H. J. Ferguson,

Brick Machine.

No. 57,628. Patented Aug. 28, 1866.

Fig. 3.

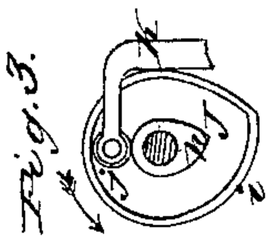


Fig. 5.

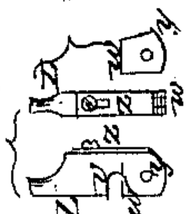


Fig. 4.

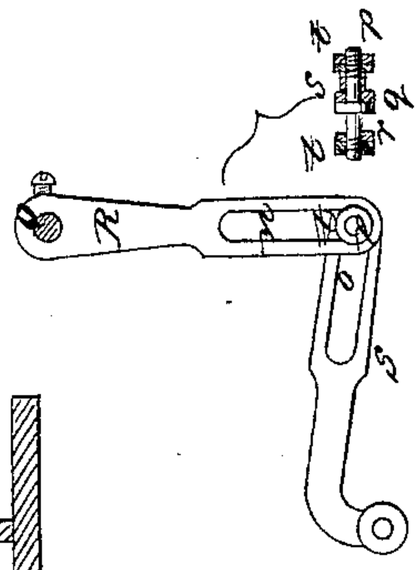


Fig. 2.

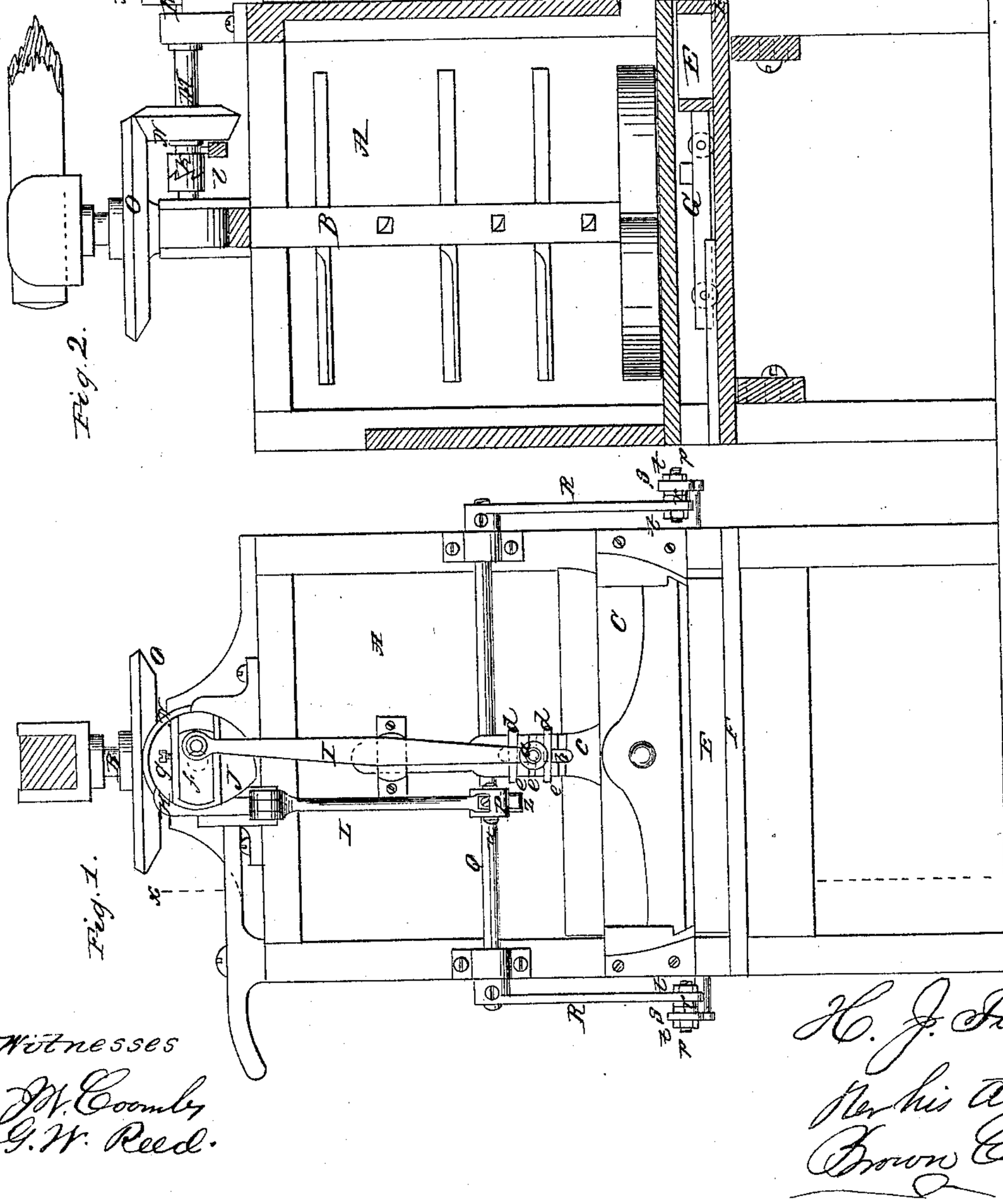
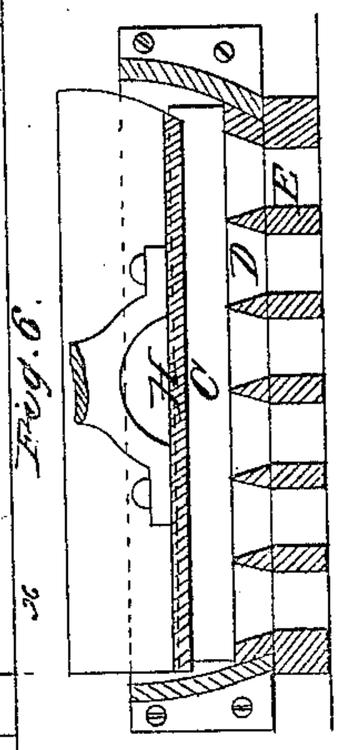


Fig. 1.

Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY J. FERGUSON, OF NEW YORK, ASSIGNOR TO SELAH REEVE, OF BROOKLYN, N. Y.

IMPROVED BRICK-MACHINE.

Specification forming part of Letters Patent No. **57,628**, dated August 28, 1866.

To all whom it may concern:

Be it known that I, HENRY J. FERGUSON, of the city, county, and State of New York, have invented certain new and useful Improvements in Brick-Making Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a front elevation of a brick-machine constructed according to my improvement; Fig. 2, a vertical section thereof, taken mainly through the line *x x* in Fig. 1; Fig. 3, a rear view of certain mechanism for operating the pitmen that give motion to the plunger and mold-pusher; Fig. 4, a side view of the slotted arms that operate the pusher, also showing in cross-section, the means used for connecting said arms; Fig. 5, views of the one end of the pitman that actuates the pusher and details connected with said end detached; Fig. 6 is a vertical longitudinal section through the press-box, with parts pertaining thereto.

Like letters refer to like parts in all the figures.

In this machine, as in many others for making brick, there are certain features or principles of action that are so common and well known that it is useless to describe them—such as, for instance, knives attached to a vertical rotating shaft for tempering the clay within a box, and curved arms for delivering it into a press-box in which works a plunger that forces the clay through a grating into molds beneath, fed to their place by a pusher.

About these things, of themselves, there is nothing claimed as new in this invention, nor yet in the mere provision and adjustability of certain details connected with these parts for regulating the action of the machine and protecting it against breakage in case of excessive strain or obstruction. But what this invention consists in is, first, a novel combination, with the plunger and pusher, through suitable intermediate devices, of a disk on the working-shaft, so grooved as to form inner and outer cam-surfaces, acting in concert with a slide, and serving to operate both the plunger and pusher; and my invention also consists in certain devices for securing a double adjustment of the arms which connect the pusher with the rock-shaft that operates it, which consist of a novel arrangement of pins, nuts, and fast and loose collars, in connection with slots in both arms; also, in a combination of adjustable keys at one end and a slide at the other of the plunger-pitman; likewise in an adjustable spring hold and catch arrangement applied to the end of the pitman that operates the pusher to produce an automatic stoppage of the mold-feed when an obstruction or excessive strain occurs.

To enable others skilled in constructing and working brick-machines to make and use my invention, I will now proceed to describe it with reference to the accompanying drawings.

A is the box, in which the clay is tempered by the action of rotating knives on a vertical main driving-shaft, B, that may receive its motion in any suitable manner, said shaft being also provided at its bottom with curved arms that force the tempered clay through a slot in the box into the press chamber or box C. This press-box is provided with the usual grating D at its bottom, the spaces in which correspond to the molds E beneath, that are placed by hand or otherwise on a table, F, in front of a pusher, G, to receive, when fed up by the pusher, the clay pressed through the grating, the full molds being afterward replaced by an empty set to keep up a continuity of action.

The plunger H and its grate, which establish or shut off communication between the press and tempering boxes and presses the clay through the grating into the molds, is operated by means of a pitman, I, that is attached in an adjustable manner to the plunger and rotating driving-disk J. This adjustability serves to regulate the stroke of the plunger to suit different conditions and natures of the clay, also different thicknesses of bricks, and is effected as follows: The lower end of said pitman has its joint or joint-pin *a* made to fit a vertical slot, *b*, in a standard, *c*, secured to the plunger, and is held at its required position therein with, if desired, requisite play to insure a slight pause at the end of the downstroke by keys *d*, passing through grooves *e* in the standard. These grooves are so arranged as that the keys may be taken

out of one set of grooves and, after the plunger has been adjusted higher or lower, driven through another set to hold the joint-pin to its place in the standard. But as it sometimes is necessary, both to meet the adjustment just referred to and independently of it, to lengthen or shorten the stroke of the plunger, the upper end of the pitman I is secured to the rotating disk J by means of a radial slide, *f*, held, when adjusted, by a set-screw, *g*. The driving-disk J not only carries the adjusting-slide *f*, but is otherwise peculiarly constructed by the arrangement on its rear face of a center cam, *h*, and outer eccentric or cam-shaped ring *i*, between which lies a roller, *j*, attached to a vertical slide, K, that is pivoted to the pitman L, which gives motion to the pusher G, so that said disk, when rotated by the horizontal shaft M, to which it is secured, and operated by means of a bevel pinion, N, meshing into a wheel, O, on the driving-shaft B, not only serves to operate the adjustable plunger H but also the pusher G.

A clutch, *k*, and lever *l* answers to throw in and out of gear at pleasure the pinion N with the wheel O, for the purpose of stopping and starting at pleasure the pressing and molding devices.

The pitman L thus reciprocated at frequently-recurring intervals by the action of the cam *h* and eccentric ring *i* on the roller *j*, is made, by its connection at its lower end with a slotted arm, P, to rock a shaft, Q, that has secured to it at either end levers R. These levers have slots *n* in or toward their lower ends, where they are attached in an adjustable manner to horizontal levers S through slots *o*, the back ends of the latter levers S being pivoted to a cross-bar on the pusher G. This adjustable connection of the vertical and horizontal levers R and S is of a character that permits of it forming a swivel or joint to both levers, and at the same time a tie to hold them to their relative sets or adjustments, both vertically and horizontally, by means of (see Fig. 5) a joint-pin, *p*, passing through the slots *n o*, and provided with fast and loose collars *q r*, collared loose boss *s*, and tightening-nut *t*. In this way the levers R S are not only pivoted together for independent and joint action, but are capable of being adjusted, the vertical levers R more or less outward, and the horizontal levers S upward or downward, to regulate the action of the pusher and throw of the mold-box.

To free the molds from action when a stone or other obstruction is forced in with the clay, or otherwise obviate breakage by undue strain, the lower end of the pitman L has its joint-pin *u* passed through a slot in the arm P and through a notch, *v*, in the pitman, open at the rear, and said pin made to lie on or over a hold-fast or catch, *w*, pivoted at *y*, and held in front by a spring or springs, *z*, which spring or springs are adjustable up or down the pitman to regulate their pressure on the catch *w*. By this means, if any obstruction or undue strain occurs in the rise of the pitman L, when the pusher G comes forward to throw out the molds or mold-box, the strain on the back end of the catch *w* will cause the latter to tilt and force out the spring *z*, and so release the pitman, which will rise free from gear with the joint-pin *u* and arm P.

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

1. The combination of the rotating disk J, having a center cam, *h*, and outer eccentric or cam-shaped ring *i*, with the pitman I to the plunger H, and slide K to the pitman L, for operating the plunger and pusher, substantially as described.

2. The combination of the disk J, with its radial slide *f*, pitman I, and plunger H, adjustably connected, as described, through a slot in the standard *c*, by keys *d* fitting in key-ways or grooves *e*, as herein set forth.

3. The slotted levers R S, pivoted together by joint-pins *p*, fast and loose collars *q r*, bosses *s*, and lock-nuts *t*, substantially as specified.

4. The combination of the pitman L with the arm P on the rock-shaft Q, geared together by a joint-pin, *u*, arranged to fit in a notch at the back of the pitman, and held in gear therewith by a catch, *w*, and spring *z*, essentially as and for the purpose or purposes herein set forth.

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Witnesses:

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