

Jan. 28, 1930.

R. F. JAHN

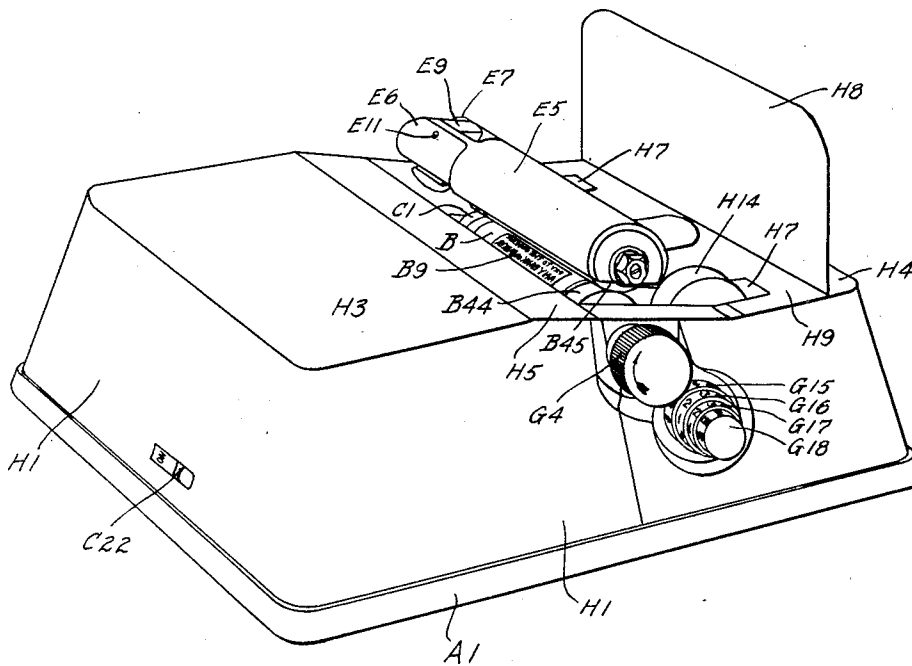
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PRINTING AND STAMPING MACHINE

Filed April 13, 1927

7 Sheets-Sheet 1

Fig 1.



INVENTOR
Raymond A. Jahn
BY
Roger Kennedy Campbell
ATTORNEYS

Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

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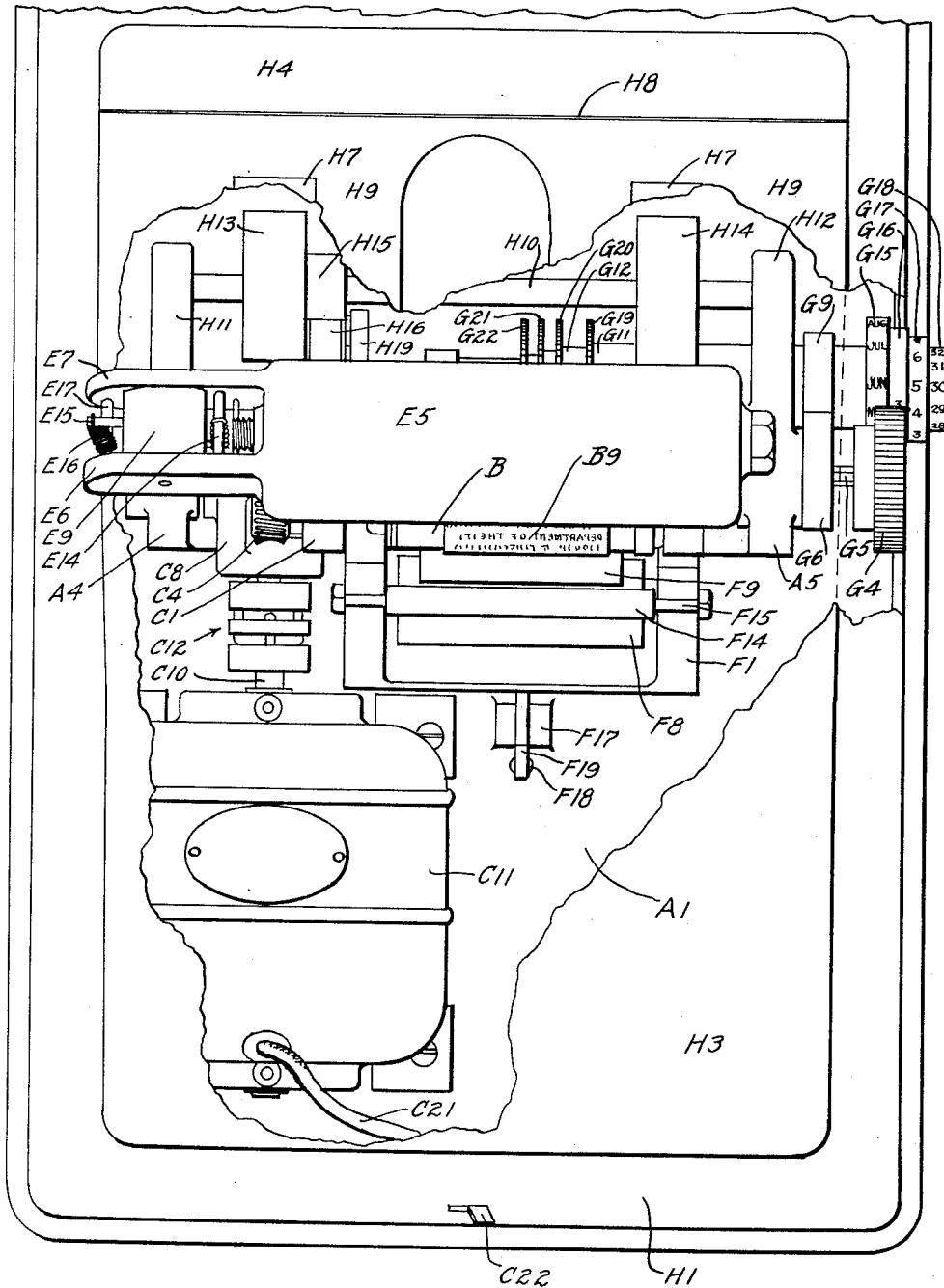


Fig. 2.

INVENTOR
Raymond F. Jahn
BY
Roger Kennedy Campbell
ATTORNEY

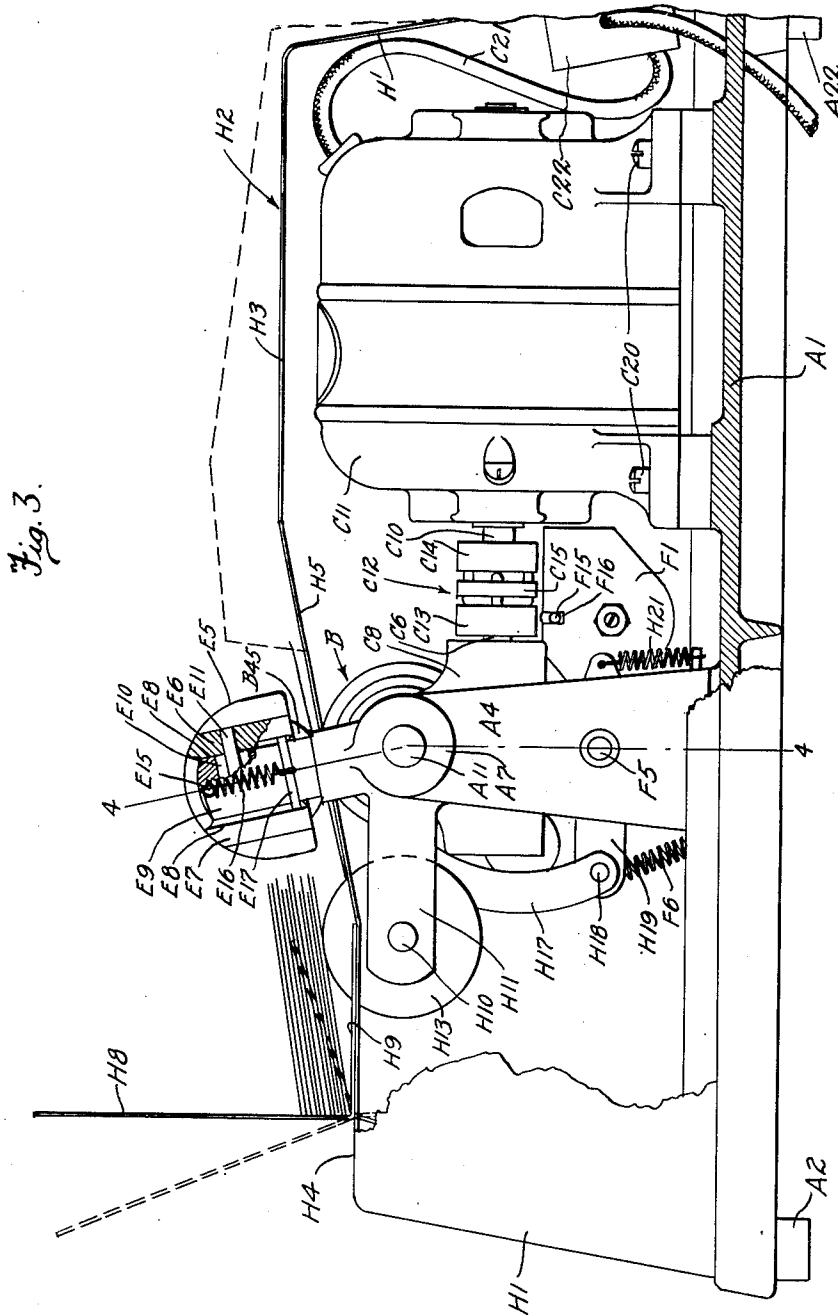
Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

Filed April 13, 1927 7 Sheets-Sheet 3



INVENTOR
Raymond P. Jahn
BY
Rogers, Kennedy & Campbell
ATTORNEYS

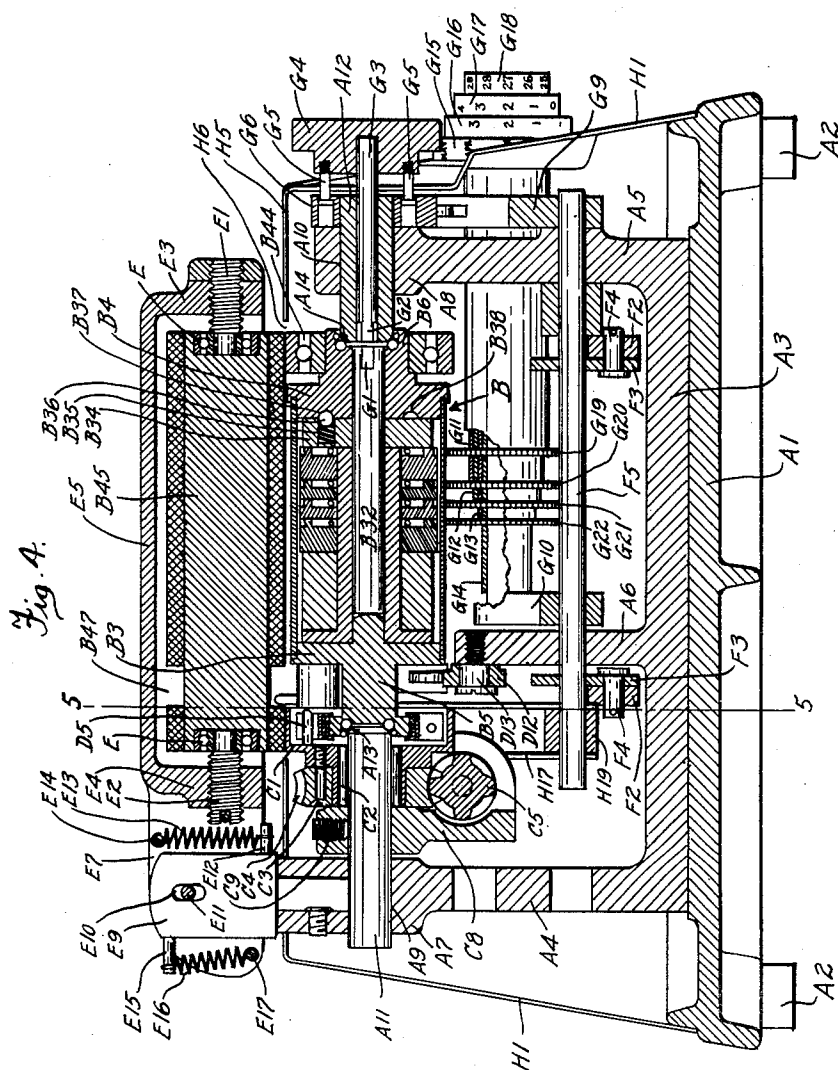
Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

Filed April 13, 1927 7 Sheets-Sheet 4



INVENTOR
Raymond F. Jahn
BY
Rogers, Kennedy & Campbell
ATTORNEYS

Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

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7 Sheets-Sheet 5

Fig. 5.

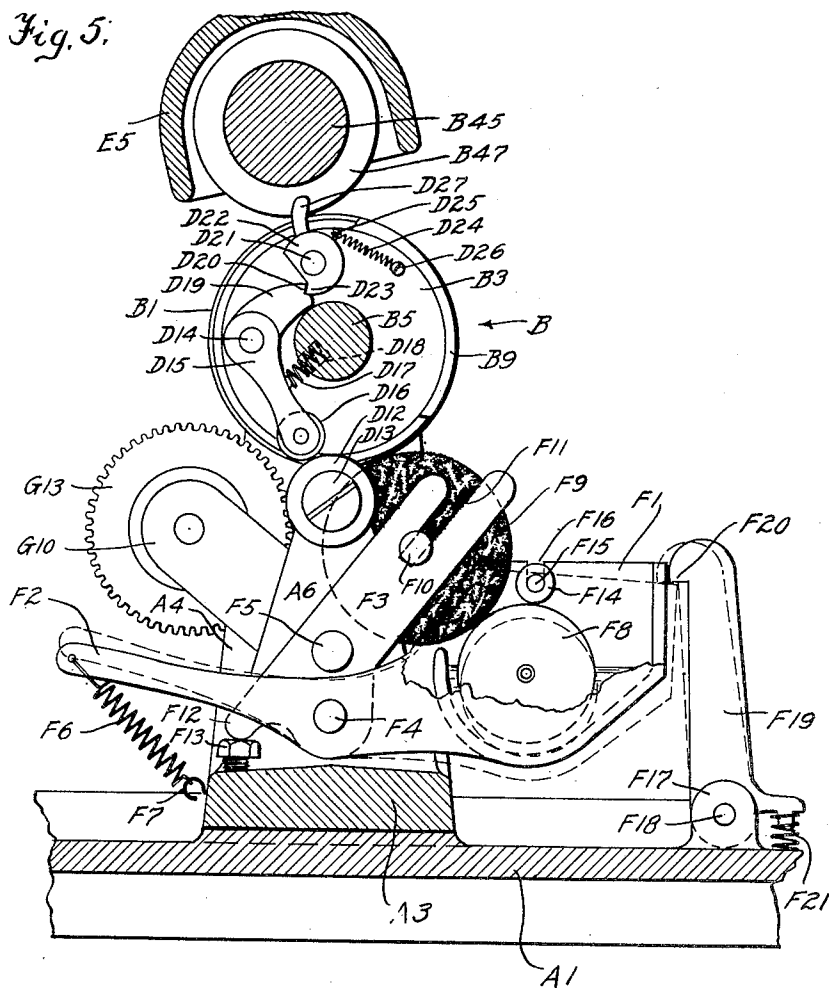
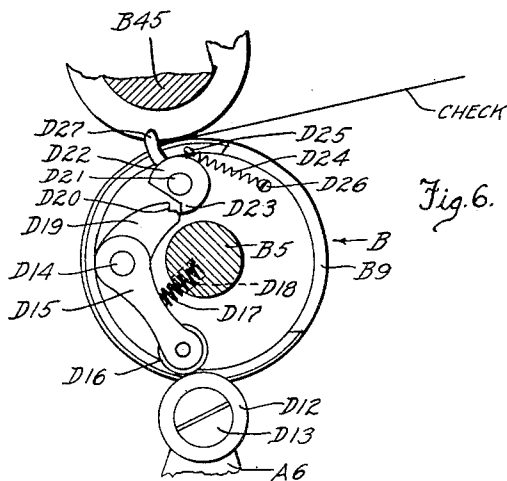


Fig. 6.

INVENTOR
Raymond F. Jahn
 BY
Rogers, Kennedy & Campbell
 ATTORNEYS

Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

Filed April 13, 1927 7 Sheets-Sheet 6

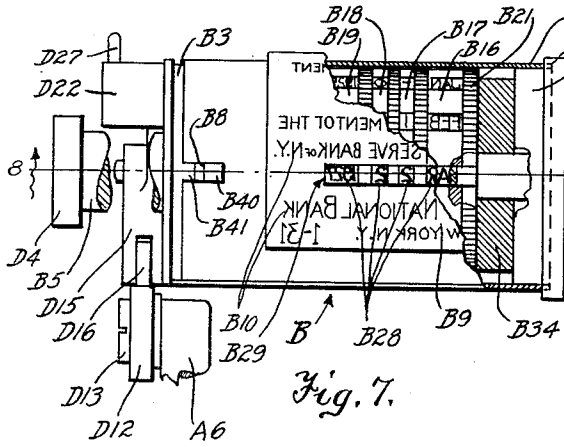


Fig. 7.

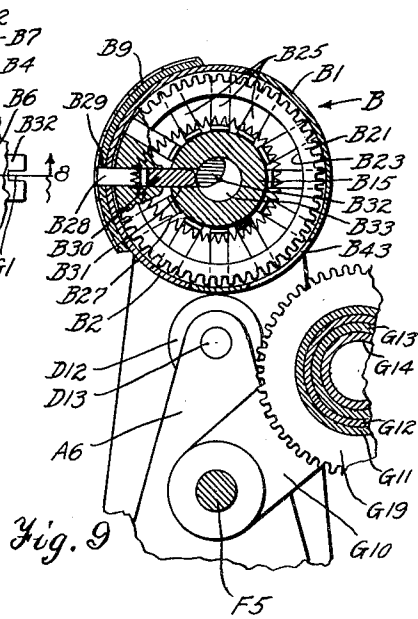


Fig. 9.

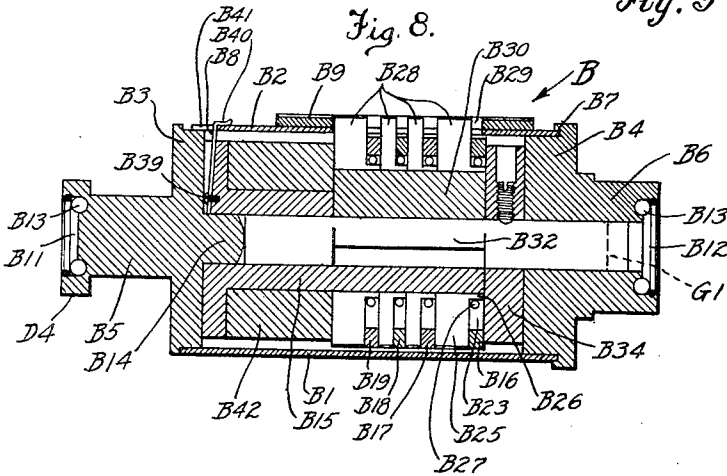


Fig. 10.

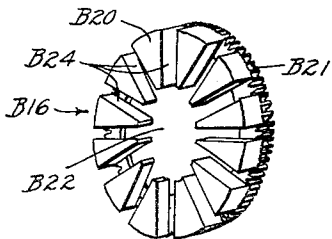


Fig. 11.



INVENTOR
Raymond F. Jahn
BY
Roger Kennedy Campbell
ATTORNEYS

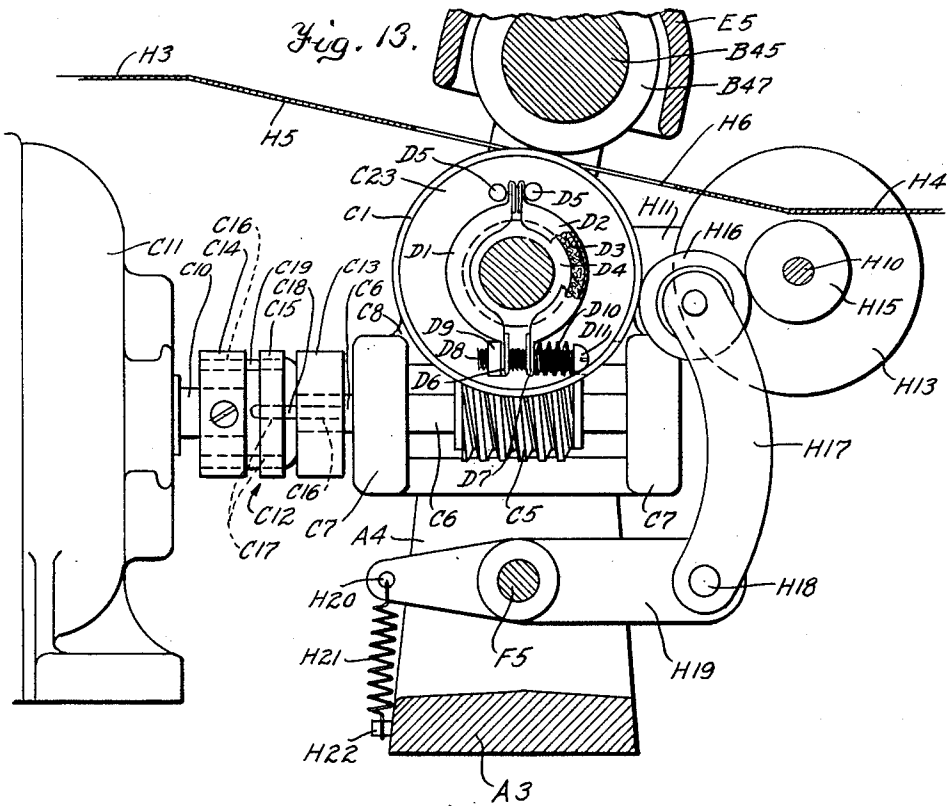
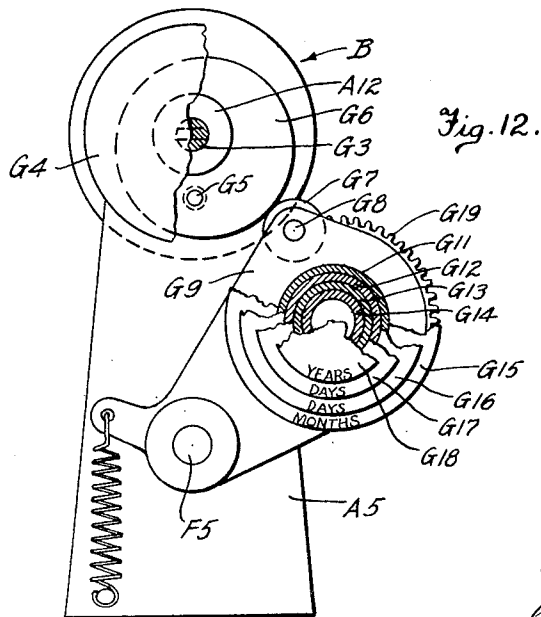
Jan. 28, 1930.

R. F. JAHN

1,744,770

PRINTING AND STAMPING MACHINE

Filed April 13, 1927 7 Sheets-Sheet 7



INVENTOR
Raymond F. Jahn
BY
Roger Kennedy Humphreys
ATTORNEYS

UNITED STATES PATENT OFFICE

RAYMOND F. JAHN, OF BROOKLYN, NEW YORK

PRINTING AND STAMPING MACHINE

Application filed April 13, 1927. Serial No. 183,318.

This invention relates to improvements in printing and stamping machines, and has particular reference to such devices which are adapted for endorsing, cancelling, or otherwise printing upon bank checks, tickets, letters, and similar articles.

One of the general objects of the invention is to provide a machine of the above mentioned character which is power driven and capable of expeditiously operating upon a quantity of successively fed paper sheets or like articles, and in which certain of the type on the printing unit can be easily changed as and when desired. More specifically, the printing couple includes a rotatable printing roller which is provided on its periphery with a fixed printing die, and having a slot adjacent to or through said fixed die, through which interchangeable type elements may be selectively brought to a printing position in association with the fixed die. An important feature of the invention is the provision of interchangeable type elements within the printing roller, said type elements being independently movable radially in a type carrier when alined with the opening in the roller, and the selective alinement being accomplished by actuating or setting mechanism outside of the roller. Preferably there are a plurality of sets of type elements, one set being for months, two sets of numerals for days, and one set for years. Each set of type elements has an independent type carrier including a gear, and the roller is suitably slotted to expose portions of said gears whereby to engage them with the setting mechanism. Another feature of the invention is the provision of means for locking the selected type elements in the printing position, said means including a cam which extends longitudinally in the roller, and which operates against type ejector bars associated with the type carriers. A feature of this construction is that the selected and projected type elements are very firmly anchored in place for printing. Furthermore, the slot in the fixed die plate is not restricted as to position with reference to the edges of the plate, but may be varied as desired in different plates, and the interchangeable type carriers,

together with their supporting sleeve and ejecting means may be correspondingly rotated to other normal positions within the printing roller.

The actuating or setting mechanism is in the form of a plurality of independently rotatable concentric tubes, each of which has at one of its ends an indicating dial, and at its other end a gear which is adapted to mesh with one of the type carrier gears. Another feature of the invention is the provision of such a setting mechanism which is movable toward and away from the printing roller, the tubes being preferably supported in the free ends of swinging arms, and the movement of said arms being controlled by a cam which is mounted for simultaneous movement with the type projecting and locking cam.

The invention further contemplates the provision of a novel inking mechanism for a printing machine of the above mentioned character, in which an ink well is mounted on a pair of swinging arms and provided with an ink roller and a wiping roller. The arms which support the ink well are eccentrically pivoted to another pair of arms, which are pivoted to the main frame or base of the machine, and said last mentioned arms carry a distributing roller which mutually engages the ink roller and the printing roller. Thus the ink roller and the distributing roller are normally held yieldingly against the printing roller, and a suitable latch is provided for rendering the inking mechanism inactive when desired.

Another feature of the invention is the provision of novel means for equalizing the pressure of the impression roller which cooperates with the printing roller. The impression roller is continuously rotatable in a supporting frame which is yieldably supported adjacent one of its ends, said frame being capable of both a straight line movement and an arcuate movement in the common plane of the impression and printing rollers. By having the impression roller supporting frame supported at one end only, a free passage is left at the other end for checks which are longer than the rollers, and thus the machine is capa-

ble of printing upon checks of any length, though the rollers are no longer than actually necessary for printing.

Another feature of the invention resides in the provision of a simplified and efficient driving connection for the printing couple, the printing roller being intermittently rotatable through the instrumentality of a clutch and a tripping mechanism. The printing roller is normally held against rotation and is automatically released when a check or other similar article is introduced to the feed rolls, and after being thus released, it is permitted to make only one complete revolution. The clutch has a portion associated with the intermittently rotatable printing roller, and another portion associated with a constantly rotatable feed roller which is driven by a worm and worm gear from an electric motor. The motor shaft and the worm are connected together by a flexible coupling, and the principal rotating parts are journaled in anti-friction bearings whereby their operation will be exceedingly smooth and efficient.

The operative mechanism is enclosed in a protective casing which has a top wall forming a convenient feeding table at one side of the rollers, and a receiving or stacking table at the opposite side of the rollers. Said table portions of the casing are preferably at different levels and connected by an inclined guide for the sheets being fed, the guide being apertured to permit mutual contact of the rollers, and one of the rollers being above said guide and top wall of the casing, while the other roller is below it or within the casing. The checks or other articles to be printed upon are fed, one at a time, between the rollers and are stacked in a substantially vertical column on the receiving table at the rear of the rollers, each succeeding check being delivered to the bottom of the column. The novel stacking mechanism is characterized by a pair of rotating cylindrical rollers which partially support the column of stacked checks without extensive vibration, and which receive the checks from the delivery side of the printing couple and feed them to the bottom of the column.

These and other features and advantages will be readily apparent from the following description in connection with the accompanying drawings, wherein one form of the invention has been shown by way of illustration, and wherein

Figure 1 is a perspective view of the improved printing machine;

Fig. 2 is a top plan view thereof, with portions of the casing broken away;

Fig. 3 is a side elevation thereof, parts being broken away and parts in section;

Fig. 4 is a vertical transverse sectional view through the same on line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view on line 5—5 of Fig. 4 showing the normal position of the parts, ready for operation;

Fig. 6 is a similar fragmentary view of the tripping mechanism after the printing roller has been released;

Fig. 7 is a detail view of the printing roller, partly in elevation and partly in section;

Fig. 8 is a fragmentary sectional view on line 8—8 of Fig. 7;

Fig. 9 is a vertical transverse sectional view through the printing roller and setting mechanism, showing how the selected type elements are locked in printing position;

Fig. 10 is a detail perspective view of one of the type carriers;

Fig. 11 is a detail perspective view of one of the individual type elements;

Fig. 12 is a fragmentary end elevation, partly in section, showing the means for engaging and disengaging the setting mechanism; and

Fig. 13 is a vertical sectional view through the drive shaft coupling and gearing.

The invention has been shown as embodied in a machine for endorsing bank checks, and in the following description, when bank checks are specified in connection with the operation of the device, it is to be understood that their equivalents may be operated upon in the same way. The device comprises a substantially flat base plate A^1 , here shown as of rectangular outline and preferably having a plurality of cushion feet A^2 whereby to be supported upon a desk, table, or the like without likelihood of damaging the surface thereof. Secured to the base plate A^1 intermediate its ends is a supporting bracket A^3 having a pair of upwardly extending spaced arms A^4 and A^5 , said arms being disposed adjacent the opposite side edges of the base plate. Also integral with the bracket A^3 and extending upwardly therefrom, between said arms A^4 and A^5 , is a shorter arm A^6 , which supports certain portions of the mechanism as will hereinafter be explained. Adjacent their upper ends, the arms A^4 and A^5 are provided with bearing bosses A^7 and A^8 , respectively, having axially alined openings A^9 and A^{10} , in which are secured stationary mounting shafts A^{11} and A^{12} , the inner ends of which are spaced from each other to rotatably support a novel printing roller B of the printing couple.

The printing roller B is built up of several parts, and includes a relatively thin walled cylindrical shell formed of semi-cylindrical sections B^1 and B^2 , supported at their opposite ends by disks B^3 and B^4 , which are respectively formed with outwardly extending hub portions B^5 and B^6 as best shown in Fig. 4. The shell section B^1 is permanently secured to the disks B^3 and B^4 , while the section B^2 is readily detachable therefrom, it normally having one of its ends disposed in

a groove B⁷ in the disk B⁴, while its other end is engaged by a spring catch B⁸. On its outer surface, the detachable shell section B² carries a printing or stamping die B⁹ having the desired legends B¹⁰ which for convenience I term the permanent or fixed printing indicia, to distinguish the same from the changeable printing elements to be described presently. In order to rotatably support the printing roller B, the hub portions B⁵ and B⁶ are respectively counterbored as at B¹¹ and B¹² to form the outer races for bearing balls B¹³ which seat against the beveled ends A¹³ and A¹⁴ of the stationary mounting A¹¹ and A¹².

The inner side of the disk B³ is provided with a substantially central cylindrical projection B¹⁴ upon which is mounted a sleeve B¹⁵, said sleeve rotatably supporting a plurality of type carriers, here shown as four in number, and designated by the reference characters B¹⁶, B¹⁷, B¹⁸, and B¹⁹. Either a greater or less number of such type carriers may be used as desired, and they may differ slightly in thickness, but their characteristics will be the same, and a detail description of one will be sufficient. As best shown in Fig. 10, the type carrier B¹⁶ comprises a substantially cylindrical body portion B²⁰ having at one of its ends a relatively narrow gear B²¹ of the same outside diameter as said body portion. A substantially central bore B²² extends longitudinally through the carrier for fitting upon the sleeve B¹⁵, and at one of its ends is a counterbore B²³. The body portion B²⁰ is formed with a plurality of radial slots B²⁴ which intersect the counterbore B²³, and which constitute guides for interchangeable type elements B²⁵ in the form of independently movable slugs (Fig. 11). Each of the type elements has a lateral offset or extension B²⁶ extending into the counterbore B²³, and all of said slugs or type elements are normally drawn inwardly against the sleeve B¹⁵ by an expansible spring B²⁷ encircling the lateral extensions B²⁶ (Fig. 9). Thus the type carriers and type elements are contained entirely within the shell of the printing roller B, with the exception of the selected type elements B²⁸ which are extended to printing position through aligned slots B²⁹ in the shell section B² and die B⁹, and said selected type elements B²⁸ are firmly maintained in printing position by a bar B³⁰ disposed in a longitudinal slot B³¹ in the sleeve B¹⁵. The bar B³⁰ and slot B³¹ are of the same thickness as the interchangeable type elements B²⁵, and in radial alinement with the slot B²⁹ which defines the printing position, said bar B³⁰ being movable into and out of the selected radial slots of the type carriers B¹⁶ to B¹⁹ inclusive, by means of a cam B³² which is rotatable in the bore B³³ of the sleeve B¹⁵ (Fig. 9). It will be evident that when the parts are in position as shown in Fig. 9, the interchangeable type

carriers will be held against rotation with reference to the sleeve B¹⁵ by the bar B³⁰ and further, that when the cam B³² is turned about the axis of the roller through an angle of 180°, the bar B³⁰ will be moved inwardly by the pressure of the spring B²⁷ against the lateral extension B²⁶ of type element B²⁸. In such condition, the outer edge of the bar B³⁰ is flush with the outer surface of the sleeve B¹⁵, rendering the type carriers B¹⁶ to B¹⁹ independently rotatable within the roller B. Secured to and rotatable with the cam B³² is a disk B³⁴ positioned adjacent to the inner side of the roller disk B⁴, and at a suitable point in its surface, is a socket B³⁵ for a spring-pressed ball B³⁶, which is adapted to seat in one or the other of the recesses B³⁷ and B³⁸ in the opposed face of the disk B⁴. The recesses B³⁷ and B³⁸ are disposed at diametrically opposite sides of the axis of the roller B, and the arrangement is such that the recess B³⁷ defines the locking position of the cam B³², while the recess B³⁸ defines the unlocking position. The spring B⁸ is secured to the sleeve B¹⁵ by means of a screw B³⁹, and has its outer end offset at B⁴⁰ for interlocking engagement in a notch B⁴¹ in the detachable plate B², said notch being substantially in line with the slot B²⁹ in said plate. The sleeve B¹⁵ can be rotated with reference to the disk B³ when the die plate B² is removed, and in view of this fact, the location of the slot B²⁹ may be varied as required by different printing indicia B¹⁰. From this it will be evident that the machine is capable of use for several different stamping operations, by having a plurality of interchangeable plates B², and the change from one to the other can be easily and quickly effected. The type carriers are held against longitudinal movement on the sleeve B¹⁵ by means of a spacing block B⁴², and the respective gears B²¹ of said type carriers are accessible through slots B⁴³ in the casing section B¹, said slots permitting engagement of said gears by a setting mechanism.

Mounted upon the hub portion B⁶ of the mounting disk B⁴ is a ball bearing B⁴⁴ against the outer race of which rests one end portion of an impression roller B⁴⁵, said impression roller being yieldably held in parallel relation to the printing roller B and having its other end portion engaging against a feed roller C¹. The feed roller C¹ is coaxial with the printing roller B and adapted to be intermittently connected therewith to rotate said roller B, and is itself rotatable on anti-friction rollers C² on the mounting shaft A¹¹. Secured to the outer side of the feed roller C¹, as by screws C³, is a worm gear C⁴ which meshes with and is driven by a worm C⁵ on a shaft C⁶, said shaft being journaled in ball bearings at C⁷ in a bracket C⁸. The bracket C⁸ is suspended on the mounting shaft A¹¹, as best shown in Figs. 4 and 13, and secured thereto by a set screw

C⁹, and the shaft C⁶ extends in a direction transverse to that of the axis of the printing roller, and forwardly beyond the bracket C⁸ for connection to a driving shaft C¹⁰ of a motor C¹¹. The shafts C⁶ and C¹⁰ are substantially coaxial and connected together by a flexible coupling C¹², which has been shown as comprising a pair of disks C¹³ and C¹⁴, secured to the respective shafts C⁶ and C¹⁰, and an intermediate disk C¹⁵ of flexible material. The disks C¹³ and C¹⁴ are each provided with a pair of diametrically opposed apertures C¹⁶, and said apertures of the respective disks are disposed at right angles (Fig. 13). The intermediate disk C¹⁵ is provided with four apertures C¹⁷ 90° apart, and is connected to the disk C¹³ by a U shaped pin C¹⁸, and to the disk C¹⁴ by a similar U shaped pin C¹⁹. The motor C¹¹ may be of any desired type, and is secured by screws C²⁰ to main base A¹ and is furnished with electric current through a conductor C²¹, and controlled by a manually operable switch C²².

Novel means are employed for connecting the feed roller C¹ with the printing roller B whereby to intermittently rotate the latter one revolution at a time, said means including a clutch and a tripping mechanism. The clutch comprises a pair of semi-circular jaws D¹ and D², provided on their inner surfaces with suitable friction material D³ for engagement against the periphery of a clutch collar D⁴ which is carried by the printing roller hub B⁵. The jaws D¹ and D² are disposed within a recess C²³ in the inner end of the feed roller C¹ and are secured thereto by clamping between a pair of parallel pins D⁵, which are secured to said feed roller C¹. The opposite ends of the jaws D¹ and D² have outwardly extending lugs D⁶ and D⁷, which are apertured for the reception of a screw D⁸, said screw being fitted with a nut D⁹ against the outer side of the lug D⁶, and having a spring D¹⁰ between the screw head D¹¹ and the outer side of the lug D⁷. The spring D¹⁰ is under compression whereby to normally force the lugs D⁶ and D⁷ toward each other, and thereby cause the desired frictional engagement of the clutch lining D³ with the clutch collar D⁴, and in such condition the printing roller B will be caused to rotate with the feed roller C¹, provided said feed roller is not otherwise held against rotation. The spring D¹⁰ provides a cushioning effect against the tightening of the screw D¹¹, and also restrains said screw from turning loose.

Mounted upon the upper end of the stationary bracket arm A⁶, and in substantially vertical alinement with the axis of the printing roller, is a stop wheel D¹², which may preferably be rotatable upon a screw D¹³. Carried by the printing roller and pivoted to the mounting disk B⁵ at D¹⁴ is a stop lever D¹⁵, having at its free end a roller D¹⁶ which is adapted to normally abut against the roller D¹², and

thus prevent rotation of the printing roller. The stop lever D¹⁵ has its free end normally forced outwardly by a compression spring D¹⁷ which is partially disposed in a recess D¹⁸ in the hub portion B⁵, and at its other end said stop lever is provided with an arm D¹⁹ formed at its extremity with a shouldered notch D²⁰. Also pivoted to the disk B⁵, as at D²¹, is a trip lever D²², which has a tooth portion D²³ adapted to engage in the notch D²⁰ to maintain the stop lever in its outermost position as shown in Fig. 5. The trip lever D²² is under the influence of a tension spring D²⁴ which has one of its ends connected to said trip lever at D²⁵, and its other end anchored to the roller disk B⁵ at D²⁶, said spring normally maintaining the tooth D²³ in the notch D²⁰. Extending outwardly from the trip lever D²² is a finger portion D²⁷, said finger portion extending beyond the periphery of the printing roller B and into a groove B⁴⁷ in the impression roller B⁴⁵. Bank checks or other similar articles are presented to the printing couple in the usual manner and are drawn inwardly by the constantly rotating feed roller C¹ and the impression roller B⁴⁵, and since the finger portion D²⁷ of the trip lever is disposed in the path of said checks, it will be moved rearwardly about the pivot D²¹ disengaging the tooth D²³ from the notch D²⁰. As the stop lever D¹⁵ is thus released, the printing roller is free to rotate, the roller D¹⁶ riding over the stop roller D¹², (as shown in Fig. 6) and as rotation continues to the point where the rollers D¹⁶ and D¹² become disengaged, the spring D¹⁷ again forces the free end of the stop lever B¹⁵ outwardly, and thereafter the finger D²⁷ becomes disengaged from the entering edge of the check, permitting the return of the tooth D²³ into the notch D²⁰. The printing roller continues to rotate until it is again arrested by the abutment of the locked lever D¹⁵ with the stop roller D¹² overcoming the frictional grip of the clutch jaws D¹ and D² on the collar D⁴ and permitting subsequent slippage of said clutch jaws around the collar. This operation is repeated as each successive check is inserted and the checks are printed upon as they pass between the rollers B and B⁴⁵ of the printing couple. Because of the fact that the trip lever and the stop lever are independently pivoted upon the end of the printing roller the pressure required for releasing or tripping the mechanism will be very slight and therefore it can easily be accomplished with a thin piece of paper without injury to the same.

In order to equally distribute the pressure of the impression roller, B⁴⁵, on the printing roller, a novel yielding support is provided for the impression roller. For this purpose, said impression roller is mounted for rotation upon ball bearings E held on the ends of opposed set screws E¹ and E² which are an-

chored in the end portions E³ and E⁴ of a guard member E⁵, said guard member affording substantial protection to the impression roller B⁴⁵. Secured to the end member E⁴ of the guard is a yoke having spaced parallel portions E⁶ and E⁷, each of which is provided with a relatively flat inner surface E⁸ which bears against a supporting post E⁹ extending upwardly from the upper end of the stationary supporting arm A¹. The post E⁹ is provided with a substantially vertical slot E¹⁰ as best shown in Figs. 3 and 4, and the yoke portions E⁶ and E⁷ are provided with a transversely extending pin E¹¹ which is disposed in said slot E¹⁰ and guided for vertical movement thereby. The guard E⁵ is thus held against lateral movements by the relatively flat bearing surfaces E⁸ and is capable of bodily movement in a straight line in the common plane of the cooperating rollers B and B⁴⁵, and in addition to this straight line movement, said guard member is capable of arcuate movement about the center of the pin E¹¹. Extending inwardly adjacent the lower end of the post E⁹ is an anchoring pin E¹² to which is secured the lower end of a coiled spring E¹³ having its upper end similarly anchored to a fixed pin E¹⁴ which extends transversely between the yoke portions E⁷ and E⁶. The spring E¹³ normally exerts a downward pressure on the guard E⁵ and said pressure is communicated uniformly throughout the length of the impression roller by virtue of the fact that said guard is capable of both arcuate and straight line movement. At the outer side of the post E⁹ is an anchoring pin E¹⁵ similar in all respects to the pin E¹² and having secured to it one end of a coiled spring E¹⁶ whose other end is attached to a transverse pin E¹⁷ carried by the yoke portions E⁶ and E⁷. The spring E¹⁶ assists the spring E¹³ in exerting the desired pressure for feeding purposes in the printing couple, and it will be evident that said feeding pressure will be effective at all times, even though there should be variations in the thickness of an article, such as a letter, being printed upon. This feature is particularly valuable in connection with mail marking or cancelling machines.

As the machine is operated as above described, the printing roller B is provided with quick drying ink in any desired manner. The preferred inking mechanism is illustrated in Fig. 5 and comprises an ink well F¹, provided at its opposite ends with arms F², which are pivotally attached to swinging arms F³ by means of pins F⁴. The arms F³ are pivotally supported on a stationary rod F⁵ which extends longitudinally between the stationary arms A⁵ and A⁶, the pins F⁴ being eccentrically disposed with reference to said rod F⁵, and each of the arms F³ has secured to its outer end one end of a tension spring F⁶, the other end of which

is anchored at F⁷ to the base of the machine. The force of the spring F⁶ is oblique to the direction of the arms F², and the arrangement is such that the upper ends of the arms F² as well as the ink well F¹ are normally urged upwardly toward the printing roller B. Rotatable with the ink well F¹ and partially below the surface of the ink is a roller F⁸ which has surface contact with a distributing roller F⁹, of felt or similar material, said distributing roller in turn having surface contact with the printing roller B. The distributing roller F⁹ is provided at its ends with trunnions F¹⁰ which are received in downwardly inclined slots F¹¹, in the upper ends of the swinging arms F², and said arms F³ are provided adjacent their lower ends with projections F¹², adapted to abut against adjusting screws F¹³ to limit the movements of said arms toward the roller B. A wiping roller F¹⁴ is also rotatably associated with the ink roller F⁸, it having trunnions F¹⁵ received in slots F¹⁶ in the end walls of the ink well F¹, and said wiping roller engages the surface of the ink roller to relieve the same of superfluous ink before it rolls against the intermediate distributing roller F⁹. Thus a uniform amount of ink will at all times be applied to the die as the printing roller rotates, and there will be no feeding or distributing of ink when the printing roller is not rotating. To compensate for wear of the various parts, the adjusting screws F¹³ may be turned either in or out to determine the desired limit for the roller F⁸.

Integral with the base A¹ and forwardly of the ink well, is a slotted lug F¹⁷ in which is pivoted at F¹⁸ a latch F¹⁹, said latch having a hook portion F²⁰ adjacent its upper end for engagement with the upper edge of the ink well F¹. A compression spring F²¹ normally forces said hook portion F²⁰ toward the ink well, and when it is desired to temporarily discontinue the ink supply, (for example, when the roller F⁹ has become saturated), the ink well is pressed downwardly about the pins F⁴ to the position indicated by dotted lines in Fig. 5, in which position the latch holds it. In this condition, the printing roller B will continue to be inked by the distributing roller F⁹, due to the action of the springs F⁶ on the arms F³ indirectly through the ink well arms F².

Returning now to the interchangeable type, the setting mechanism therefor will be described. As best shown in Fig. 4 the outer end of the cam B³² is provided with a slot G¹ in which is adapted to be engaged the inner end G² of a rod G³, said rod being rotatable and slidable longitudinally within the stationary mounting shaft A¹². The outer end of said rod G³ has secured to it a finger piece such as a knurled wheel or knob G⁴ which carries a pair of inwardly

extending pins or screws G^3 for connection to a cam G^6 . The cam G^6 is best shown in Fig. 12 and is rotatably supported upon the stationary shaft A^{12} , the pins or screws G^5 being capable of sliding movement with reference to the cam as the rod G^3 is moved longitudinally to engage or disengage the extension G^2 with reference to the slot G^1 . Riding against the outer surface of the cam G^6 is a shoe or roller G^7 which is secured as at G^8 to a swinging arm G^9 attached rigidly to the rod F^5 . A similar swinging arm G^{10} is attached to the rod F^5 adjacent to the stationary arm A^6 , and extending between the free ends of said arms G^9 and G^{10} are a plurality of concentric tubes G^{11} , G^{12} , G^{13} , and G^{14} . Said tubes are independently rotatable about their common axis which is parallel to the axis of the printing roller B, and in order to rotate said tubes they are respectively provided with dials G^{15} , G^{16} , G^{17} , and G^{18} . The tubes G^{11} to G^{14} , inclusive, are of graduated lengths as will be readily understood from Fig. 4, and they are respectively fitted at their inner ends with gears G^{19} , G^{20} , G^{21} , and G^{22} meshing with the gears B^{21} of the several interchangeable type carriers, B^{16} to B^{19} , inclusive. By rotating the cam G^6 through the instrumentality of the knob G^4 , the swinging arms G^9 and G^{10} will be moved toward and away from the printing roller B, causing the above mentioned gears to be engaged or disengaged, as the case may be. When the cam is so rotated while the extension G^2 is engaged with the slot G^1 the type ejecting cam B^{32} will also be rotated, causing the bar B^{30} to be drawn into the sleeve B^{15} and rendering the type carriers independently rotatable upon said sleeve. In such movement the swinging arms are moved toward the roller B causing the gears G^{19} to G^{22} , inclusive, to become meshed with the gears of the several type carriers, and in such condition the various dials G^{15} to G^{18} may be independently rotated to present selected type elements B^{23} to the printing position. Thereafter, the knob G^4 may be turned in either direction 180° , causing said selected type elements to be projected through the slot in the die B^9 and locking the selected type elements in such projected positions. Thus the machine is set for operation as above described.

All of the mechanism, with the exception of the impression roller B^{12} and its supporting means, are disposed within a protective casing which includes sidewalls H^1 and a top wall H^2 , said top wall having its forward portion H^3 substantially flat to provide a feeding table on which the articles to be printed upon may be disposed. The rearward portion H^4 of said top wall provides a receiving table at the delivery side of the printing couple, and said portion H^4 is preferably disposed in a plane below that of the portion H^3 and connected

thereto by an inclined guide portion H^5 . The inclined portion H^5 is necessarily provided with an opening H^6 (Fig. 4) having a pair of rearward extensions H^7 (Fig. 1) to permit the mutual contact of the impression roller and the printing roller.

Mounted on the upper side of the casing portion H^4 is an angle plate having an upright portion H^8 constituting a back stop, and horizontal portions H^9 , said angle plate being tiltable and removable from the casing and being adapted to receive the delivered checks from the printing couple. A shaft H^{10} is rotatably supported in bracket arms H^{11} and H^{12} which extend rearwardly from the supporting standards A^4 and A^5 , and said shaft H^{10} carries a pair of spaced cylindrical stacker wheels H^{13} and H^{14} (Figs. 2 and 13), which extend partially above the casing portion H^3 in the opening H^7 . Secured to said shaft H^{10} is a pulley H^{15} , by which the shaft and stacker wheels are rotated through the instrumentality of a friction idler H^{16} . The idler engages the outer surface of the feed roller C^1 and is carried at the upper end of a pivoted arm H^{17} , which in turn is mounted at H^{18} in one end of a lever H^{19} . The lever H^{19} is pivoted intermediate its ends on the rod F^5 , and has attached to its other end, as at H^{20} , a spring H^{21} , the lower end of which is secured to an anchoring pin H^{22} in the mounting bracket A^3 . The spring H^{21} normally urges the lever H^{19} in a counter-clockwise direction, as viewed in Fig. 13, forcing the idler H^{16} into driving relation with the feed roller C^1 and pulley H^{15} , whereby to rotate the stacker wheels in the same direction as the printing roller rotates. As best shown in Fig. 3, the front edges of the delivered checks are raised up by the stacker wheels to a plane above that in which the checks come through the printing couple, and as a result, the successive checks are positioned below the column of previously delivered checks on the angle plate H^9 . Thus the cancelled checks are stacked automatically upon the angle plate in exactly the same order in which they were fed through the printing couple, with the first check at the top of the column, and in view of the fact that the stacker wheels H^{13} and H^{14} are smooth and cylindrical, the column will be supported without vibration.

It is thought that the structure and operation of the machine will be clear from the foregoing description, but brief recapitulation will be resorted to. Assuming that the machine is to be used for endorsing checks, for example in a bank, the proper plate B^2 with die B^9 is mounted on the printing roller B, and then through the instrumentality of the knob G^4 the cams G^6 and B^{32} may be simultaneously rotated to unlock the interchangeable type carriers B^{16} , B^{17} , B^{18} , and B^{19} and to engage the setting gears G^{19} , G^{20} , G^{21} , and G^{22} with the corresponding gears of said

type carriers. The dials G^{15} , G^{16} , G^{17} , and G^{18} are then turned independently to select the desired type slugs B^{28} for printing, whereupon said type slugs can be locked in printing position and the setting gears disengaged by again turning the knob G^4 half a revolution. In this condition, the ball B^{36} will be pressed into the recess B^{37} maintaining the cam B^{32} against accidental displacement, and thus insuring a firm support for the selected type slugs B^{28} which have been projected to the printing position defined by the slot B^{29} in the die B^9 . After looking at the inking means and engaging or disengaging the latch F^{10} with reference to the ink well F^1 , dependent upon the condition of the distributing roller F^9 , the machine is ready for use, and may be set into operation by moving the switch C^{22} to its "on" position, thus supplying electric current to the motor C^{11} to rotate the same.

As the motor shaft C^{10} rotates, the power is transmitted through the flexible joint C^{12} , shaft C^8 , worm C^5 , and worm gear C^4 , to the feed roller C^1 , and the impression roller B^{45} is caused to rotate in the opposite direction by virtue of its contact with the periphery of said feed roller. The printing roller B , however, is normally held against rotation by the abutment of the roller D^{16} with the stop member D^{12} , the clutch jaws D^1 and D^2 freely slipping around the clutch collar D^4 . A pile of checks to be endorsed is then placed upon or adjacent to the table portion H^2 of the casing, and said checks are then fed, one at a time, through the printing couple, it is seized by and between the rotating feed roller C^1 and impression roller B^{45} , and is carried rearwardly, its front edge striking the trip finger to release the lever D^{15} , whereupon the clutch jaws D^1 and D^2 take hold of the collar D^4 and rotate the printing roller one revolution. Thus the checks are endorsed or otherwise printed upon, and are successively delivered to the receiving and stacking means rearward of the printing couple. The back stop H^8 causes the delivered checks to come to rest in a column on the receiving table H^4 of the casing, and the constantly rotating stacker wheels H^{13} and H^{14} partially support said column and cause the successive checks to be delivered to the bottom of the column, face uppermost. The result is that when all the checks of the original stack have been run through the machine, they are still piled or stacked in their original order or sequence and they can very conveniently be removed from the receiving table by tilting the angle plate H^8 , H^9 to a position indicated by dotted lines in Fig. 3.

The machine is very easy running, quiet, rapid, free from vibration, and so compact as to be readily portable if desired, and is particularly desirable because of the ease with which various plates B^2 and dies B^9 may be

interchanged for different stamping operations.

Obviously the invention is susceptible of numerous modifications in the details of construction and arrangements of parts, and the right is herein reserved to make such changes as fall within the scope of the appended claims without departing from the spirit of the invention.

Having thus described my invention, what I claim is:

1. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of radial type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell, actuating means adjacent the cylindrical shell adapted to engage the carrier gear to rotate the carrier whereby to aline a selected type element with the slot, and means for projecting the selected type element through said slot to the printing position.

2. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of radial type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell, actuating means adjacent the cylindrical shell adapted to engage the carrier gear to rotate the carrier whereby to aline a selected type element with the slot, means for projecting the selected type element through said slot to the printing position, and means for disengaging said actuating means from the carrier gear as the selected type element is moved to the printing position.

3. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of radial type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell, actuating means adjacent the cylindrical shell adapted to engage the carrier gear to rotate the carrier whereby to aline a selected type element with the slot, means for projecting the selected type element through said slot to the printing position, and means including a cam for disengaging said actuating means from the carrier gear as the selected type element is moved to the printing position.

4. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of radial type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell, actuating means adjacent the cylindrical shell adapted to engage the carrier gear to rotate the car-

rier whereby to aline a selected type element with the slot, and means for projecting the selected type element through said slot to the printing position, said actuating means being mounted for movement toward and away from the axis of the roller whereby to be selectively engaged with and disengaged from the carrier gear.

5. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of radial type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell, actuating means adjacent the cylindrical shell adapted to engage the carrier gear to rotate the carrier whereby to aline a selected type element with the slot, and means for projecting the selected type element through said slot to the printing position, said actuating means being mounted for movement toward and away from the axis of the roller whereby to be selectively engaged with and disengaged from the carrier gear, said movement of the actuating means being effected simultaneously with the radial movement of the type element through the slot.

6. In a printing machine, a printing roller comprising a cylindrical shell having a slot defining a printing position for interchangeable type elements, a plurality of type elements within the cylindrical shell, a carrier for said type elements, said carrier including a gear within the shell and provided with radial slots for containing the type elements, an actuating gear adjacent to the shell and adapted to partially extend through it to engage the carrier gear whereby to rotate the carrier gear to aline a selected type element with the slot in the roller shell, a pivoted supporting arm for the actuating gear capable of movement toward and away from the axis of the roller, means including a cam within the carrier for radially moving the selected type element through the slot in the shell, and means operable with said cam for disengaging the actuating gear from the carrier gear as said type element is moved outwardly in the slot.

7. In combination with a rotatable printing member, a plurality of interchangeable type carriers mounted for rotation with and with reference to the printing member, said carriers being independently adjustable, and each carrier including a gear, actuating means including a plurality of concentric, independently rotatable tubes, a gear mounted on each tube to mesh with one of the carrier gears, and means for moving said tubes and actuating gears toward and away from the carrier gears to engage and disengage the same.

8. A printing roller comprising a cylindrical shell, a substantially central hub there-

in, a type carrier rotatably mounted on said hub, said carrier having radial type guides, a plurality of type slugs disposed in said radial guides, said type slugs having lateral extensions, and an expansible spring encircling the hub and engaging the lateral extensions, tending to restrain the type slugs from outward radial movement.

9. In a printing machine, a printing roller including a printing plate provided with a slot to define a printing position for interchangeable type elements, a plurality of radial type elements within the roller, a carrier for said type elements, means for rotating said carrier with reference to the roller to aline a selected type element with the slot, and means associated with said carrier for extending a selected type element through the slot in the printing plate and for locking it in such position, said extending and locking means being operable in different positions dependent upon the location of the slot.

In testimony whereof, I have affixed my signature hereto.

RAYMOND F. JAHN.