

B. O. FANSLOW.
 ROTARY PRINTING MACHINE.
 APPLICATION FILED APR. 26, 1907.

1,016,682.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 1.

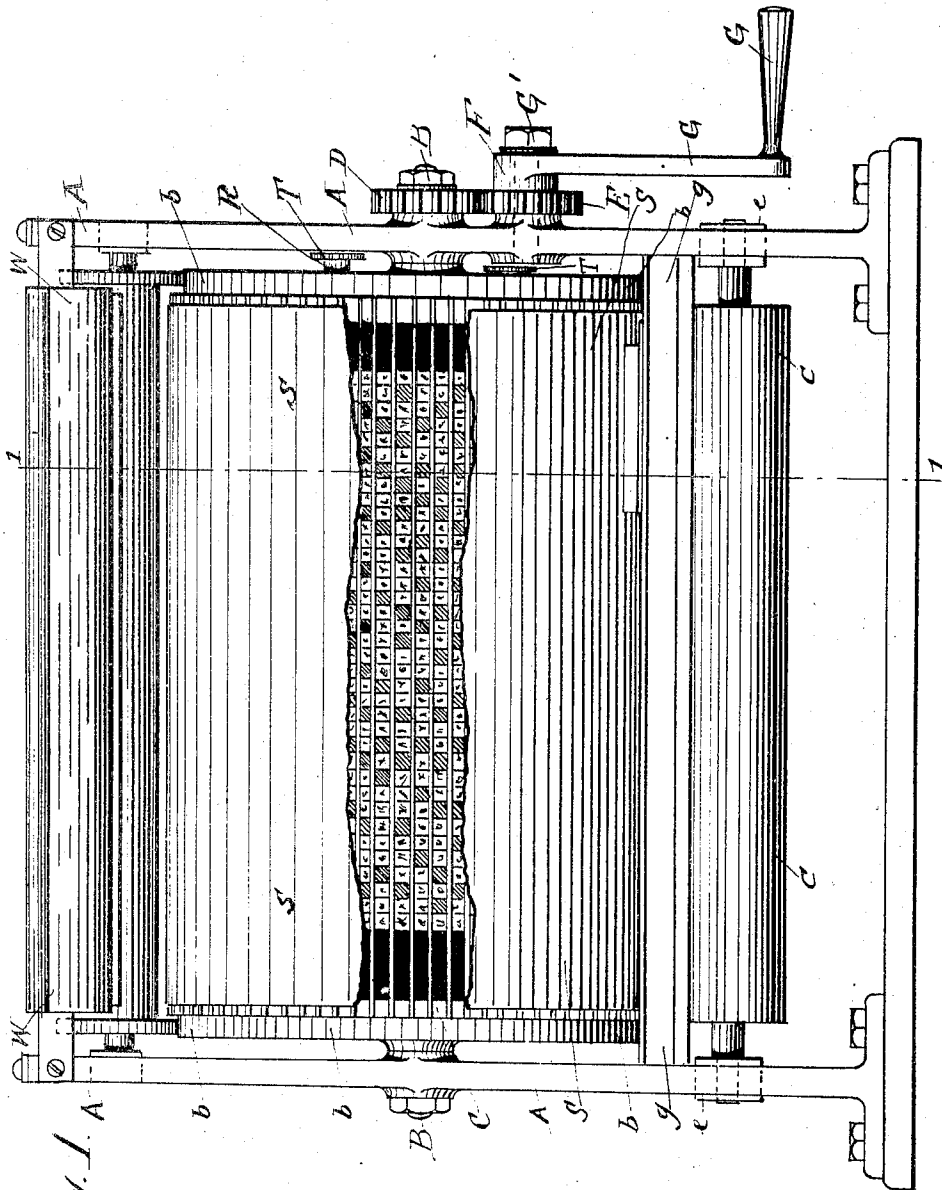


Fig. 1.

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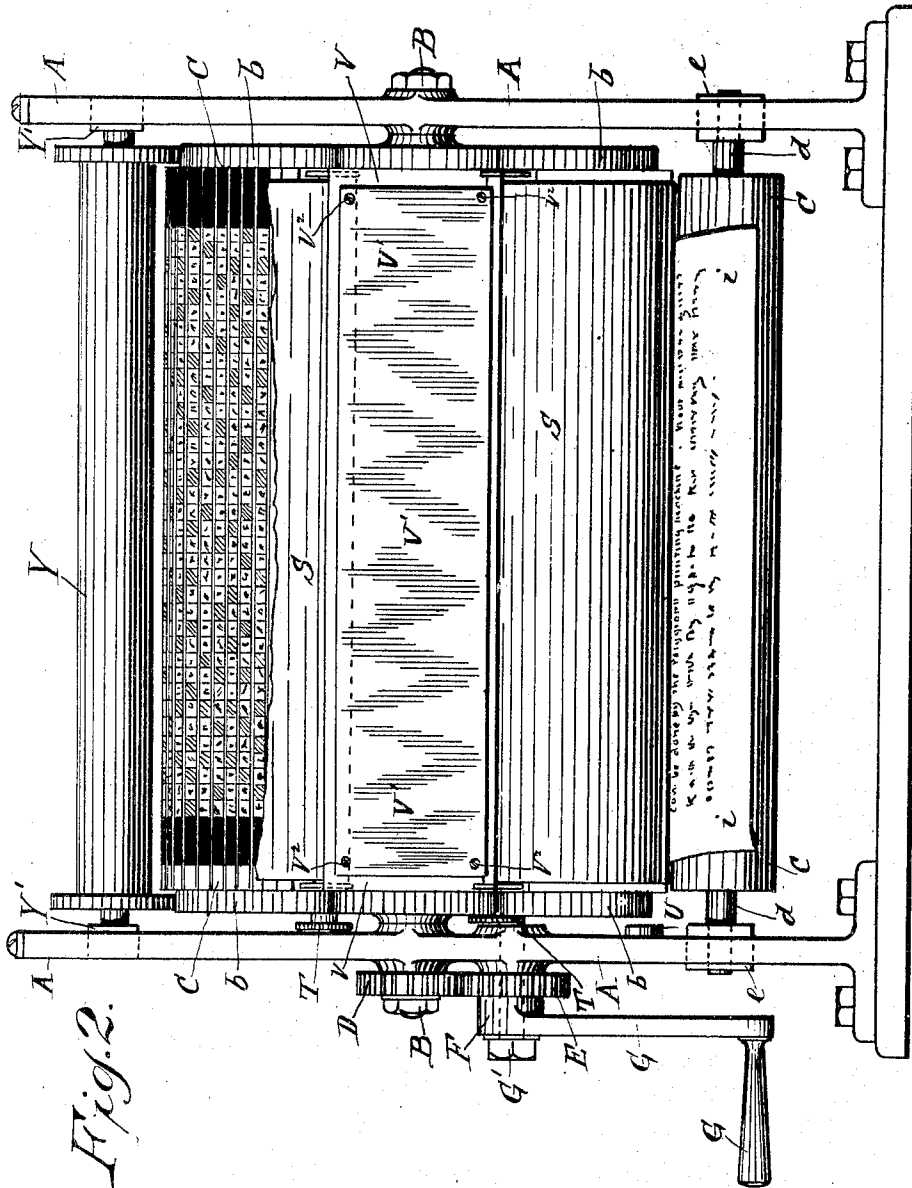


Fig. 2.

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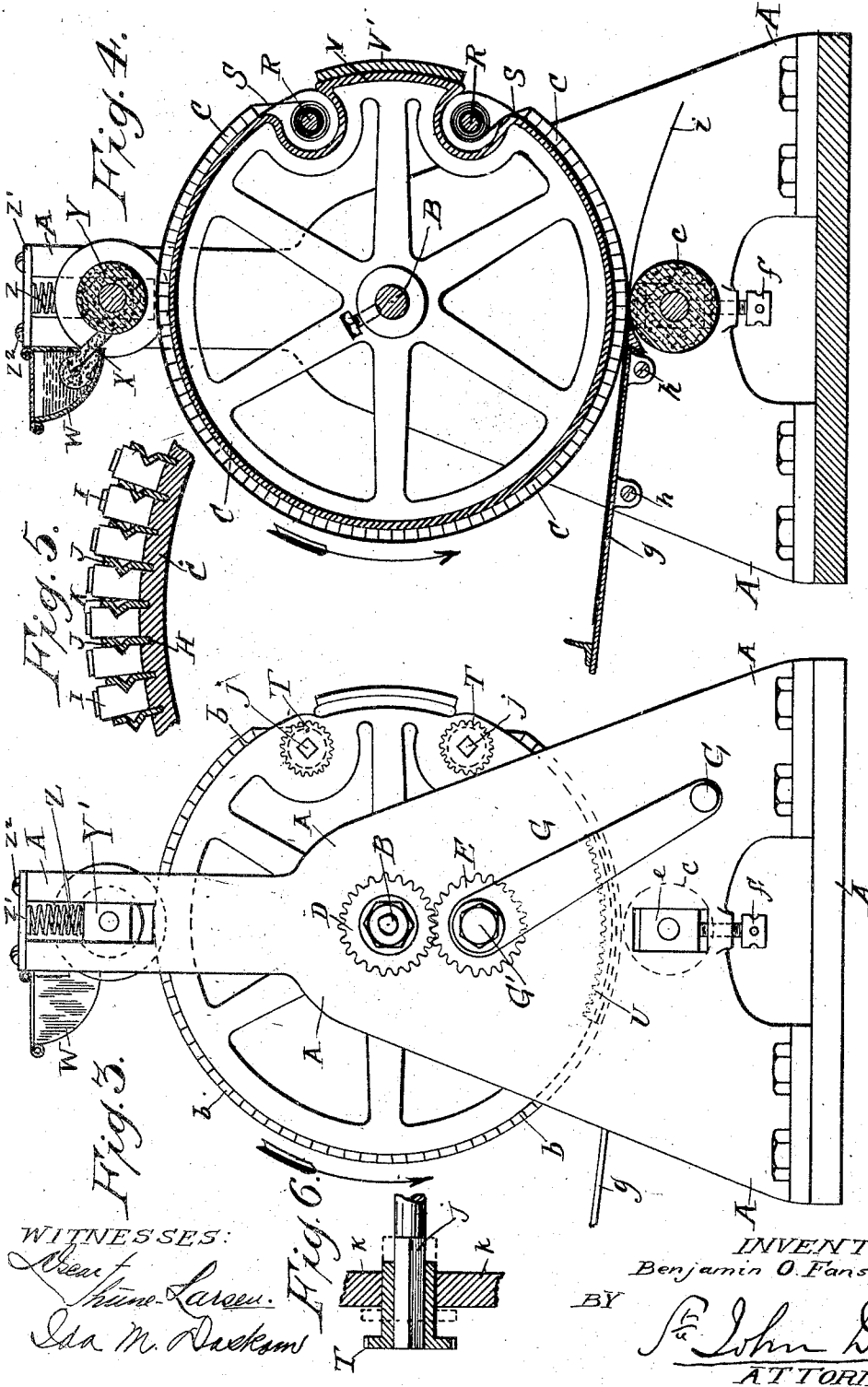
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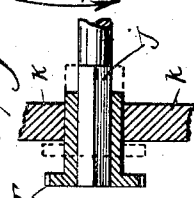
4 SHEETS—SHEET 3.



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Fig. 6.

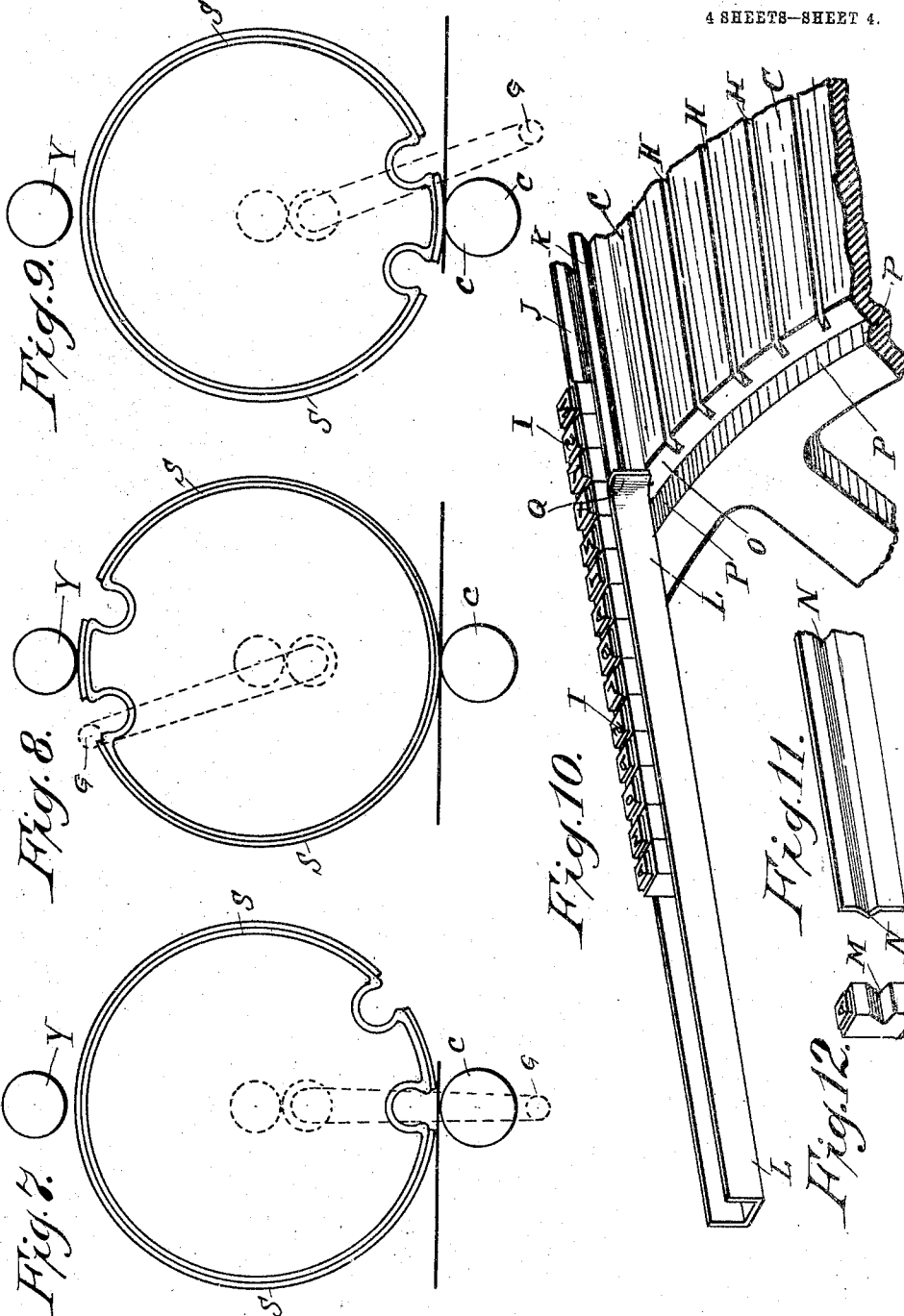


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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN OTTO FANSLAW, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO JOHN F. MAHLSTEDT, OF LOS ANGELES, CALIFORNIA.

ROTARY PRINTING-MACHINE.

1,016,682.

Specification of Letters Patent.

Patented Feb. 6, 1912.

Application filed April 26, 1907. Serial No. 370,498.

To all whom it may concern:

Be it known that I, BENJAMIN OTTO FANSLAW, of the city of Los Angeles, in the county of Los Angeles, in the State of California, have invented a new or Improved Rotary Printing-Machine, of which the following is a full, clear, and exact specification, reference being had to the annexed drawings and to the figures and letters marked thereon.

The new or improved rotary printing machine constituting my present invention is more especially adapted for printing letters, circulars, or similar documents, wherein several copies are required, and is of the type wherein an inking ribbon is used for conveying the impressions of the type or other printing surface to the paper or other fabric to be printed upon and the electrotype, engraved plate, or their analogue is used for printing the letter head, bill head, or its equivalent, upon the upper part of the sheets of paper to be printed.

Upon the annexed drawings Figure 1, is a front elevation of my improved printing machine wherein a portion of the inking ribbon is shown broken out in order to exhibit the type in the grooves of the cylinder wherein they are carried, and wherein the inking ribbon is carried and operated as hereinafter described. Fig. 2, is an elevation of the rear of the said machine. Fig. 3, is an end elevation of my new or improved machine corresponding to Figs. 1, and 2. Fig. 4, is a vertical transverse section upon the line 7, 7, Fig. 1. Fig. 5, is an enlarged section of a portion or segment of the type carrying cylinder, of the bars carried in longitudinal slots in said cylinder, and of the types themselves wherein it is shown that the bars or partitions for carrying the types while held in parallel or equi-distant slots in the circumference of the printing cylinder are formed with V-shaped projections so as to hold the types securely in and between the said bars. Fig. 6, is a detail, partly in section, of the means for engaging and dis-engaging one of the inking ribbon rollers with the toothed quadrant by which the winding on and winding off of the printing ribbon, so as to supply fresh surfaces of inking ribbon to the type is effected. Figs. 7, 8, and 9, are diagrams hereinafter more fully described. Fig. 10, is a perspec-

tive view of a portion of the printing cylinder showing two of the bars entered into the longitudinal slots thereof, between which the types to be held in the spaces between the bars are shown as being passed from the type holder. Fig. 11, is a perspective view of a portion of one of the bars or strips, showing the V-shaped groove on one side and the corresponding V-shaped projections on the other side, with which the types engage when set in the spaces between them in the printing cylinder. Fig. 12, is a perspective view of a type having a groove on one side fitting against the V-shaped projection on one of the bars, and flat on the opposite side.

As shown by Figs. 1, 2, 3, and 4, of the annexed drawings, my new or improved printing machine consists of the frame A, constructed of cast iron. In suitable bearings in the two upright side portions of the frame of this machine, there is carried the axis B, of the printing cylinder C. Upon one end of this axis there is mounted a toothed pinion D, into which gears another toothed pinion E, fastened upon the rotatable central portion F, of the crank handle G. The pinion E, and crank handle G, are mounted upon a stationary stud G', Figs. 1, 2, and 3. By turning the crank handle G, it is obvious that the printing cylinder C, is caused to rotate upon its axis by reason of the spur pinion E, gearing with a spur pinion D. The surface of the printing cylinder C, as shown by the enlarged perspective view Fig. 10, has cut in it a series of equi-distant parallel grooves H, H, whereinto the type holding bars, one of which is shown at Fig. 11, are fastened. These grooves H, extend across the entire length of the printing or type cylinder C, and the types I, Fig. 10, are set in each groove or space in the printing cylinder C, formed between any two of the bars J, and K, by being slid lengthwise from a type holder L, into each of the grooves as required, that is to say, the types from the type holder L, are pressed endwise into the grooves between any pair of bars J, or K, and are held securely in the grooves thus formed in the type cylinder by means of the notches M, in the side of the types engaging with the projections N, in the face or faces of the bars as is obvious from Figs. 5, 11, and 12. When

type is being set into the grooves formed by the bars J, and K, the type holder L, is held by hand against the end O, of the type holding cylinder C, the under face of the type holder resting upon the smooth cylindrical surface P, of the type holding cylinder C, as shown at Fig. 10. The inner ends Q, of the type holder being formed slightly flaring or opening outward so as to insure the correct placing of the type holder N, against the ends of any pair of the bars J, or K.

The type cylinder C, has the greater part of its surface fitted with the bars J, and K, in order to receive such number of lines of type as may be necessary for printing any circular, letter or other document which a machine of the kind constituting my present invention is more especially adapted to print. Between the ends of that part of the surface of the type cylinder C, wherein the types are carried, and as more especially shown at Fig. 4, two rollers R, R, upon which portions of the printing ribbon S, are wound, are carried, one end of each of these rollers R, having a toothed pinion T, securely fastened thereon. The printing ribbon S, extends from one of the printing rollers R, around and over the entire portion of the surface of the types in the printing cylinder C, to the other printing ribbon roller R, so that when the type cylinder C, is set with type, the type or printing surface is completely covered over by the inking ribbon S. In the lower part of one side of the frame A, there is situated a circular toothed rack U, as shown in dotted lines in Fig. 3, and in end elevation at Fig. 2. On that portion of the printing cylinder C, between the two recesses wherein the inking ribbon rollers R, R, are carried, there is contained a portion more especially shown in section in Fig. 4, marked V, whereon an electro-type, copper plate, or other engraved or printing surface, V', such as that constituting a letter head to be printed as the heading of circulars, letters, or analogous documents, is carried. This portion V', is removable and changeable as required from time to time, being fastened to the portion V, by means of screws or other convenient attachment V², as shown at Fig. 2. In the upper part of the frame A, of the machine, there is carried the longitudinal ink well W, Figs. 1, 3, and 4. As shown by Fig. 4, wherein the ink well W, is in section, it contains printing ink indicated by horizontal dotted lines, and with an opening in the bottom through which the strip of felt X, passes, and protrudes against the surface of the inking roller Y. The strip of felt X, being retained in the inking well W, by means of the folding over upon itself of its upper part as shown in Fig. 4. The width of the opening through which the strip of felt passes is narrow enough to

prevent the strip of felt from falling through such opening, while allowing sufficient freedom of the holding of the felt to enable ink to pass from the well W, through the felt as a feeder to the inking roller Y. The inking roller Y, is that part of the machine which applies ink to that part of the printing surface marked V', in Figs. 2, and 4, carried upon the portion V, of the printing cylinder. The axis of the inking roller Y, is carried in vertically slidable bearings Y', in the upper ends of the standards of the frame A, and they are pressed downward by means of spiral springs Z, acting upon the bearing blocks Y', so that the flanges a, one at each end of the inking roller Y, are pressed down upon the cylindrical ends b, b, of the printing cylinder C, by which arrangement the surface of the cylinder Y, is kept out of contact with the printing ribbon S, during the passage of that portion of the rotation of the printing cylinder C, and inking ribbon S, beneath the inking roller Y. The pressure of the springs Z, is obtained by means of the plate Z', compressing the springs Z, by means of the screws Z², screwed into tapped holes in the upper ends of the framing A. This separation of the inking roller Y, from the surface S, of the inking ribbon during such portion of the rotation of the printing cylinder, is shown in diagram Figs. 7, and 9, while when that portion V', which contains the letter head, or equivalent electro-type, wood cut or engraved matter being situated between the two ends of the inking ribbon S, carried upon rollers R, R, when passing beneath the inking roller Y, enables the inking roller Y, to be pressed down into the recesses wherein the inking ribbon rollers R, are carried, and to make contact of the inking surface of the roller Y, with that portion of the surface V', whereon the letter head, bill head or other permanent part of the printing surface is contained, by which arrangement this portion V', of the printing surface receives its ink direct from the roller Y, and all the other part of the surface to be printed receives its ink from the inking ribbon S. Beneath the printing cylinder C, and also beneath the inking ribbon S, carried upon the printing cylinder C, there is situated the adjustable pressure roller c, carried upon a shaft d, held in adjustable bearings e, one in each vertical side of the framing A, as shown at Figs. 1, 2, and 3. Set screws f, are provided for the purpose of adjusting the upward pressure of the roller c, against the inking ribbon S. The paper to be printed upon is carried in a pile upon the platform or support g, attached by screws h, or equivalent fastenings to the side frames of the machine, and is held upon the platform, table or support g, until type in the printing cylinder C. as

the printing cylinder rotates, catches the lower edge of the paper and presses it upon the pressure roller *c*, when as the continued rotating of the printing cylinder C, proceeds, the paper is drawn from off the platform, table or support *g*, and discharged over the top of the pressure roller *c*, with the printing which it has received from the inking ribbon S, upon the types in the cylinder C, being pressed upon its upper surface, and each sheet of paper thus printed is successively discharged from between the printing ribbon, and the pressure roller *c*, in the direction indicated by the sheet of paper *i*, in Fig. 4. As during the continuance of the printing operations hereinbefore described, the inking ribbon S, becomes wound off one of the inking ribbon rollers R, and on to the other inking ribbon roller R, each time that one of the pinions T, engages with the toothed rack U, it follows, that the continuance of the printing operation will roll the printing ribbon S, off one of the rollers R, and wind it on to the opposite roller. When this condition of the printing ribbon S, has been reached it becomes necessary in order to continue the printing operations, that the winding of the printing ribbon shall take place in the reverse direction, that is to say, that it shall be wound off that roller R, upon which it has accumulated, and be correspondingly wound upon the other roller R, from which it has been drawn. To enable this reversing of the direction of winding of the inking ribbon S, to take place, each of the pinions T, and T', are mounted slidably upon one end of the axis *j*, which is preferably made square as shown at Fig. 3, and in enlarged detail at Fig. 6. In Fig. 6, the part marked *k*, represents in section that portion of one end of the printing cylinder wherein the toothed pinion T, fastened slidably upon the square end *j*, of the inking ribbon roller is carried. When the pinion T, of one of the printing ribbon rollers R, has slid outward upon the square portion of the axis *j*, of that inking ribbon roller, then it is in such position as to gear with the toothed rack U, at each rotation of the printing cylinder C, and the pinion T, which is winding off the inking ribbon S, from one of the inking ribbon rollers R, is pulled out into the position shown in Figs. 1, 2, and 6, so as to gear with the curved toothed quadrant U, at each rotation of the printing cylinder C, until the ribbon S, is wound off one of the inking ribbon rollers R, on to the other inking ribbon roller R, when the pinion T, which has been last in operation with the toothed quadrant U, is pushed inward into the position shown in dotted lines in Fig. 6, and the toothed pinion T, of the other inking ribbon roller is pulled outward so as to gear with the toothed quadrant U, during part of the revolution of the

printing cylinder C, and so as to cause the inking ribbon to be wound in the opposite direction, that is to say, off from the roller R, on which it has been last accumulated, and on to the other roller R.

As shown by Figs. 1, and 2, of the drawings, the types and space blocks are held in between the strips J, and K, by means of plugs of india rubber, or other sufficiently hard and elastic material, pressed into those portions of the spaces beyond the end of each row of type, and in Fig. 2, the sheet of paper *i*, is shown as being discharged from between the pressure roller *c*, and the inking ribbon S.

It is to be understood that each pair of bars J, and K, for holding the types, may be placed at such distances apart in the grooves or slots H, H, H, in the surface of the printing cylinder so as to correspond with what is known as single spacing, double spacing and treble spacing in typewriting, whereby the rows of types are carried at such distances apart, understood as single spacing, double spacing, and treble spacing.

I claim as my invention.

1. In a machine for printing imitation typewritten letters and the like in which various portions of each letter are printed by a single impression, the combination with a rotatable drum, of means carried by a portion of the periphery of said drum for securing a portion of a form thereon, means for feeding an ink ribbon over said form-carrying portion, a second form-carrying portion located on the periphery of the drum between the ends of the first mentioned form-carrying portion, inking means for supplying ink to the second mentioned form-carrying portion and impression means coöperating with said form.

2. In a machine for printing imitation typewritten letters and the like in which various portions of each letter are printed by a single impression, the combination with a rotatable drum, means carried by a portion of the periphery of said drum for securing a portion of a form thereon, a pair of ribbon spools located in the drum at each end of said form-carrying portion whereby an inking ribbon may be fed over said form-carrying portion, a second form-carrying portion located on the periphery of the drum between the ends of the first mentioned form-carrying portion, inking means for supplying ink to the second mentioned form-carrying portion and impression means coöperating with said form.

3. In a machine for printing imitation typewritten letters and the like in which various portions of each letter are printed by a single impression, the combination with a rotatable drum, of means carried by a portion of the periphery of the drum for securing a portion of a form thereon, said drum

being provided with a depression adjacent each end of said form-carrying portion, a ribbon spool mounted in each depression whereby an ink ribbon may be fed over said form-carrying portion, a second form-carrying portion located on the periphery of the drum between the ends of the first mentioned form-carrying portion, inking means for supplying ink to the second mentioned form-carrying portion and impression means cooperating with said form.

4. In a machine for printing imitation typewritten letters and the like in which various portions of each letter are printed by a single impression, the combination with a rotatable drum, of a plurality of bars mounted on the periphery of the drum and extending parallel to each other and to the axis of the drum, said bars being adapted to hold type in the periphery of the drum to form a portion of a form, means for feeding an ink ribbon over said type, a second form-carrying portion located on the periphery of the drum between the ends of the first mentioned form-carrying portion, inking means for supplying ink to the second mentioned

form-carrying portion and impression means cooperating with said form.

5. In a machine for printing imitation typewritten letters and the like in which various portions of each letter are printed by a single impression, the combination with a rotatable drum, of means for securing a form on the periphery of said drum, a pair of ribbon spools mounted in the drum and adapted to feed an ink ribbon over said form, a pair of gears, one mounted on the end of each ribbon spool and adapted for movement toward and away from the spool, a stationary rack adapted to be engaged by the gears when in one of their positions of movement but not in the other position, and impression means cooperating with said form.

In testimony whereof, I have hereunto set my hand and seal at the city of Los Angeles aforesaid, in the presence of two subscribing witnesses.

BENJAMIN OTTO FANSLAW. [L. S.]

Witnesses:

ST. JOHN DAY,
J. D. CORY.