

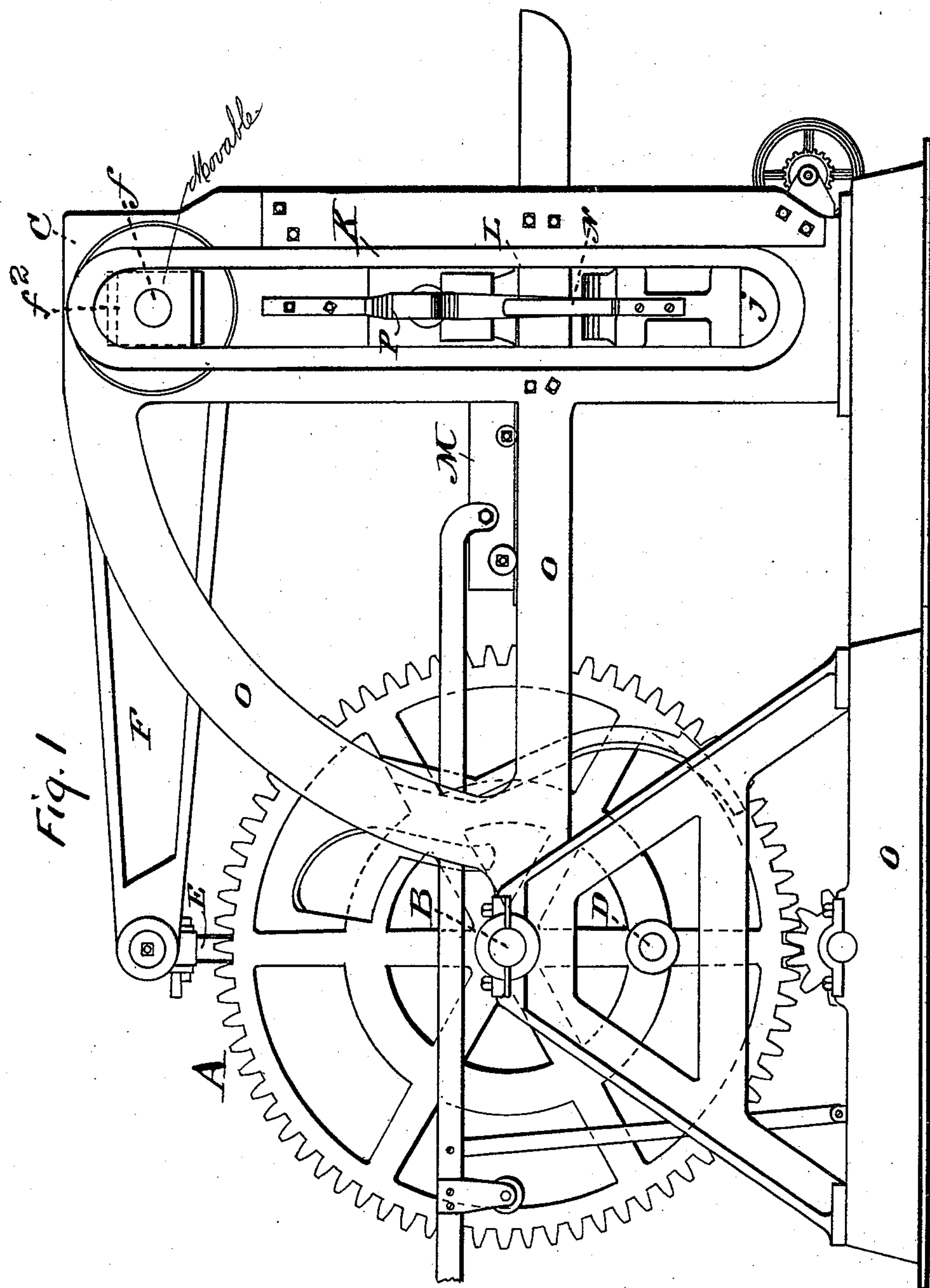
(No Model.)

3 Sheets—Sheet 1.

J. J. KULAGE.  
BRICK PRESS.

No. 485,549.

Patented Nov. 1, 1892.



Witnesses:  
Edward H. Hurrell  
W. J. Keel

Inventor:  
Joseph J. Kulage  
by C. D. Moody  
his atty

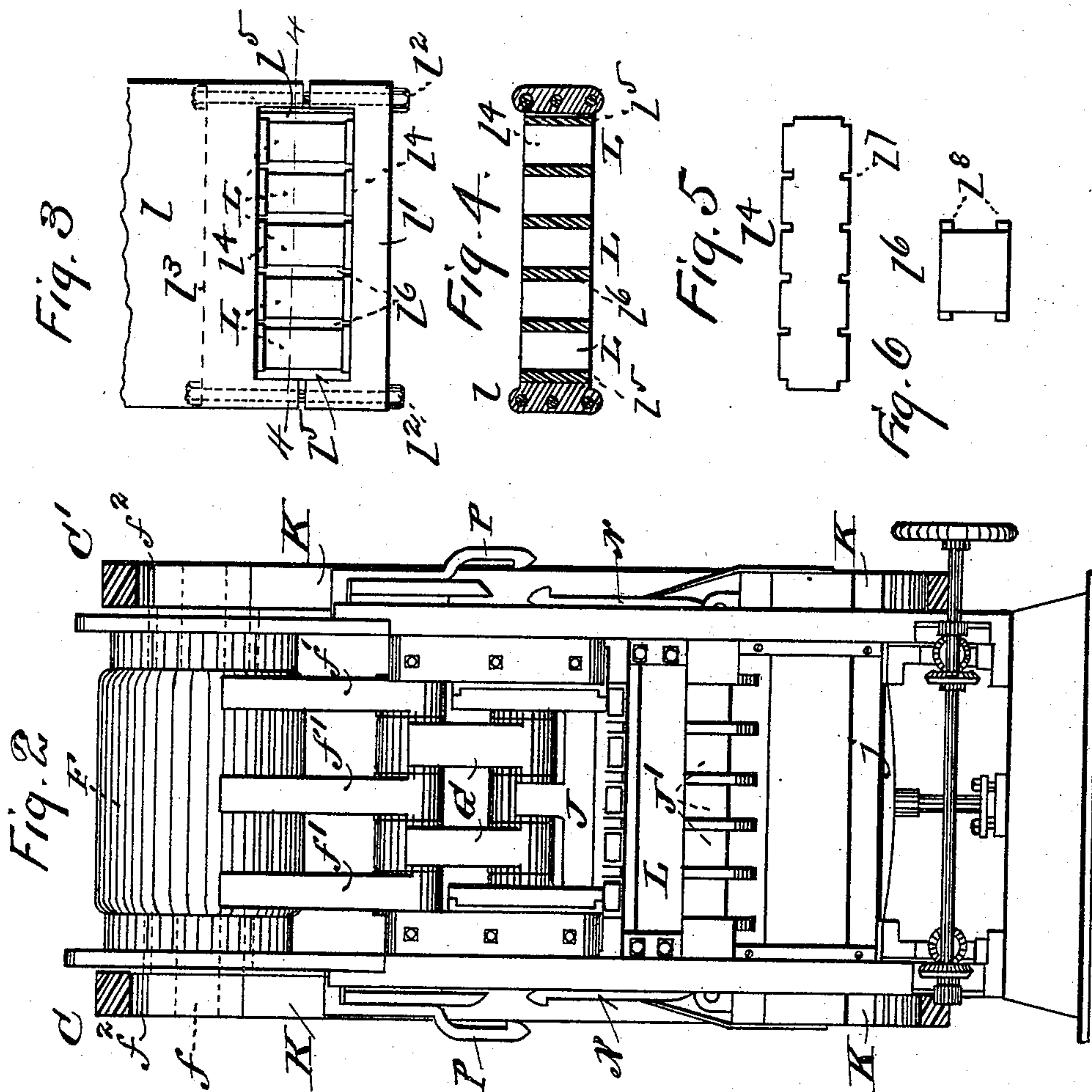
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3 Sheets—Sheet 2

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Edward Funnell  
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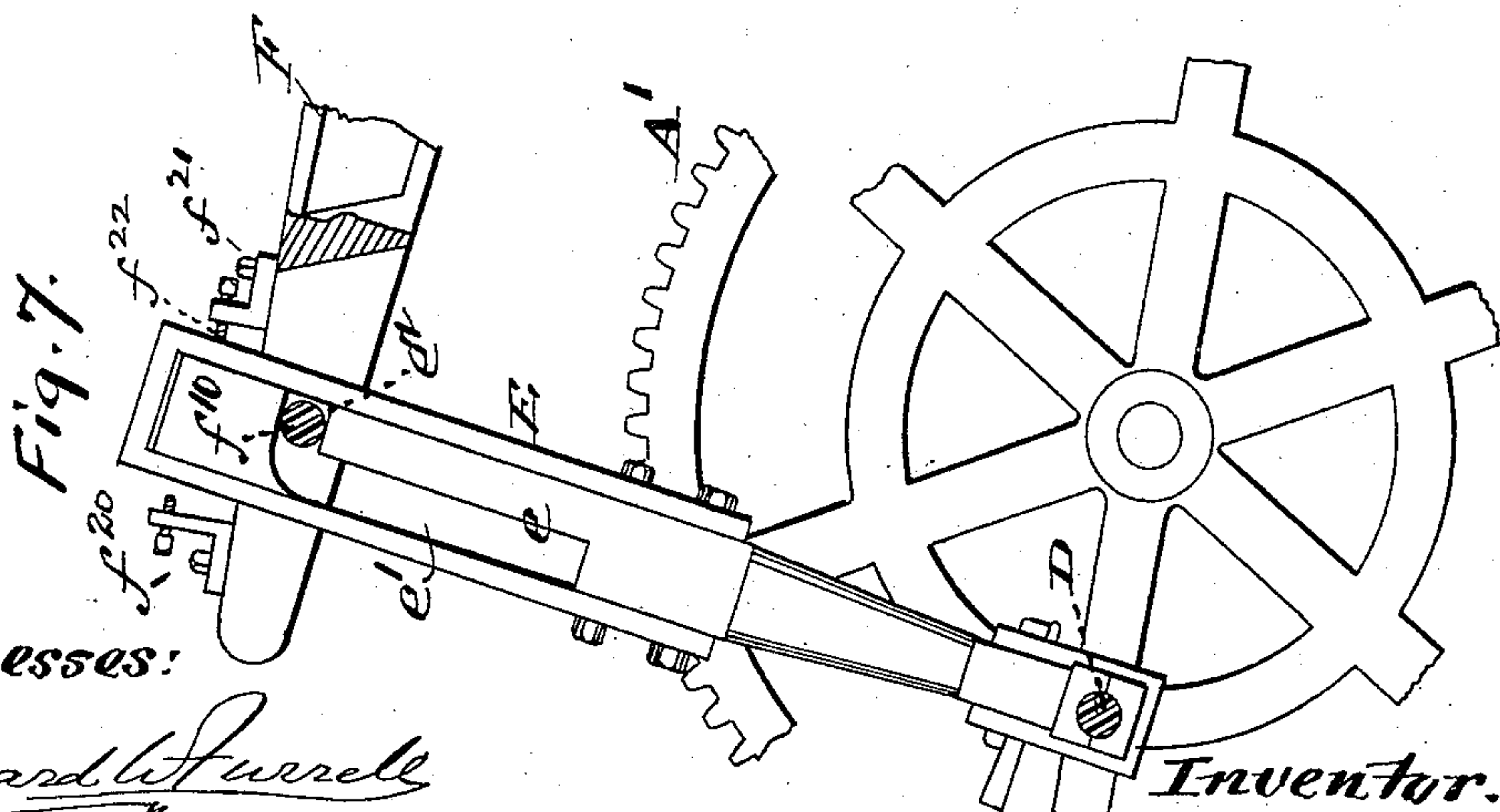
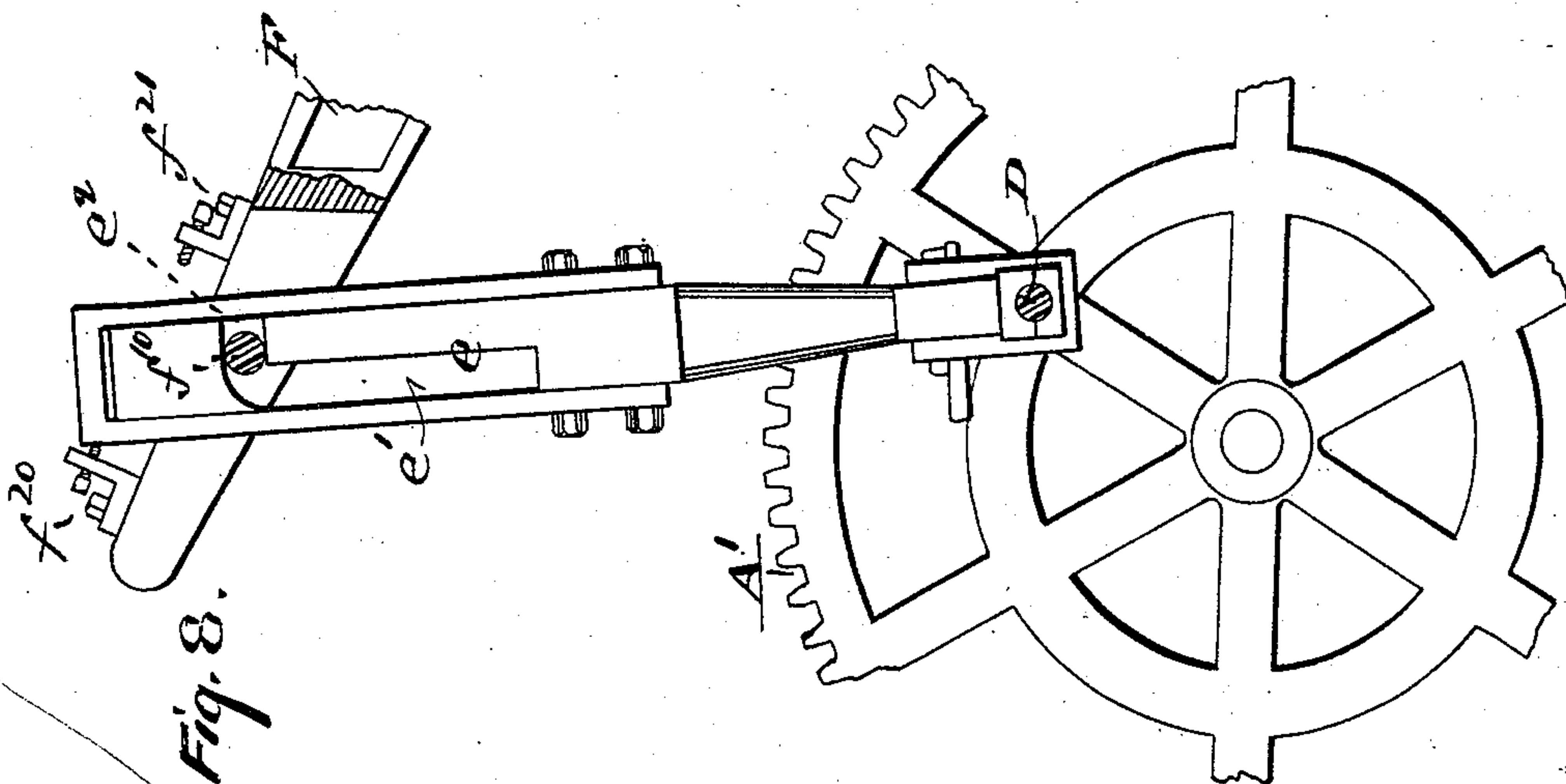
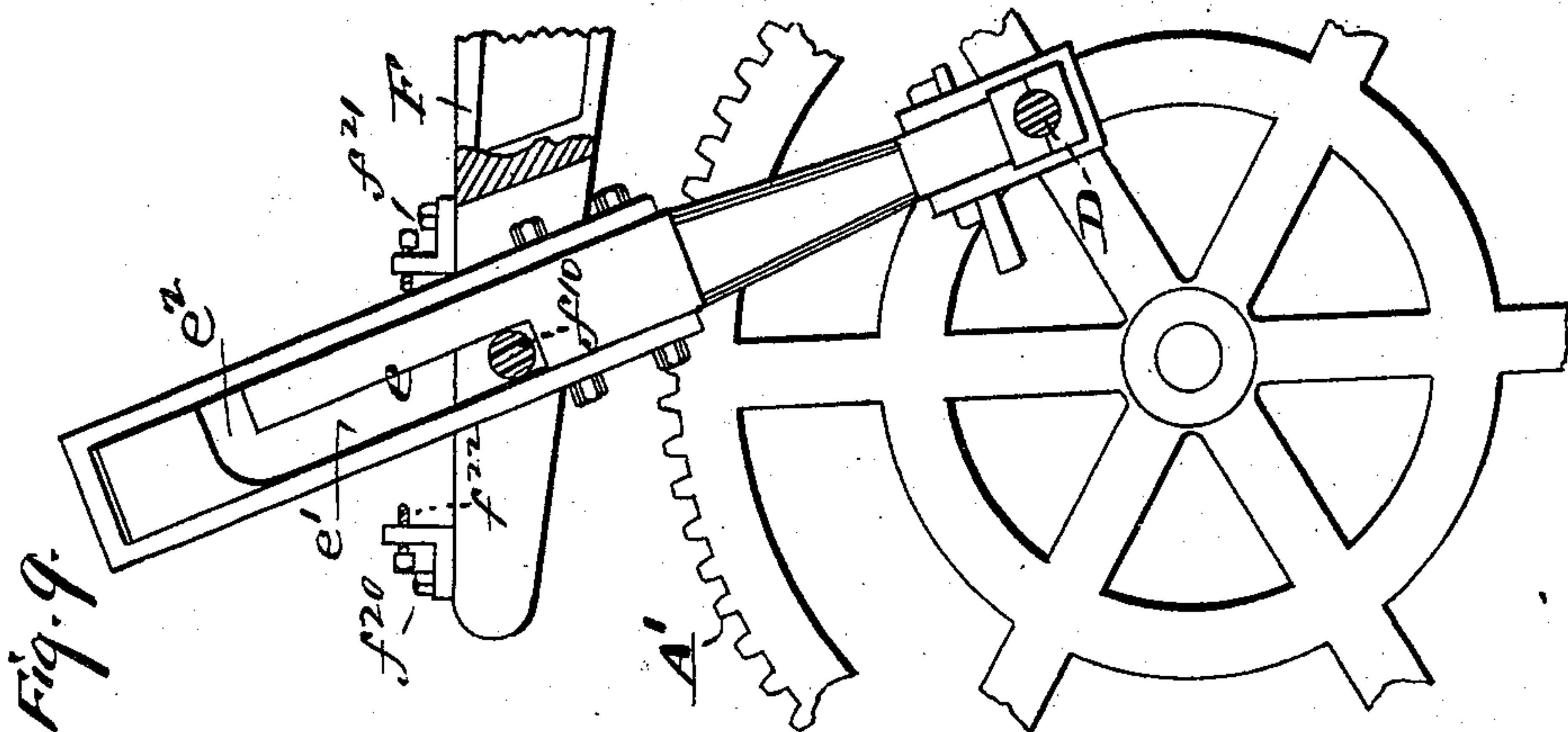
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# UNITED STATES PATENT OFFICE.

JOSEPH J. KULAGE, OF ST. LOUIS, MISSOURI.

## BRICK-PRESS.

SPECIFICATION forming part of Letters Patent No. 485,549, dated November 1, 1892.

Application filed January 9, 1891. Renewed October 6, 1892. Serial No. 448,074. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH J. KULAGE, of St. Louis, Missouri, have made a new and useful Improvement in Presses, of which the following is a full, clear, and exact description.

The present improved machine can be used for pressing various substances for various purposes into various shapes. It is especially adapted for forming bricks, and it is in connection with a brick-machine that it is illustrated.

The improvement relates partly to the construction of the molds, partly to the means for obtaining a percussion, as well as a steady pressure, upon the material as it is being molded, and partly to the special means for securing an upward pressure in the molds, all, together with other minor features of the construction, substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of the brick-machine having the improvement embodied therein. The parts are as when the full pressure of the machine is being exerted. Fig. 2 is a front end elevation of the machine; Fig. 3, a plan of the mold-table and contained molds; Fig. 4, a vertical section on the line 4 4 of Fig. 3; Fig. 5, a side elevation of one of the side linings used in forming the molds; Fig. 6, a side elevation of one of the partitions or end linings used in the molds; and Figs. 7, 8, and 9, views showing the means for obtaining the percussive action in the molds, and being side elevations of the outer end of the main lever of the machine and parts thereof with operating, and respectively showing the said parts in successive positions.

The same letters of reference denote the same parts.

So far as the means for obtaining the upward pressure upon the material within the molds is concerned, the present machine belongs to that class of pressing-machines in which an upper and lower plunger are employed, the plungers moving toward and from each other to open apart from each other to admit of the charging of the molds, and to close toward each other in forming the bricks or other objects in the molds.

The machine exhibited in Letters Patent

No. 383,399, granted to me May 22, 1888, for an improvement in brick-machines is of the type referred to—that is, two similar gear-wheels A A' are journaled side by side and respectively upon shafts, such as B, and are united by the wrist-pin D, from which a pitman E leads to a lever F, journaled upon a pin f, working within the uprights C C'. The lever, through its downwardly-extended arm or arms f', is jointed to the link or links G, which in turn are jointed to the upper plunger or plungers J. The lower plunger or plungers are shown at J'. The links K K at the sides, respectively, of the uprights and used in operating the lower plungers are connected with the cross-head j of said lower plungers. L L represent the molds, and M the charger, all, together with the framework O, substantially as in the construction referred to above. The mechanism for effecting the ejection of the molded bricks from the molds is also similar, the hooks N N of the lower plunger being adapted at each stroke of the plunger to connect with shoulders (not shown) upon the upper plunger and the lower plunger thereby caused to rise in the molds and to eject the bricks therefrom, and the hooks then engaging with the hooks P P to enable the lower plungers to continue to be upheld until the charger has moved into position to deliver the clay or other material into the molds and the hooks N then disengaging and the lower plunger dropping, as in said patented construction; but in place of providing the lever F with upwardly-extended arms and jointing them to links above them, in turn jointed to an upper cross-bar upon whose ends the links K K are hung, and thus providing an upper toggle, which when straightened acts to lift the links and with them the lower plungers, the links are at the upper end thereof hung directly upon the bearings f<sup>2</sup> f<sup>2</sup> of the lever F, and the pin f, instead of being held in fixed bearings in the uprights C C', is held in the vertically-movable bearings f<sup>2</sup> f<sup>2</sup>, and the required upward movement of the lower plungers in producing the desired upward pressure in the molds at the time of the formation of the bricks or other objects is obtained as follows: The molds being charged with the clay or other material, the upper plungers, by suitably lowering the outer end



of the lever F, are forced downward into the molds until the pressure thereby exerted upon the contents of the molds is equal to the weight of the upper plungers and parts thereon resting. The toggle, consisting of the lever-arms  $f'$  and the links G, is not yet straightened and the outer end of the lever F has to be turned still farther down to straighten the toggle and obtain the full pressure upon the contents of the molds; but in doing this the bearings  $f^2$ , being vertically movable, rise in the uprights C C', and in such upward movement they lift the links K K, and thereby raise the lower plungers and produce the upward pressure in the molds. The described combination of parts by which this described pressure from above and beneath is obtained is a desirable one, in that thereby a comparatively simple and strong compact mechanism is provided, and having fewer joints and working parts than have heretofore been necessary in pressing-machines in which an upward pressure is obtained in the molds at the moment of the application of the final pressure. The described vertical movement of the bearings  $f^2$  is indicated by the broken lines in Fig. 1.

The molds L are constructed, preferably, in the following manner: In place of the mold-table  $l$  being in a single piece it is constructed so that its outer portion  $l'$  is removable. To this end said outer portion is adapted to be secured to the main portion of the table by means, say, of the bolts  $l^2$   $l^2$ , which pass through suitable perforations in the table near the sides thereof and respectively at the sides of the space occupied by the molds L, and held in the main portion of the table by coming against any suitable shoulder  $l^3$  thereon, substantially as shown. When said outer portion is thus attached in place, it serves, in conjunction with the main portion of the table, to clamp and hold in place the molds. An additional feature of the molds is the side linings  $l^4$ , the end linings  $l^5$ , and the partitions  $l^6$ , which parts are assembled substantially as shown in Fig. 3. The side linings are notched, substantially as shown at  $l^7$ , and the other parts are provided with projections, substantially as shown at  $l^8$ , and the parts are united by inserting said projections in said notches. By withdrawing the bolts  $l^2$   $l^2$  the described parts  $l^4$   $l^5$   $l^6$  are left free to be detached from each other. By this means provision is made for readily renewing any of said parts or for changing them in the event molds of special shapes are desired, and such special shapes can be obtained by correspondingly shaping those surfaces of the parts  $l^4$   $l^5$   $l^6$  which come in contact with the material being pressed.

The provision for obtaining a percussive pressure on the mold contents is substantially as follows: In the place of moving the lever F at an even rate or a substantially-even rate, and thereby moving the mold-plungers corre-

spondingly, I contrive to expedite its movement during a portion of its stroke, and this feature of the improvement is more effectively carried out by allowing the free end of said lever to drop directly or substantially directly downward during its said portion of its stroke, and thus utilize the weight of the lever in connection with such rapid movement to cause the plungers to act like a hammer upon the mold contents, a mode of action which is quite desirable in connection with certain kinds of clay or other material being pressed. This described operation of the lever F is accomplished in the following manner, preferably: The pitman E has a slotted connection with the lever F. The lever is provided with a wrist-pin  $F^{10}$ , which engages in the pitman-slot  $e$ , and said parts are relatively so constructed and combined as to enable the pitman to sustain the lever throughout a portion of its stroke and then to release it and allow it to drop and make its blow, and then to raise the lever again and carry it around into position to be again released. The parts are also suitably combined to provide for the delivery of the blow in question at the proper time. As a desirable construction to the end in view, the slot  $e$  in the pitman is extended longitudinally within it, substantially as shown at  $e'$ , and then crosswise therein, substantially as shown at  $e^2$ , by which means provision is made for sustaining the wrist-pin of the lever when it is required to raise the lever, and a space  $e'$ , through which the wrist-pin can move when the lever is dropped. The lever is also provided with means for insuring the engagement and disengagement of the wrist-pin from the portion  $e^2$  of the pitman-slot. These means take the form, preferably, of abutments  $f^{20}$   $f^{21}$ . The pitman, in raising the lever, encounters one,  $f^{21}$ , of these abutments, and is thereby confined so as to keep the lever wrist-pin in the slot portion  $e^2$ . This position is indicated in Fig. 7. After the parts have been moved to raise the lever into the position from which it is to drop, the pitman is brought into position to bear against the other,  $f^{20}$ , of the abutments. This position is indicated in Fig. 8. The pitman is now carried farther around, and in such continued movement it bears against the abutment  $f^{20}$ . The relative position of the pitman and lever is such that said abutment  $f^{20}$  acts to pry the pitman into a position which permits the wrist-pin to be disengaged from the slot portion  $e^2$ , and the lever at once drops into the position indicated in Fig. 9, and thereby effects the desired action of the plungers upon the mold contents. To enable the release of the lever to be effected readily at just the proper point of time, the abutments are made adjustable with reference to the pitman, so that they can act upon the pitman sooner or later, as desired. A convenient form of adjustment is shown. Each abutment is pro-



vided with a screw  $f^{26}$ , which can be set in the abutment to project more or less therefrom to the pitman, substantially as shown.

I claim—

5 1. The combination, in a press, of the up-rights C C', the lever F, the vertically-movable bearings  $f^2$ , the links G, the upper plungers J, the links K K, the molds L, and the lower plungers J', said links G being jointed at the  
10 upper end to the arms  $f'$  of said lever and at the lower end being jointed to said upper plungers, and said links K K at the upper end thereof being connected directly with said lever and at the lower end thereof with said  
15 lower plungers, and said bearings  $f^3$  being movable in said uprights, substantially as described.

2. The molds L, consisting of the side linings  $l^4$ , the end linings  $l^5$ , and the partitions  $l^6$ ,  
20 and clamped in a mold-table, substantially as described.

3. In a press, the combination of molds, plungers for working in said molds, and a le-

ver for pressing said plungers into said molds, said lever during a portion of its stroke hav- 25 ing its downward movement expedited for the purpose of producing a percussive pressure upon the contents of said molds.

4. The combination of the slotted pitman and the lever provided with the wrist-pin 30 and the abutments, substantially as and for the purpose described.

5. The combination, in a press, of the crank for operating the pitman, the pitman, and the pivoted lever F, said lever having its mo- 35 tion expedited during a portion of its stroke, for the purpose described.

6. The pivoted lever F, having the adjustable abutments and wrist-pin, in combination with the slotted pitman, substantially as 40 described.

Witness my hand December 31, 1890.

JOSEPH J. KULAGE

Witnesses:

GEO. W. FISHER, Jr.,

C. D. MOODY.