

(No Model.)

C. HAMMELMANN.

MECHANICAL MOVEMENT.

No. 282,076.

Patented July 31, 1883.

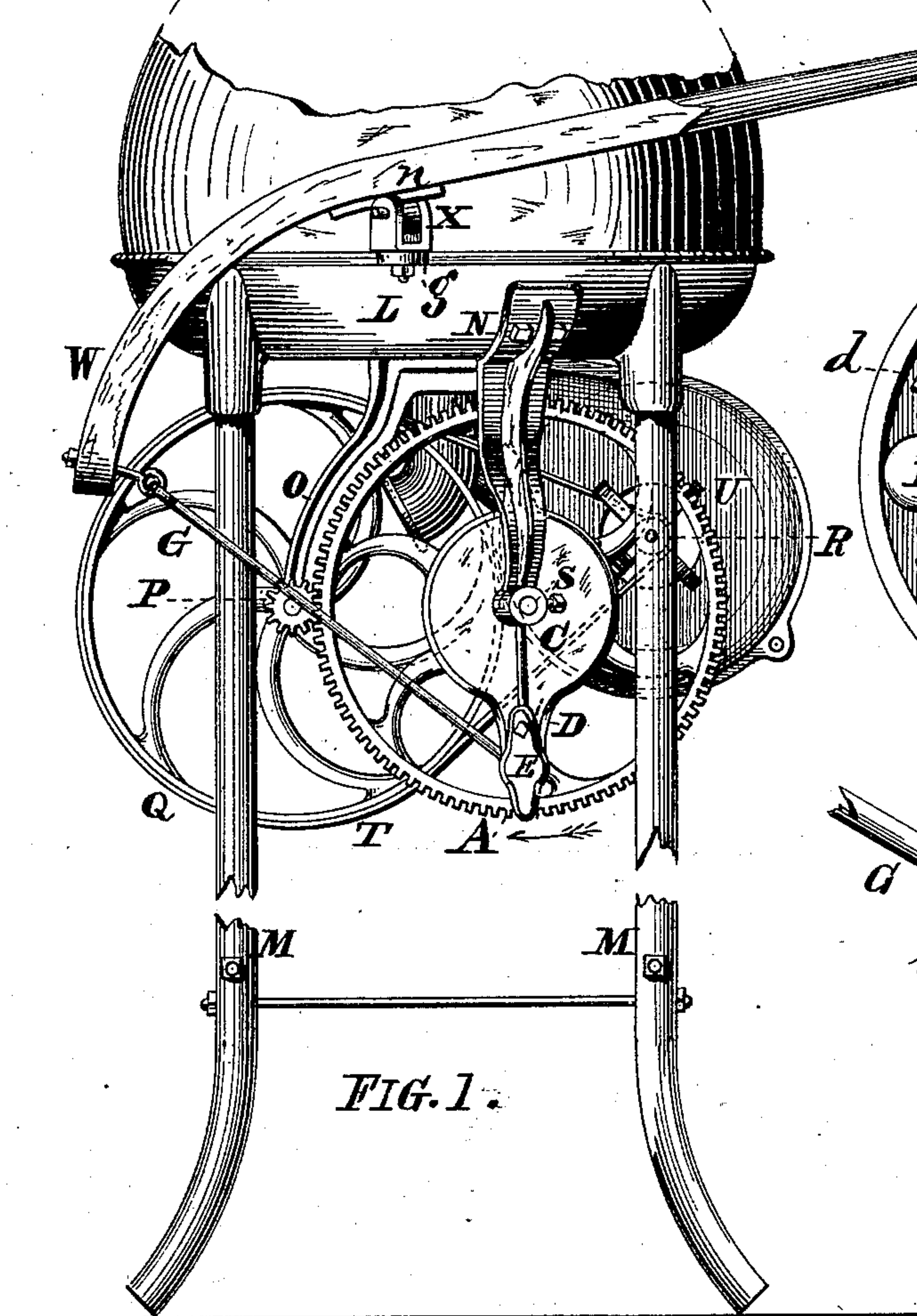


FIG. 1.

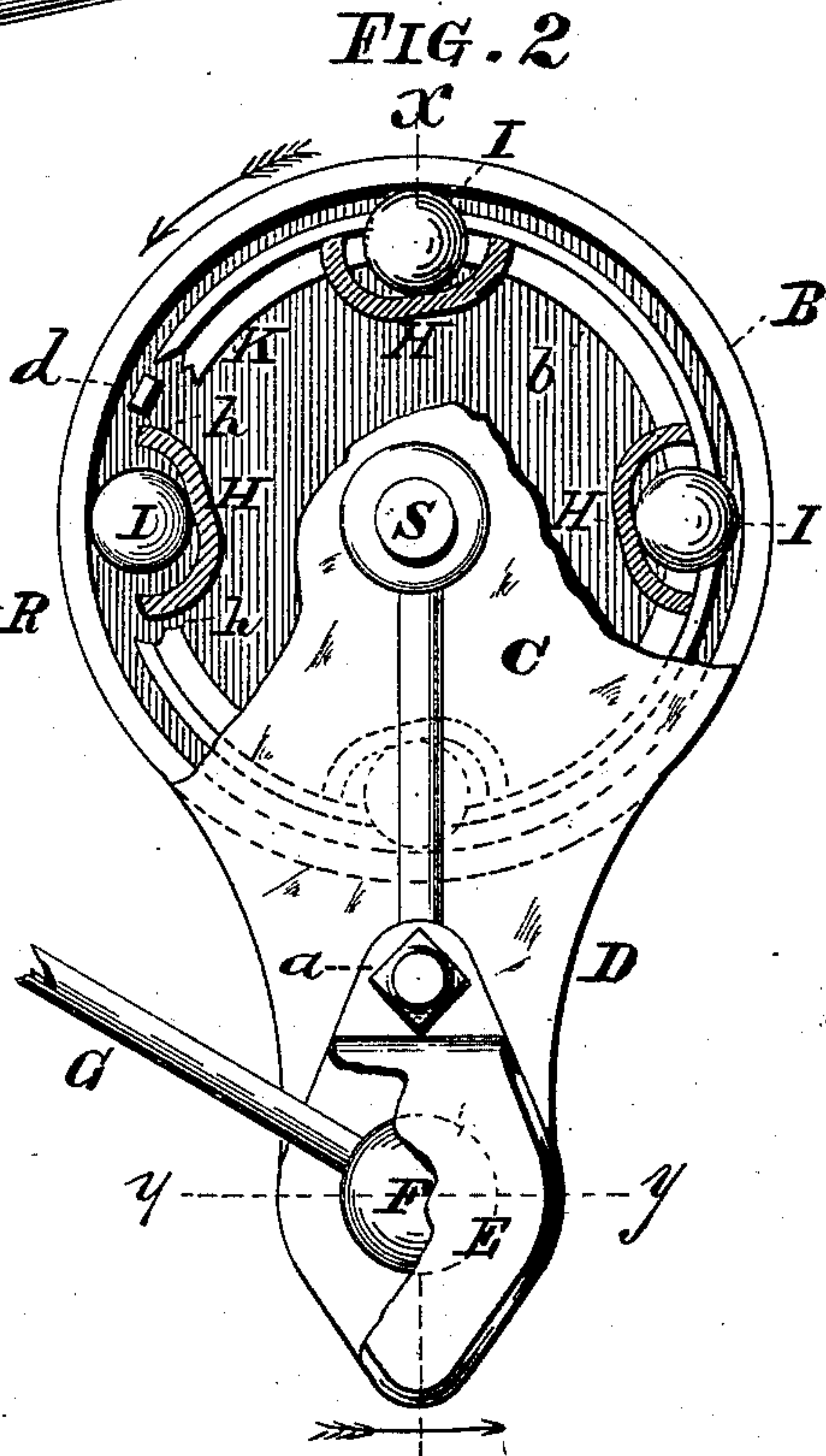


FIG. 2.

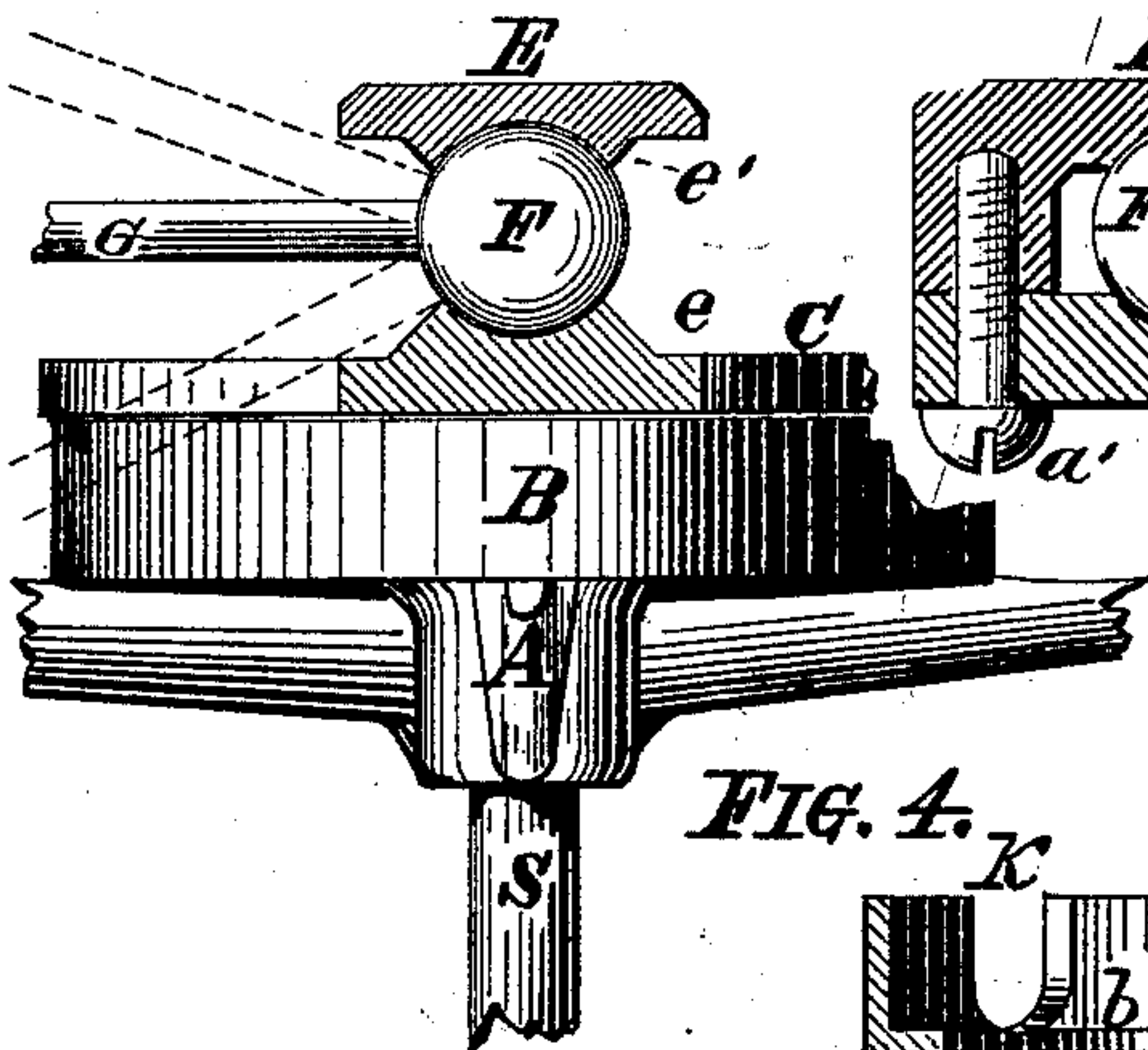


FIG. 4.

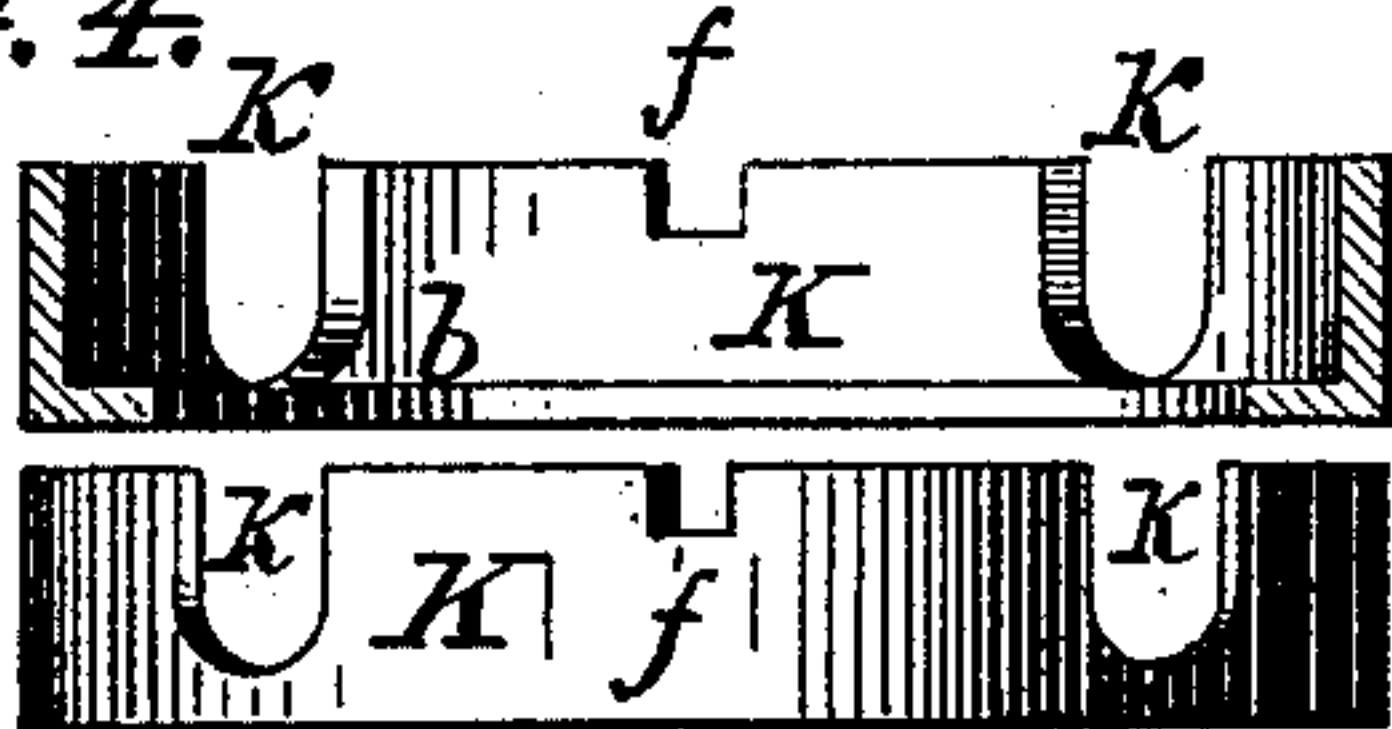
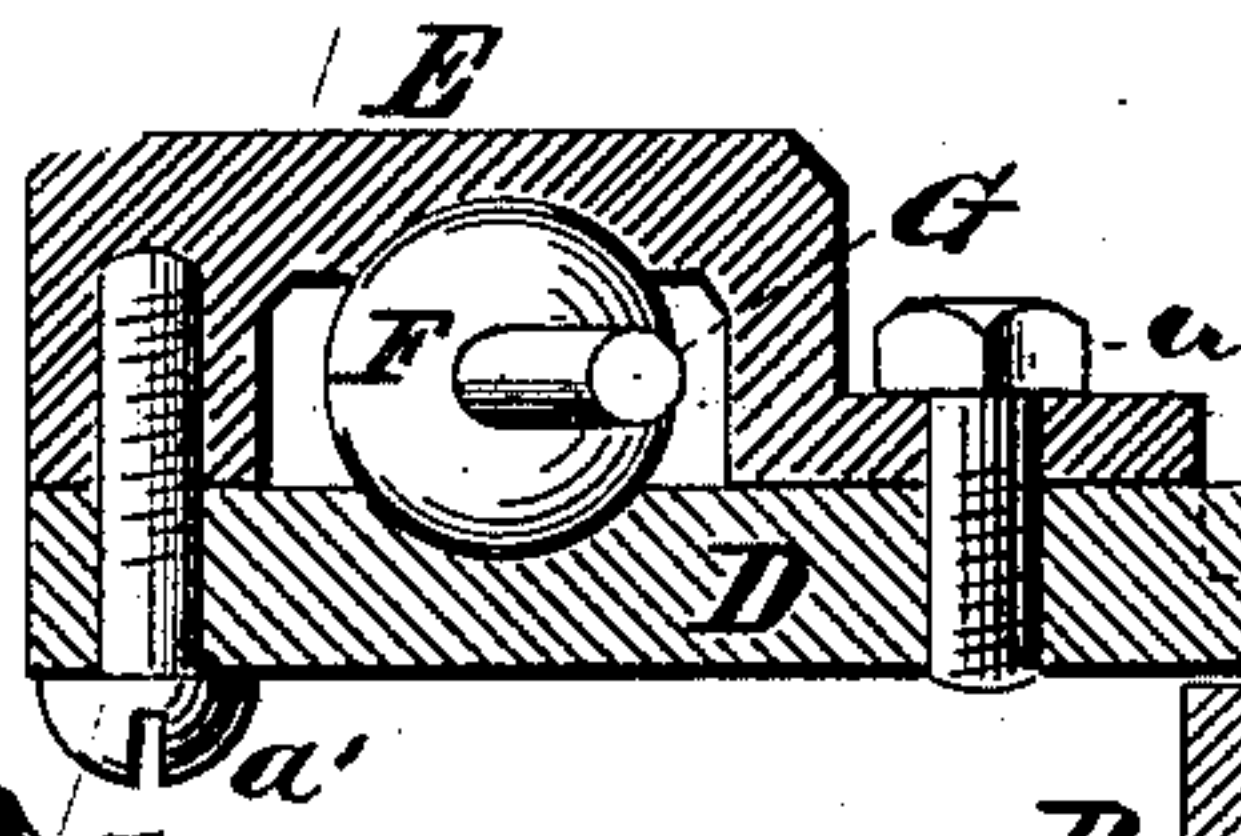
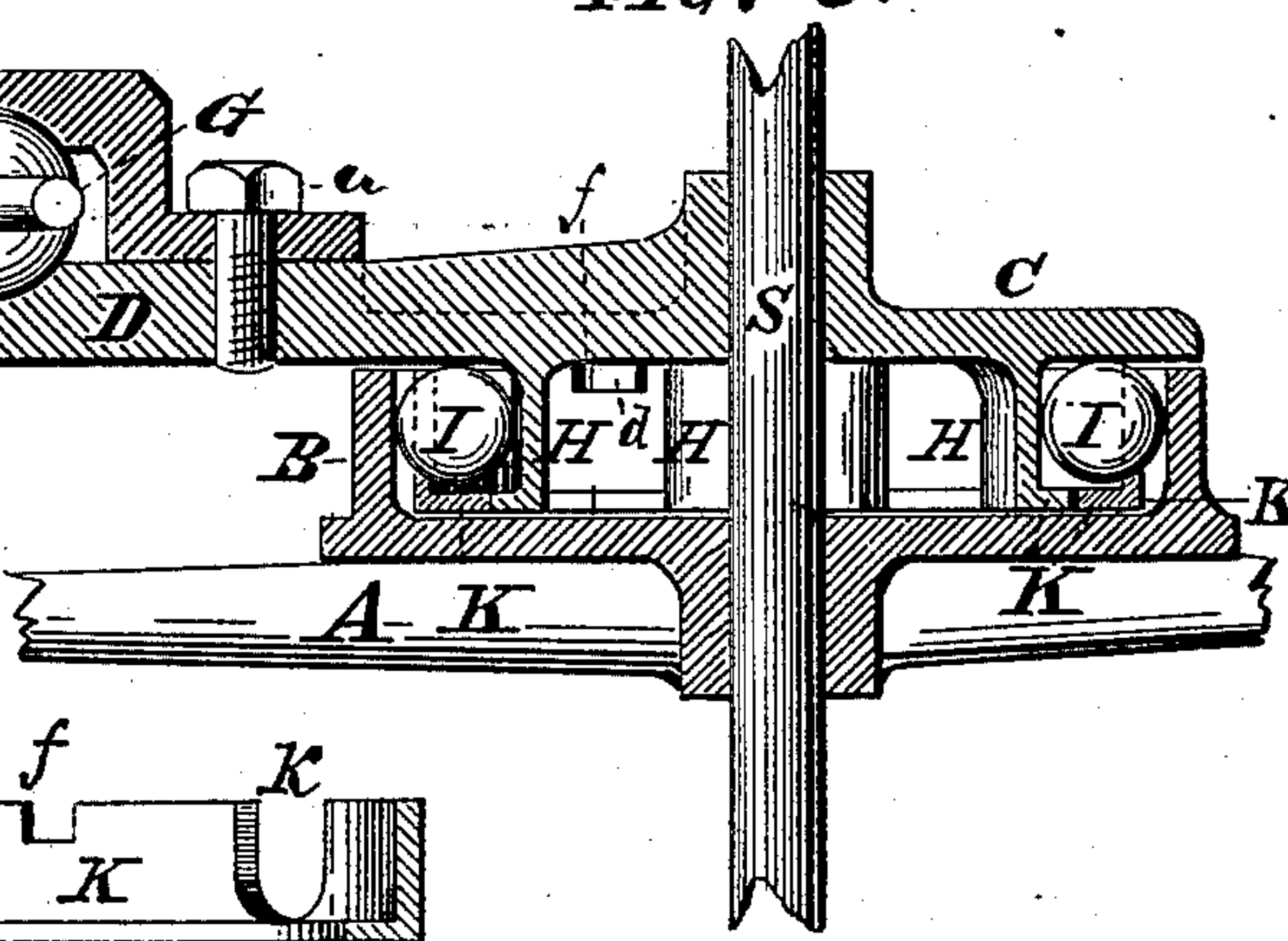


FIG. 5.

FIG. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES HAMMELMANN, OF BUFFALO, NEW YORK.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 282,076, dated July 31, 1883.

Application filed June 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HAMMELMANN, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Mechanical Movement for Operating Portable Forges, Blowers, &c.; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention has general reference to mechanical movements for operating forges, blacksmiths' blowers, and similar machines; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate my said invention more fully, Figure 1 is a side elevation of a portable forge fitted with my improved mechanical movement. Fig. 2 is a front elevation of the movement detached, parts being broken to illustrate the interior construction. Fig. 3 is a longitudinal sectional elevation in line *xx* of Fig. 2. Fig. 4 is a transverse sectional elevation in line *yy* of said Fig. 2. Fig. 5 are detail views of the clutch-ring.

Like parts are illustrated by corresponding letters of reference in all the figures.

The object of my present invention is the production of a simple and effective mechanical movement for operating forges, blowers, and similar machines. To attain this result I construct this device, essentially, of a main spur-wheel, A, having centrally a circular rim or casing, B, directly cast to the spokes of said wheel, so as to form at the same time a hub for said wheel, or otherwise affixed thereto. This casing B is closed by means of a cover, C, having an arm, D, to which is secured a cap, E, by means of screws *a a'*, as clearly illustrated in the drawings. On the under side of this cover C are formed four (more or less) curved projections, H, serving, as it were, as chambers for a like number of balls or short cylinders, I. On the top of

these projections, which are arranged concentrically around the axis S of the cover and casing C B, is placed a ring or band, K, of an L-shaped transverse section, said ring having in the rim a number of notches or excisions, *k*, corresponding with the number of balls or cylinders employed, and a further notch, *f*, to engage with a projection, *d*, on the cover D, as hereinafter to be referred to. The ring K has an inwardly-projecting flange, *b*, Figs. 2 and 4, to add strength to the rim, and for other obvious purposes.

The lower end of the arm D is cup-shaped and beveled at *e*, as shown in Fig. 4, and the lower face of the cap E is similarly formed, so as to receive between them a ball, F, cast or otherwise produced on or secured to one end of a rod, G, to act as a universal joint for said rod and arm, in a manner readily comprehended.

In describing the operation of this device it is assumed as being fixed to a portable forge, such as illustrated in Fig. 1, where L designates the bowl, to which is secured a downwardly-pending bracket, N, said bowl being supported upon legs M, of an approved construction. To this bowl is, furthermore, attached another bracket, O, carrying a short shaft, to which is affixed a pinion, P, meshing with the spur-wheel A, already mentioned, and a pulley, Q, connecting with the fan-pulley R by means of a belt, T.

The arm D is vibrated by the hand-lever W, through the intervention of the rod G, connected with said lever in any suitable manner, said lever being fulcrumed in a double eye, X, swiveled to the bowl L in the lug or projection *g*.

It will now be readily observed that when the arm D is moved in the direction of the arrow (the balls or spheres are presumed to remain stationary) the inclined projections H cause the wedging of the balls between the interior of the casing B and the inclined base of said projections, and thereby lock said casing to the cover C and cause it to rotate with said cover in the direction of the arrow on the upper portion of Fig. 2. As soon as the motion of the arm and cover C D is reversed the spheres I will disengage the rim of the casing B, leaving the latter, and with it the

entire driving mechanism, to continue in rotation in virtue of the momentum imparted to it, the said arm and cover returning to their starting position for another grip as often as the hand-lever W is vibrated in the manner described.

It is a well-known fact that, owing to the weight of the balls, cylinders, &c., employed in this as well as all similar clutch mechanism, there is only one, or, at best, only a few, of all the balls in a position to engage the casing at the moment when the cover C and the projections H reverse, this difficulty being so well known and understood as not to require lengthy description and explanation. I have overcome this objection and drawback by the introduction of the ring K, the notches *k* of which engage all the balls I, and connect them in such a manner that when one of them is in a position to lock the casing they all must be in the same position.

It will thus be observed that when the arm and cover C D are started in the direction of the arrow on the lower end of Fig. 2 the ring K and balls I will remain at rest for a short space of time, in virtue of their inertia, thus giving the inclines H an opportunity to engage the balls and press them toward the rim of the casing B, thereby engaging the latter, as described.

It will be further observed that at the moment when the direction of motion of the arm and cover is reversed the ring and the balls will continue in motion in the direction first described, in virtue of their momentum, thus enabling the inclines H to disengage from said balls until the projection *d*, engaging the ring K in the notch *f*, causes the reversal of the direction of motion of said ring and balls, a continuous movement of the casing B in one direction only being thus secured by a successive vibratory motion of the arm and cover C D.

I here desire to call attention to the fact that, in order to secure the continuous motion of the wheel A in the direction of the arrow in Fig. 1, the inclines H in Fig. 2 should incline in a direction opposite to that shown in said Fig. 2, the direction of motion of the said casing or wheel A depending entirely upon the position said inclines occupy.

In portable forges and similar machines it is desirable that the handle W be capable of a lateral motion in addition to its up-and-down movement. This advantage I have secured, in the present instance, by swiveling the said handle within the yoke or double eye *x* by means of the eye-piece *n*, and by forming the ball-and-socket-joint connection between the arm D and the rod G, which connects the said hand-lever W with the clutch mechanism.

It is perfectly obvious that, instead of spheres, I may use short cylinders within the casing B, and that when these spheres or cylinders are produced of hard metal (by casting them in a so-called "chill") they will be almost indestructible and wear a long time before renewal shall become necessary.

Having thus described my invention, I claim as new and desire to secure to me by Letters Patent of the United States the following devices and mechanism, to wit:

1. The combination, with the spur or other main driving wheel, A, having the clutch-casing B, of the cover C, having the operating-arm D and a series of inclined projections, H, as described, the spheres or cylinders I, and the ring K, having the notches *k*, whereby the said spheres I are caused to operate simultaneously, substantially in the manner as and for the purpose specified.

2. The combination of the cover C, having the actuating-arm D, provided with the cup-shaped beveled projection *c*, and the cap E, provided with the cup-shaped beveled projection *c'*, the ball F, and the rod G, substantially as described, for the object indicated.

3. As an improved article of manufacture, a clutch for converting reciprocating into a continuous rotary motion, consisting of the casing B, shaft S, cover C, having arm D, and a series of projections, H, fitted with spheres I, ring K, having notches *k* and *f*, and the actuating-rod G, with a universal-joint connection on the arm D, substantially as specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

CHARLES HAMMELMANN.

Attest:

MICHAEL J. STARK,
JOHN C. DUERR.