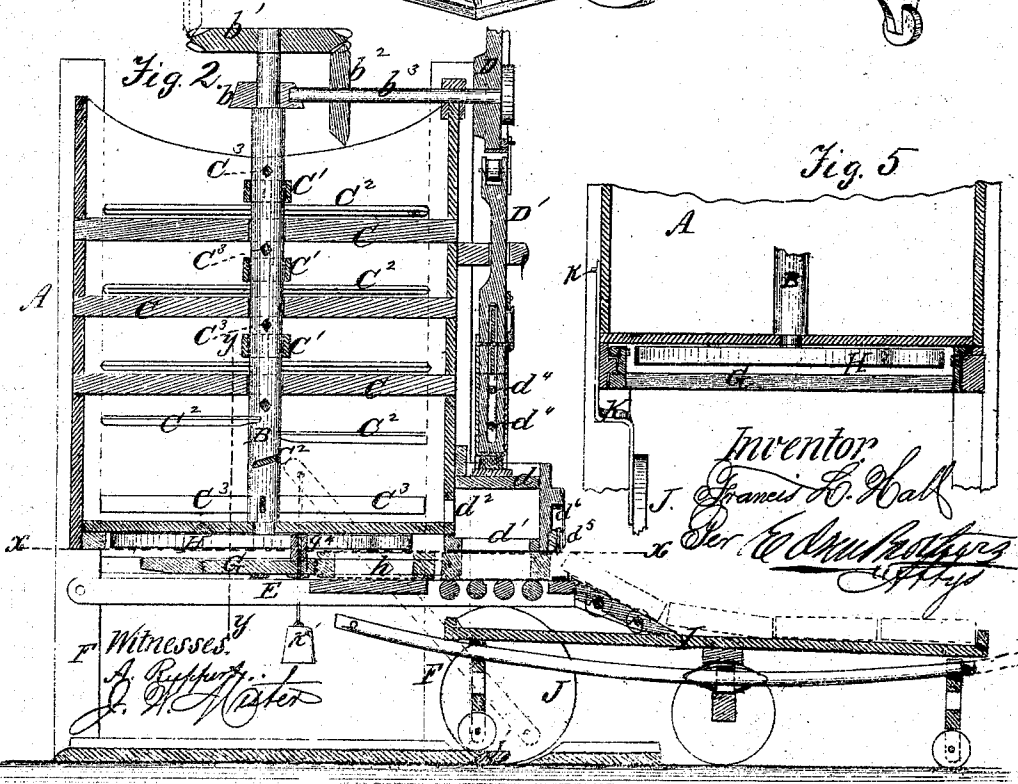
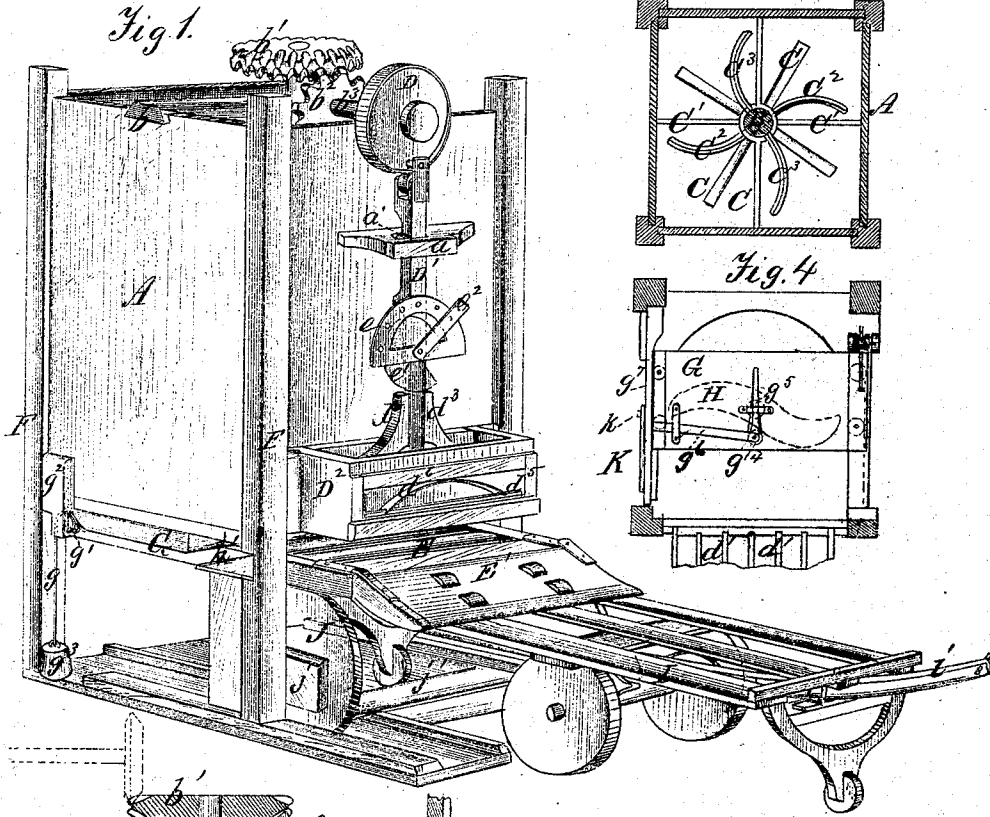


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PATENTED JUL 4 1871

Fig. 3



UNITED STATES PATENT OFFICE.

FRANCIS L. HALL, OF ONEIDA, NEW YORK.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. 116,587, dated July 4, 1871.

To all whom it may concern:

Be it known that I, FRANCIS L. HALL, of Oneida, in the county of Madison and State of New York, have invented a certain new and useful Improvement in Brick-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of the same, and in which—

Figure 1 represents a perspective view of my improved brick-machine and truck therefor. Fig. 2 is a vertical central section of the same and truck. Fig. 3 is a plan view of my machine with the driving mechanism removed. Fig. 4 is an inverted view thereof and a section through the dotted line *xx* of Fig. 2, and Fig. 5 is a section of a portion of the same through the dotted line *yy* of Fig. 2.

Similar letters of reference in the several figures refer to like parts.

This invention has reference to an improved brick-machine; and it consists of the means used in removing obstructions that are found to interfere with the proper working of the machine at that point where the slide or follower which pushes the bricks or clay from under the molding-chamber performs the work just mentioned; of the construction of the clay-knives and their combination and arrangement with stationary plates or bars arranged and secured within the receptacle for receiving the clay; of the means used for regulating the pressure of the follower or press of the molding-chamber upon the clay while undergoing formation to make the brick; all constructed, arranged, and operating substantially as hereinafter described and claimed.

To enable those skilled or unskilled in the art to which my invention appertains to make and use the same, I will proceed to describe it.

A in the annexed drawing refers to a receptacle or case for the reception of the clay, from which it is desired to make the bricks, and within which is placed an upright shaft, B, having its bearings in a bar, *b*, fastened to the upper ends of two of the sides of said receptacle, and in an aperture made in the bottom of the latter. To the upper extremity of this shaft is attached a double-beveled gear, *b*¹, for the double purpose of transmitting motion from any suitable driving-power to the shaft B, and to the pinion *b*² upon the shaft *b*³, from which motion is communicated

to an eccentric driving the shaft to which the follower or press of the molding-chamber is attached. C C¹ refer to a series of metallic bars or plates entering each of the four sides of the receptacle A, and constructed at their centers with ferrules or rings embracing the upright shaft B, through which the latter passes in such a manner as to permit of its being revolved. These bars are placed and secured alternately in different directions, as shown in Fig. 2, as are also the knives C² C³, in conjunction with which they operate, when the latter are put in motion, for the purpose of grinding or cutting the clay. C² C³ refer to the knives, which are constructed in an S-shape and made to pass through apertures in the shaft B, in the manner above stated, and fastened thereto at their centers, from which it will be seen that their blades, which are of opposite curvatures, as already stated, are brought in such a position with relation to the bars C C¹, when revolved, as to act upon the principle of the action of the blades of a pair of shears or scissors, whereby the clay being operated upon is thoroughly ground or pulverized. The knives C² C³ are so arranged with reference to the bars C C¹ as that, when they are revolved, each one of the same will be brought in contact alternately with the one above and the one below it, whereby an increased utility of the knives is obtained. D refers to an eccentric secured upon one end of the shaft *b*³, having the pinion *b*² above referred to, and supplied around its periphery with a right-angular flange which fits and revolves between frictional rollers fastened to the upper end of the shaft D¹, as shown in Figs. 1 and 2. D¹ refers to a shaft, which receives a vertically-sliding motion from the eccentric D, which it communicates to the follower or press *d* of the molding-chamber D², for the purpose of causing the said follower to push the clay through apertures or molding-openings *d*¹ *d*¹ in said chamber, when said clay has been pushed from the receptacle A through an aperture *a*², previous to which the follower *a* being elevated by the said eccentric and shaft for that purpose. The shaft D¹ passes through and is guided by means of a perforated block or guide, *a*, fastened to one side of the receptacle A, and supplied with a frictional roller, *a*¹, in contact with which the said shaft is brought in passing through the aperture of the block or guide above referred to. *e* refers to a metallic frame, secured, by means of screws or

otherwise, to the shaft D^1 , the curvilinear portion of which is supplied with a series of apertures. e^1 refers to an eccentric, hung within a slot made in the shaft D^1 upon an axle, to one end of which is attached a handle, e^2 , having an aperture. The devices $e^1 e^2$ constitute means for regulating the pressure of the follower d of the molding-chamber D^2 , as it will be seen that when the handle e^2 is thrown or turned in one or the other direction the eccentric e^1 will be brought in contact with bars secured to the follower d and depress the same, or latter, when elevated, or when depressed be relieved therefrom, whereby the said follower may be elevated at any desired point and there held by securing the handle e^2 to the frame e by passing a pin through the aperture in said handle and one of the apertures of the said frame. The raising and lowering of the follower d , it will be observed, brings it nearer or places it further from the clay or brick in the molding-chamber; consequently, as the shaft D^1 , to which the follower d is attached, is operated or raised and lowered, the said follower will be brought with greater or lesser force or pressure upon the clay. d refers to the follower above alluded to, which fits and slides vertically within the molding-chamber or receptacle, and which is fastened to the lower ends of two uprights or bars, $d^3 d^3$, against the upper ends of which rests the eccentric e^1 , the said uprights being connected together and held to the shaft D^1 by means of two bars or pins, $d^4 d^4$, placed a short distance apart and passing through an elongated slot made in the said shaft and forming a continuation of that within which the eccentric e^1 is placed. By means of the slot within which the pins $d^4 d^4$ fit the follower d is permitted to have a vertically-sliding motion, when such is required, in regulating its pressure upon the clay undergoing formation to make the brick. D^2 refers to the molding-chamber or receptacle, which is attached by suitable means to the receptacle A , and into which the clay, after having passed through the cutting operation in the said receptacle A , is thrust through the opening d^2 by the rectangular-shaped inclined knives or carriers $C^3 C^3$, (see Fig. 2,) and caused thereby to fall upon the bottom of said chamber or receptacle D^2 , which is supplied with a series of rectangular-shaped openings, $d^1 d^1$, through which the clay is pressed by the follower d , as above stated, into the shape of the brick, from whence it falls into the mold placed upon the platform, supplied with rollers for assisting in carrying it therefrom to the truck used for receiving and conveying it, after having been converted into bricks or brick-form, to the desired destination. d^5 refers to the "strike," a blade or bar with its lower edge beveled, for giving a smooth surface to the upper part of the brick or clay, which fits and has a slightly-vertical movement within a wedge-shaped aperture or slot made in a bar or support fastened to the lower front edge of the molding-receptacle D^2 , and operated upon by a spring, d^6 , which is held down thereon by means of a bar or projection attached to said receptacle, and against which the apex of the convex surface of said spring rests. The said strike smooths the brick or bricks as it or they pass from

under the chamber or receptacle D^2 . E refers to a platform, which is hinged or pivoted at the rear ends of its side or longitudinal bars to the rear legs $F F$ of the receptacle A , and having rollers for assisting the follower G in removing the clay or bricks in their molds from it. This platform is supplied with a leaf, E' , hinged thereto in such a manner as to rest in an inclined position, said leaf being supplied with rollers which, in connection with its inclination, furnish a ready and quick means for conveying the bricks in their molds from the said platform to the track I , to be hereinafter described. G refers to the follower, or a slide above referred to, which is supplied with grooved side pieces secured at right angles thereto, and which receive and slide on rails fastened to the lower side of the receptacle A . (See Fig. 5.) The side pieces of the said follower are also supplied with frictional rollers, as shown in the last-named figure. To the follower G is attached one end of a cord, g , which passes over a pulley, g^1 , having its bearings within an aperture made in an upright, g^2 , secured to the receptacle A , the opposite end of said cord being supplied with a weight, g^3 , which, after the said follower has been carried forward by the eccentric or cam upon the shaft B to the full extent of the cord g , returns the said follower to the point from whence it was taken by the said eccentric. The forward movement of the said slide or follower carries or pushes the mold h , inserted through the opening h' of the receptacle A , directly under the molding-chamber D^1 , where the said mold receives the brick or clay, and from whence said mold is conveyed, by the means above described, to a truck. H refers to an eccentric, made preferably of an **S**-shape, and secured to the lower extremity of the upright shaft B , the object of which being for the purpose of imparting a forward movement to the slide or follower G , which it does by revolving the shaft B , causing its convex surfaces to be brought in contact with a frictional roller, g^4 , with which the said follower is furnished. g^4 refers to a frictional roller, above referred to, which has its bearings upon a vertical axle or shaft secured to a bar, g^5 , made of spring metal, or of sufficient elasticity to act in the capacity of a spring, and placed and secured by suitable means within an aperture of a wedge or other suitable shape, whereby it may have lateral movement at that end which supports the said roller g^4 , the office of which will be described hereinafter. g^6 is a bar or lever which is attached at its inner end to the spring g^5 , and entering a recess made in the lower side of the slide or follower G , within which it is held by a metallic plate, the outer end of said lever being made to come in contact with a straight flat spring, g^7 , fastened at one end to a pendent bar or plate of the receptacle A , and to the said receptacle itself, its opposite or forward end being made to enter a recess made in one of the front legs $F F$, so as to permit of its having room in which to operate or have lateral movement when pressure is applied thereto through the lever g^6 , as more fully explained hereinafter. $J J$ refer to eccentrics or cams, which are pivoted to bars j fastened to the front legs of the receptacle A , and connected to

gether by means of a bar, g' . Upon these eccentrics rests the front end of the platform E, and by means of which the said end thereof may be depressed, and after which elevated to its original position, in the manner hereinafter described. K refers to a lever, which is attached at one end to one of the eccentrics J J, and supplied at its opposite end with an aperture, which, when said lever is elevated, receives a projection, k , fastened to one side of the receptacle A. This lever is also supplied with a weight, k' , attached thereto by a cord.

It will be remarked that, by way of illustrating or explaining the office of the devices herein described constituting the means for removing obstructions that are found to interfere with the proper working of the machine, the bricks, in passing from under the molding-chamber or receptacle D², are at times caught or held between it and the platform E by stones or other obstructions; in the event of which the operation of the machine has to be stopped until they are removed, or, if not stopped, the risk of seriously damaging the machine has to be run. The object of the above is to obviate these disadvantages, and the operation thereof is as follows: When the machine is in motion the eccentric H will strike the frictional roller g^4 of the follower G and carry said follower, with its mold h , forward to the bricks or clay having been precipitated from the molding-chamber D² down into said mold-plates upon the platform E, which, in case they or the said mold should be caught and held between the said chamber and platform, by the interference of stones or other obstructions, will be freed therefrom, as the said frictional roller will yield laterally by reason of the spring g^5 and push the lever g^6 against the spring g^7 , which will in turn throw the lever K off the projection k . The said lever, after having been relieved from the projection k , will, by means of its weight k' , be depressed, operating the eccentrics J J in such a manner as to cause that end of the pivoted platform E, upon which the

bricks in their mold rest, to be lowered, consequently allowing them to pass therefrom to their proper destination. I refers to a truck for conveying the bricks from the platform E of the machine, which consists of a slatted frame supported at its center upon an axle with a spring and wheels, and at its ends upon supports or bifurcated bars, which are supplied at their lower ends with small wheels or trucks. This truck is furnished with a handle or pole, i , which is held to the said truck by means of clips or staples, whereby it may be slipped back and forth so as to furnish a handle for either end of said truck for convenience of drawing the same.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The follower G, in combination with the frictional roller g^4 , lever g^6 , and spring g^5 , constructed and arranged to operate substantially as shown and described, and for the purpose set forth.

2. The lever K, weight k' , eccentrics J J, and hinged or pivoted platform E, combined, arranged, and operating substantially as and for the purpose set forth.

3. The combination of the follower G, frictional roller g^4 , spring g^5 , lever g^6 , spring g^7 , lever K, weight k' , eccentric J J, and hinged or pivoted platform E, all arranged to operate substantially as herein shown and described, and for the purpose set forth.

4. The eccentric e^1 , frame e , and handle e^2 , in combination with the shaft D¹ and follower d , constructed and arranged to operate substantially as shown, and for the purpose described.

In testimony that I claim the foregoing as my invention I have hereunto set my hand this 24th day of March, A. D. 1871, in presence of two subscribing witnesses.

FRANCIS L. HALL.

Witnesses:

J. E. FERRY,
J. D. TIBBITS.