

C. H. HOPE.

MACHINE FOR GRINDING THE SURFACES OF PRINTING OR EMBOSSING CYLINDERS.

APPLICATION FILED NOV. 30, 1908.

959,140.

Patented May 24, 1910.

5 SHEETS—SHEET 1.

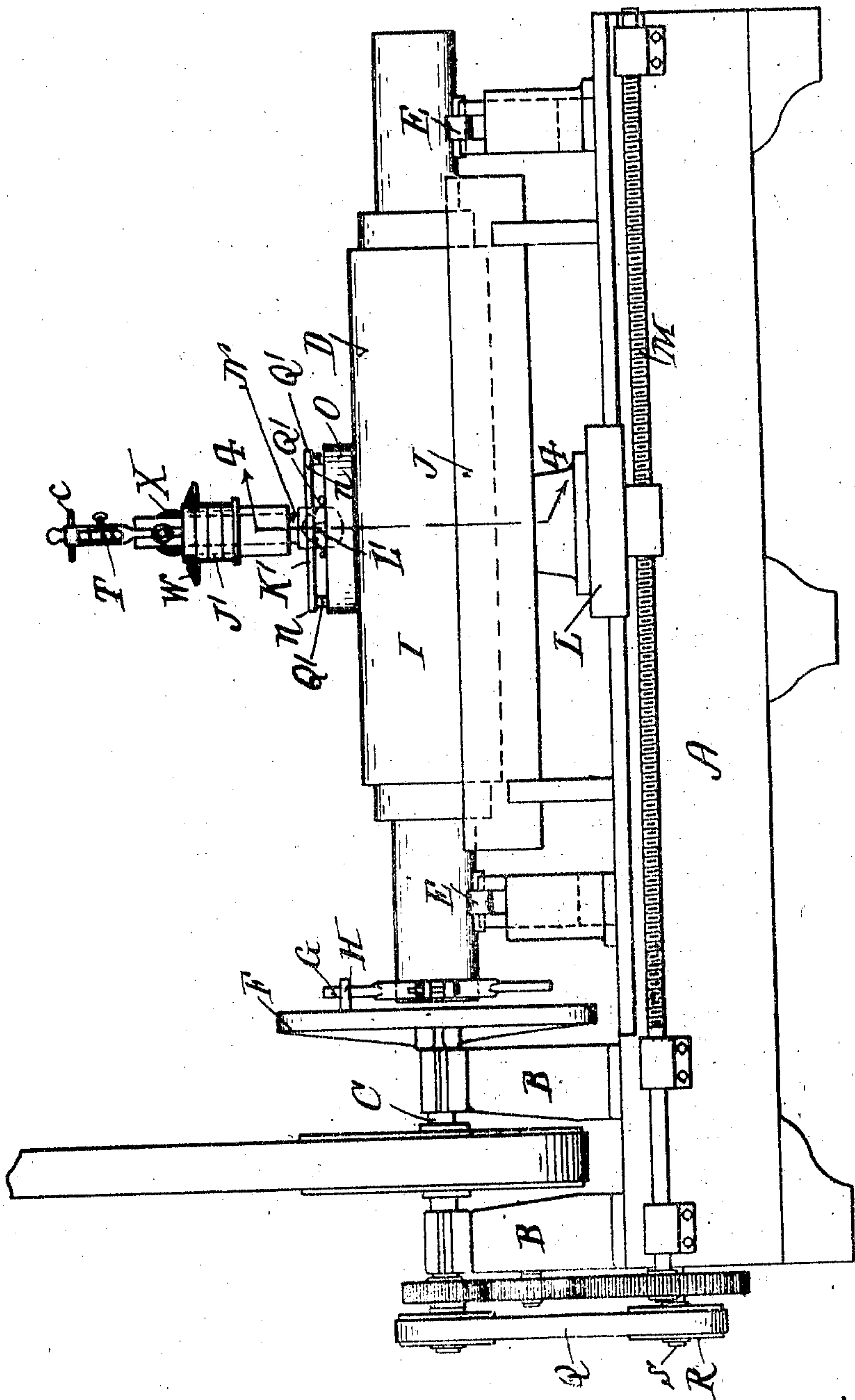


FIG. 1

WITNESSES.

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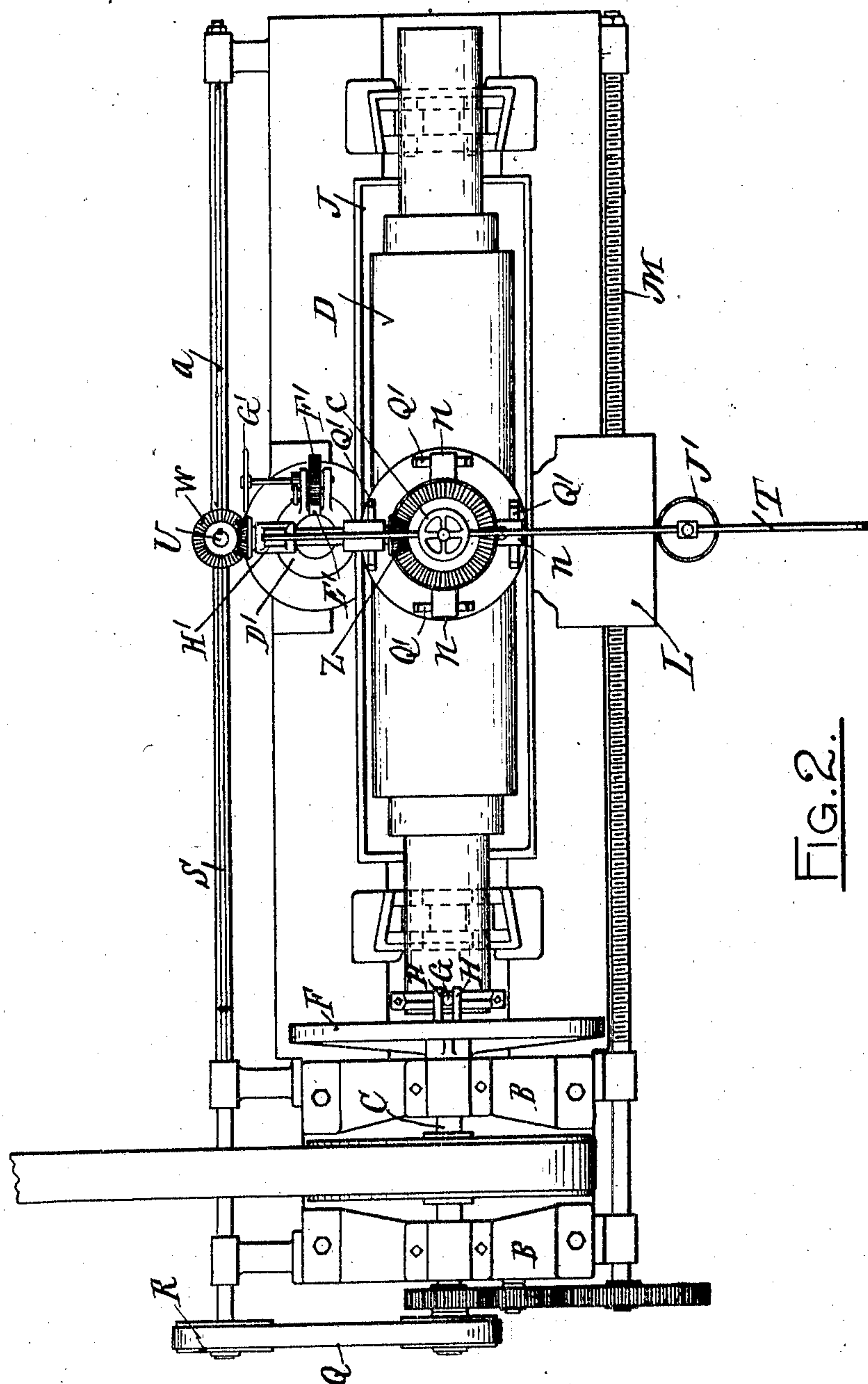


FIG. 2.

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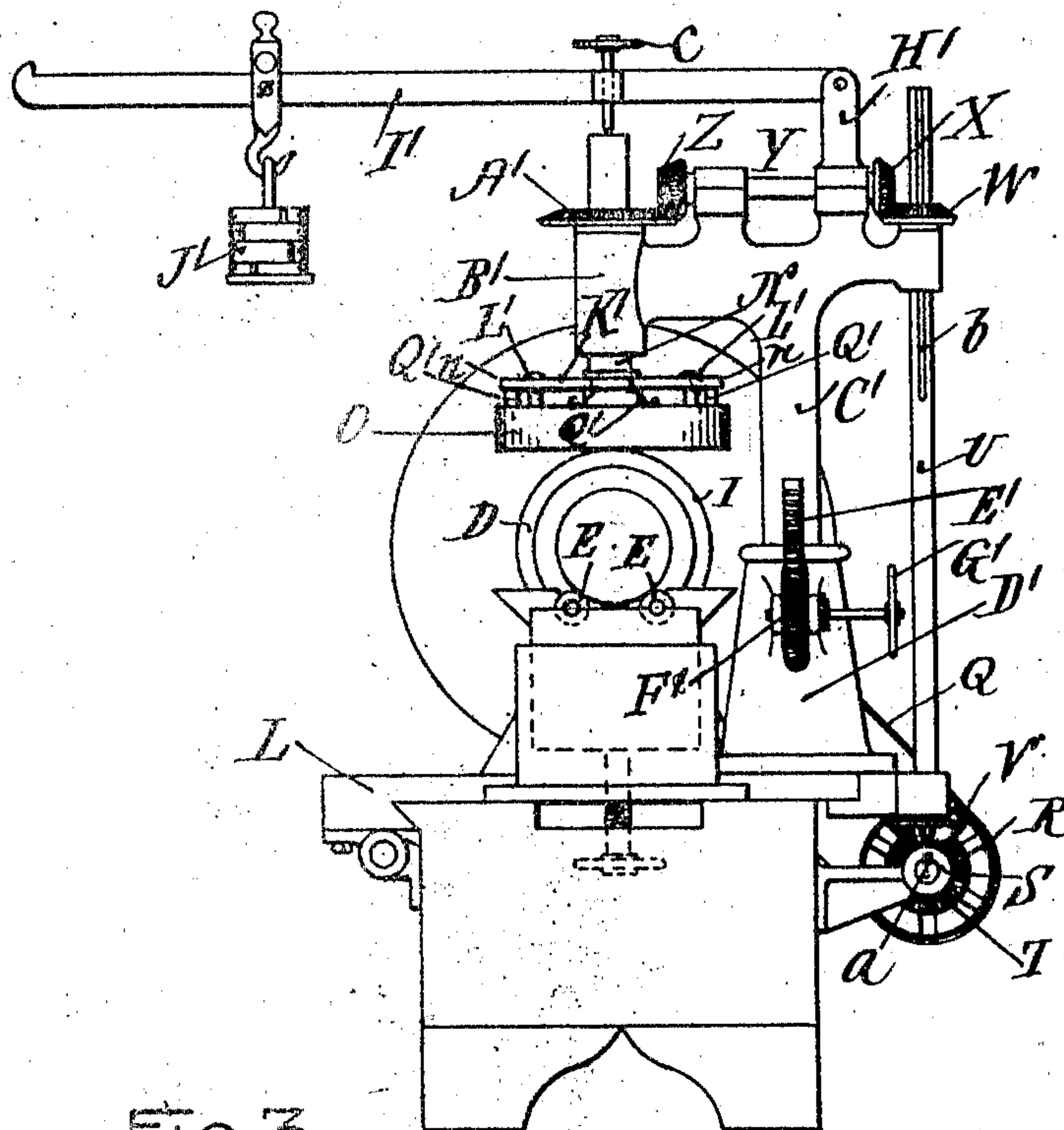
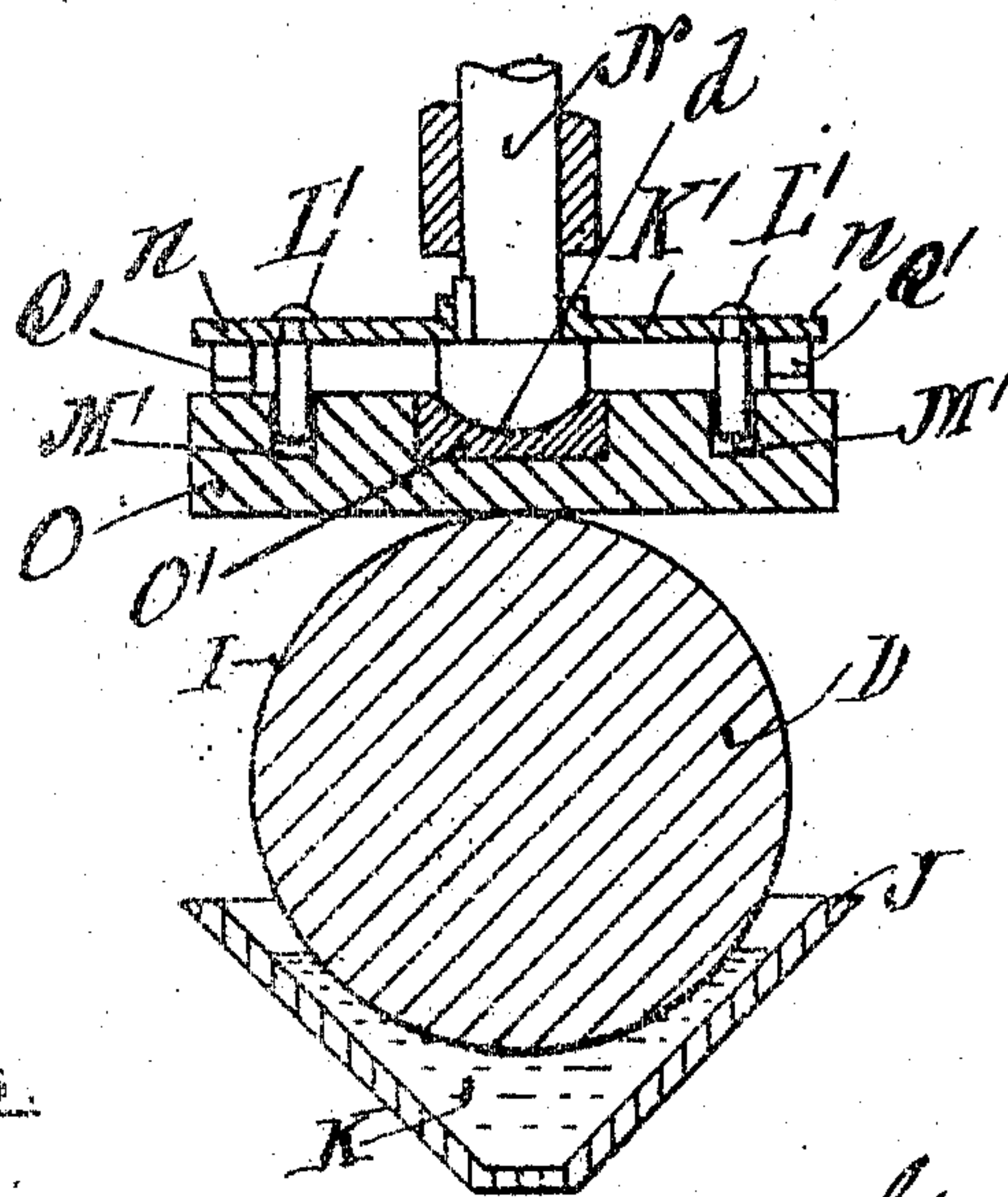


FIG. 3.



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FIG. 4.

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5 SHEETS—SHEET 4.

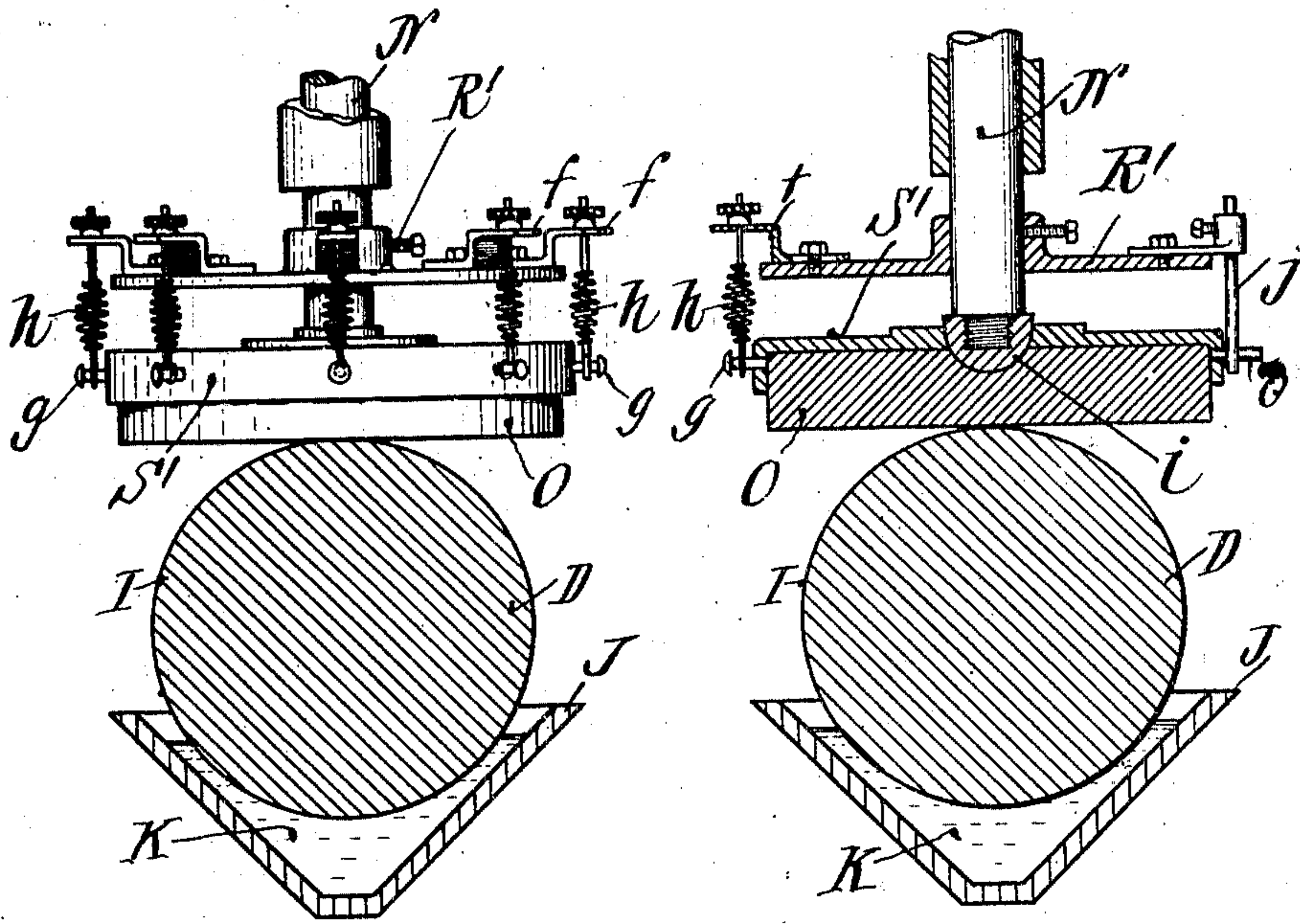


FIG. 5.

FIG. 6.

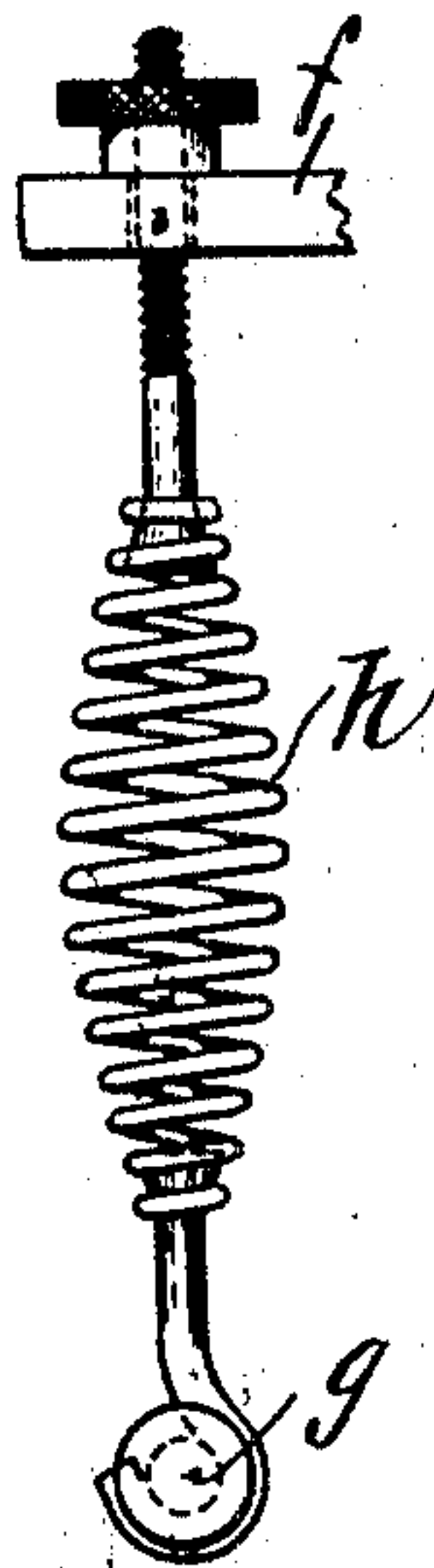


FIG. 8.

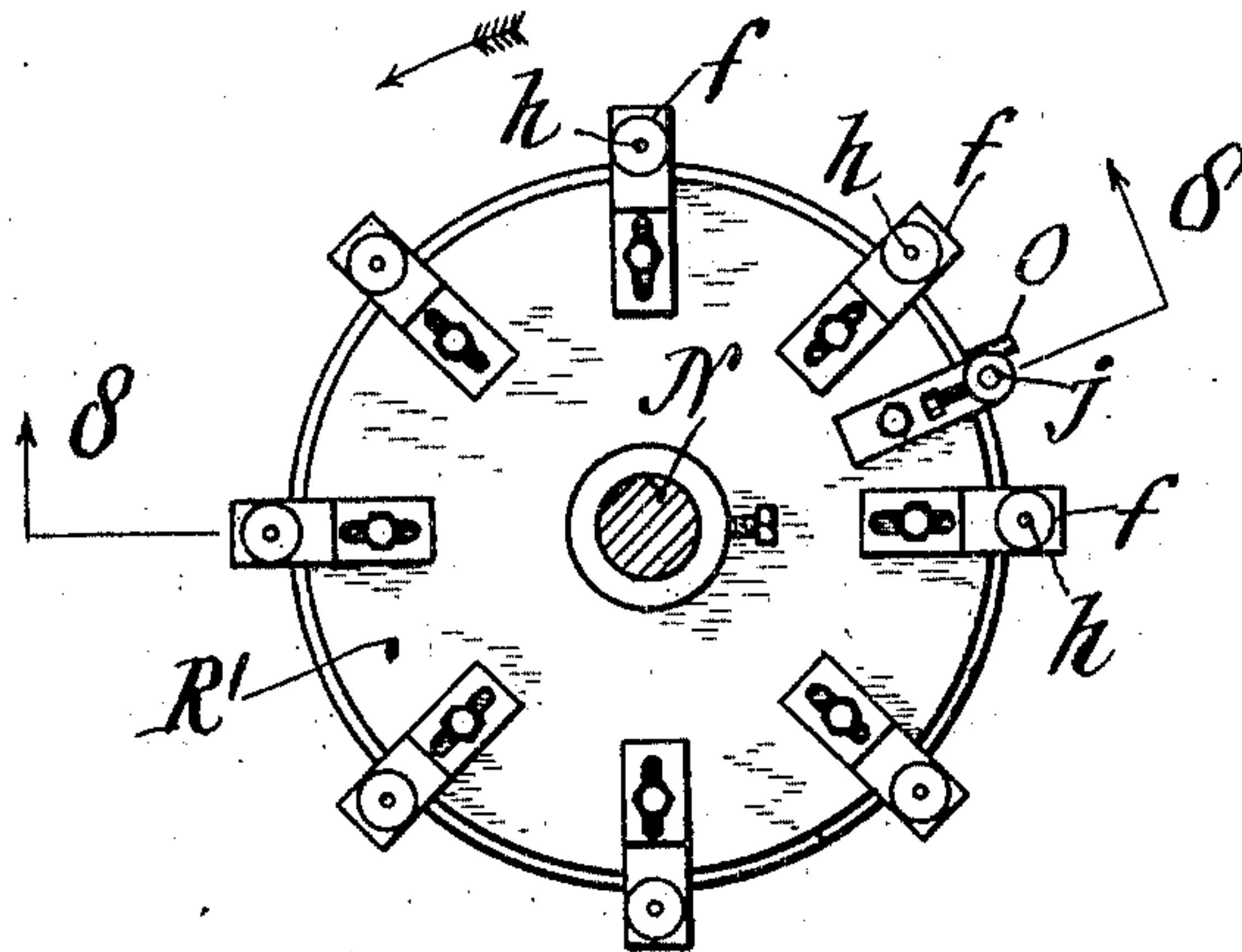


FIG. 7.

WITNESSES

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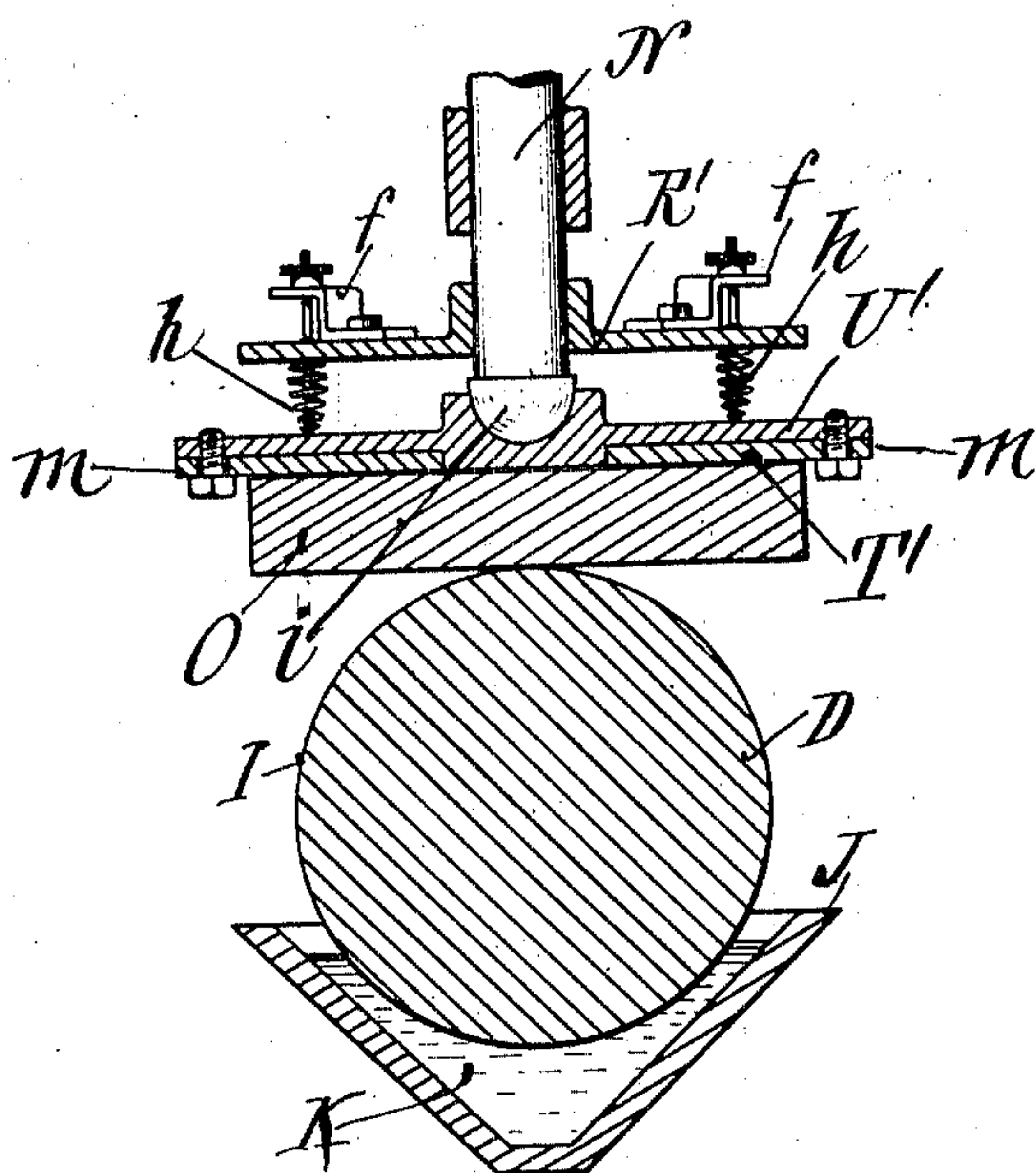


FIG. 9.

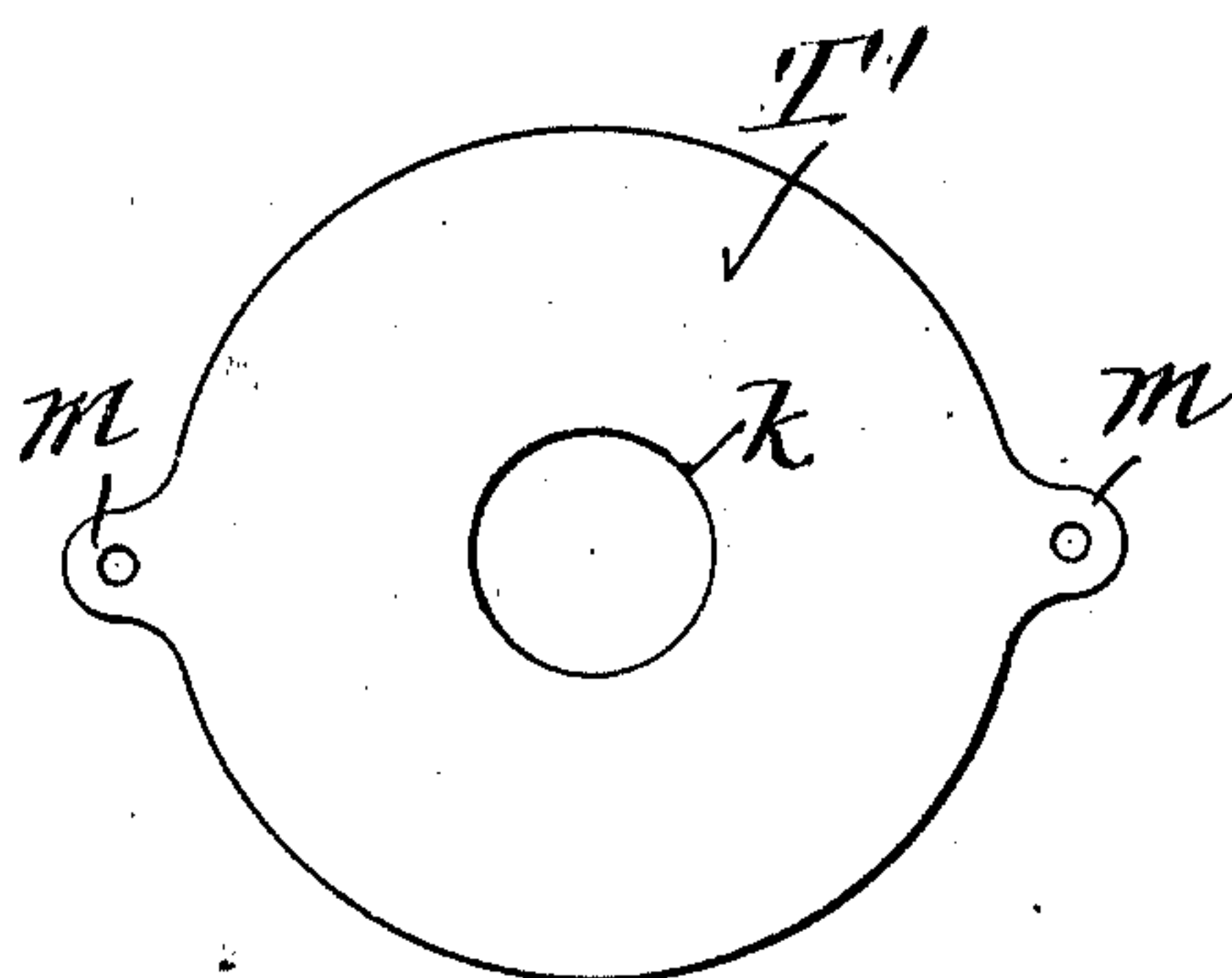


FIG. 10.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES H. HOPE, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR GRINDING THE SURFACES OF PRINTING OR EMBOSSING CYLINDERS.

959,140.

Specification of Letters Patent. Patented May 24, 1910.

Application filed November 30, 1908. Serial No. 465,434.

To all whom it may concern:

Be it known that I, CHARLES H. HOPE, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Machines for Grinding the Surfaces of Printing or Embossing Cylinders, of which the following is a specification.

My invention relates to a machine in which printing or embossing cylinders may have their surfaces ground uniformly true, and it consists in a flat grinding stone connected with the lower member of a socket-joint, which is held by springs against the upper member, at the lower end of an upright spindle, by means of which the stone is rotated.

Figure 1 represents a front elevation of a cylinder grinding machine embodying my improvement. Fig. 2 represents a top view of the same. Fig. 3 represents an end view. Fig. 4 represents a detail section in line 4, 4, of Fig. 1. Fig. 5 represents an edge view of the driving plate and the stone, and a transverse section of the cylinder to be ground. Fig. 6 represents a vertical section taken on the line 8, 8, of Fig. 9. Fig. 7 represents a top view of the driving plate for the stone shown in Fig. 8. Fig. 8 is an enlarged representation of one of the springs employed between the grinding stone and the driving means. Fig. 9 represents a detail section showing another modification. Fig. 10 represents a top view of the plate for holding the stone.

In the drawing, A represents the bed frame of the machine, B, B represent the bearing heads which support the rotary spindle C, by means of which rotation is imparted to the cylinder D which is to be ground. The cylinder D is supported upon the anti-friction rollers E, E, and is rotated from the face plate F by means of the stud G, and dog H. The cylindrical surface I of the cylinder D, which is to be ground, revolves in a trough J, containing water K, which serves to keep the surface of the cylinder D sufficiently wet for the purpose of grinding.

The sliding carriage L is operated longitudinally of the bed frame A, by means of the screw M, and rotary movement is imparted to the spindle N and the grinding stone O, by means of the shaft U, which is driven from the spindle C by means of the

belt Q, pulley R, the shaft S, provided with a longitudinal groove *a*, the bevel gear T splined to rotate with the shaft S and move loosely along the same, a connection between the said bevel gear and the carriage L, the upright shaft U of the carriage, the bevel gear V engaging with the bevel gear T, the bevel gear W adjustably held upon the shaft U, by means of the groove *b* and a suitable spline in the bore of the said gear, the bevel gear X engaging with the gear W, the shaft Y, and the bevel gear Z which engages with the bevel gear A' upon the spindle N which carries the grinding stone O. The spindle N is carried by the adjustable support B', the stem C' of which is held for up and down movement in the hollow standard D' of the sliding carriage L, the said support B' being moved either up or down by means of the rack E', gear F', and the hand wheel G'.

At the upper part of the support B', is placed the standard H', to the end of which is pivoted the lever I' having connected therewith, the center bearing screw *c* on the upright spindle N, and upon the outer portion of the said lever is placed the adjustable weight J', by means of which the pressure of the grinding stone upon the surface of the cylinder may be properly varied and controlled.

To the lower end of the spindle N is attached the spider arm plate K', provided, with the downwardly extending pins L', L', which enter the recesses M', M', made in the upper face of the grinding stone O, the said stone being also provided with an inserted metal disk O' concaved at its upper surface to receive the convex end *d* of the spindle N, thus forming with the said spindle a universal joint. The spider arms *n, n*, of the plate K' are each provided at their under side with the attached flat springs Q' thus forming a yielding seat for the grinding stone, whereby any irregularity in the face of the stone will be compensated and upon raising the spindle N with its attached plate K' the stone O will become separated therefrom and may then be removed from the cylinder.

Another modification is shown in Figs. 7, 8, 9 and 10, in which the circular plate R' is attached to the spindle N the said plate being provided with the brackets *f, f*, which project outward from the edge of the plate

and between the said brackets and the pins *g, g*, of the holding plate *S'* for the stone *O* are placed the contracted spiral springs *h, h*, by means of which the said holding plate is held up against the semi-circular end *i* of the spindle *N*, movement of rotation being imparted to the stone from the plate *R'* by means of the downwardly extending pin *j*, which engages with the stud *o*.

10 Another modification is shown in Figs. 11 and 12 in which the stone *O* is cemented upon a flat disk plate *T'* provided with a central perforation *k*, and the ears *m, m*, by means of which screw attachment is made
15 with the plate *U'* which fits the semi-circu-

lar end *i* of the spindle *N* and is held thereto by means of the springs *h, h*.

I claim as my invention:

In a machine for grinding the surface of printing or embossing cylinders, the com- 20 bination of an upright rotary spindle the lower end of which forms an element of a socket joint, a flat grinding stone, and springs for holding the socket-joint members in working contact with each other.

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Witnesses:

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