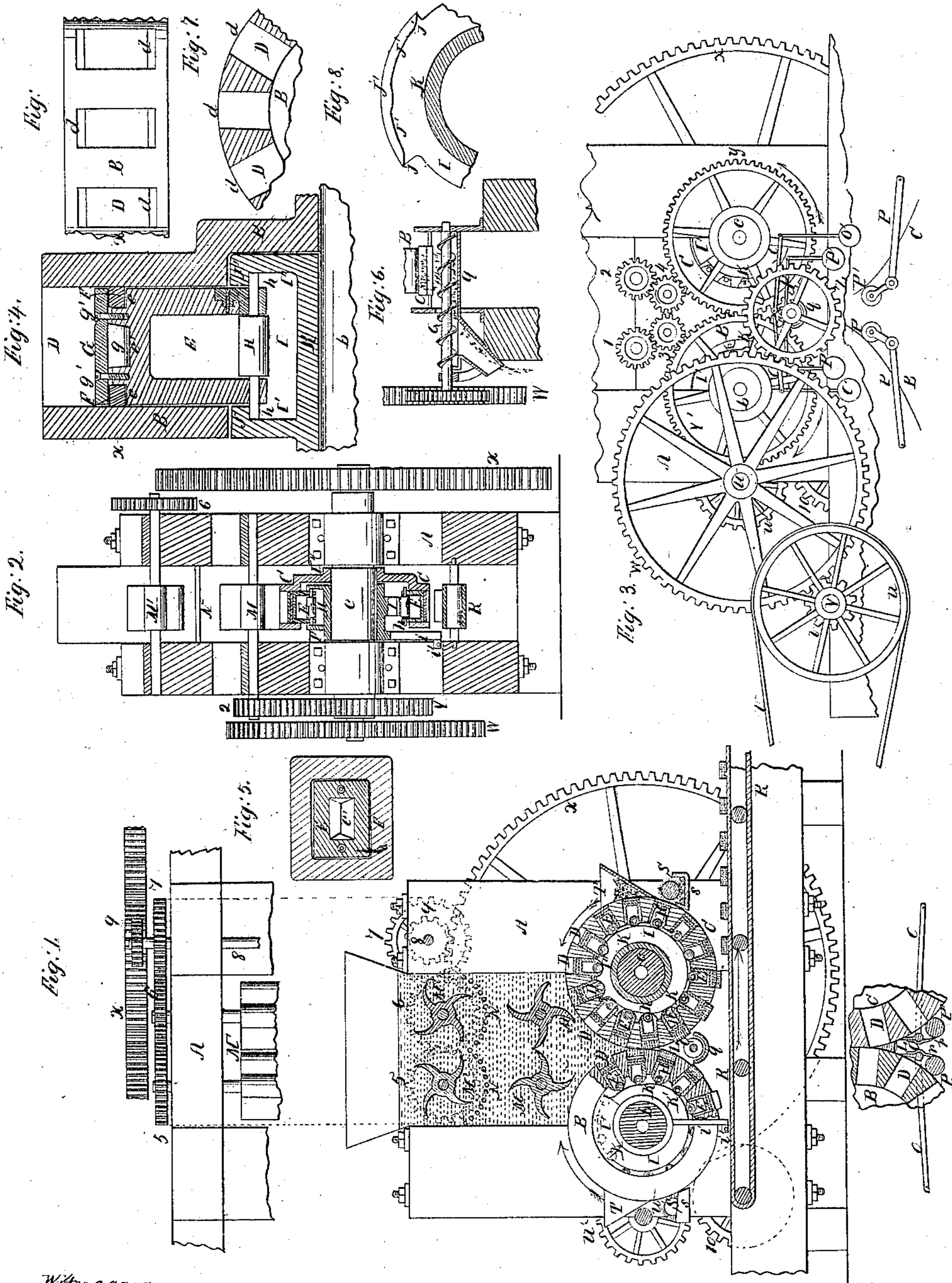


G. C. Bovey,

Brick Machine.

No. 83,244.

Patented Oct. 20, 1868.



Witnesses,

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Inventor,

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Per [Signature]*

United States Patent Office.

GEORGE C. BOVEY, OF CINCINNATI, OHIO.

Letters Patent No. 83,244, dated October 20, 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, GEORGE C. BOVEY, of Cincinnati, Hamilton county, and State of Ohio, have invented certain new and useful Improvements in Brick-Machines; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This invention relates to certain additional improvements on the brick-machine patented by me, February 19, 1867, whereby said machine is rendered more effective and reliable in its operation, and all danger of its being injured by the entrance of stones or other refractory matter into the mould-wheels is entirely removed.

In the accompanying drawings—

Figure 1 is a transverse section of a brick-machine embodying my improvements, with a plan of the gearing which operates the pulverizers shown above it;

Figure 2 is a longitudinal section of the machine;

Figure 3 is an end elevation of the machine, showing the operating-gears;

Figure 4 is a longitudinal section, on an enlarged scale, of one of the plungers and its accessories;

Figure 5 is a horizontal section of the same, taken at the line X-X of fig. 4;

Figure 6 shows the devices for cleaning the mould-wheels, and for conducting the debris away from the machine;

Figure 7 are diagrams, exhibiting the shoulders at the ends of the moulds; and

Figure 8 is an enlarged view of that portion of the fixed cam which serves to retract the plungers.

The frame A has journaled in it two heavy shafts, *b c*, to which are secured the mould-wheels B C, whose radial compartments or chambers, D, constitute the moulds proper, said chambers being traversed by the reciprocating hollow plungers E, that are constructed and operated in the following manner:

The outer end of each plunger is furnished with a rebate, *e*, and recess, *e'*, the former being for the attachment of the elastic packing F, and the latter for the reception of the boss *g*, which projects from the inner side of the face-plate G, the latter being connected to the plunger by screws *g'*.

This provision of the adjustable face-plate permits of the elastic packing being expanded by compressure, so as to completely fill up the interior of the mould, and thereby prevent the machine being cut out by the entrance of sand between the sides of said mould and the plunger.

The inner end of each plunger has journaled within it a roller, H, whose shaft, *h*, projects some distance beyond the side of the plunger, for a purpose which will be hereafter described.

Resting upon the shafts *b c* are fixed cams, I, that are prevented from rotating by means of the arms *i*, which are bolted, at *i'*, to the standards of the frame, and the upper portion of said cams is provided with two wings, I' I'', having inwardly-projecting flanges, J J', which serve to retract the plungers E whenever their shafts *h* are, by the rotation of the mould-wheels, brought in contact with said flanges, as clearly shown in fig. 4.

The ends of these flanges are chamfered, as shown at *j* in fig. 8, so as to insure the proper engagement of the shafts, even in case the mould-wheels should be turned in the wrong direction; and said flanges are provided, near their mid-lengths, with swells, *j'*, which can be reduced by filing, so as to regulate the retraction of the plungers with the utmost nicety.

Each of these cams has swells, *k*, and eccentric portions, *k'*, the former being for the compression of the clay, and the latter for the expelling of it, after compression, from the mould-wheels.

K are the hubs of the cams, which surround the shafts *b c*, and within which the latter revolve.

L is a dividing-tongue, which is secured immediately below the point where the peripheries of the mould-wheels meet, and the swells *k* of the cams are on a line with this tongue, in order that it may sustain the entire strain when the clay in the moulds is being subjected to the greatest pressure.

As rapidly as the moulds are brought within the hopper, they are filled by the rotating wallowers M, which are situated beneath an upper set of pulverizers, M'.

Placed a slight distance below the pulverizers M', and concentric therewith, is a screen, N, which is composed of stout bars, and this screen prevents the entrance of stones or other foreign substances into the mould-wheels.

These wallowers and pulverizers may be constructed either like the ones here represented, or like those shown in my previous patent; or, if preferred, they may consist simply of shafts having radial arms or blades.

O are scrapers, which are located below the dividing-tongue L; and these scrapers extend completely across the face of the mould-wheels, with which they are held in contact by the levers *o* and weights *o'*, which arrangement is clearly shown in figs. 3 and 6, and also in the diagrams under figs. 1 and 3.

In order to impart an additional pressure to the clay in the moulds, I provide two vibrating rollers, P P', which are journaled in the bell-cranks *p*.

These rollers are pressed against the clay by heavy weights, *p'*, that are attached to the ends of the bell-cranks.

Unlike the scrapers, O, these rollers do not extend

across the entire face of the wheels B and C, but only to the shoulders *d* of the moulds, so that said rollers can compress the clay in the moulds, and thereby impart a smooth, square, and even finish to the face of the brick.

Q is a conveyer, which conducts away from the machine the scrapings from the mould-wheels. This conveyer rotates within a trough, *q*.

Secured to the scrapers O are auxiliary ones, *r r'*, which keep the peripheries of the vibrating rollers P P' perfectly clean.

R is an endless carrier, which conducts the pressed brick to any part of the yard or kiln.

S are cylinders, whose peripheries are covered with sheep-skin having the hair on, or with thick woollen cloth; and these cylinders are caused to revolve by their contact with the mould-wheels, and, in so doing, lubricate the moulds with oil that is elevated by said cylinders from tank *s*.

If preferred, the tanks *s* may be filled with water instead of oil, in which case sand should be placed in the boxes T, it being understood, however, that the sand is never used with oil.

Motion is communicated to the various parts of my brick-machine in the following manner:

U is a belt, proceeding from the engine, which furnishes the requisite power, and it passes around a pulley, *u*, that is attached to a shaft, V, the latter being provided with a pinion, *v*, which gears with a wheel, W.

The wheel W is secured to one end of a shaft, *w*, whose opposite end carries a pinion, *w'*, which gears with the large spur-wheel X, that is attached to one end of the shaft *c* of mould-wheel C.

Secured to the other end of shaft *c* is a wheel, Y, which meshes into another one, Y', that is attached to the shaft *b* of mould-wheel B, and, as these two wheels Y Y' are of uniform diameters, it will be seen that the two mould-wheels revolve at a uniform speed, and in opposite directions, as indicated by the red arrows in figs. 1 and 3.

The conveyer Q is rotated by the pinion Z, which gears with the wheel W.

Motion is communicated from the wheels Y Y' to the wheels 1 and 2 of the wallowers M by means of gears 3 and 4.

The pulverizers M' have attached to their shafts wheels 5 and 6, which gear with one another, and which are propelled by the carrying-wheel 7 on shaft 8. The outer end of this shaft has a pinion, 9, which gears with the large spur-wheel X.

Gearing with the spur-wheel X is a pinion, 10, which operates the driving-roller of the endless carrier R.

The operation of my brick-machine will be readily understood by referring to fig. 1, and it will be seen that the clay is forced into the moulds D by the wallowers M as rapidly as the rotation of the wheels B

and C brings the open ends of said moulds within the hopper.

By referring to the drawing, it will be seen that the solid portion of one mould-wheel is brought in contact with the clay contained in the mould of the opposite wheel, thereby imparting additional pressure to the clay, which is effected just before the chambers D reach the dividing-tongue L.

When the chambers D are brought opposite the tongue L, the clay contained within them is subjected to a powerful pressure by means of the rollers H coming in contact with the swell *k* of the fixed cam I, which causes the plungers E to be forced out towards the periphery of the mould-wheel.

After passing the tongue L, any clay which may be adhering to the surface of the wheel is removed by the scraper O, as shown in fig. 6, and by the diagram under fig. 1.

The final pressure is imparted to the clay by the vibrating and weighted rollers P, and, as these are adapted to operate between the shoulders *d* at each end of the moulds, they reduce the surface of the clay to a perfectly smooth, level, and uniform condition.

The eccentric portion *k* of the cam is gradually forcing the plungers out from the time they pass the tongue L until they reach a position under the shaft of the mould-wheel, when said plungers are protruded to the periphery of the wheel, and the pressed clay is delivered upon the endless carrier R.

After the clay has been expelled from the mould-wheel, the plungers are maintained in their protruded condition by the concentric portion of the cam until the plungers are nearly vertically over the shaft of said wheel, when they are retracted by means of the projecting shafts *h* coming in contact with the flanges J J' of the wings I I' of the cam.

This continued protrusion of the plunger permits their being thoroughly lubricated by the revolving cylinders S, as previously described.

I claim herein as new and of my invention—

1. The arrangement of the pulverizers M and M' and screen N, in combination with the mould-wheels B C of a brick-machine, in the manner and for the purposes described.

2. The arrangement of the fixed cam I, having wings I I', and flanges J J', in combination with a series of plungers, E, having rollers H, and outwardly-projecting shafts *h*, for the object herein stated.

3. In combination with the mould-wheels, having radial compartments D, and shoulders *d*, the gravitating and weighted rollers P and bell-cranks *p*, substantially as herein set forth.

In testimony of which invention, I hereunto set my hand.

Witnesses:

GEO. C. BOVEY.

GEO. H. KNIGHT,
JAMES H. LAYMAN.