(No Model.) 2 Sheets—Sheet 1.

# G. MARTIN.

## BRICK MACHINE.

No. 327,569. Patented Oct. 6, 1885.

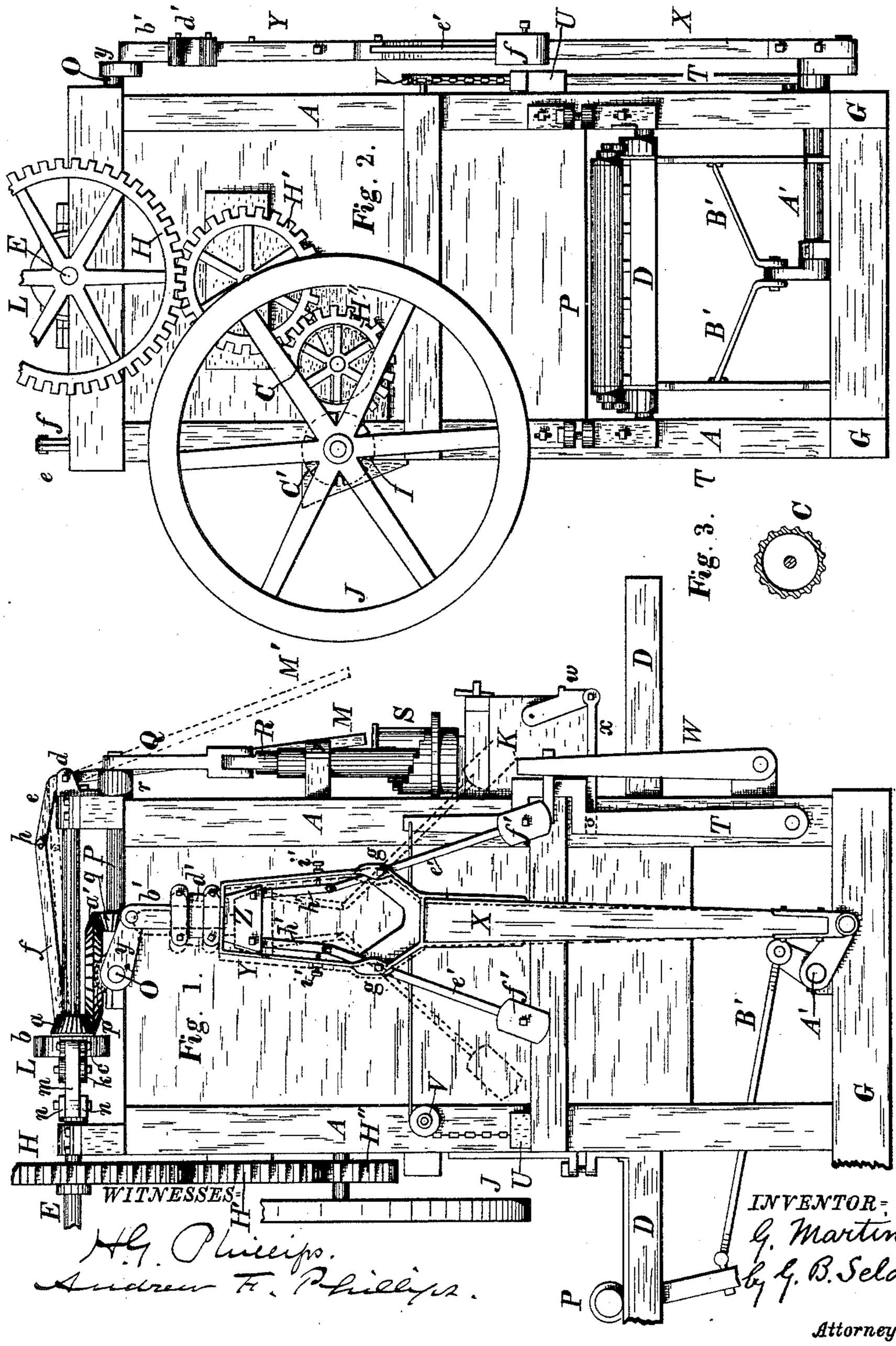


Fig. 1.

Fig. 2.

Fig. 3.

(No Model.) 2 Sheets—Sheet 2.

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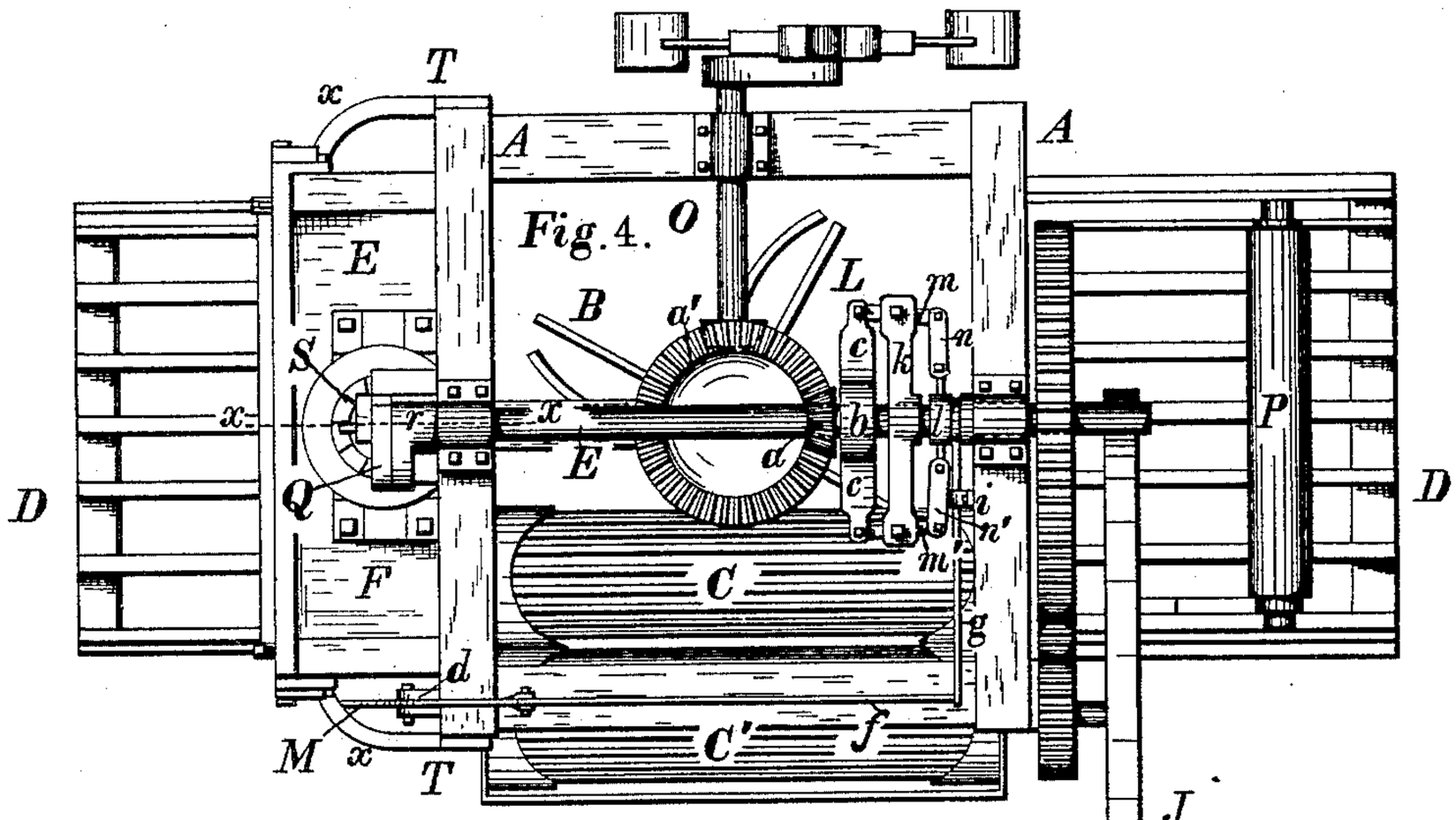



Fig. 4.

Fig. 5.

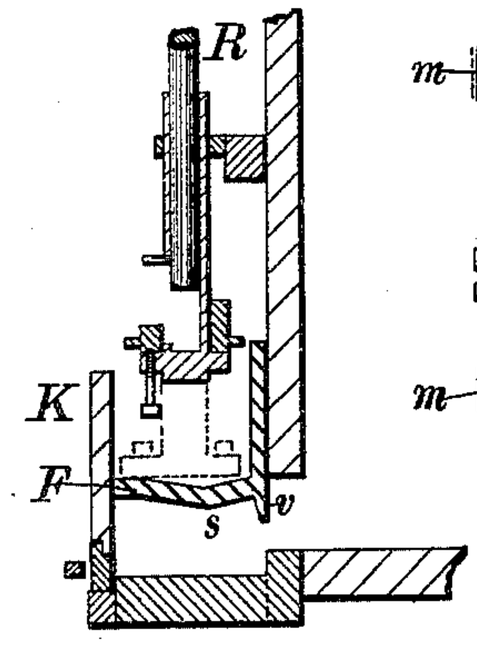



Fig. 6.

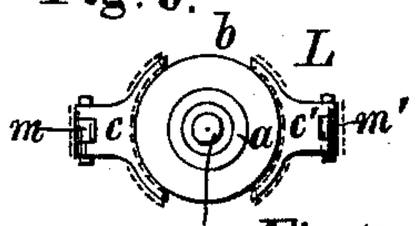



Fig. 7.

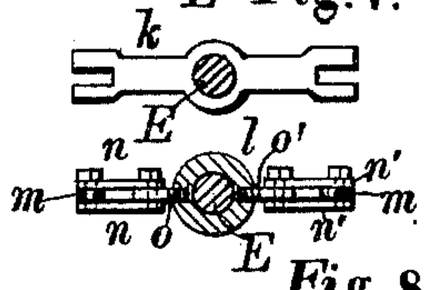
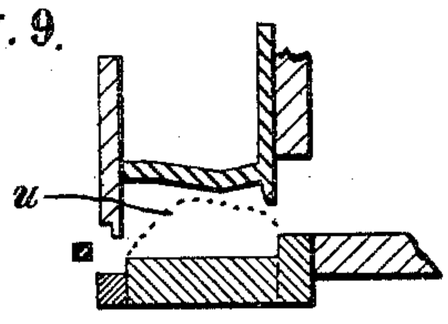



Fig. 8.

Fig. 9.




WITNESSES

H. G. Phillips.

Andrew F. Phillips.

INVENTOR

Gaylord Martin,

by Geo. B. Selden,

Attorney

# UNITED STATES PATENT OFFICE.

GAYLORD MARTIN, OF MILWAUKEE, WISCONSIN.

## BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 327,569, dated October 6, 1885.

Application filed December 6, 1884. Serial No. 149,669. (No model.)

*To all whom it may concern:*

Be it known that I, GAYLORD MARTIN, of Milwaukee, Wisconsin, have invented certain Improvements in Brick-Machines, of which the following is a specification, reference being had to the accompanying drawings.

My present invention relates to certain improvements on the brick-machine for which Letters Patent of the United States were issued November 20, 1883, No. 288,649, which improvements are fully described in the following specification, and the novel features thereof specified in the annexed claims.

My improvements in brick-machines are illustrated in the accompanying drawings, in which Figure 1 is a side elevation. Fig. 2 is a rear elevation. Fig. 3 is a transverse section through one of the crushing-rollers. Fig. 4 is a plan view. Fig. 5 is a vertical section on the line *x x*, Fig. 4. Fig. 6 is an end view of the friction-clutch. Fig. 7 is a side view of the driving-arm. Fig. 8 represents the sliding collar and toggle-links. Fig. 9 is a vertical section through the press-box, showing the position occupied by the clay therein previous to the descent of the plunger.

In the accompanying drawings, representing my present improvements in brick-machines, A is frame of the machine. B is the pug-mill; C C′, the crushing-rollers; D, the table on which the brick-molds are placed; E, the main driving-shaft; F, the reciprocating plunger, by which the clay is forced into the molds.

The machine rests on the sills G G, from which arise the upright posts or standards A A, connected together by suitable cross-braces.

Power is applied to the machine by a pulley on the shaft E, from which the pug-mill is driven by the bevel-gears *a a′*. The pug-mill is supported by a vertical shaft, which revolves in journals sustained by suitable cross-bars within the casing of the machine.

The crushing-rollers C C′ are driven from the shaft E by the train of gears H H′ H″, which revolve on studs attached to the side casing or frame-work of the machine. The crushing-rollers are supported on shafts extending horizontally across the machine and sustained in suitable bearings at each end. One of the crushing-rollers is arranged to run at a greater speed than the other, being driven by the pinion I meshing with the gear H″.

In order to secure a steady motion, I place a fly-wheel, J, on the shaft of the roll C′.

In the operation of the machine the clay is fed into the crushing-rollers, through which it passes into the pug-mill, being delivered therefrom into the press-box K, which contains the reciprocating-plunger F.

The machine is so constructed that the crusher-rollers are allowed to run all the time, while the other parts of the machine can be disconnected from the driving-shaft E by means of the friction-clutch L.

The bevel-pinion *a* and the friction-wheel *b* are made in one piece or fastened together and fitted to revolve on the shaft E, being loose thereon. The friction-shoes *c c′* are supported so as to revolve with the shaft, and are arranged so as to be capable of a slight radial movement in and out, so as to connect or disconnect the shaft with the friction-wheel *b*.

The friction-clutch L is operated by the lever M, which is pivoted to the frame of the machine at *d*, Figs. 1 and 4, and extends downward, so that its extremity comes conveniently within reach of the operator standing in front of the press-box.

The upper end, *e*, of the lever M is bent over the top of the machine, and has its extremity pivoted to the connecting-bar *f* at *h*, Fig. 1, the rear end of the connecting-bar being jointed to the outer end of the lever *g*, which is pivoted to the frame at *i*, Fig. 4, and the inner end of which is forked and fitted to a groove in the sliding collar *l*. Between the collar *l* and the friction-wheel *b* is placed the driving-arm *k*, keyed or otherwise secured to the shaft E, so as to revolve therewith. The outer ends of the arm have the levers *m m′* pivoted thereto. The forward ends of these levers *m m′* are connected to the friction-shoes *c c′*, while their rear ends are attached to the outer ends of the toggle-links *n n′*. The toggle-links are double, one above and one below the levers *m m′*, and their inner ends embrace between them the outer end of the screws or eye-bolts *o o′*, being attached thereto by a bolt or screw.

The operation is as follows: When the end

of the lever M is pulled outward, as indicated by the dotted lines M′, Fig. 1, the joint *h* is depressed, the rear end of the connecting-bar *f* is forced backward, swinging the lever *g* and causing the collar *l* to slide forward on the driving-shaft E. This motion of the sliding collar is transmitted by the eyebolts *o o′* and the toggle-links *n n′* to the levers *m m′*, which force the friction-shoes *c c′* against the wheel *b*, causing the latter and the pinion *a* to revolve with the shaft E. The parts are so proportioned that when once the clutch is thrown into operation by moving the lever M outward it will continue to drive the machine until the lever is returned to its former position by the operator, while at the same time it will be observed that the weight of the free end of the lever prevents any accidental engagement of the clutch, so as to start the machine when it is not desired to do so.

The inner surfaces of the friction-shoes *c c′* are preferably covered with leather, which may be attached thereto by rivets or in any other convenient manner.

In order to provide for the wear of the friction-wheel *b* or the joints, I provide the eyebolts *o o′*, which are screwed into threaded holes in the sliding collar, so that they may be adjusted therein for the purpose of varying the throw of the levers *m m′* and compensating for any wear in the friction-surfaces between the shoes *c c′* and the wheel *b*. In order to make this adjustment it is only necessary to remove the bolts which connect the inner ends of the links *n n′* with the outer ends of the eyebolts, when the latter may be adjusted in or out by turning them in the threaded holes in the collar, and then to connect them again with the links.

In the drawings I have shown the links as double; but it is obvious that this construction is not essential to the operation of the device, although I prefer to use it, as being cheap and strong.

It will be understood that when the clutch is disconnected the links *n n′* stand at an angle with the length of the driving-shaft, and that when the collar *l* is moved along the shaft the links are compelled to take a position at right angles therewith, thereby forcing the ends of the levers *m m′* outward and causing the shoes *c c′* to grip the wheel *b* with great force, in consequence of the double leverage formed by the joint *h* between the lever M and the connecting-bar *f* and that between the eyebolts and links.

The bevel *a′* is provided with rings of teeth both above and below, the upper ring meshing with the pinion *a*, while the lower ring engages with the pinions *p* and *q*, by which motion is transmitted to the shafts P and O, which operate, respectively, the plunger F in the press-box and the mold-pusher roll P′.

Motion is transmitted from the shaft P to the plunger F by means of the crank *r* on the outer end of the shaft, connection Q, and plunger-rod R.

The construction of the press-gage S and the parts connected therewith, by which the plunger-rod is attached to the plunger, is similar to that described in my previously-mentioned patent, and need not therefore be more fully described here. I have, however, improved the plunger by giving its lower surface an inclination in each direction, so as to form a longitudinal ridge or projection, *s*, Fig. 5, the apex of which is located between the central line of the plunger and the opening through which the clay is delivered into the press-box from the pug-mill. The object of this construction is to secure equal distribution of the clay to the molds, as I have found in practical operations that the clay, previous to the descent of the plunger, occupies the position indicated by the dotted line *u* in Fig. 9, being deficient in quantity at the outer side of the press-box. The effect of the inclined lower surfaces of the plunger is to force a portion of the clay forward as the plunger descends, thereby securing its more equal distribution and the complete filling of the molds.

As the apex of the inclined lower surface of the plunger is nearest to the rear side of the press-box, or the opening into the pug-mill being located behind the central line of the plunger, the greater portion of the clay in the box will be pressed forward to supply the deficiency at the front side of the box, thereby insuring perfect regularity in the filling of the molds.

I prefer also to employ the cut-off lip *v* on the inner edge of the plunger, in connection with the inclined lower surface.

The press-box K is provided with the stone-door *w*, which swings outward to permit the discharge of the mold when a stone or any other hard substance projects above its upper surface.

The stone-door is connected by the arms *x x* to the levers T on each side of the machine, the upper ends of which are drawn inward by the weights U, attached to the levers by a chain running over corner-pulleys V.

The lever W may be employed to depress the front end of the table D, as described in my previously-mentioned patent.

The mold-pusher roll P receives a reciprocating motion on the table D from the shaft O by means of the crank *y*, Figs. 1 and 2, pitman X, rock-shaft A′, and connections B′ in a manner substantially similar to that described in my previous patent, except that I have introduced into the pitman a device for preventing injury to the machine in case a mold should become accidentally caught between the roller and the frame of the machine. This safety device consists, essentially, in the pitman constructed in two parts arranged to slide together if an excessive resistance is encountered, but ordinarily held in their extended positions by weighted arms. This construction is shown in Fig. 1, in which *b′* is the upper part of the pitman, arranged to slide in the socket *d′*, at-

tached to the frame Y, the lower end of which is fastened to the lower part of the pitman X.

The levers *e' e'*, carrying the weights *f' f'*, are pivoted to the frame Y at *g' g'*, and connected to the head-piece Z on the sliding rod *b'* by the links *h' h'*.

If the pusher-roll P' encounters an obstruction or excessive resistance, the rod *b'* will slide downward in the socket *d'*, throwing the weights *f' f'* outward and upward, as indicated by the dotted lines in Fig. 1, thereby allowing the crank O to complete its revolution without injury to the machine.

The inclination of the links *h' h'* relatively to the levers *e' e'* may be varied by means of the screws *i' i'*, thereby adjusting the amount of force required to lift the weights *f' f'*.

I do not claim herein anything which has been previously patented to me.

I claim—

1. In a brick-machine, a clutch mechanism consisting of the lever M, connecting-bar *f*, lever *g*, sliding collar *l*, eyebolts *o o'*, toggle-links *n n'*, levers *m m'*, driving-arm *k*, friction-shoes *c c'*, and friction-wheel *b* on the driving-shaft, substantially as and for the purposes set forth.

2. In combination with the press-box K of a brick-machine, the reciprocating plunger F, provided with the cut-off lip *v*, and having its lower surface inclined upward and outward for a distance greater than one-half its width, substantially as described.

3. In combination with the driving-shaft of a brick-machine, the friction-clutch L, consisting of the friction-wheel *b*, friction-shoes *c c'*, arranged to act on the periphery of the wheel, levers *m m'*, driving-arm *k*, keyed on the shaft, links *n n'*, and adjustable eyebolts *o o'*, inserted in the sliding collar *l*, substantially as described.

4. The combination, with the mold-pushing device of a brick-machine, of the divided pitman X, the parts of which are connected together by a weighted lever and link, substantially as and for the purposes set forth.

5. In a brick-machine, the divided pitman X, consisting of the sliding rod *b'*, frame Y, weighted levers *e' e'*, and links *h h'*, substantially as described.

6. The combination, in a brick-machine, of the pug-mill B, driven from the main shaft E by bevel-gears *a a'*, and the crushing-rollers C C', operated from the main shaft by a suitable train of gearing, substantially as described.

7. The combination, in a brick-machine, of the press-box K, stone-door *w*, arms *x x*, levers T T, pulleys V V, chains *l' l'*, and weights U U, substantially as described.

GAYLORD MARTIN.

Witnesses:
GEO. B. SELDEN,
HERBERT G. PHILLIPS.