

C. M. RUNYAN.
PRINTING MACHINE.

APPLICATION FILED SEPT. 26, 1912. RENEWED JUNE 13, 1919.

1,354,918.

Patented Oct. 5, 1920.

3 SHEETS—SHEET 1.

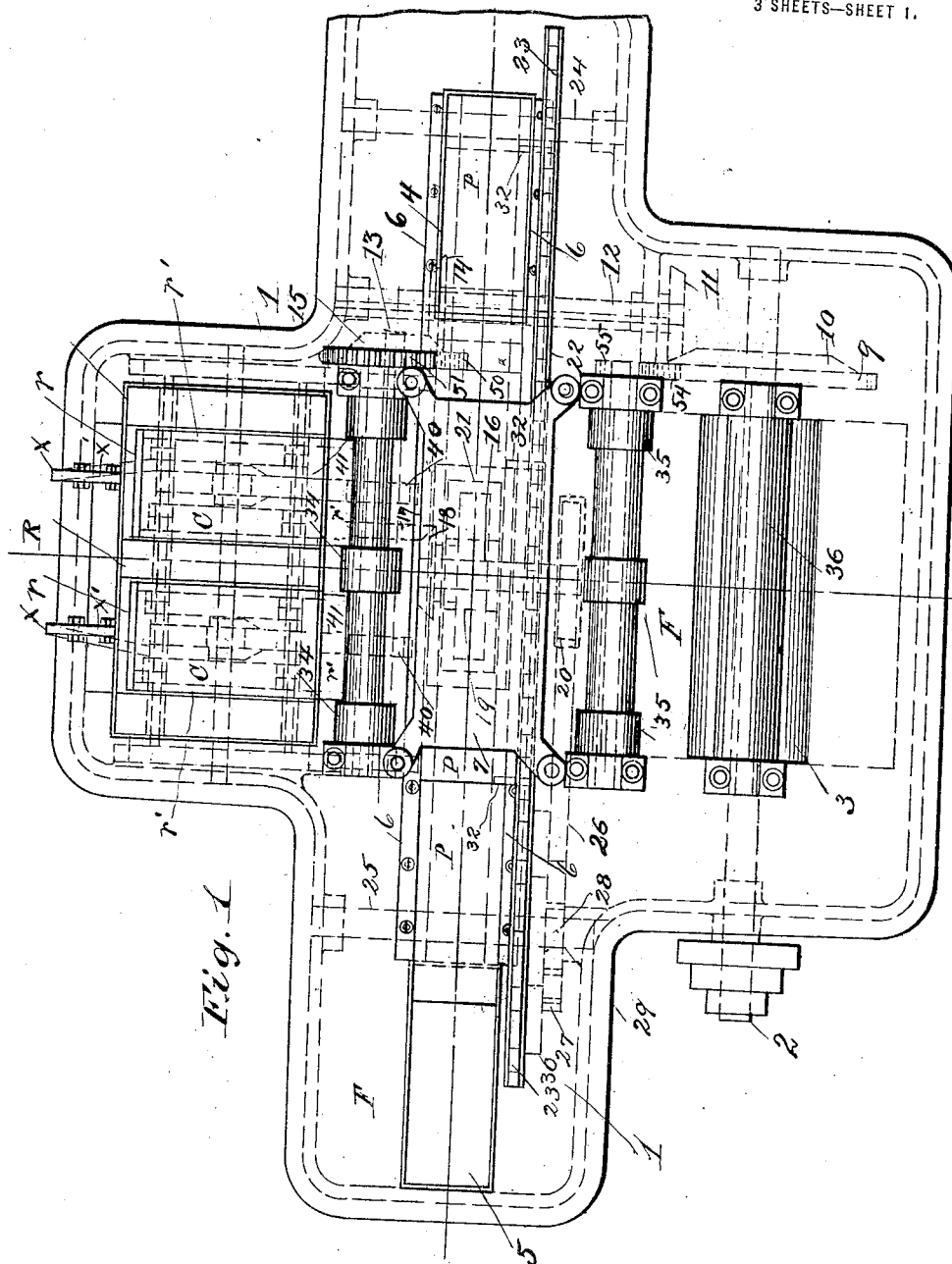


Fig. 1

Witnesses
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E. M. Luntz

Inventor
Clay M. Runyan
by W. M. Monroe, Attorney

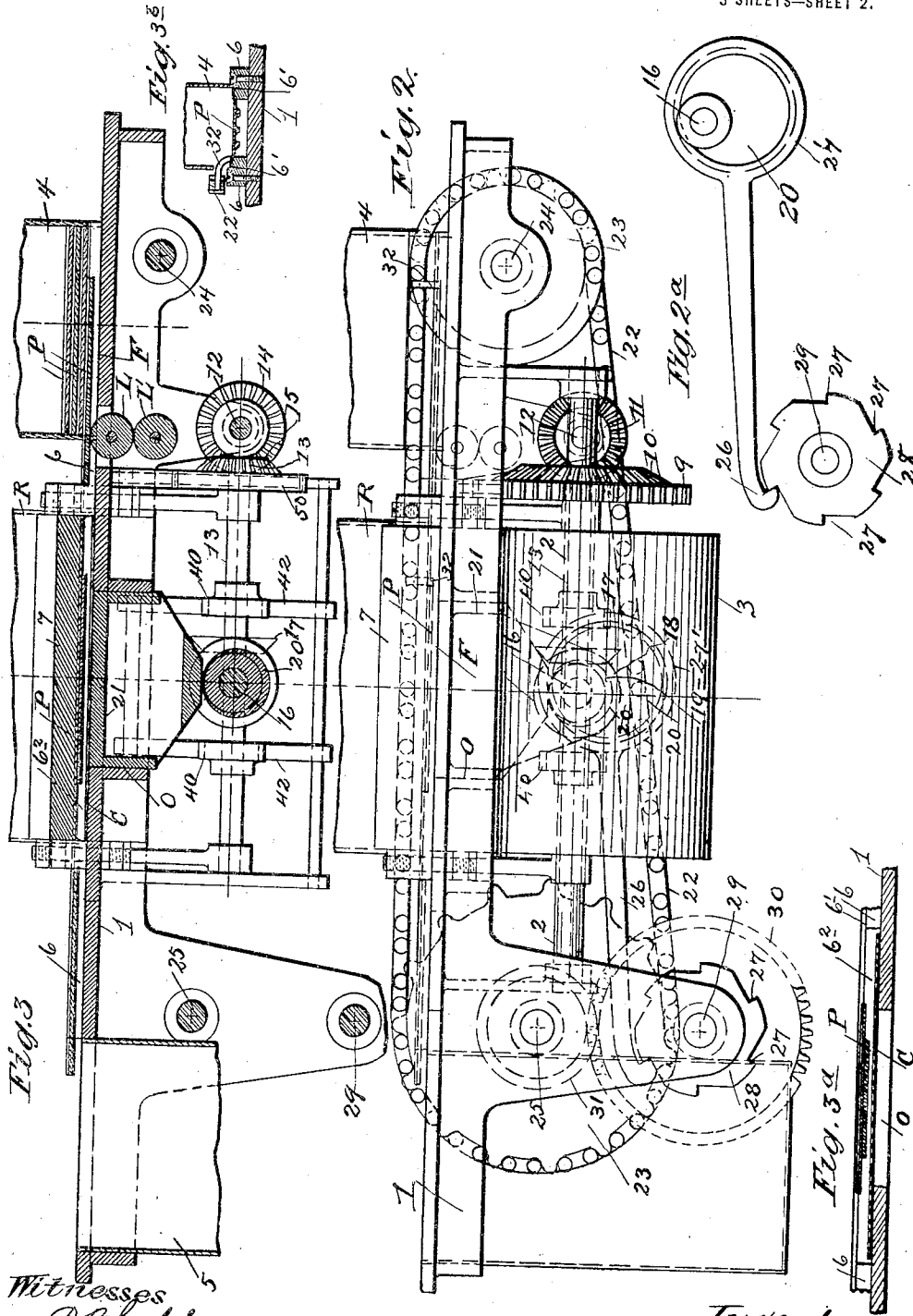
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Witnesses
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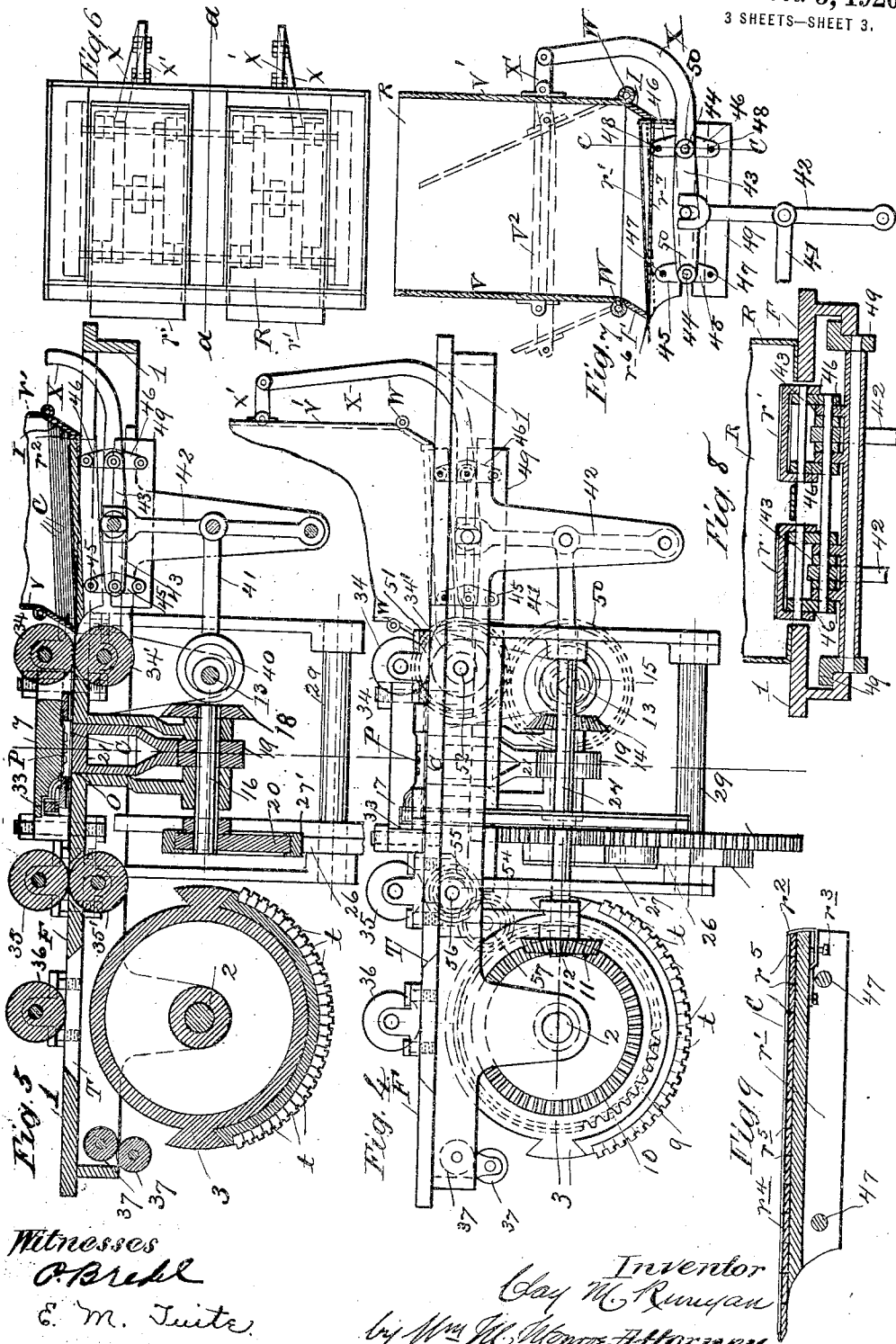
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3 SHEETS—SHEET 3.



Witnesses
O. Prehl
E. M. Tuite.

Inventor
C. M. Runyan
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UNITED STATES PATENT OFFICE.

CLAY M. RUNYAN, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ADVANCE MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MAINE.

PRINTING-MACHINE.

1,354,918.

Specification of Letters Patent.

Patented Oct. 5, 1920.

Application filed September 26, 1912, Serial No. 722,419. Renewed June 13, 1919. Serial No. 304,084.

To all whom it may concern:

Be it known that I, CLAY M. RUNYAN, a citizen of the United States, and resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Printing-Machines, of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a printing machine wherein two printing mechanisms are provided, whereby one of said mechanisms can print certain subject-matter upon each blank and the other of said mechanisms, if desired, can print different subject-matter upon each blank.

One object of the invention is to provide an improved machine of this character capable of operating rapidly and economically.

Another object of the invention is to provide a simple and efficient printing machine in which opposite sides of blank sheets of paper, cards, or other blanks may be printed.

The invention relates to that type of machine described and illustrated in Letters Patent No. 1,025,926, granted to me on May 7th, 1912, for a combined printing and addressing device. In the machine illustrated in this patent the main printing device operates upon the upper sides of the blanks, and the printing slugs operate upon the lower sides of said blanks. In the present machine however, this arrangement is reversed, but the position of the printing devices, either or both, relative to the support or supports for printing upon the blanks can be changed, to suit circumstances of use or special requirements without departing in any manner from the scope of the claims.

The invention is hereinafter further described, illustrated in the accompanying drawings and particularly pointed out in the claims.

In the accompanying drawings Figure 1 is a plan view of the machine; Fig. 2 is a side elevation of the device showing the feeding mechanism for the series of printing slugs, the receptacle therefor, the main printing roller and operating mechanism for the various devices; Fig. 2^a is a detail

view of pawl and ratchet for feeding the printing slugs; Fig. 3 is a longitudinal central section through the receptacle for printing slugs and shows the inking means for the printing slugs, the printing slugs in the printing position, the card to be printed, the plunger for pressing the card against the slug, and the abutment plate or pressure head against which the printing slug is pressed; Fig. 3^a is a longitudinal section of the bed plate through the opening at the printing position for the printing slugs; Fig. 3^b is a transverse section through the guides for the printing slugs and slug receptacle; Fig. 4 is an end view showing the card holding receptacle and the card printing device including the printing roller and pressure roller and also the card feeding devices; Fig. 5 is a transverse section of the machine on center line showing a card and a printing slug in the printing positions for printing from the slug and the printing roller; Fig. 6 is a plan view of the receptacle for cards; Fig. 7 is a longitudinal section thereof showing the card elevating and feeding mechanism and also showing the movable upper part of the receptacle; Fig. 8 is a transverse section thereof on the line *c-c* of Fig. 7; Fig. 9 is an enlarged longitudinal section of the movable card feeding supports.

In these drawings the machine is exemplified in all essential features but modifications in relative position and arrangement of the various parts can be made without departing from the scope of the claims.

In the aforesaid drawings 1 is a bed plate of any suitable construction. The bed plate is provided with a platform F upon or over which blanks such as cards C are moved to the different printing positions. 2 is a main longitudinal shaft from which the various movements of the printing and feeding devices for blanks and printing slugs are obtained. The shaft 2 is mounted at its opposite ends in suitable bearings provided in arms which preferably depend from the bed plate 1. Upon this main shaft 2 is mounted the printing drum 3. A receptacle 4 for printing slugs is mounted at one end of the platform and a second receptacle 5 at the other end of the platform receives the slugs as fast as the impression has been taken from them. One of these receptacles

is shown above the platform and one below. The printing slugs are fed longitudinally of the machine upon suitable guides 6, 6 from one receptacle to the other by mechanism hereinafter described.

The printing position for the slugs is preferably arranged in the center of the machine underneath a fixed pressure head or abutment 7. R is a receptacle for cards or other blanks to be printed and they are fed by means of mechanism hereinafter fully described, preferably first to the printing position for the slugs in operative relationship to the fixed pressure head 7, and then to the printing position of the printing roller 3.

The operation of the feeding and printing mechanism for the printing slugs may be first described as follows:

The main driving shaft 2 is provided with a spur gear 9 and a bevel gear 10. The bevel gear 10 drives a bevel gear 11 on a transverse shaft 12 which in turn drives a short longitudinal shaft 13 by means of the bevel gears 14 and 15 on the respective shafts. A short central transverse shaft 16 is driven from the shaft 13 by means of the bevel gears 17 and 18 on the respective shafts and upon the shaft 16 are mounted two eccentrics 19 and 20. The eccentric 20 is employed to operate the feeding device for the printing slugs, while the eccentric 19 is employed to operate a plunger 21. The plunger 21 serves to press a card C against one of the printing slugs P, which is held meantime immovable by the pressure against the head 7—see Fig. 5.

The slugs P may be intermittently fed or moved to the printing position by means of a chain or band 22 mounted upon suitable supporting disks or sprocket wheels 23, 23, arranged near opposite ends of the machine. The wheels 23 are mounted upon transverse shafts 24, 25, which are supported in suitable bearings provided on the frame 1. An intermittent progressive movement is imparted to one of these shafts as 25 by means of the eccentric 20 upon the central shaft 16 and a pawl 26 connected to a sleeve 27' upon said eccentric, as shown in Fig. 2^a.

The pawl 26 successively engages the teeth 27 of a ratchet wheel 28 upon a transverse shaft 29. The shaft 29 is preferably arranged parallel with the shaft 25 and may be operatively connected therewith by means of spur gears 30, 31. The gears 30, 31, are proportioned to give the necessary amount of movement to the driving sprocket wheel to advance each slug to its printing position opposite the abutment 7 with each reciprocation of the pawl 26.

The slugs travel between the guide rails 6 and are engaged by the members or pins 32 extending from certain links of the feed

chain 22 and moved thereby along the guides 6. The guides 6 are provided with shoulders 6', between which the slugs move. The guides 6 serve to support each slug above and spaced from the bed plate sufficient to permit the admission of a card or blank beneath the printing slug. Adjacent the printing position for the slugs, the guide rails 6 are cut away on their lower edges 6² to permit each card or blank to pass transversely through them below the slug, as shown in Figs. 3 and 3^a.

The plunger 21 passes through an opening O formed in the bed plate to cause impressions from each slug upon a blank. Prior to the operation of the plunger 21, upwardly through the opening O, a card C is fed through the openings 6² to a position over or above the opening O. When so positioned the plunger 21 moves upwardly and presses the adjacent blank against the printing slug which has been moved into position of registry with the blank. The chain 22 passes through an opening 33 in the fixed pressure head 7, as shown in Fig. 5.

Any suitable means may be provided for inking the slugs P. As one example of such means, I have chosen to illustrate a pair of inking rollers L, L', preferably arranged adjacent to the delivery end of the receptacle 4, at one side of the machine. The cards or blanks C are stacked in the receptacle R in superposed order. The cards C are fed from the receptacle, one by one, through a slot 34, 34', indicate a pair of feed rollers which engage the cards as they are fed from the receptacle R and move them across the path of movement of the slugs P toward a second pair of feed rollers 35, 35', which in turn move the cards to a position above a second slot or opening T formed in the bed plate. One feed roller, in each pair of feed rollers, may be loosely mounted on a suitable shaft, but the opposite feed roller of each pair is rotated in any well known manner at a speed to insure the feeding of the cards C to the printing positions in correlation to the movements of the slugs and drum.

36 indicates an idler for holding each card in contact with the type *t* upon the printing roller or drum 3 to cause printing on the card as it passes the latter. The type *t* may be secured to the drum in any preferred manner and supplied, preferably once in each revolution of the drum, with ink by suitable mechanism such as illustrated at 37, 37.

r indicates openings, preferably two, formed in the bottom of the receptacle R. *r'* indicates a card feeding member movably mounted in and projecting through each of the openings *r*. Each feeding member *r'* is preferably provided with slightly raised metallic rear edge *r*², which may be adjusted by

means of screws r^3 to conform to the thickness of the blanks C. Upon each feeding member is preferably placed a thin sheet of rubber r^4 , through which project needle points r^5 to provide positive means of engagement with each blank as it is fed forwardly from the receptacle R.

The card feeding members r' are preferably given a forward and backward reciprocating movement and also a vertical reciprocating movement and these movements are so timed relatively to each other that the rear ends of the cards are raised before the forward movement commences, thereby eliminating any tendency of the cards to adhere together during the forward movement thereof conjointly with the movement of the feeding members r' . As a result of this operation, the lowermost card is caused to readily disengage itself from the cards in the stack for feeding by the feeding members r' to the feed rollers 34, 34'. The feeding members then recede to a position below the bottom r'' of the receptacle R and thereafter move rearwardly to a position to engage the next card in the stack.

When a card is fed from the receptacle it is engaged by the first pair of feeding rolls 34, 34' and is thereby propelled underneath the guides 6, 6 through the openings 6² therein to the printing position for the printing slugs. The card remains in this position until a second card is fed from the receptacle, which engages the rear end of the forward card and pushes it between the second set of feeding rollers 35, 35', which in turn propel the card to the printing position for the printing drum 3. The drum 3 impresses the main subject matter successively on the cards. The mechanism for obtaining these results may be described as follows:

40 indicates a pair of eccentrics mounted in any suitable manner on the shaft 13. 41 indicates a pair of thrust members each connected at one end to and operated by the adjacent eccentric 40. At its opposite end each thrust member 41 is connected to a lever 42, which is pivotally mounted at its lower end in any preferred manner upon a depending member of the bed plate 1. 43 indicates devices which are pivotally connected to the upper ends of the levers 42 and reciprocated thereby. 45, 46, indicate pairs of toggle members. The inner ends of the reciprocable devices 43, while their outer ends are connected to the feeding members r' and sliding members 49. The sliding members are preferably mounted to move on suitable guides provided on the bed plate 1, as shown in Fig. 8. The thrust members 41 are actuated by the eccentrics to oscillate the levers 42, which in turn reciprocate the devices 43. As the devices 43 move forward, the toggle members will be caused to spread or

open to the position shown in Fig. 7. The reaction of the toggle members against the sliding members 49 during such movement causes the feeding members r' to rise. After the toggle members have completely opened, they serve to transmit the further movement of the devices 43 to the feeding members r' to move the latter forwardly to feed the adjacent card C in the stack. When the direction of movement of the devices 43 is reversed, the rearward movement thereof operates to close the toggle members 45, 46, which in turn move the feeding members r' downwardly relative to the bottom r'' and to thereafter move the feeding members r' rearwardly to their initial position.

The links 46 may be made longer than the links 45. When so constructed a greater elevation is imparted to the rear extremities of the feeding supports or members when the devices 43 move forwardly; when the devices 43 move rearwardly the feeding supports are lowered below the level of the bottom plate of the receptacle so as to clear the cards entirely. The rear wall of the receptacle is preferably inclined at I so that the rear end of the bottom card will be spaced from the rear end of the card above and thus give access to the engaging edges r^2 of the feeding supports and prevent them from engaging more than one card.

Additional mechanism is preferably provided to agitate the cards and to relieve friction upon the bottom card so that they will feed more easily. This is accomplished by hinging the upper portions of the front and rear walls of the receptacle R at W W and providing means for throwing or swinging forward these walls at their upper ends as each card is being fed from the receptacle as shown in Figs. 5 and 7.

Of this mechanism X, X, indicate arms projecting rearwardly and upwardly from the links 43 and connected at their upper ends, by means of links X', X', with the rear wall V', whereby the latter will be swung forwardly, on the adjacent pivot W, as shown in dotted lines in Fig. 7, each time the devices 43 reciprocate. The front and rear walls V, V', are connected together by means of links V² so as to move in unison.

The operation of the walls V, V', about their pivots W, will shift the cards in the stack above the plane of the pivots W forwardly, so that their forward edges will be supported by the front wall V. The effect of this operation is to relieve the lowermost card in the stack of the weight of the cards in the upper part thereof, particularly along the front edge of the lowermost card as it is being fed forwardly. As shown in Fig. 6, the front and rear walls V, V', extend from side wall to side wall of the receptacle R and move forwardly and rearwardly therebetween. As the side walls are maintained

stationary, the cards or blanks C are maintained in position to be fed forward for printing.

The feeding rolls 34, 34' are operated by means of spur gears 50 and 51 upon shafts 13 and 52 and the feeding rolls 35, 35' are operated by means of gears 9, 54 and 55 upon shafts 56, 57 and main shaft 2, respectively.

The second pair of feeding rolls are preferably operated at a higher rate of speed than the first pair of feeding rolls to accommodate the peripheral rate of speed of the printing roll.

To those skilled in the art to which my invention relates, many modifications of and widely differing embodiments and applications of my invention will suggest themselves, without departing from the spirit and scope thereof. My disclosures and descriptions herein are purely illustrative and are not intended to be in any sense limiting.

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

1. In a printing machine, the combination of a support over which blanks are fed to different printing positions, a printing device adapted to engage and print upon one side of each blank at one printing position, an intermittently acting mechanism for feeding a series of printing slugs to the other printing position, said slugs being fed to the last-mentioned printing position for printing the blanks upon that side opposite to the side printed by said printing device, mechanism for successively feeding the blanks to said printing positions for the slugs and for said printing device, and a reciprocating device for making an impression from each slug upon a blank while the slug is at rest at the slug printing position.

2. In a printing machine, the combination of a support over which blanks are fed to different printing positions, a rotatable device adapted to engage and print upon one side of each blank at one printing position, an intermittently acting mechanism for feeding slugs to the other printing position for printing the other side of the blanks, an intermittently acting mechanism for feeding the blanks to the positions for printing by said slugs and by said rotatable device, and a device operable while a blank and a slug are at rest at the printing position for said slug for causing engagement therebetween.

3. In a printing machine, the combination of a support over which blanks are fed to different printing positions, a rotatable device adapted to engage and print upon one side of each blank at one printing position, an intermittently acting mechanism for feeding slugs to the other printing position for printing the other side of the blanks,

an intermittently acting mechanism for feeding the blanks to the positions for printing by said slugs and by said rotatable device, and a reciprocating device for causing engagement between each slug and the blank which is coöperatively fed to the position for printing thereby.

4. In a printing machine, the combination of a support over which blanks are fed to different printing positions, coöperating mechanisms for feeding slugs and blanks to one of the printing positions, said mechanisms permitting a period of rest for each slug and each blank at the printing position, means operating during each period of rest for causing engagement between each slug and the adjacent blank for printing on one side of the blank, and means arranged at the other printing position for printing on the opposite side of each blank, said blank feeding mechanism including means for feeding the blanks to the last mentioned printing position.

5. In a printing machine, a platform upon which blanks are moved to different printing positions, mechanism for making impressions from a series of printing slugs in one printing position upon corresponding sides of the blanks, means for guiding the printing slugs to their printing position, a printing device arranged in the other printing position for printing upon the opposite sides of the blanks, intermittently acting means for moving the blanks to the printing positions, and separate intermittently acting means for moving the printing slugs to their printing position and permitting periods of rest therefor during the printing operations.

6. In a printing machine, the combination of a support over which blanks are fed to different printing positions, a device adapted to engage and print upon one side of each blank at one printing position, an intermittently acting mechanism for feeding slugs to the other printing position for printing upon the other side of the blanks, an intermittently acting mechanism for feeding the blanks to the positions for printing by said slugs and by said device, a device operable while a blank and a printing slug are at rest and in registry with each other in the printing position for causing engagement therebetween, and means for supporting each slug at the printing position.

7. In a printing machine, the combination of a support formed with two openings over which blanks successively move to permit printing impressions thereon, a printing device arranged to operate through one of said openings, means for intermittently feeding a series of separate printing devices to a position of registry with the other opening, a reciprocating device for

impressing each blank against a separate printing device as a blank and separate printing device register with the adjacent opening, and means for intermittently feeding the blanks to one of the openings and then to the other opening.

8. In a printing and addressing machine for printing blanks or cards, a platform having spaced openings over which the blanks move, a receptacle for holding the blanks, means for successively feeding the blanks to positions over said openings, a receptacle for holding a series of printing slugs, mechanism, cooperating with said blank feeding means, for successively feeding the slugs from said slug receptacle to one of said openings, means for supporting each slug in position of registry with the last-mentioned opening, means for pressing the blanks against the slugs to cause printing therefrom, said pressing means being mounted to operate through the last-mentioned opening, and a device operable through the other opening in the platform for printing on the blanks.

9. In a printing machine, a platform formed with two openings, a support for a series of printing slugs, a receptacle, spaced from the printing openings, for holding a series of blanks, mechanism having alternate periods of movement and rest for successively feeding the blanks from said receptacle to positions of registry with said printing openings, means for effecting printing from the printing slugs on one side of the blanks while in registry with one of said openings, mechanism having alternate periods of movement and rest for feeding the slugs from said support to the printing position to permit printing therefrom by said printing means, and a device operable through the other opening in said platform for printing on the other side of the blanks.

10. In a printing machine, the combination of a platform formed with two openings, means for successively feeding blanks to one opening and then to the other opening, means for successively feeding slugs across the path of movement of the blanks into registry therewith at one of said printing openings, means for guiding the slugs while being moved, means for causing engagement between each slug and the adjacent blank while in registry, and means operating through the other opening for printing upon each blank when it is fed thereto.

11. In a machine of the class described, the combination of a platform formed with two spaced printing openings, means for feeding blanks to be printed upon to said openings, means for successively feeding slugs into a position of registry with one of said printing openings and across the path of movement of the blanks, guides for the

slugs, said guides being formed with openings through which the blanks move, means operable through the last-mentioned printing opening to press the blanks and slugs together for printing upon corresponding sides of the blanks, and a printing device operable through the other printing opening to print subject-matter upon the other side of each blank.

12. In a printing machine, a platform, a blank holding receptacle, a receptacle for printing slugs, means for moving the blanks across said platform from said blank holding receptacle, means for moving printing slugs across said platform, the slugs and blanks having a common registering position for printing, a pressure receiving head mounted on said platform at said registering position, and a reciprocating member adapted to press the blanks against the printing slugs and pressure receiving head when the blanks and slugs arrive at the registering position, a printing device provided with type adapted to print upon the blanks, operating mechanism for the said printing device, feeding means and reciprocating member, and means for inking the type on said printing device and on said printing slugs.

13. In a printing machine, the combination of a support having printing openings, a printing couple mounted to print upon a blank when positioned at one of said openings, a reciprocating member operable through the other opening, a stationary member arranged to oppose movement of said reciprocating member in one direction, means for successively feeding printing slugs to a position between said reciprocating member and said stationary member, means for feeding blanks to each of said printing openings, and means for applying ink to the printing slugs and the printing element of said printing couple.

14. In a printing machine, the combination of a support formed with printing openings, a printing couple mounted to print upon a blank when positioned at one of said openings, a reciprocating member operable through the other of said openings, a shaft, a cam mounted on said shaft for operating said reciprocating member, a device arranged to oppose movement of said reciprocating member in one direction, intermittently acting means for successively feeding blanks to each of said openings, and mechanism for successively feeding printing slugs to a position between said reciprocating member and said device.

15. In a printing machine, the combination of a printing mechanism having a rotatable printing element, a separate printing mechanism having printing elements which are successively fed to printing position, means for moving the printing ele-

- ments of the last mentioned printing mechanism to their printing position, a reciprocating member arranged to cause impressions from each of the printing elements of said last mentioned printing mechanism, means for operating the printing element of said first mentioned printing mechanism, and means for feeding blanks to said printing mechanisms.
16. In a printing machine, the combination of a printing mechanism having a rotatable printing element, a separate printing mechanism having printing elements which are successively fed to printing position, intermittently acting means for moving the printing elements of the last mentioned printing mechanism to their printing position, a reciprocating member arranged to cause impressions from each of the printing elements of said last mentioned printing mechanism, means for operating the printing element of said first mentioned printing mechanism, and intermittently acting means for feeding blanks to said printing mechanisms.
17. In a printing machine, the combination of a printing mechanism having a rotatable printing element, arranged to print upon one side of each blank, a separate printing mechanism having a series of elements each arranged to print upon the opposite side of a blank, intermittently acting means for successively feeding the printing elements of the last mentioned printing mechanism to printing position, a reciprocating element cooperating with said intermittently acting feeding means for causing impressions upon the blanks from said printing elements, and means for intermittently feeding the blanks to one printing mechanism and then to the other printing mechanism.
18. In a printing machine, the combination of a support formed with two openings, means for successively feeding blanks to one opening and then to the other opening, a rotary device for printing upon one side of the blanks through one of said openings, means for successively feeding in a direction at right angles to the direction of movement of the blanks over said support a series of slugs for printing upon the opposite sides of the blanks through the other opening, said blank feeding means and said slug feeding means operating intermittently and cooperating with each other to permit periods of rest of the blanks and said slugs simultaneously in operative relation to the last mentioned opening, and means for causing an impression from each slug upon the adjacent blank while they are at rest.
19. In a printing machine, the combination of a support formed with two openings, means for successively feeding blanks to one opening and then to the other opening, a rotary device for printing upon one side of the blanks through one of said openings, said rotary device being mounted upon an axis extending transversely to the direction of movement of the blanks, means for successively feeding in a direction at right angles to the direction of movement of the blanks over said support a series of slugs for printing upon the opposite sides of the blanks through the other opening, said blank feeding means and said slug feeding means operating intermittently and cooperating with each other to permit periods of rest of the blanks and said slugs simultaneously in operative relation to the last mentioned opening, and means for causing an impression from each slug upon the adjacent blank while they are at rest.
20. In a printing machine, the combination of a support formed with two printing openings over which a series of blanks are successively fed, a rotary printing device arranged below said support in operative relation to one of said openings and arranged to print upon one side of each blank when the latter is fed into registry position with said opening, means for successively feeding a series of inverted slugs into operative relation with the other printing opening, and means for causing impressions from the slugs as the blanks are successively brought into registering position with the adjacent opening, said means including a reciprocating plunger arranged below said support and operating through the last mentioned printing opening.
21. In a combined printing and addressing machine, a platform formed with printing openings, a receptacle adapted to hold a series of printing slugs, a receptacle adapted to receive blanks and spaced from the printing openings, mechanism having alternate periods of movement and rest for feeding the blanks from said blank holding receptacle to register in succession with said printing openings, means for printing one side of the blanks from the printing slugs in one printing position at one opening, separate means operating in the other opening for printing the side of each blank opposite to that printed upon by the slugs, and mechanism having alternate periods of movement and rest for feeding the slugs from said slug receptacle to position for printing from said slug printing means.
22. In a printing machine, the combination of a main printing couple, a separate printing couple adapted to permit the insertion of a printing slug therebetween, one element of said separate printing couple comprising a reciprocating device, means for successively feeding blanks to one printing couple and then to the other printing couple, said means being intermittently controlled, whereby each blank remains adjacent

cent to each printing couple a predetermined length of time, and means for operating said reciprocating device in correlation to the movement of said blank feeding means.

23. In a printing machine, the combination of a main printing couple, a separate printing couple arranged to permit the insertion of a printing slug therebetween, one element of said separate printing couple comprising a reciprocating device, means for successively feeding blanks to one printing couple and then to the other printing couple, said means being intermittently controlled, whereby each blank remains in operative relation to each printing couple a predetermined length of time, means for positioning a printing slug between the elements of said separate printing couple in correlation with the feeding of each blank thereto, and means for operating said reciprocating device in correlation to the movement of said blank feeding means.

24. In a printing machine, the combination of a platform having spaced openings over which blanks to be printed move, a receptacle for holding the blanks, means for successively feeding the blanks to positions over said openings, a receptacle for holding a series of printing slugs, mechanism coöperating with said blank feeding means for successively feeding the slugs from said slug holding receptacle to one of said openings, means for supporting each slug in position of registry with the last mentioned opening, means operable through the last mentioned opening for causing relative movement between each blank and a slug to cause printing from the latter upon the blank, and a device operable through the other opening in said platform for printing upon each blank.

25. In a printing machine, the combination of a main printing couple adapted to

print on one side of a blank, a separate printing couple adapted to print on the other side of a blank and arranged to permit the insertion of a printing slug therebetween, one element of said separate printing couple comprising a reciprocating device, means for successively feeding blanks to one printing couple and then to the other printing couple, said means being intermittently controlled, whereby each blank remains in operative relation to each printing couple a predetermined length of time, and means for operating said reciprocating device in correlation to the movement of said blank feeding means.

26. In a printing machine, the combination of a main printing couple adapted to print on one side of a blank, a separate printing couple adapted to print on the other side of a blank and arranged to permit the insertion of a printing slug therebetween, one element of said separate printing couple comprising a reciprocating device, means for successively feeding blanks to one printing couple and then to the other printing couple, said means being intermittently controlled, whereby each blank remains in operative relation to each printing couple a predetermined length of time, means for delivering a printing slug to a position between the elements of the separating printing couple in correlation with the feeding of each blank thereto, and means for operating said reciprocating device in correlation to the movement of said blank feeding means and slug delivery means.

In testimony whereof, I hereunto set my hand this 23rd day of September 1912.

CLAY M. RUNYAN.

In presence of—

WM. M. MONROE,
RALPH BLUE.