F. DURAND & E. L. MARAIS.

Apparatus for Pressing or Molding Brick.

No. 168,730. Patented Oct. 11, 1875.

Fig. 1.

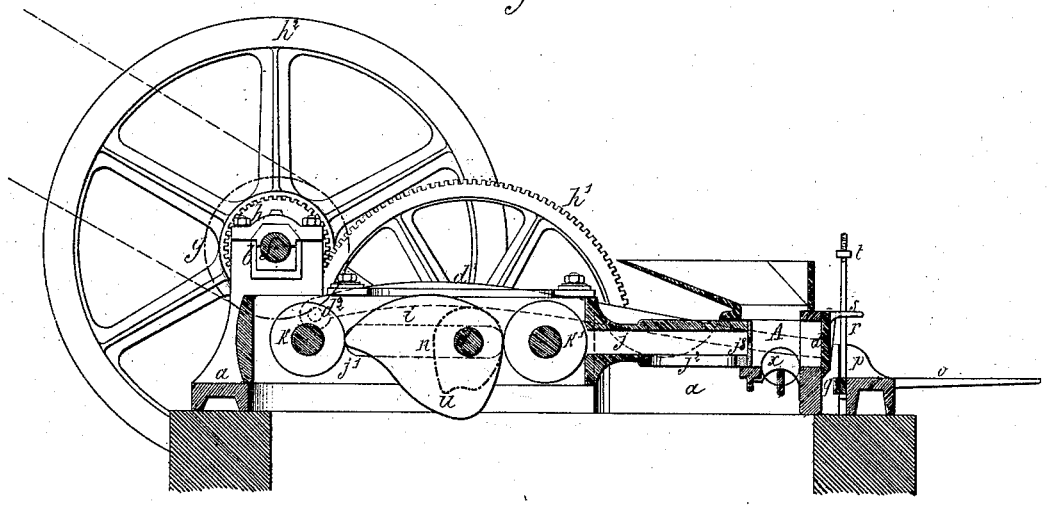


Fig. 2.

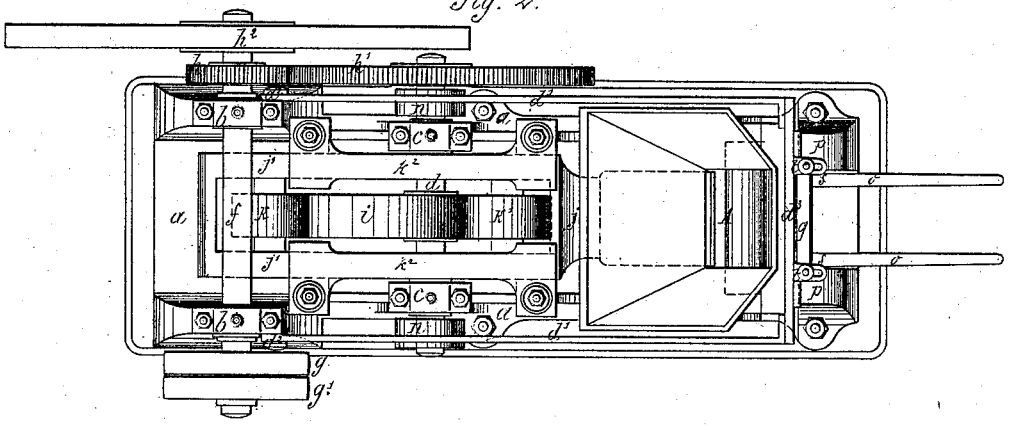


Fig. 3.

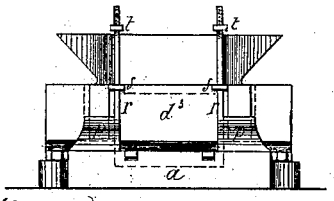
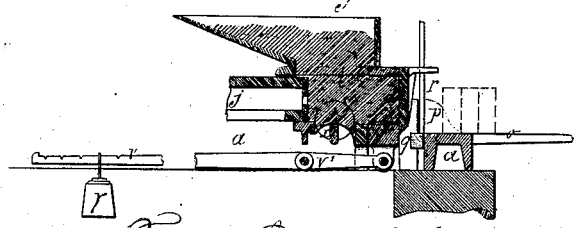


Fig. 4.



Witnesses:
H. Shumway
Clara Broughton.

Francois Durand & Louis Ernest Marais
Inventors
By Alby
Thos. E. Earle

UNITED STATES PATENT OFFICE.

FRANÇOIS DURAND AND ERNEST L. MARAIS, OF PARIS, FRANCE.

IMPROVEMENT IN APPARATUS FOR PRESSING OR MOLDING BRICKS.

Specification forming part of Letters Patent No. **168,730**, dated October 11, 1875; application filed September 28, 1875.

To all whom it may concern:

Be it known that we, FRANÇOIS DURAND and ERNEST LOUIS MARAIS, both of Paris, France, have invented an Improved Apparatus for Pressing or Molding Bricks and other agglomerated articles of like kind, of which the following is a specification:

Our invention relates to that description of apparatus for pressing or molding bricks and other articles wherein a rectangular piston, actuated by a cam, is caused to enter a mold, in which it compresses the brick-earth, coal-dust, or other pulverulent material entering the mold from a hopper situated directly over the mold.

Our improved apparatus differs from those heretofore employed more particularly in the use of a new combination of parts, which renders its construction very simple and its action exceedingly easy.

The construction of the improved apparatus will be readily understood on reference to the accompanying sheet of drawings, and to the figures and letters marked thereon.

Figure 1 shows a longitudinal elevation, partly in section, of the improved machine. Fig. 2 shows a plan, and Fig. 3 an elevation, of the end at which the bricks are delivered. Fig. 4 shows a vertical section of a modified construction of the mold with movable bottom, which will be described hereafter.

The entire machine is mounted on a cast-iron frame, *a a*, placed on a stone bed, or formed in one with a cast-iron bed-plate. The frame is provided with four plumber-blocks, *b b c c*, carrying two parallel transverse shafts, *d f*, of which the one *f* carries the fast and loose driving-pulleys *g g'* of fly-wheel h^2, and a pinion, *h*, which is in gear with a large wheel, h^1, fixed on the shaft *d*, which also carries several cams, *i* and *n n*. The principal cam *i*, which actuates the compressing-piston *j*, is fixed in the middle of the shaft *d*. Its configuration, as shown in Fig. 1, is determined so as to effect successively, first, the progressive compression of the material to be agglomerated in the mold; second, a final compression of short duration; and, third, the expulsion of the finished brick. This cam acts on the piston *j* by means of two rollers, K K', mounted loosely on axes carried in bearings formed at each end of the frame *j'*, which forms an extension of the piston. This is guided in its motion by means of guides k^2 k^2, formed in the cheeks of frame *a a*. The two outer cams *n n*, also fixed on the shaft *d*, operate on levers d^1 d^1, pivoted to the framing at d^2 d^2, and bolted rigidly to a vertical plate, d^3, which serves to close the exit-orifice of the mold A from the moment when the pressure begins to the termination thereof, and which uncovers the mold when the piston advances for expelling the brick therefrom onto the bars *o o*, fixed in an inclined position. The rigid holding of the plate d^3 during the pressure is furthermore secured by means of two supports, *p p*, cast on the framing. In order to prevent the bricks, when expelled from the mold, from adhering to the face of the piston, a stirrup, *q*, is provided at the end of the machine, into which the brick passes as it issues from the mold. This stirrup-frame is guided on either side by the frame *a*, and is connected to the plate d^3, which serves as a door to the mold, by means of two rods or guides, *r*, passing through ears *s*, fixed to the door. These guides have screw-nuts *t* on their upper ends, on which abuts a corresponding ear, *s*. When the door d^3 has been raised by the action of the cams *n n* operating on the levers d^1 d^1, and the brick has been entirely extruded, then, by causing the door to rise a little higher, (which is effected by small projections *u u* on the cams,) the ears *s*, in pushing against the nuts *t*, will cause the stirrup *q*, and with it the brick, to be slightly raised, and the brick, being thus made to slide against the face of the piston, will become detached therefrom. As the levers d^1 descend with the door the stirrup also descends and brings the brick again to the level of the inclined bars *o*. Small escape-apertures *x x* are provided in the sides and bottom of the mold, as also in the piston itself, in order to allow of the escape of any excess of earth or other material at the time of compression, and thus to prevent any injurious resistance. These escape-apertures may be dispensed with by employing the arrangement shown at Fig. 4, in which a portion of the bottom of the mold, at least equal to the width of the brick, is made movable, and is hinged to the end of a lever, *v*, pivoted at *v'*,

and having at its other end a weight, *y*. By increasing this weight, or by moving it nearer to or farther from the fulcrum, the pressure resisted by the movable bottom, and consequently the degree of compression of the material in the mold, is regulated, and thus is prevented any fracture of the machine that might otherwise occur.

The machine constructed as above described affords a very rapid rate of production, and works very easily. It can be arranged either single or double acting. In the latter case it will suffice to extend the piston backward, and to arrange it to work in another mold provided with the same devices as the mold A.

The form, material, and dimensions of the several parts of the above-described machine may be variously modified, according to the nature of the work to be performed, the material to be compressed, and the dimensions of the bricks to be produced.

Having thus described the nature of our invention, and in what manner the same is to be performed, we claim, in respect of the before-described machine for pressing or molding bricks or other articles of like kind—

The combination, in a machine for making bricks, of the following elements: the mold A, the piston *j*, the double-acting cam *i*, the vertically-sliding door or bottom d^3, and the stirrup *q*, all arranged and operating substantially as specified.

In testimony whereof we have signed our names to this specification before two subscribing witnesses.

F. DURAND.
E. L. MARAIS.

Witnesses:
ROBT. M. HARPER,
ARMENGAUD, Jeune.