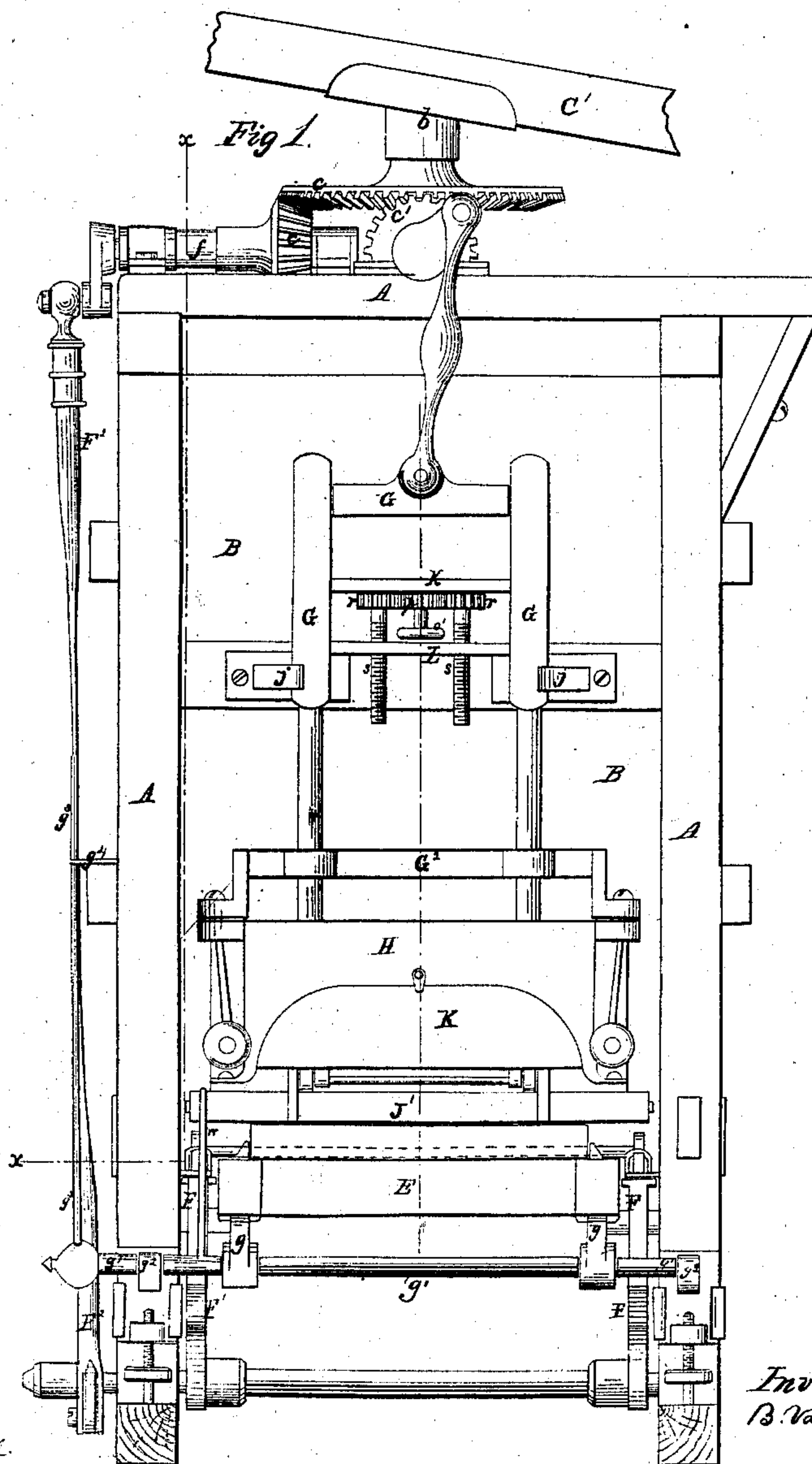


*B. Van Vranken,
Brick-Machine.*

Nº 74.956.

Patented Feb. 25. 1868.



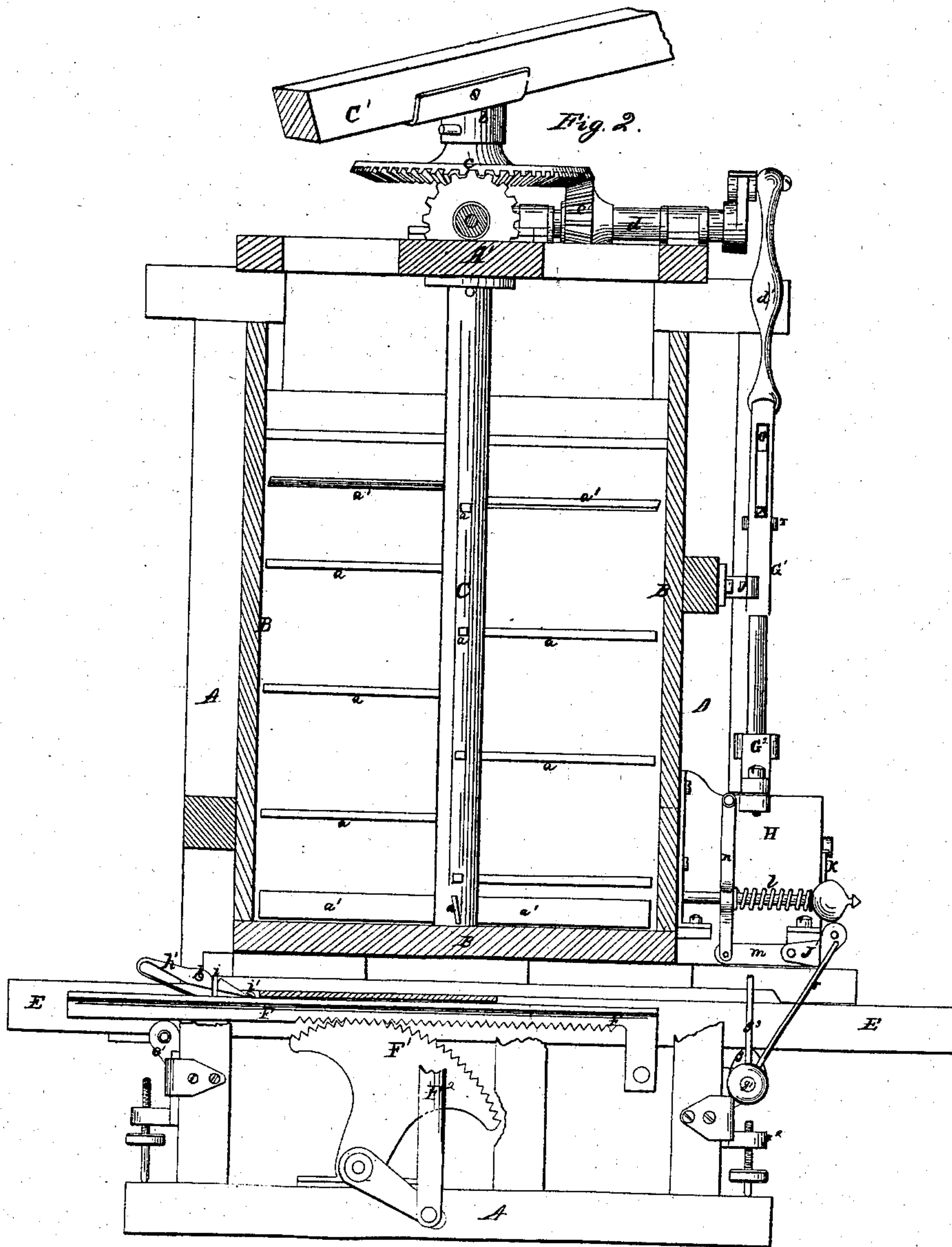
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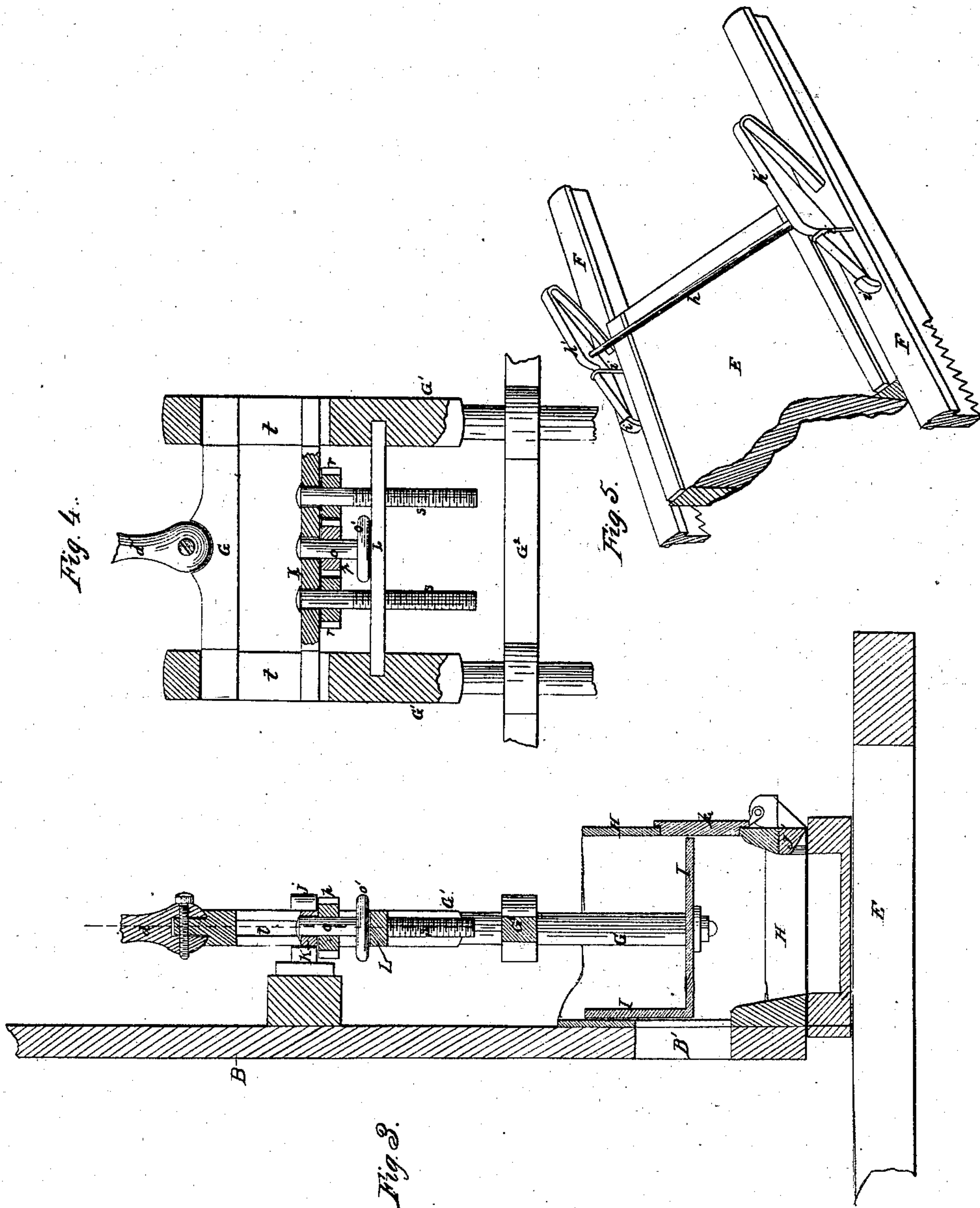
Witnesses.
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Brick-Machine.

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United States Patent Office.

BENJAMIN VAN VRANKEN, OF SCHENECTADY, NEW YORK.

Letters Patent No. 74,956, dated February 25, 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, BENJAMIN VAN VRANKEN, of Schenectady, in the county of Schenectady, and State of New York, have invented certain new and useful Improvements in Brick-Making Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, sheet 1, is an elevation of the front of the improved machine.

Figure 2 is a vertical section through the machine, taken in the planes indicated by red line *xx* in fig. 1.

Figure 3, sheet 2, is an enlarged sectional view of the press-box, the follower, and the adjusting-device for regulating the pressure of the follower.

Figure 4, sheet 2, is a front sectional view of the devices for adjusting the follower-bar.

Figure 5, sheet 2, is a perspective view of the rear portions of the mould-box, table and carriage, showing the device for moving the mould-boxes up to and from the work.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on that class of brick-making machinery which is designed for making what are denominated hard-pressed bricks, and which is constructed with the press-box, from which the clay is forced into the mould-boxes by a follower, on one side of the pug-mill or box in which the clay is pulverized and stirred. In this kind of machine, the empty mould-boxes are placed upon the rear end of a table, which is arranged beneath the pug-mill and press-box, and these mould-boxes are moved forward beneath the press-box, when they receive the clay, and are afterward moved forward and removed from the table, to give place for other boxes. Should a stone or other hard substance get into the press-box, which frequently happens, and no adequate means be provided for the release of the strain which would be caused by such substance, it would be very liable to seriously break or derange the machine.

In the Letters Patent granted to Barker and Martin, dated on the 1st day of May, 1866, is shown one mode of allowing of the escape of hard substances from the bottom of the press-box during the descent of the follower. This plan operates well under some circumstances, but it is also desirable to cause the table upon which the mould-boxes are supported to drop down, and thus prevent the machine from being strained, by allowing the follower to complete its downward stroke without obstruction. One part of my invention consists in effecting this object automatically, by a contrivance which will cause the front part of the table, together with the mould-box or boxes thereupon, to drop down, should the follower be obstructed in its descent, as above mentioned.

Another object of my invention is to provide for relieving the machinery from undue strain should an empty mould-box be improperly placed upon the table, by so constructing the follower, which moves the boxes beneath the press-box, that this follower will become detached from its reciprocating carrier, should it be subjected to extraordinary pressure, as will be hereinafter described.

Another object of my invention is to provide for expeditiously and correctly adjusting the follower of the press-box, for giving a greater or less pressure to the clay, by forcing a greater or less amount of clay into a given space, by the employment of an adjusting-device which will keep the movable bar, upon which the follower-head presses in its downward stroke, always parallel to the follower and the bottom of the press-box, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In order that my invention may be fully understood, I will describe the construction and operation of the entire machine, as represented in the accompanying drawings.

A represents a strong upright frame, which is adapted for containing and supporting the several parts employed in mixing the clay and producing the bricks. The upper portion of this frame is housed in, so as to form the clay-box or pug-mill, B, within which the clay, as it comes from the bed, is put, and after being finely pulverized and mixed, is forced into the press-box. A vertical shaft, C, is supported in the centre of the pug-mill B, and provided with a number of radial stirring and pulverizing-arms, *a a*, and also with blades *a' a'*, so arranged as to force the clay, which is put into the top of said mill, downward, and discharge it through an opening, B', fig. 3, into the press-box. The upper part of the shaft C is supported by a horizontal cross-beam,

A', of the frame A, in a suitable journal-box, and the lower end of said shaft is stepped in a suitable block upon the bottom of the pug-mill box. Upon the extreme upper end of the shaft C, a flanged collar or cap, b, is secured, to which is applied the sweep-arm C', by which the machine may be driven by animal-power. Below this cap b, but above the beam A', a bevel-wheel, c, is keyed to shaft C, the teeth of which engage with the teeth of a bevel-pinion, c', on a horizontal shaft, d, that has its bearings in journal-boxes upon the beam A'. The wheel c also engages with a pinion-spur wheel e, which is keyed to a shaft, f, upon beam A', that extends outward at right angles to the shaft d, as shown in figs. 1 and 2. The shaft d is provided with a crank on its outer end, and operates the follower of the press-box, as will be hereinafter explained. The shaft f also has a crank on its outer end, which operates the carriage that moves the mould-boxes up to and from their work, as will be hereinafter explained.

Beneath the pug-mill box B and press-box, is a table, E, which is of such length as to extend out some distance from the front and rear sides of the frame A, as shown in fig. 2. This table E is supported, near its rear end, by means of adjustable bearings, e', applied to frame A, which bearings receive pivots that project from the sides of the table, thus allowing the front end of this table to vibrate in a vertical plane. The front part of table E is supported upon cams or toes, g g, which are formed on a horizontal rock-shaft, g', that has its bearings in adjustable portions, g², upon frame A. The adjustable bearings, e' and g², which are applied to the front and rear posts of the frame A, are designed for adjusting the table E vertically, and setting it at any desired point; also for levelling said table. The cam-shaft g', with its lifting-cams, g, are designed for raising or depressing the front end of said table, and for this purpose a long arm, g³, is applied to one end of said shaft, which arm is held in an upright position, when the table E is level, by a friction-catch, g⁴, on frame A.

On both sides of the table E are guides, between which the mould-boxes are placed and guided to their work. The mould-boxes are moved beneath the press-box by means of a horizontal transverse rod, h, which is applied to two horizontal reciprocating rack-bars, F, which move forward and backward in suitable guides applied to the frame A. These bars are arranged on each side of the table E, while the rod or follower h extends across this table, so as to push the mould-boxes forward, at every forward stroke, a distance equal to the width of a mould-box. The teeth on the lower edges of the bars F F engage with toothed segments, F¹, which are keyed on a rock-shaft having its bearings upon the sills of frame A. On one end of the rock-shaft last mentioned is a crank-arm, which is connected to a similar arm on the shaft f, at the top of the machine, by means of a pitman-rod, F². The rod h is secured, at its extremities, to two spring-holders, h', the front ends of which are notched and tapered, while their rear ends are bent under, so as to form spring-supports. These holders are held by staples, i, and stops, i', on the rack-bars F, as clearly shown in figs. 2 and 5, so that, should an extraordinary pressure be brought against the rod h, in moving forward, the springs of said holders will be depressed, and the notches released from their staples. It very frequently happens that the mould-boxes are placed with one side on the table E, and one side on the rod h, in the hurry of returning the boxes to the table after being emptied. When this occurs the boxes will be caught between the bar or rod h and the lower rear edge of the box B, which will instantly disengage the rod and its holders from the bars F, and prevent derangement of the machine. The crank, which is on the forward end of the crank-shaft d, is connected by a pitman, d', to a cross-head, G, the ends of which play freely in vertical slots made in the follower-rods G¹ G¹, as shown in figs. 1, 3, and 4. The rods G¹ G¹ are guided by means of the fixed brackets j j, and also by means of a bridge, G², which latter is secured to the ends of the press-box H, as shown in fig. 1. These rods G¹ are parallel to each other, and have a right-angular plate, I, firmly secured upon their lower extremities, which plate forms the follower for pressing the clay out of the press-box H. The horizontal portion of the follower performs the pressing, while the vertical portion, which lies closely to the back-plate of the press-box, serves as a cut-off for preventing the escape of clay over the follower-plate, when this plate descends below the top of the opening B', as shown in fig. 3.

There is an opening through the front of the press-box, which is covered by a hinged door, k, by opening which, access can be had to the interior of this box beneath the follower. Below this door is a hinged section, J', which closes an opening provided for the escape of stones and other foreign substances found mixed with the clay. This section J' is held in place by means of springs, l, applied to the ends of the press-box, and acting upon the section J', through the medium of connecting-rods m and levers n, shown in fig. 2. Should a stone get beneath the follower, the descent of the latter will force the hinged section J' outward and downward, which latter will press upon a short arm, w, projecting from rock-shaft g', and release the long arm g³ from its friction-catch g⁴, thus causing the table E and mould-box, beneath the press-box, to drop, and allowing the obstruction to escape. Beneath the cross-head G, and parallel to it, is a cross-bar, K, the ends of which are fitted to move up and down in the slots t t in the rods G¹, and beneath this bar K is another one, L, which is parallel to said bar, and secured firmly to the rods G¹. In the middle of the length of the movable bar K is a vertical shaft, o, carrying a hand-wheel, o', on its lower end, and having its upper end applied to said bar, so as to allow the shaft to be turned freely. A pinion spur-wheel, p, is keyed on the short shaft o, which engages with pinions r r on screw-shafts s s, that are tapped through the lower fixed bar L, and allowed to turn loosely in the bar K. By turning the hand-wheel o', the bar K may be adjusted nearer to or set further from the cross-head G, according to the distance it is desired to force the follower into the press-box, and the amount of clay it is desired to force into the cells of the brick-moulds. This object has been accomplished in a previous patent, but in a very imperfect manner. Hitherto ratchets or dogs were employed, and there was no certainty of having the bar K parallel to the bottom of the follower. With the two adjusting-screws applied as described, the bar K must move in a plane parallel to the bottom of the follower.

I am aware of the patent granted to Barker and Martin, May 1, 1866, for a brick and peat-press, and therefore I do not claim a yielding gate, *per se*, for relieving the press from obstructions, but having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The spring-catch g^4 , rod g^3 , and rock-shaft g^1 , for holding up one end of table E, in combination with the arm w and press-box section J' , arranged so as to operate substantially as described.
2. Depressing the mould-box table E, by an outward pressure of a hinged section, J' , or its equivalent, applied to the press-box substantially as described.
3. The application of a self-releasing follower to the mould-box table E, substantially as and for the purposes described.
4. Providing for a parallel adjustment of the bar K, by means of screws and pinion-spur wheels, substantially as described.

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