

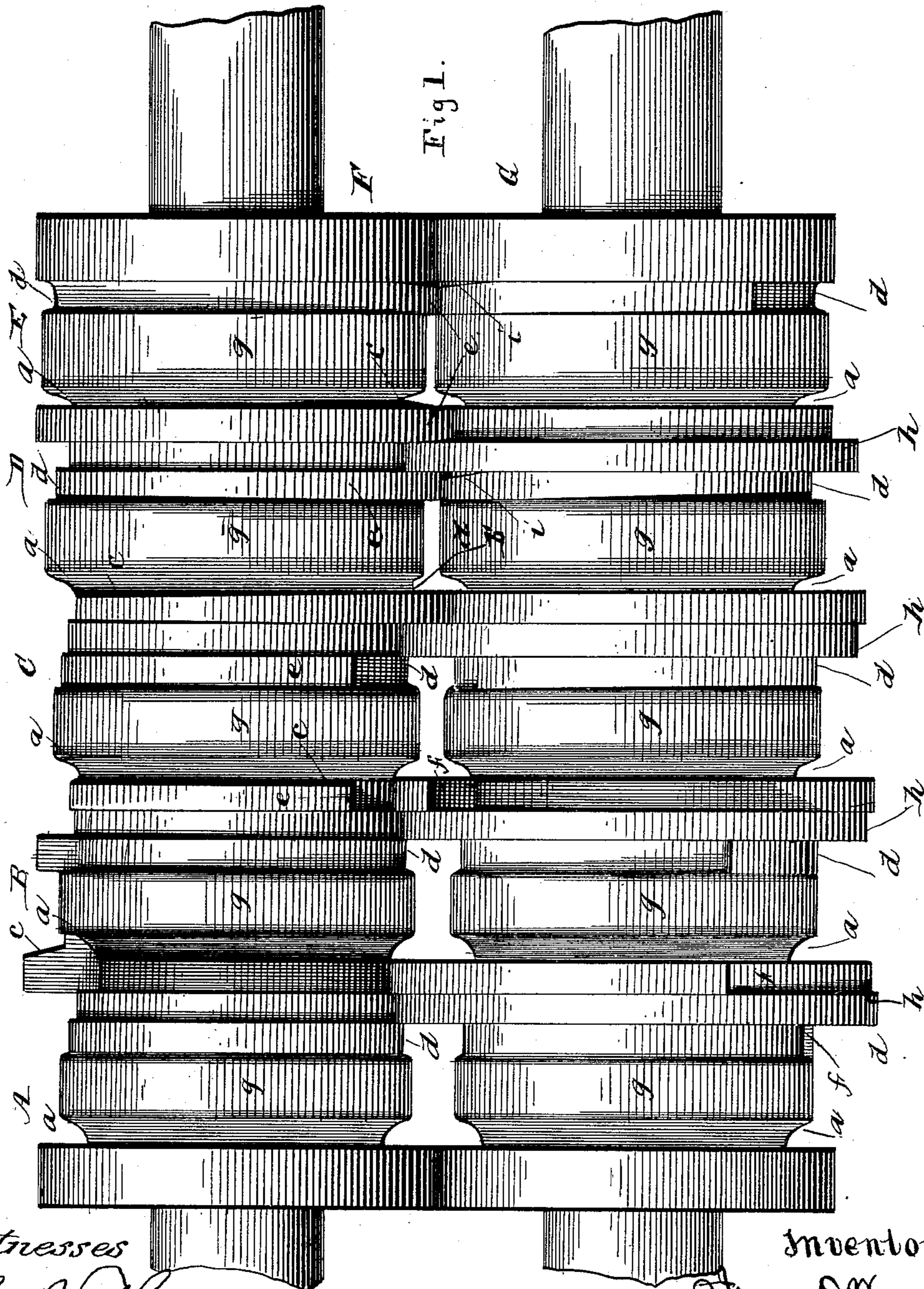
(Model.)

4 Sheets—Sheet 1.

I. D. WEAVER.
ROLLS FOR ROLLING SWITCH POINTS.

No. 428,580.

Patented May 20, 1890.



Witnesses

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(Model.)

4 Sheets—Sheet 2

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Fig. 2.

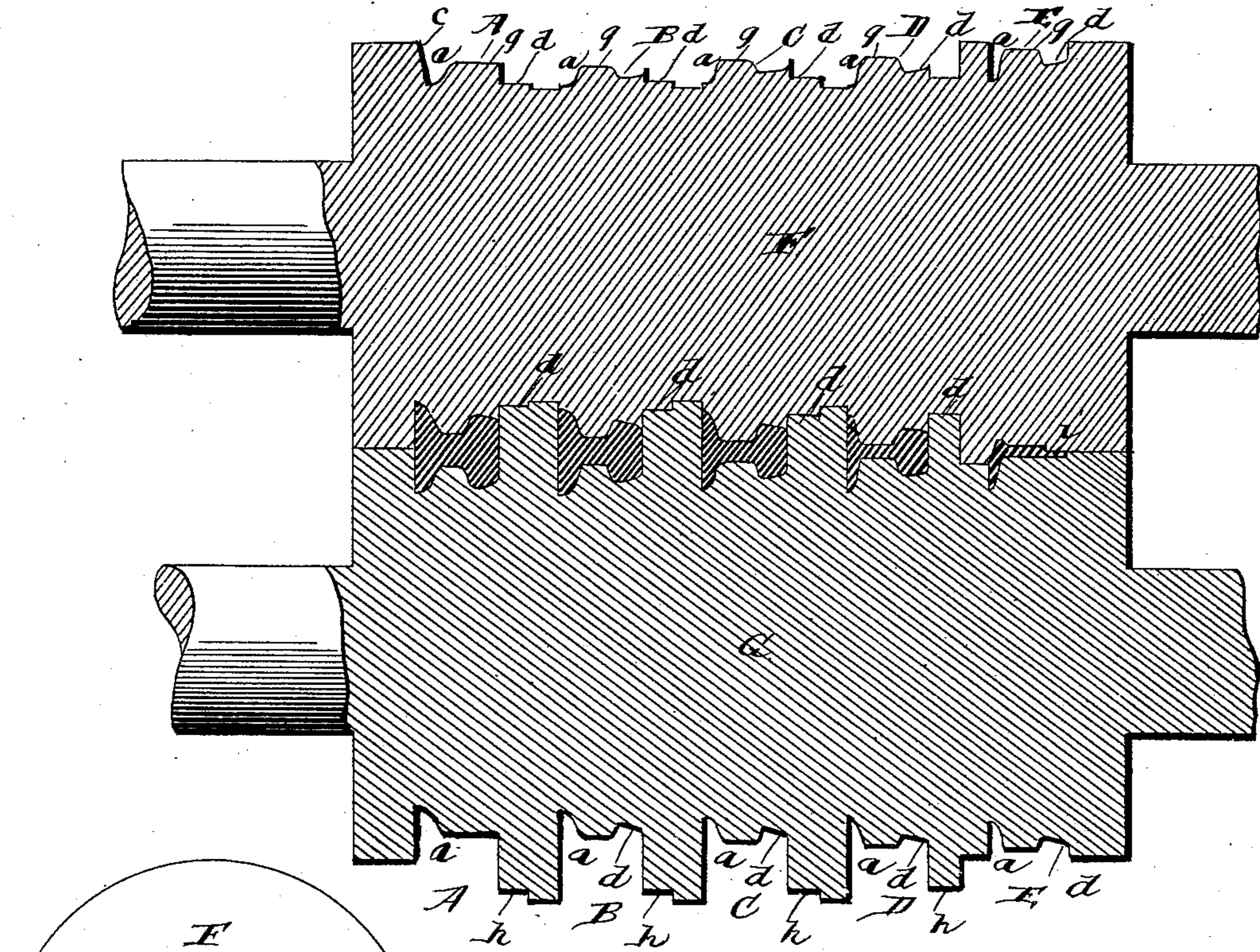
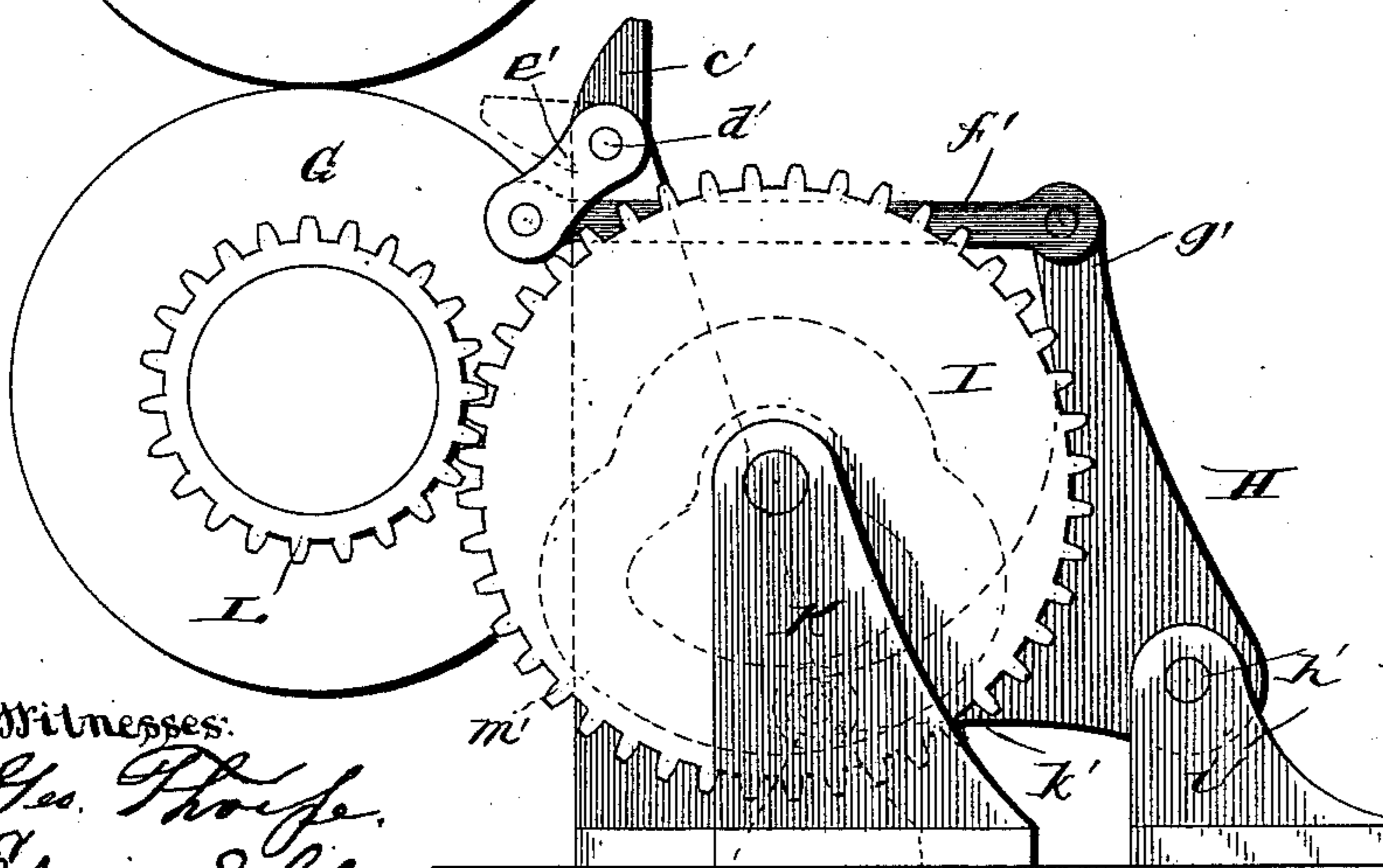


Fig. 3.



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(Model.)

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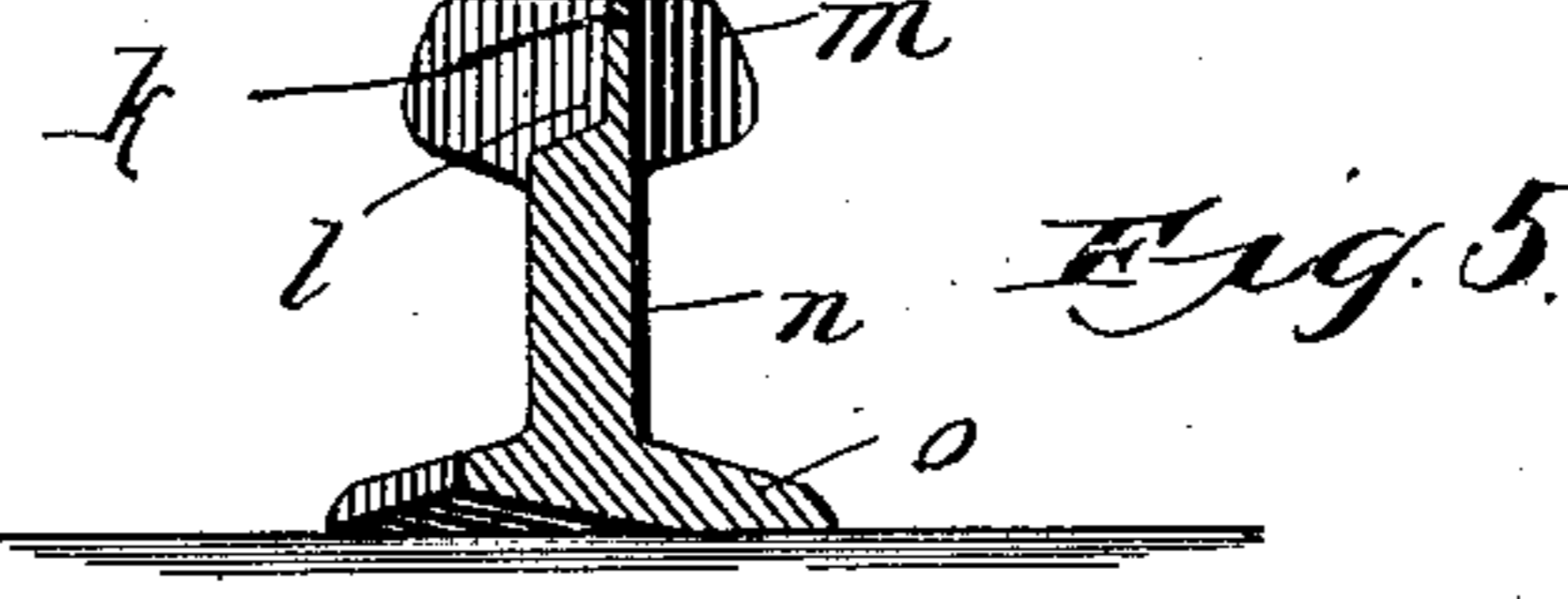
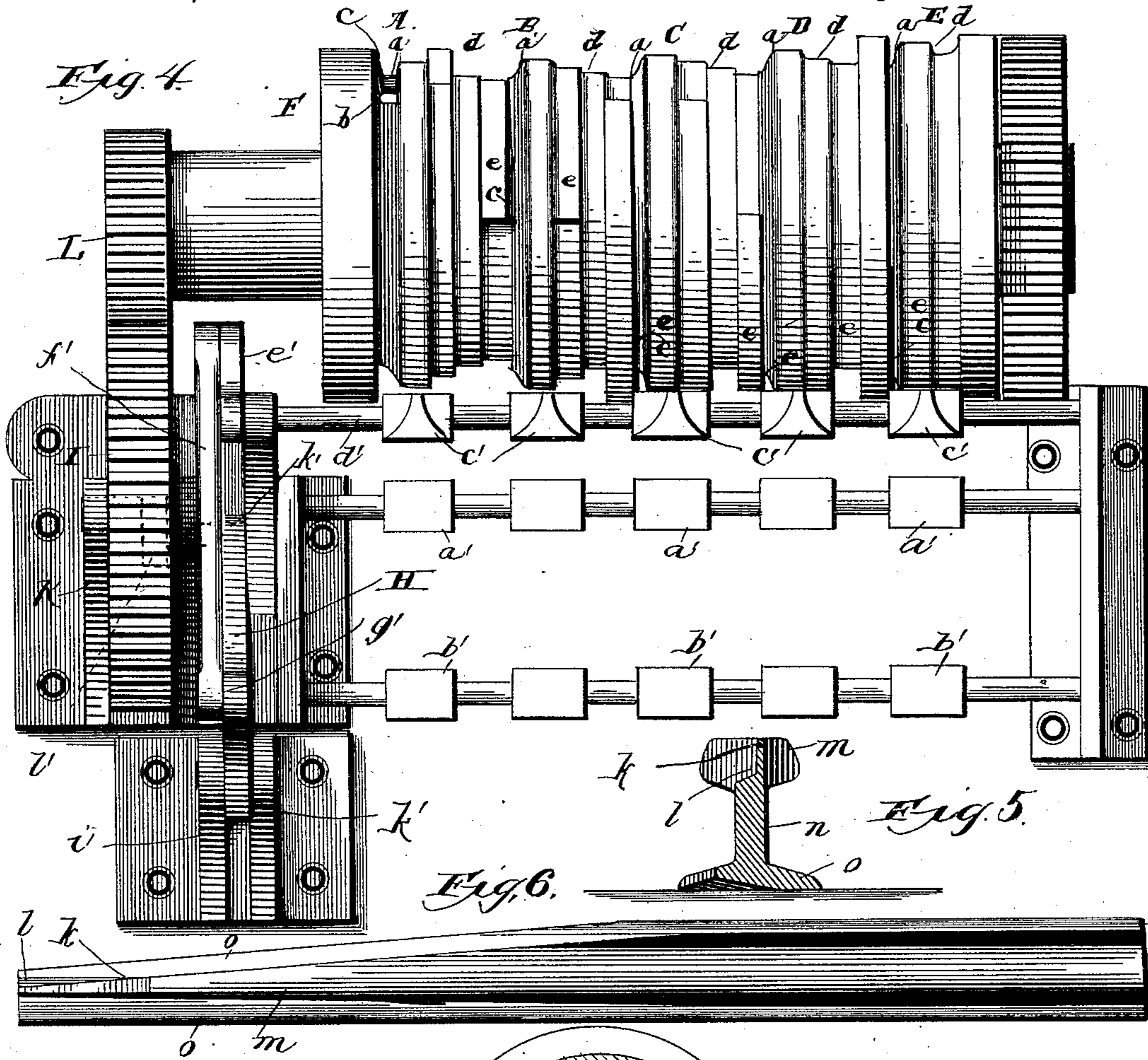
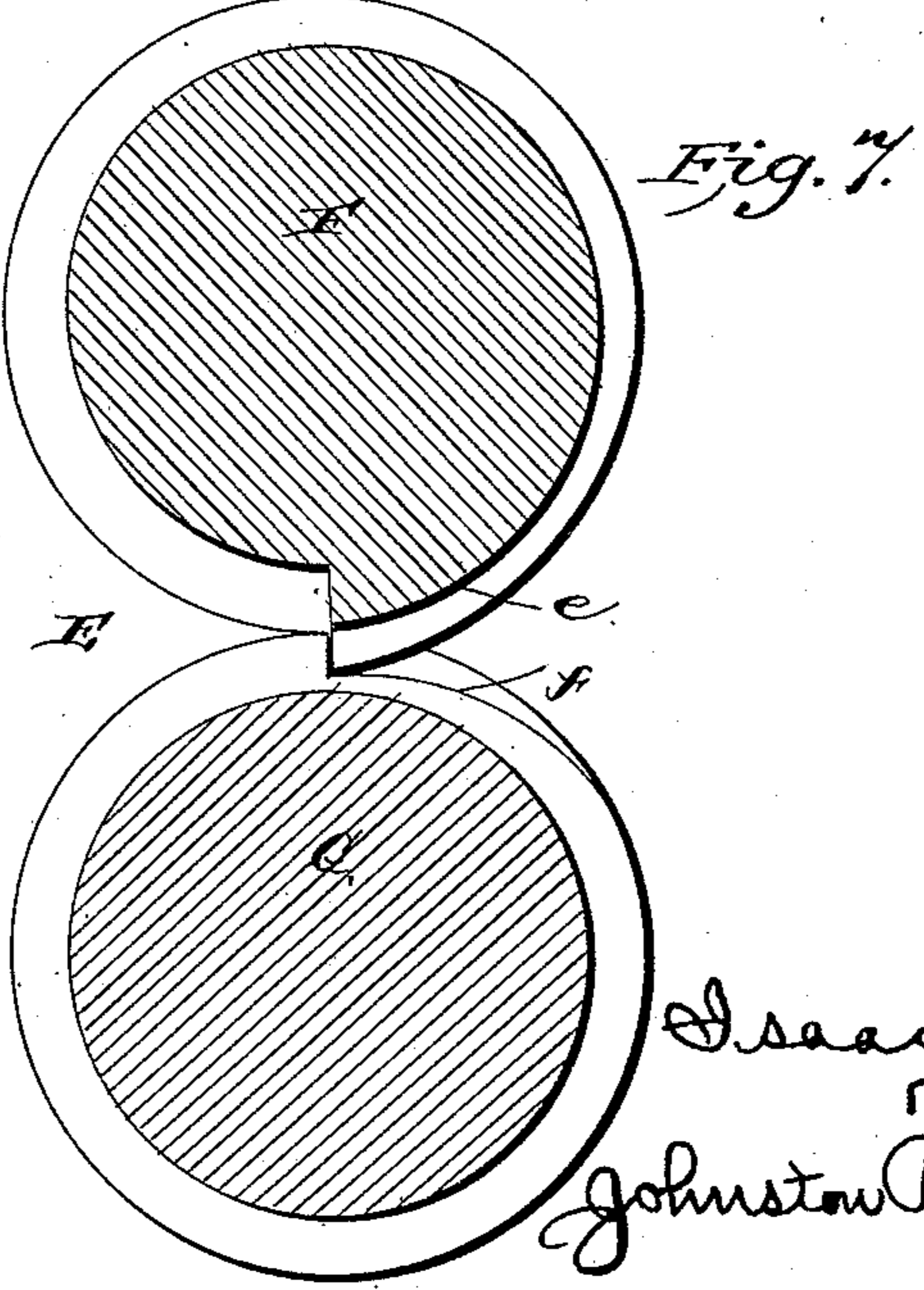


Fig. 6.



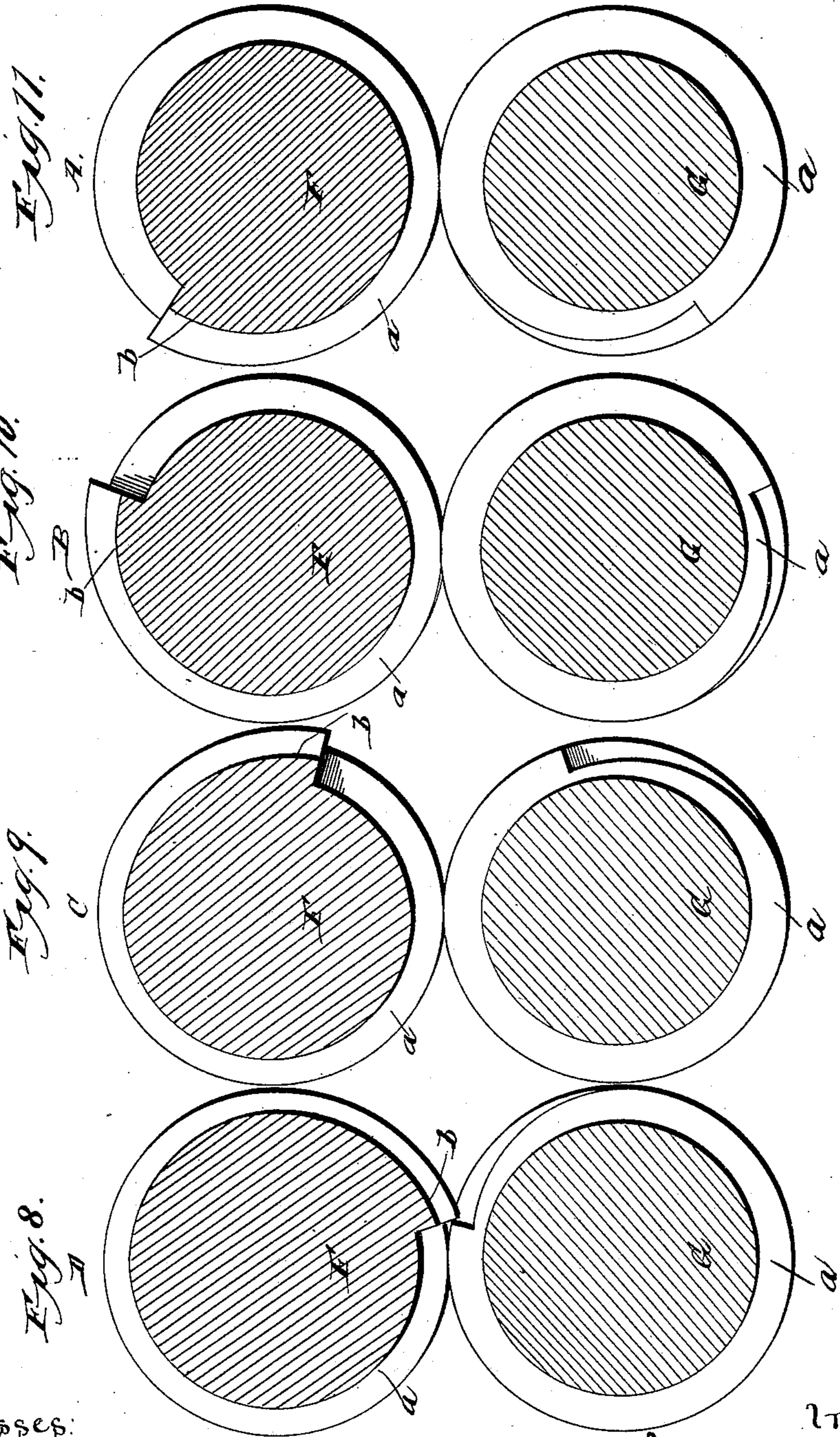
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I. D. WEAVER.
ROLLS FOR ROLLING SWITCH POINTS.

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UNITED STATES PATENT OFFICE.

ISAAC D. WEAVER, OF LEBANON, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS TO CHARLES M. BOWMAN, JACOB M. SHENK, AND THOMAS EVANS, OF SAME PLACE.

ROLLS FOR ROLLING SWITCH-POINTS.

SPECIFICATION forming part of Letters Patent No. 428,580, dated May 20, 1890.

Application filed August 21, 1889. Serial No. 321,503. (Model.)

To all whom it may concern:

Be it known that I, ISAAC D. WEAVER, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Switch-Points; and I do hereby 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.

My invention relates to the manufacture of switch-points, and has for its object a reduction in the cost of making the article and producing it complete and ready for use in a set of rolls.

In the manufacture of switch-points as heretofore practiced it has been necessary to plane off both sides of the head and one of the flanges on its edge and bottom at one end of the section of rail from which the switch-point was made to produce the proper taper required to bring the point up against the rail of the main track. This operation involved considerable expense and loss of time.

The invention will be hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a front elevation of a pair of rolls for rolling switch-points; Fig. 2, a vertical longitudinal section on a reduced scale; Fig. 3, an end view; Fig. 4, a plan; Fig. 5, a cross-sectional end view of a finished switch-point; Fig. 6, a top or plan view of the same; Fig. 7, a section of the rolls through the pass E; Fig. 8, a section through the pass D; Fig. 9, a section through the pass C; Fig. 10, a section through the pass B, and Fig. 11 a section through the pass A.

Reference being had to the drawings and the letters thereon, F indicates the upper and G the lower roll, which may be mounted in any suitable housing and geared to revolve together in the same direction by gearing common to rolling-mills. In the rolls are formed the passes A, B, C, D, and E, by passing through which a bar or billet of metal is

reduced to a completed or finished switch-point. In Fig. 1 the rolls are shown in position for entering the metal to each pass successively. The groove *a*, which forms the flange of the switch-point, is of uniform depth throughout, or concentric to the axis of the lower roll in all of the passes, while in the upper roll said groove is concentric to the axis of the roll throughout a portion of the circumference of the roll only, and then diminishes gradually in depth and becomes eccentric, as shown at *b*, Figs. 8 to 11, for the purpose of gradually pointing or reducing the flange of the switch-point on one side, and at the lower surface of the flange on the same side of the rail is gradually tapered by the lateral contraction of the groove, as shown at *c*, Fig. 4.

The groove *d*, which forms the head of the switch-point, is concentric to the axis of the roll in both the upper and lower roll throughout a portion of its circumference, and is then reduced in depth gradually and made eccentric to the axis of the rolls by a projection *e* on the upper roll and by reducing the depth of the groove at *f* for the purpose of gradually reducing the head of the switch-point on both sides of the web at one end thereof, as shown in Figs. 5 and 6. The ribs *g* between the grooves, which form the head and flange of the switch-point, are concentric to the axis of both rolls and form that portion of each pass in the rolls which produces the web of the switch-point, which is of uniform thickness throughout its length.

The several passes are separated by collars *h*, and in the passes D and E the terminal point of the eccentric portion of the groove *d* is contracted laterally by a projection *i* for tapering the point vertically, as shown at *k* in Fig. 5, and the recess *l* in the point is formed by the projection *e* in the pass E, which finishes the article.

In Figs. 5 and 6, *m* indicates the head, *n* the web, and *o* the flange or base, of a switch-point having the vertically-tapered portion *k* and the recess *l*. In the several passes the eccentric portions of the grooves spring from

different points on the circumference or periphery of the rolls to correspond with and compensate for the degree of tapering of the switch-point produced by the preceding pass
 5 and to cause the rolls in one pass to "bite" just at the place where they ceased to bite and reduce the point in the former pass. In turning the rolls only one center is used, and the eccentricity or taper of the passes is produced with the automatic cross-feed of the
 10 lathe. The collars *h* may be distributed upon the upper and lower roll, instead of all being on the lower roll, as shown, without departing from the spirit of my invention.

15 In the operation of the rolls described they revolve continuously in one and the same direction from the time the bar or billet of metal is introduced until the switch-point is completed, and the metal is fed into the several
 20 passes at the same point on the circumference of the rolls.

The feed mechanism consists of a series of feed-rolls *a' b'*, operated by any suitable connection with the rolls, and a series of gates
 25 *c'*—one for each pass—mounted upon a rock-shaft *d'*, supported in suitable bearings at each end and operated by an arm *e'*, secured to the shaft *d'* at one end and at the opposite end to a rod or link *f'*, attached to one arm
 30 *g'* of a vibrating lever *H*. The lever *H* is fulcrumed at *h'* in a support *i'*, and its opposite arm *k'* is provided with a cam-roller *l'*, which enters a groove *m'* in a gear-wheel *I*, supported in a pedestal *K* and engaging with a
 35 pinion *L*, secured to one of the rolls.

The feed mechanism may be geared to cause the gates to assume a horizontal position and allow the metal to enter the passes of the rolls at every revolution or at every other revolution
 40 of the rolls, or at any suitable number of revolutions, by regulating the gearing accordingly. The feed-rolls *a' b'* run continuously, thereby moving the metal up against the gates *c'* and holding it in position ready
 45 to enter the passes of the rolls as soon as the gates are moved forward into a horizontal position by the gearing and operating mechanism.

By the construction and operation described
 50 a completed switch-point is produced capable of being placed in position in a switch without any further preparation.

Having thus fully described my invention, what I claim is—

55 1. Rolls for the manufacture of switch-points, provided with a concentric groove for the flange and an eccentric groove for the head in one roll, and eccentric grooves for the flange and head in the opposing roll, and
 60 concentric ribs between the grooves in both rolls, constituting one pass in the rolls, substantially as described.

2. Rolls for manufacturing switch-points, provided with a cam-shaped or eccentric projection, as *e*, on one roll and a corresponding
 65 part, as *f*, on the opposite roll, grooves, as *a*

d, to operate upon the head and flange of the switch-point, and concentric ribs, as *g*, to operate upon the web, substantially as described. 70

3. Rolls for manufacturing switch-points, provided with a pass or passes having grooves, as *a d*, and ribs, as *g*, and vertical and lateral projections in said grooves, as at *i* and *e*, for pointing or reducing a bar of metal at its upper front end and forming a double incline
 75 on one of the flanges, substantially as described.

4. Rolls for manufacturing switch-points, provided with a series of passes having
 80 grooves, as *a d*, and ribs, as *g*, for forming the head, flanges, and web, and eccentric vertical and lateral projections, respectively, as shown at *e*, *e*, and *i*, for reducing the head to a point on both sides of the web and the
 85 flange on one side of the web, substantially as described.

5. Rolls for manufacturing switch-points, provided with grooves, as *a d*, having concentric portion throughout a part of the circumference of the rolls and concentric portions throughout the remainder of the circumference of the rolls, and a concentric rib, as *g*, between the grooves, whereby the article
 90 is rolled parallel throughout a part of its length and gradually tapered throughout the remainder of its length, substantially as described. 95

6. Rolls for manufacturing switch-points, provided with grooves, as *a d*, the former being concentric to the axis in one roll throughout its circumference and concentric to the axis in the opposing roll throughout a portion
 100 of the circumference of said roll and eccentric throughout the remainder, and the latter groove being concentric to the axes of both rolls throughout a portion of the circumference thereof and eccentric to the axes of the
 105 rolls throughout the remaining portion thereof, substantially as described. 110

7. Rolls for manufacturing switch-points, provided with a series of passes having grooves, as *a* and *d*, constructed substantially as described, and concentric ribs, as *g*, between said grooves, in combination with an
 115 automatic feed mechanism, substantially as and for the purpose set forth.

8. Rolls for manufacturing switch-points, having grooves provided with cam-shaped projections and recesses in the rolls, in combination with an automatic feed mechanism
 120 constructed to admit the metal to the several passes at the same point on the periphery of the rolls, substantially as described.

9. Rolls for manufacturing switch-points, in combination with a feed mechanism consisting of rolls, and a gate for opening and closing the entrance to the pass in the rolls,
 125 substantially as described.

10. Rolls for manufacturing switch-points, in combination with a feed mechanism consisting of rolls, a rock-shaft provided with

gates, and a train of mechanism for intermittently dropping and raising said gates, substantially as described.

11. Rolls for manufacturing switch-points, 5 in combination with feed-rolls, a rock-shaft supporting gates, a gear-wheel having a cam-shaped groove, a pinion engaging said gear-wheel, and intermediate connection between

the gear-wheel and the rock-shaft, substantially as described. 10

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

ISAAC D. WEAVER.

Witnesses:

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J. F. ELLENBERGER.