

(No Model.)

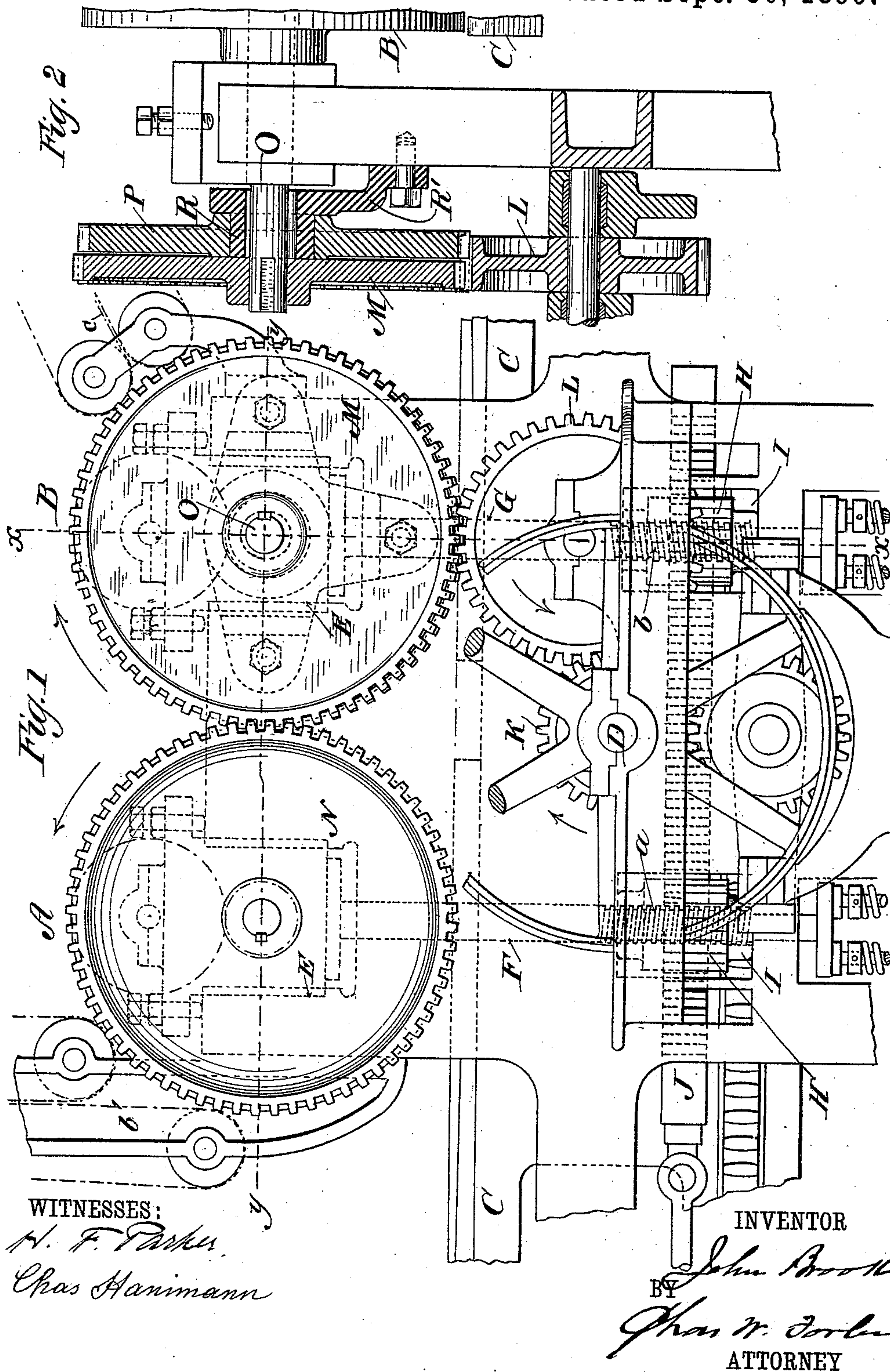
2 Sheets—Sheet 1.

J. BROOKS.

GEARING FOR CONTINUOUS MOTION IMPRESSION CYLINDERS.

No. 437,417.

Patented Sept. 30, 1890.



WITNESSES:

*H. F. Parker.*

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INVENTOR

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(No Model.)

2 Sheets—Sheet 2.

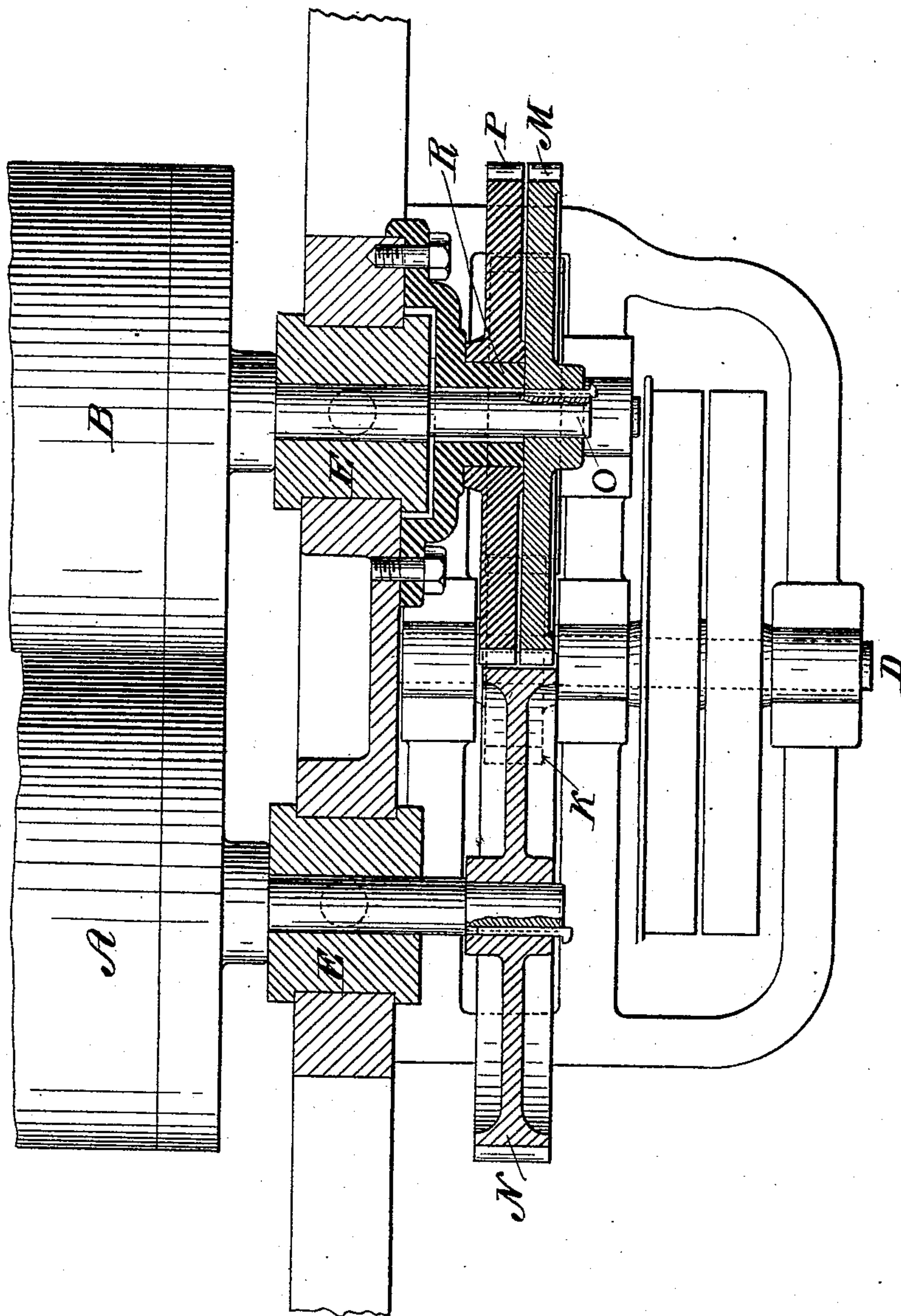
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Fig. 3



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN BROOKS, OF PLAINFIELD, NEW JERSEY.

GEARING FOR CONTINUOUS-MOTION IMPRESSION-CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 437,417, dated September 30, 1890.

Application filed April 19, 1890. Serial No. 348,713. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BROOKS, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Gearing for Continuous-Motion Impression-Cylinders, of which the following is a specification.

My invention relates to form-bed printing-presses in which the impression-cylinders have continuous rotation and are driven by gearing from the driving-shaft of the machine independent of the form-bed gearing.

My invention more especially relates to a perfecting-press in which the cylinders are alternately elevated from the form-bed when the latter takes its return motion under them in each direction. Heretofore the two cylinders have been driven from the driving-shaft, the one through a single intermediate gear and the other through two intermediate gears from a common driving-pinion, the two intermediate gears being essential to the proper direction of rotation. Such a construction is illustrated in my Letters Patent No. 413,491, issued October 22, 1889.

The object of my present improvement is to overcome the excess of lost motion of both cylinders when the one having the single intermediate transmitting-gear is raised partially away from the driving-pinion, necessitating the only positive motion to be derived through the double intermediate-gear transmission.

To this end my invention dispenses with the double transmitting-gearing; and it consists in combining with the single intermediate gear a loose spur-gear on an independent stationary axis or journal concentric with the normal axis of one of the impression-cylinders—that is to say, the axis of said cylinder when in its lowest position—the loose gear meshing with the spur-gear of the other impression-cylinder. The loose spur-gear is of the same diameter as the tight spur-gear of the cylinder to which it pertains and bears the same number of teeth, so that the positive motion given to the loose gear is also returned to the said tight gear through the spur-gear of the remaining cylinder, with which they mesh in common, and both said cylinders are thereby maintained in positive

relation to the driving-gearing irrespective of vertical movement.

Referring to the accompanying drawings, Figure 1 is a side elevation of a part of a cylinder-press, showing the application of my invention; Fig. 2, a vertical section on the line  $x x$ , Fig. 1; and Fig. 3, a horizontal section on the line  $y y$ , Fig. 1.

A represents the first impression-cylinder, and B the second impression-cylinder.

C represents the form-bed, driven from the driving-shaft D by suitable gearing, such as that illustrated in the aforesaid patent. The form-bed bears two forms, one pertaining to each cylinder, and as the bed is reciprocated to and fro the cylinders continuously rotate and are vertically moved into or out of printing contact with the respective forms at the proper times. The cylinders are elevated in their movable journal-boxes E by means of the vertical elevating-shafts F G, indicated by dotted lines, and these shafts bear left and right screw-threads  $a b$ , respectively, upon which the pinion-nuts H in the mortises I of the frame engage. The said pinion-nuts are rotated by engagement therewith of a rack J at either side of the machine. Such mechanism corresponds to that heretofore described by me in Letters Patent No. 274,558, and is therefore not new, and, moreover, any other well-known or suitable form of elevating mechanism may be employed in connection with my invention.

$b'$  represents conveying-belts for feeding the sheet of paper, and  $c$  the conveying-belts for delivering the printed sheets.

K is the driving-pinion on the driving-shaft D.

L is the intermediate transmitting gear; M, the tight spur-gear of the impression-cylinder B, and N the spur-gear of the remaining impression-cylinder A.

P, Figs. 2 and 3, is the loose spur-gear pertaining to the impression-cylinder B, and the independent axis or journal of said loose gear consists of the stationary sleeve R, supported from the frame of the machine on the bracket R', being concentric with the shaft O when the cylinder B is in its lowest position. The sleeve axis or journal R has its central opening sufficiently large to permit the free vertical movement of the shaft O independently.



This motion is in practice very slight, but sufficient, however, to cause lost motion between the teeth of the gears M and L in the absence of my improvement.

5 As seen in Fig. 2, the transmitting-gear L meshes with both gears M and P in common, and, as seen in Fig. 3, the spur-gear N also meshes with both gears M and P in common, it being obvious that the gear L might only  
10 mesh with the gear P.

In Fig. 1 the second impression-cylinder B is shown in an elevated position, the first impression-cylinder A being depressed in printing contact with the form-bed.

15 In operation a positive motion is always transmitted from the gear L to the gear P, the pitch circles remaining coincident at the point of engagement. A positive motion is thereby also transmitted to the spur-gear N of the cylinder A irrespective of the elevation of the cylinder B and its gear M. A positive motion is also returned to the tight gear M of the cylinder B through the medium of the gear N, meshing in common, and no  
20 lost motion occurs in the revolution of the cylinder B, whereby to interfere with the registering of the paper while being transferred from the one cylinder to the other.

The loose gear P and intermediate gear L  
30 may of course be applied to either cylinder A or B.

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

35 1. In a cylinder printing-press in which the cylinders have vertical motion, applied as described, the combination of the tight cylinder-gears and a loose spur-gear on an independent axis concentric with the axis of printing rotation of one of the cylinders; intermeshing  
40 with the tight gear of the other cylinder, and also intermeshing in common with the tight cylinder-gear adjacent to it with a driving-gear of the machine vertically in line therewith, for the purpose set forth.

2. In a cylinder printing-press in which the cylinders have vertical motion, applied as described, the combination of the tight cylinder-

gears, the driving-pinion, the intermediate gear, and a loose gear on a fixed axis concentric with the axis of printing rotation of one of the cylinders, intermeshing in common with the tight cylinder-gear adjacent thereto, with the other tight cylinder-gear, and with said intermediate gear, for the purposes set forth. 50 55

3. In a form-bed perfecting-press, the combination of the impression-cylinders, the elevating mechanism for alternately lifting the cylinders, the tight cylinder-gears, the driving-pinion, the intermediate gear, and a loose gear on a fixed axis concentric with the axis of printing rotation of one of the cylinders, intermeshing in common with the tight cylinder-gear adjacent thereto, with the other tight cylinder-gear, and with said intermediate gear, for the purpose set forth. 65

4. In a printing-press, the combination of a cylinder having a tight gear, a loose spur-gear mounted independent of the cylinder and its gear, a third gear meshing with both of the former gears, and a driving transmitting-gear for driving the tight gear through the loose spur and third gears, substantially as described. 70

5. In a printing-press, the combination of an impression-cylinder having a tight gear, a loose spur-gear mounted independent of the cylinder and its gear and concentric therewith at stated times, a third gear meshing with both of the former gears, a driving loose spur-gear for driving the tight gear through the intermediate and third gears, and means for raising and lowering the impression cylinder, substantially as described. 80

6. The combination of the impression-cylinders, each having a tight gear, a loose spur-gear mounted independent of one of the cylinders and substantially concentric therewith and meshing with the fixed gear of the other cylinder, and a driving transmitting-gear for driving both tight gears through the loose spur-gear, substantially as described. 90

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Witnesses:

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