

(No Model.)

3 Sheets—Sheet 1.

J. HACKETT.
CYLINDER PRINTING MACHINE.

No. 422,206.

Patented Feb. 25, 1890.

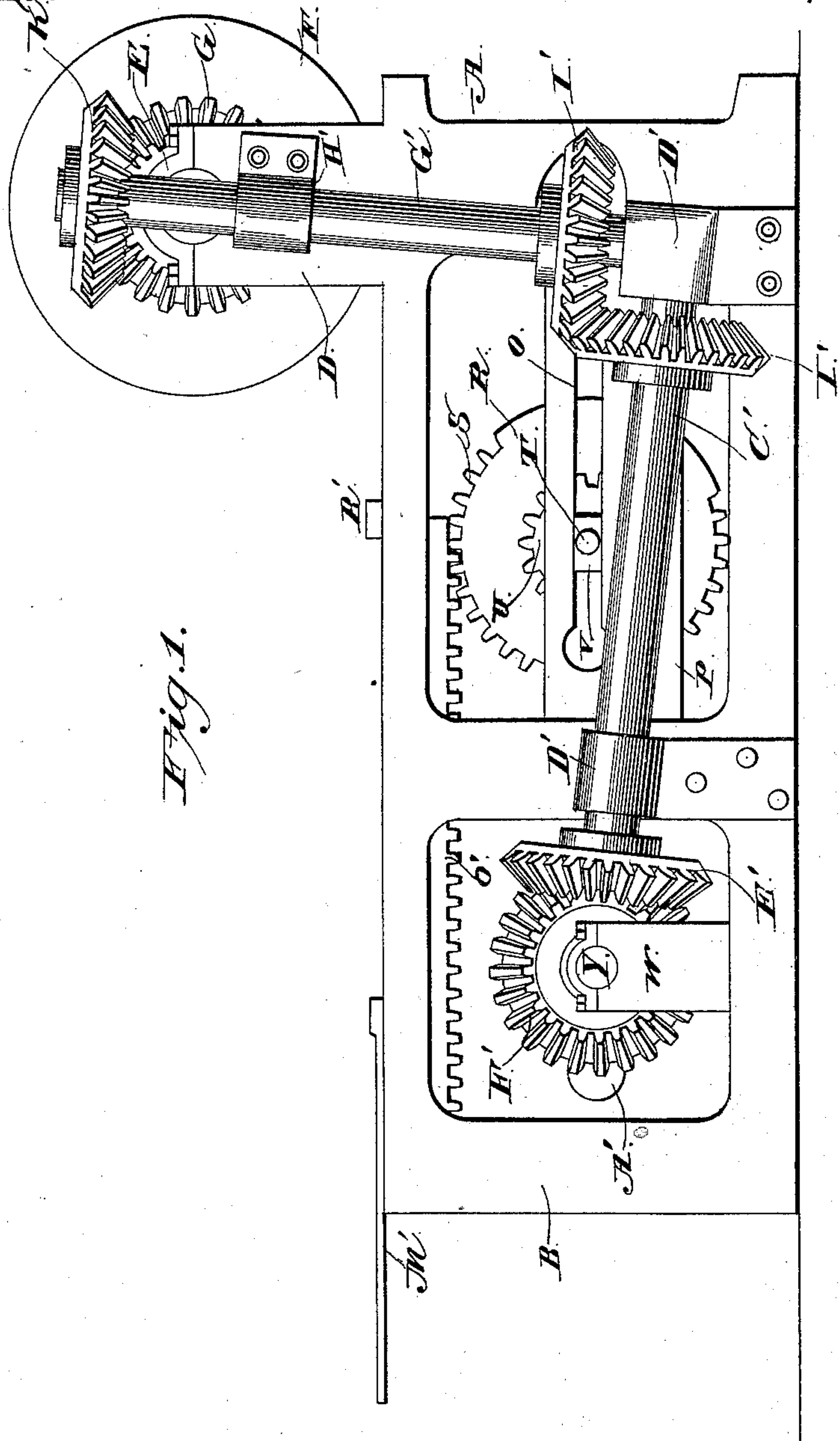


Fig. 1.

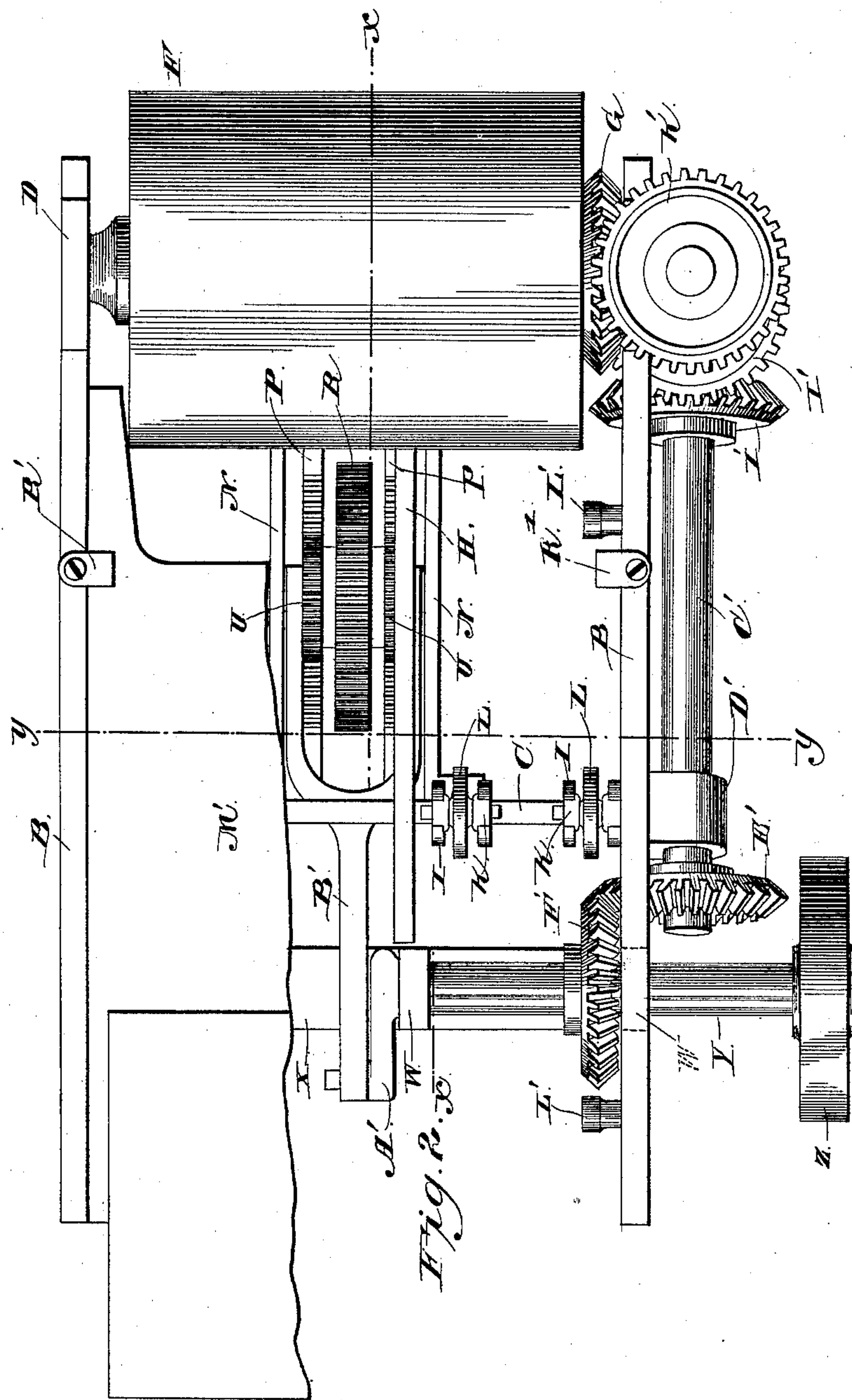
Witnesses
M. Fowler
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3 Sheets—Sheet 2.

Patented Feb. 25, 1890.



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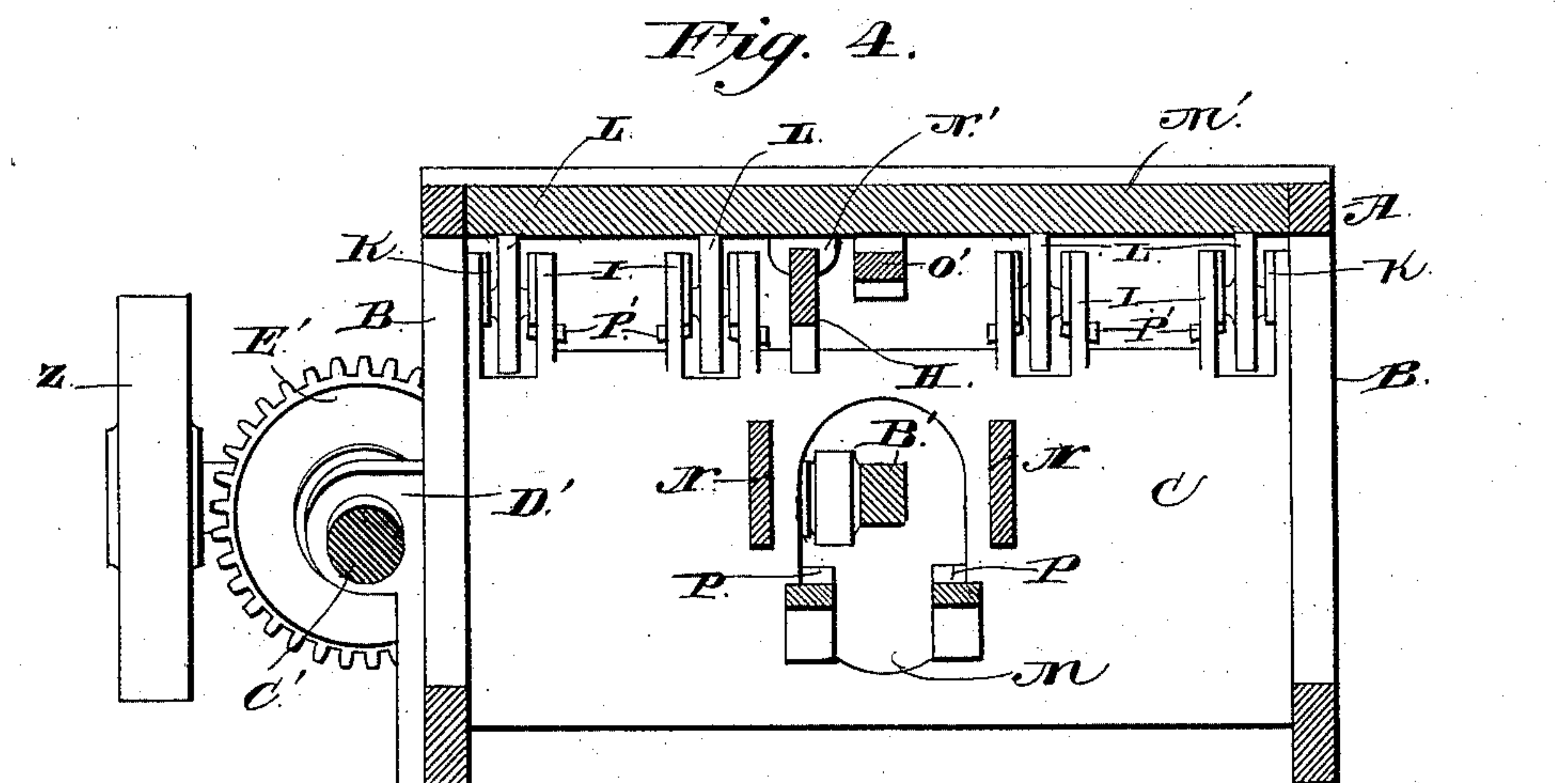
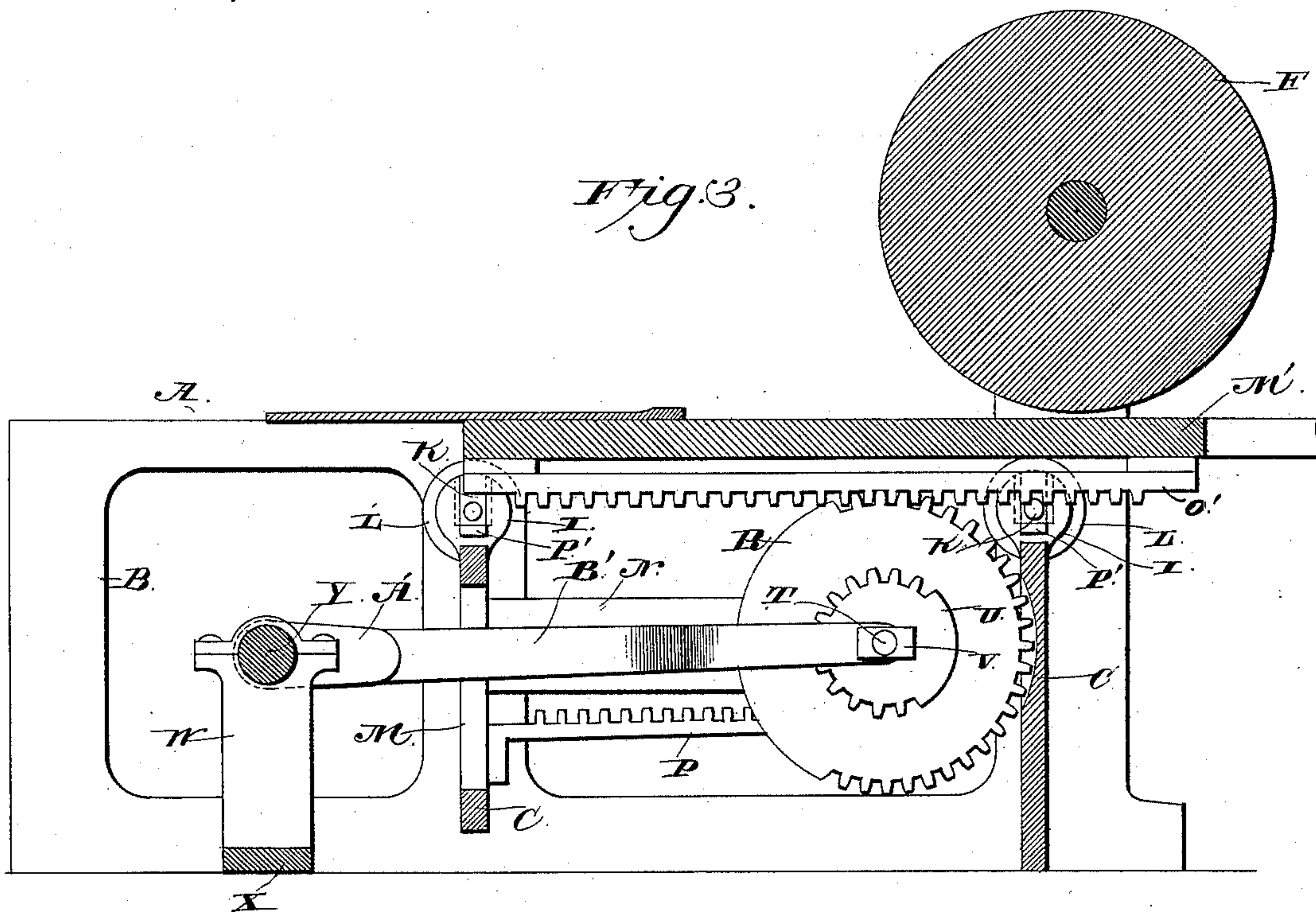
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3 Sheets—Sheet 3.

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J. Warner

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By *His* Attorneys

C. H. Hackett

UNITED STATES PATENT OFFICE.

JAMES HACKETT, OF TAUNTON, MASSACHUSETTS.

CYLINDER PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 422,206, dated February 25, 1890.

Application filed May 21, 1888. Serial No. 274,522. (No model.)

To all whom it may concern:

Be it known that I, JAMES HACKETT, a citizen of the United States, residing at Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Cylinder Printing-Presses, of which the following is a specification.

My invention relates to an improvement in cylinder printing-presses; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

The object of my invention is to provide a cylinder printing-press which will be exceedingly strong, durable, compact, simple in construction, readily operated, and capable of printing at great speed.

In the accompanying drawings, Figure 1 is a side elevation of a cylinder printing-press embodying my improvements. Fig. 2 is a top plan view of the same, a portion of the reciprocating bed being removed. Fig. 3 is a vertical longitudinal sectional view taken on the line xx of Fig. 2. Fig. 4 is a vertical transverse sectional view taken on the line yy of Fig. 2.

A represents the frame of the press, which comprises the sides B and the transverse plates C, connecting the said sides at suitable distances from their ends.

From the upper sides of the sides B, near one end thereof and in line transversely with each other, project vertical standards D, which have bearings E at their upper ends, in which are journaled the spindles at the ends of the impression-cylinder F. On one end of the said cylinder is a miter gear-wheel G.

H represents a longitudinal guide-rod, which is secured on the upper edges of the plates C, and is arranged parallel with the sides B and nearly midway between the same. The said plates C are further provided on their upper edges with series of vertical pairs of ears or standards I, each of which is provided with a vertical open slot. In the said open slots are guided bearing blocks or boxes K, in each pair of which are journaled the

spindles of supporting wheels or rollers L, the latter being arranged at suitable distances apart, as shown in Figs. 2 and 4. These rollers support the bed of the press, and may be adjusted vertically for the purpose of varying the impression.

The front plate C has a vertical central opening M, and the front and rear plates are connected by longitudinal parallel bars N, each of which has a longitudinal slot O. The said bars are arranged at regular distances from the center of the frame. Also connecting the plates C is a pair of horizontal bars P, which are arranged in a lower plane than the guide-bars N and somewhat nearer together, and have rack-teeth on their upper side.

R represents a circular disk or wheel of suitable size, which is provided on about three-fifths of its circumference with spur-teeth S. A shaft T extends through the center of the said wheel and is keyed thereto, and on the said shaft, on opposite sides of the wheel, are secured smaller wheels or pinions U, the teeth of which mesh with the rack-bars P. The ends of the shaft T are journaled in bearing-boxes V, which are arranged in and guided longitudinally by the slots O.

W represents a pair of vertical standards, which are arranged and supported on a cross-bar X near the front end of the frame, at the lower side thereof, one of the said standards being arranged nearly in the center of the same, and the other standard near the sides thereof. In the said standards is journaled a transverse driving-shaft Y, which has a driving-pulley Z at its outer end and a crank A' at its inner end. The said crank is connected to the shaft T by means of a pitman B', the inner end of which is bifurcated to form yoke-arms, which extend on the outer sides of the wheels U and are journaled to the shaft T.

From the foregoing description it will be understood that when the shaft Y is rotated the crank and pinion will cause the shaft T and its bearing-blocks to move backward and forward in a horizontal plane, and that the

wheels U by engaging with the rack-bars P, and being of less diameter than the wheel R, will impart an accelerated rotary motion to the latter, first in one direction and then in the opposite direction, the direction of the rotation of said wheel being reversed at the ends of its longitudinal movement.

C' represents an inclined shaft, which is journaled in bearings D' on one side of the machine-frame. The said shaft has at one end a miter-wheel E', that engages a similar wheel F', which is keyed to the shaft Y.

G' represents a nearly vertical shaft, which is journaled in bearings H' on the same side of the frame, has its lower end connected to the rear end of the shaft E' by means of miter-gears I', and has a miter-wheel K' at its upper end, which engages with the wheel G on the impression-cylinder F.

From the foregoing description it will be understood that when the shaft Y is rotated and the traveling spur-wheel R is moving back and forth continuous rotary motion will be imparted to the printing-cylinder by reason of the gear-shafts E' and G', which connect the impression-cylinder with the driving-shaft Y.

On the inner sides of the sides B, near the upper edges thereof, are journaled anti-friction rollers L'.

M' represents a horizontal bed, which is supported on the rollers L and L', and is arranged between the sides B. On the under side of the bed are depending guides N', which engage the guide-bar H.

O' represents a longitudinal rack-bar, which depends from the center of the bed, has its ends secured thereto, and has its upper sides recessed between its ends, so that the upper side of the rack-bar is out of contact with the opposing lower side of the bed, and said rack-bar engages the spur-wheel R, and, as the latter moves backward and forward and rotates first in one direction and then in a contrary direction, it follows that the same imparts reciprocating motion to the bed, so as to move the same first under the impression-cylinder and then backward from the same. Inasmuch as the wheel R is operated at an accelerated rate of speed by reason of the pinions U and rack-bars P, as before stated, it follows that the bed will be moved by the said wheel R at a correspondingly rapid rate, thereby causing the printing-press to operate very rapidly.

I have not illustrated the inking-rollers nor other necessary parts of the machine, because the same will be readily understood by persons skilled in this art and form no part of my present improvement. It will be observed that the wheel R and the rack O' are arranged directly under the center of the bed, and that therefore the power is applied directly to the bed, and hence the same is moved with greater certainty and with less strain than is possible when the

operating-wheels engage rack-bars at the sides of the bed. The guide-bar H and the guides N' serve to direct the bed in a straight line and prevent the same from vibrating laterally, thus causing the impression-cylinder to take clear impressions from the form.

By reason of the rack-bar O' being supported at its ends and unsupported at its intervening portion the same is adapted to spring under the strain exerted thereon by the wheel R without imparting a springing or vertically vibratory motion to the bed, hence enabling the latter to operate smoothly on the supporting-rolls and causing all parts of the form to be presented to the surface of the impression-cylinder with equal pressure, and thereby improving the quality of the work performed by the press.

Each block K is supported on a key or wedge p' , by means of which the wheels L may be adjusted very accurately, so as to preserve all parts of the surface of the bed in the same plane.

On the upper edges of the sides B are pivoted buttons or clamp-plates R', which are adapted to turn inward over the bed M', so as to keep the same firmly seated on the supporting-rolls.

Having thus described my invention, I claim—

1. In a printing-press, the combination of the frame, the continuously-revoluble impression-cylinder, the reciprocating bed, the vertically-adjustable friction wheels or rollers supporting the latter, the rack-bar upon the under side of the bed-plate, the rack-bars arranged longitudinally in the frame, the transverse reciprocating shaft, having pinions meshing with the rack-bars in the frame and a larger gear-wheel engaging the rack-bar of the bed-plate, and a transverse operating crank-shaft connected by a bifurcated pitman with the transverse reciprocating shaft, and counter-shafts and gearing to transmit motion from said crank-shaft to the impression-cylinder, substantially as set forth.

2. The combination of the frame, the transverse cross bars or plates, the longitudinal rack-bars connecting and having their ends secured to said plates, the guide-bars, likewise secured to said plates and having longitudinal horizontal slots, the boxes arranged to move in said slots, the transverse shaft journaled in said boxes, a transverse crank-shaft, a bifurcated pitman connecting the latter with the transverse reciprocating shaft, and mechanism for rotating the latter and transmitting motion therefrom to the reciprocating bed-plate, substantially as set forth.

3. The combination, in a cylinder printing-press, of the driving crank-shaft, the impression-cylinder, gears, substantially as set forth, connecting the same to the driving-shaft, whereby the impression-cylinder is continuously rotated in one direction, the rack-bars P, the guides N, the pinions en-

gaging the rack-bars, the gear-wheel R, the
shaft T, arranged in the guides, and to which
the pinions and wheel R are keyed, the pit-
man connecting said shaft to the crank-
5 shaft, and the reciprocating bed having the
rack-bar engaging the wheel R, substantially
as described.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
presence of two witnesses.

JAMES HACKETT.

Witnesses:

JOHN C. REYNOLDS,
PETER J. MCGLINN.