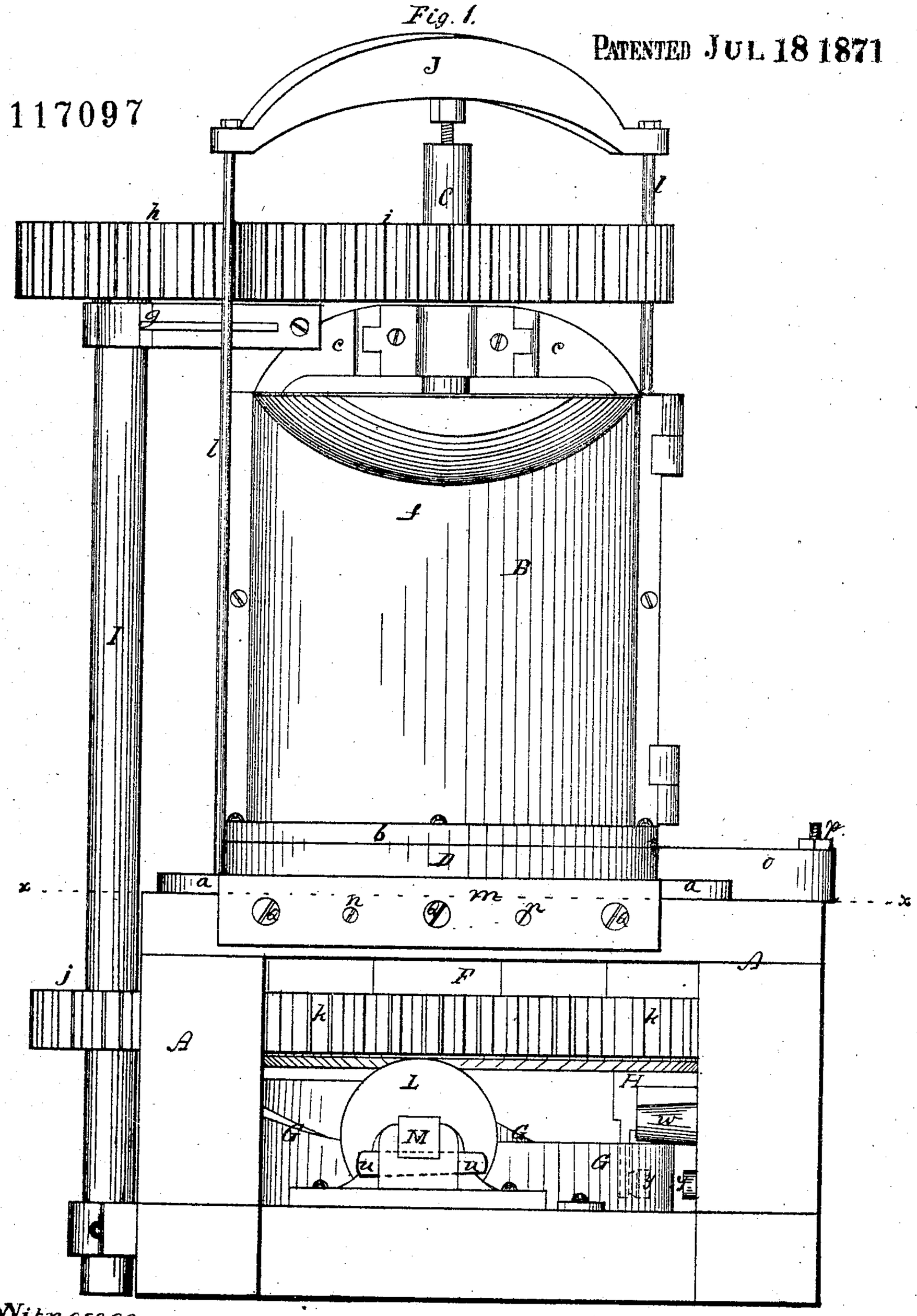
Augustus F. Mitchell's Imp^d Brick Machine.

Fig. 1.

PATENTED JUL 18 1871

117097

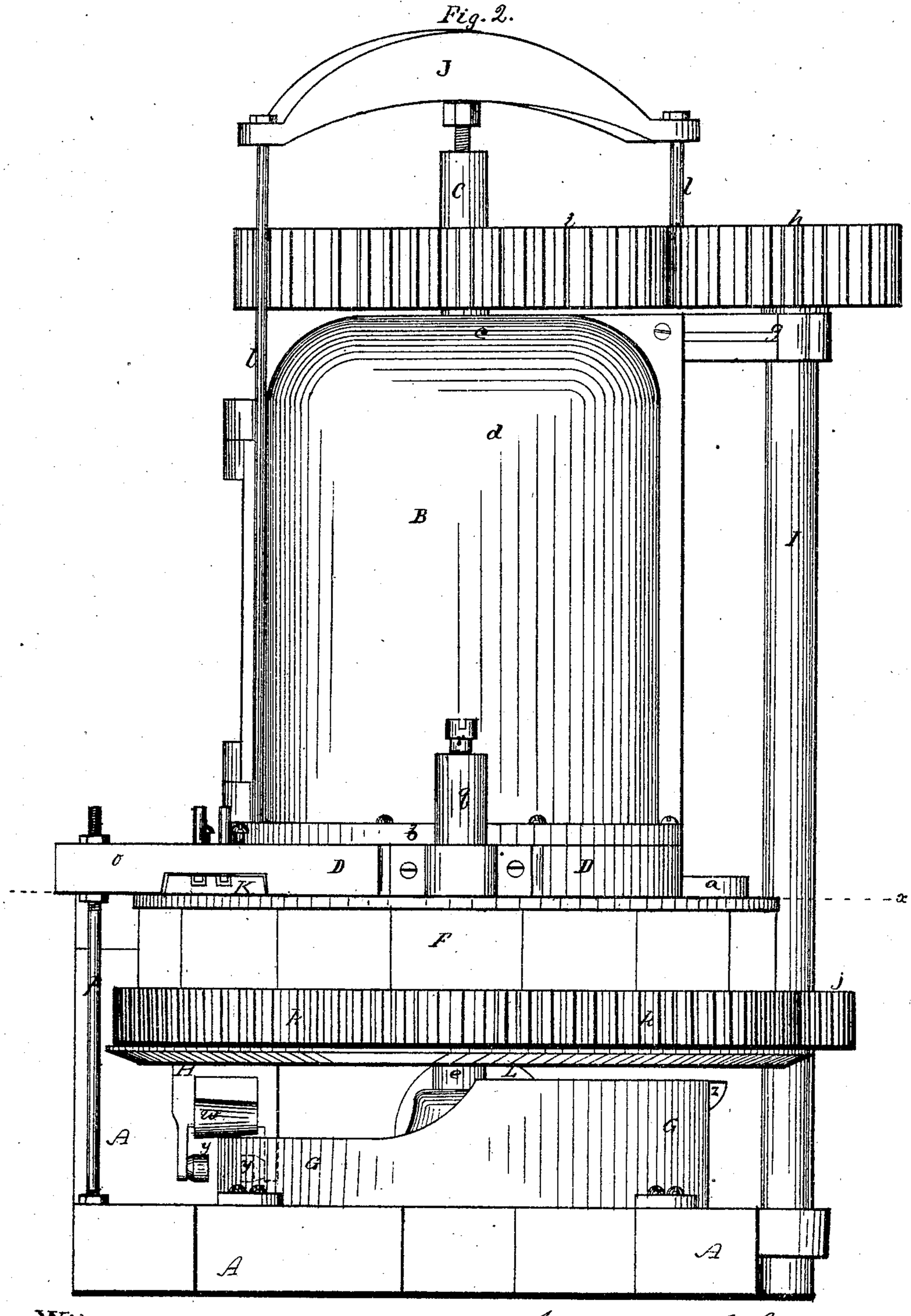


Witnesses,
D. W. Wood
D. J. Brown

Augustus F. Mitchell,
By his attorneys,
J. S. Brown

Augustus F. Mitchell's Impt. **Brick Machine.**

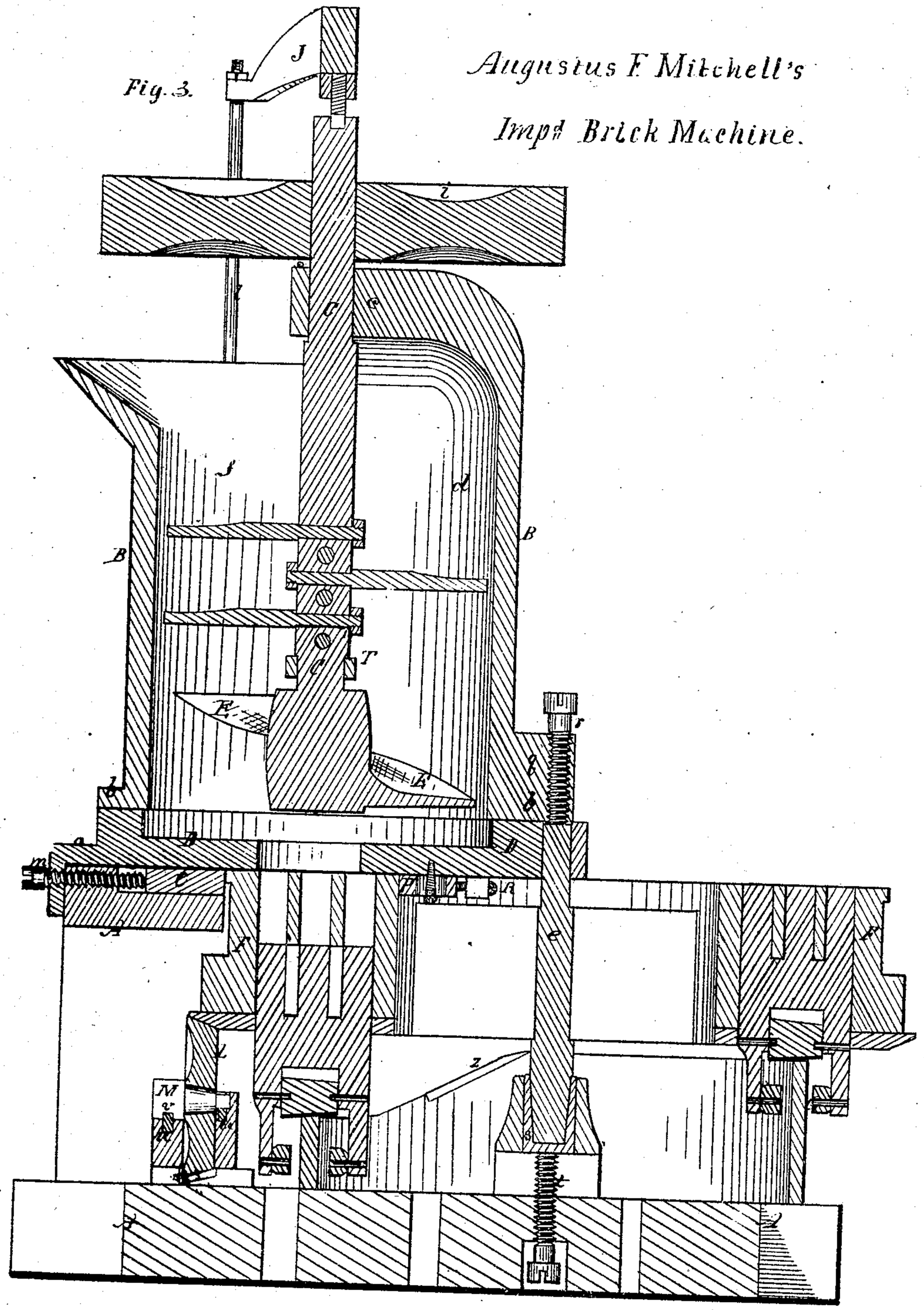
Fig. 2.



Witnesses,
S. W. Wood
D. J. Brown

Augustus F. Mitchell,
By his attorney,
A. S. Brown.

Fig. 3.



Augustus F Mitchell's

Impd Brick Machine.

Witnesses,

S W Wood

D. J. Brown

Augustus F. Mitchell,

By his attorneys,

J. S. Brown,

Augustus F. Mitchell's Impd Brick Machine.

Fig. 1.

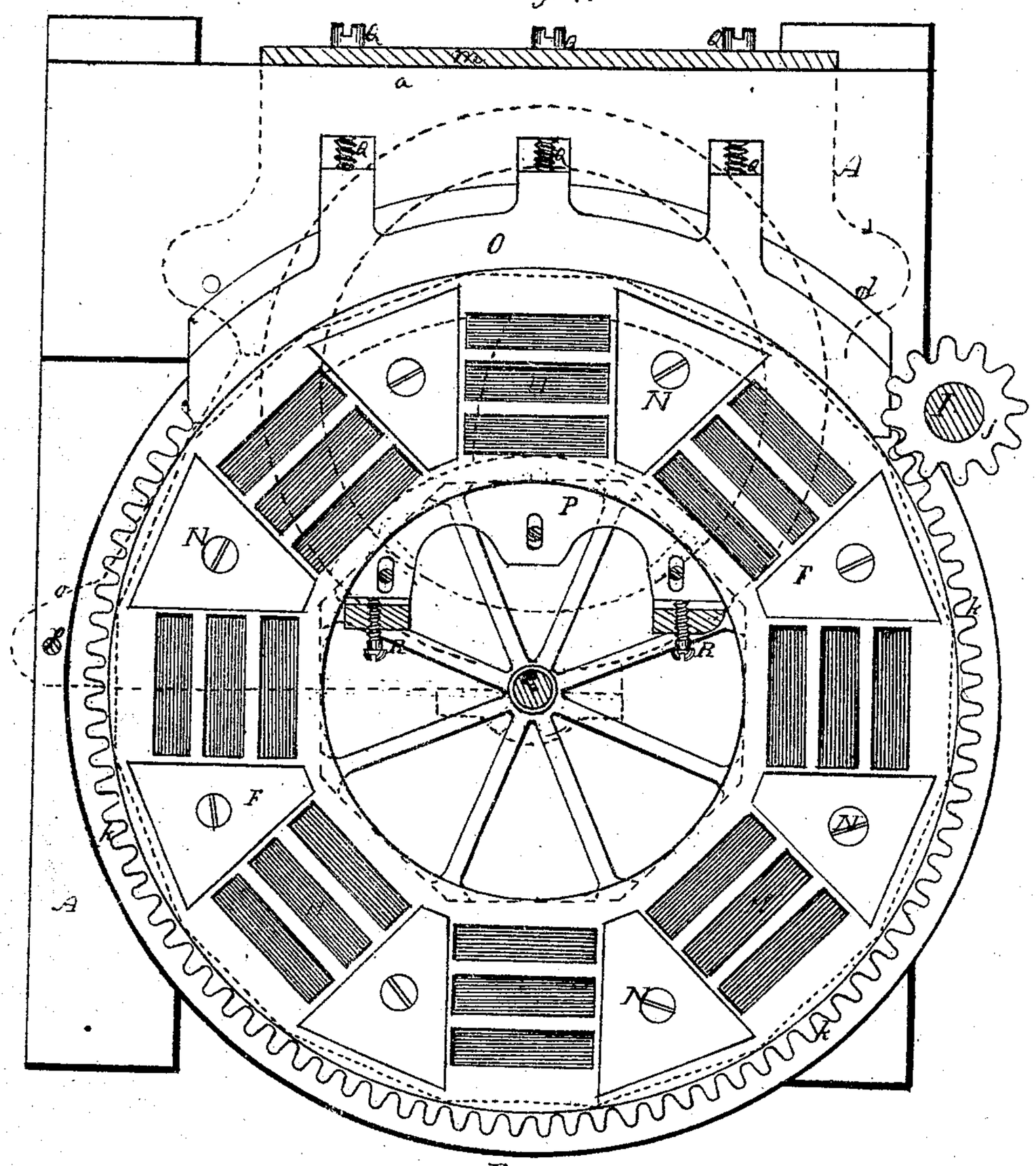
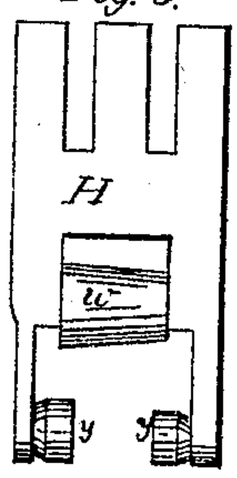


Fig. 5.



Witnesses,
S. Holmes
O. J. Brown

Augustus F. Mitchell,
By his attorney,
Jas. J. Brown

117,097

UNITED STATES PATENT OFFICE.

AUGUSTUS F. MITCHELL, OF VALPARAISO, INDIANA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 117,097, dated July 18, 1871.

To all whom it may concern:

Be it known that I, AUGUSTUS F. MITCHELL, of Valparaiso, in the county of Porter and State of Indiana, have invented an Improved Brick-Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification—

Figure 1 being a front elevation of the machine; Fig. 2, a rear elevation thereof; Fig. 3, a central vertical section of the same in a plane cutting from front to rear; Fig. 4, a horizontal section thereof in a plane indicated by the line *x x*, Figs. 1 and 2; Fig. 5, view of a part detached.

Like letters designate corresponding parts in all of the figures.

This machine works on the principle of a continuously-revolving horizontal mold-wheel, receiving the tempered clay from a pug-mill situated above, which forces the clay into the molds by the pressure of a revolving screw on the pug-mill shaft. The molded bricks are lifted from the molds by followers working vertically therein, and operated by a circular cam-track over which the said followers travel as the mold-wheel revolves.

In the drawing, let A represent the frame of the machine, suitably formed to receive the working parts; B, the pug-mill tub; C, the pug-mill shaft; D, the pug-mill bottom; E, the pug-mill screw; F, the mold-wheel; and G, the cam-track upon which the followers H H travel. The pug-mill bottom D is secured to the top of the frame A by means of a flanch, *a*, at the front side, and screws or bolts passing through the same into the frame. The pug-mill tub B is secured to the pug-mill bottom by a flange, *b*, and screws or bolts passing through the same into the bottom. The pug-mill shaft C has its lower bearing in a cross-bar, T, in the pug-mill tub, and its upper bearing in the top *c* of the rear half *d* of the tub. The front half *f* of the pug-mill tub is hinged at one side to the rear half *d*, and is attached or fastened by screws or other means thereto at the other side, so that it is capable of being readily opened therefrom, as occasion may require, without disturbing the other parts of the machine; and the driving-shaft I, when the machine is driven by steam or water-power, has its upper bearing *g* secured to the said rear half of the pug-mill tub, the top thereof being arched over in a dome-shape to give it strength for that purpose. The front half *f* of the pug-mill tub is open, and has a projecting hopper for receiving the clay into the tub. The driving-shaft I has on its upper end a small cog-wheel, *h*, which gears into a cog-wheel, *i*, on the pug-mill shaft, to communicate motion thereto, and has near its lower end another small cog-wheel, *j*, which gears into a set of spur-cogs, *k*, on the periphery of the mold-wheel to give motion to said mold-wheel. When horse-power is employed a driving-sweep is attached directly to the pug-mill shaft. In order to relieve the upward strain produced by the pug-mill screw through its shaft against the upper bearing thereof, I employ a strong cross-head, J, with a bearing under the center thereof resting on the pug-mill shaft, the said cross-head being held against upward pressure by rods *l l* reaching therefrom down into the flanch *a* of the pug-mill bottom. The difficulty experienced in securing the pug-mill bottom firmly and strongly in position on the frame A against the strong pressure and strain exerted beneath it I obviate, first, by means of a right-angled lip or projection, *m*, extending downward from the attaching-flanch *a*, so as to abut against the side of the frame, and of screws or bolts *n n*, passed through the same into the frame, thus holding the flanch by their longitudinal resistance, whereas when the screws or bolts hold by lateral resistance they are liable to yield or break. At the same time there are attaching-screws passed vertically through the flanch *a* into the frame to hold against upward pressure. Thus screws or bolts hold by longitudinal resistance both against lateral and upward vertical strain. Second, the projection *o* of the pug-mill bottom in which the striking-plate or block K is held is sustained against upward pressure by a rod, *p*, extending from the projection down to the frame A below, and secured by adjusting-screws and nuts thereon. The mold-wheel is adjusted, in relation to the pug-mill bottom, downward by means of a projection, *q*, on the back side of the pug-mill tub, directly over the mold-wheel shaft *e*, and of a set-screw, *r*, passing down through the said projection so

as to bear on the top of the shaft, and upward by means of a sliding box, *s*, in which the mold-wheel shaft rests, and which is adjusted upward and downward in the frame of the machine by a set-screw, *r*, beneath. The said adjustable bearing-box may be lined with soft metal, and may have a square or angular portion at the bottom fitting a corresponding recess in the frame, so as to prevent the turning of the box therein. The mold-wheel is also supported by several friction-wheels or rollers L near its periphery, one of which wheels is shown in the drawing. As these friction-wheels are required to be adjusted in height, and the angle of their journals to be adjusted, the same is effected by means of a movable pivot, M, which is free to slide up and down in the bearing-block that sustains each wheel. This pivot is adjusted in height at the two ends separately by keys or wedges *u u*, passed transversely through mortises in the bearings of the block, the ends of the pivot resting thereon. The outer key passes also through a transverse notch, *v*, in the lower side of the pivot, and thereby the pivot is held from lateral or horizontal displacement as well as adjusted in height.

The most important features of my invention consist in the construction and operation of the mold-wheel F and its followers H H, now to be described. The molds in the mold-wheel are arranged in groups, generally three or more together, and preferably transverse to the radiuses of the wheel, as represented, the bricks also being formed laterally edgewise therein. These groups of parallel molds are arranged as closely together as space will allow, so that the capacity of the machine of a given size is greatly increased thereby; and not only this, but they effect great economy of labor in removing the bricks from the machine thus formed successively in each group, they being seized or swept off together in the most convenient and compact manner possible. This arrangement of the grouped molds, for the purposes specified, in a continuously-revolving mold-wheel is to be clearly distinguished from the arrangement of molds in sets of two or three together in mold-wheels having an intermittent motion for the purpose of pressing the bricks in fixed positions, &c.

In connection with the grouped molds, I employ connected or compound followers H H, all formed in one, for each group of molds repectively, as shown particularly in Figs. 3 and 5. Thus not only is the construction of the followers simplified and cheapened by having fewer surfaces to finish, fewer friction-rollers *w w* (only one for each compound follower) to furnish and fit, and fewer pull-down rollers *y y* (two for each compound follower) to provide and adapt, but there is less friction in their operation, and consequently less power is required to drive the machine than with separate followers for the several molds. The pull-down rollers *y y* pass under short inclined flanges *z z* on the sides of the descending part of the cam-track G. Between the groups of molds on the top of the mold-wheel the triangular spaces are covered with chilled plates N N, which, together with the chilled iron or steel mold-linings, form a hard and durable surface over the entire top of the mold-wheel subjected to the contact and wear of the clay. The upper surface of the mold-wheel terminates respectively, at its inner and outer peripheries, with circular concentric flanges. Beneath these flanges the peripheries of the wheel, down to the bottom on the inside and down to the set of gearing-cogs on the outside, are of polygonal form, the faces being opposite to and parallel with the sides of the molds of the respective mold-groups, substantially as shown, and the thickness of metal between the peripheral faces and the sides of the molds being only sufficient to secure the necessary strength. By this simple formation the mold-wheel is lessened very considerably in weight and consequent cost of construction. For a like purpose, instead of making the shaft *e* of the mold-wheel of wrought-iron, it is of cast-iron, cast in one piece with the mold-wheel, connected therewith by thin plate-like spokes. The mold-wheel being well supported against all strain and violent action, and its shaft, in this machine, being short—nothing but projecting journals, in fact—this construction, without a separate wrought-iron shaft, becomes admissible; also, a thick, heavy hub is not required thereby, so that the wheel is made lighter and more cheaply. Beneath the pug-mill the peripheral flanges of the mold-wheel at its upper surface pass between two packing-plates or ring-segments, O P, of concentric form, so as to fit the said flanges. The outer segment-plate O fits in a recess of the frame A beneath the pug-mill bottom, and set-screws Q Q are passed through the frame from the outside to bear against the plate and adjust it closely to the outer flange of the mold-wheel as the surfaces wear away. The inner segment-plate P is located in a recess in the pug-mill bottom, and similar set-screws R R passed through some downward projections of the said bottom, and, bearing against projections of the segment-plate, serve in a similar manner to adjust the plate to the inner peripheral flange of the mold-wheel. These segment-plates serve to prevent the escape of clay down the sides of the mold-wheel, which not only would cause a waste thereof, but would foul the machine and cause additional friction in its working.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The grouped molds, and connected or compound followers fitting the same, in a continuously-revolving mold-wheel, F, substantially as and for the purpose herein specified.

2. The mold-wheel F, when formed with its shaft *e* and thin radial plates or spokes cast in one piece therewith, and with the interior and exterior polygonal peripheries, as and for the purpose herein specified.

3. The adjustable segment-plates O P, in combination with the mold-wheel, substantially as and for the purpose herein specified.

4. The flanch *a*, when provided with the right-

angled extension *m*, in combination with the frame of the machine, as and for the purpose herein set forth.

5. The fixed half of the pug-mill tub, when formed with the close dome-shaped top to support the upper bearing of the pug-mill shaft, as specified.

6. The transverse notch *v* in the movable pivot M of the friction-wheels L L, in combination with the transverse keys or wedges *u u*, substantially as and for the purpose herein specified.

AUGUSTUS F. MITCHELL.

Witnesses:
C. B. MEYER,
A. BURKE.