

(No Model.)

3 Sheets—Sheet 1.

D. I. ECKERSON.

DELIVERY MECHANISM FOR PRINTING PRESSES.

No. 457,187.

Patented Aug. 4, 1891.

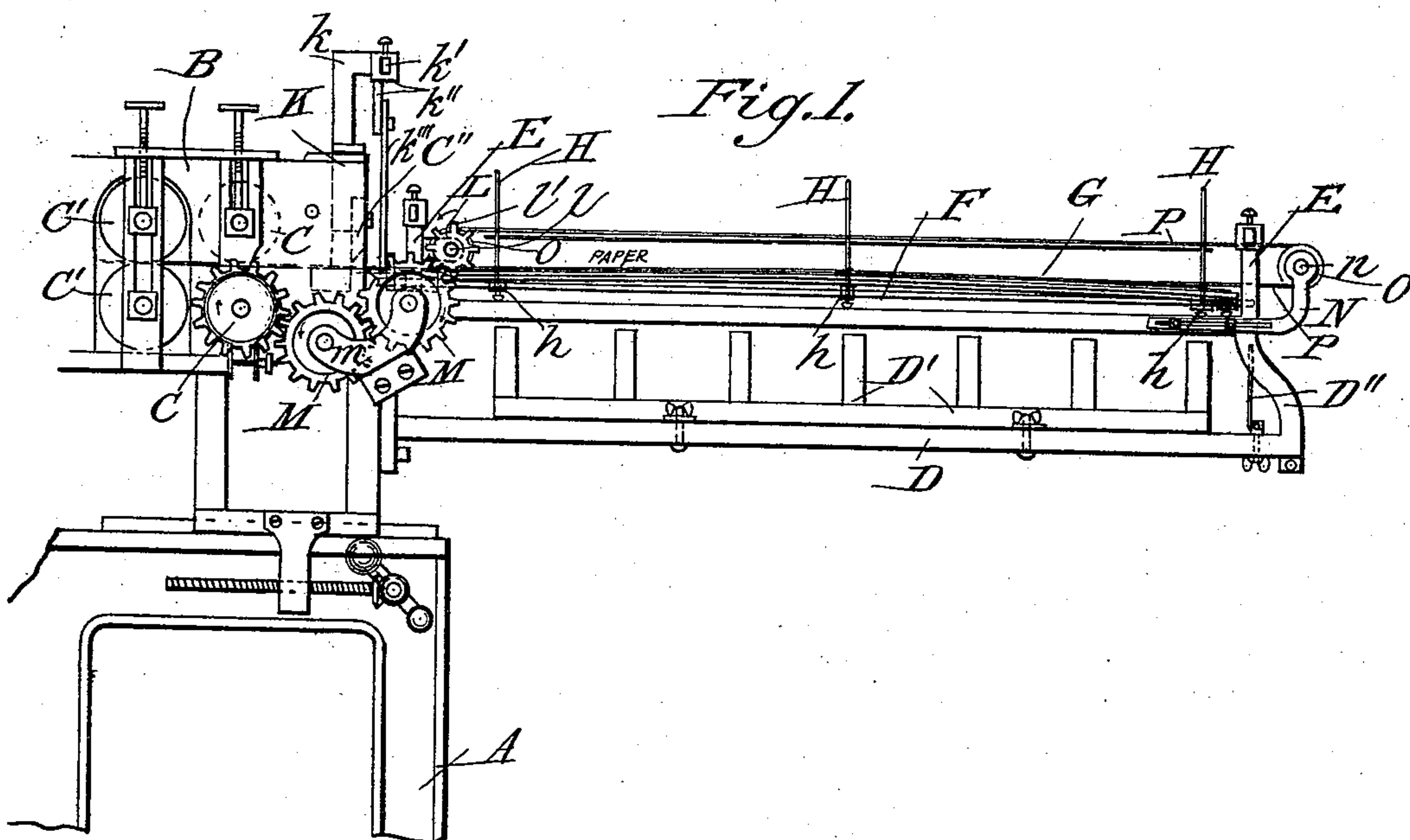
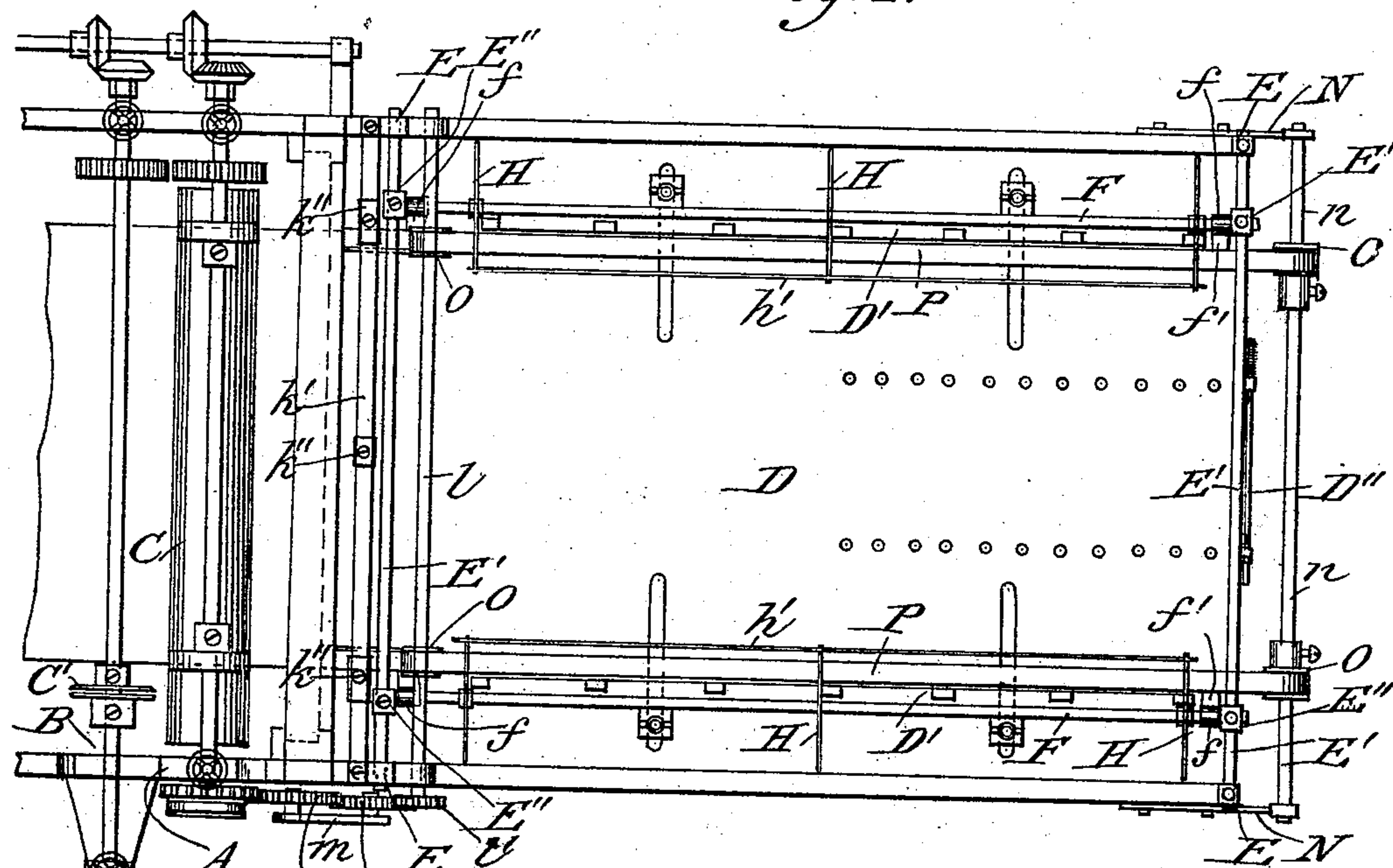


Fig. 2.



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(No Model.)

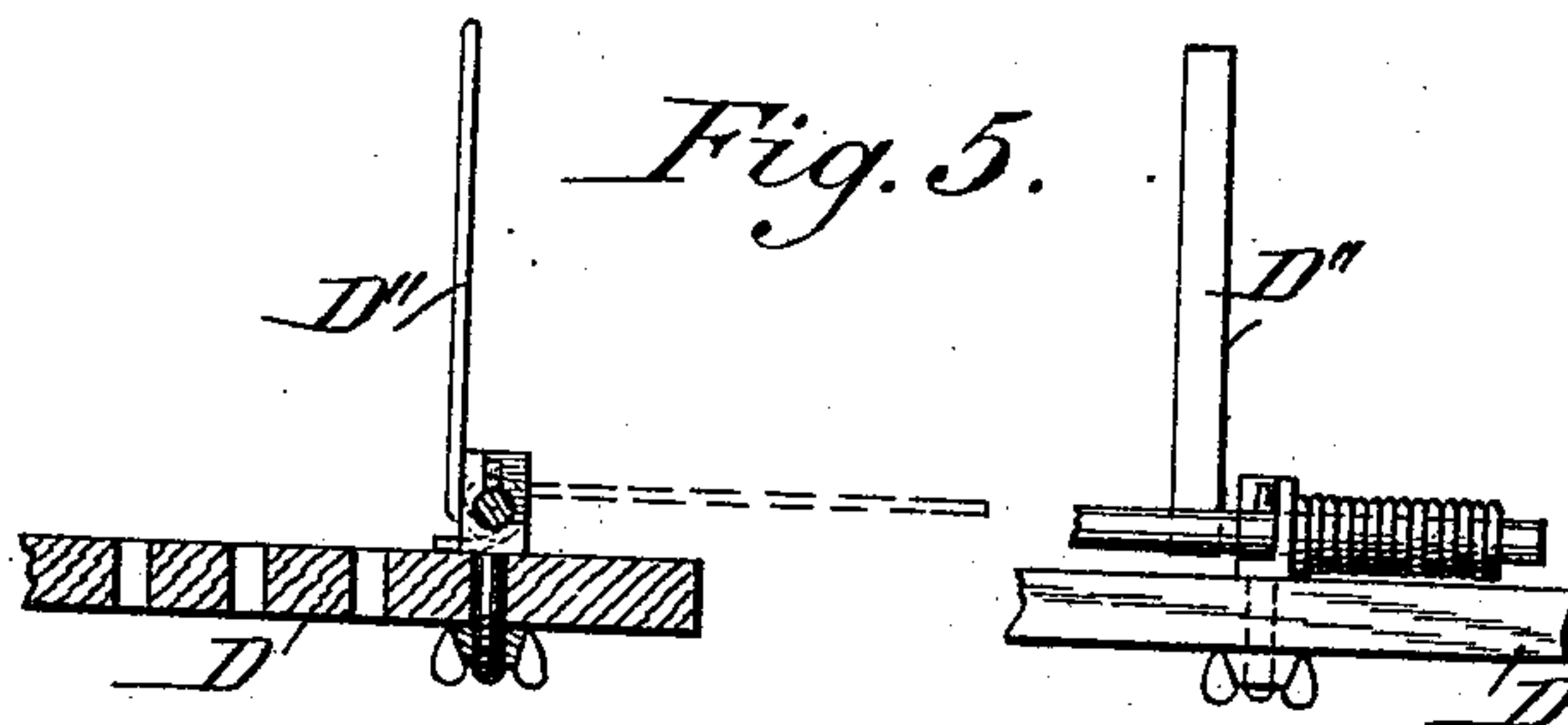
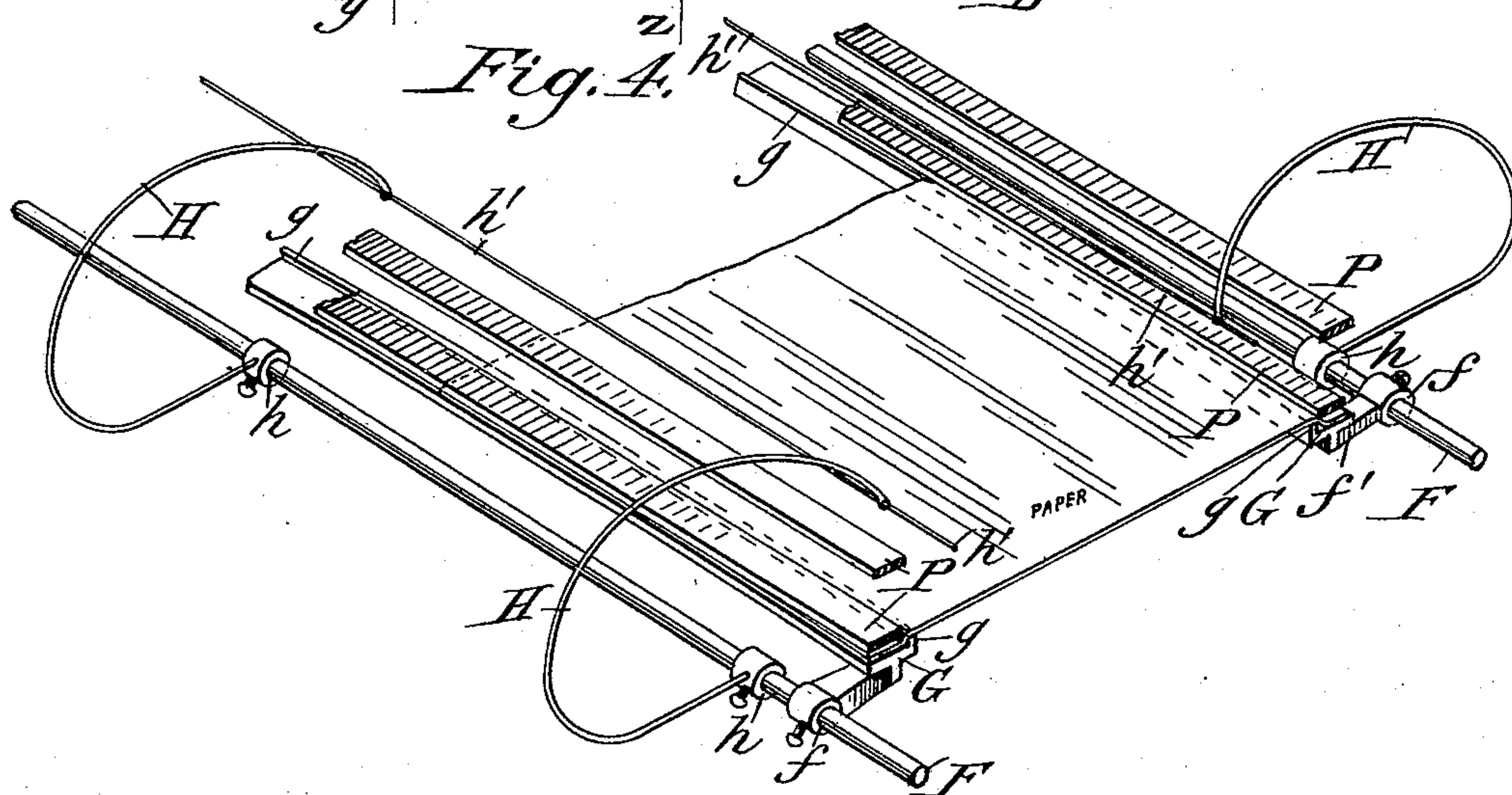
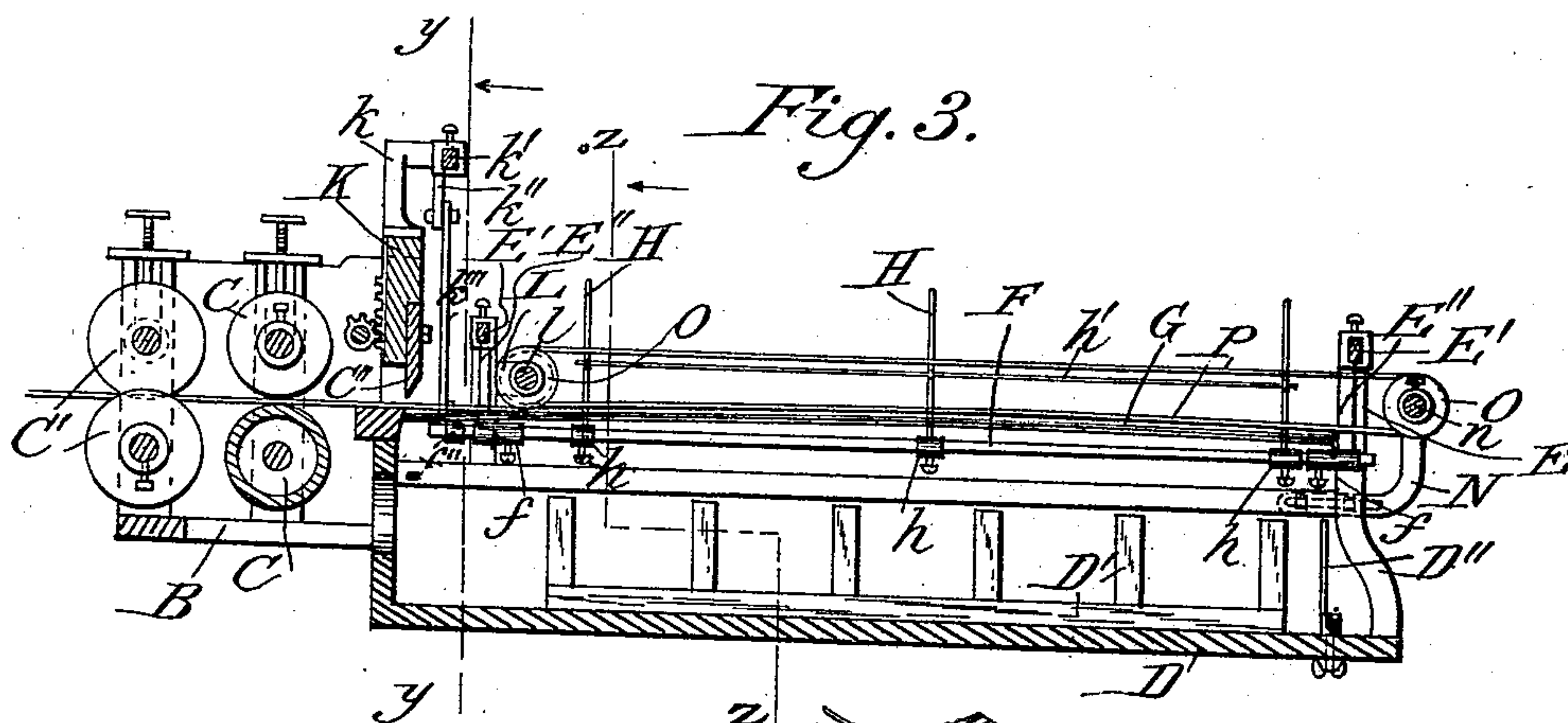
3 Sheets—Sheet 2.

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 6.

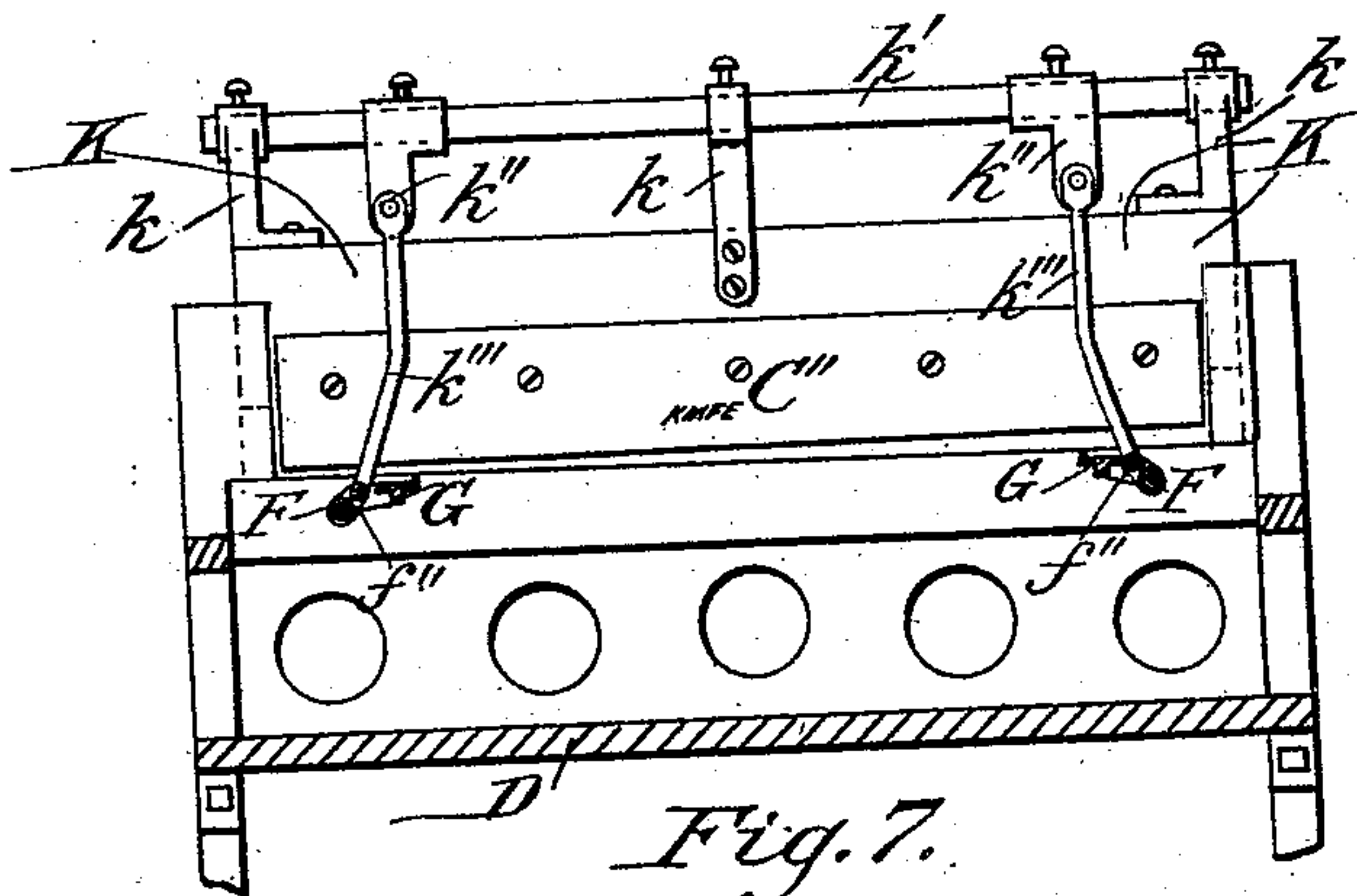


Fig. 7.

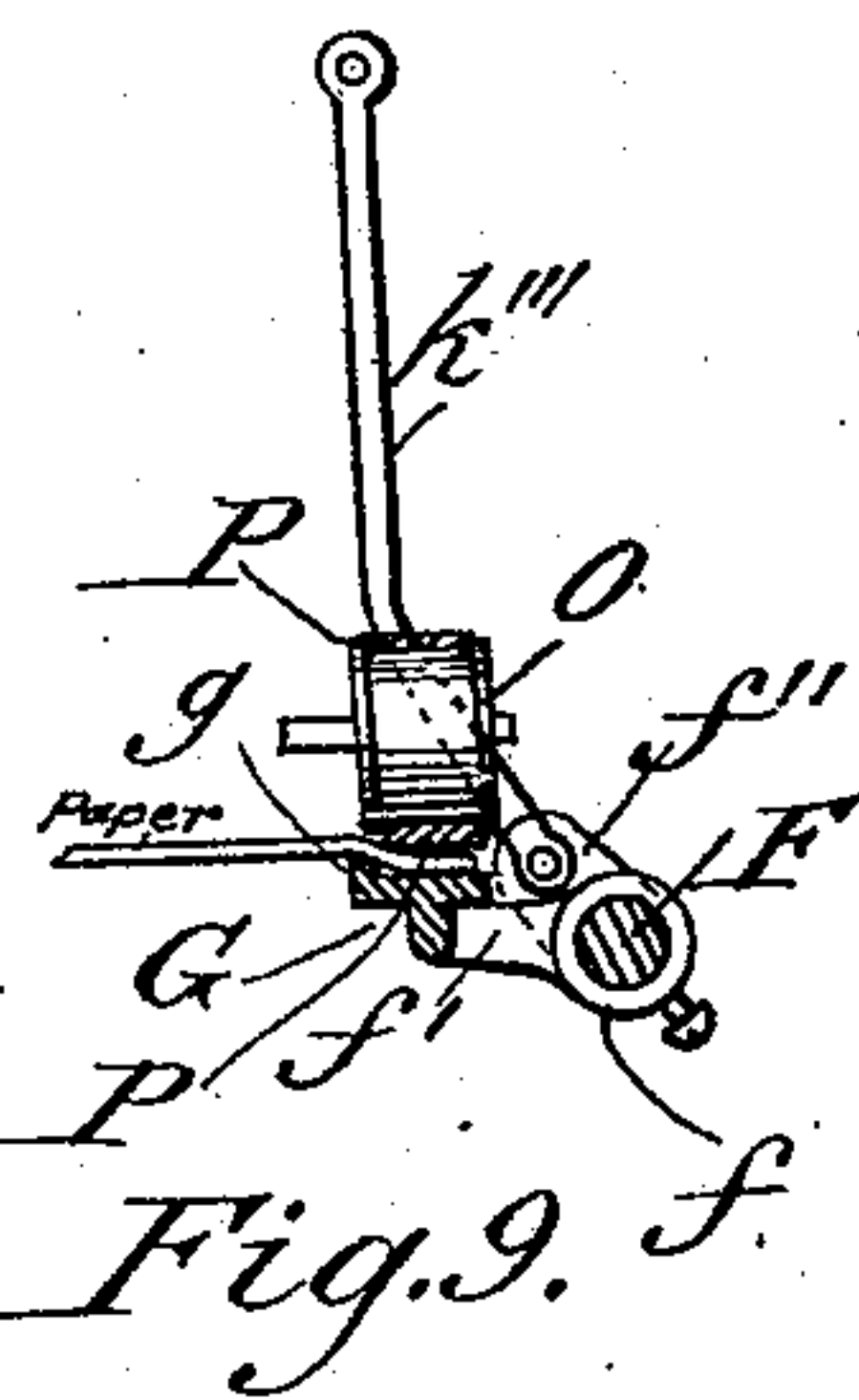
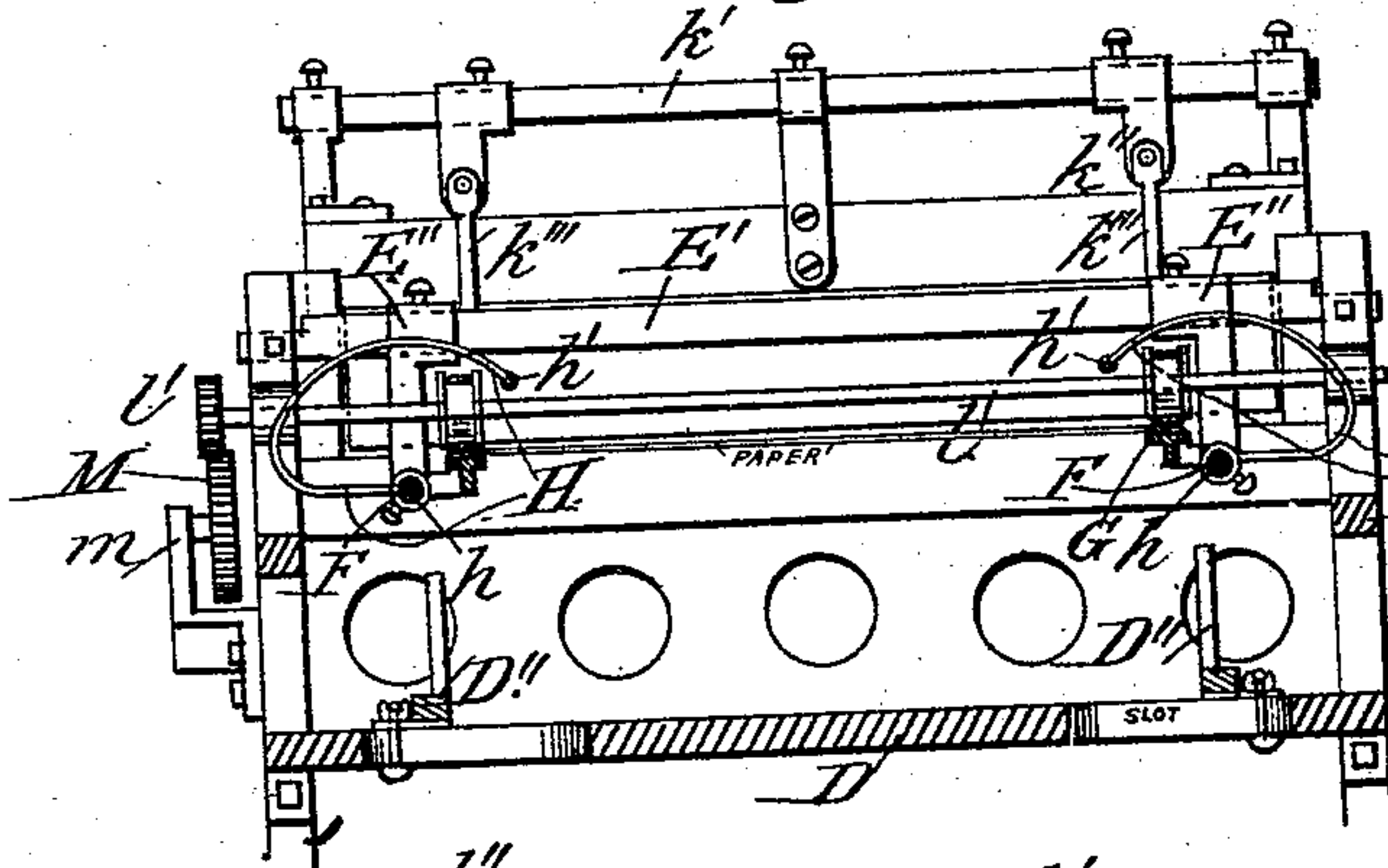


Fig. 9. f.

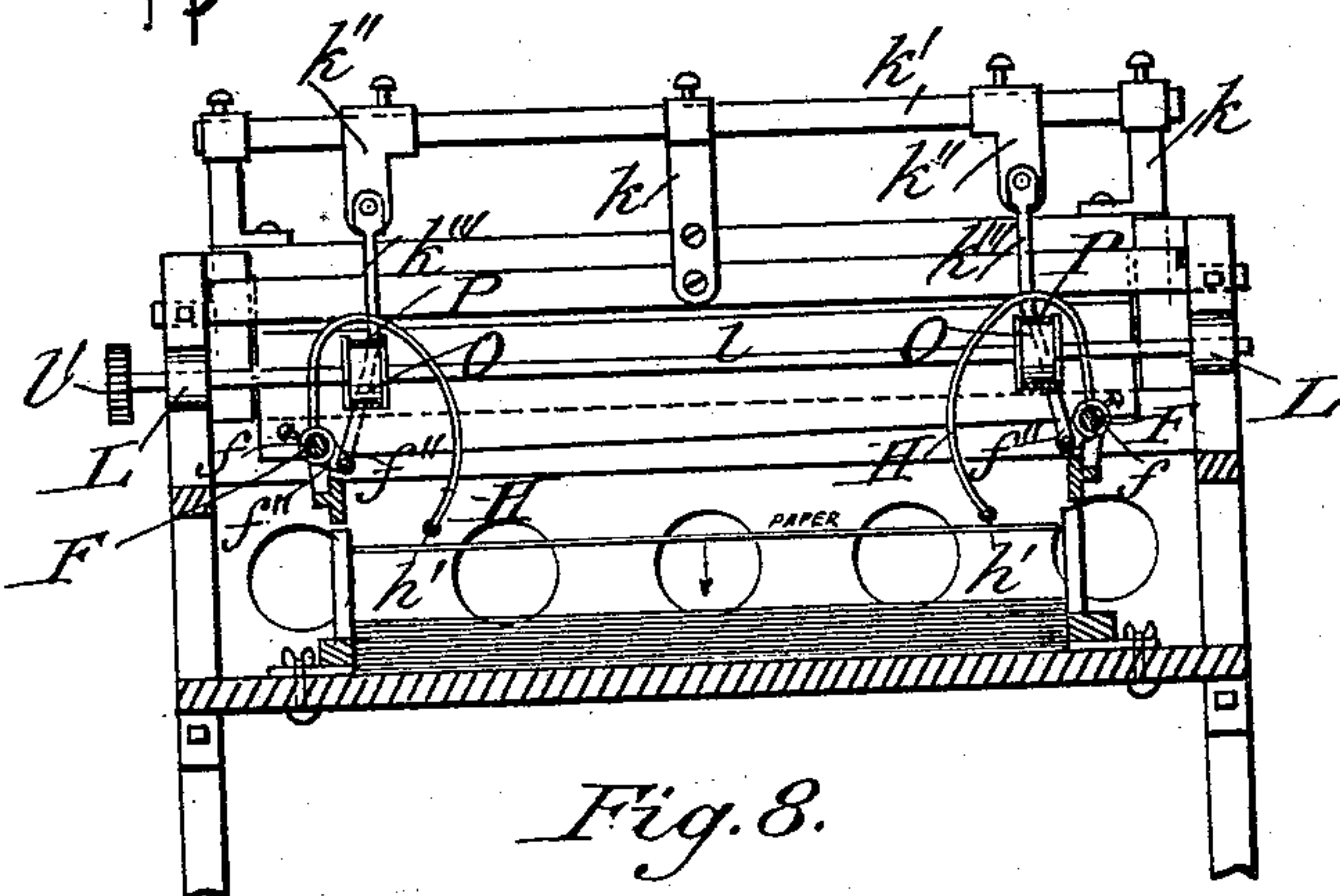


Fig. 8.

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UNITED STATES PATENT OFFICE.

DAVID I. ECKERSON, OF WORCESTER, NEW YORK.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 457,187, dated August 4, 1891.

Application filed March 21, 1891. Serial No. 385,885. (No model.)

To all whom it may concern:

Be it known that I, DAVID I. ECKERSON, a citizen of the United States, residing at Worcester, in the county of Otsego and State of New York, have invented certain new and useful Improvements in Delivery Mechanism for Printing-Presses; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in printing-presses of that class which are adapted to print upon a continuous sheet of paper taken from a roll and to be run at a high rate of speed, and it is especially adapted to be used with a machine such as is shown and described in patents numbered 432,385 and 433,776, granted to me July 15, 1890, and August 5, 1890, respectively.

In all printing-machines which are run at a high rate of speed and which deliver the printed paper in large sheets upon a delivery-table much trouble is experienced in handling these large sheets as they leave the press, as they will not readily drop onto the table, owing to the resistance of the air beneath them, and are apt to slide off to the side or remain suspended and be in the way of the succeeding sheet. The object of this invention is to provide a means whereby this difficulty is obviated and which will positively and quickly deposit each sheet in its proper place upon the table as soon as it is severed from the web.

The invention consists in providing the delivery-table with a carrier which is adapted to receive the web or sheet from the intermittent feed-rollers after it has passed beneath the reciprocating knife and conduct it over the delivery-table and on the severing of the sheet deposit it upon the table. The carrier consists of two parallel tracks supported one upon each side of the table by rock-shafts, and of endless belts carried by adjustable pulleys, so that their lower sides will contact with the tracks, and of arms carried by the rock-shafts adapted to depress the sheets as they are released from the carrier;

and it also consists in providing means whereby the endless belts are driven at the same rate of speed as that of the peripheries of the feed-rollers, so that the paper will be withdrawn from the press at the same speed that it is fed into it, and also of providing means whereby the rock-shafts are partly rotated at each stroke of the reciprocating knife and release the sheet from the carrier and press it upon the table.

The invention further relates to the novel construction, combination, and arrangement of parts, as will be hereinafter more fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the accompanying drawings, in which similar letters of reference designate corresponding parts, Figure 1 is a side elevation of a printing-press embodying the invention, only showing, however, such parts as is necessary to illustrate the invention. Fig. 2 is a plan view. Fig. 3 is a longitudinal vertical section. Fig. 4 is a detail perspective view illustrating the manner in which the sheet is borne by the carrier. Fig. 5 shows two detail views of the end retaining-frame, the first view showing the means adopted for adjusting the frame, the second showing the coiled spring adapted to hold the frame in its upright position. Fig. 6 is a transverse vertical sectional view on the line *yy* of Fig. 3. Fig. 7 is a similar view on the line *zz* of Fig. 3, showing the relative positions of the different parts of the carrier when it is bearing the paper forward. Fig. 8 is a similar view to that shown in Fig. 7, showing the relative position of the different parts of the carrier as the sheet is deposited upon the table. Fig. 9 is an enlarged detail view showing the manner in which the edge of the paper is grasped between the track and the endless bands.

Referring to the drawings, A A designate the side frames of the press.

B is the adjustable carriage, in which are supported the intermittent feed-rollers C C, the rotary cutters C' C', and the reciprocating knife C''. As these several parts and their operations are specifically described in the Letters Patent hereinbefore mentioned, a full description of the same is not necessary in the present instance.

D is a delivery-table secured to the front standards of the carriage B, and it is provided with the retaining-frames D' D' and the adjustable end gate D''. These retaining-frames and the end gate are provided with means whereby they may be adjusted to the size of the sheet to be delivered upon the table, and the latter is provided with a spring attachment which will allow the withdrawal of the sheets by being depressed and which will cause it to assume its upright position as soon as the pressure is removed. Projecting upward from the corners of the frame are the standards E E. Between these standards, at the front and rear ends of the table, respectively, are secured the rods E' E', on which, near their ends, are adjustably secured the hangers E'' E'', each of which has a bearing formed in its lower end. F F are rock-shafts extending the length of the table, one on each side, with their ends journaled in the bearings in the lower ends of the hangers. Adjustably secured on each of the rock-shafts, near its ends, are the collars f f, each of which has an inwardly-projecting bracket f'.

G G are two parallel tracks formed of T-shaped angle-iron, extending longitudinally of the table and supported, one on each side, by the brackets f' f'. These tracks are normally supported so that their upper faces are in the same horizontal plane as the upper edge of the lower knife of the transverse cutters, so that the paper will pass directly from beneath the reciprocating cutter upon the said tracks. The upper faces of the tracks are polished, so as to offer the least possible resistance to the paper passing over them, and have projecting from their inner edges the vertical flanges g g, the purpose of which will be explained further on. The rock-shafts are prevented from moving longitudinally by the said collars f f, which are secured on the shafts, close to the hangers E'' E'', by set-screws. Inside of the collars f f on the rock-shafts are adjustably secured similar collars h h, each of which has an arm H secured at its lower end to it. This arm projects horizontally outward, then upward over the intervening mechanism to a point inside of and above the face of the track on its respective side. Secured to the free ends of these arms and extending the length of the table are the rods h' h'.

Mechanism by means of which the shafts F F are given their rocking motion will now be described. To the top of the reciprocating frame K, which carries the knife for severing the web transversely, are secured the vertical brackets k k, the upper ends of which are bent forward at right angles. In the ends of these brackets are formed sockets, in which is secured the rod k', which carries the adjustable hangers k'' k'', one near each end. The end of each hanger is connected with a bell-crank f'', secured to the end of the rock-shaft F on its respective side by the link k'''. At each complete stroke of the reciprocating

frame the rock-shafts are partly rotated and move the arms H H and the tracks G G through an arc of substantially ninety degrees.

L L are lugs projecting forward from the rear standards E E, and in which are journaled the ends of the shaft l. One of the ends of this shaft projects beyond its bearing and has attached thereto a gear-wheel l', to which motion is conveyed from the gear on the shaft of the lower of the intermittently-rotated feed-rollers C C by the intermediate gears M M, supported by the bracket m. The relative size of these gears is such that the peripheral speed of a pulley carried on the shaft l will be the same as that of the intermittent feed-rollers.

N N are brackets secured to the front ends of the side frames of the table in such a manner as to be adjustable longitudinally. In the ends of these brackets are bearings, in which are journaled the ends of the shaft n.

O O are grooved pulleys carried, two on each, by the shafts l and n. Those carried on the shaft l are keyed on, so as to be rotated with the said shaft, and at the same time have free longitudinal movement thereon. Those carried by the shaft n are provided with set-screws, so that they may be secured in any desired position.

P P are endless bands, of any material suitable in the premises, carried by the grooved pulleys, one on each side of the table. The height at which these pulleys are placed is such that the lower sides of the endless bands will contact with the tracks outside of the flanges g g. It is for the purpose of taking up any slack that might occur in the endless bands that the brackets N N are made adjustable.

The tracks are slightly curved longitudinally, so that the centers of their upper faces are slightly elevated relatively to the ends. The object of this is to cause the bands to bind to a slight extent upon the paper, and thereby more firmly draw it forward. This curvature is very slight, however, and, as shown in the drawings, is very much exaggerated to better illustrate the construction.

The operation of the device will now be described. Before the machine is started it is necessary to adjust the various parts so that they will be adapted to the size of the sheet to be printed. The retaining-frames are adjusted to give the proper space upon the table for the reception of the sheets. The tracks are so adjusted that the distance between them is somewhat less than the width of the sheet. This is accomplished by moving the hangers on the supporting-rods E' E', and the pulleys are adjusted on their respective shafts so as to bring the endless bands in their proper position on the tracks. When in operation, the paper is fed beneath the reciprocating cutter to the carrier of the delivery-table, which grasps the side edges of the paper between the endless bands and the

tracks and bears it over the table. The object of the flanges *g g* is to enable the bands to more securely grasp the paper. When the whole sheet has passed the reciprocating cutter, which has been adjusted as to its movement, it will descend and sever the sheet from the web. This movement of the knife will partly rotate the rock-shafts *F F* and their contiguous parts, which will lower the tracks from the endless bands and release the paper, and the rods carried by the arms *H H* will force the sheet from the endless bands, if it should be caused to adhere by electric attraction, upon the table. Immediately that the knife moves upward the several parts will assume their original positions and be ready for the next sheet.

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

1. In a carrier for printing-presses, the combination of the flanged tracks and the endless bands moving in contact with the same, substantially as described.

2. In a carrier for printing-presses, the combination of the movable tracks and the endless bands moving in contact with the said tracks, substantially as described.

3. In a carrier for printing-presses, the combination of the movable tracks, the endless bands moving in contact with the said tracks, and the depressing-arms, substantially as described.

4. In a printing-press, the combination of the delivery-table, the rock-shafts journaled longitudinally thereof, the tracks carried by the said rock-shafts, and the endless bands moving in contact with the said tracks, substantially as described.

5. In a printing-press, the combination of the delivery-table, the rock-shafts journaled longitudinally thereof, the tracks and the sheet-depressing arms carried by the said rock-shafts, and the endless bands moving in contact with the said tracks, substantially as described.

6. In a printing-press, the combination of the delivery-table, the rock-shafts journaled longitudinally thereof, the tracks carried by the said rock-shafts, the reciprocating knife-

frame, the connections between the said frame and the rock-shafts, and the endless bands moving in contact with the said tracks, substantially as described.

7. In a printing-press, the combination of the delivery-table, the rock-shafts journaled longitudinally thereof, the sheet-depressing arms carried by the rock-shafts, and the carrier consisting of the movable tracks and the endless bands moving in contact with the said tracks, substantially as described.

8. In a printing-press, the combination of the delivery-table, the adjustable hangers, the rock-shafts journaled in the said hangers, the tracks, and the sheet-depressing arms carried by the said rock-shafts, and the endless bands moving in contact with the said tracks, substantially as described.

9. In a printing-press, the combination of the delivery-table, the rock-shafts, the tracks carried by the said rock-shafts and provided with a vertical flange on their inner edges, and the endless bands moving in contact with the said tracks, substantially as described.

10. In a printing-press, the combination of the delivery-table, the shafts journaled transversely at the ends of the said table, the flanged pulleys adjustably secured on the said shafts, the adjustable tracks, and the endless bands carried by the said pulleys and moving in contact with the said tracks, substantially as described.

11. In a printing-press, the combination of the delivery-table, the vertical standards secured to the corners thereof, the rods secured transversely at each end of the table between the said standards, the hangers adjustably secured on the said rods, the rock-shafts journaled in bearings in the lower ends of the hangers, the tracks and the sheet-depressing arms carried by the said rock-shafts, and the adjustable endless belts moving in contact with the said tracks, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID I. ECKERSON.

Witnesses:

M. J. MEHAN,

FRANCIS HENDERSON.