

B.M. & E.R. Gard, 2, Sheets, Sheet 1.

Brick Machine.

No. 111,629.

Patented Feb. 7, 1871.

Fig. 1.

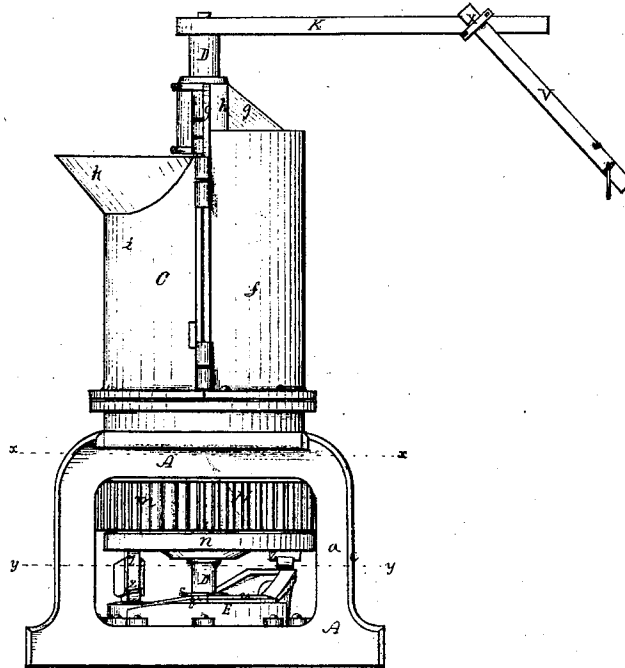
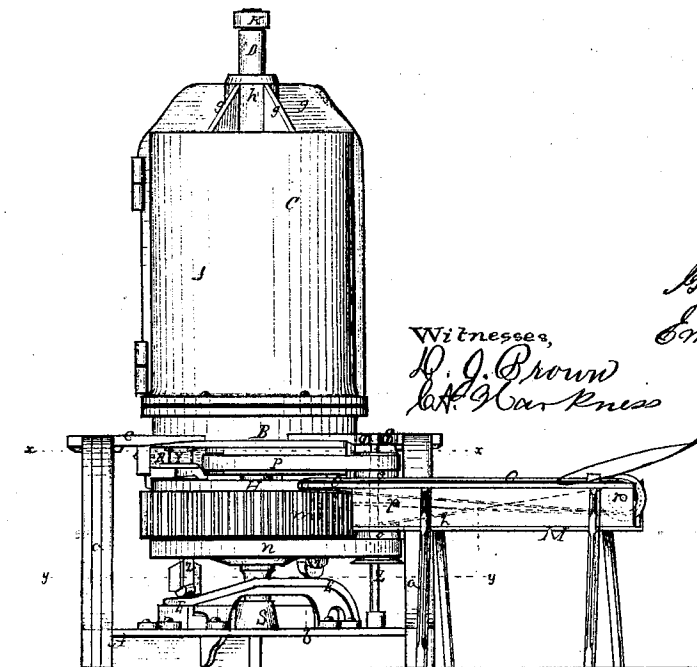


Fig. 2.



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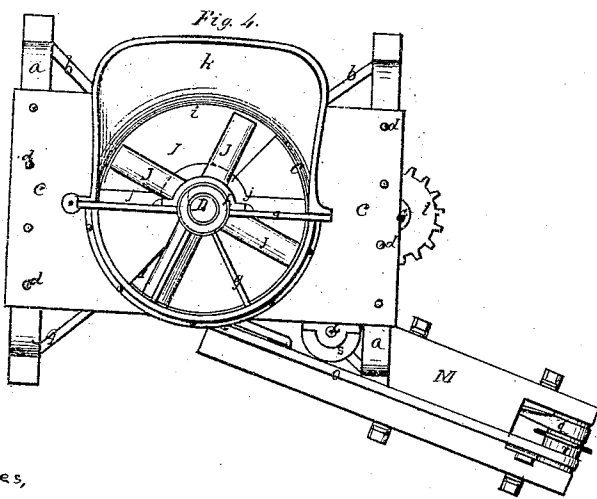
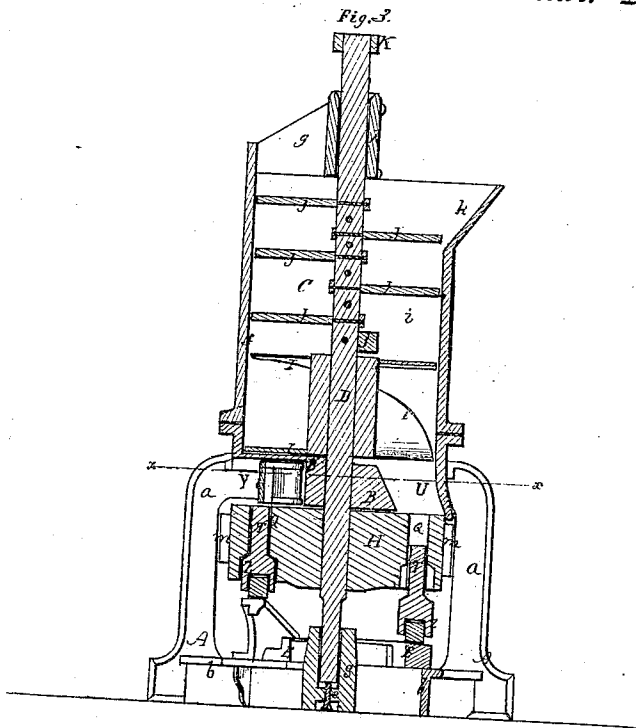
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3 Sheets, Sheet 2

Brick Machine.

No. 11,629.

Patented Feb. 7. 1871.



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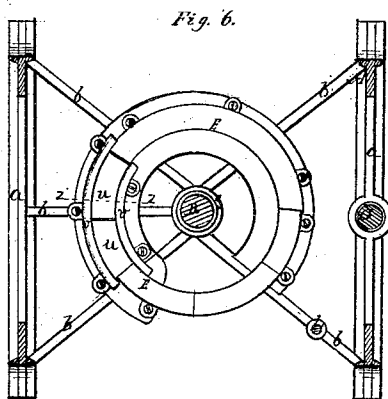
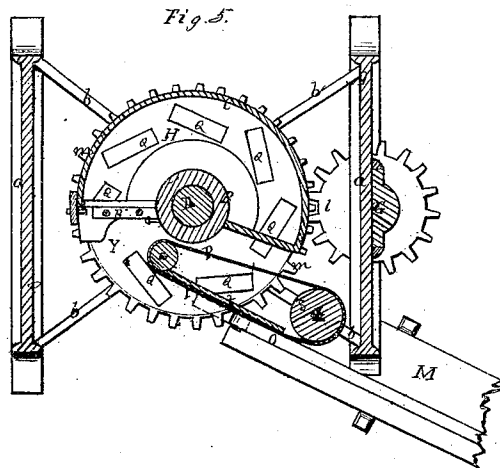
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B.M. & E.R. Gaud, ^{3, Sheets, Sheet 3,}

Brick Machine.

No. 111,629.

Patented Feb. 7, 1871.



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United States Patent Office.

BENJAMIN M. GARD, OF URBANA, OHIO, AND EMERY R. GARD, OF CHICAGO, ASSIGNORS
TO UNITED STATES BRICK-MACHINE COMPANY, OF CHICAGO, ILLINOIS.

Letters Patent No. 111,629, dated February 7, 1871.

IMPROVEMENT IN BRICK-MACHINES.

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

To all whom it may concern:

Be it known that we, BENJAMIN M. GARD, of Urbana, in the county of Champaign and State of Ohio, and EMERY R. GARD, of Chicago, in the county of Cook and State of Illinois, have invented Improvements in Machines for Molding and Pressing Bricks; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification—

Figure 1 being a side elevation of a brick-machine provided with our several improvements.

Figure 2, a rear elevation of the same.

Figure 3, a central vertical section thereof, in a plane cutting from front to rear.

Figure 4, a plan of the machine.

Figure 5, a horizontal section of the same, in a plane indicated by the line *x x*, figs. 1, 2, and 3.

Figure 6, a horizontal section thereof, in a plane indicated by the line *y y*, figs. 1 and 2.

Figure 7, a vertical section of a part, as indicated by the line *z z*, fig. 6.

Like letters designate corresponding parts in all of the figures.

The general construction and operation of the machine to which the present improvements are applied, as represented in the accompanying drawing, are the same as in the brick-machine for which Letters Patent of the United States were granted to us on the 22d day of February, 1870; but we do not intend to restrict the use of these improvements, so far as they may be applicable to other brick-machines, to a machine of that construction.

Thus the machine to which we have applied our improvements, as represented in the drawing, has its working parts, comprising its mold-wheel H, feeding-screw I, and mixing-arms J J, arranged and secured upon a single driving-shaft, D, and its principal stationary functional parts, comprising the tub-bottom B, tub C, and cam-track E, also arranged around the same shaft as compactly as practicable.

The first feature of our present improvements lies in the formation of the frame-work of the machine.

The frame proper A consists of side uprights *a a*, connected by a skeleton of brace-bars, *b b*, at the base, the whole being a single casting, of a form suitable for supporting the several parts of the machine.

As an additional part of the frame-work or support of the machine, the tub-bottom B has lateral flanches *c c* extending outward and resting on the tops of the side uprights *a a* of the frame A, being secured by set-screws *d d* so as to be adjustable thereon, to level the said bottom and to trim it to the other parts of the machine.

Also, upon this tub-bottom the tub C is mounted, one side or half, *f*, thereof being firmly bolted or oth-

erwise secured thereto; and the said fixed part is braced at the top with cross-bars *g g*, to support the upper bearing *h* of the driving-shaft D of the machine.

Thus the frame proper is of the simplest, cheapest, and most compact construction, not encumbering the upper part of the machine; and two functional parts of the machine are made to do the additional duty of support to other parts, effecting thereby further simplicity and economy of construction.

The tub C being thus required to assist in the support of the operative parts of the machine, provision is made for getting access to the inside thereof, for any purpose, by hinging the half side or part *i*, which is not attached to the tub-bottom below, to the fixed half or part *f* at one edge, as shown in fig. 1, so that it may swing away from the said fixed part, like a door.

The free edge is fastened to the fixed part by any suitable means.

This swinging part may have a brace-bar, *j*, figs. 3 and 4, extending across from edge to edge, with a curved portion in the middle, to fit partially around the driving-shaft, and assist in supporting or steadying the said shaft, as well as also to prevent the turning of the clay in the tub.

It also may have a flaring mouth or hopper, *k*, to afford ample room for the introduction of the clay or composition to be molded.

When the machine is driven by animal power, the same is applied through a sweep, K, directly to the driving-shaft D.

If, however, the machine is to be driven by steam or other stationary power, it is most convenient to communicate the motion through a shaft, G, mounted in one side of the frame, and by a cog-wheel, *l*, thereon, gearing into a set of cogs, *m*, on the periphery of the mold-wheel H.

For convenience in adapting the machine to all situations, it may be permanently provided with both of these means of deriving its motion.

Another important feature of our invention consists in the improved device for automatically removing the bricks from the mold-wheel successively, as fast as formed and pressed.

The movements for this purpose are all derived from the mold-wheel, which, in this function, performs the additional duty of a driving-pulley or wheel.

Thus the lower part of the mold-wheel periphery receives a driving-belt, *n*, which also passes around a pulley, *o*, on a transmitting-shaft, L, mounted in a suitable position in the frame.

On this transmitting shaft is another pulley, *p*, from which a belt, *q*, passes to a pulley on a horizontal shaft, *r*, in the outer end of the attached frame M, on which is mounted the carrier belt O that con-

veys the bricks from the mold-wheel, the inner return of the said carrier belt being around a small roller close to the upper edge of the periphery of the mold-wheel. In this manner the movements for conveying off the bricks from the mold-wheel are obtained.

But the essential part of this feature of our invention is the means employed for automatically transferring the bricks from the mold-wheel to the carrier-belt O.

To accomplish this we combine the actions of two motions, one of the revolution of the mold-wheel itself, and the other that of a vertical belt, P, which has a traverse movement over the mold-wheel in the open space beneath the raised side of the tub bottom B, in a diagonal direction, or oblique, between a radial and a tangential direction.

It passes round a pulley, s, on the transmitting-shaft L, from which it derives its motion, and at its inner turn around a friction-pulley, hung beneath the tub bottom.

In its outward traverse the belt passes alongside of a stationary plate or board, t, which prevents its yielding laterally, as the bricks are pressed against it.

The molds Q Q of the mold-wheel have two peculiarities for the purpose in view: first, they are located diagonally or obliquely both to radial and tangential directions of the mold-wheel, as shown clearly in fig. 5, the forward ends thereof, in respect to the motion of the mold-wheel, being nearest to the periphery of the same, so that as the molds are brought round under the traverse belt P, the bricks, then raised from the molds, but lying directly over them, will come laterally in contact and nearly parallel with the belt; second, the molds are arranged to form the bricks vertically edgewise therein, that is, with the thin sides or edges up and down, so that as they are raised out of the molds and are brought around against the traverse belt P, their broad sides will come in contact therewith and afford more frictional surface thereby; or they may come out flatwise.

The result of the combined motions of the mold-wheel and traverse belt, with this arrangement of parts, is to slide the bricks as they are brought successively to the belt, endwise outward, as indicated by dotted lines in fig. 5, upon the carrier-belt O, which is located in line with the bricks as they are thus moved, and flush with the upper surface of the mold-wheel.

The bricks thus conveyed in an edgewise position on the carrier-belt, are also more readily seized and lifted from the belt by the attendants.

The formation of the bricks in vertically-edgewise molds Q Q, also has an advantage irrespective of the

purpose of conveying the bricks automatically from the machine; for, by this formation, the thickness of the bricks is always uniform, which is always of the most importance, while the width only is subject to variation in pressing them in the molds, a matter of less consequence.

The cam-track E, on which the mold-followers travel, has one or two removable sections *u u*, resting in recesses, or between flanges *v v*, of the track, in the portion where the pressure is given to the molded bricks under the striking and pressing-plate R, so as to be replaceable when worn too much; and under one or each of these removable portions is an adjusting screw, *w*, arranged as shown in fig. 7, or in an equivalent manner, for adjusting the height thereof, to compensate for the wear of the track, and to adjust the amount of compression, or the thickness or width of the bricks, as desired. Only one end of the track section need be thus adjustable.

It being necessary either to adjust the tub-bottom B to the mold-wheel H, or the mold-wheel to the tub-bottom, in order that the former may turn closely by the lower surface of the latter, we effect this purpose by adjusting the height of the driving-shaft D, on which the mold-wheel is accurately secured.

To accomplish this adjustment a screw, *e*, is set in the bottom of the lower bearing S of the shaft, as shown in fig. 3, the shaft resting on the screw or upon an intermediate step or block.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the frame A, composed of the uprights *a a*, and connecting braces *b b*, with the tub-bottom B, having lateral flanches *c c*, in the manner and for the purpose herein specified.

2. The combination of the tub-bottom B and its lateral flanches *c c* with the attached half tub *f*, and its braced shaft-bearing *h*, substantially in the manner and for the purpose herein set forth.

3. The combination and arrangement of the diagonal or oblique brick-molds Q Q, the traverse belt P, and carrier-belt O, for automatically removing the bricks from the mold-wheel, substantially as herein specified.

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