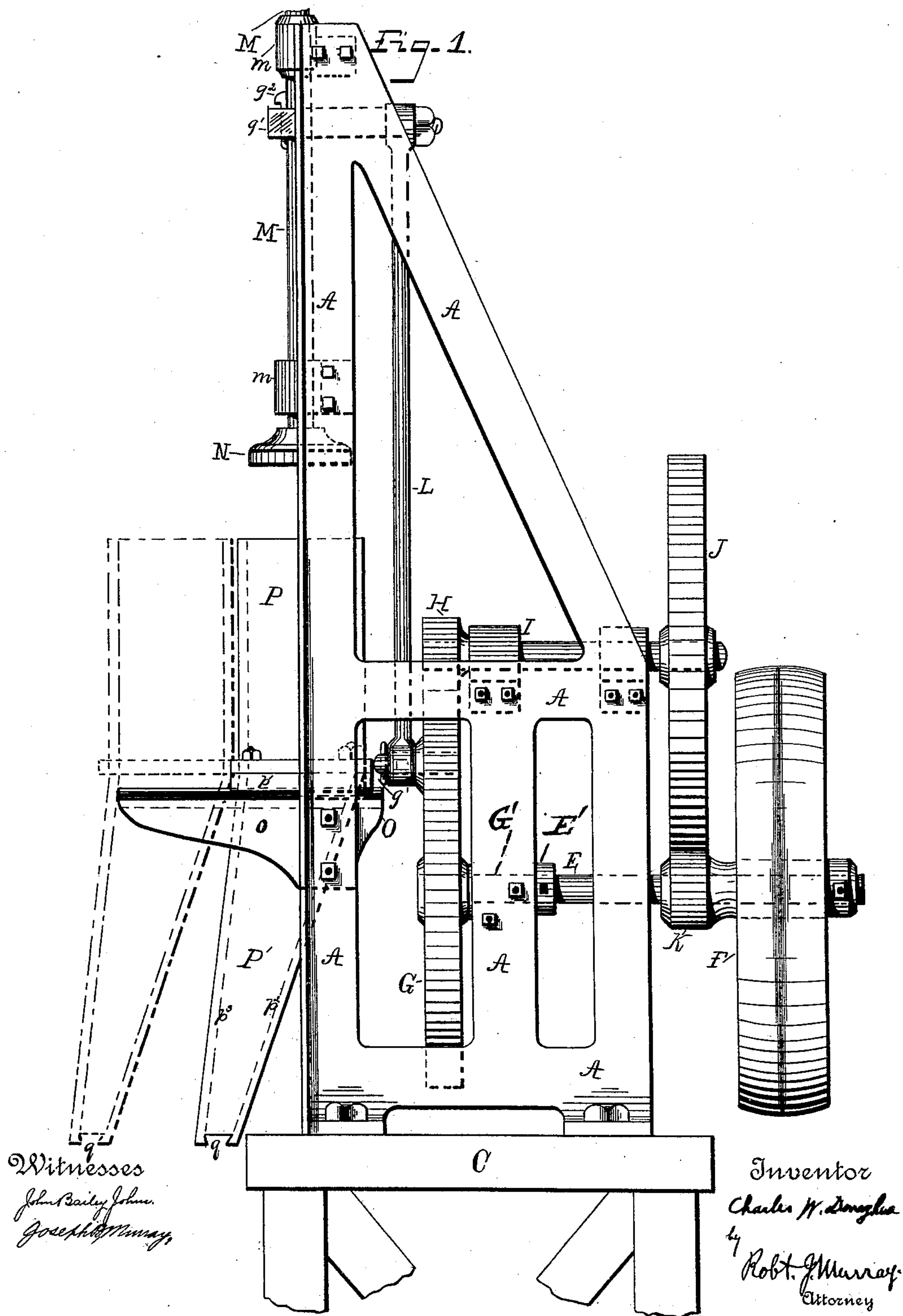


C. W. DONAGHUE.

MANUFACTURE OF PINS FOR POTTERS' USE.

No. 452,435.

Patented May 19, 1891.



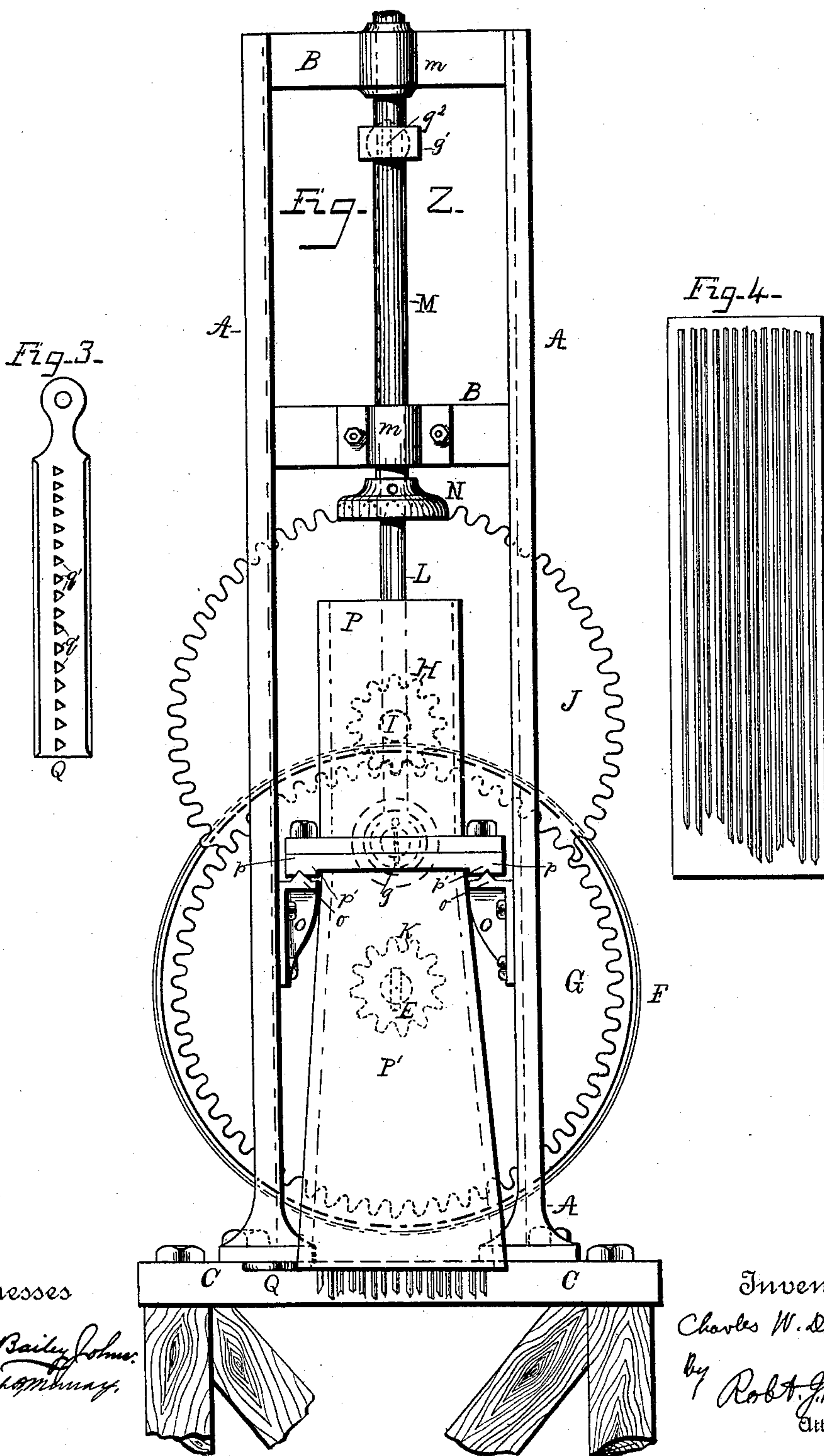
(No Model.)

2 Sheets—Sheet 2.

C. W. DONAGHUE.
MANUFACTURE OF PINS FOR POTTERS' USE.

No. 452,435.

Patented May 19, 1891.



UNITED STATES PATENT OFFICE.

CHARLES W. DONAGHUE, OF TRENTON, NEW JERSEY.

MANUFACTURE OF PINS FOR POTTERS' USE.

SPECIFICATION forming part of Letters Patent No. 452,435, dated May 19, 1891.

Application filed September 26, 1889. Serial No. 325,173. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DONAGHUE, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Pins for Potters' Use, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to pins used in the manufacture of earthenware; and my said invention consists of a machine adapted to be driven by power in which after the clay has been kneaded and worked into the proper condition it is forced through a die-plate having multitudinous holes situated at the bottom of the clay-chamber, as for the purposes as will be hereinafter more fully described and form the subject-matter of the appended claims.

The object of my invention is to facilitate the manufacture of pins for potters' use; and to accomplish this the plunger is operated by an engine through suitable connections between said engine and plunger, to be hereinafter in detail explained, and the die-plate at the bottom of the clay-chamber, through which the clay is forced and which gives to the pins or strips of clay their desired shape, is provided with multitudinous holes, instead of a single hole, as has heretofore been the practice, which holes may be of the same or of a variety of shapes, whereby at a single operation of the machine a number of pins are produced either all of the same shape or of various shapes, instead of but one pin being produced at a time, as heretofore, and through the direct action of the plunger upon the clay the same is quickly and thoroughly kneaded and incorporated into the required condition for forming into pins.

In carrying out the details of my invention I proceed as follows, reference now being had to the accompanying drawings, forming a part hereof, and in which drawings—

Figure 1 is a view in side elevation of a machine for manufacturing pins for potters' use constructed according to my invention, and Fig. 2 is a view in front elevation of the same. Fig. 3 is a detail detached view of the die-plate, and Fig. 4 is a view of the board upon

which the strips are received as they come from the die-plate.

Similar letters of reference designate like parts in the several figures.

The frame of the machine is composed of two uprights A A, connected by cross-pieces B and supported upon a table C.

The letter E indicates a shaft journaled at its inner end in a bearing E' in the frame of the machine. The said shaft carries at its outer end a driving-pulley F and a small pinion K, which meshes with a large gear-wheel J, mounted on a shaft I, journaled in bearings on the main frame A. The inner end of said shaft has mounted on it a small pinion H, which intermeshes with the wheel G, which is journaled in a bearing G' in the frame of the machine. The above arrangement of the gearing distributes the strain thereon, and by applying a crank-handle to the pulley F, or by removing the said pulley and applying a crank-handle to the wheel J, permits the machine to be operated by hand. Upon the wheel G is a crank-pin g, which, by a crank-arm or pitman L, communicates motion to the rod M of the plunger N, and this rod M has a vertically-reciprocating movement in suitable bearings m in the cross-bars B of the frame A. The degree of vertical movement of this rod M, and consequently the corresponding play of the plunger N, may be regulated by the adjustment of the said rod M in the arm g', through which arm the said rod M passes and is secured by a key g², this arm g' forming the connection between the plunger-rod and the pitman L. This completes the description of the mechanism for operating the plunger, which plunger, it might be well to state, is removable from the plunger-rod and is made in different forms to either knead the clay in the clay-chamber or simply act as a plunger-head to force the clay through the die-plate at the bottom of the chamber when such is in position for forming pins. I will therefore now proceed to describe the means for forming the pins. Upon the inner edge of each of the uprights A A of the frame of the machine are secured brackets O O, which brackets extend or project outward from the face of the said uprights A, as shown in Fig. 1, and are formed upon their top edge with a track

or Λ projection, as at o , Fig. 2, which projection enters a correspondingly-shaped groove or channel p' , formed in the bottom of a flange p about midway of the clay-chamber P . It will then be seen that provision is made for the withdrawal of the clay-chamber from beneath the plunger when said chamber is to be charged—that is to say, the clay-chamber is movable or slides upon the track o , but is held in its proper position by the groove p' of the flange of the clay-chamber. This clay-chamber is, as shown, made in two parts P and P' , which are connected to each other by bolts which pass through the flanges p , formed on each section. The top part P is preferably cylindrical and of such size relatively to the plunger N that said plunger will closely fit said chamber, and the lower section P' is made to incline forward and with the rear wall p^2 inclined or made to approach the front wall p^3 as it nears the discharging end. In other words, the portion P' of the clay-chamber is narrower from front to back at its bottom end than at its top, as shown in Fig. 1, and by reference to Fig. 2 it will also be seen that while the front and back of this section of the clay-chamber converge toward its lower end the sides thereof diverge, the discharge end of the clay-chamber being wider from side to side and narrower from front to back than at its top. The object of this construction is to compress the clay into a long narrow compass, whereby it is brought to the proper homogeneous condition and temper to be formed into pins of the desired strength, &c.

At the discharge end of the clay-chamber, upon the inner surface of the front and back walls thereof, are formed grooves q to receive the die-plate Q , and this die-plate, as shown in Fig. 3, consists of a long narrow plate with bevel edges to fit the slots q , through which plate is a series of holes q' of any desired size or configuration.

The operation of my machine is as follows:
 45 The clay-chamber is first drawn outward upon the brackets O and charged with clay. It is then returned beneath the plunger and said plunger placed in operation through a band over pulley F from an engine or other power
 50 and the intermediate connections between said band-pulley and plunger herein described. The bottom of the clay-chamber being closed by a solid or blank plate, the rapid reciprocation or pounding of the plunger into
 55 and through the clay quickly and thoroughly kneads and works the same into a homogeneous mass of the desired consistency and tem-

per, after which, upon placing the die-plate at the bottom of the clay-chamber, the clay is forced through the openings in said die-plate 60 and depends from the under side thereof in long strips, as shown in Fig. 2. As these strips come from the die-plate they are received on a board, as in Fig. 4, and when of the desired length are cut off, when, after being dried, 65 they are baked, as usual.

It has been found that the pins when made as herein described were superior in texture than when made under the old process and were stronger and without curls or cracks, 70 and in addition to this the facility and rate of production are very greatly increased.

As before stated, the plunger-head is of a size relative to the size of the clay-chamber as to closely fit the same when the clay 75 is being forced through the die-plate; but when the clay is being worked the plunger-head is somewhat of less diameter than said chamber to permit the ready passage of the said plunger-head through the clay without 80 packing the same.

Having thus fully described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is as follows, viz: 85

1. In a machine for making potters' pins, the clay-chamber constructed in two parts flanged at their adjoining edges and bolted together at such flanges, the upper chamber being of a cylindrical shape and the lower 90 chamber widened out laterally and contracted toward its lower end, substantially as specified.

2. The combination, with the upper part of the clay-chamber, flanged at its lower end, of 95 the lower part flanged at its upper end and connected to the upper part, the lower chamber being widened laterally and contracted toward its lower end and arranged to extend at an angle from the upper portion, substan- 100 tially as specified.

3. The combination, with the clay-chamber constructed in two parts, as described, of the grooved flanges of the lower part, the brackets upon which said grooved flanges are arranged 105 to slide, and the plunger and mechanism for operating the same, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES W. DONAGHUE.

Witnesses:

ANDREW JAS. SMITH,
 JAMES WOOLVERTON.