

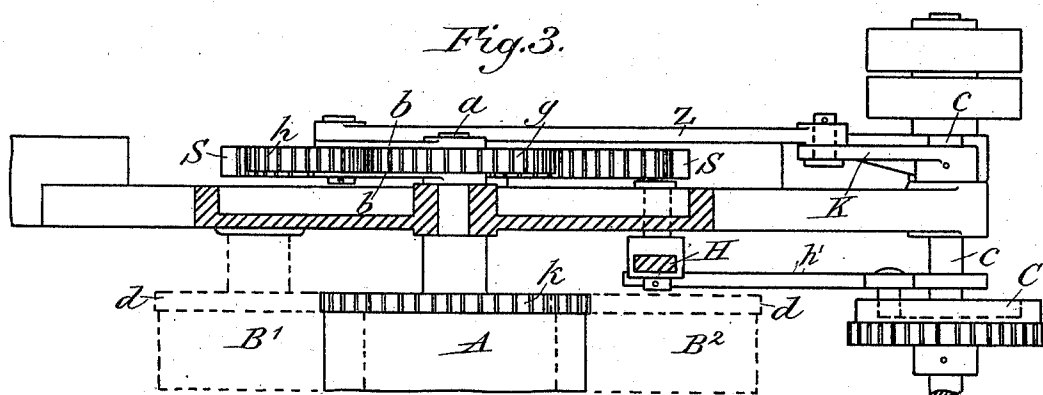
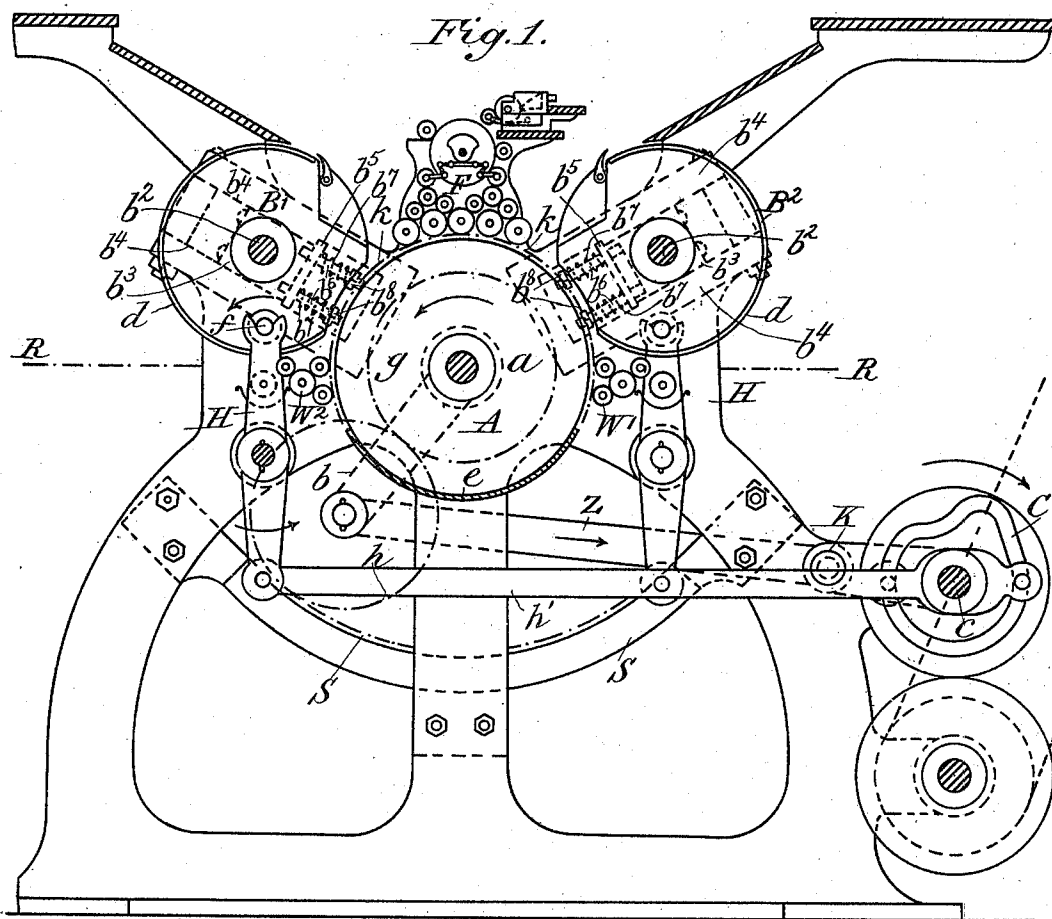
(No Model.)

3 Sheets—Sheet 1.

J. WEZEL.  
PRINTING MACHINE.

No. 585,546.

Patented June 29, 1897.



Witnesses:

R. Mitchell

H. H. Schott

Inventor:

Julius Wezel

by *W. H. W. W.* attorney.

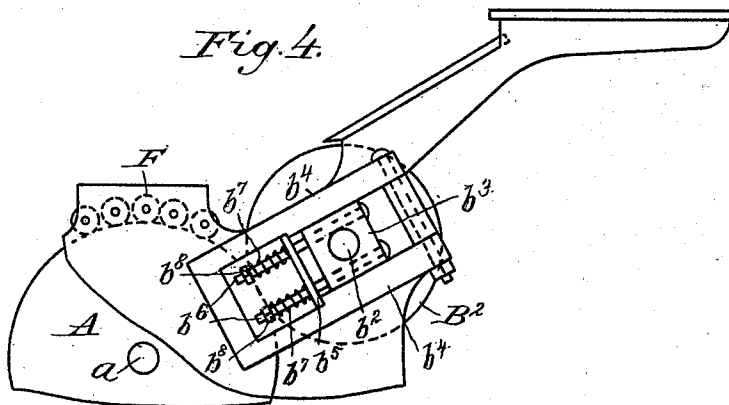
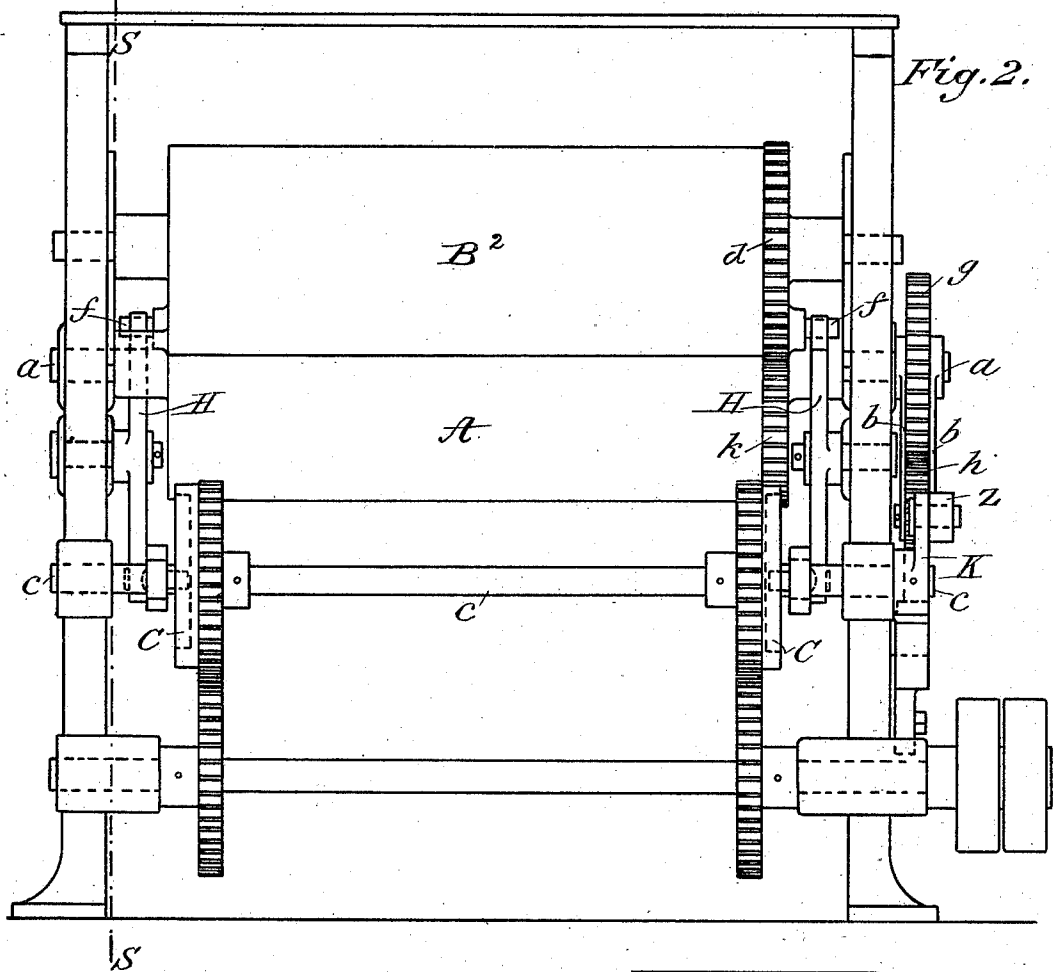
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3 Sheets—Sheet 2.

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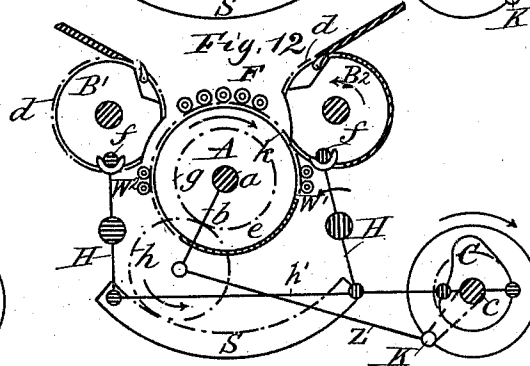
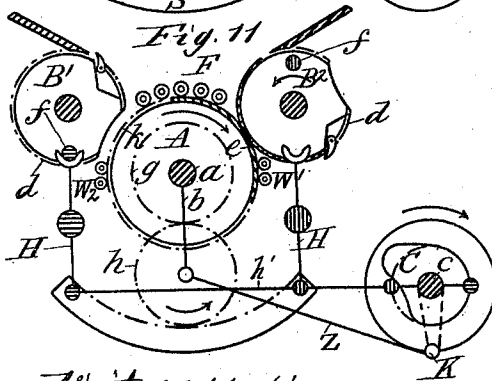
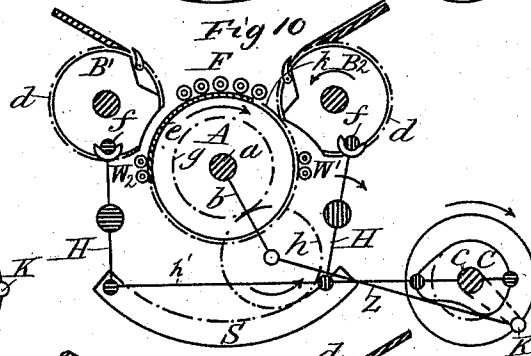
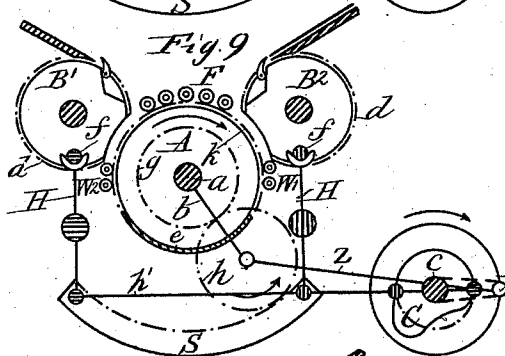
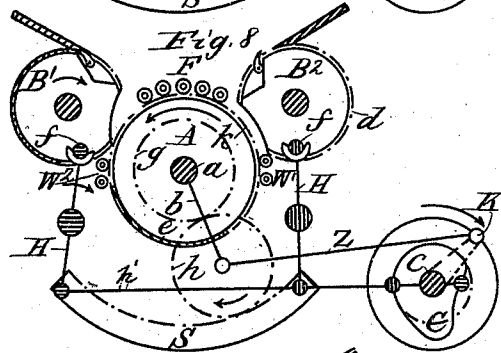
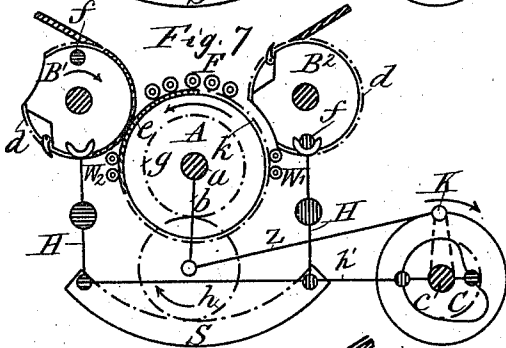
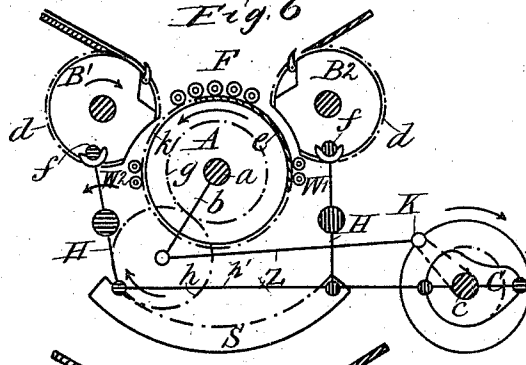
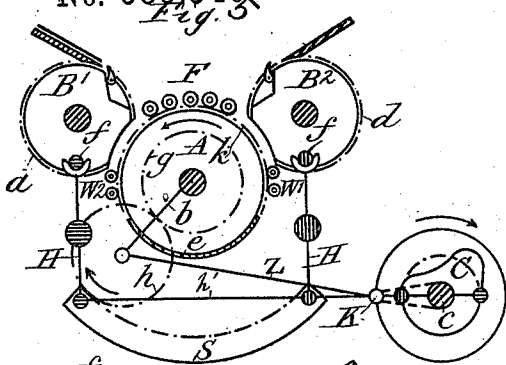
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# UNITED STATES PATENT OFFICE.

JULIUS WEZEL, OF LEIPSIC, GERMANY.

## PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 585,546, dated June 29, 1897.

Application filed August 19, 1896. Serial No. 603,229. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS WEZEL, a subject of the King of Saxony, residing at Leipsic, Saxony, Germany, have made a new and useful invention for Improvements in Printing-Presses, of which the following is a full and clear specification.

My invention relates to improvements in printing-presses, and particularly to improvements in rotary cylinder-presses. By this machine an objection is removed which consists in the fact that in printing with printing-cylinders constantly revolving in the same direction the design becomes uneven in the direction of rotation. The drawing or design in this case becomes massed at one side—*i. e.*, it gradually becomes denser—while on the opposite side it becomes paler, or finer, or sharper in its details. This defect is avoided by the new machine for the reason that in the same the printing-cylinder is caused to rotate in one direction and then in the other direction in making the impressions. This arrangement, moreover, enables the working capacity of the machine to be considerably increased, since it is arranged to work with two impression or feed cylinders.

The arrangement and operation of the machine, as well as the coaction of the principal parts of the same, will be understood from the following with the aid of the drawings.

In the drawings, Figure 1 is a vertical longitudinal section, and Fig. 2 a front elevation, of the machine. Fig. 3 is a sectional plan of the lateral parts of the machine, the section being taken on line R R, Fig. 1. Fig. 4 represents an elevation of the spring journal-bearings of the impression or feed cylinders; and Figs. 5 to 12 are diagrams in vertical section, illustrating the mode of operation of the machine.

The printing-cylinder A is suitably journaled in the standards of the machine-frame, the axle or journal *a* of this cylinder being connected with the guide-crank *b*, mounted loosely on the same and adapted to receive an oscillatory or rocking motion. The latter is connected by pitman *z* with the driving-crank K, mounted on the shaft *c*. A gear-wheel *g*, meshing with the guide-crank gear-

wheel *h*, is mounted on the axle of the cylinder.

The wrist-pin of the crank-wheel oscillates or rocks in the plane of rotation of the crank K, and in consequence thereof the crank-wheel, by virtue of meshing with the fixed toothed segment S, causes the cylinder gear-wheel *g*, and with it the printing-cylinder A, to rotate. This rotation of the printing-cylinder A, in consequence of the crank motion and the gear transmission, is a reciprocatory or rocking motion, so that the printing bed or plate *e* takes effect alternately in one and in the other direction.

The impression-rollers B' B<sup>2</sup> have their movements of rotation imparted to them from the printing-cylinder by means of the train of gear-wheels *k* and *d d*, the latter of which having their gearing mutilated at one point for the period of rest.

The impression-cylinders B' B<sup>2</sup> have their journals or gudgeons *b*<sup>2</sup> mounted in boxes *b*<sup>3</sup>, movable between guideways *b*<sup>4</sup>, carried by and forming a part of the framework of the press. The said guideways *b*<sup>4</sup> are reduced in width at their inner ends to form shoulders, against each pair of which an abutment-plate *b*<sup>5</sup> bears. Through holes in this abutment-plate pass bolts *b*<sup>6</sup>, which also pass through holes in the corresponding box *b*<sup>3</sup> and are provided outside the box with heads. Around the inner end of each bolt is placed a coiled spring *b*<sup>7</sup>, which bears against the abutment-plate and against a nut *b*<sup>8</sup> on its respective bolt. By this construction a certain yielding pressure is given to the impression, and, furthermore, by screwing the nuts *b*<sup>8</sup> up or down on their respective bolts the pressure may be adjusted as required.

The impression-cylinders are provided with the stop-pins *f*, which serve to arrest the cylinders B' B<sup>2</sup> during the period of rest and also to again cause them to correctly mesh with the actuating-gearing. To attain this effect, the stop-pins *f* are caused to engage with the rocking retaining-forks H, which retaining-forks H are actuated from the cam-wheel C by means of the draw-rods *h'*, so as to cause them to rock when the period of rest begins or terminates.

The inking apparatus F is arranged over the middle of the printing or plate cylinder, while the wiping or damping roller trains W<sup>1</sup> W<sup>2</sup> are located beneath the impression-cylinders B<sup>1</sup> and B<sup>2</sup>.

The various phases as they occur in their operation of the machine may be understood from the following, with the aid of Sheet III, embracing Figs. 5 to 12 of the drawings.

In Fig. 5 the cylinder-driving crank K is in its extreme left-hand position and the printing plate or surface is beginning to rotate to the right, so as to pass beneath the wiping-rollers W<sup>1</sup> and alongside the inoperative and stationary impression-cylinder B<sup>2</sup> and under the inking-train F. (See Fig. 6.) The plate e then produces the impression (see Fig. 7) with the aid of the impression-cylinder B<sup>1</sup>, which has been thrown into renewed engagement with the actuating mechanism by the movement of the retaining-fork H. (See Fig. 6.)

In Fig. 8 the impression-cylinder B<sup>1</sup>, which has just been actuated, is caught by the retaining-fork and taken out of engagement with the gear-wheel k of the printing-cylinder, so that it is finally brought to rest, as indicated in Fig. 9. In the meantime the crank K has attained its extreme right-hand position (see Fig. 9) and the motion is now reversed.

The printing-cylinder, or rather its plate or surface e, now travels in contact with the wiping-rollers W<sup>2</sup> and passes the stationary impression-cylinder B<sup>1</sup> and then runs in contact with the coloring or inking train F (see Fig. 10) and toward the impression-cylinder B<sup>2</sup>, Fig. 11, which, by the proper movement of the rocking retaining-fork H, has now been brought from its position of rest into engagement with the printing-cylinder gear-wheel k to carry out the printing operation in the same manner as was done previously in connection with the impression-cylinder B<sup>1</sup>.

By virtue of the alternating play of the crank K and the resulting back-and-forth movement of the printing-cylinder A the advantage is attained that one and the same

printing-plate e will be caused to travel in printing first in one and then in the opposite direction of rotation, whereby a one-sided shifting or change of the design is avoided. These advantages are coupled with a simple arrangement of the parts and a grouping of the same which constantly secures a certain and reliable coaction of the working parts, since all the movements are made positive.

The size of the machine, as well as the form and arrangement of separate motive parts, may be varied without thereby in any manner changing the character of the invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a printing-press, the combination, with an oscillating printing-cylinder, of two impression-cylinders and means for alternately throwing said impression-cylinders into operation.

2. In a printing-press, the combination, with an oscillating printing-cylinder, of two impression-cylinders, means for operating the impression-cylinders and mechanism for alternately throwing the impression-cylinders into a position to be actuated by said operating means.

3. In a printing-press, the combination, with a printing-cylinder, and means for rotating it in alternately-opposite directions, of a pair of impression-cylinders, and mechanism for giving the latter intermittent alternating rotations.

4. In a printing-press, the combination, with a printing-cylinder, and a segmental rack, of a gear-wheel connected to the printing-cylinder, an idler gear-wheel between the rack and the cylinder gear-wheel, and means for reciprocating the idler gear-wheel along the rack.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS WEZEL.

Witnesses:

RUDOLPH FRICKE,  
MAX MATTHÄI.