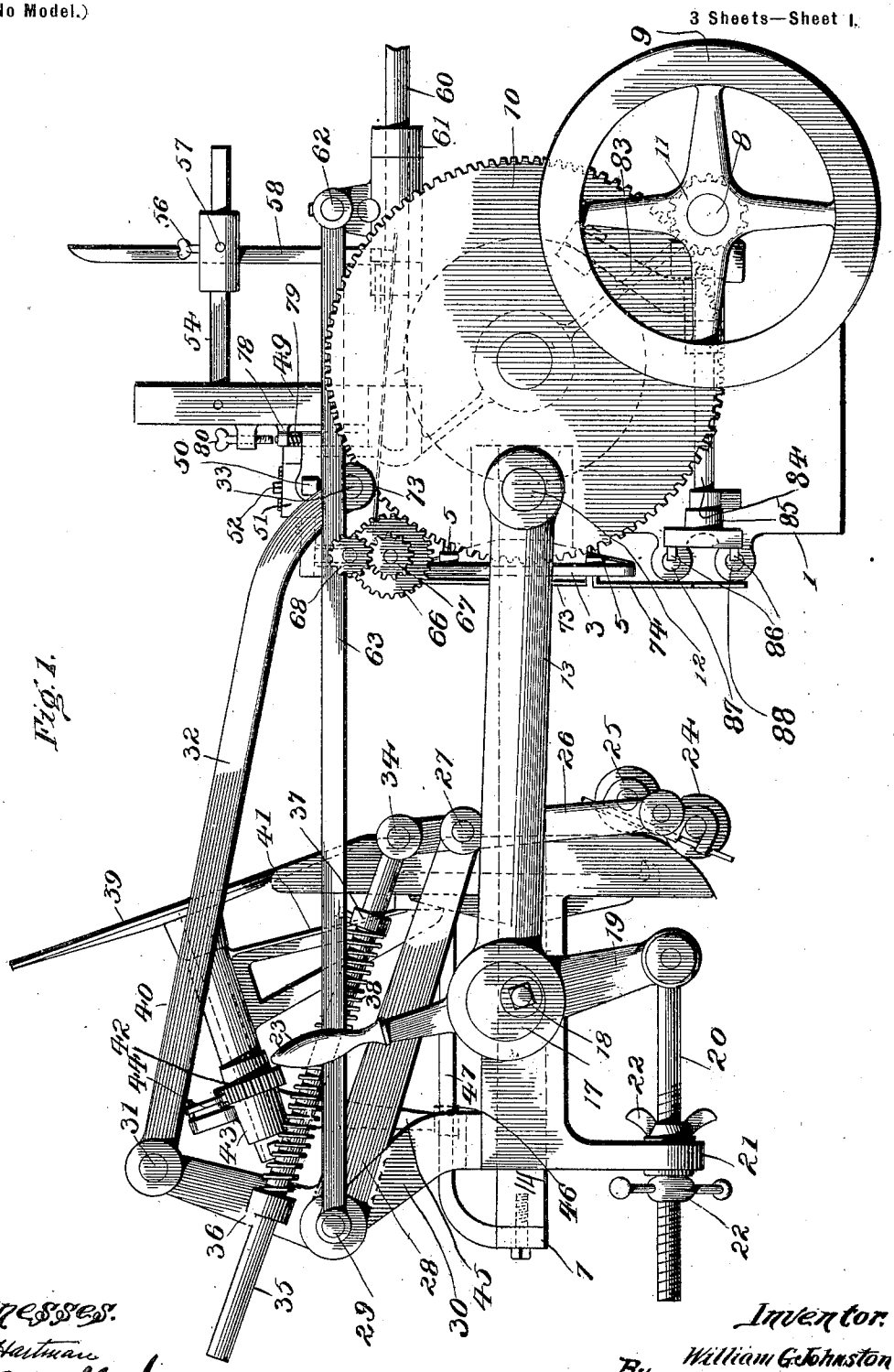


Fig. 1.

Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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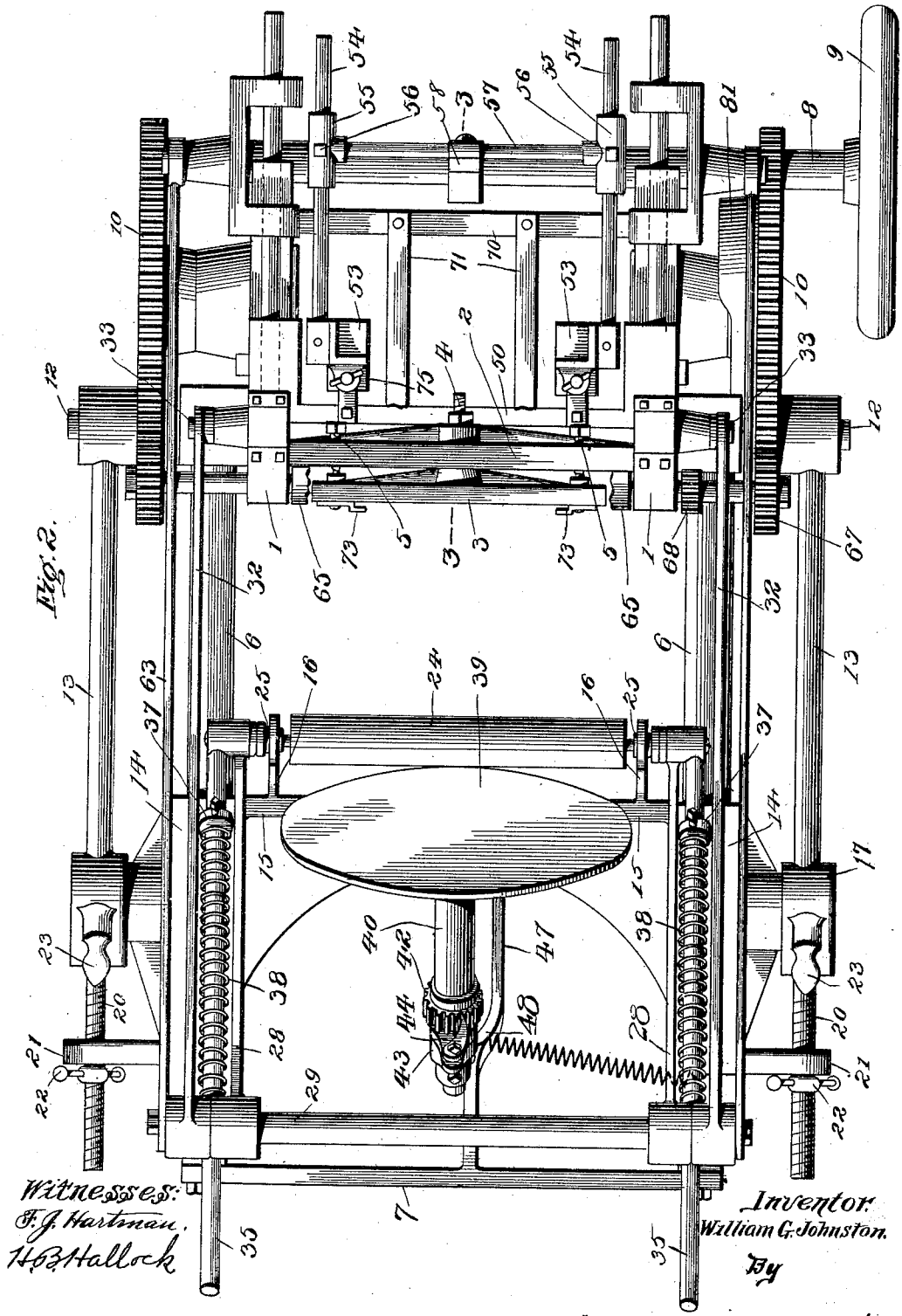
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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

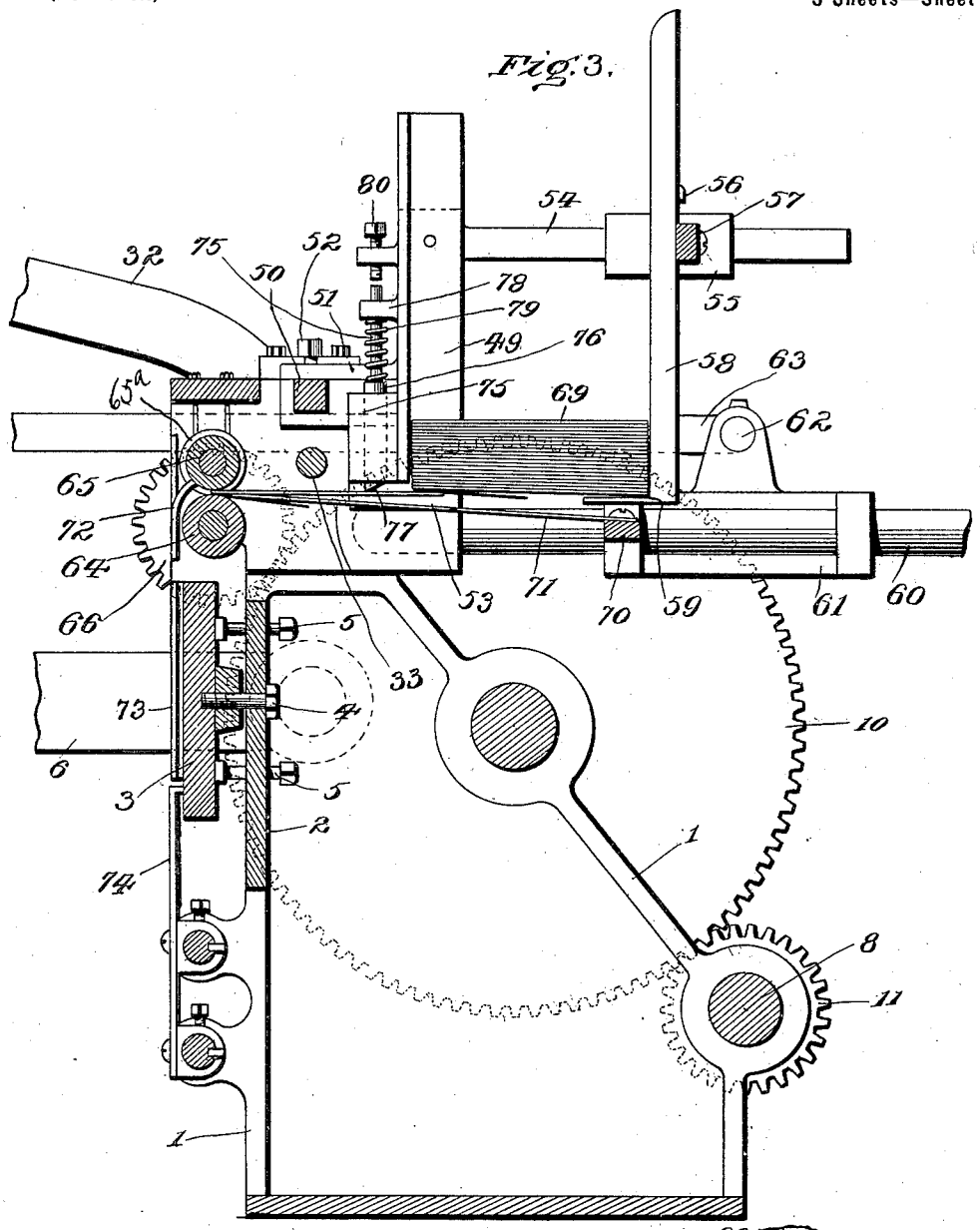
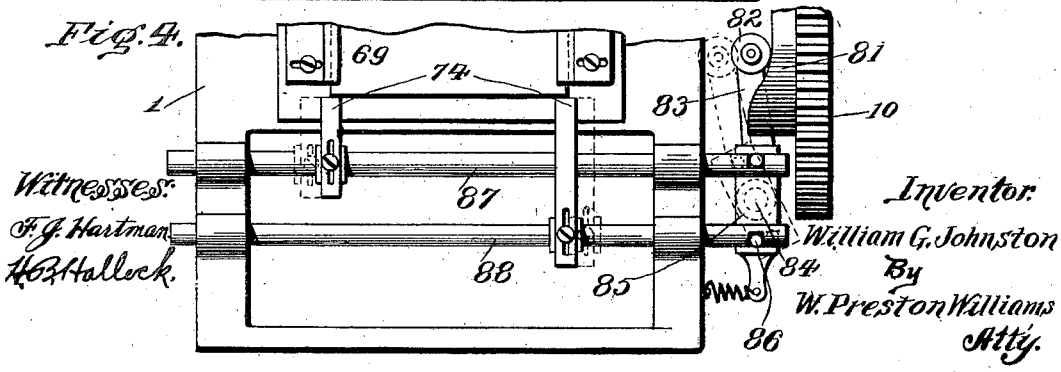


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM G. JOHNSTON, OF WOODBURY, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STEEL MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

ENVELOP-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 699,686, dated May 13, 1902.

Application filed April 12, 1901. Serial No. 55,441. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. JOHNSTON, a citizen of the United States, residing at Woodbury, county of Gloucester, and State of New Jersey, have invented a certain new and useful Improvement in Envelop-Printing Presses, of which the following is a specification.

My invention relates to a new and useful improvement in envelop-printing presses, and has for its object to provide a press of this description wherein the envelop to be printed is held in a vertical position while the impression is being made and the form will reciprocate backward and forward in a horizontal plane.

Another object of my invention is to provide means whereby the envelops to be printed are held in a vertical stack, the envelops lying flat, and providing automatic means whereby the bottom envelop of the stack will be fed through suitable mechanism which will cause the envelop to change its position from horizontal to vertical and be held in suitable guides in front of the platen.

Another object of my invention is to provide means whereby the form can be adjusted to the envelop without backing up with paper, as is the common practice now.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my printing-press; Fig. 2, a plan view of the same; Fig. 3, a longitudinal section of the rear or stationary portion of the press, taken on the line 3 3 of Fig. 2; and Fig. 4 is a front elevation of the lower portion of the platen, showing the mechanism for releasing the envelop and allowing the same to drop after it has been printed.

In carrying out my invention as here embodied the framework of the machine consists of the two side standards 1 1, which are joined together in the front by the cross-plate 2. To this cross-plate is adapted to be secured the platen 3 by means of the central bolt 4. Bolts 5 are threaded through the cross-plate 2 and bear against the platen near each of these four corners. These bolts are for the purpose of adjusting the platen to the form. Extending forward from each of the side standards are slide-bars 6. These slide-bars are connected together at the forward end by the cross-piece 7. Upon these slide-bars slide the form-carrier and all the inking mechanism.

8 is a power-shaft to which power can be communicated in any suitable manner, and a fly-wheel 9 is upon this same shaft.

10 is a large gear-wheel, which is journaled in the side standards of the press. Power is communicated to this large gear-wheel by the spur-wheel 11, which is secured upon the power-shaft 8. Studs 12 are secured upon the outer faces of these gear-wheels 10, near the periphery of the same, and upon these studs are pivoted the pitmen 13. The other ends of these pitmen are pivoted to the slides 14, which slide upon the slide-bars 6. These slides 14 are connected together by the cross-plate 15, upon the face of which are the flanges 16, between which the form or chase is secured. This form or chase may be secured in any suitable manner, and for the purpose of adjusting the same to the platen, so that the impression will be uniform and the impact between the two will be as light or heavy as desired, I provide an eccentric 17, which is journaled upon the stud 18, which stud is formed with or secured to the slides 14. The forward end of the pitman 13 is pivoted upon the eccentric 17 instead of directly upon the stud 18. A downwardly-extending arm 19 is secured to or formed with the eccentric 17. Pivoted to the lower end of this arm is a screw-threaded rod 20, which is adapted to slide through a lug 21, projecting downward from the slides 14. Upon each side of the lug 21 threaded upon the screw-threaded rod 20 are thumb-nuts 22, which are adapted to hold the arm 19 into position when once set,

it is obvious that by reason of one end of the pitman 13 being pivoted to the stud 12 which is secured to the gear-wheel 10, and when the press is stationary, this point will be fixed, then by turning the eccentric 17 upon the stud 18, and this stud being secured to the slide, will enable the operator to move the form a slight distance backward and forward relative to the pitmen 6, thus if it is desired to secure a deeper or more forcible impression the form is moved a slight distance forward, and if a light impression the frame is moved backward; after it is once set to the operator's satisfaction the thumb-screws 22 can be set against each side of the lug 21 and so hold it in proper adjustment. A handle 23 is also secured to the eccentric 17 for the purpose of better manipulating the same.

24 represents inking-rollers, which are journaled in bearings 25, which bearings are pivoted to a link 26 upon each side of the machine. These links 26 are pivoted near their other ends at 27 to members of the bell-crank levers 28. One bell-crank lever 28 is fixed at each side of the machine on the rock-shaft 29, said rock-shaft being supported by the extensions 30, which extend upward from the slides 14. The other member of each bell-crank lever 28 is pivoted at the point 31 to a link 32. The other end of this link is pivoted at the point 33 to a stud extending outward from the side standards. By reason of the link 32 being pivoted to a fixed point 33 when the slides move backward and forward the bell-crank lever 28 will be consequently rocked, which will cause the inking-rollers to be raised and lowered across the face of the type.

For the purpose of keeping the inking-rollers in contact with the face of the type I pivot to the upper end of the link 26 at the point 34 a rod 35, which rod passes forward and is guided through the lug 36, which is formed upon the bell-crank lever 28. A collar 37 is secured upon this rod, and a coil-spring 38 surrounds the rod and is interposed between the lug 36 and the collar 37, thereby always tending to keep the inking-rolls in contact with the type under spring-pressure.

39 is the inking-plate, which is journaled in a bearing 40, which bearing is secured to the cross-plate 15 by means of the bracket 41. As the inking-rollers pass upward they pass from off the form-holder onto the inking-plate, and of course it is desirable to revolve this inking-plate upon each movement of the machine, so that the ink will be evenly distributed. As this operation is common to all printing-presses, it can be done in any suitable manner, here shown as providing the shaft to which the inking-plate is secured with a ratchet-wheel 42.

43 is a hub loosely journaled upon the shaft, and this hub has an arm which carries the pawl 44. The nose of the pawl rests within the teeth of the ratchet-wheel 42. The hub 43 has an arm 45 extending downward therefrom, and a roller 46 is pivoted at the lower end of this arm. This roller is held by spring-pressure in contact with a horizontal arm 47, which arm is formed with or secured to the cross-rod 7. This arm 47 is curved so as to form a cam, as represented at 48. Whenever the roller 46 is operated in one direction by this cam-surface the hub 43, and consequently the pawl 44, will be rocked a short distance forward, which will revolve the ratchet-wheel and consequently the inking-plate a slight distance.

From the foregoing description it is obvious that if an envelop is held in front of the platen and if the gear-wheel 10 is revolved the form will be drawn toward the platen and an impression made, after which the platen will recede to its original position, and at the same time by means of this sliding action the bell-crank lever 28 will be rocked, and thereby cause the printing-rollers to roll from off the inking-plate over the type and back upon the inking-plate again at each forward and backward movement of the form.

For the purpose of feeding the envelops automatically to the front of the platen I provide the following mechanism: 49 represents angular upright guides located near each side of the machine inside of the side standards 1. These upright guides are held in position by means of the square rod 50, which rod is secured at each end in the upper part of the side standards 1. The guides 49 have projections 51 extending out therefrom, which projections are adapted to slide upon the square rod 50 and be set at any desired point by means of the set-screw 52. These guides 49 are adapted to guide the two forward corners of a stack of envelops, the guides being made angular for this purpose, as illustrated in Fig. 3. A ledge 53 is formed with the lower portion of these guides 49, and the two forward corners of the stack of envelops rest upon this ledge. 54 represents two rods which are formed with or secured to the guides 49 and extend rearwardly from the same. 55 is a sliding block, which slides upon the rod 54 and is set in any desired position by means of the set-screw 56. A cross-rod 57 is formed with or secured to the slide 55 and extends across and is secured to the opposite sliding block 55. 58 is an upright which is secured in the middle of the cross-rod 57. This upright has a ledge 59 extending forward at its lower end, and this ledge 59 is in the same plane as the ledge 53 and is for the purpose of supporting the stack of envelops at their rear edge.

Extending rearwardly from each of the side standards 1 are slide-rods 60, upon which slide the slides 61. These slides are pivotally connected at the points 62 with links 63 upon each side of the machine. The other end of this link is connected to some portion of the sliding framework which slides upon the slide-bars 6, here shown as being connected at the point 29. It will thus be seen that as

the framework which slides upon the slide-bar 6 reciprocates backward and forward the same motion will be transmitted, by means of the links 63, to the slides 61.

64 and 65 are two small rolls journaled at each end in the side standards 1 of the machine above the platen. The roll 64 has secured upon the same shaft the spur-wheels 66 upon each side of the machine, which are adapted to mesh with the gear-wheels 10, and thus transmit motion to the roll 64. Motion is transmitted to the roll 65 by means of the spur-wheel 67, which is secured upon the same shaft as the roll 64 and which meshes with the spur-wheel 68, which is secured to the same shaft as the roll 65. Thus it will be seen that these rolls are constantly revolved.

The envelops 69, as illustrated in Fig. 3, will be stacked between the upright guides with the flap of the envelop downward and at the forward side of the machine. The slides 61 are connected together by a cross-bar 70. This cross-bar has secured to it two spring-blades 71, which blades are very thin, and when the slides 61 are at their extreme position rearwardly the end of these spring-blades will bear against the bottom of the stack of envelops at a point rearward of the termination of the flap of said envelops, and when the slides 61 are caused to travel forward the end of the blades 71 will pass between the flap and the envelop and as the forward movement continues will push the lower envelop of the stack forward until the forward edge of the envelop is grasped between the rolls 64 and 65. The blades then recede, but the envelop is carried forward between the rolls by the action of the rolls. Placed directly in the front of the rolls is a curved shield 72. The envelop in being forced forward by the action of the rolls will come in contact with this curved shield, which will deflect the envelop downward and cause it to enter between the vertical guides 73 and the forward face of the platen 3. These guides are secured to each side of the platen and are adjustable for different-size envelops. After the envelop has been released by the rolls it will drop downward in the guides 73, and the lower edge of the envelop will rest upon the fingers 74. These fingers engage the envelop near each side thereof, and after the envelop has received the impression these fingers 74 are caused to spread, which will allow the envelop to drop upon a receiving-table, and the platen is then ready for the next envelop. Either of the rolls 64 or 65, or both, may be covered with rubber or other frictional material, or, as I have illustrated in the drawings, rings of rubber 65^a may be placed in grooves around the upper roller 65.

For the purpose of preventing more than one envelop from being removed at a time from the pile I provide upon the forward face of the upright guides 49 a housing 75, in which are guided vertical rods 76. The lower ends of these rods are beveled, as indicated at 77, and normally rest upon the ledge 53. The upper end of the rod 76 is made smaller and is guided through the lug 78. Interposed between this lug and the enlarged portion of the rod 76 is a spring 79, which tends to always keep the rod 76 pressed downward. When the lower envelop is forced forward and comes in contact with the bevel of the lower rod 76, the said rod will be raised sufficiently to allow that envelop to pass; but if the next envelop is dragged from the pile by reason of friction it will be stopped by the rod 76. Set-screws 80 are threaded through lugs extending forward from the guides 49, and the ends of these set-screws are adapted to be just above the end of the rod 76. These set-screws can be set so as to allow the rod to be raised just sufficiently to allow one envelop to pass. The guides 47 can be adjusted along the square rod 50 so as to accommodate different-size envelops, and the upright 58 can be adjusted backward and forward along the rods 54 for the same purpose.

After the envelop has been printed the fingers 74 are caused to spread apart in the following manner: Upon the inner face of one of the gears 10 is formed a cam 81. This cam is adapted to operate a roller 82, which roller is pivoted at the end of an arm 83, which arm is secured to a shaft 84, which is journaled in suitable bearings upon the side standard 1. Upon the forward end of the shaft 84 is secured a cross-arm 85, which has pins 86 extending forward from the same at each end. 87 and 88 are slide-rods extending across the machine and sliding in suitable bearings formed with the side standards 1. The upper pin 86 of the cross-piece 85 is adapted to engage a notch formed in the end of the slide-rod 87, and the lower pin 86 is adapted to engage a notch formed in the slide-rod 88, so that it is obvious that if the shaft 84, and consequently the cross-piece 85, is rocked, as shown in dotted lines in Fig. 4, the slide-rod 87 will be pushed in one direction and the slide-rod 88 in the opposite direction. One of the fingers 74 is secured to the slide-rod 87, and the other of the fingers 74 is secured to the slide-rod 88, so that when the shaft 84 is rocked one of the fingers will be pushed in one direction and the other in the opposite direction, which will spread the same and allow the envelop to drop.

The operation of my press is as follows: After an envelop has been printed and the form commences to recede by reason of the revolution of the gear-wheel 10 the first operation is for the cam 81 to act upon the roller 82, which will cause the fingers 74 to spread and drop the envelop just printed. The fingers then resume their normal position, ready for the next envelop, and as the form continues to recede from the platen the slides 61, and consequently the blades 71, pull forward, and the blades will pass between the flap of the lower envelop and the envelop itself and push said lower envelop forward until the

same is grasped by the rolls 64 and 65. At this point the form-holder has reached its extreme foremost position and commences to travel back toward the platen, which will cause the blades to recede; but the envelop will be carried forward and downward within the guides secured to the platen and rest upon the fingers 74. The form-holder in receding has caused the inking-rollers to travel downward over the face of the type, and as the form-holder commences to travel back toward the platen the inking-rollers are carried upward upon the inking-plate 39. The form-holder then continues to travel toward the platen and makes the impression, when it will again begin to recede, and the above operation will be repeated.

The principal advantage of my invention is the fact of having a vertical platen and a vertical form-holder, which is adapted to travel backward and forward in a horizontal plane, and also in being able to feed the envelops automatically from a vertical stack in which the envelops lie horizontally.

Another advantage of my invention is that by reason of connecting the pitman 13 to an eccentric block which surrounds the stud 18 I am enabled to adjust the relative position of the form-holder and platen so that the impression can be regulated to a nicety.

Another advantage of my invention is in the simplicity of the construction of the press, which will enable the same to be manufactured at a comparatively small cost, and on account of the small number of parts the machine will be very durable and not liable to easily get out of order.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In an envelop-printing press, suitable framework for supporting the operating parts, a vertical platen secured to said framework, a vertical form-holder adapted to slide horizontally, guideways formed upon the face of the platen for holding the envelop while receiving the impression, automatic means for feeding the envelop from a suitable source of supply to said guideways upon the face of the platen, means for releasing the envelop after it has received its impression, and means operated by the sliding motion of the form-holder for automatically inking the type, substantially as described and for the purpose specified.

2. In combination in an envelop-printing machine, a framework adapted to support the operating parts, a power-shaft journaled in said framework, suitable gearing for transmitting motion from said power-shaft to the operating parts of the machine, a vertical platen secured to the framework of the machine, guides secured upon the face of the platen for holding the ends of the envelop while receiving the impression, fingers upon which the lower edge of the envelop is adapted to rest while receiving the impression, means for causing these fingers to spread and allow the envelop to drop after receiving the impression, slide-bars secured in the frame of the machine and extending forward from the same, slides adapted to slide upon said slide-bars, a vertical form-holder secured to said slides and adapted to slide therewith horizontally, means for communicating motion to said slides for the purpose of reciprocating the same, inking-rollers adapted to travel over the face of the form, an inking-plate from which the rollers are adapted to receive their supply, means for causing these rollers to travel from the inking-plate over the form and back again, adjustable upright guides supported by the framework of the machine for holding a supply of envelops, a pair of constantly-revolving rollers arranged above the platen, slide-bars secured in the framework of the machine and extending rearwardly from the same, slides adapted to slide upon said slide-bars, a connection connecting said slides with the sliding frame which carries the form, blades secured to said slides and adapted to bear against the lower envelop of the pile and adapted to enter between the envelop and the flap thereof, and feed the same between the two rolls when the slides are brought forward, a shield secured in front of the rolls and adapted to deflect the envelop downward within the guides formed on the face of the platen, substantially as described and for the purpose specified.

3. In combination in an envelop-printing press, suitable framework adapted to support the operating parts, a power-shaft journaled in said framework, a train of gears adapted to transmit motion from the power-shaft to the operating parts of the machine, a vertical platen secured at the front of the framework, adjustable guides secured to the face of the platen for holding the ends of the envelop while being printed, two fingers, upon the end of which the two lower corners of the envelop are adapted to rest while receiving the impression, means for causing said fingers to spread at a predetermined time to allow the envelop to drop after it has received the impression, means for automatically feeding the envelop from the source of supply to the face of the platen, horizontal slide-bars secured in the framework upon each side of the machine and extending forward, a framework adapted to slide upon said slide-bars, a vertical form-holder secured to or formed with said framework and adapted to reciprocate therewith, a crank-wheel journaled in the framework of the machine and adapted to be constantly revolved, a pitman, one end of which is pivotally connected to said crank-wheel, a stud extending outward from the sliding framework, a circular block journaled eccentrically upon said stud,

the other end of the pitman being pivoted upon said circular eccentrically-journaled block, an arm extending downward from said block, a screw-threaded rod pivoted to the lower end of said arm and adapted to slide through a lug carried by the sliding framework, two thumb-nuts threaded upon the screw-threaded rod upon each side of the lug for the purpose of allowing the eccentric block to be turned backward or forward for the purpose of regulating the impression, an inking-plate journaled in suitable bearings carried by the sliding framework, means for rotating said inking-plate a short distance upon each backward-and-forward movement of the sliding framework, bell-crank levers pivoted to the sliding framework upon each side of the machine, an arm pivoted to the end of one member of each bell-crank lever, inking-rollers carried by the lower ends of said arms, springs arranged to exert tension so as to keep the inking-rollers in contact with the form or inking-plate at all times, a link pivotally connected to the upper end of the other member of the bell-crank lever, the other end of said link being pivotally connected to the stationary framework of the machine, substantially as described and for the purpose specified.

4. In combination with a machine of the character described, vertical adjustable guides adapted to hold a stack of envelops, said envelops being placed within said guides horizontally with the flap downward, ledges formed upon the lower end of said guides upon which the envelops rest, two rollers arranged one above the other above the platen, means for constantly revolving said rollers in contact with one another, flexible covers surrounding one or both of said rollers, slide-bars extending rearwardly from the framework of the machine, slides adapted to slide upon said slide-bars horizontally, suitable means for sliding said slides, spring-blades secured to said slides and adapted to reciprocate therewith, the end of said spring-blades adapted to enter between the envelop and the flap thereof when the slides are caused to travel forward and thus remove the lower envelop from the stack and feed the same between the two rolls, a plunger guided in suitable guides, the lower end of said plunger being beveled rearwardly, a spring adapted to exert pressure downward upon said plunger, a set-screw adapted to limit the upward movement of said plunger, a curved shield arranged in front of the rolls and adapted to deflect the envelop downward and cause the envelop to assume a vertical position within the guides formed on the face of the platen, substantially as described and for the purpose specified.

5. In combination with a machine of the character described, a suitable framework, a vertical platen secured to said framework, vertical guides secured to the face of the platen upon each side thereof, two fingers arranged in front of the lower edge of the platen, the two slide-bars supported in suitable bearings, one of said fingers being adjustably secured to one slide-bar, and the other finger adjustably secured to the other slide-bar, a shaft journaled in suitable bearings on the framework and extending longitudinally of the machine, an arm secured to the forward end of said shaft, two pins secured in said arm one upon each side of the shaft, notches formed in the ends of the slide-bars in which the said pins are adapted to rest, an arm extending upward from the other end of the longitudinal shaft, a roller pivoted to the upper end of this arm, a circular cam journaled in suitable bearings in the framework of the machine and adapted to be constantly revolved, said cam adapted to operate upon the roller and rock the shaft for the purpose of spreading the fingers and allowing the envelop to drop, and a spring adapted to return the parts to their normal position when allowed to do so by the cam, substantially as described and for the purpose specified.

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

WILLIAM G. JOHNSTON.

Witnesses:
MARY E. HAMER,
L. W. MORRISON.