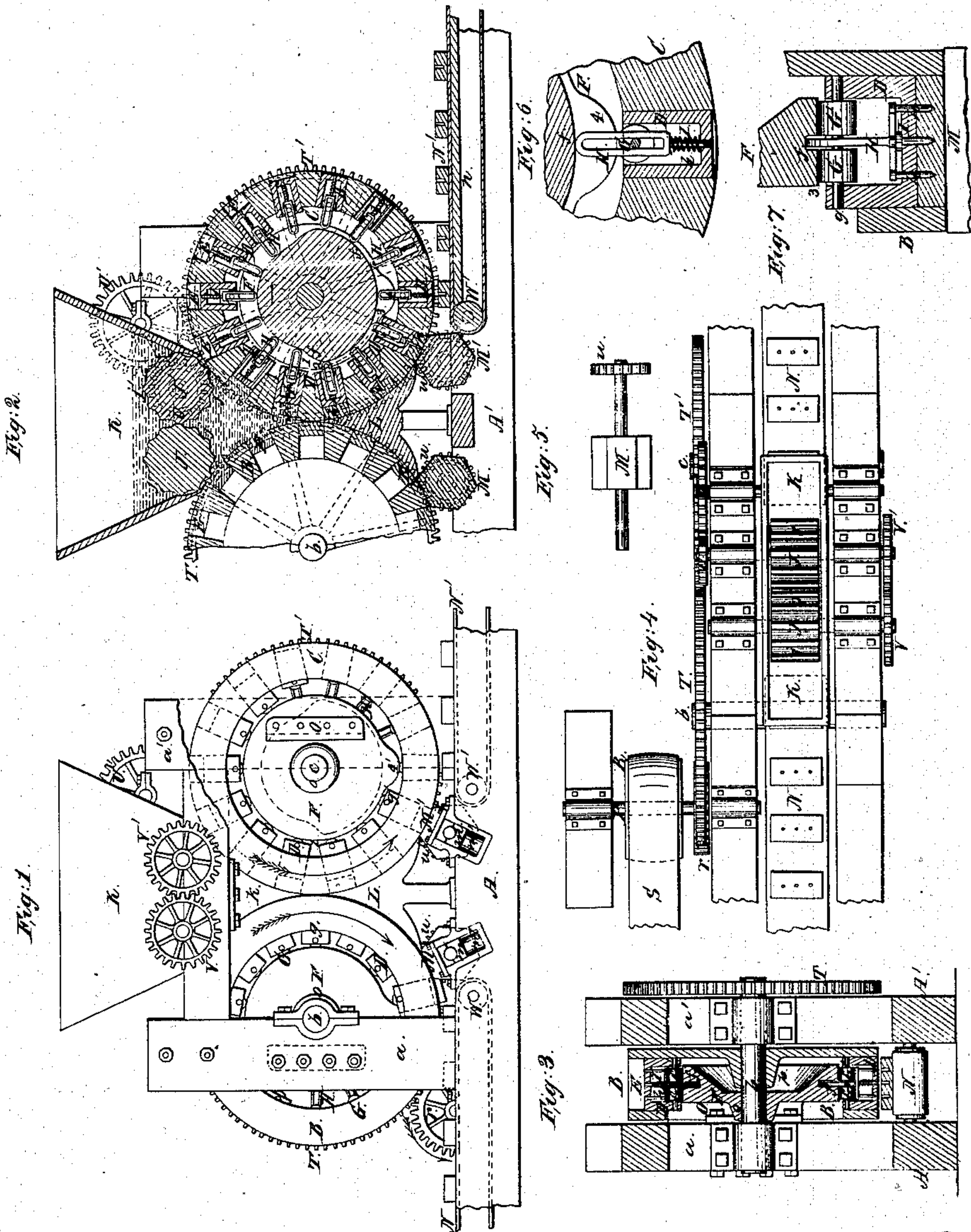


G. C. Bovey

Brick Machine.

N^o 62,249.

Patented Feb. 19, 1867.



Witnesses:

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United States Patent Office.

GEORGE C. BOVEY, OF CINCINNATI, OHIO.

Letters Patent No. 62,249, dated February 19, 1867.

IMPROVED BRICK MACHINE.

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

TO WHOM IT MAY CONCERN:

Be it known that I, GEORGE C. BOVEY, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Brick Machine; 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.

My invention is an improvement in machines which are employed for making bricks from dry clay or tempered clay, and the first part of my improvement consists in an arrangement of devices whereby the moulds are completely filled with a proper quantity of clay and without any liability of springing or straining the machine.

The second part of my improvement relates to the revolving mould-wheels, whose radial compartments or chambers constitute the moulds proper, and each is provided with a suitable plunger for first pressing and then expelling the bricks from the moulds, the plungers being operated by a fixed cam-plate attached to the frame of the machine and operating as shown inside of the mould-wheel, and with a loose journal running through the centre of it for the purpose of allowing the mould-wheel and plunger to revolve around it.

The third part of my improvement consists in a device for puncturing the bricks with a series of forks for a purpose that will hereafter be described.

My fourth improvement consists in attaching an external flat-faced pressure-wheel or roller for the purpose of squaring the faces of the bricks, operated by a spring and pinion, as shown in the drawings. By this operation the surplus clay is pressed into the centre of the mould, instead of being cut or scraped off, as in other machines.

My fifth improvement consists in a hollow plunger, with a fork operating in the centre.

My sixth improvement consists in a grooved cam for operating the plungers and their accompanying forks or punches. In the accompanying drawings—

Figure 1 is an end elevation of a brick machine embodying my improvements, a portion of the frame being broken away so as to exhibit one of the mould-wheels and its accompanying cam, &c.

Figure 2 is a transverse section, showing the machine in operation.

Figure 3 is a longitudinal section of the machine.

Figure 4 is a plan showing the method of applying power to the machine.

Figure 5 is a side elevation of one of the external flat-faced wheels, for the purpose of squaring the face of the brick.

Figure 6 is a transverse section of one of the plungers and its accompanying device for the purpose of perforating the clay after it is in the moulds, the puncturing device being in its retracted position; and

Figure 7 is a longitudinal section of the same, showing the position of the puncturing device when forced into the brick.

The two last figures are drawn upon an enlarged scale.

A A' represent the sills or foundation timbers of the machine, and rising vertically from these sills are stout posts *a a'*, either made of wood or iron, which afford journal bearings for the shafts *b c* of the mould-wheels B C. The mould-wheels are provided with a series of radial compartments or chambers, D, which constitute the moulds proper, and each of said chambers is traversed by a movable hollow plunger, E, which is operated at the proper moment by the fixed and grooved cam-plate F *f*. G G' are friction-rollers, whose shaft *g* is journaled in the sides of the hollow plunger E, near their open or inner ends, and the shaft *g* serves to confine to a rectilinear path the yoke H, whose outer end is provided with a number of punches, *h h h*, and those points are forced out through apertures *d* in the face of the plungers into the brick by the action of the grooved cam F *f*, and they are retracted by the spring I. The clay is pressed into the moulds or chambers of the mould-wheels by the following devices: J J' are two feed-rollers or wallowers, located in the hopper K, and each of these is provided with longitudinal corrugations *j j'*, and as the peripheries of these two rollers are in contact with each other the cavities or corrugations *j j'* serve to draw the clay down from the hopper and force it into the moulds. It will be seen that this arrangement insures the complete filling of the moulds, and in case the feed-rollers should draw too much clay towards the moulds the corrugations *j j'* will permit the return of the overplus back to the hopper K, and thus save the machine from any injurious strain. Bolted to

the sides of the frame of the machine are plates *k*, which fit between the mould-wheels B C, and those plates are provided with suitable stays to keep them in their places, thereby preventing the mud from running out. L is a division tongue, which retains the mud in the moulds until the bricks are completely formed all but facing, which is done by the flat-face rollers M M', and these rollers are journalled in boxes *m*, having springs *m'* for keeping the roller in contact with the mould-wheel, and yet allowing the facing-wheel or roller to operate on the face of the brick and square it while it is in the mould. N N' are endless carriers, which convey the newly-formed bricks away from the machine; and these carriers may be of any length, and if the bricks are not pressed dry when they come from the machine, said carrier could be made to pass the bricks through a hot furnace, on the way to the kiln, thereby drying them so that they could be put in the kiln as they come from the machine. The grooved cam-plate F *f* is provided with a hub, O, and the shafts *b* and *c* of the mould-wheels revolve within the hub, while a flange, O, projecting from the cam-plate F, and being bolted to one of the posts *a a'* prevents the rotation of said cam. One side of the cam is dished so as to admit of its revolving around the hub P of the mould-wheel, as is shown in fig. 3. Power is communicated from the engine to the machine in the following manner: P is the driving-shaft, having a pulley, R, and pinion, *r*, the pulley R being rotated by a belt, S, from the engine, whilst the pinion *r* gears with the spur-wheel T of the mould-wheel B, and said wheel T meshes into another spur-wheel, T', of corresponding size, which is attached to the shaft *c* of the other mould-wheel C. The pinion *r* may be omitted and a worm substituted for it, that is, if the pinion is not sufficient to run the machine when at work, and also the flat-faced roller can be changed, in constructing a machine, and placed in the tongue L. The pressure-rollers M M' have pinions *u u'*, which gear with the spur-wheels T T', and the corrugated feed-roller J' is provided with a pinion, U, which is rotated from the wheel T by the intermediate wheel U'. The feed-roller J' imparts a corresponding rotation to the other roller J by the even-gearred cog-wheels V V'. The drums W W' of the endless carriers N N' may be driven either by pinions geared with the spur-wheels T T' or else by a belt.

The operation of my machine is clearly exhibited in fig. 2, and it will be seen that the clay is forced into the moulds E as fast as the rotation of the mould-wheels B C brings the open ends of said moulds within the hopper K, and the clay is continually packed into the moulds by the rollers J J', and is pressed into bricks by the two mould-wheels pressing together, the solid metal of one pressing the clay in the other. As soon as the moulds arrive at the top of the dividing tongue L the swell 1 of the eccentric-groove *f* causes the puncturing points *h h* to protrude from the hollow plunger and enter the bottom of the brick, and as the mould-wheel revolves the eccentric portion of the cam F *f*, which extends from 2 to 3, imparts a gradual simultaneous advancement of the plunger D and points *h h*, thus compressing the bricks thoroughly, and to their proper thickness. After the moulds have passed the tongue or plate L, the hexagonal pressure-roller M imparts the square face to the brick. When the moulds have arrived directly under the shafts *b* or *c* of the wheel, the enlargement 4 of the cam forces the bricks from the moulds on to the endless carriers N N', and after passing this swell the points *h h' h''* are retracted by the spring I. The opening made in the under side of the bricks by the points *h h' h''* are for the purpose of allowing the steam and dampness to escape from the centre of the brick whilst drying or burning; and for the mortar to enter when the bricks are laid in the wall, thereby acting as dowels, and making the bricks more firm when the mortar is dry. In order to increase the capacity of the machine it may be double, that is, having two wheels on each shaft, thereby making double the number of bricks at each revolution of the mould-wheel; each wheel to be provided with its own fixed cam-plate and carrier.

I claim herein as new, and of my invention—

1. The provision in a brick machine of the two feeding-rollers J J', having longitudinal corrugations *j j'*, geared together to turn in the same direction as the respective mould-wheels, and so as not to mesh into each other, and operating substantially as shown.
2. I also claim the puncturing points *h h' h''*, operating within a hollow plunger and operated by a grooved stationary cam, in combination with the pressing devices, as shown and described.
3. I claim the solid parts of the mould-wheels pressing the bricks, as shown in the drawings, also the mould-wheel when arranged with stationary grooved cam, hollow plungers, grooved friction-rollers, with puncturer operating or sliding through it, with shaft of mould-wheel passing through the cam, all arranged and operating in the manner described.
4. I claim the dividing tongue L, when placed between the mould-wheels B and C, and when used for the purpose described.
5. In combination with the mould-wheel B I also claim the hexagonal or other square-faced pressure-roller, when made and used in the manner described and for the purposes set forth, or any other polygonal spring-roller, for the purpose of squaring the faces of the brick without scraping or cutting the clay or the face of the brick.
6. I also claim the combination of the mould-wheels B C, feed-rollers J J', dividing tongue L, pressure-rollers M M', and aprons N N', when made and used substantially as shown and described.

In testimony of which invention I hereunto set my hand.

Witnesses:

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