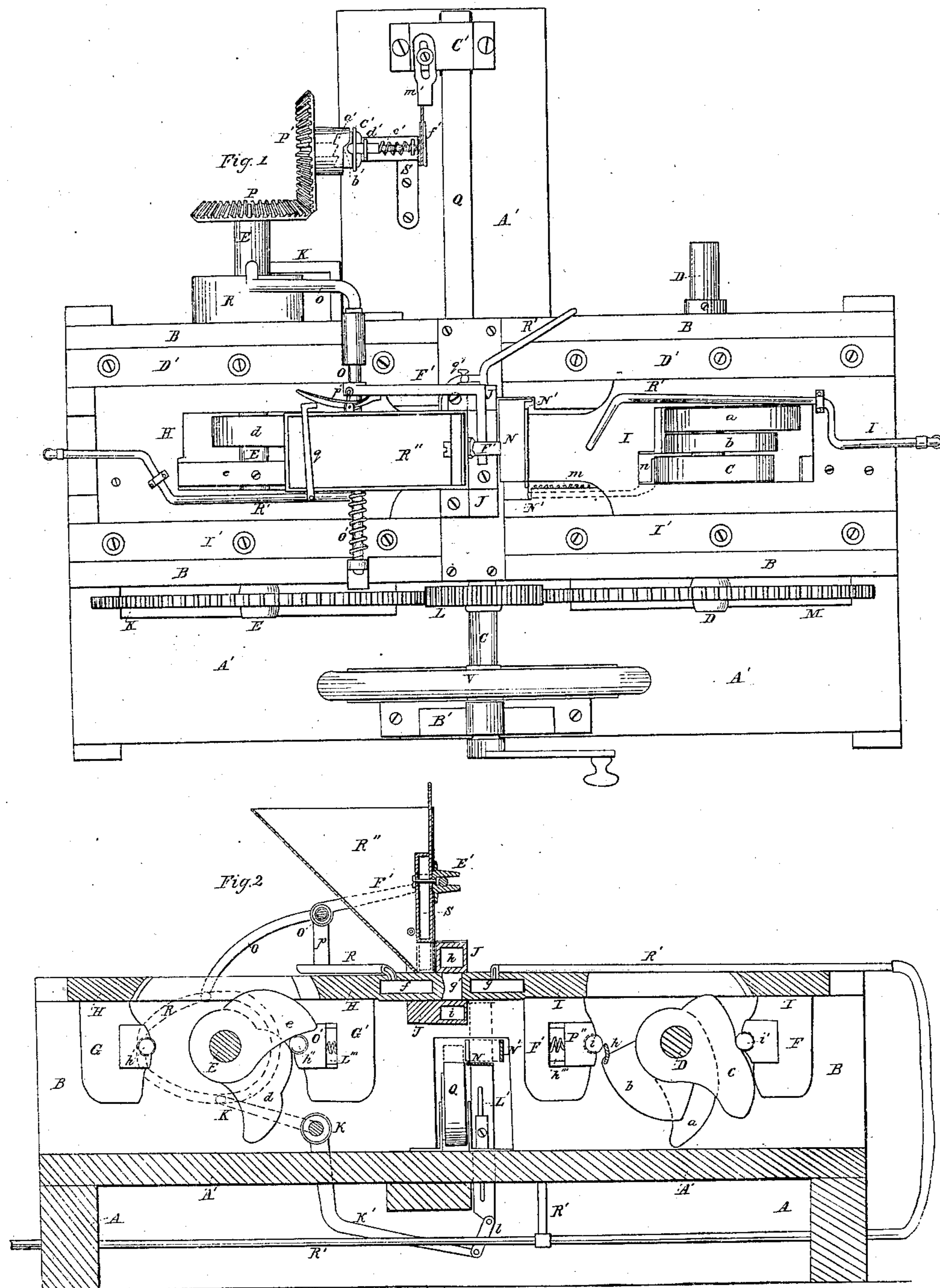


J. Armstrong. Brick Machine.

N^o 74030

Patented Feb. 4, 1868.



Witnesses
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United States Patent Office.

JOHN ARMSTRONG, OF ST. LOUIS, MISSOURI.

Letters Patent No. 74,030, dated February 4, 1868.

IMPROVED BRICK-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN ARMSTRONG, of St. Louis, in the county of St. Louis, and State of Missouri, have invented certain new and useful Improvements in Brick-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

My invention relates to brick-machines, and consists in a novel arrangement of mechanism for moulding, pressing, and delivering hot-pressed brick. In the drawings—

Figure 1 is a top plan view, and

Figure 2 is a longitudinal vertical section, on the line *xx* of fig. 1.

In constructing my machine, I make the sills *A*, and over them lay a strong platform, *A'*, and on this platform *A'* erect the frame *B*, for the support of the principal part of my mechanism, as shown in both figures. On this platform *A'*, I also place a standard, *B'*, and on it mount the shaft *C*, which has its bearing on this standard, and in one side of the frame *B*, as shown in fig. 1, and has upon it the fly-wheel *V* and pinion *L*. In the frame *B*, and parallel with the shaft *C*, I place the shafts *D E*, with their bearings in the sides of the frame. On the ends of the shafts *D E*, which project through the frame *B*, on the same side with the shaft *C*, I place two spur-wheels, *K M*, of equal size, which gear into the pinion *L*. Within the frame *B*, on the shaft *D*, I place three cams, *a b c*, and on the shaft *E* two cams, *d e*, in form substantially as shown in fig. 2. The shaft *E* projects beyond the side of the frame *B*, as shown in fig. 1, and has attached to it a compound cam, *R*, and bevel-wheel, *P*. The form of the compound cam *R* is shown in dotted lines in fig. 2. The bevel-wheel *P* gears into the bevel-wheel *P'*, which is placed loosely upon the shaft, having its bearings in the standard fastened on the platform *A'*, by the foot *S*. Upon the same shaft is a clutch, *a'*, arranged to engage in a corresponding clutch on the bevel-wheel *P'*. The edge of the rim or collar, about the clutch on the bevel-wheel *P'*, forms a cam, *b'*. The clutch *a'* has an annular groove, into which engages a lip, *c'*, which is attached to a shaft, *d'*, about which there is a spiral spring, *e'*, as shown in fig. 1. The spiral spring *e'* throws the clutch *a'* forward, when it engages the bevel-wheel *P'*, which then turns the shaft till the cam *b'* comes round and shoves the shaft *d'* back, and the clutches disengage and the shaft ceases to turn. On the opposite end of the shaft upon which the bevel-wheel *P'* is placed, I attach a grooved pulley, *f'*, which I connect with another pulley in the standard *C'*, which communicates motion to the discharge-belt *Q*, arranged as shown in figs. 1 and 2.

In the upper side of the frame *B*, and midway from its ends, I place a die or moulding-box, *J*, transversely with the frame *B*. This die *J* has an opening, *g'*, sufficiently large to admit the heads of the plungers *H* and *I*, as shown in fig. 2, and also has hollow spaces, *h* and *i*, above and below the opening *g'*. The heads of the plungers *H* and *I* are also hollow at *g* and *f*, as shown in fig. 2. Into these hollow spaces I introduce steam by means of the steam-pipes *R'*, as shown in figs. 1 and 2, for the purpose of heating the die *J* and the heads of the plungers *H* and *I*. I also, when desired, introduce steam into the lower part of the hopper *R'*, by turning the cock *q'*, as shown in fig. 1. The plungers *H* and *I* are formed, as shown in fig. 1, with an irregular opening in each, and arranged to slide longitudinally between the guides *D' I'*, within the upper sides of the frame *B*. These guides *D' I'* are screwed fast to the frame *B*, as shown in fig. 1. The plungers *H* and *I* have each two projections, *G G'* and *F F'*, arranged and shaped as shown in fig. 2. On the inner face of the projections *F* and *G*, I place rollers *h'* and *i'*, and on the faces of the projections *F'* and *G'*, opposite the faces of the projections *F* and *G*, I insert movable blocks *O'* and *P''*, having rollers *h''* and *i''* on their front sides, and spiral springs *h'''* and *i'''* on their rear sides. These rollers *h' h''*, *i'* and *i''* are operated against by the cams *a, b, c, d*, and *e*, as shown in fig. 2. On the upper side of the frame *B*, and directly over the die-box *J*, I place the hopper *R''*, as shown in fig. 2, and provide it with a plunger, *S*. The perpendicular side of the hopper *R* has a slot, and the plunger *S* has a slotted projection, *E'*, passing through it. On the sides of the frame *B*, I place two standards, *p*, and mount therein a shaft, *o*, having one of its ends bent, so as to engage in and be operated by the compound cam *R*, as shown in figs. 1 and 2. And to the shaft *o*, I attach an arm, *F'*, bent so as to engage in the projection *E'*, as shown in fig. 1. On the shaft *o*, I place a spiral spring, *o'*. This spring holds the shaft

o in place, so as to secure its operation by the compound cam R. To the side of the hopper R'' I pivot a lever, p', so that its lower end will bear against the side of the arm F', and that its upper end may be locked by the hook q, when it is desired to disengage the shaft E' from the compound cam R, and stop the movement of the plunger S, as shown in figs. 1 and 2.

In the frame B, below the lower line of the projection G', I place a shaft, K, transversely, with its bearings in the sides of the frame B, and with one end bent, so as to engage in and be operated by the compound cam R, as shown in fig. 1, and in dotted lines in fig. 2. To this shaft K, I attach an arm, K', bent as shown in fig. 2, and having its lower end connected by a link to an upright, L', arranged to move vertically, and having at its upper end a table, N, as shown in figs. 1 and 2. The upright L' passes up alongside the discharge-belt Q, and the table N rises, so as to be, when at its greatest elevation, on a level with the bottom of the opening g' of the die J, and descends, so as to be, at its greatest descent, on a level with the upper side of the discharge-belt Q. Within the frame B, and in front of and operated by the cam c, I place a follower, N', arranged with a spiral spring, m, and a bearing, n, so as to be moved forward over the top of the table N, when on a level with the discharge-belt Q, and be promptly sprung back by the elasticity of the spiral spring m, when released from the pressure of the cam c, as shown in fig. 1.

In order to accommodate the steam-pipe R' to the movements of the plungers H and I, I make a portion of it of gutta percha or other flexible material, as shown in fig. 2. In order to tighten promptly, when desired, the belting connecting the pulley f with the pulley within the standard C', which moves the discharge-belt Q, I attach an adjustable arm, m', with a roller on the under side of the end immediately over the connecting-belt, so that it may be made to press upon it when necessary to tighten the belt.

In operating my brick-machine, I first introduce steam into the hollow spaces of the die or mould, and into the hollow heads of the plungers. When they are sufficiently heated, I place the clay into the hopper R'', and, if desired, moisten and heat it with steam, by turning the cock q', and allow it to pass into the hopper R''. The clay is fed down into the space between the heads of the plungers H and I, by means of the plunger S, which is operated by the compound cam R moving the bent shaft O and arm F'. The mould is now formed by the heads of the plungers H, I, and S, and the bottom and sides of the die-box J. The plunger I now recedes partially out of the opening g' in the die-box J, and the plunger H advances, shoving the moulded brick into the space g', where it is pressed by the plungers H and I, the cams b and d bearing upon them. The plungers H and I then are moved, by the action of the cams a and d, together, towards the delivery-end of the die-box J, and carry with them the moulded brick, which is placed on the table N, which has been elevated by means of the compound cam R, moving the shaft K and the arm K', link l and upright L', and which, by the same means, is caused to descend till its upper surface is on a line with the upper surface of the discharging-belt Q, when the cam c, pressing against the bearing n of the follower N', drives the follower forward, which, in turn, pushes the moulded brick off from the table N, on to the discharge-belt Q, which, when done, the follower N' is released by the cam c ceasing to bear upon it, and is carried back to its original position by the spiral spring m. At the same instant the clutch on the bevel-wheel P' is engaged with the clutch a', and the pulley p' is revolved, which, in turn, causes the pulley in the standard C' to revolve and move the discharge-belt Q, which carries the moulded brick out of the frame B. The belt Q continues to move till the cam b' operates against the head of the shaft d', moves it back, and disengages the clutch on the bevel-wheel P', with the clutch a', when the pulleys and the belt cease to move. While the moulded brick has been thus-carried out of the frame, another has been moulded, and the table N has returned to its place, to receive it as before; and thus the process may be continued indefinitely. It is obvious that the die and the heads of the plungers may be heated by hot air, or in some other way, as well as by steam, though, for many reasons, I prefer steam, and that with some slight changes in the form of the die and the heads of the plungers, tile, pipe, mouldings, or other objects made of clay or similar substances, may be subjected to pressure by my machine, or moulded without pressure.

Having thus described my invention, what I claim, is—

1. The hopper R'', in combination with the plunger S, for feeding the machine, when constructed and arranged to operate substantially as herein described and set forth.
2. Providing the plungers H I and die-box J with hollow chambers, so that the brick or other materials that are being moulded may be surrounded on all sides with heated surfaces, substantially as shown and described.
3. The follower N', in combination with the vertically-moving table N, for delivering the brick on to the discharging carrier-belt Q, when constructed and arranged to operate substantially as herein described and set forth.
4. Imparting to the discharging carrier-belt Q an intermittent motion, by the means substantially as herein described.
5. The plungers H and I, provided with the projections G G' and F F', in combination with the cams d e and the cams a b c, for imparting to them a reciprocating longitudinal motion, when constructed and arranged to operate substantially as herein described.
6. The shaft O, provided with the spiral spring o', in combination with the lever p and hook q, when constructed and arranged to operate substantially as described.

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Witnesses:

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