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PATENTED JAN. 2, 1906.

M. J. BARNETT.

BED AND CYLINDER MOTION FOR PRINTING PRESSES.

APPLICATION FILED APR. 2, 1904.

2 SHEETS—SHEET 1.

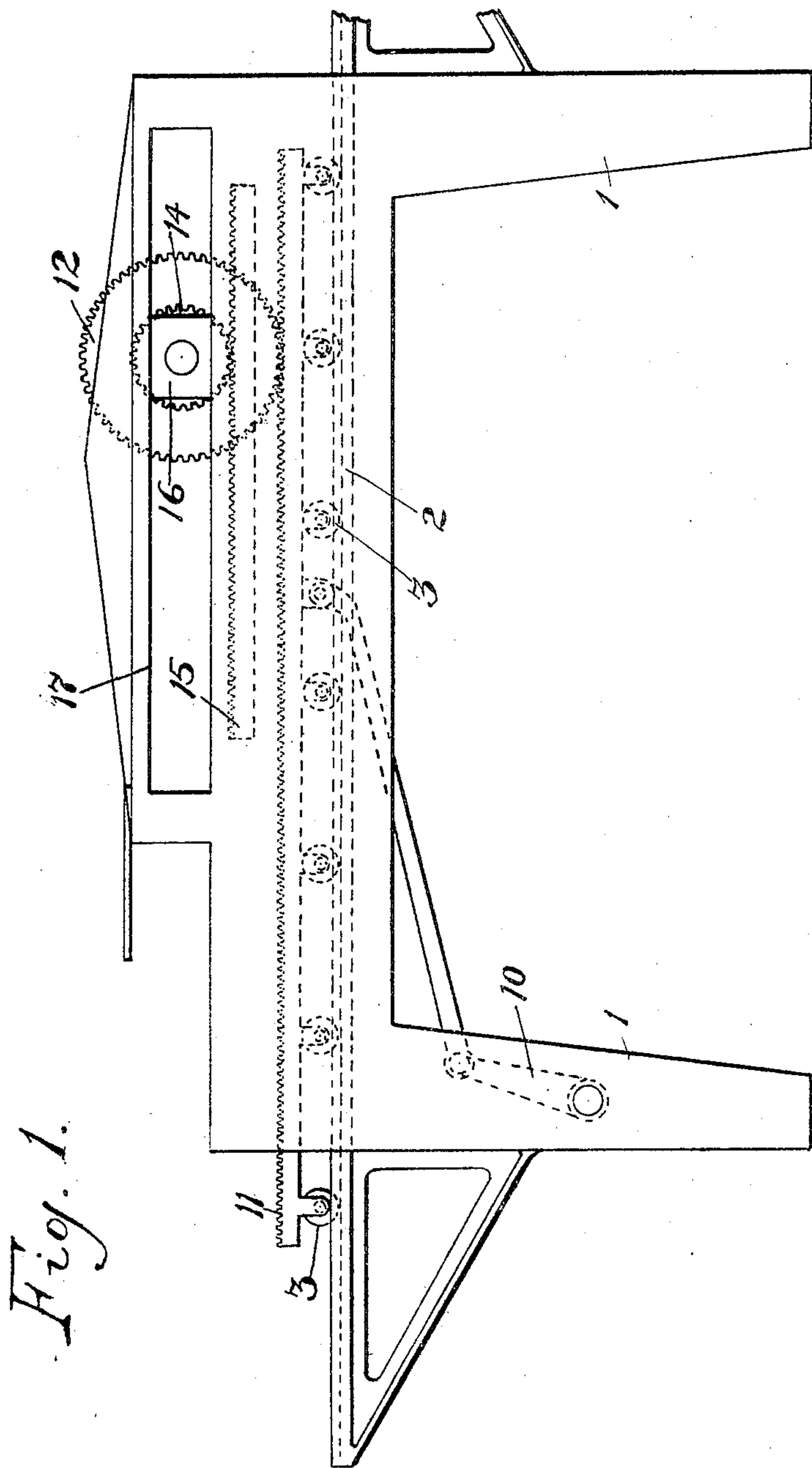


Fig. 1.

Witnesses  
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2 SHEETS—SHEET 2.

Fig. 2.

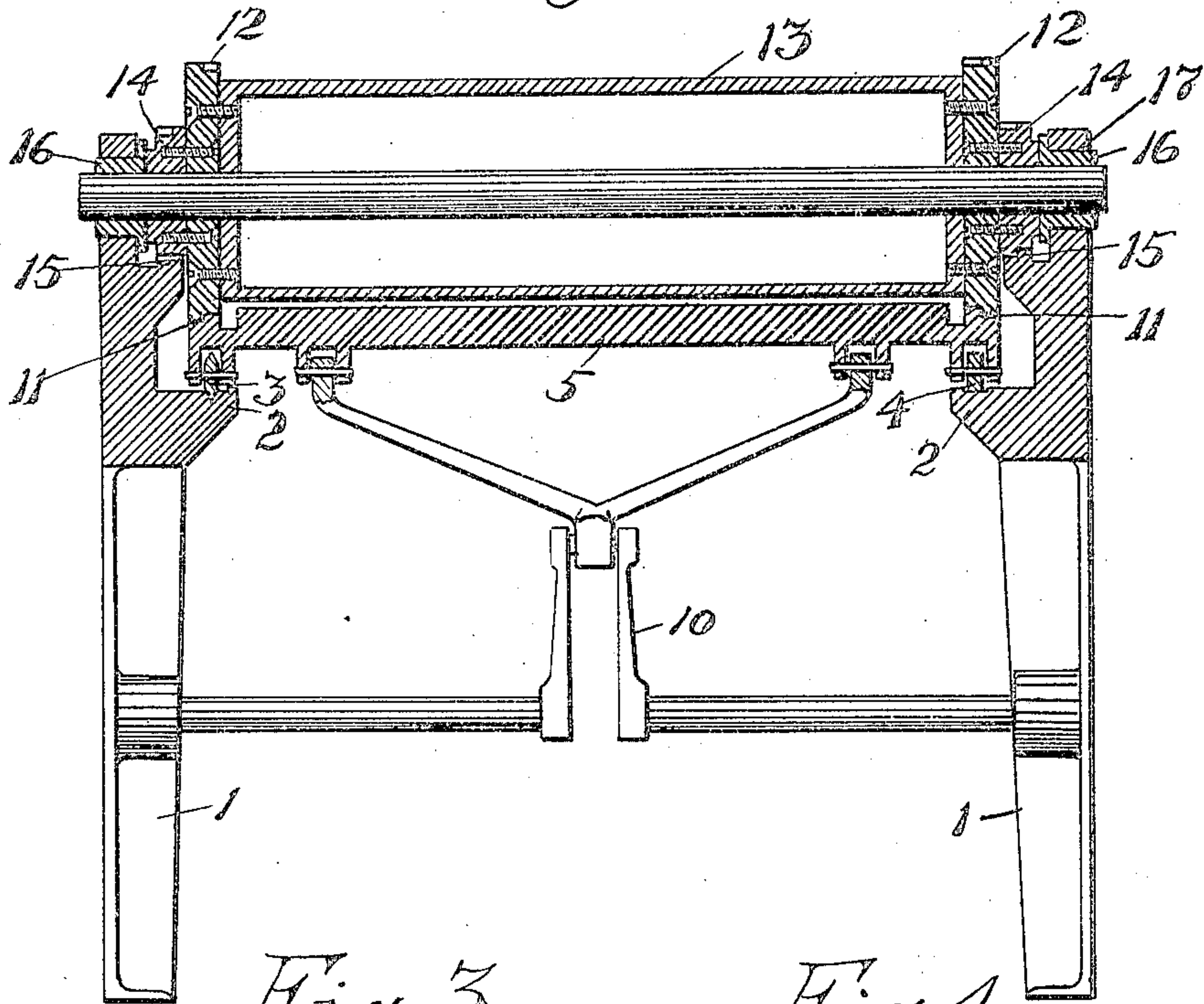
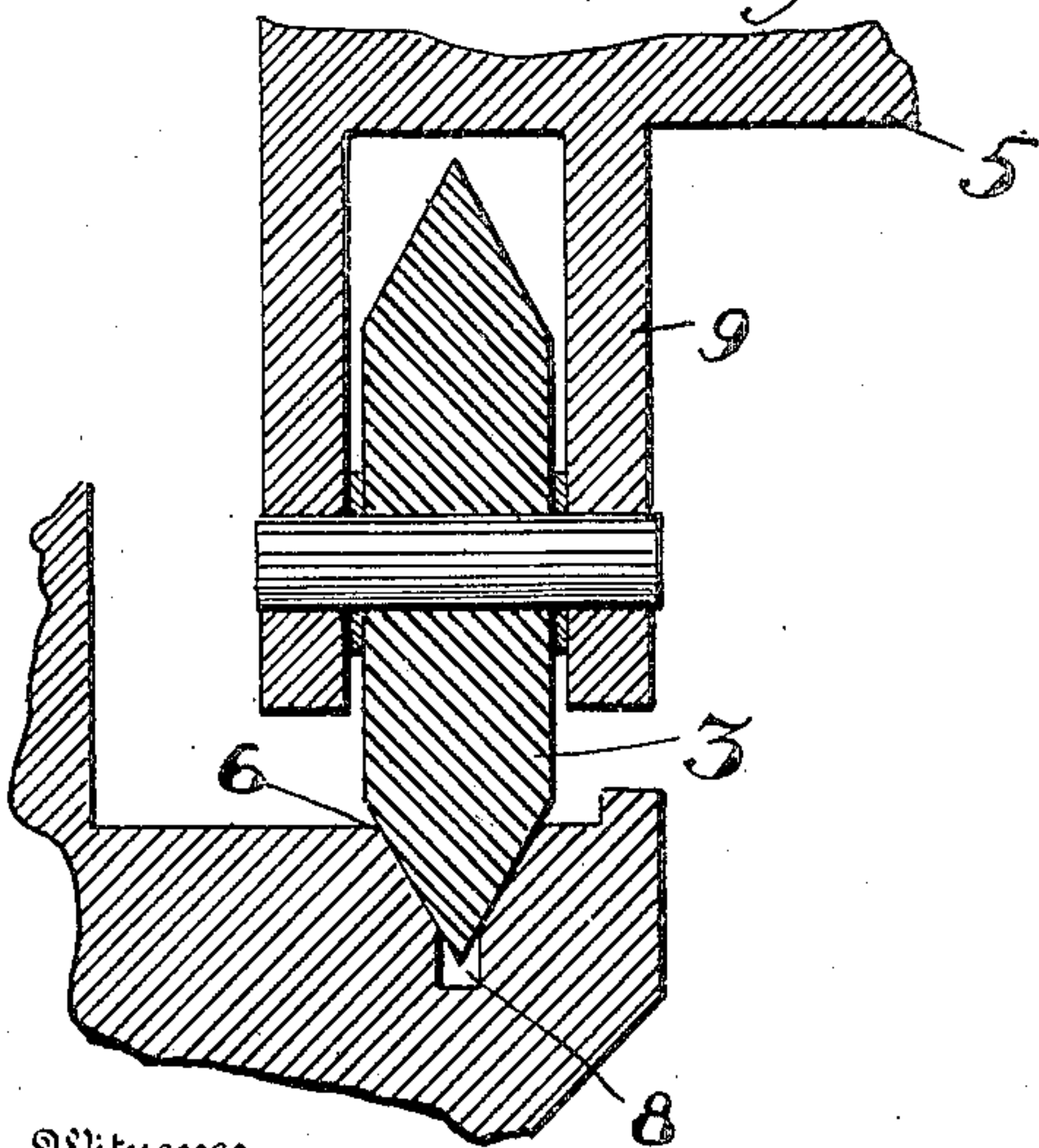


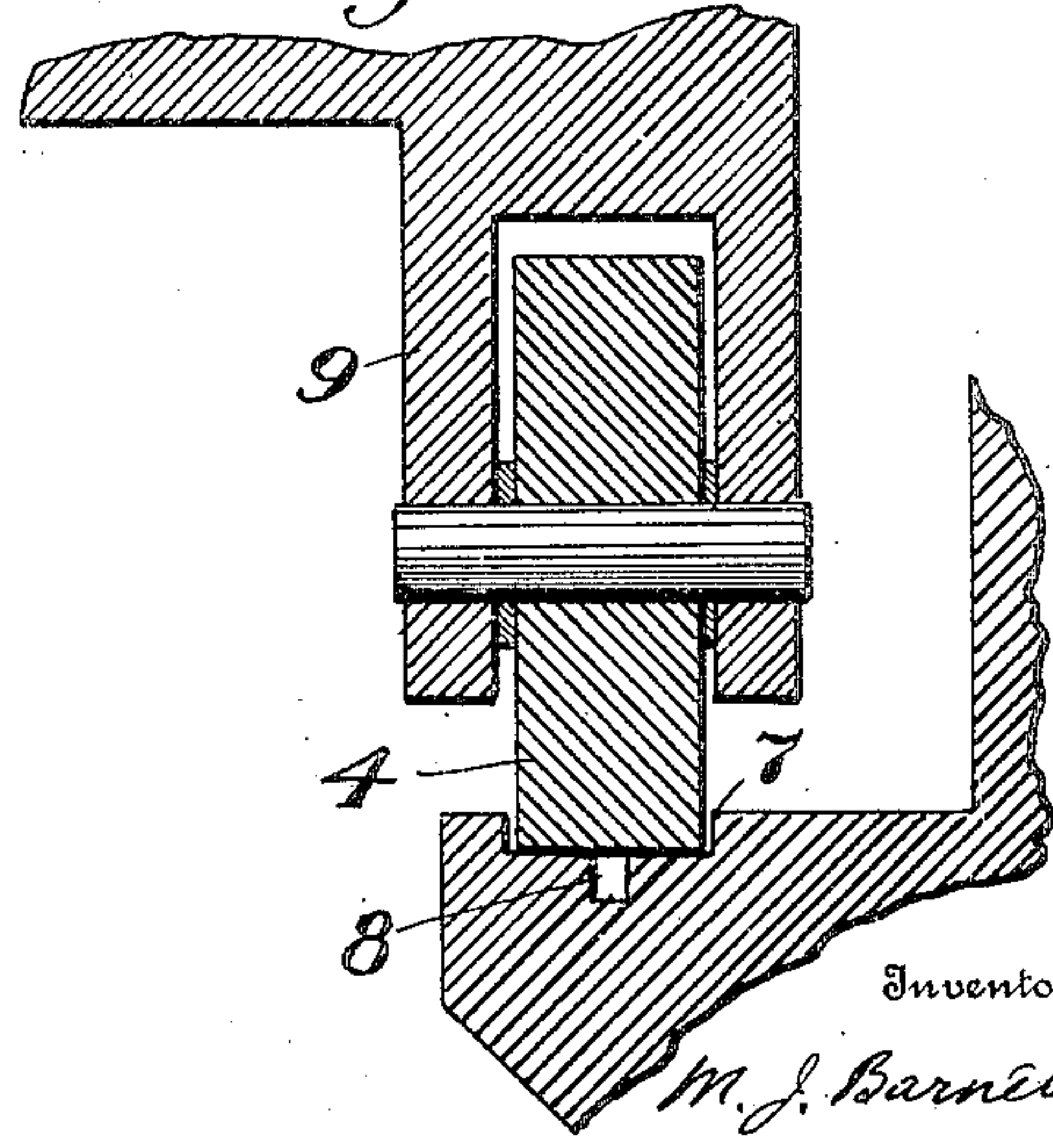
Fig. 3.



Witnesses

*C. B. McCauley.*  
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Fig. 4.



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# UNITED STATES PATENT OFFICE.

MORRISSON J. BARNETT, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY  
MESNE ASSIGNMENTS, TO WHITSON AUTOPRESS COMPANY, A CORPO-  
RATION OF NEW YORK.

## BED-AND-CYLINDER MOTION FOR PRINTING-PRESSES.

No. 808,806.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed April 2, 1904. Serial No. 201,287.

*To all whom it may concern:*

Be it known that I, MORRISSON J. BARNETT, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Bed-and-Cylinder Motions for Printing-Presses, of which the following is a specification.

This invention relates to improvements in bed - and - cylinder motions for printing-presses, and especially to that class of motions in which while the bed is moving in one direction the cylinder moves bodily in the opposite direction.

One of the principal objects of my invention is to provide mechanism which shall avoid all possibility of blurring of the type upon the paper either from lateral motion of the cylinder with reference to the bed or from the motion of the cylinder on the bed not being a true rolling motion.

A further object of the invention is to provide mechanism whereby the motion imparted to the cylinder is much slower than heretofore as compared with the motion of the bed, the advantage of this being that more time is permitted for handling the paper, both in taking hold and releasing the same, so that as a given time is necessarily required for the handling of the paper the motion for taking the impression may be given less time, and the whole motion of the machine is more rapid, while not interfering with or impairing the accurate handling of the paper.

A further object of my invention is to provide a construction by means of which the motion of the bed can be transmitted to the cylinder directly and without taking it through the shaft, thereby avoiding the chance of unduly straining and bending the shaft, which would result in uneven impression coming from the type on account of the cylinder revolving eccentrically.

A further object of the invention is to provide means for better resisting unequal pressure upon the bed due to variations in the printing-surface. Thus if the form contained a cut to one side of the center, which cut contains a greater pressure-area than the average type-surface, then the pressure on that part will be correspondingly greater. With machines heretofore constructed this has tended to produce a buckling or a tilting of the bed

upon one side which would create undue friction against the surface holding down that side. By my present construction I am enabled to dispense with any surface bearing down upon the sides of the bed and am enabled to run the bed upon free rollers, thus causing it to run with much less friction and less power.

My invention furthermore resides in the novel details of construction hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of the printing-press. Fig. 2 is a vertical cross-section of the same. Figs. 3 and 4 are details of the rollers and the parts adjacent thereto.

Referring to the drawings, 1 represents the legs of the machine, with which are cast side tracks 2 for the rollers 3 4 of the printing-bed 5. Said tracks have channels 6 7, corresponding in shape to said rollers. Of these rollers one, 3, is formed with a beveled periphery, and the channel therefor is correspondingly beveled, while the other roller is formed with a flat edge and its channel is also flat. In the center of each channel is formed a lower depression 8, serving as an oil-trough. The object of making one of these rollers with a beveled periphery and the other with a flat edge, as shown, is in order that the flat-faced roller can move freely laterally in its channel without lateral binding, while at the same time the bed is guided with absolute accuracy on account of the beveled edge of the other or guide roller rolling in its correspondingly-beveled channel. If both of these rollers were beveled, then there would be a tendency to bind unless the distance between the channels were accurately equal to the distance between the rollers, which it is almost impossible to obtain; but by making one beveled and permitting free lateral movement to the other roller such accuracy of workmanship is not required.

The rollers are mounted on lugs 9, depending from the sides of the printing-bed 5. This bed is driven from a crank 10 by means of a rigid Y connect-shaft. This is an important feature of my invention. Heretofore, so far as my knowledge extends, the point of connection of the connect-shaft with the printing-bed has been in the center or else the ex-



treme outside of the frame where there were used two connections, or if the bed were connected at the sides the connections were flexible, containing a plurality of joints. These joints necessarily involved much lost motion, especially when worn. The first and third constructions only need be considered here for the purpose of comparison with my present invention. The defect common to both constructions was that the pressure on the bed would be uneven, according to the character of the type-surface. This on account of the driving force being applied centrally would cause a tilt of the bed and consequent friction. With the present construction this pressure is received between the two points of support, and there is substantially no lost motion, so that it no longer causes a tilting of the bed. It is for this reason that I am enabled to use rollers to support the bed without any upper gibs therefor.

On each side of the printing-bed is formed a rack 11, and each rack engages a gear-wheel 12, bolted to the printing-cylinder 13. Formed integral with each gear-wheel 12 is a smaller gear-wheel 14, which in turn engages a stationary rack 15 on the frame. The result of this construction is that as the printing-bed moves in one direction the cylinder moves in the opposite direction. The speed at which the cylinder travels will depend upon the ratio of the diameters of the gear-wheels. If the gear-wheels were of the same diameter, the cylinder would travel in one direction as fast as the bed travels in the opposite direction. The gear-wheels 14 being smaller than the gear-wheels 12, the cylinder travels backward slower than the bed travels forward. This comparatively slow speed of the cylinder is a great advantage, for it allows a longer time throughout the entire action for taking up the paper and releasing it. This may be taken advantage of either by obtaining a more accurate handling of the paper or by increasing the speed of the machine as a whole.

An important advantage arises from connecting the cylinder and bed by means of the rack-and-gear wheel directly, as in this way so long as the bed is moving in the same direction there is maintained a constant pressure between the parts which prevents any lost motion which would result in blurring of the impression taken from the type.

The ends of the shaft are carried in boxes

16, which slide on the sides of the frame under guides 17.

I have not herein shown the construction of the grippers for taking the paper, as these may be of any approved construction, or of other parts of the machine which are common in the art, but have confined myself to the parts of the machine wherein it differs from those heretofore constructed.

I claim—

1. In a printing-press, in combination, a frame, a bed reciprocating on said frame, the sides of said bed being unrestrained by said frame against upward movement thereon, a shaft, a crank thereon, and a Y-shaped connection between the crank and the bed, the arms of the Y being connected to the sides of the bed, whereby pressure at any point of the platen is received between the two supporting-points, substantially as described.

2. In a printing-press, in combination, a frame having on each side a guide, a cylinder and boxes therefor sliding under said guides, a stationary rack on each side of the frame, said racks being between the guides, a bed, a rack secured at each side thereof, a large and a small gear-wheel at each end of the cylinder, said gear-wheels and cylinder being all secured together, the large gear-wheels engaging the racks on the bed, and the small gear-wheels engaging the racks on the frame, and means for directly reciprocating the bed in continuous engagement with the cylinder, substantially as described.

3. In a printing-press, in combination, a frame having on each side a guide, a cylinder and boxes therefor sliding under said guides, a stationary rack on each side of the frame, a bed, a rack secured at each side thereof, a large and a small gear-wheel at each end of the cylinder, said gear-wheels and cylinder being all secured together, the large gear-wheels engaging the racks on the bed, and the small gear-wheels engaging the racks on the frame, and means for directly reciprocating the bed in continuous engagement with the cylinder, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MORRISSON J. BARNETT.

Witnesses:

FRANCIS M. WRIGHT,  
BESSIE GORFINKEL.