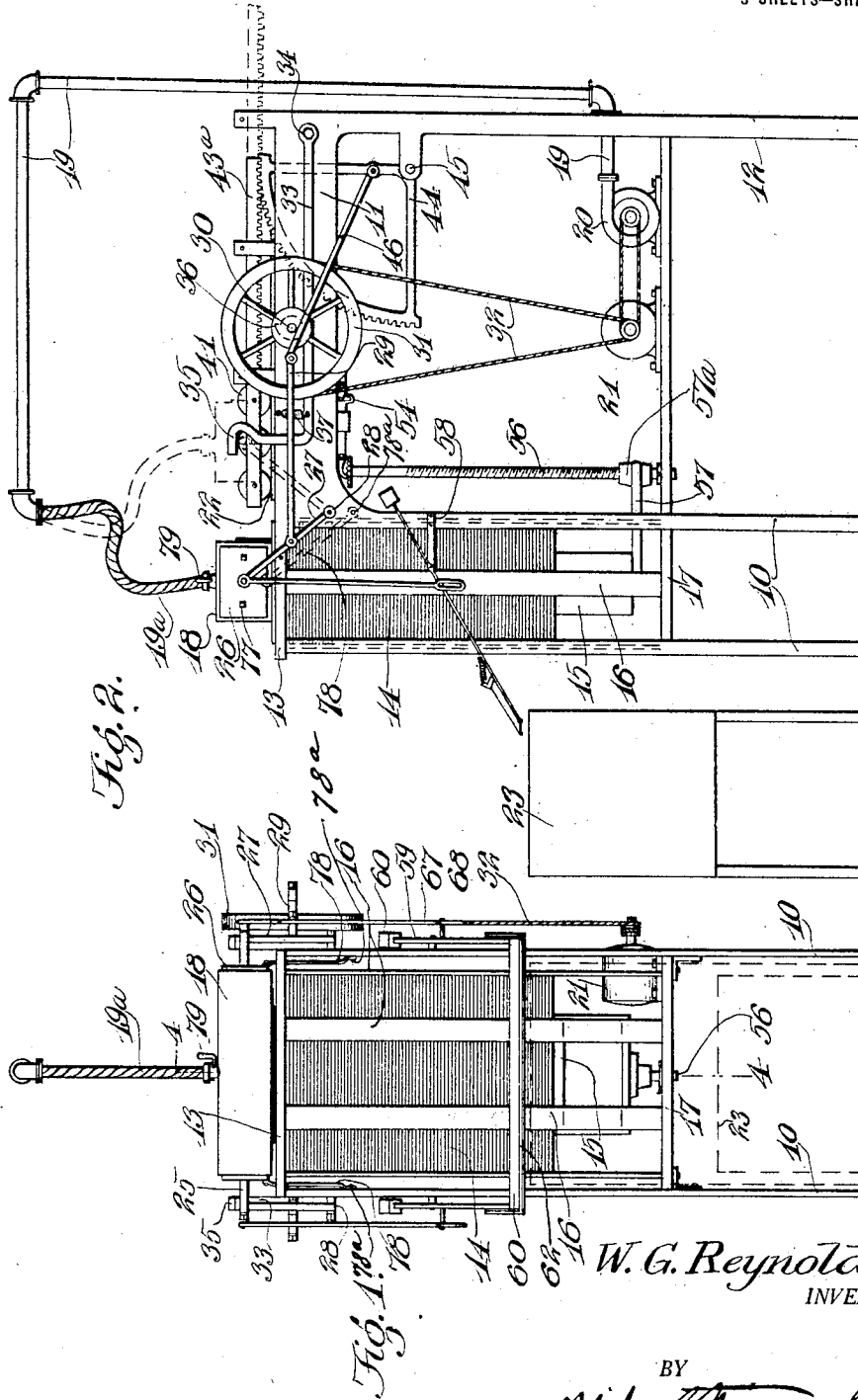


W. G. REYNOLDS.
PRINTING MACHINE.
APPLICATION FILED JAN. 7, 1920.

1,376,640.

Patented May 3, 1921.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

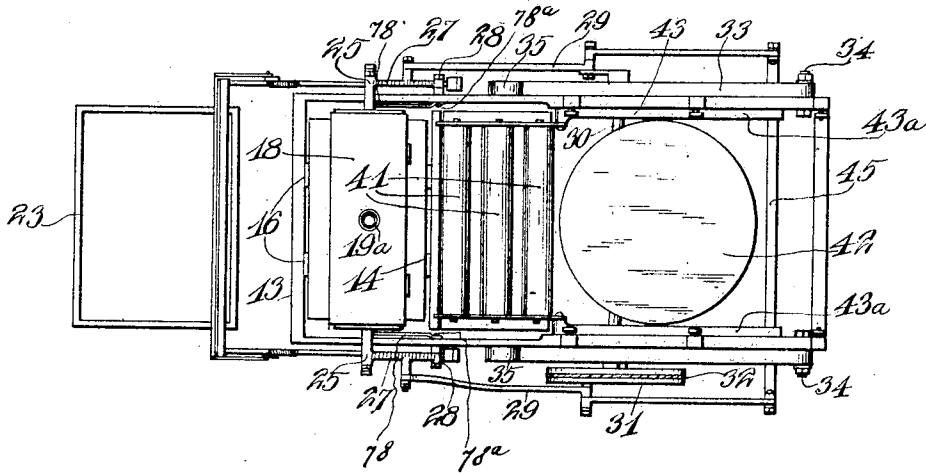


Fig. 3.

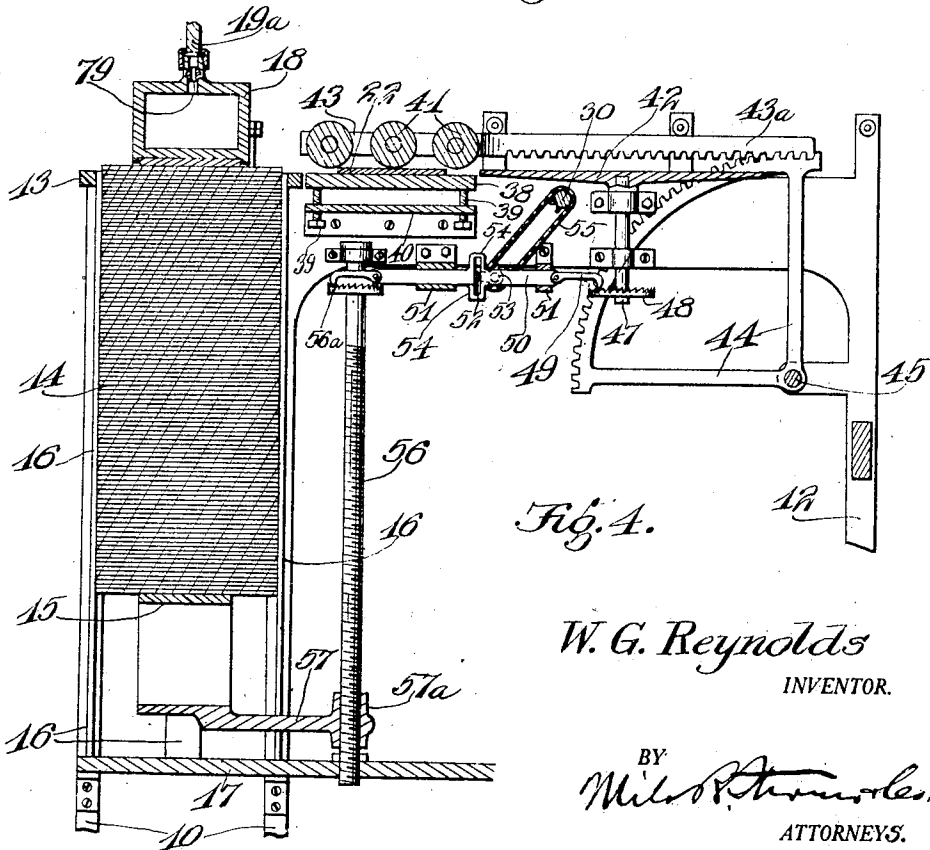


Fig. 4.

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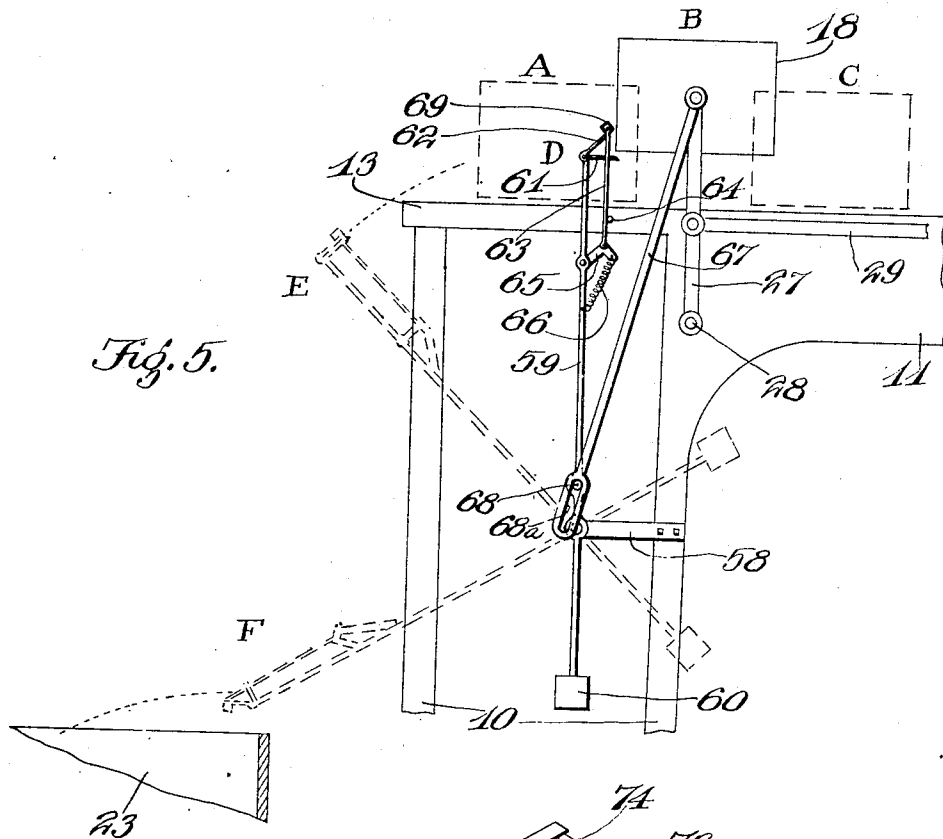


Fig. 5.

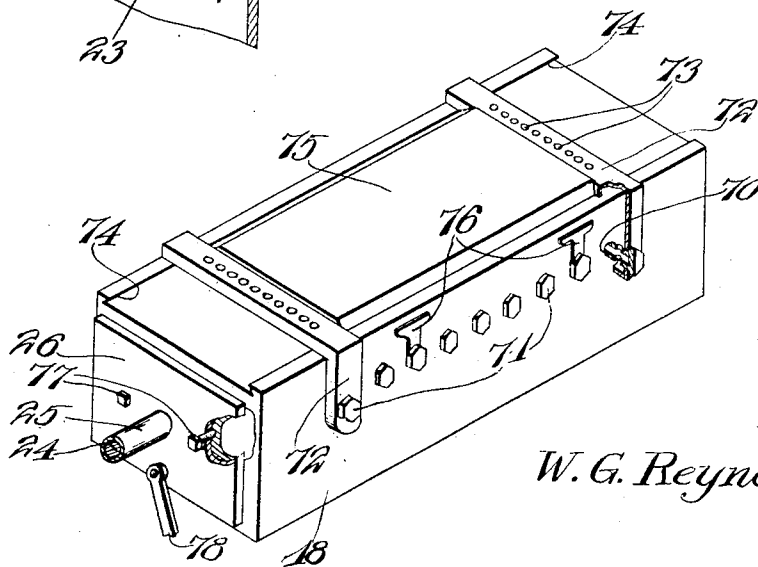


Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM G. REYNOLDS, OF CHICAGO, ILLINOIS.

PRINTING-MACHINE.

1,376,640.

Specification of Letters Patent.

Patented May 3, 1921.

Application filed January 7, 1920. Serial No. 350,002.

To all whom it may concern:

Be it known that I, WILLIAM G. REYNOLDS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Printing-Machines, of which the following is a specification.

The machine which is the subject matter of the present application for patent has been designed more particularly for printing letter heads, cards, envelopes and the like, the blanks being in a stack from which they are taken, one after the other, and printed, and then delivered into a receptacle in which they are piled up.

The invention has for its object to provide a novel and improved machine of the kind stated, which is entirely automatic in its operation, and to this end it consists in a combination and arrangement of parts to be hereinafter described and claimed.

The preferred embodiment of the invention has been shown, but it will be understood that various changes and modifications may be made without a departure from the spirit and scope of the invention as claimed hereinafter.

In order that the invention may be better understood, reference is had to the accompanying drawings forming a part of this specification.

In the drawings, Figure 1 is a front elevation of the machine; Fig. 2 is a side elevation thereof; Fig. 3 is a plan view; Fig. 4 is an enlarged section on the line 4-4 of Fig. 1; Fig. 5 is an enlarged fragmental side elevation showing a take-away device, and Fig. 6 is a perspective view of a platen inverted.

Referring specifically to the drawings, the supporting frame of the machine consists of a four-legged stand 10 having rearward side walls 11 which are also supported by legs 12. The stand has a top 13, which is rectangular and made open to permit a stack 14 of envelopes, cards or other blank stock to be deposited in the stand so as to rest on a box 15. The stack 14 seats between guide strips 16 depending from the top 13 to a base shelf 17 supported by the legs 10 and 12. The strips 16 are adjustably supported so that they may be set to stacks of smaller or

larger dimensions within certain limits. The box 15 serves as a supporting base for the stack 14, and as it is designed to elevate the stack, it will be seen that the guide strips 16, which latter are stationary, will keep the blanks from shifting sidewise.

The printing action is similar to that of an ordinary rubber stamp which is raised off the blank last stamped, then applied to an inking pad, and then returned to a new blank. This action is however somewhat modified in that a platen 18 is provided which is hollow so that suction may be created therein by a conduit 19 connected thereto and leading from the inlet of a suction pump 20 of any suitable design, and driven by a motor 21. The plate attracts and picks up the top blank of the stack 14, carries it rearward as shown dotted in Fig. 2 to position it on a type form 22, and on the return stroke, a takeaway device draws the blank from the under side of the platen, and deposits it, with its printed side up, into a receptacle 23. The platen therefore moves in an arc between the stack and the type form.

The platen 18 is rectangular and has trunnions 24 at its ends extending through sleeves 25 of end plates 26 as shown in Fig. 6. The platen is hung by the sleeves on radius rods 27 pivoted at 28 to the side walls 11. The action of the platen is thus governed by the movement of the rods 27 from the full to the dotted positions and back in Fig. 2. It will be noted that the platen rises as it swings from the stack 14 to the type form 22 and back to the former. The rods 27 are actuated by pitmen 29 connected to a wrist pin on a fly-wheel 31 carried by a shaft 30, the latter receiving motion from the motor 21 by the belt 32.

As the printing is done when the platen 18 is above the type form 22, a means is provided for pressing the platen downward to make a good impression, such impression means comprising the following parts:

A bar 33 is pivoted at 34 on each side of the machine, and extends forwardly under the shaft 30 and then upwardly and terminates in a hook 35. The hooks 35 are positioned to intercept the sleeves 25 when the platen comes above the type form 22. The shaft 30 has cams 36 which bear down on the

bars 33 at the proper time, and as said bars are hooked to the platen, the latter is forced down to press the blank against the type form 22. A spring 37 connected to each bar 33 draws up on the same to follow the cam 36.

As shown more clearly in Figs. 3 and 4, the type-form 22 is supported on a base 38 which is adjustable as to height by four screws 39 beneath the same, the screws being supported by a shelf 40 on the walls 11.

Above the type form 22 is a set of inking rollers 41 adapted to move from the form across a standard ink-applying plate 42. The motion of the inking rollers 41 is simultaneous with that of the platen 18, but they travel through a greater distance. For carrying the rollers 41 toward and from the plate 42, the frame 43 of said rollers has rearwardly extending rack bars 43^a which are in mesh with sector gears 44 beneath the same. The gears 44 are pivotally supported on a cross shaft 45, and they are operated by a pitman 46 from the flywheel 31.

The inking plate 42 has the usual intermitting rotary motion to properly distribute the ink over the rollers 41. As shown in Fig. 4, the plate 42 has a depending shaft 47 provided with a ratchet disk 48 engageable by a pawl 49 carried by a slide bar 50 mounted in bearings 51. The bar 50 is actuated through the motion of a crank pin 52 on a shaft 53, said pin passing through a slotted cross head 54 on the bar. The shaft 53 receives motion through chains 55 from the main shaft 30.

The slide bar 50 also actuates a vertical screw 56 through a pawl-and-ratchet device 56^a, said screw operating to periodically lift a bracket 57 of the stack support 15. The bracket 57 has a nut 57^a through which the screw 56 is threaded, and as the screw is a non-traveling one, it will be evident that when it is turned in the proper direction, the nut 57^a travels upwardly thereon, whereby the stack 14 is elevated as the blanks are taken from the top thereof, to keep the top blank in proper place to be taken off by the platen 18. The upward feed of the stack can be adjusted by varying the distance of the crank pin 52 from the center of the shaft 53, and as this is a well-known expedient, it need not be shown in detail.

The device which takes the blank after it has been printed will now be described, particular reference being had to Fig. 5. The letter A denotes the position of the platen 18 when it is taking a blank off the stack 14; B shows the intermediate position of the platen, and at C the platen is shown in printing position above the type form 22. It is the object to provide a device which will grip the projecting edge of the sheet as the platen reaches its intermediate position

(B) on its return from printing position (C), and as the platen finishes the stroke from the position B to blank-receiving position A, to carry the blank much faster and deposit it in inverted position (printed side up; to prevent smearing of the wet ink) into the receptacle 23. In Fig. 5 will be noted a small bracket 58 (one on each side of the frame), which supports a rocking bar 59 counterweighted at its shorter end as shown at 60. This bar carries (with its mate on the other side of the machine) a small rigid jaw member 61 at the top, which is adapted to come beneath the projecting portion of the printed blank when the platen is in the intermediate position (B). Hinged over the jaw 61 is a gripper jaw 62 which is held open above the blank by an end prop 63 in contact with an abutment 64 projecting from the side of the machine. The bar 59 carries a link 65 and spring 66, the link being connected to the prop 63 and parallel to the jaw 62. When the prop 63 leaves the abutment 64, the spring 66 swings the link 65 in a direction to pull the prop 63 downwardly, and thus close the jaw 62 down on the projecting edge portion of the blank, the latter being now held between the jaws 61 and 62. This action is controlled by a pitman 67 extending from the end of platen 18 to a pin 68 on the bar 59. The movement of the platen 18 from position B to position A is accompanied by a movement of the bar 59 and the parts carried thereby, in the same direction. Fig. 5 shows the bar in three different positions, denoted D, E and F, respectively. The position D corresponds to the position B of the platen. As the platen starts to move to the left from position B, the bar 59 moves in the same direction, and as the prop 63 leaves abutment 64, the jaw 62 closes down in the blank and grips the same. As the bar 59 moves much faster than the platen, it swings away from the same and before the platen is in the position A the bar has moved to the position E and the gripper has pulled the blank away from the bottom of the platen, and when the platen reaches the position A the bar is in position F. In the last mentioned position of the bar 59 the jaws 61 and 62 are above the receptacle 23, and the position of the jaw 62 has become inverted so that it opens automatically and allows the blank to drop into the receptacle. To enable the jaw 62 to open as stated, it is weighted at its free end, as shown at 69, sufficiently to overcome the tension of the spring 66. When the platen again moves from A to B, the bar 59 follows, and when the platen arrives at position B, the bar is back to its normal position D. During the movement of the platen from B to C, the bar 59 re-

mains stationary in position D, due to the slotted connection 68^a between the pin 68 and the pitman 67.

Fig. 4 shows the preferred construction of the platen 18. As pointed out hereinbefore, the platen is hollow so that air may be exhausted from the interior to produce the suction for holding the blanks to be printed. In the sides of the platen are tapped holes 70, all but two of which latter are closed by screw plugs 71. The chosen holes communicate with L-shaped conduits 72 extending across the bottom of the platen, and having perforations 73 forming suction nozzles for attracting and holding the blank. The same plugs 71 are used for fastening the conduits 72 to the side of the platen, the shanks of the plugs being hollow and perforated to establish communication between the conduit and the platen interior. The bottom of the platen has a dove-tailed recess 74 to seat a base plate 75, the latter being slightly higher than the conduits 72 for the flat seating of the blanks. If a smaller blank is to be printed, the plate 75 is removed, and a shorter one put in its place, and the conduits 72 are also re-positioned to extend across the ends of the plate. Suitable clips 76 are provided for securing the usual padding to the base plate 75. The clips 76 are held by some of the plugs 71. The platen is securely fastened to the end plates 26 by screws 77. From each end plate 26 depends a link 78 parallel to the radius rod 27, said link assisting to hold the platen upright so that it will not tilt or wobble. The links 78 are pivoted to the frame of the machine as shown at 78^a so as to swing parallel with the radius rods 27, and as they are pivotally connected to the plate 26 below the connection of the radius rods with the latter, they serve to steady the platen and to prevent it from rocking on its axis.

The conduit 19 has a flexible portion 19^a which is made sufficiently long so as not to impede the movement of the platen 18, and where it is coupled to the platen, a valve 79 is provided as shown in Fig. 4, which makes it easy to shut off the suction. The flexible conduit 19^a also makes it possible to invert the platen without uncoupling said conduit.

I claim:

1. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top sheet off the stack, and means for operating the platen to make a printing impression on the blank.

2. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having suction means for taking the top blank off

the stack, and means for operating the platen to make a printing impression on the blank.

3. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top blank off the stack, means for operating the platen to make a printing impression on the blank, and means for removing the printed blank from the platen.

4. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top blank off the stack, means for operating the platen to make a printing impression on the blank, and means for removing the printed blank from the platen on the return stroke of the platen toward the stack of blanks.

5. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top blank off the stack, means for operating the platen to make a printing impression on the blank, and a swinging gripping device engageable with the printed blank and movable in the same direction as the platen but at a great speed for removing the printed blank therefrom.

6. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top blank off the stack, means for operating the platen to make a printing impression on the blank, a swinging gripping device engageable with the printed blank and movable in the same direction as the platen but at a great speed for removing the printed blank therefrom, and means for opening the gripping device to release said blank.

7. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable in an arc between the stack and the printing form, and having means for taking the top blank off the stack, radius rods carrying the platen and means for operating the radius rods.

8. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable in an arc between the stack and the printing form, and having means for taking the top blank off the stack, radius rods carrying the platen, means for operating the radius rods, and means for giving the platen an impression stroke when it is opposite the printing form.

9. In a printing machine, means for sup-

porting in a stack the blanks to be printed, a printing form, a platen movable in an arc between the stack and the printing form, and having means for taking the top blank
5 off the stack, radius rods carrying the platen, means for operating the radius rods, and an oscillatory member having means for engaging the platen and forcing it toward the printing form when the platen is opposite
10 the latter.

10. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and hav-
15 ing means for taking the top blank off the stack, means for operating the platen to make a printing impression on the blank, and means for periodically advancing the stack supporting means to elevate the stack.

20 11. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable between the stack and the printing form, and having means for taking the top blank off the stack,
25 means for operating the platen to make a printing impression on the blank, a nut on the stack supporting means, a non-traveling screw threaded through the nut, and means for operating the screw to periodically ad-
30 vance the stack supporting means to elevate the stack.

12. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable in an arc
35 between the stack and the printing form, and having means for taking the top blank off the stack, radius rods carrying the platen, means for operating the radius rods, a swinging gripping device engageable, with
40 the printed blank and movable in the same direction as the platen but at a greater speed for removing the printed blank therefrom, and an operative connection between the gripping device and the aforesaid radius
45 rods.

13. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen movable in an arc
50 between the stack and the printing form, and having means for taking the top blank off the stack, radius rods carrying the platen, means for operating the radius rods, a pivoted bar movable in the same direction as
55 but at greater speed than the platen, a gripper on the bar engageable with the printed blank for removing the same from the platen, and an operative connection between the bar and the aforesaid radius rods.

14. In a printing machine, means for sup-
60 porting in a stack the blanks to be printed, a printing form, a platen, a swinging support for the platen for moving the same in an arc between the stack and the printing form, the platen having means for taking the top

blank off the stack, and operating means for
65 the platen support.

15. In a printing machine, means for sup-
porting in a stack the blanks to be printed, a
printing form, a platen, a swinging support
for the platen for moving the same in arc
70 between the stack and the printing form, the platen having means for taking the top blank off the stack, and operating means for the platen support, and means for giving
75 the platen an impression stroke when it is opposite the printing form.

16. In a printing machine, means for sup-
porting in a stack the blanks to be printed, a
printing form, a platen, a swinging support
for the platen for moving the same in an
80 arc between the stack and the printing form, the platen having means for taking the top blank off the stack, operating means for the platen support, and an oscillatory member having means for engaging the platen and
85 forcing it toward the printing form when the platen is opposite the latter.

17. In a printing machine, means for sup-
porting in a stack the blanks to be printed,
a printing form, a platen, a swinging sup-
90 port for the platen for moving the same in an arc between the stack and the printing form, the platen having means for taking the top blank off the stack, operating means for the platen support, a swinging gripping
95 device engageable with the printed blank and movable in the same direction as the platen but at a greater speed for removing the printed blank therefrom, and operative connection between the gripping device and
100 the platen support.

18. In a printing machine, means for sup-
porting in a stack the blanks to be printed,
a printing form, a platen, a swinging sup-
105 port for the platen for moving the same in an arc between the stack and the printing form, the platen having means for taking the top blank off the stack, operating means for the platen support, a pivoted bar mov-
110 able in the same direction as but at a greater speed than the platen, a gripper on the bar engageable with the printed blank for removing the same from the platen, and an operative connection between the bar and
115 the platen support.

19. In a printing machine, means for sup-
porting in a stack the blanks to be printed,
a printed form, a platen, a swinging support
for the platen for moving the same in an arc
120 between the stack and the printing form, the platen having means for taking the top blank off the stack, operating means for the platen support, a swinging gripping device engageable with the printed blank and mov-
125 able in the same direction as the platen but at a greater speed for removing the printed blank therefrom, and operating means for the gripping device.

20. In a printing machine, means for supporting in a stack the blanks to be printed, a printing form, a platen, a swinging support for the platen for moving the same in an arc between the stack and the printing form, the platen having means for taking the top sheet off the stack, operating means for the platen support, a pivoted bar movable in the same direction as but at a greater speed than the platen, a gripper on the bar engageable with the printed blank for removing the same from the platen, and operating means for the bar. 10

In testimony whereof I affix my signature.

WILLIAM G. REYNOLDS.