GEORGE C. BOVEY. Improvement in Brick Machines.

No. 125,012. Patented March 26, 1872.

Fig. 8.

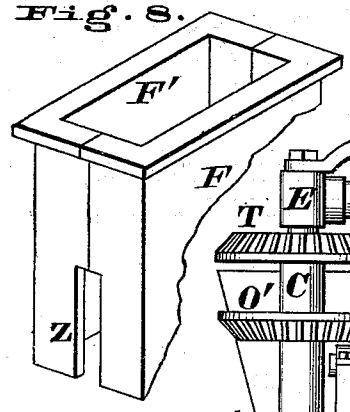


Fig. 1.

Fig. 2.

Fig. 4.

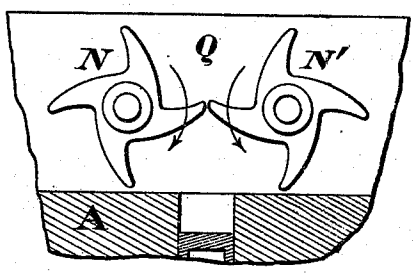


Fig. 5.

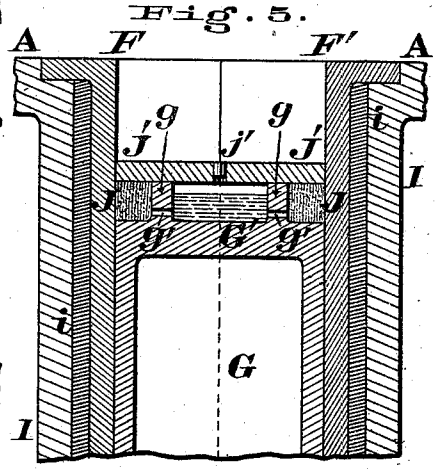


Fig. 6.

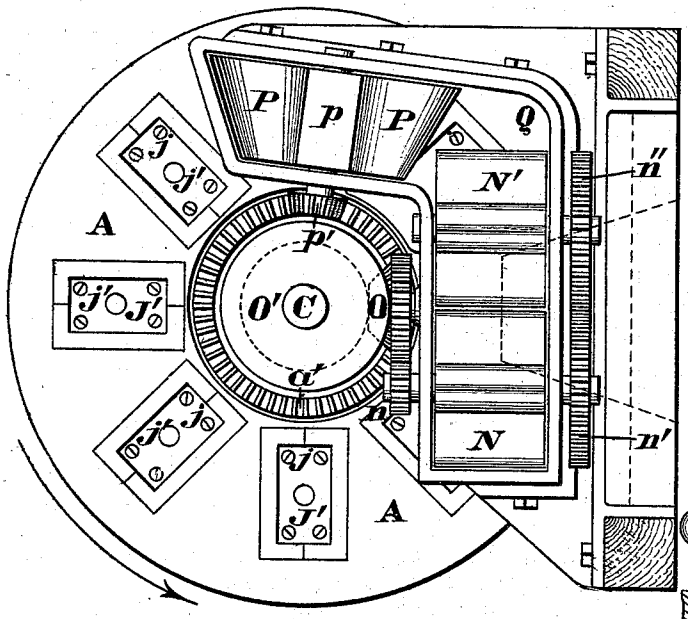


Fig. 3.

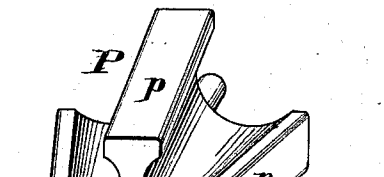
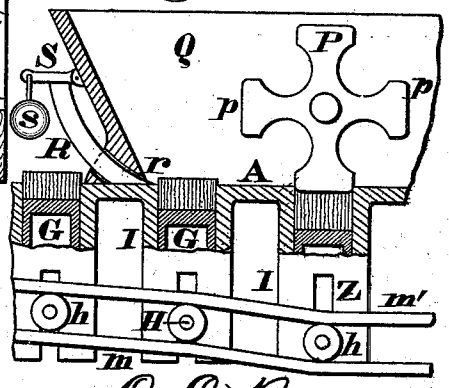
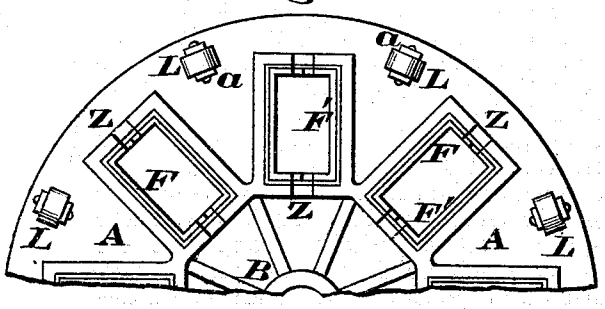


Fig. 7.





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UNITED STATES PATENT OFFICE.

GEORGE C. BOVEY, OF CINCINNATI, OHIO, ASSIGNOR TO GEORGE WEBER, OF SAME PLACE; SAID WEBER ASSIGNOR TO HIMSELF AND WILLIAM M. CORRY.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 125,012, dated March 26, 1872.

I, GEORGE C. BOVEY, of Cincinnati, Hamilton county, Ohio, have invented certain Improvements in Brick-Machines, of which the following is a specification:

This invention relates to that class of machines in which a proper shape is imparted to the tempered clay by means of vertically-acting plungers that traverse molds in a disk or table, which latter rotates in a horizontal plane; and the first part of my improvements consists in such an arrangement of parts as will effectually exclude the clay from the rollers, eccentrics, and other operating devices—the details of the arrangement being hereinafter fully described. The second part of my invention consists in constructing the molds proper of longitudinally-divided boxes, which are composed either of chilled iron or steel; and said boxes are fitted in the horizontally-rotating table in such a manner as to be readly removed whenever they become worn or broken. The third part of my improvements consists in providing the operative ends of the plungers with an oil-chamber, a compressible packing, and an adjustable face-plate, for a purpose which will be hereafter fully explained. The fourth part of my improvements consists of a peculiarly-shaped rotating wallower, which acts to compress the clay in the molds; and the fifth part of my improvements relates to an arrangement of knife, which cuts off the upper part of the compressed clay and causes the brick to leave the hopper of the machine in a perfectly smooth condition.

Figure 1 is an axial section of a brick-machine embodying my improvements. Fig. 2 is a plan of the same, with the nozzle of the pulverizer removed. Fig. 3 is a partial plan of the under side of the rotating table. Fig. 4 represents the two wallowers that force the clay into the molds. Fig. 5 is an enlarged transverse section of the upper portion of one of the molds and its accompanying plunger. Fig. 6 is a perspective view of the rotating compresser. Fig. 7 is a diagram, showing the action of the compresser on the clay in one of the molds, and also showing the cut-off knife; and Fig. 8 is a perspective view of a portion of one of the longitudinally-divided mold-boxes.

A represents a horizontally-rotating disk-table or bed-plate, having a hub, B, wherewith it is firmly attached to the vertical shaft C, whose lower end is journaled in a step, *d*, of spider D, while the upper end plays within a bearing, E. The molds proper are composed of two chilled iron or steel members, F F′, which, when secured within the table, serve as boxes for the vertically-reciprocating plungers G, that are operated by rollers *h*, which are journaled upon the ends of shafts H. The boxes F F′ are fitted within flanges I, that project downwardly from the table A, and said boxes are anchored therein by means of soft metal *i*, that is run in between the boxes and flanges, as shown in Fig. 5. The upper ends of plunger G are chambered out, as shown at G′, so as to form oil-reservoirs; and compressible packing J is interposed between the oil-chamber and the under sides of the mold-boxes F F′, as clearly shown in Fig. 5. Ribs *g* are placed between the oil-reservoirs and packing, so as to separate them, and also to support an adjustable face-plate, J′, which is secured to the plunger by screws *j*, that enter said ribs. These ribs are perforated as at *g′*, so as to allow the oil to flow from chamber *g′* into the packing J. An aperature, *j′*, in the face-plate, which is closed by a suitable plug, enables the filling of chamber G′. Securely bolted upon spider D, and concentric with shaft C, is an outer cylinder, K, whose inner periphery is provided with flanges *k k′*, that serve as eccentrics for operating the plungers of the machine. The upper edge of this cylinder forms a track for rollers, L, that are journaled in hangers *a*, that depend from the under side of table A. Bolted to spider D is an inner cylinder, M, which is also concentric with shaft C, and said cylinder is provided with outwardly-projecting flanges *m m′*, that are everywhere level with the ones *k k′*, and, like them, they also serve to operate the plungers. The plungers G, together with their boxes F F′, and inclosing flanges I, all rotate within the annular space between these two cylinders K and M. Clay is forced into the molds by the oppositely-rotating wallowers N N′, of which the shaft of the one N is provided with a pinion, *n*, that gears with a carrying-wheel, O, whose outer face has bevel-

teeth *o*, which mesh with a wheel, *o'*, that is secured to the shaft C. Uniform but opposite rotation is imparted from one wallower to the other by the even-geared wheels *n' n''*. P is a pyramidal-shaped compresser, having a number of flat faces, *p*, which are adapted to enter the molds and pack the clay contained therein, as shown in Fig. 7. The shaft of this device carries a bevel-pinion, *p'*, that engages with a circular rack, *a'*, of the table A. The wallowers N N' and compresser P are journaled within a hopper, Q, which may be attached to the frame of the machine in the represented or any other preferred manner. R is a curved knife, which is fitted in one end of the hopper in such a manner as to bear constantly upon the face of table A; and said knife is constructed so that its mid-length *r* will cut somewhat in advance of its sides, so as to sever the clay without destroying its proper shape. The upper edge of this knife bears against a lever, S, which is weighted at *s*, so as to maintain the knife in contact with the face of the table. The shaft C has attached near its upper end a bevel-wheel, T, that gears with another one, U, which latter is keyed to a shaft, V. This shaft V projects through the nozzle W of a pulverizer, which may be similar in construction and operation to that patented by me August 15, 1871. Y is a brace for securing the shaft C in a vertical position. The flanges *a*, boxes F F', and soft metal *i* are slotted at Z, so as to permit the play of shafts H.

The operation of the machine is as follows: The thoroughly-pulverized and comminuted clay is discharged from nozzle W directly into the hopper Q, when the wallowers N N' take hold of the clay and force it into the molds of the machine. The eccentrics *k k'* and *m m'* are arranged in such a manner that the plungers of all the molds shall be completely depressed whenever the rotation of table A has brought the molds under the wallowers N N', so as to insure the filling of the molds at this point. As the table rotates away from the wallowers in the direction indicated by the arrow in Fig. 2, the compresser P enters each of the molds in succession, and serves to impart an additional pressure to the clay contained therein. After the rotation of the table A has carried the molds away from under the compresser P the plungers are slightly elevated, in order that the knife R may shear off the upper portion of the clay, so as to leave it in a smooth and untorn condition when it passes beyond the hopper. When the molds pass beyond the hopper the plungers are entirely elevated, so as to expel the bricks from the molds, after which the bricks are removed from the table by hand. Before the molds again pass under the hopper the plungers are completely retracted, and the above-described operation is repeated at every revolution of the table A.

It will be seen that there are no perforations in the table through which clay can drop and choke up the internal operative devices; neither can the track upon which the rollers L run become clogged up, as the margin of said table extends beyond the track, as shown in Fig. 1. The longitudinally-divided mold-boxes constitute a valuable feature peculiar to my machine, as each of the members F F' can be cast without a core, and be placed upon a planer, and made perfectly true and uniform at the same time; and in case a portion of the box should become worn or broken it can be readily removed and a new one substituted for it with very little expense. The oil-chamber G' also adds to the efficiency and durability of the machine, as the constant flow of oil to the packing serves to lubricate the interior of the molds, and thus causes the plungers to work with the least amount of friction and without cutting out the interior of the boxes. By simply operating the screws *j* the packing may be compressed so as to bear against the interior of the molds with an increased pressure.

The above-described form of my invention is susceptible of various modifications—for example, a cheaper machine, on the same plan of construction, might have its molds fewer in number, and arranged tangentially instead of radially in the disk, which might be of smaller diameter than the one here shown. The weight *s* might be adjustable upon the lever S, or be replaced by a spring regulated by screw or otherwise.

Claims.

I claim as my invention—

1. The combination, as herein described, of the horizontally-rotating table, A B I, shaft C, bearings *d* E, plungers G, shafts H *h*, cylinders K *k k'* M *m m'*, rollers L, and wallowers N N', for the objects stated.

2. I claim the provision in the molds of a brick-machine of the longitudinally-divided boxes F F', when constructed of chilled iron or steel, for the purpose explained.

3. I claim the combination of plunger G, oil-chamber G', ribs *g g'*, compressible-packing J, and adjustable face-plate J' *j*, as and for the purpose described.

4. In combination with the horizontally-rotating mold-wheel or table A, I also claim the pyramidal-shaped compresser P *p*, as herein shown and described.

5. The described combination of weighted knife R *r* S *s*, plunger G, and eccentrics *k k' m m'*, when constructed and arranged as herein set forth.

In testimony of which invention I hereunto set my hand.

GEO. C. BOVEY.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.