

(No Model.)

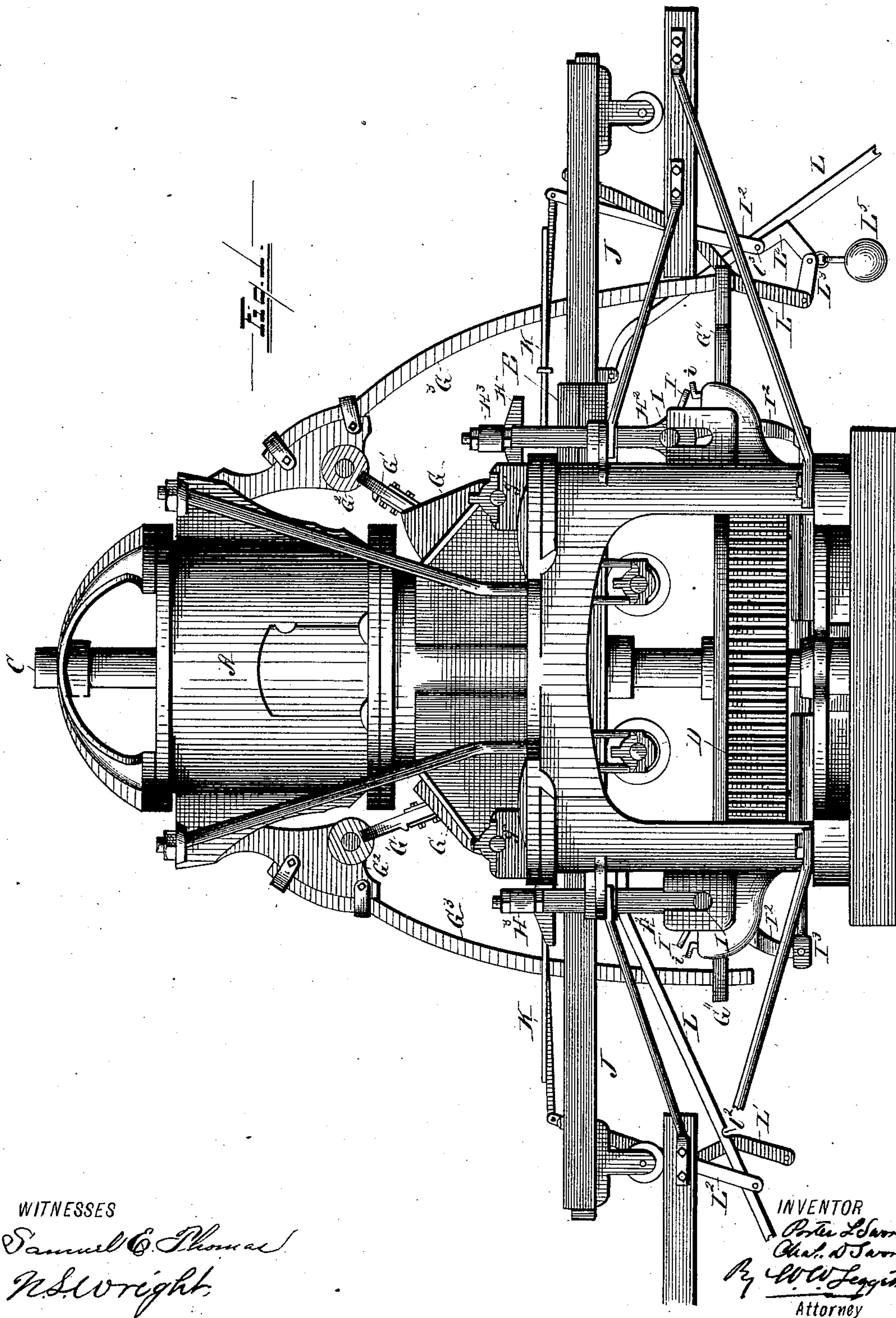
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P. L. & C. D. SWORD.

BRICK MACHINE.

No. 304,283.

Patented Aug. 26, 1884.



(No Model.)

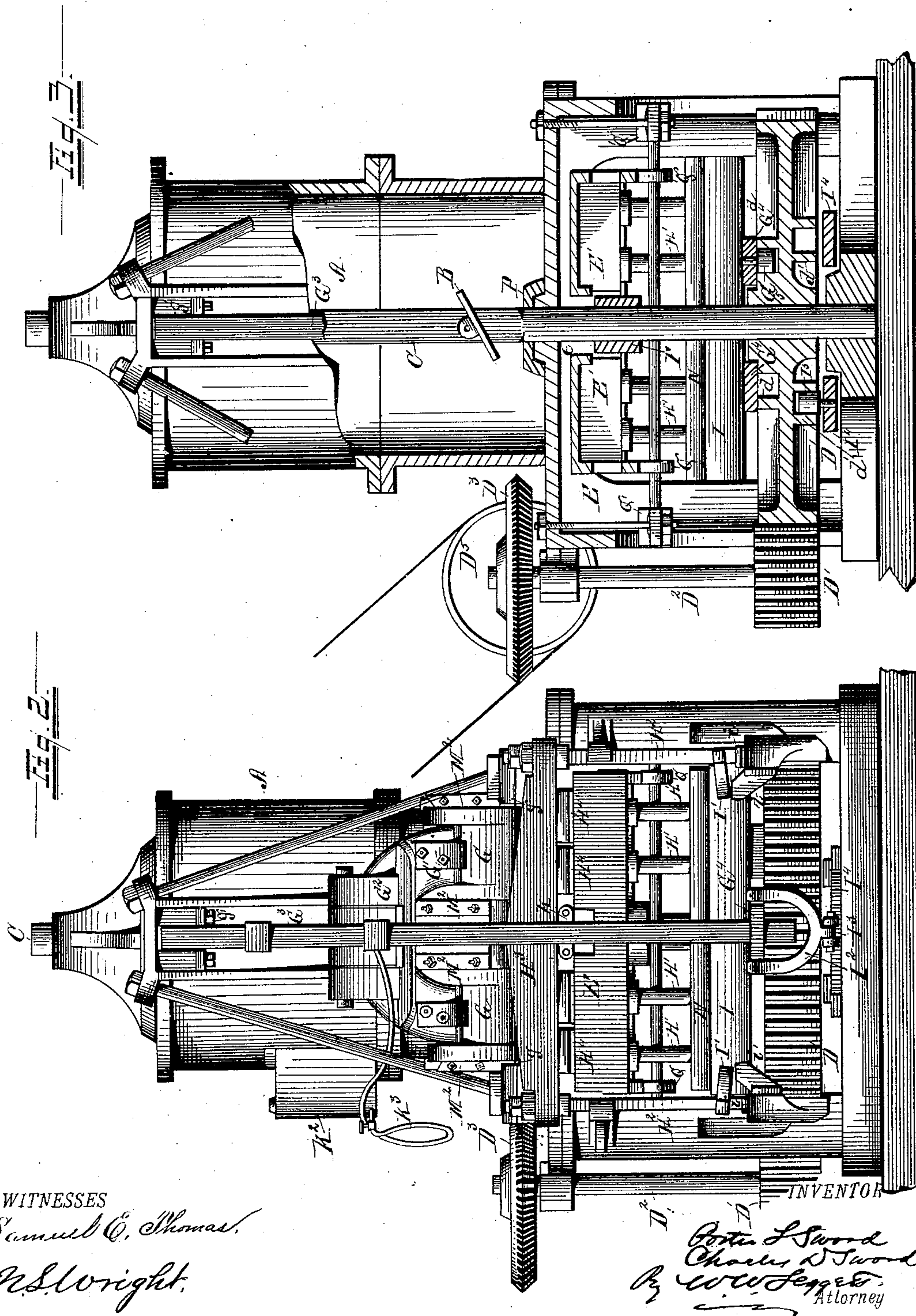
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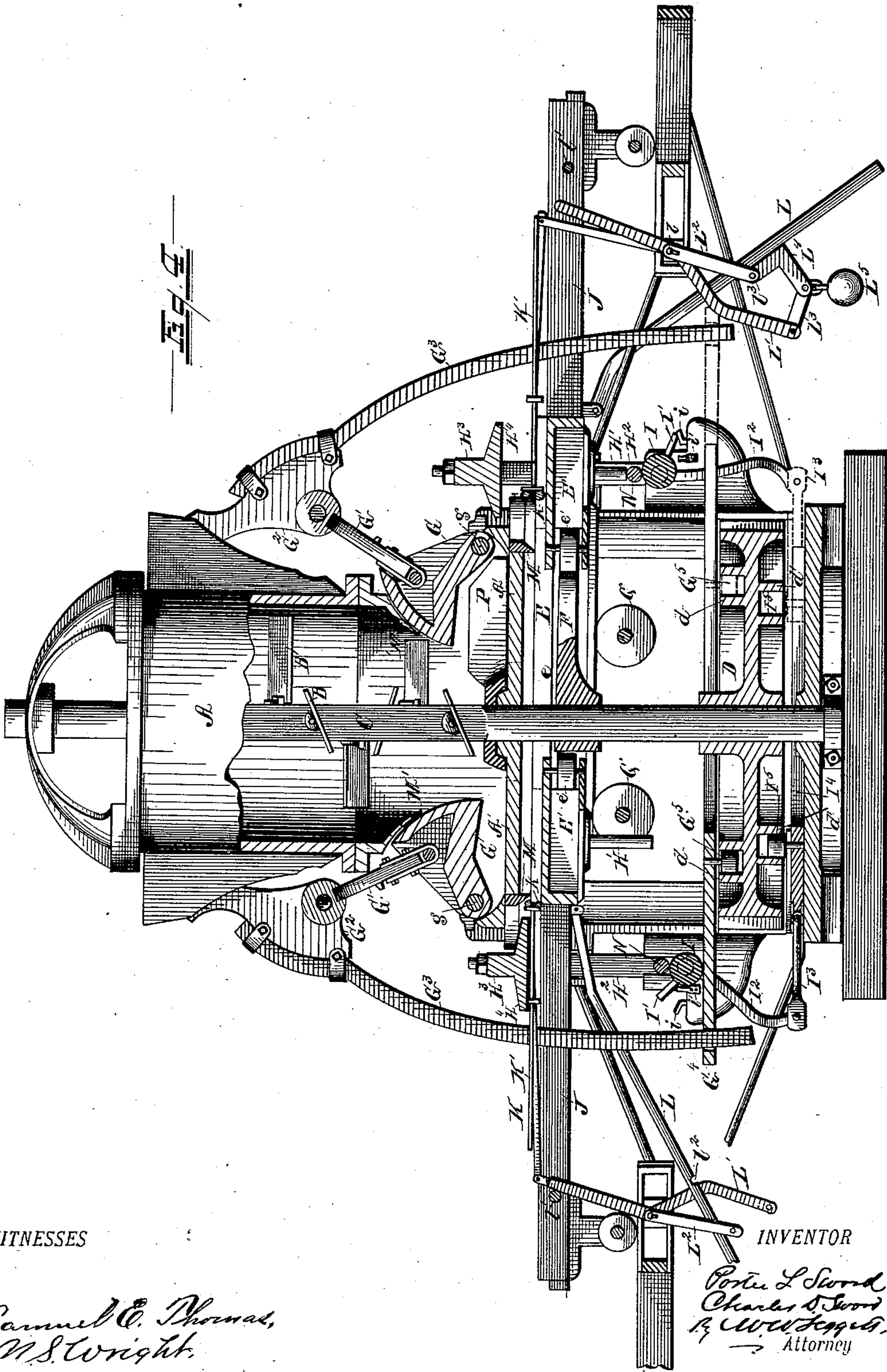
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WITNESSES

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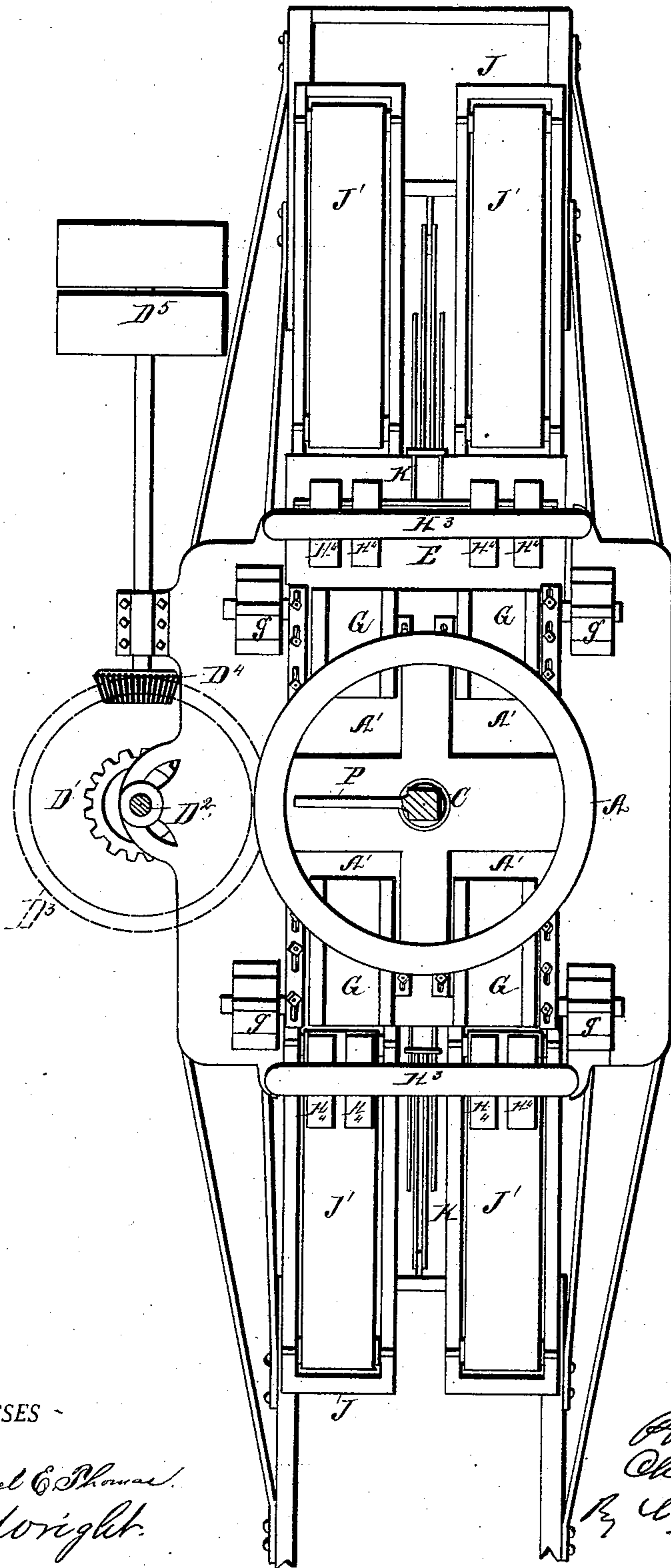
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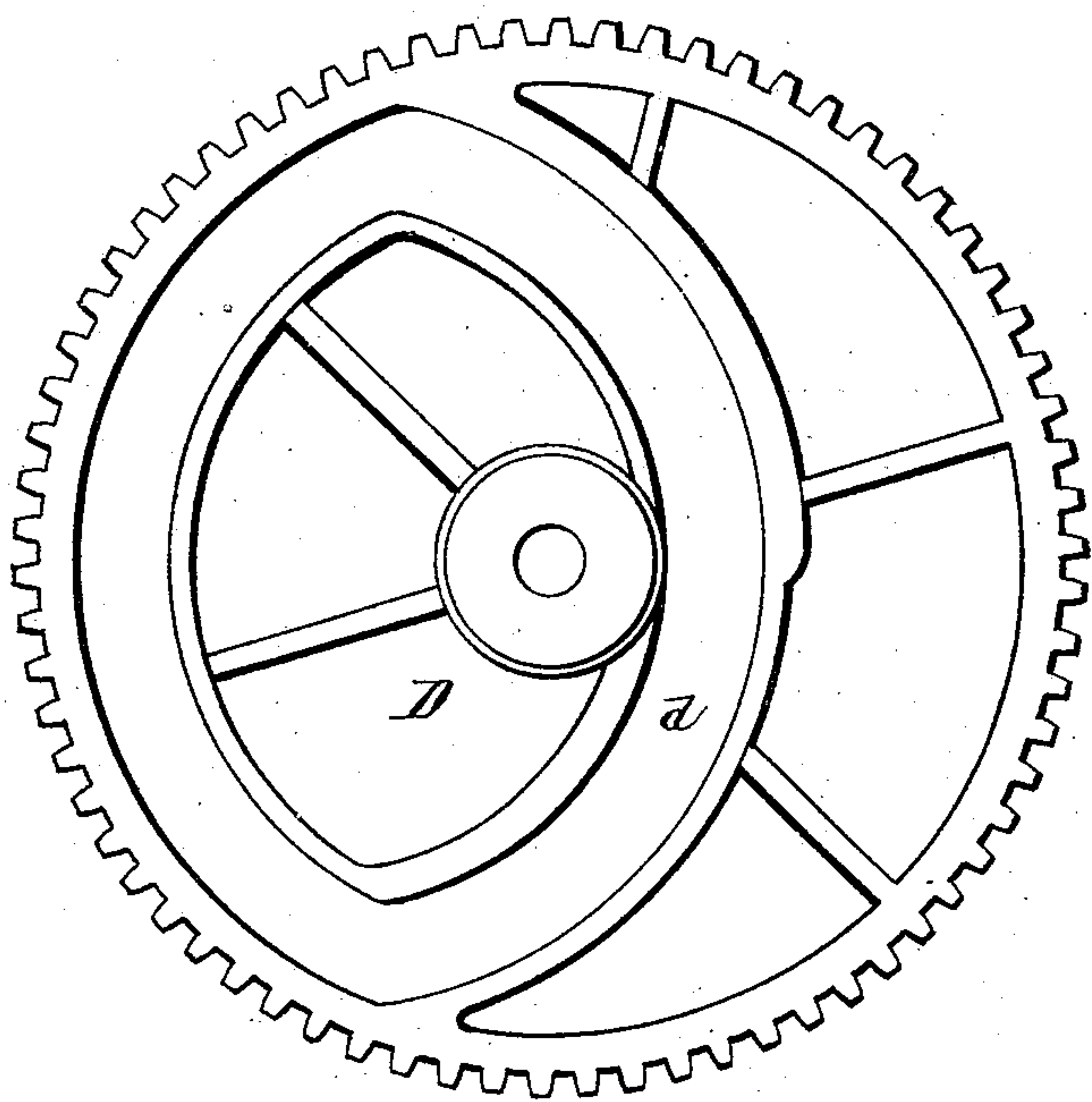


Fig. 6.

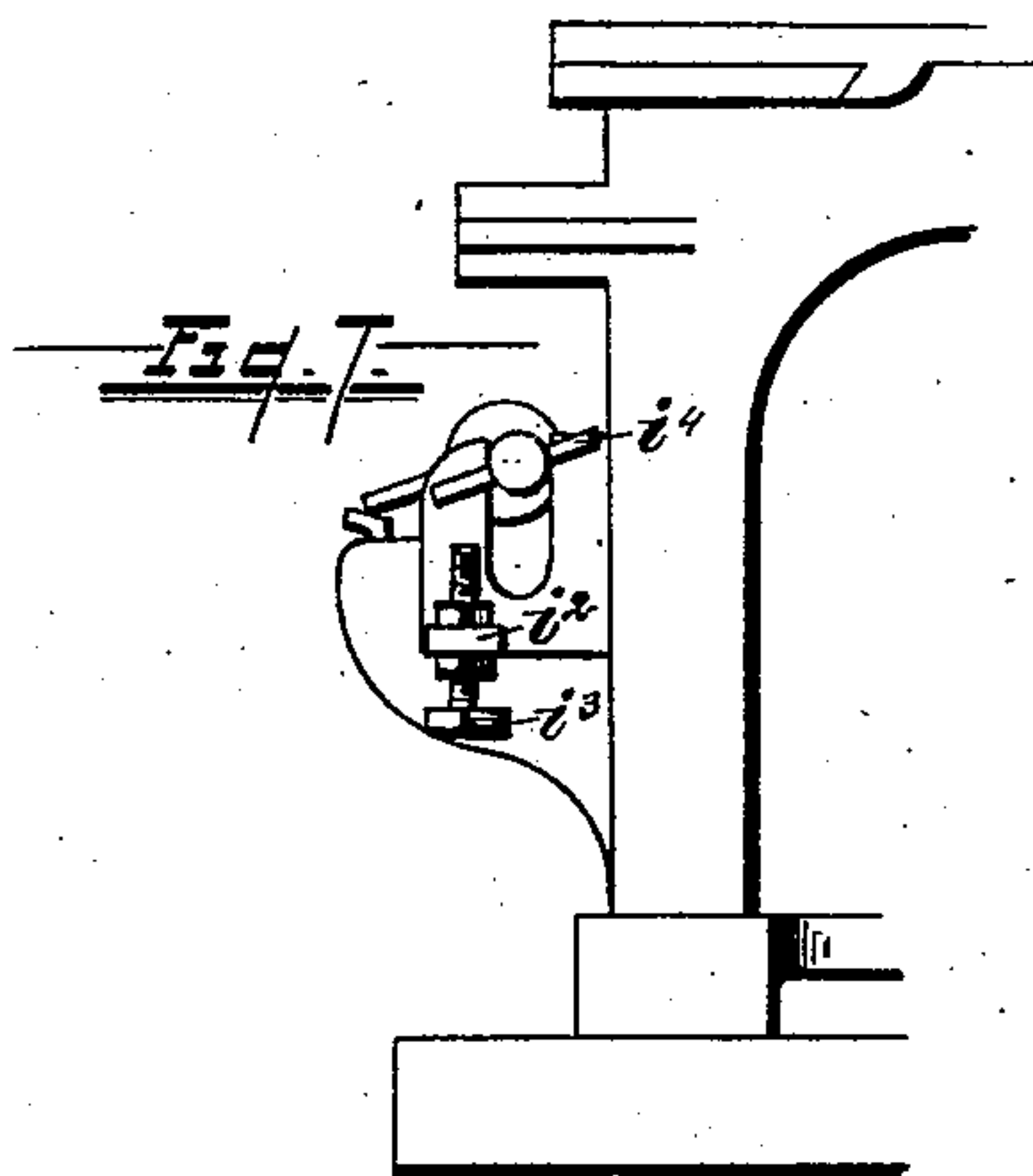
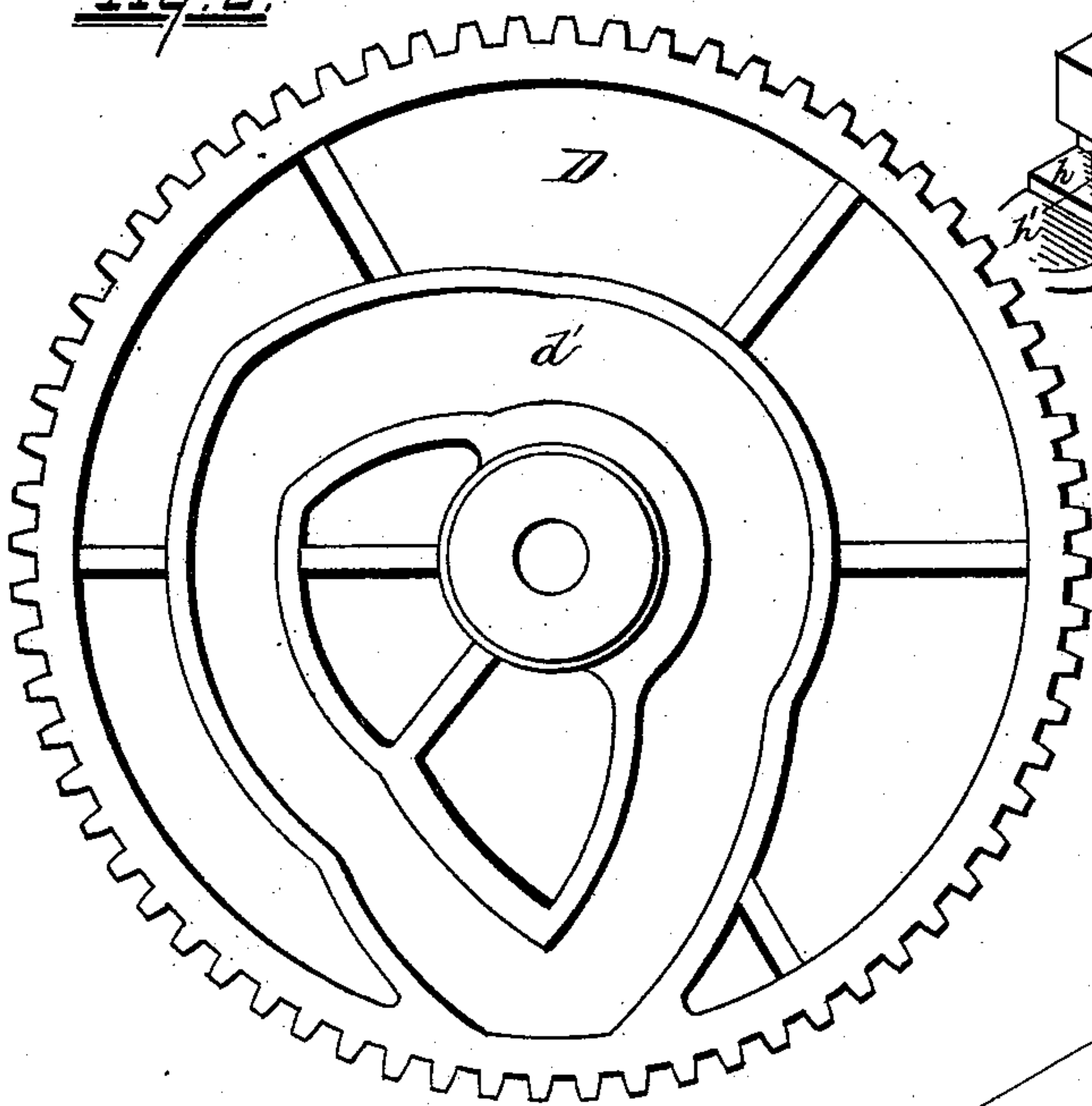


Fig. 7.

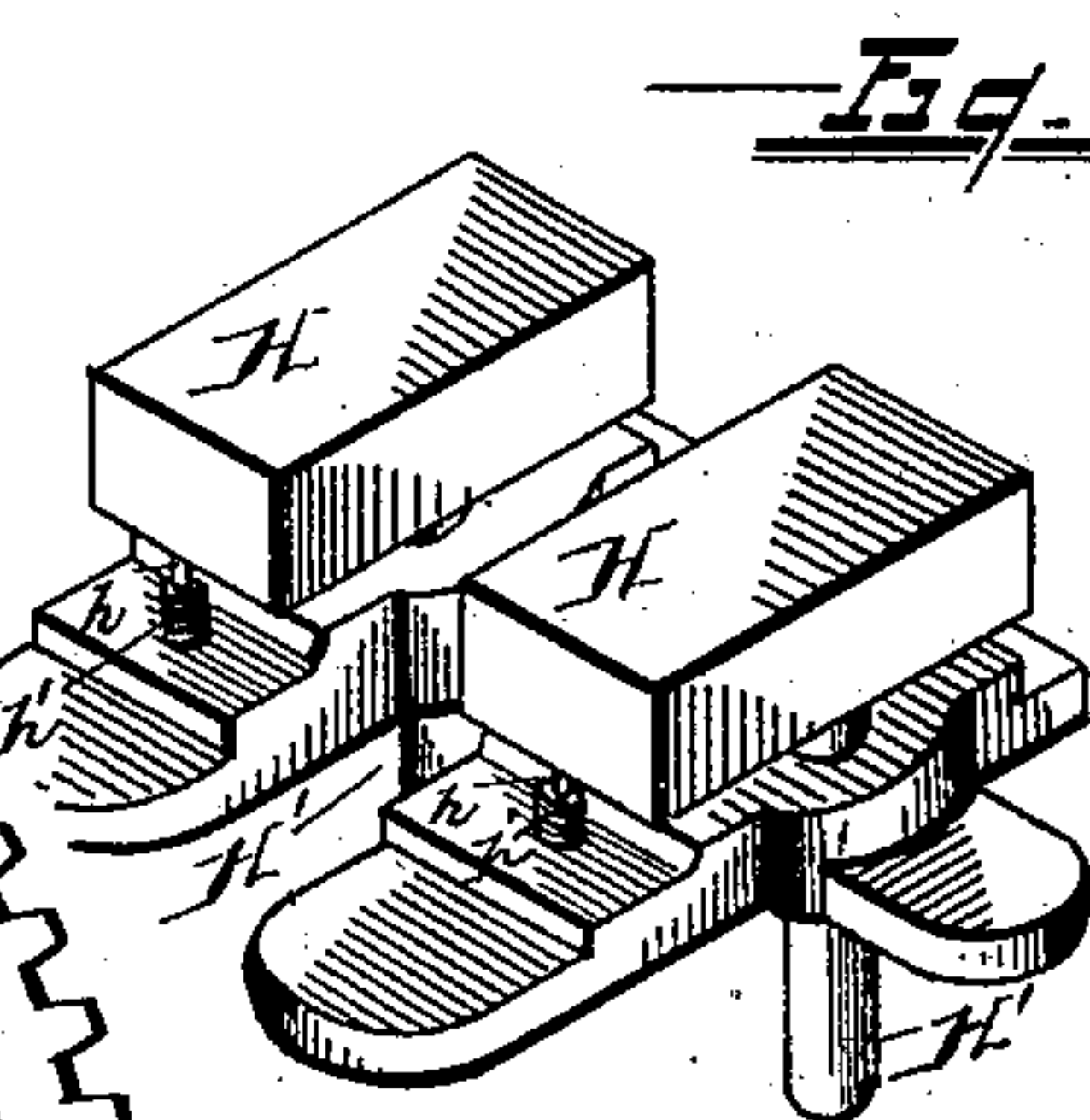


Fig. 8.

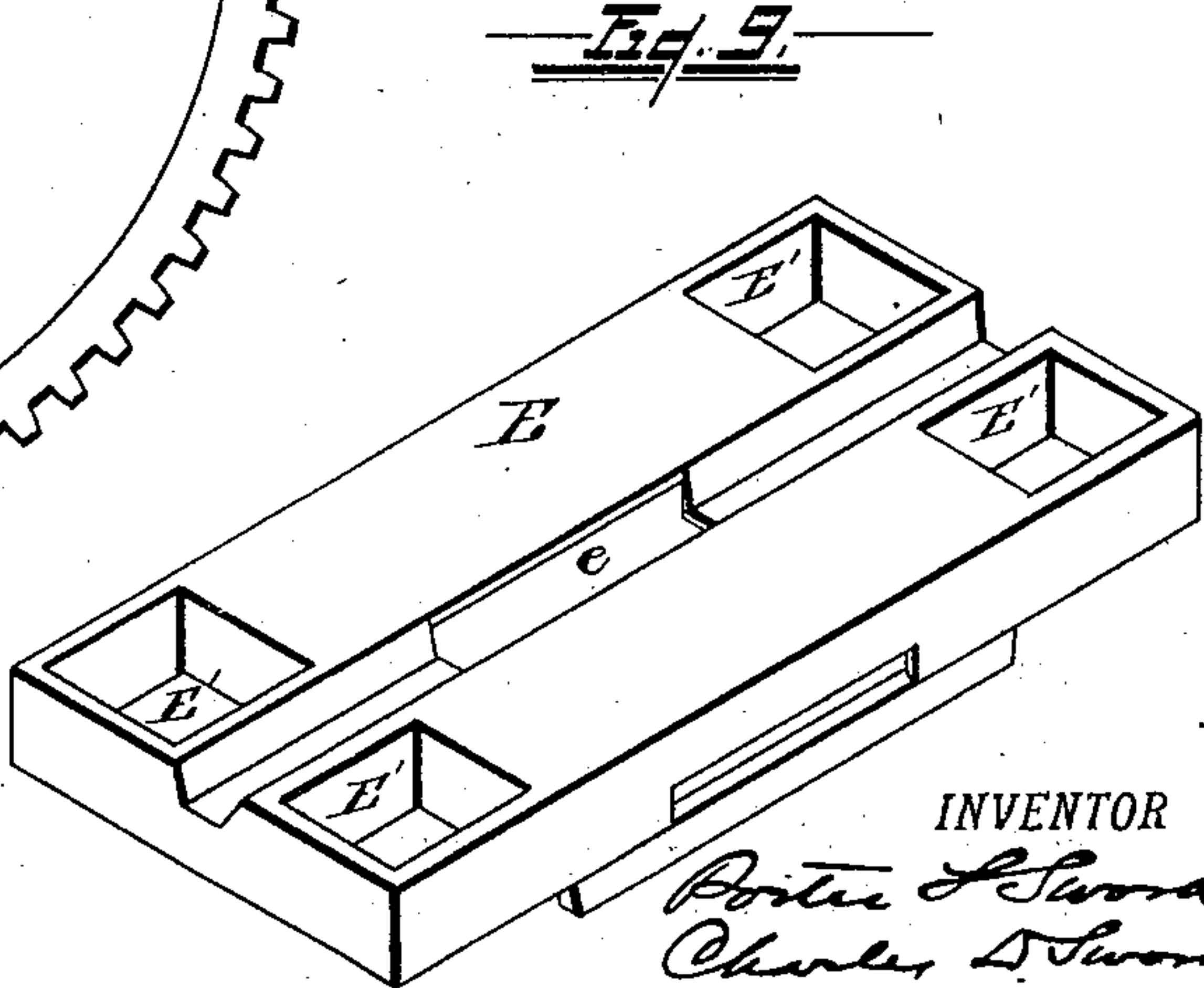


Fig. 9.

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(No Model.)

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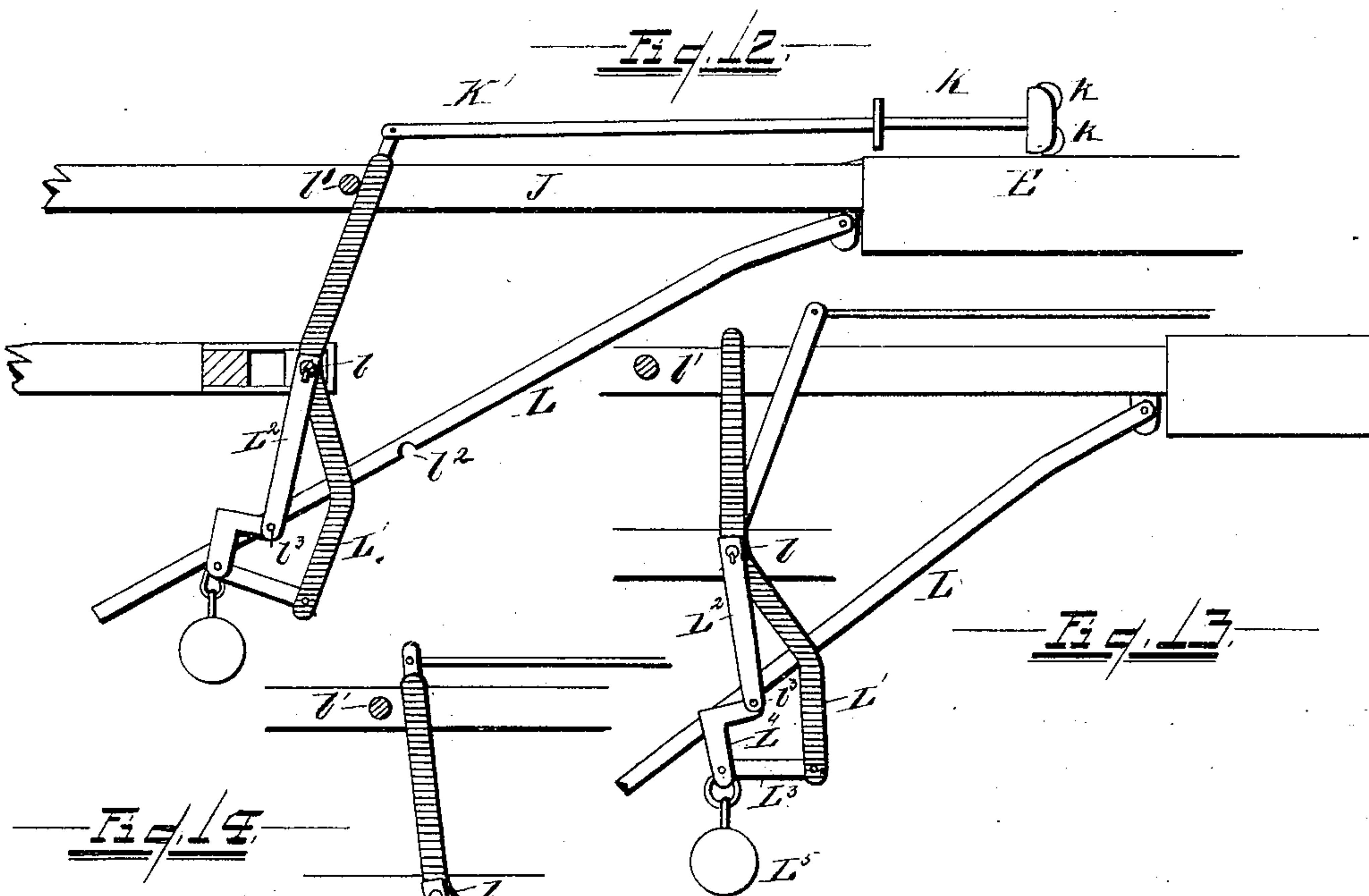
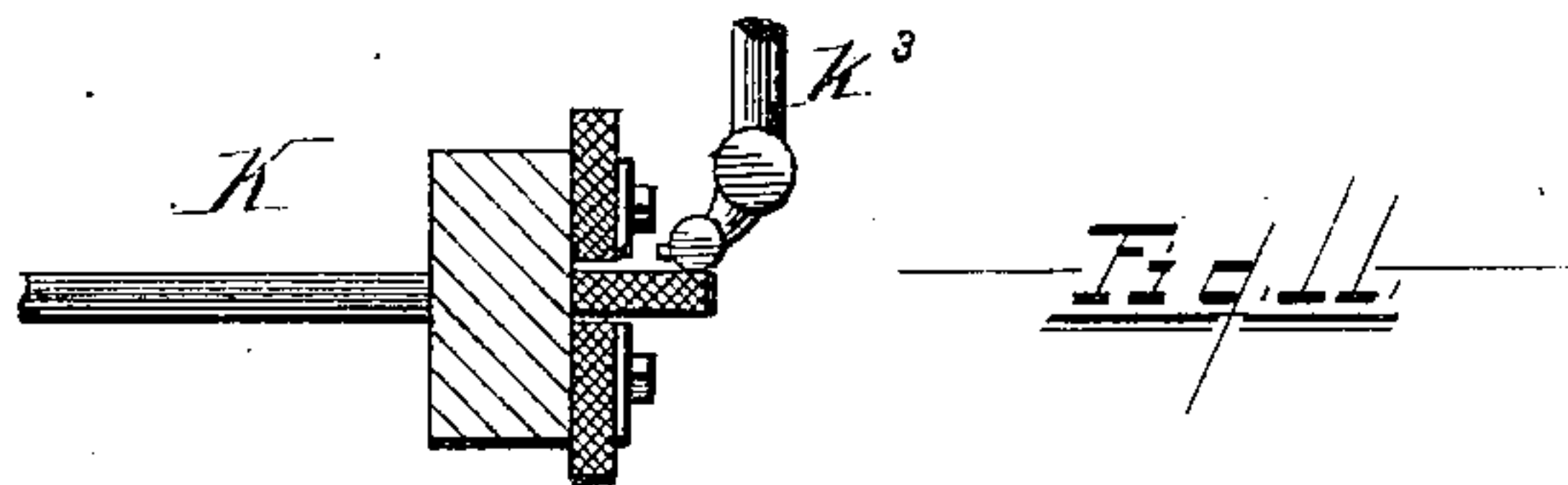
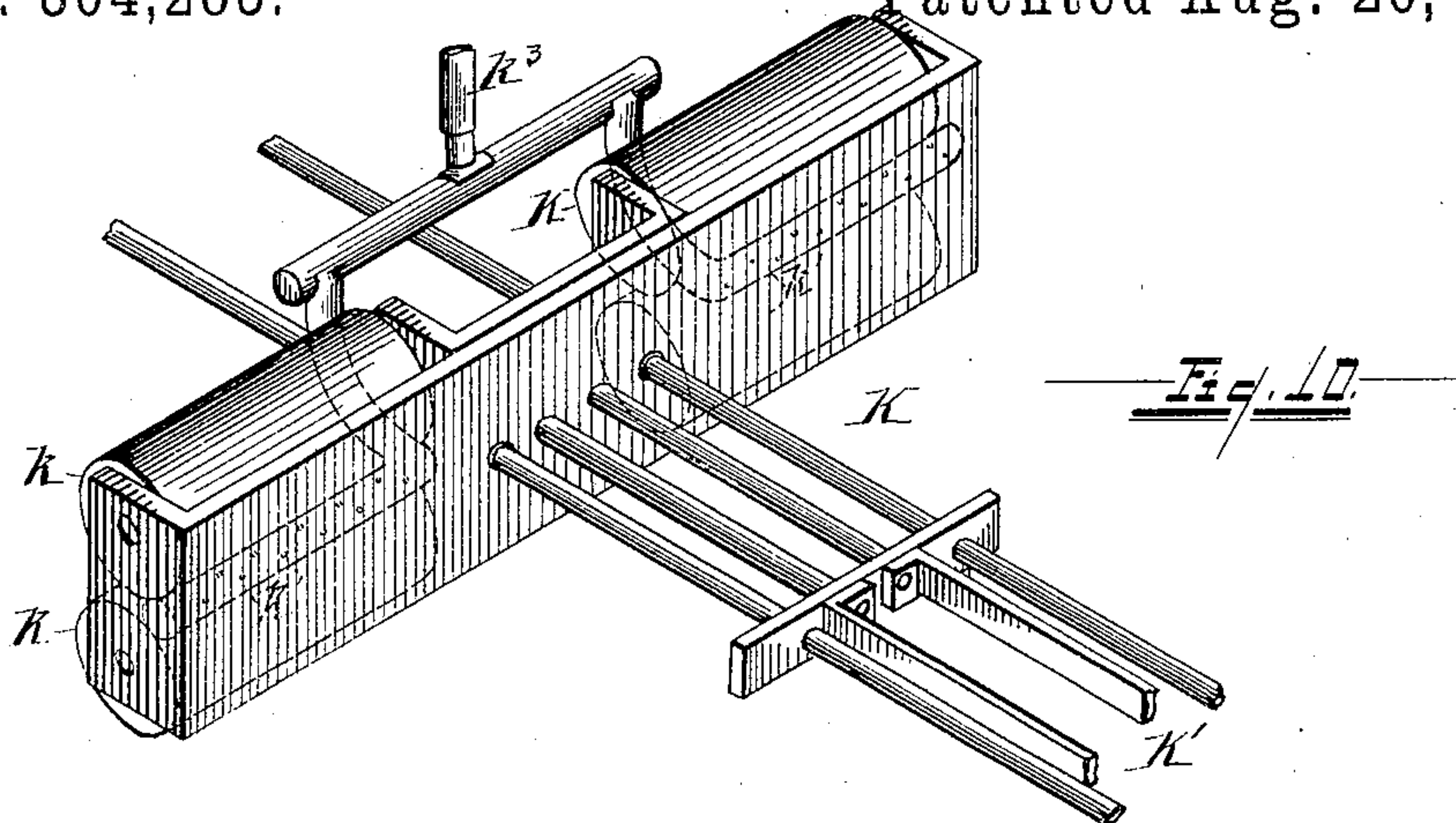


Fig. 13

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UNITED STATES PATENT OFFICE.

PORTER L. SWORD AND CHARLES D. SWORD, OF ADRIAN, MICHIGAN.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 304,283, dated August 26, 1884.

Application filed May 7, 1884. (No model.)

To all whom it may concern:

Be it known that we, PORTER L. SWORD and CHARLES D. SWORD, of Adrian, county of Lenawee, State of Michigan, have invented a new and useful Improvement in Brick-Machines; and we declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

Our invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a machine embodying our invention. Fig. 2 is an end elevation, with the brick-carrier removed and the re-presses ready to begin the re-pressing of the brick. Fig. 3 is a cross-sectional view at right angles to the brick-carriers. Fig. 4 is a longitudinal central section of the device. Fig. 5 is a plan view with the tub removed. Fig. 6 is a separate view of opposite sides of the large cam-wheel. Fig. 7 is a view of a modification of the re-pressing mechanism. Fig. 8 is a separate view of the brick-molds; Fig. 9, a separate view of the table; Fig. 10, a separate view of the oiler; Fig. 11, another form of oiler; Figs. 12, 13, 14, separate views of the mechanism for actuating the lubricator K.

Our invention comprehends the general structure as a whole, and also the particular features which are separately enumerated in the claims.

A is a tub, in which the brick metal is charged. B represents the tempering-blades, whereby the mass is tempered in the usual way. The tempering-blades are secured to and revolved by the upright shaft C, which at this point is preferably squared for the ready attachment of the blades. The shaft C passes down and at its base there is a large gear-wheel, D. This in turn meshes into the pinion D' on the vertical shaft D². At the upper end of this shaft is a beveled gear, D³, which meshes with a pinion, D⁴, on the shaft of the driving-pulley D⁵, which drives the entire machine.

E is a reciprocating table, in which the brick-molds are situated. This table is slotted

along the line *e*, through which the shaft C passes. The under side of this table is provided with a yoke having anti-friction rollers *e'*.

F is a cam-lever located on the shaft C. This cam-lever is embraced in the yoke between the said anti-friction rollers, so that as the cam-lever revolves with the shaft C it causes the table E to reciprocate back and forth. The bottom of the tub A is provided with openings A', into which the brick metal is swept by the sweep P. The table E is provided with brick-molds E', corresponding with the openings A'. When the brick metal is thus deposited in the openings A', the revolution of the cam-lever F drives the table out toward the edge of the machine, beneath the presses, which we will now proceed to describe.

G represents a press. There are two presses corresponding with each of the openings A', each of said openings corresponding to a pair of brick-molds beneath. These presses are pivoted at *g* to the frame of the machine. A pitman, G', connects the same with a lever, G², which is hinged at *g'* to the frame. This lever G² has an arm, G³, projecting down to the base of the machine, and is here engaged with a sliding or driving bar, G⁴. This bar has projecting studs and anti-friction wheels G⁵, which project into and engage with the cam *d* in the top of the gear-wheel D at the base of the machine. This cam is so arranged with respect to the movements of the table E that it causes the bar G⁴ to reciprocate at the proper moment to draw upon the arm G³, and so actuate the presses G. The upper cam, *d*, is so shaped with respect to the cam F that the presses G are caused to come down and operate while the table E is stationary beneath them. The presses then recede and the table E moves forward to the re-pressing apparatus, which we will now describe.

H is a die upon which the brick metal rests in the mold. A pin, H', projects down therefrom. H² represents the uprights, and H³ the cross-piece, of the frame which supports the press-plates and resistance-plates H⁴.

I is a shaft journaled eccentrically in the lower ends of the uprights H². This eccentric shaft has projections I' connected rigidly therewith. An arm or arms, I², project downward and engage the pitman I³, which in turn

is connected with the plate or slide I^4 , from which project lugs and anti-friction rollers I^5 into the cam d' on the lower face of the gear-wheel D. Now, the brick-mold on the table 5 E, having been slid forward beneath the press-plate H^4 , the pin H' comes into contact with the eccentric shaft I. Now, as the pitman I^3 is forced outward from the machine, it rotates the shaft I in its eccentric bearings, which in 10 turn rises upon the pins H' and effects a powerful re-pressure upon the bricks in the molds. The eccentric I being firmly journaled in the uprights H^2 , the outward thrust upon the arm I^2 simply serves to rotate this eccentric shaft 15 I in its bearings, and it is this rotation upon the eccentric journals which effects the upward pressure on the pins H' . As soon as the pressure has been thus applied the motion of the pitman I^3 is reversed. The arms I' will at this mo- 20 ment be well raised about the trip i' . The first effect of the backward motion is to quickly rotate the shaft I, relieving the pressure and slightly lifting the frame H^2 , so as to separate the press-plates H^4 from the brick-molds. The 25 further backward motion serves to bring the arms I' in contact with the bearings i , and the frame is now raised bodily about these bearings i as pivotal points. This, it will be observed, will cause the eccentric shaft I to be 30 revolved somewhat farther, and the effect of this increased revolution is to still further loosen the bearing of the eccentric shaft upon the pins H' to the same extent, separating the plates H^4 from the bricks. This upward mo- 35 tion of the frame $H^2 H^3$ has lifted the bricks up out of their molds, and they rest upon the dies H, with the presser-plates H^4 lifted free from the bricks.

We will now describe how the bricks are 40 removed from the machine onto the carrier.

J is the carriage which supports a continuous belt, J' , which receives the bricks as they come from the machine. This carriage J is 45 connected with the table E, so as to move backward and forward with the table.

K is the oiling device. It consists of upper and lower rollers, k , which are preferably covered with woolen cloth, sheep-skin, or other similar substance, and receive a supply of oil 50 from perforated pipes k' , which in turn take their oil from the reservoir k^2 and flexible pipe k^3 . This oiling device is connected with rods K' , and serves at the same time to force the bricks off from the plates H^4 onto the continuous belt J' . It is accomplished as follows: L 55 represents arms, which are in like manner connected with the table E, and move forward and backward with it. L' represents a lever, and L^2 represents another lever. These two 60 levers are pivoted at l to the frame. The levers L' and L^2 are connected by arms L^3 and L^4 , and support a weight, L^5 , at their junction. l' is a projecting pin on the carriage J, and l^2 a notch in the arm L. Now, as the table E 65 moves backward the oiler K is left in the position shown in Fig. 4, because the pin l' has engaged the levers L' and L^2 and forced the

oilier back to this position. Subsequently, when the table E moves forward the knives M shave 70 the surplus brick metal from the top of the mold, the mold passes beneath the oiler and into the re-presser. This receding of the table carries with it the carriage J, and the levers L' and L^2 stand erect. Just as the carriage, 75 however, reaches nearly the end of its stroke the notch l^2 engages over the bar l^3 . Now, when the table E starts again on its backward motion, the arm L causes the lever L' to tilt about its pivotal point l , thus drawing out the 80 oiling device K, which forces the bricks out upon the endless belt J' . In the further movement of the carriage the pin l' comes in contact with the lever L^2 , and as it forces that lever forward the link L^4 is forced up against the arm L, lifting its notch l^2 free from the bar 85 l^3 . The pin l' on the carriage then forces the levers L' and L^2 forward with the carriage and returns the oiler K to its original position back of the re-presses.

We would have it understood that the de- 90 vice for discharging the bricks, as above explained, is a novel feature of our invention, and we would not therefore be limited in its employment to a device in which the lubricating appliances are attached thereto, for the 95 lubrication may be accomplished in other ways.

i' is a trip, the purpose of which is as follows: When the pitman I^3 moves out from the machine, and thus permits the frame $H^2 H^3$ to 100 descend, the arm I' strikes this trip, which serves to stop the downward motion, causing the eccentric shaft to stop at this point, and by a further revolution to lift the frame so as to hoist the plates H^4 slightly and permit the 105 brick-molds to enter freely beneath them. The farther outward thrust of the pitman I^3 lifts the arms I' sufficiently far to permit the shaft I to drop down slightly, thus again bringing the plates H^4 squarely down upon the brick- 110 molds before the re-pressure is begun. The farther outward thrust of the pitman is what accomplishes the re-pressure upon the bricks by the rotation of the eccentric shaft J. Instead of employing the trip i' , any other suitable contrivance may be employed—as, for in- 115 stance, that shown in Fig. 7, in which i^2 represents a lug, through which the bolt i^3 is passed, and secured by jam-nuts above and below, as shown. Then upon the eccentric shaft we 120 would locate a lug or pin, i^4 , which in descending would strike against the top of the bolt i^3 , and thus check the downward movement of the eccentric shaft I, as before explained. This bolt l^3 admits of adjustment up and down, so 125 as to regulate its action upon the eccentric shaft.

M' represents scrapers, which dress the brick metal off from the presses G as they re- 130 ceede from their work. Similar scrapers, M^2 , are located at the sides of the presses.

N represents one or more rollers, which may be located over the eccentric shaft I to receive the direct bearing of the pins H' . The object

of this roller or rollers is simply to permit the pin to drop down from one roller to another as the table recedes, instead of dropping down through the whole distance at once. Of course these rollers may or may not be employed; or an inclined plane may be employed for effecting a similar purpose.

P is a sweep keyed to the shaft C, its office being to sweep the brick metal into the openings A' above the molds.

Q represents bearing-rollers, which support the table E. These rollers are supported by journals Q', which are capable of adjustment up or down, so as to locate the table always in its proper position.

For varying the thickness of the bricks we employ a small pin or stop, *h*, beneath the brick-dies, and to reduce the thickness we remove the pins and locate washers *h'* upon the pins, which raise the dies just to that extent. All the parts of the apparatus are capable of adjustment, so as to compensate for wear and to properly align and regulate the parts.

The various parts of the machine are made interchangeable to suit any other machine of the same size, so that repair parts may be supplied at any time and may be at once adjusted into the place of the piece broken or removed.

The oiler K may be constructed as shown in Fig. 11. The upper lubricating appliance consists of a piece of felt or other capillary substance secured to a suitable support and adapted to lubricate the re-presser plates by being drawn across in contact with the latter. The lower appliance may be similar to the upper, or may consist of a roller. Both forms are shown in this figure.

What we claim is—

1. The combination, in a brick-machine, of a traveling table containing the brick-molds, a press for effecting the initial pressure, and an independent press arranged within the limit of travel of the table for re-pressing the bricks before they are removed from the molds, and subsequently to receiving the initial pressure, substantially as described.

2. In a brick-machine, a reciprocating table containing the brick-molds, presses for giving to the bricks the first or initial pressure, and a re-pressing device located within the limits of the travel of the table, whereby re-pressure is effected in the molds without removing them from the reciprocating table, substantially as described.

3. The combination, in a brick-machine, of a reciprocating table containing the brick-molds and a re-pressing mechanism located within the limits of the travel of said table, said re-pressing mechanism adapted also to discharge the bricks from the molds, substantially as described.

4. In a brick-machine, the combination, with the mechanism for lifting the bricks from the molds, of a discharging device located back of said lifting apparatus, and mechanism for subsequently forcing the said discharg-

ing device forward, causing it to discharge the bricks onto the apron, substantially as described.

5. The combination, in a brick-machine, of a traveling table containing the brick-mold, mechanism for pressing the brick and lifting it from the mold, a traveling apron for receiving the brick from the mold, and a reciprocating oiling device for discharging the brick upon the traveling apron and lubricating the press-plates, substantially as described.

6. The combination, in a brick-machine, of a traveling table containing the brick-molds, a press for effecting the initial pressure, a re-pressing device arranged within the range of travel of the table for re-pressing the bricks, and two cams connected, respectively, with the initial press and the re-pressing device, substantially as described.

7. In a brick-machine, the combination, with initial pressing mechanism and re-pressing mechanism, of a table for receiving the brick-molds, said table provided with a yoke, and in connection therewith a revolving cam-lever embraced by said yoke, whereby the said table is reciprocated to and from the pressing mechanism, substantially as described.

8. A brick-machine made double, and provided at each side with presses for giving initial pressure, also with re-pressing mechanism, and a reciprocating table bearing the molds, said table brought alternately under the pressing and re-pressing mechanism at each side of the machine, substantially as described.

9. The re-pressing mechanism, consisting of the combination, with the brick-molds and pressure-plates, of a frame, $H^2 H^3$, and eccentric rocking shaft I, the construction being such that the re-pressure is exerted by the rocking of said eccentric shaft, substantially as described.

10. In the re-pressing mechanism, the eccentric I, provided with projections or arms I' , adapted to engage a support, *i*, the construction being such that after said engagement the further draft upon the arm I^2 will lift the re-pressing mechanism about said support as a pivot and discharge the bricks, substantially as described.

11. The combination, with the eccentric shaft I, of a trip for throwing said shaft well around when nearing its lowest position, substantially as and for the purpose described.

12. The combination, with the eccentric shaft I, of an adjustable trip, substantially as and for the purpose described.

13. The combination, with the oiling device K, of a traveling carriage, J, and arms L, and in connection therewith the lever mechanism L' and L^2 , whereby the discharge or oiling mechanism is caused to advance and discharge the bricks as the table E recedes, and subsequently, during the same motion of the table, to restore the said device to its position back of the re-presser, substantially as described.

14. The combination, with the carriage J, having a pin, *l'*, and the arms L, notched as

described, of the levers L^1 L^2 , and weighted links L^3 L^4 , the construction being such that the pin V will first strike the lever L^2 , and so lift the arms L and disengage the notches from their engaging-bar, substantially as described.

15. The combination, in a brick-machine, of the reciprocating table E , with supporting-wheels Q , said wheels journaled in adjustable bearings Q' , substantially as described.

16. A brick-machine made double and provided with a gear-wheel at its base, said gear-wheel having two cam-grooves, one engaging and serving to actuate the initial pressing mechanism, and the other engaging and serving to actuate the re-pressing mechanism, substantially as described.

17. The combination, with a brick-machine, of a lubricating device, K , consisting of oilers k and an oil-supply pipe, k' , substantially as described.

18. The combination, with the oiling device, consisting of oilers k and oil-supply pipe k' , of a reservoir, k^2 , and flexible pipe k^3 , substantially as described.

In testimony whereof we sign this specification in the presence of two witnesses.

PORTER L. SWORD.
CHARLES D. SWORD.

Witnesses:

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N. B. O. DOGHERTY.