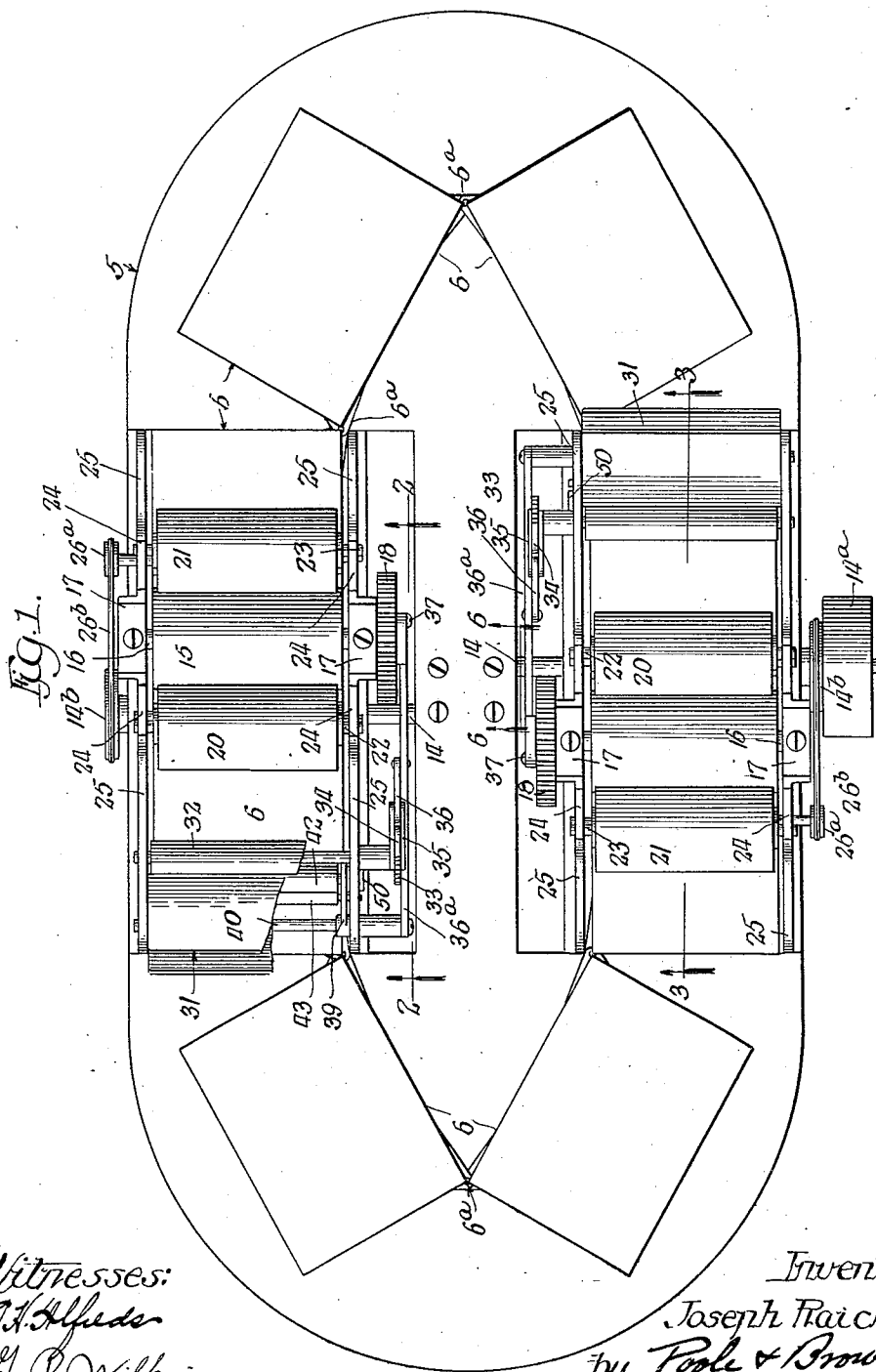


J. RAICH.
 PRINTING PRESS.
 APPLICATION FILED JAN. 7, 1911.

1,016,033.

Patented Jan. 30, 1912.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 2.

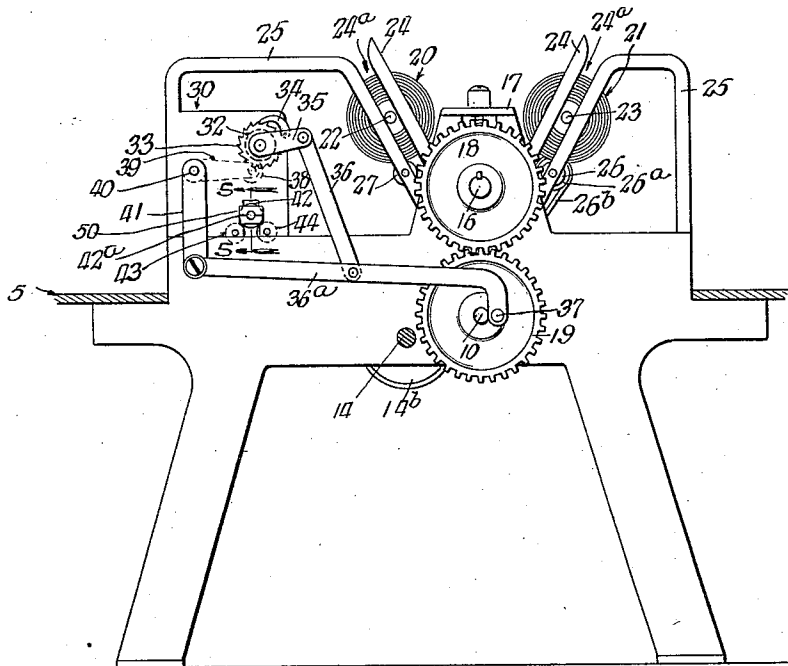


Fig. 7.

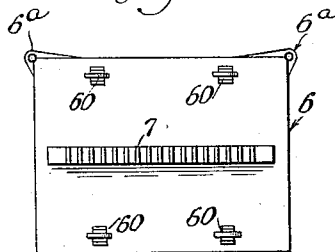


Fig. 5.

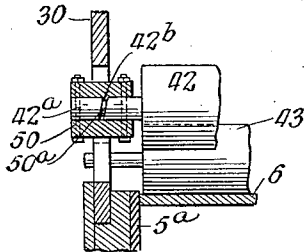
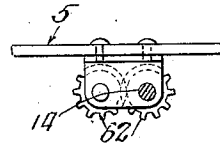


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 3.

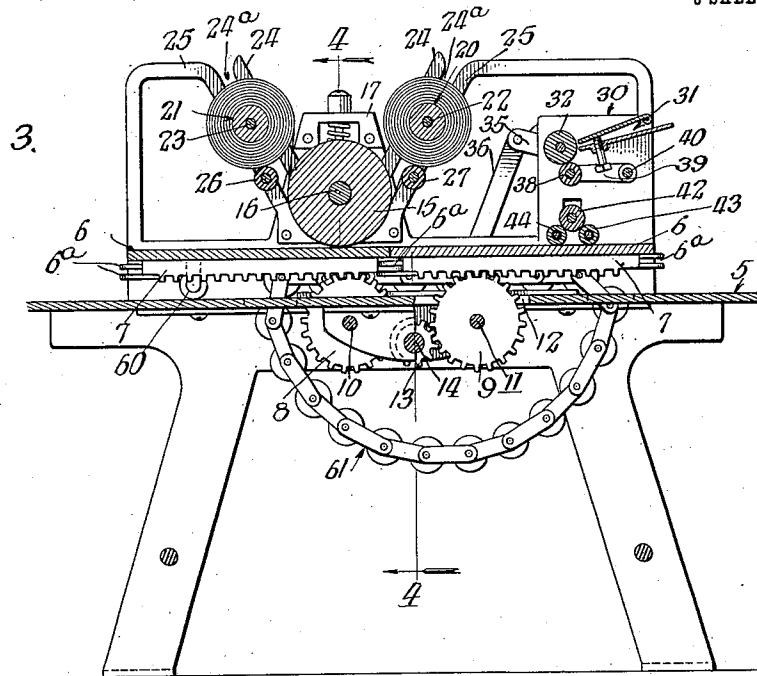
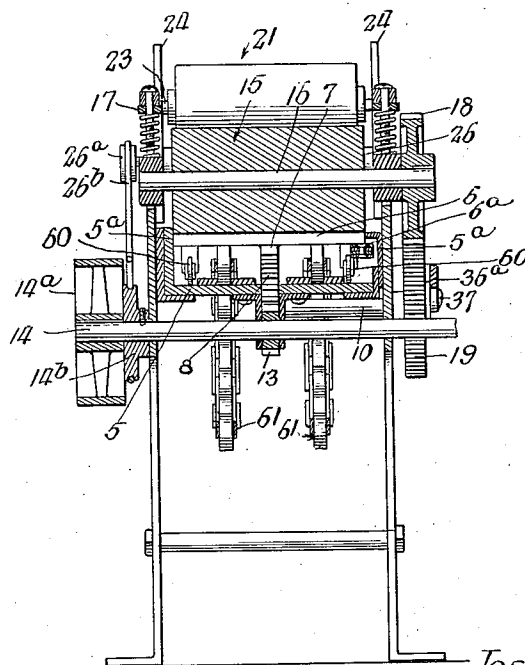


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH RAICH, OF CHICAGO, ILLINOIS.

PRINTING-PRESS.

1,016,033.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed January 7, 1911. Serial No. 601,452.

To all whom it may concern:

Be it known that I, JOSEPH RAICH, a subject of the Czar of Russia, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain novel improvements in the construction of printing presses and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

My improved printing press embraces in its preferred form, a bed upon which there are mounted a plurality of traveling plates upon which are carried the printing forms and which are adapted to pass in succession in rolling engagement with one or more impression rolls, about each of which is fed a continuous strip of paper, traveling at the speed of the form bearing plates and at the peripheral speed of the impression roll, which strip receives in succession printed impressions from the successively advancing plates.

In the drawings:—Figure 1 is a plan view of my improved printing press. Fig. 2 is a view in side elevation of a part thereof. Fig. 3 is a vertical cross-sectional view taken through the various rollers, on the line 3—3 of Fig. 1. Fig. 4 is a cross-sectional view taken upon line 4—4 of Fig. 3. Fig. 5 is a fragmentary cross-sectional view of a part of the mechanism, taken on the line 5—5 of Fig. 2. Fig. 6 is a detail of the driving pinions for the impression rolls, being a section on the line 6—6 of Fig. 1. Fig. 7 is a bottom plan view of one of the form bearing plates.

In said drawings, 5 indicates the main bed of the press and 6, 6, the traveling form-bearing plates which are preferably connected together to form an endless train and which are moved around the main bed to successively engage inking and impression rolls as hereinafter more particularly described.

As shown in the drawings there are eight plates 6, each of which is provided with lugs 6^a, 6^a at its inner corners (see Figs. 1 and 3), which are pivotally connected to

similar lugs on the adjacent plates. An impression roll, a set of inking rolls and paper feed and re-wind rolls are located on each side of the bed 5, but as these various members are the same in both cases, but one will be described, the other being indicated in the drawings by like letters of reference.

Upon the bottom of each of the plates 6 is located a rack bar 7 which extends longitudinally of the plate along its longitudinal median line. The rack bars of said plates are successively engaged by longitudinally spaced cog wheels 8 and 9, which rotate in a plane parallel to the length of the bed 5 and thus produce a continuous advancing movement of the train of plates 6. Said cogs 8 and 9, which project upwardly through a slot 12 in the bed 5, are mounted respectively on transverse shafts 10 and 11 supported below the bed and are driven in the same direction by means of a pinion 13 keyed to the main driving shaft 14 which extends transversely of the bed and is driven in any suitable manner as by the pulley 14^a. As said plates are engaged by the cogs 8 and 9 they are passed under an impression roller 15 carried upon a shaft 16 mounted in suitable standards 17, 17 upon the main bed of the press. Laterally spaced upright guide plates 5^a, 5^a (see Fig. 4) are located below the impression roll to hold the plates in proper alinement as they are passed under the impression roll. Upon one end of the impression roll shaft 16 is mounted a gear wheel 18 which meshes with a gear wheel 19 carried upon the shaft 10, and by means of which said impression roll is driven.

Located above and respectively in front and in the rear of the impression roll 15 are paper rolls 20 and 21, the shafts 22 and 23 of which are slidably and rotatively mounted at their ends in slots 24^a formed by frame members 24 and 25 which extend diagonally upward.

In the operation of the machine the paper is unwound from the roll 20, passes under the impression roll 15 and is rewound on the other paper roll 21. A transverse feed roll 26 is rotatably supported in the frame member 25 beneath the rewind roll 21, and is provided at one end with a pulley 26^a driven by a belt 26^b from a pulley 14^b on the main shaft 14. The paper roll 21 rests on the feed roll 26 and is frictionally engaged thereby so as to be rotated by the rotation

of said feed roll 25 to wind the strip of paper about it. As said paper roll increases in diameter in the winding of the strip of paper thereon, said roll rises by reason of the engagement of the ends of its shaft 23 in the associated diagonal slots 24^a. A transverse idle roll 27 mounted in the frame member 25 adjacent to the supply roll 20 bears against said roll and retards the unrolling of the paper therefrom to prevent said paper roll from running away. As the paper roll 20 is unwound and decreases in thickness, gravity causes it to descend so as to always be in contact with the roll 27, this being made possible by reason of the bearing of the ends of its shaft in the associated diagonal slots 24^a. Just previous to the time that plate 6 passes under the impression roll 15, ink is applied to the printing form thereon by means of a plurality of inking rolls arranged and operating as follows: Formed integrally with the frame members 25 upon the approach side of the impression roll are upright bracket plates 30, 30 located at each side of the path of travel of the plates 6 and between which is supported an ink reservoir 31. Said reservoir opens at its forward end adjacent the surface of a transverse inking roll 32 which is rotatively supported by the bracket plates 30. Upon the end of said inking roll 32 is a ratchet wheel 33 (see Fig. 2), which is engaged by a gravity controlled pawl 34 carried by a rock arm 35 which is pivoted at one end upon the shaft of the inking roll 32 and at its other end to a downwardly extending link 36. The link 36 is pivotally connected to an operating arm 36^a to which movement is imparted by a crank pin 37 on the gear wheel 19 which drives the impression roll. Located beneath and adapted to contact with the inking roll 32 is a second transverse roll 38 which has vertical swinging movement. Said roll 38 is mounted in the ends of two vertically swinging rock arms 39, 39 which are secured at their ends to a rock shaft 40. Said shaft 40 is oscillated by a rock arm 41 which has pivotal connection at its end with the operating arm 36^a. Located beneath and adapted to be engaged by the vertically swinging roll 38 when at its lower limit of movement is a rider 42 which bears upon two form engaging rolls 43 and 44 which are adapted to apply ink to the several forms as they pass beneath them. The passing of the printing form beneath and in contact with the rolls 43 and 44 rotates said rollers which in turn rotate the rider 42.

As shown in Fig. 5, the shaft 42^a of the rider 42 is supported at one end in a bearing block 50 provided on its inner bearing surface with a cam groove 50^a which engages a pin 42^b on the shaft so that an endwise movement of the rider 42 is produced to more evenly distribute the ink. The

plates 6, 6 are each provided with casters 60, 60 which ride upon the bed 5 when the said plates are not engaged by the driving cogs. 61, 61 designate chains of antifriction rollers which engage between the lower faces of said plates 6 and the top of the bed 5 as said plates pass beneath the impression roll. When two impression rollers are used, as illustrated, the one is operatively connected with the other through driving pinions 62, 62 located beneath the central portion of the main bed 5 of the press.

The operation of the improved printing press is apparent from the above description. The impression roll 15 is continuously rotated at a peripheral speed equal to the speed of travel of the form bearing plates 6 and the strip of paper is continuously fed about the impression roll from the supply roll 20 to the rewind roll 21. The printed matter on the successive forms is successively printed on the strip of paper and when the entire strip has passed from the supply roll to the rewind roll, said rolls may be replaced by withdrawing them through the slots in which they are mounted. As each form bearing plate 6 passes under the rolls 43 and 44 a fresh supply of ink is conveyed thereto by the rider 42 which periodically receives a supply of ink from the roll 33 by means of the swinging roll 38. The supply of ink on said rolls is thus continuously renewed so that the printing form carried by each plate is inked by freshly supplied ink rolls.

While I have shown herein certain details of mechanical construction in illustrating one embodiment of my invention, it is to be understood that these may be variously modified without departing from the spirit of my invention and I do not wish to be limited thereby except as pointed out in the appended claims.

I claim as my invention:—

1. In combination with a plurality of form-bearing plates connected together to form an endless train adapted for travel in a plane, a bed-plate on which said train of plates travels, a rotative impression roll adapted for rolling contact with the forms on said plates, horizontally spaced upright guide-plates secured to said bed-plate and adapted for engagement with the lateral edges of said form-bearing plates to guide them in their travel below the impression roll, a supply roll and a rewind roll located respectively in the front and in the rear of said impression roll, adapted to feed a strip of paper to said impression roll, and means for driving said form-bearing plates, said impression roll and said rewind roll at the same rate of speed.

2. In combination with a plurality of form-bearing plates, all arranged in an endless train in the same horizontal plane, each

plate being provided at its inner corners with lugs each pivotally connected to a lug of an adjacent plate, a bed-plate on which said train of form-bearing plates travels, a rotative impression roll adapted for rolling contact with the forms on said plates, a supply roll and a rewind roll located respectively in the front and the rear of said impression roll adapted to feed a strip of paper about said impression roll, horizontally spaced upright guide-plates adapted for engagement with the lateral edges of said form-bearing plates to guide them in their travel below the impression roll, and means for driving said form-bearing plates, said impression roll and said rewind roll at the same rate of speed.

3. In combination with a plurality of form-bearing plates connected together to form an endless train traveling in a horizontal plane, a bed-plate on which said endless train of form-bearing plates travels, a rotative impression roll supported above said bed-plate, a rack secured to the bottom of each of said plates, cog-wheels supported by said bed-plate adjacent to said impression roll adapted to engage the racks of said plates in succession, a supply and a rewind roll located respectively in the front and the rear of said impression roll adapted to feed a strip of paper about said impression roll, horizontally spaced upright guide plates adapted for engagement with the lateral edges of said form-bearing plates to guide them in their travel below the impression roll, and means actuating said cog-wheels, said impression roll and said rewind roll to rotate them in timed relation.

4. In combination with a plurality of form-bearing plates connected together to form an endless train traveling in a horizontal plane, a bed-plate on which said train of form-bearing plates travels, a rota-

tive impression roll adapted for rolling contact with the forms on said plates, means providing inclined guide-ways adapted to receive the ends of a supply roll and of a rewind roll located respectively in the front and in the rear of said impression roll, a supply roll and a rewind roll located in said guide-ways adapted to feed a strip of paper about said impression roll, an idle friction roll adapted for engagement with said supply roll, a friction feed roll adapted for engagement with said rewind roll, horizontally spaced upright guide plates adapted for engagement with the lateral edges of said form-bearing plates to guide them in their travel below the impression roll, and means for driving said form-bearing plates, said impression roll and said friction drive roll in timed relation.

5. In a printing press of the class described, in combination with the bed, a plurality of form bearing plates traveling on said bed, a rotative impression roll adapted for engagement with the forms on said plates, and a supply and rewind roll adapted to feed a strip of paper about said impression roll, rollers located on each plate having rolling contact with said bed, a rack formed on the under surface of each plate, cog-wheels supported by the bed adapted to engage the racks of said plates, and antifriction means supported by said bed adapted to engage the under surface of each plate as it is fed under the impression roll.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 22nd day of November A. D. 1910.

JOSEPH RAICH.

Witnesses:

JOHN JANUST,
JOHN PALLAKOFF.