

(No Model.)

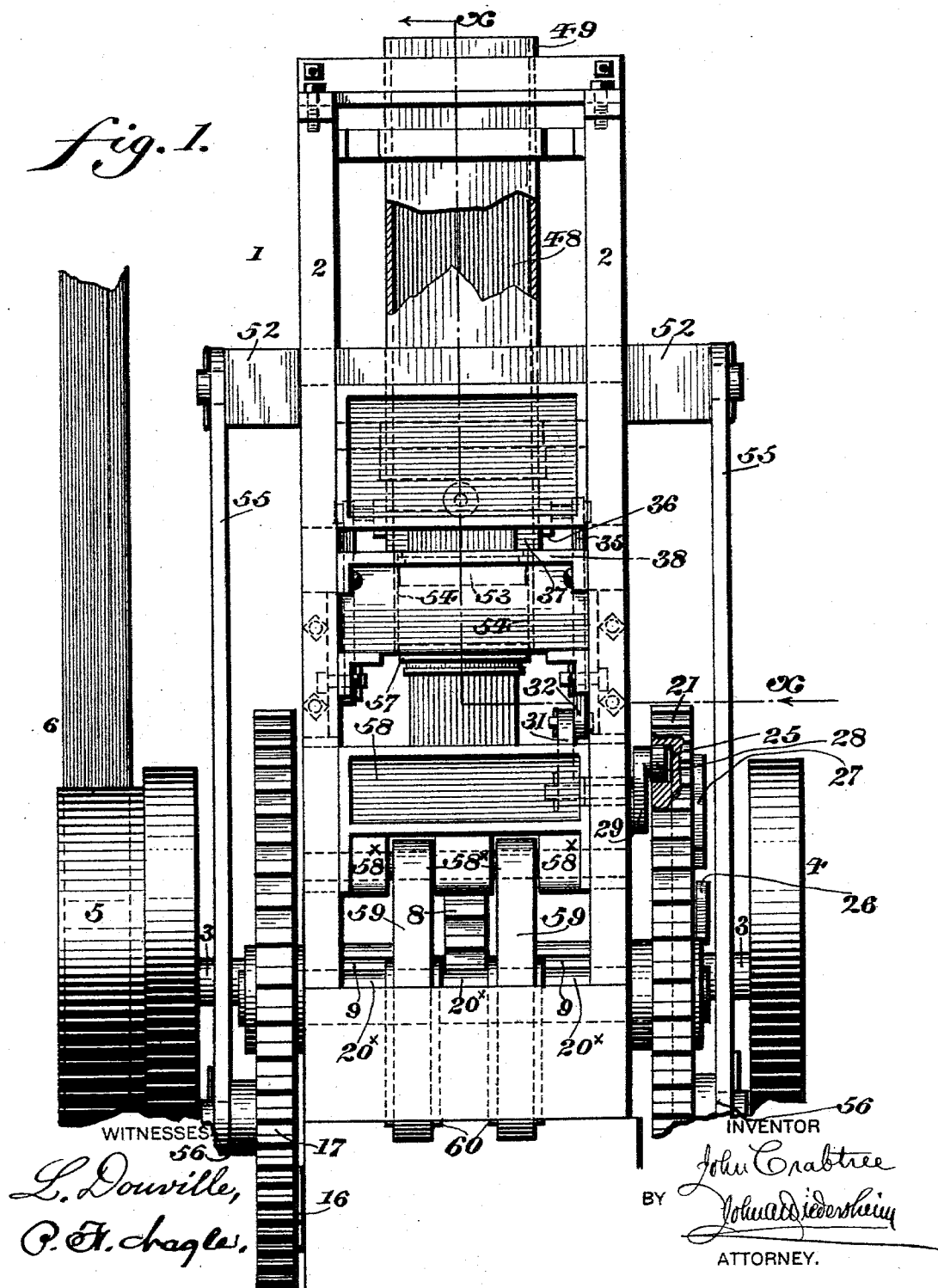
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J. CRABTREE.
BRICK MACHINE.

No. 571,750.

Patented Nov. 24, 1896.

Fig. 1.



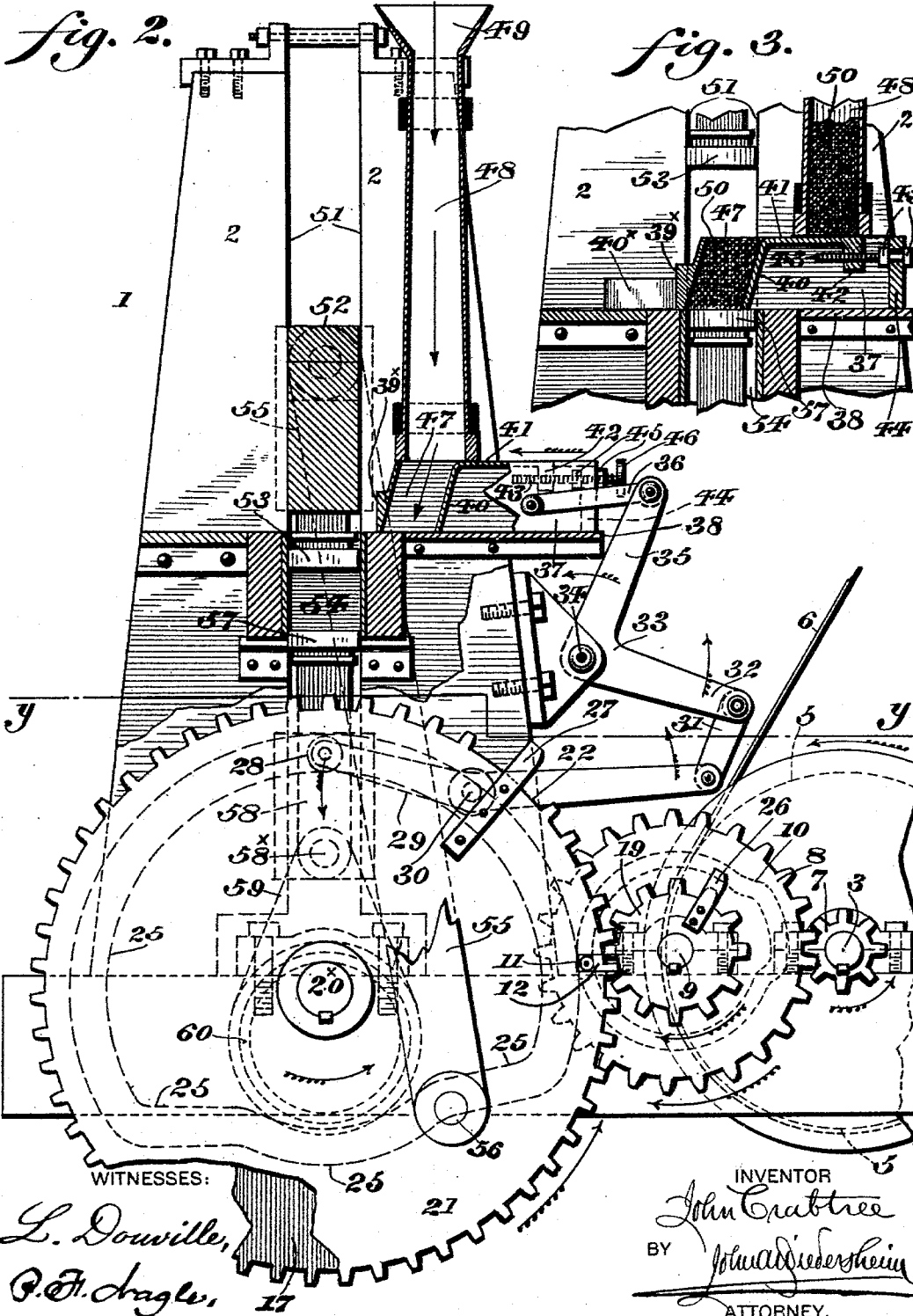
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fig. 4.

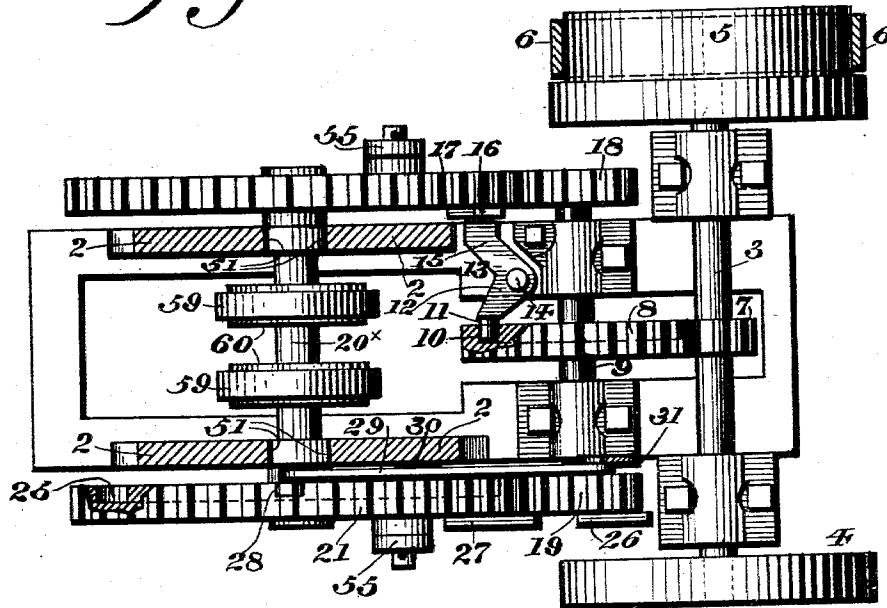


fig. 5.

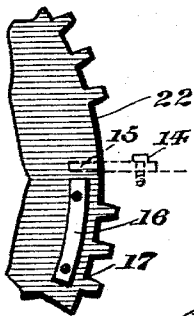
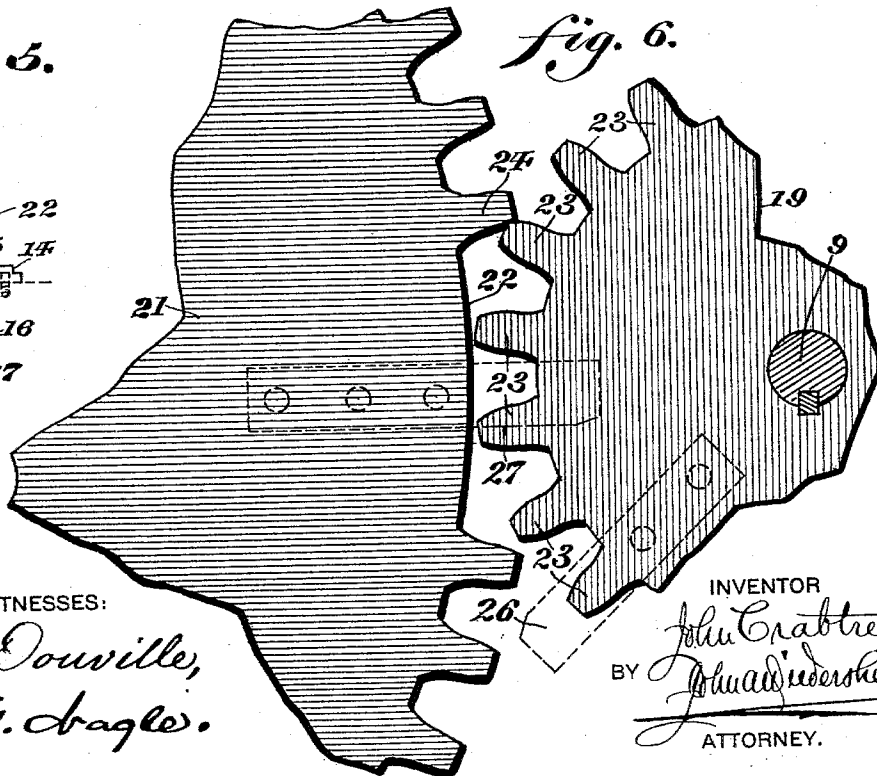


fig. 6.



WITNESSES:

L. Douville,
P. H. Bagley.

INVENTOR

John Crabtree
BY *John Anderson*
ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN CRABTREE, OF PHILADELPHIA, PENNSYLVANIA.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 571,750, dated November 24, 1896.

Application filed October 1, 1895. Serial No. 564,309. (No model.)

To all whom it may concern:

Be it known that I, JOHN CRABTREE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Brick-Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a novel construction of brick-machine, in which provision is made for feeding a predetermined quantity of clay or other material to the desired point or mold and afterward pressing and shaping the same, means being provided for discharging the completed brick from said mold.

It also consists in removing a portion of the teeth from one of the actuating gear-wheels of the machine to a certain extent, and thereby allowing the pinion intermeshing therewith for a predetermined interval to rotate without causing rotation of said gear, thereby allowing said gear to dwell for a certain period, whereby the air in the unfinished brick is allowed to exude therefrom during the progress of manufacture, thereby producing a better brick than heretofore.

It also consists of novel means for causing certain of the above last-mentioned parts to be positively thrown into operation at the proper intervals.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a front elevation of a brick-machine embodying my invention, a portion of the same being shown in section. Fig. 2 represents a side elevation of the same, certain parts thereof being shown in section on line *x x*, Fig. 1. Fig. 3 represents a detail view of a portion of the measuring and feeding mechanism, showing the parts in a different position from that seen in Fig. 2. Fig. 4 represents a horizontal section on line *y y*, Fig. 2. Fig. 5 represents a broken view showing a portion of the mechanism seen at the top of Fig. 4, to be hereinafter referred to. Fig. 6 represents, on an enlarged scale, a detail view of the mechanism for allowing a dwell to certain of the gears employed.

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

Referring to the drawings, 1 designates the machine complete, the same consisting of the

upright frames or housing 2, upon which the principal operative parts are supported.

3 designates the main shaft, which is journaled in suitable bearings, said shaft having mounted upon one extremity, in the present instance, the fly-wheel 4, and upon the other extremity the belt-pulley 5, which is actuated by means of the belt or other means.

7 designates a pinion mounted upon said shaft 3, which is adapted to mesh with the gear 8, which is mounted upon the shaft 9, the latter being journaled in suitable bearings.

10 designates a cam-groove in the side of said gear 8, the walls of which are adapted to be engaged by the pin 11, which latter is secured to the arm 12 of the bell-crank 13, which is fulcrumed at 14, the extremity of the other arm, 15, of said bell-crank being adapted to contact with the stop 16, which is secured to the inner face of the gear 17, the function of which will be hereinafter referred to.

18 designates a pinion which is mounted upon the shaft 9 and which is in mesh with said gear 17, which latter is mounted upon the shaft 20^x, which revolves in suitable bearings.

19 designates another pinion similar to the pinion 18, which is mounted upon the shaft 9 and meshes with the gear 21, which is mounted on the shaft 20^x opposite the gear 17, said gears 17 and 21 being in the present instance located outside of the framework or housing 2. The said gears 17 and 21 have a portion of their teeth removed at the point 22, as indicated in Figs. 2 and 6, thereby forming a mutilated gear, the space 22 from which said teeth are removed being either three, four, or five teeth, as may be desired, according to requirements, as will be further explained, whereupon it will be seen on reference to Fig. 6, that if we assume the pinions 18 and 19 to continue their rotation, the gears with which they mesh will be allowed to dwell for a certain period, the teeth 23 and 24 being afterward caused to intermesh, as will be explained, whereby the air is allowed to exude from the brick during the process of manufacture, thereby producing a better brick than heretofore.

25 designates a cam-groove which is located

on the inner face of said gear 21, the contour of which is best seen in Fig. 2, the walls of said groove being engaged by the roller 28, which is mounted upon an arm of the lever 29, which latter is fulcrumed to any suitable fixed point at 30.

31 designates a link which has one end attached to the extremity of said lever 29, while its other end is attached to an arm 32 of the bell-crank 33, which latter is mounted upon a rock-shaft 34, which is journaled in suitable bearings, said bell-crank having its other arm, 35, connected by means of a link 36 with the feed-slide or measuring device 37, which is adapted to reciprocate upon and be supported by the table 38, it being understood that the rock-shaft 34 has an arm corresponding to the arm 35 at its other extremity, from which a connection is made by a link similar to the link 36 to the feed-slide 37. The said feed-slide 37 has a forward portion 39^x, which is adapted to act as a pusher and so contact with the finished brick, as 40^x, as seen in Fig. 3, and thus push the same from the machine, as will be hereinafter explained.

40 designates the back portion of the feed-slide, which has a horizontal member 41, from which depends a lug 42, a measuring-chamber 47 being thus formed between the portions 39^x and 40, in which the clay is received and measured prior to being discharged into the mold 54.

43 designates a threaded rod or stem which is in engagement with said lug 42 and passes through the wall 44 of said feed-slide, the collars 45 upon said stem 43 preventing longitudinal movement of the latter, whereupon it will be seen that upon manipulation of the head 46 of said stem the chamber 47 will be increased or diminished according to requirements.

48 designates an upright chute which terminates in a hopper 49, in which the clay or other material 50 from which the bricks are made is adapted to be placed.

51 designates suitable ways between the frames or housing 2, in which is adapted to reciprocate the cross-head 52, the same having attached to its lower portion the brick-forming die or head 53, which is adapted to enter the mold 54, above referred to, which in the present instance is located below the table or bed 38. The said head and die are caused to reciprocate by means of the connecting-rods 55, one of which is pivotally attached to the face of each of the gears 21 and 17 at the point 56, said gears thus serving as a crank-disk for imparting a reciprocating motion to the die 53, as is evident.

57 designates the lower brick-forming die, which is mounted upon the head 58, which latter is pivotally connected at 58^x with the eccentric-strap 59, which engages the eccentrics 60, which are mounted upon the shaft 20^x.

27 designates a dog or bar which is mounted upon the gear 21 in proximity to the space 22, from which the teeth of said gear are re-

moved, said dog 27 being adapted to be engaged at the proper interval by the dog or bar 26, which is attached to the pinion 19, as will be hereinafter explained, it being evident that the gear and pinion 17 and 18 may be provided with dogs similar to the ones 27 and 26, if desired.

The operation is as follows: If we assume the parts prior to the initial movement of the machine to appear as in Fig. 2, it will be evident that if the shaft 3 and pinion 7 are caused to rotate, such rotation will be imparted by means of the gears 8 and pinions 18 and 19 to the gears 17 and 21. The rotation of said gear 21 will by reason of the engagement of the extremity of the lever 29 with the cam-groove 25 and the intermediate connections cause the reciprocation of the feed-slide 37, as will be understood from Fig. 2, and it will be further evident that the rotation of the said gears 17 and 21 will also cause the reciprocation of the upper die 53 by reason of the connecting-rods 55, the lower die 57 being also caused to reciprocate by reason of the eccentric-straps 59, as is evident. The chute and hopper having been filled with clay, the same will descend into the chamber 47, and power having been applied to the pulley 5 the feed-slide 37 will be caused to move in the direction of the arrow, Fig. 1, the upper and lower dies 53 and 57 simultaneously arising into the position seen in Fig. 3, when the feed-slide 37 also reaches the position shown therein. The lower die 57 having commenced its descent, the feed-slide or measuring device 37 will move to the right of the position seen in Fig. 3, into the position seen in Fig. 2, and the material 50 contained in the chamber 47 will drop upon the said lower die 57, it being remembered that the latter is now in the position seen in Fig. 2, and said feed-slide will momentarily remain in its extreme right-hand position by reason of the peculiar formation of the cam 25, as seen in Fig. 2. The said lower die 57 will, by reason of the location of the eccentric, be caused to remain temporarily stationary in the position seen in Fig. 2, and at about this instant the mutilated gears 17 and 21 will be rotated into the position seen in Fig. 6, and their rotation will for the time being have ceased. The pinions 18 and 19, however, continue their revolution, and it will be evident that a dwell is thereby allowed to the said gears until the dogs 26 and 27 engage each other, at which period the gears and pinions will be caused to rotate in unison again, the air in the unfinished brick being allowed to exude therefrom during said dwell, which I have found by experience produces a most effective and satisfactory result, as the brick by reason of having all the moisture extracted therefrom is left in a smooth, polished, and finished condition, such as it is impossible to attain when the brick is merely squeezed once between the dies and then discharged from the machine. As the pinion 19 continues its revolutions the dog 26 will at

the proper interval, as stated, engage the dog 27, attached to the gear 21, and the latter, as well as the gear 17, will be moved in the direction of the arrow, Fig. 2, and the teeth of the gears will once more be caused to be in mesh with the teeth of the pinion, and the gear 21 will once more continue its rotation until the portion 22 has again reached the position seen in Fig. 6. The continued rotation of the shafts 20^x, 9, and 3 will cause the dies 53 and 57 to ascend into the position seen in Fig. 3, and a further rotation will cause the feed-slide 37 to move forward again, the parts being now in the position seen in Fig. 3, the finished brick 40^x being pushed forward by the nose 39^x of said feed-slide, as will be understood from Fig. 3, the above-described operations being repeated in the formation of successive bricks.

In order that a positive stoppage may be given to the gears 17 and 21, I attach to the interior face of the gear 17 a strip or stop 16, which is adapted to be in contact with the arm 15 of the bell-crank 13 when the latter has been moved so as to be in the path of said strip 16, which movement, it will be understood, takes place at the proper intervals by reason of the engagement of the pin 11 with the cam-groove 10, the contour of which will be best understood from Fig. 2, the above means thus forming a positive and effective device for insuring the temporary cessation of the rotation of the gears 17 and 21 when the parts are as seen in Fig. 6, in order to enable the upper die 53 to remain momentarily stationary, an important feature to which reference has heretofore been made.

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

1. In a brick-machine, a frame, a stationary mold on said frame, a driving-shaft with a pinion thereon, a feeding device movable on a table above said mold, upper and lower ver-

tically-operating dies, a mutilated gear-wheel meshing with said pinion and mounted in said frame, mechanism connected with said upper dies and feeding device respectively, and said mutilated gear-wheel for operating the said upper dies and feeding device, a dog secured to said gear-wheel near the mutilated portion thereof, and a dog secured to said pinion and adapted to contact with the first-mentioned dog, and mechanism connected with the lower die and the shaft of said gear-wheel for operating the former.

2. In a brick-machine, a mold, upper and lower dies, a shaft with a mutilated gear-wheel thereon, having a stop on one side, mechanism connecting said dies and said gear-wheel for raising and lowering the said dies, a shaft with a pinion thereon, meshing with said mutilated gear-wheel, and a lever with an end engaged in a cam-groove in the side of a second pinion, on said latter-mentioned shaft, and its other end adapted to engage said stop, said parts being combined substantially as described.

3. In a brick-machine, a suitable housing, the pinion 8 journaled therein, the cam-groove 10 located in said pinion, the bell-crank 13 suitably fulcrumed, the gear 17, a stop thereon, said stop being adapted to be engaged at intervals by an end of said bell-crank, the other end of the latter engaging the walls of said cam-groove, a gear 21, pinions 18 and 19, adapted to mesh with said gears, the latter having their teeth removed for a portion of their periphery, means for throwing said gears and pinions into engagement at proper intervals, reciprocating dies, a feed-slide, and mechanism for actuating said dies, and slide, substantially as described.

JOHN CRABTREE.

Witnesses:

JOHN A. WIEDERSHEIM,
R. H. GRAESER.