

(No Model.)

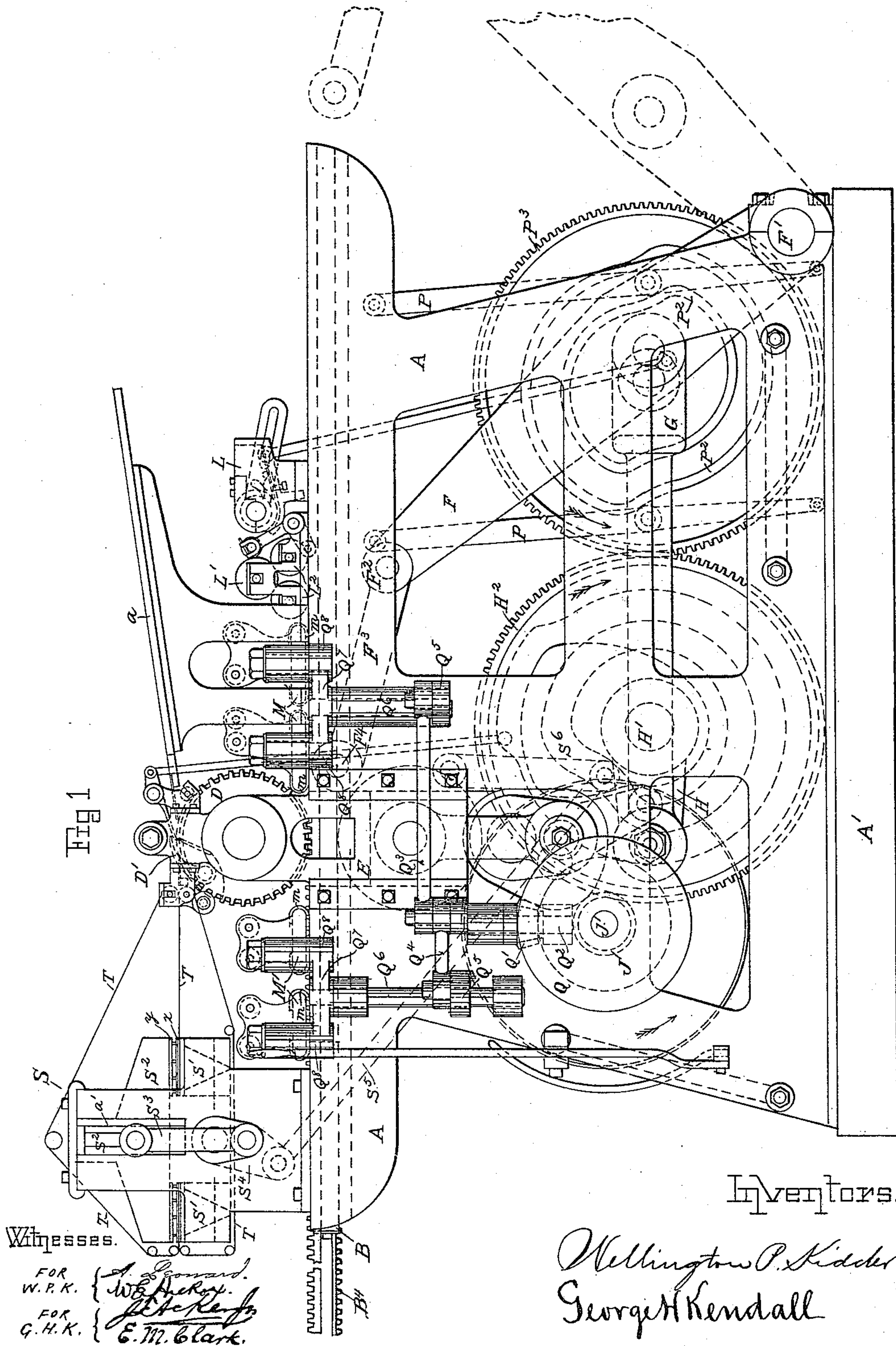
3 Sheets—Sheet 1.

W. P. KIDDER & G. H. KENDALL.

PLATE PRINTING PRESS.

No. 442,776.

Patented Dec. 16. 1890.



Inventors.

Wellington P. Kidder
George H. Kendall

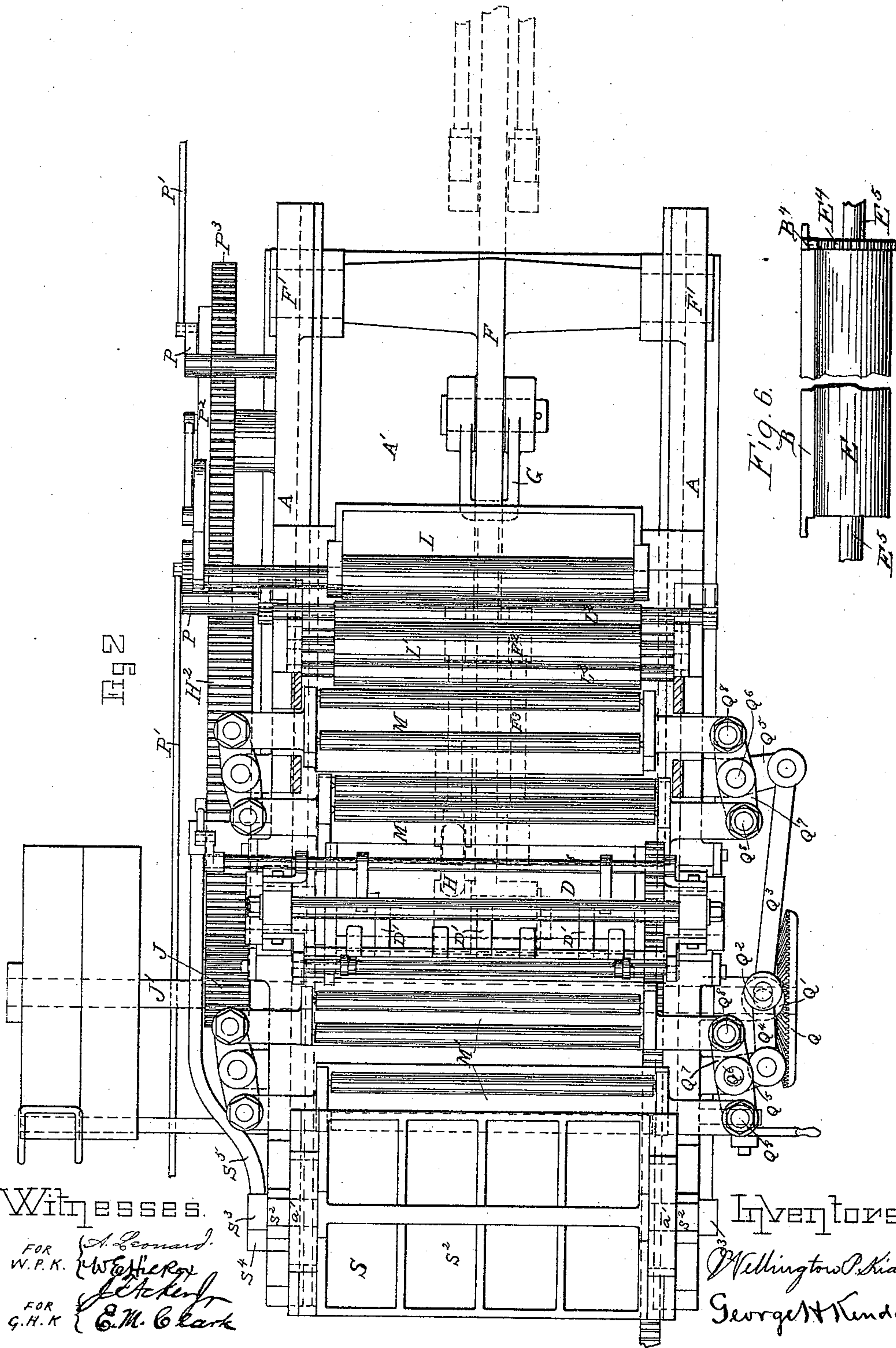
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3 Sheets—Sheet 2.

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Witnesses.

FOR W. P. K. { A. Leonard.
W. P. K. { W. P. K.
FOR G. H. K. { E. M. Clark

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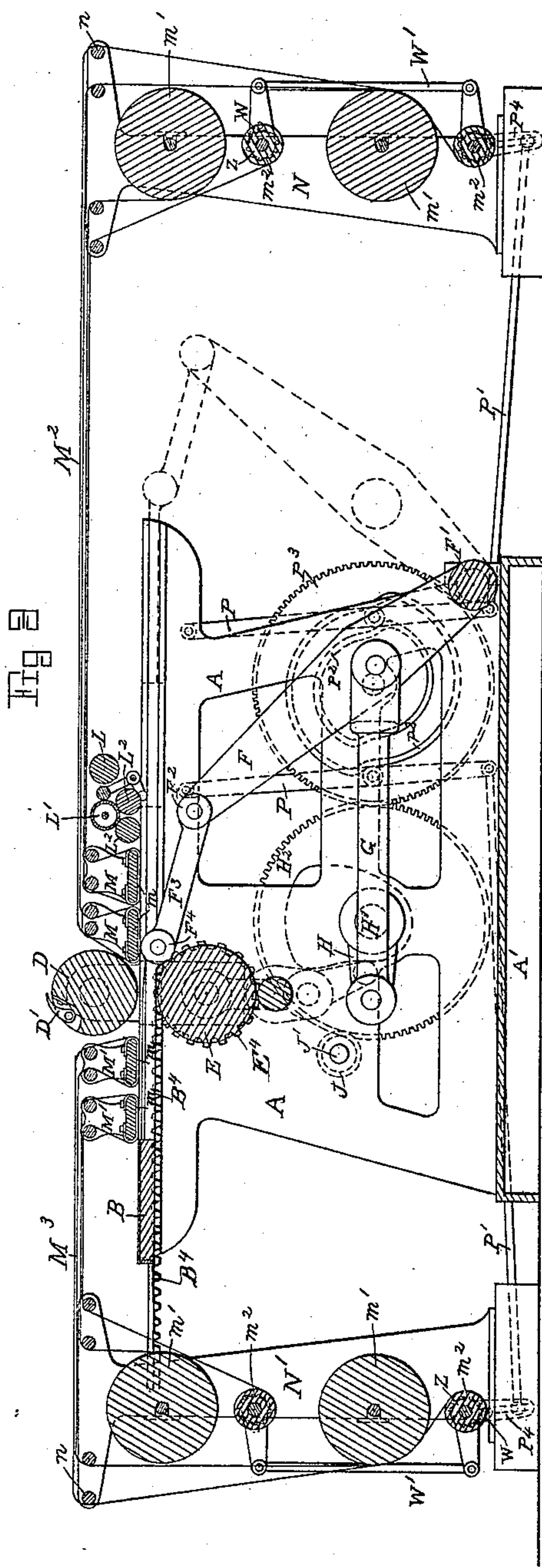
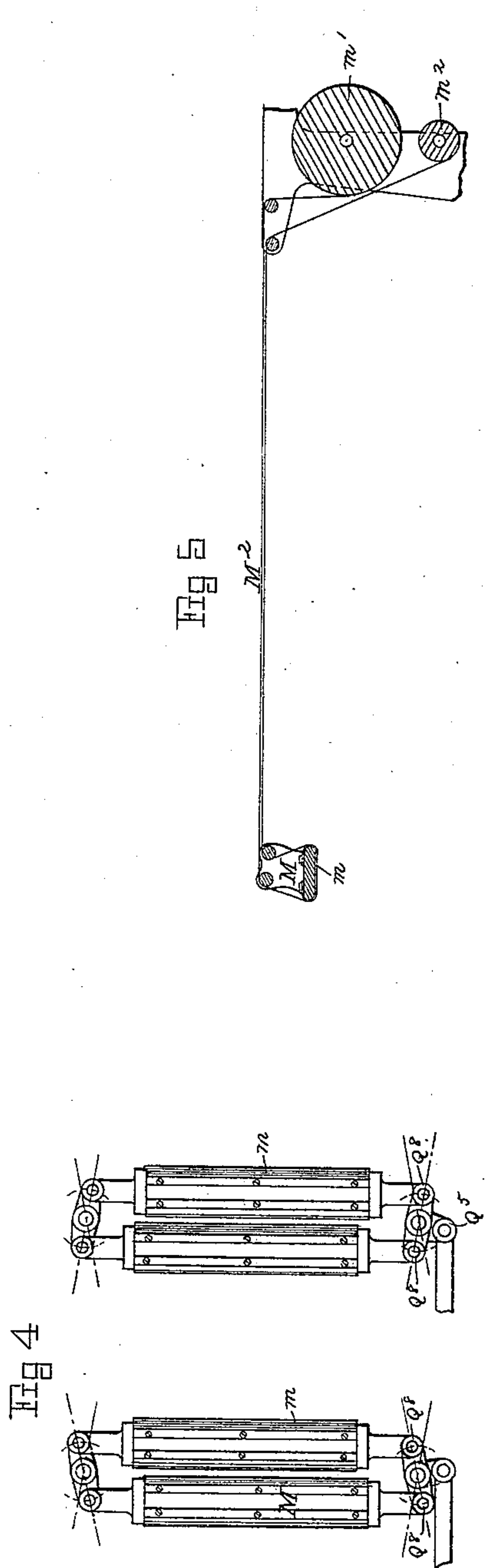
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UNITED STATES PATENT OFFICE.

WELLINGTON P. KIDDER, OF BOSTON, MASSACHUSETTS, AND GEORGE H. KENDALL, OF NEW YORK, N. Y.

PLATE-PRINTING PRESS.

SPECIFICATION forming part of Letters Patent No. 442,776, dated December 16, 1890.

Application filed June 10, 1889. Serial No. 313,735. (No model.)

To all whom it may concern:

Be it known that we, WELLINGTON P. KIDDER and GEORGE H. KENDALL, citizens of the United States, residing, respectively, at Boston, county of Suffolk, and State of Massachusetts, and at New York city, in the county of New York and State of New York, have invented a new and useful Improvement in Plate-Printing Presses, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a machine embodying our invention, and Fig. 2 the plan thereof. Fig. 3 is a detail, on a reduced scale, showing mechanism for actuating the web over the face of the wipers and polishers. Fig. 4 is a detail showing the mechanism of our wiping and polishing mechanism. Fig. 5 is a detail of a single wiper and its web. Fig. 6 is a detail view showing the roll E geared to and in rolling contact with the lower face of the reciprocating bed.

Like letters refer to like parts throughout.

Our invention relates to that class of presses in which the inking, wiping, and polishing of the plate are performed automatically; and it consists, chiefly, first, in improved mechanism for wiping and polishing the plate; second, in means for shifting the web over the face of the wipers and polishers, whereby the shift and application of the cloth in polishing or wiping, or both, are made on both the forward and back stroke of the plate; third, in a perforating mechanism, in combination with a plate-press having wiping and polishing mechanism.

Other features of our invention will be pointed out hereinafter.

In the drawings, in which we show our invention embodied in one of several forms contemplated by us, but on the whole in the form which we now deem the most preferable, A represents the main frame secured on the bed-plate A'.

B represents the bed carrying the plate actuated back and forth between the impression-cylinder D and the drum or roll E by means of the swinging arm F, pivoted on the frame at F' and actuated by the connecting-rod G and crank H on the shaft H', driven by the gear H², and pinion J on driving-shaft

J', having ordinary belt-pulleys and balance fly-wheel. The free end of the swinging arm F at F² is connected by a link F³ to a pivotal point on the bed B at F⁴. The cylinder D and roll E are both geared to the bed by racks and spur-wheels, oscillating and reversing with the bed. At one end of the roll E is fixed its gear E⁴, meshing into a straight rack B⁴. The pitch-lines of the gear and rack are such that the face of the roll and lower side of the bed are always held in perfect rolling contact, and therefore the said roll E may be properly termed an "anti-friction" roll. Grippers D' are provided on the cylinder for seizing at the proper point the sheet to be printed and releasing it after the impression has been taken, these details being similar to those used on the ordinary drum-cylinder relief letter-press printing-machines. A fountain L, for supplying the ink to the distributing-rollers L' and form-rollers L², is provided, all to operate in the ordinary manner. The mechanism for gripping and releasing the sheet, as well as the inking apparatus, may of course be varied in form, and will be readily understood by all skilled in the art without more particular description.

M represents the first pair of wipers, any desired number of which may be used between the inking-rollers and cylinder; M', a pair of polishers of similar construction. The under sides of these wipers and polishers next to the plate are preferably covered with felt or other soft material to act as a cushion or pad m, over the surface of which the changing sheet or webs (preferably of cheese-cloth) M² M³ are made to pass. These webs are wound on rolls m' m², mounted on suitable supports N N'. Each web is slowly drawn from one roll around its wiper or polisher over guide-rolls n and rewound on another roll m², a pair of rolls m' m² being used for each wiper or polisher, as indicated more clearly in the detail, Fig. 5. An intermittent motion is given to the web and a shift of each web made between each passage of the plate in either direction. This constitutes one feature of our invention. An ordinary pawl-and-ratchet mechanism W Z on the spindle of the rolls for the web is actuated by levers P⁴ and

P, connecting-rod P' and cam P², having opposite operating parts and attached to a spur gear-wheel P³, engaging the crank-wheel H², the double feed of the web at each impression 5 constituting the essential feature of this part of our invention. The upper pair of rolls are actuated in a similar manner from the lower pair by means of the connection W'.

Each wiper or polisher is mounted and actuated in a similar manner, and the description of one will suffice for all. They are placed on both sides of the cylinder, which arrangement constitutes another feature of our invention. On the driving-shaft J' is 15 placed a bevel-gear Q, engaging the smaller bevel-gear Q' on the upright shaft Q², the upper end of which is formed eccentrically to serve as a crank to give motion to the connecting-links Q³ Q⁴. The links at their opposite ends connect with arms Q⁵, fast to upright shafts Q⁶, pivoted in lugs on frame A. At the upper ends of shafts Q⁶ are double horizontal swing or vibratory arms Q⁷, on either end Q⁸ of which are upright studs supporting 25 the wiper-plates M M'.

The wipers or polishers are actuated in a novel manner and clean or polish the plate, as the case may be, very efficaciously, the path of the wipers or polishers approximating that 30 of the hand when this work is done by hand. The wipers or polishers are actuated from driving-shaft J' through the mechanism above explained, and, as will be readily understood from Figs. 1, 2, and 4, the latter figure showing the part M in its extreme positions. The gist of this feature of our invention lies in reciprocating the wipers or polishers in the arc of a circle. The dotted line in Fig. 4 shows the path in which the pivotal ends Q⁸ travel 40 when the wipers are actuated by the described mechanism, which is as good for the purpose as any now contemplated by us.

S represents perforating mechanism, which receives the sheets from the cylinder after printing by any suitable mechanism—say by 45 means of tapes T. This perforating device consists of the ordinary dies *x y*, one *x* fixed on the bed-plate S', mounted on the frame, the other *y* secured to the follower S², reciprocating in ways *a'* in the frame, follower S² being actuated by connecting-rods S³, crank S⁴, and connecting-rod S⁵, which is operated by cam S⁶ in gear-wheel H², the crank S⁴ being moved 50 only a short distance away from the centers and lifting and depressing the upper part of the die, as required for the ordinary perforation of paper or other material.

The operation of this form of machine embodying our invention is as follows: Starting 60 with the machine in the position shown in the drawings, with the bed at the extreme end of its forward stroke (to the left) and the grippers D' on cylinder D in position to receive a sheet from the feed-board *a*, a sheet is first fed to the grippers. The driving-pulleys are revolved in the direction indicated by the arrow. The bed now begins

its back-stroke toward the cylinder, passing under the polishing-pads in *m* of the polishing mechanism M', the cylinder in the meantime advancing the sheet to meet the impression between the cylinders D and E, after which the sheet continues around with the cylinder and is delivered into the tapes T, conveying it to be perforated in the mechanism 70 S or to be laid in the pile similar to the delivery of the ordinary printing-press when the perforating mechanism is not used. The plate, after the impression, passes under the wipers M and inking-roller mechanism L, L', 80 and L² to the opposite end of its stroke. While passing under the ink-rollers the cloth web M², by means of the winding mechanism N, P, P', and P², is made to shift, presenting a clean surface of cloth to the inked-plate 85 as the latter returns for its next impression. Passing under the wipers M the plate is partially wiped, thence under the impression-cylinder D, this time without contact, the cylinder being raised or the impression "thrown 90 off" by any of the well-known methods used on cylinder-presses and too well known to require description here. Thence the bed passes under the polishers M' the web of cloth on which, by the mechanism N', P, P', and P², 95 has been previously changed. Under the polishers the bed is further wiped and partially polished. Reaching the forward end of its stroke, as shown in the drawings, the webs of cloth on the polishing mechanism M' 100 are again changed, presenting a clean surface to the plate as the latter advances to receive another impression from the cylinder D. By these means the polishing of the plate is completed and the quality of the printing is rendered highly satisfactory. Before the plate reaches the cylinder the impression is again "thrown on" by the well-known mechanism before referred to, and illustrated in the drawings, but not here described, because it is 110 familiar to all skilled in the art and forms no part of our invention.

We desire it to be understood that, although the wipers are shown and described at each side of the impression-cylinder, if found desirable they may be located at one side only, in which event the forward set M' is preferably dispensed with.

We claim—

1. In a plate-printing machine, a plate-wiper 120 having one end pivoted to a horizontal swing-arm and its opposite end pivoted to a similar horizontal swing-arm connected to the actuating mechanism, substantially as shown and described, whereby the wiper is laterally reciprocated in the arc of a circle, as set forth. 125

2. In a plate-printing machine, the combination, with the frame thereof, a horizontal arm centrally fulcrumed at one side of the frame, and a rock-shaft journaled at the opposite side of the frame and provided with an attached horizontal double arm, of parallel wipers having their ends pivoted to opposite extremities of said arms, and a connection 130

between the rock-shaft and the drive-shaft of the machine, substantially as shown and described, whereby the wipers are moved in the arc of a circle, as specified.

5 3. In a plate-printing machine, the combination, with the reciprocating bed, of a wiper pivoted above and in the track of the bed, and the vibratory mechanism, substantially as described, for oscillating the wiper in the arc of
10 a circle.

4. In a plate-printing machine, the combination, with the reciprocating bed, of a series of wipers pivoted above the bed and reciprocating in the arc of a circle, substantially as
15 specified.

5. In a plate-printing machine, the combination, with the reciprocating bed, of wipers arranged in pairs and vibratory mechanism for oscillating the wipers of a pair in opposite
20 arcs of a circle, substantially as and for the purpose specified.

6. In a plate-printing machine, the combination, with a reciprocating bed, of wipers held to reciprocate in the arc of a circle over
25 the bed, dispensing and receiving rolls, guide-rolls near the wipers, and a web extending from the dispensing to the receiving roll around the wipers and in contact with the guide-rolls, substantially as specified.

30 7. In a plate-printing machine, the combination, with a reciprocating bed and wipers held to reciprocate over the bed in the arc of a circle, of dispensing and receiving rolls,

guide-rolls near the wipers, a web extending from the dispensing to the receiving rolls 35 around the wipers and in contact with the guide-rolls, and mechanism, substantially as described, for imparting to the web an intermittent shifting motion between each passage of the plate carried by the bed in either di- 40 rection, as specified.

8. In a plate-printing machine, the combination, with a wiper, of a web and means for shifting the said web, comprising, substan- 45 tially, the pawl W, the ratchet Z, mounted upon the web-spindle m^2 , the lever P^4 , the connecting-rod P' , lever P, cam P^2 , having two opposite operating parts, and gear-wheel P^3 , all combined to apply the cloth or web to the plate on both the forward and the rearward 50 travel of the bed, substantially as specified.

9. In a plate-printing machine, the plate-wiper having one of its ends connected to the actuating mechanism, comprising, substan- 55 tially, the arm Q^7 , shaft Q^6 , arms Q^5 , link Q^4 , the shaft Q^3 , the bevel-gear Q' , and drive-shaft J' , all combined for operation substantially as specified.

WELLINGTON P. KIDDER.

GEORGE H. KENDALL.

Witnesses for W. P. Kidder:

W. E. HICKOX,

A. LEONARD.

Witnesses for G. H. Kendall:

J. F. ACKER, Jr.,

E. M. CLARK.