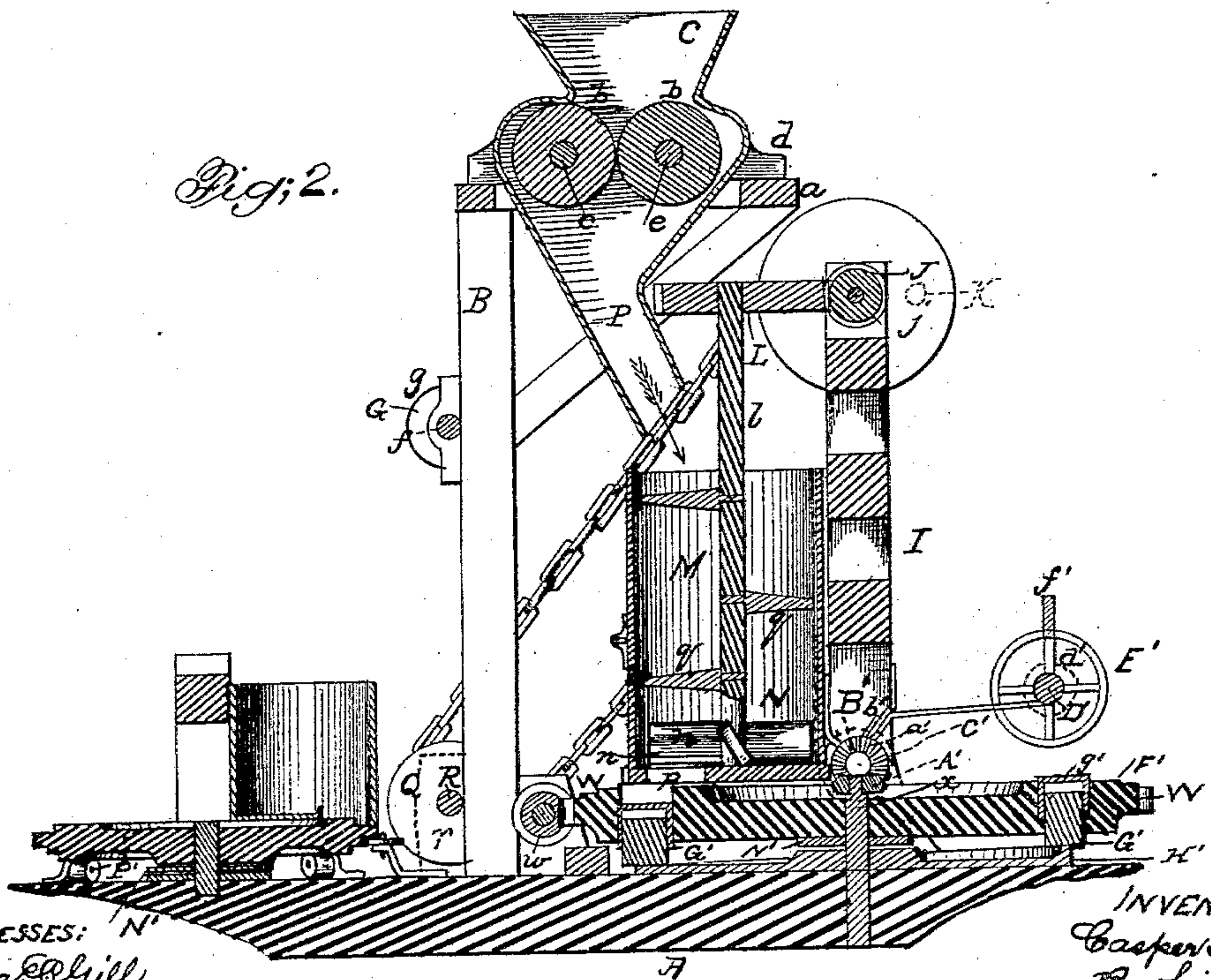
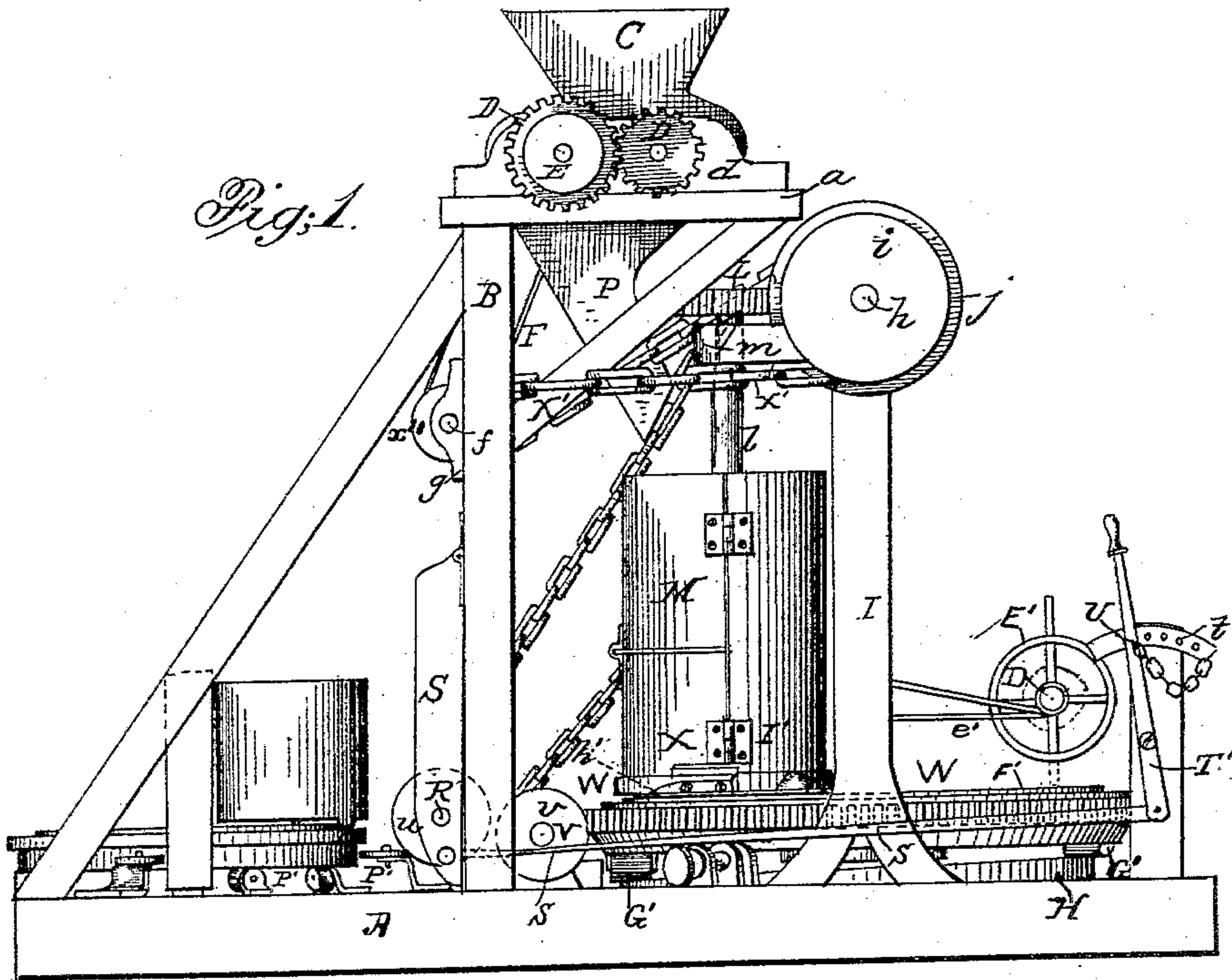


C. S. BIGLER.  
Brick-Machine.

No. 210,903.

**Patented Dec. 17, 1878.**



WITNESSES: "N"  
Chas. O'Sill  
D. P. Lowe

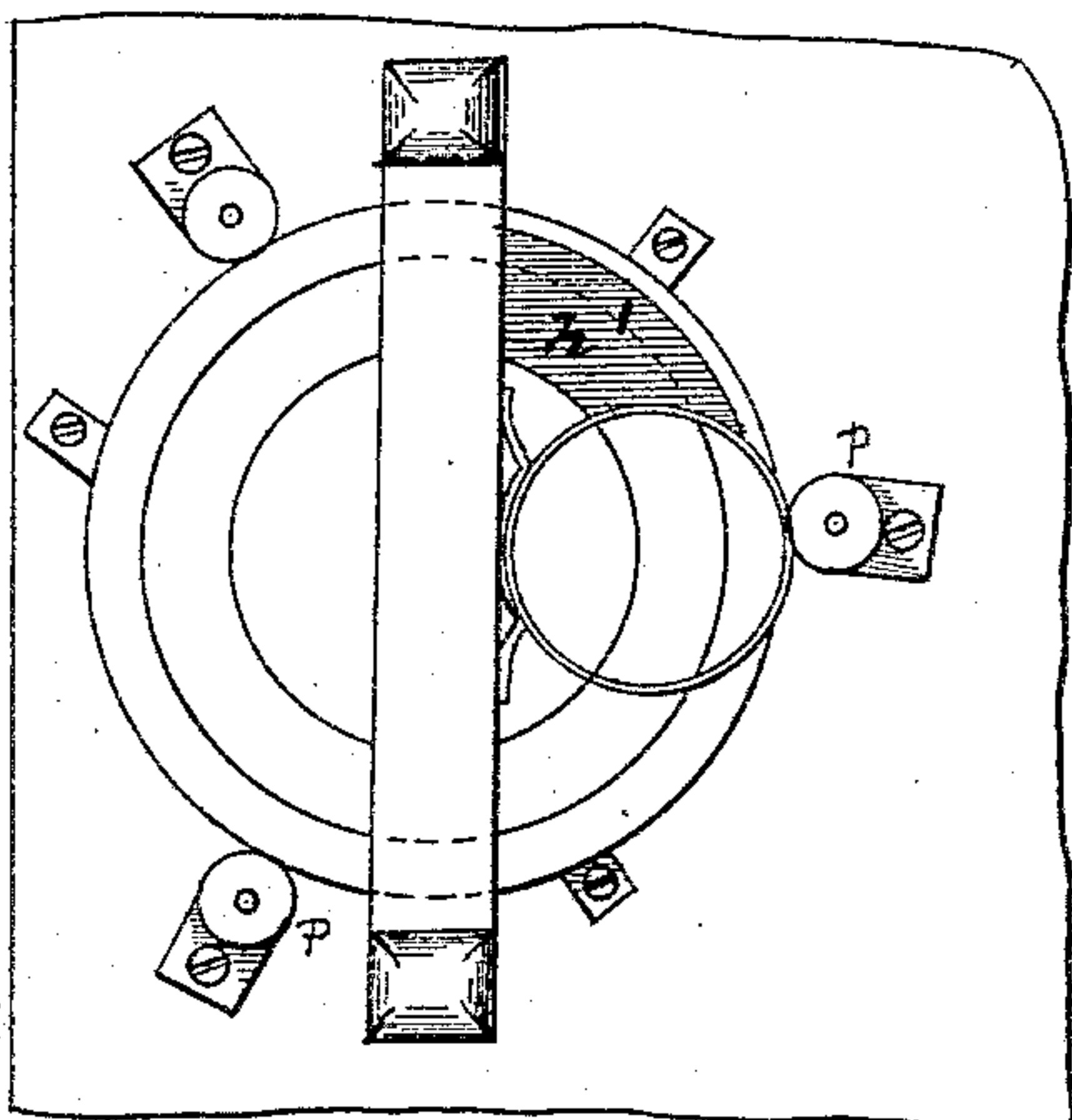
INVENTOR;  
Casper S. Bigler  
By his Attys.  
Cox & Co.

C. S. BIGLER.  
Brick-Machine.

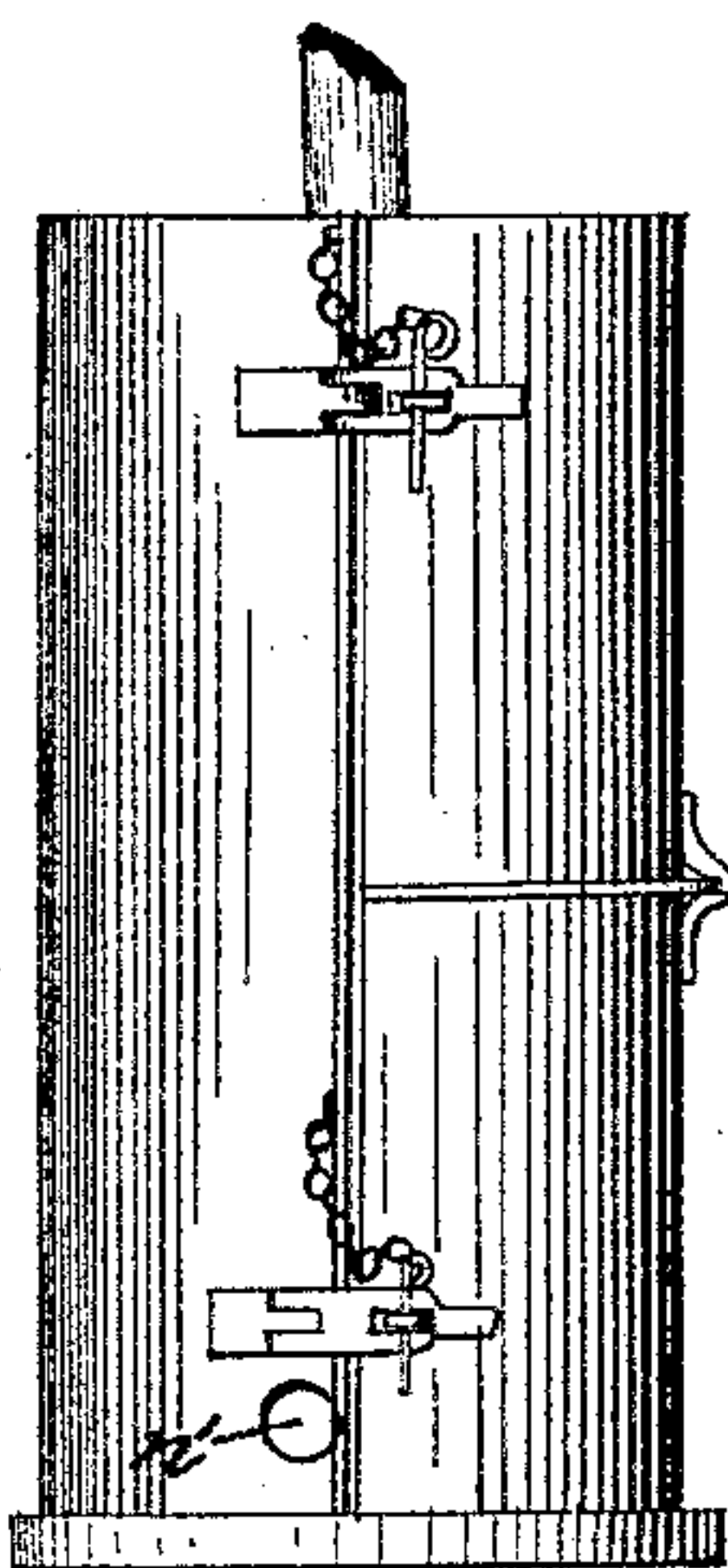
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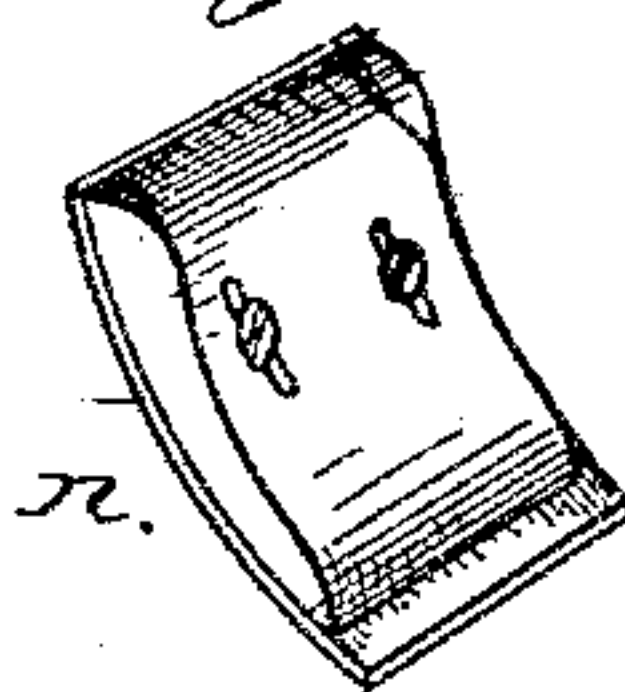
*Fig. 3.*



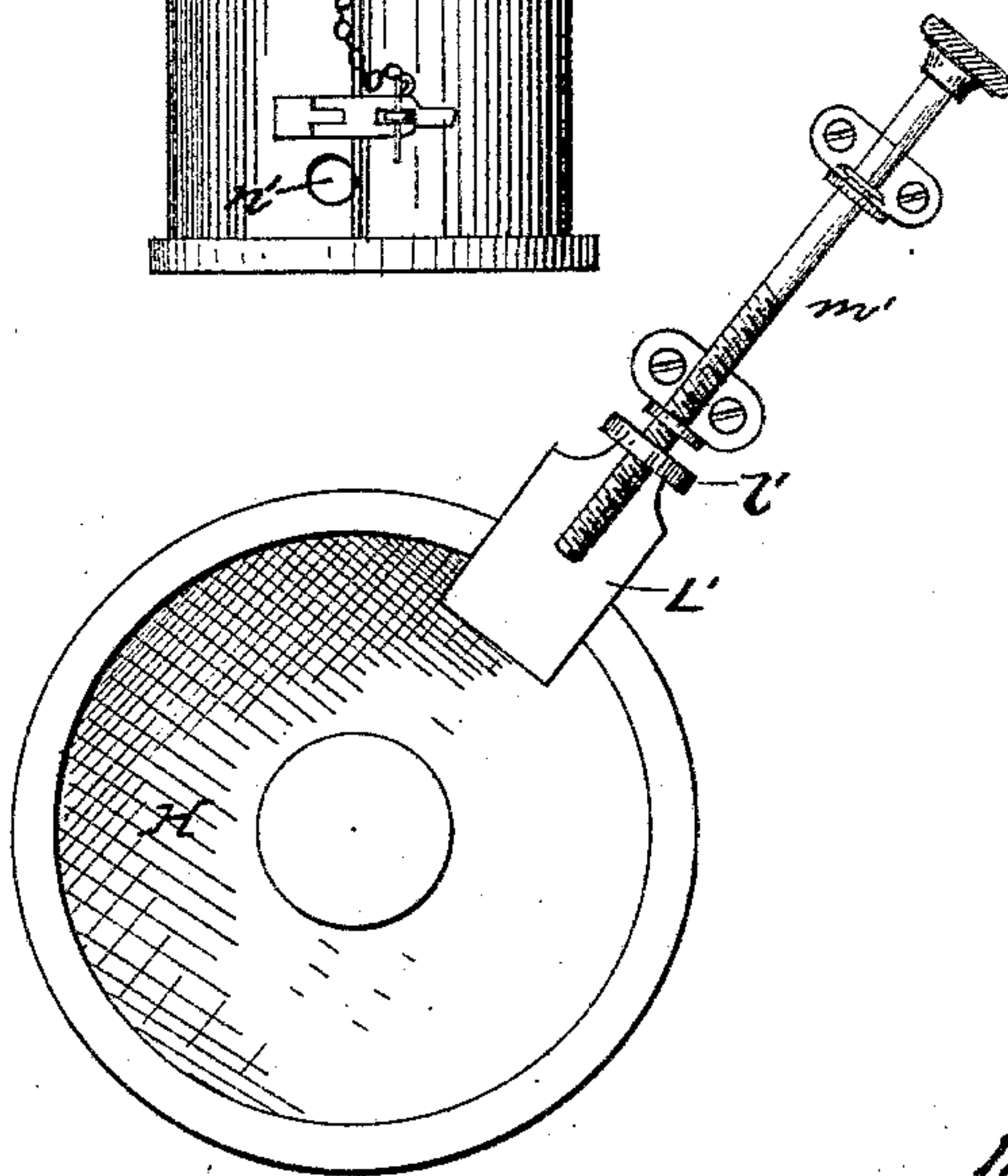
*Fig. 4.*



*Fig. 6.*



*Fig. 5.*



WITNESSES;

*Charles Hill*  
*D. P. Fowl*

INVENTOR;

*Casper S. Bigler*  
*By his atty.*  
*Cox and Dean*



# UNITED STATES PATENT OFFICE.

CASPER S. BIGLER, OF HARRISBURG, PENNSYLVANIA.

## IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **210,903**, dated December 17, 1878; application filed June 19, 1876.

*To all whom it may concern:*

Be it known that I, CASPER S. BIGLER, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a new and useful Improvement in Brick-Machines, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to certain improvements on the machines for making brick described in Letters Patent No. 172,864, granted to me February 1, 1876; and consists in the devices hereinafter specifically designated, the object being to provide a machine which will rapidly mold and deliver bricks.

In the accompanying drawings, Figure 1 is a side view of a device embodying the elements of the invention. Fig. 2 is a central vertical longitudinal section of same. Fig. 3 is a top view of the hopper, presser-plate, and guide-wheels. Fig. 4 is a side elevation of the hopper. Fig. 5 is a detached view of the adjustable incline or piece *L*. Fig. 6 is a detached perspective view of one of the pug-blades, showing the adjustable plate *n*.

In the accompanying drawings, A represents a base or platform, to which is secured the vertical frame B, which is properly braced, and sustains the auxiliary platform *a*. The platform *a* has secured at a suitable point upon its upper surface the auxiliary hopper C, which is sustained in any convenient manner above the crushing-rollers *b*, mounted upon the shafts *c c*, which are journaled in the frame *d*, and provided on their ends which extend beyond the frame with the spur-gear wheels D, and also on the shaft *c* with the wheel E, properly constructed to engage the chain-gearing F, connecting the wheel E with a similarly-constructed wheel, G, mounted upon the shaft *f*, which is journaled in the pillow or plumber blocks *g*, secured upon the rear of the frame B. Upon the platform A is also secured the vertical frame I, which sustains the shaft *h*, furnished at the end with gear-wheels *i j*, properly constructed to engage a chain-gearing. Midway between the sides of the frame I, upon the shaft *h*, is secured the worm J, which meshes with the teeth of the gear-wheel L, rigidly secured upon the upper end of the ver-

tical shaft *l*, which is supported as to its upper parts by the plumber-block *m*, and extends downward, occupying the vertical axial center of the hopper M, in the lower part of which the shaft is retained in a suitably-constructed step. Upon the lower portion of the shaft *l* is provided the propeller N, the wings or blades of which radiate at right angles from the vertical center of the shaft, and are furnished with the independent plates *n*. These plates may be secured to the blades by any suitable means, though it is preferred to fasten them by slots and set-screws, which will allow them to be readily adjusted to accommodate the wear and tear of the blades or wings.

It has been ascertained by practical experience that these independent plates add much to the cheapness of the machine, as heretofore manufacturers have been compelled to throw the whole propeller away as soon as the wings became slightly worn in diameter, which takes place very rapidly; but by the employment of the before-mentioned plates they may be made to last much longer than usual, as the plates may be set out as soon as the wings are discovered to be worn, thus taking up the wear and insuring a proper operation of the device.

Above the propeller N, upon the shaft *l*, may be provided the knives *q*, which serve to mix the clay and press it down upon the propeller.

The hopper is properly secured against the frame I in a vertical position, its bottom being a solid plate, except the crescent-shaped aperture *p*, suitably constructed to allow the egress of the clay. This hopper is, in the present instance, divided in its vertical longitudinal center into two parts or sections, which are connected by hinges, properly formed to allow one part of the hopper to be opened, exposing its interior, and allowing it to be readily cleansed of all stones, sticks, and rubbish.

It is obvious that the hopper may be divided transversely or otherwise into as many parts or sections as desired, the parts being connected by hinges, and fastened by any desirable means.

Immediately above the hopper M, and secured to the auxiliary platform *a*, is the chute P, through which the clay passes on its way



to the hopper from the rollers *b*, where it is ground and rendered suitable to be formed into bricks.

It is evident that any convenient number of these rollers may be used, and that they may be placed any suitable distance apart.

The door or section of the hopper *M* is provided with the planing-knife *X*, situated immediately above the molds as they come from under the hopper—or rather as they are just about to pass from under the hopper—and is employed to remove any surplus clay that may adhere to the table between the molds, or that may get into the molds, leaving it in the hopper, thus enabling the operator to work cleaner than usual and keep the table clear of surplus clay.

The wheel *j* is provided with an arm or crank, through which motion is imparted to the shaft *h*. The wheel *j* is connected by a chain-gearing to the similarly-constructed gear-wheel *Q*, secured upon the shaft *R*, one end of which is mounted in the standard *r*, and the other end in the movable hanger *S*, hinged to the rear of the frame *B*, and having its lower end controlled by the connecting-rod *s*, secured to the lower end of the lever *T'*, by means of which the rod is operated, the rack *t* and pinion *U* being provided to retain the lever in the position desired.

Upon the shaft *R*, near the hanger *S*, is provided the friction-wheel *u*, which co-operates with the larger friction-wheel *v* upon the shaft *V*, mounted in bearings at each end, and provided with the worm *w*, which engages the teeth of the mold-table *W*.

The mold-table is secured below the center of the frame *I* by a pivot, *x'*, provided at its upper end with the bevel-gear wheel *A'*, the teeth of which mesh with the bevel-gear wheel *a'*, secured upon the shaft *B'*, mounted in the hanger *b'*, and provided with the belt-wheel *C'*, which may be connected, by a belt or otherwise, with the belt-wheel *d'*, mounted upon the shaft *D'*, sustained in the bearings *e'*, and has rigidly secured upon it the wheels *E'*, placed a suitable distance apart, and connected by or provided with any suitable number of paddles or scrapers *f'*, which are employed to sweep or convey the bricks, as they are discharged from the mold off from the mold-table, upon an endless traveling belt, which carries them off a proper distance, and deposits them upon a conveying-belt, rest-table, or in the hands of a workman.

It is obvious that as the mold-table revolves, motion will be communicated, through the miter-gear wheels *A'* *a'*, belt-wheels *C'* *d'*, and shaft *D'*, to the scrapers or paddles *f'*, thereby operating the same.

The upper surface of the mold-table is provided with the annular elevation *F'*, consisting of a ring rising above the horizontal plane of the table. In this elevation are constructed the molds *g'*, of usual configuration, its lower surface or plate being furnished with the wheels *G'*, which ascend and descend the in-

clined ways *H'*, thereby elevating the lower plate to the upper surface of the mold-table, and then gradually descending until it passes the hopper and presser-plate, when it again ascends and delivers the brick, as before.

At a suitable point to one side of the frame *I*, and immediately above the annular elevation *F'*, is provided the presser-plate *h'*, furnished with the planing-knife *I'*, which can be adjusted to suit the necessities attending the operation of the machine, and is arranged to sweep the circumference of the annular elevation *F'*. This presser-plate is constructed to correspond with the form of the elevation *F'* of the mold-table, so that the great amount of friction existing in the machines in common use may be prevented, as the presser-plate impinges upon the annular elevation and no other part of the mold-table.

In the inclined ways *H'*, and just beneath the presser-plate *h'*, is provided the independent, movable, adjustable elevating-slide *L'*, provided upon its upper surface for a portion of its length with a groove, and upon its outer end with a standard or block, *l'*, in which the elongated screw *m'* operates, said screw being properly mounted in bearings to maintain its position. The elevating-slide *L'* is beveled, for the purpose hereinafter mentioned, its inner end being reduced in thickness in a degree governed by its length. It is obvious that by turning the set-screw from left to right the thinner end of the elevating-slide *L'* will be pushed beyond the annular elevation *F'*, and that the thicker end will be brought in position immediately below the presser-plate. Now, when the mold reaches this elevating-slide *L'* its plunger will ride up the thickness, and thus make a thinner brick than it would if the thinner end of the said piece *L'* were under the presser-plate. It is also obvious that as the elevating-slide *L'* is very gradually beveled the thickness of the bricks can be governed at will by simply turning the set-screw from left to right, or by reversing that operation.

In the side of the hopper, near the bottom, and over the elevation *F'* of the mold-table *W*, is provided the orifice *n'*, which acts as a safety-valve by relieving the pressure in the hopper when it is full, by allowing the clay to force its way out through the same. It will appear evident that this orifice may be furnished with a door or other suitable means of protecting it or closing the same when desired.

The aperture in the bottom of the hopper may be of any suitable configuration; but it is preferred to have it conform with that portion of the annular elevation that passes under it, so that the hopper may be prevented from pressing down on the table, thus enabling the table to run clear and free of friction. The aperture, in the present instance, is in the contour of a crescent; but it is clear that this form could be varied without materially affecting the character and purpose of the aperture.

Between the platform *A* and the mold-table *W*, and around the pivot *x'*, are placed the



rings or washers  $N'$ , which serve as a bearing for the mold-table, and facilitate the operation of the machine by keeping the table in a true position. Secured at suitable points around the periphery of the table  $W$  are the guide-wheels  $P'$ , which co-operate with the rings  $N'$  in causing the table to run in a true manner. It is clear that any suitable number of these wheels may be used, and also that they may be secured as desired.

The gear-wheel  $i$  is connected by the chain-gearing  $x''$  to the gear-wheel  $x'''$ , mounted upon the shaft  $f$ , and is employed to communicate motion, through the shaft  $f$ , wheel  $G$ , chain-gearing  $F$ , and wheel  $E$ , to the crushing or grinding rollers  $b$ .

Motion being imparted to the gear-wheel  $j$ , the shaft  $h$  is caused to rotate, which revolves the gear-wheel  $i$ . This communicates impetus, through the chain-gearing  $x'$ , to the wheel  $x''$ , mounted upon the shaft  $f$ , which, being revolved, causes the wheel  $G$  to operate, bringing into action the gearing  $F$  and wheel  $E$ , which set in motion the gear-wheels  $D$ , secured upon the axles of the grinding or crushing rollers  $b$ , which are rotated by the movement of the gears  $D$ .

When the wheel  $j$  is revolved motion is also communicated, through the shaft  $h$ , to the worm  $J$  and gear-wheel  $L$ , mounted upon the shaft  $l$ , which is thereby caused to be rotated in the hopper containing the material to be converted into brick.

The movement of the wheel  $j$  also communicates motion through a chain-gearing to the wheel  $Q$ , secured upon the shaft  $R$ , provided at its other end with the friction-wheel  $u$ , which, when brought into contact with the friction-wheel  $v$  by the rod  $s$ , imparts motion to it, and causes the worm  $w$  to operate in conjunction

with the teeth of the mold-table  $W$ , causing the same to revolve. This rotates the wheels  $A'$  and  $a'$ , thereby imparting motion, through the shaft  $B'$  and belt-wheels  $C'$  and  $d'$ , to the paddles or scrapers  $f'$ , which, as the brick emerges from the mold, sweep it from the mold-table onto a suitable traveling belt.

It is obvious that the wheels  $E'$  may be operated by either spur or cam gearing.

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

1. In a brick-machine, the wheel  $E'$ , provided with one or more scrapers,  $f'$ , arranged to come in contact with the long edge of the brick as it rises above the mold-table, substantially as set forth.

2. The mold-table provided with the annular elevation  $F'$ , in combination with a hinged hopper provided with an aperture,  $p$ , conforming to the width of the upper surface of the said elevation, substantially as set forth.

3. In a brick-machine, a propeller for expelling the clay from the hopper, the arms of which are provided with adjustable removable plates, substantially as specified.

4. The guide-wheels  $P'$ , for the purpose of sustaining the mold-table and preventing its oscillation, substantially as set forth.

5. The combination of the washers  $N'$  and guide-wheels  $P'$ , as set forth.

6. The grinding-rollers  $b$ , in combination with the hopper  $C$ , substantially as set forth.

In testimony that I claim the foregoing improvement in brick-machines, as hereinbefore described, I have hereunto set my hand this 16th day of June, 1876.

CASPER SHROM BIGLER.

Witnesses:

SAML. L. BIGLER,  
S. W. FLEMING.