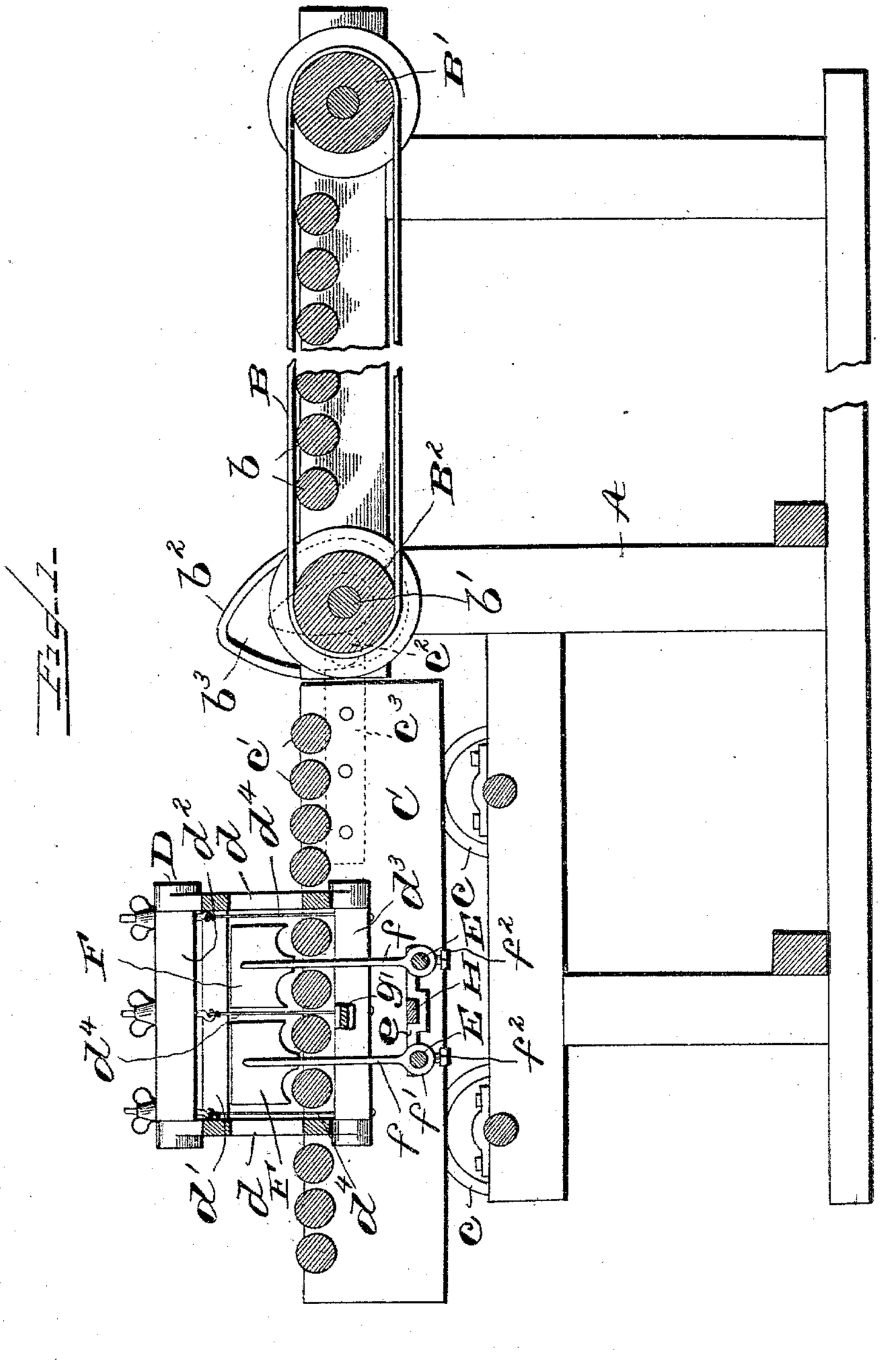
(No Model.)

4 Sheets—Sheet 1.

P. H. KELLS.

BRICK MACHINE CUT-OFF.

No. 565,210. Patented Aug. 4, 1896.



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(No Model.) 4 Sheets—Sheet 2.

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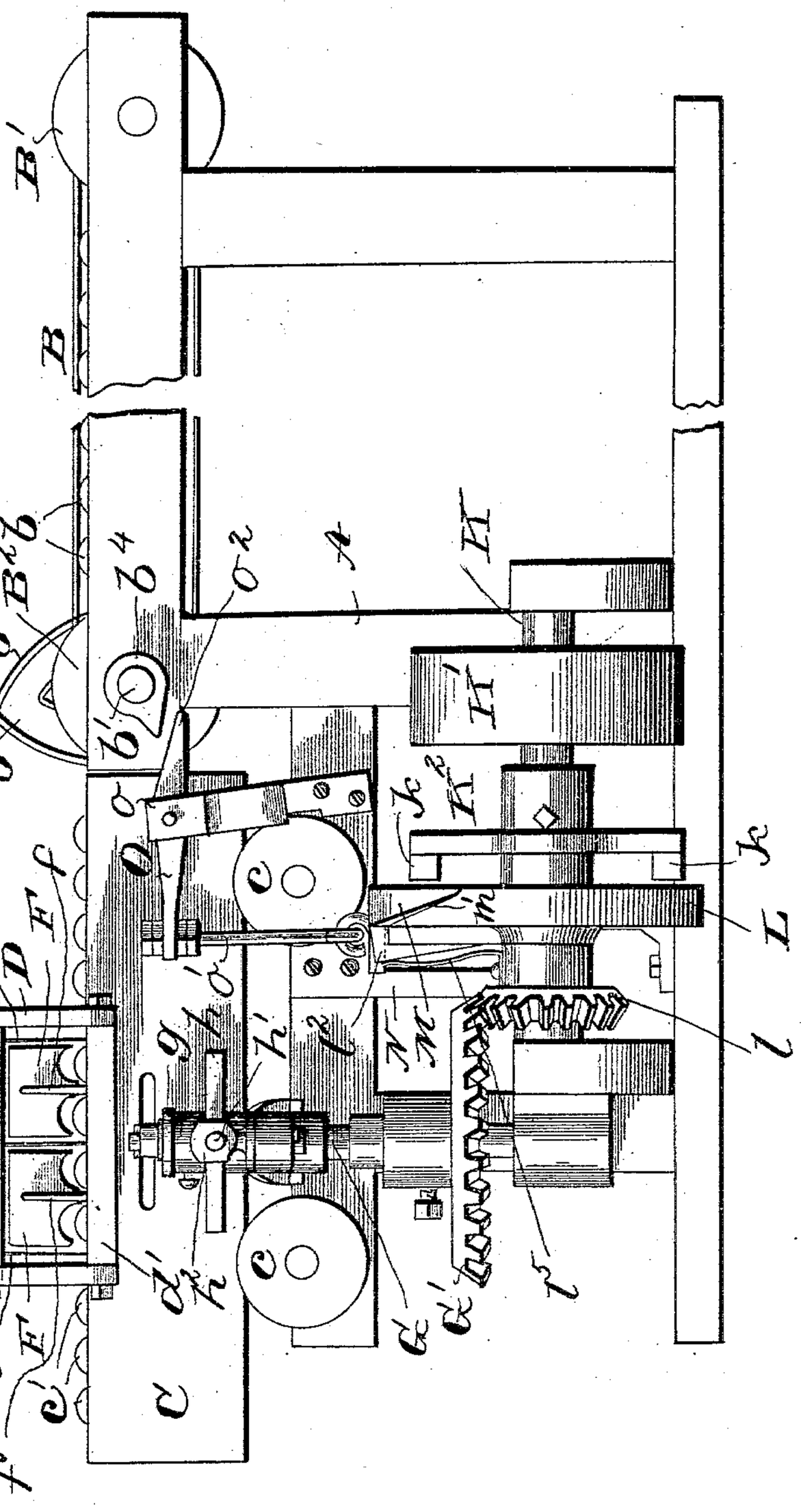
Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

P. H. KELLS.

BRICK MACHINE CUT-OFF.

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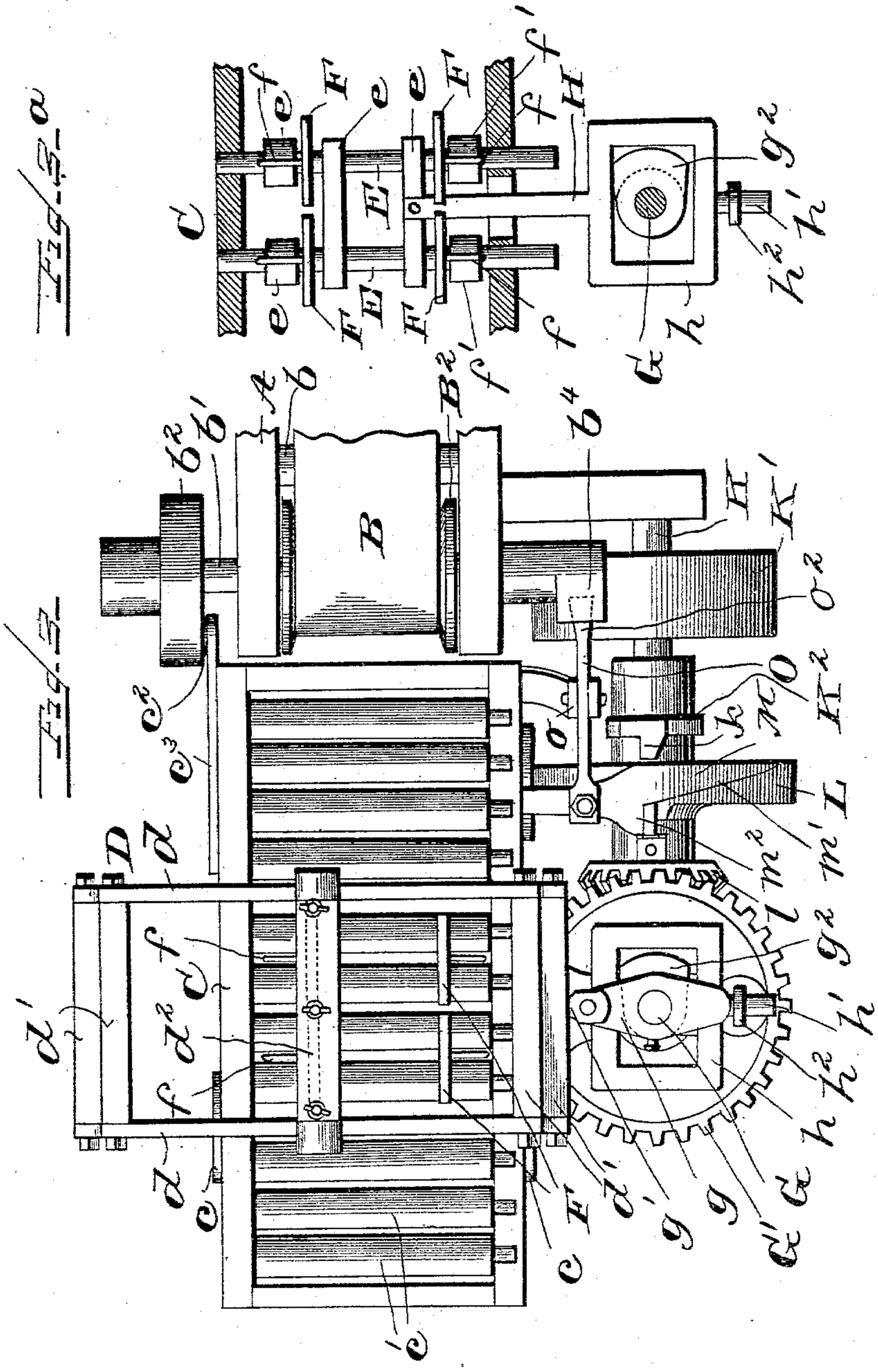

Witnesses—
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(No Model.) 4 Sheets—Sheet 4.

P. H. KELLS.

BRICK MACHINE CUT-OFF.

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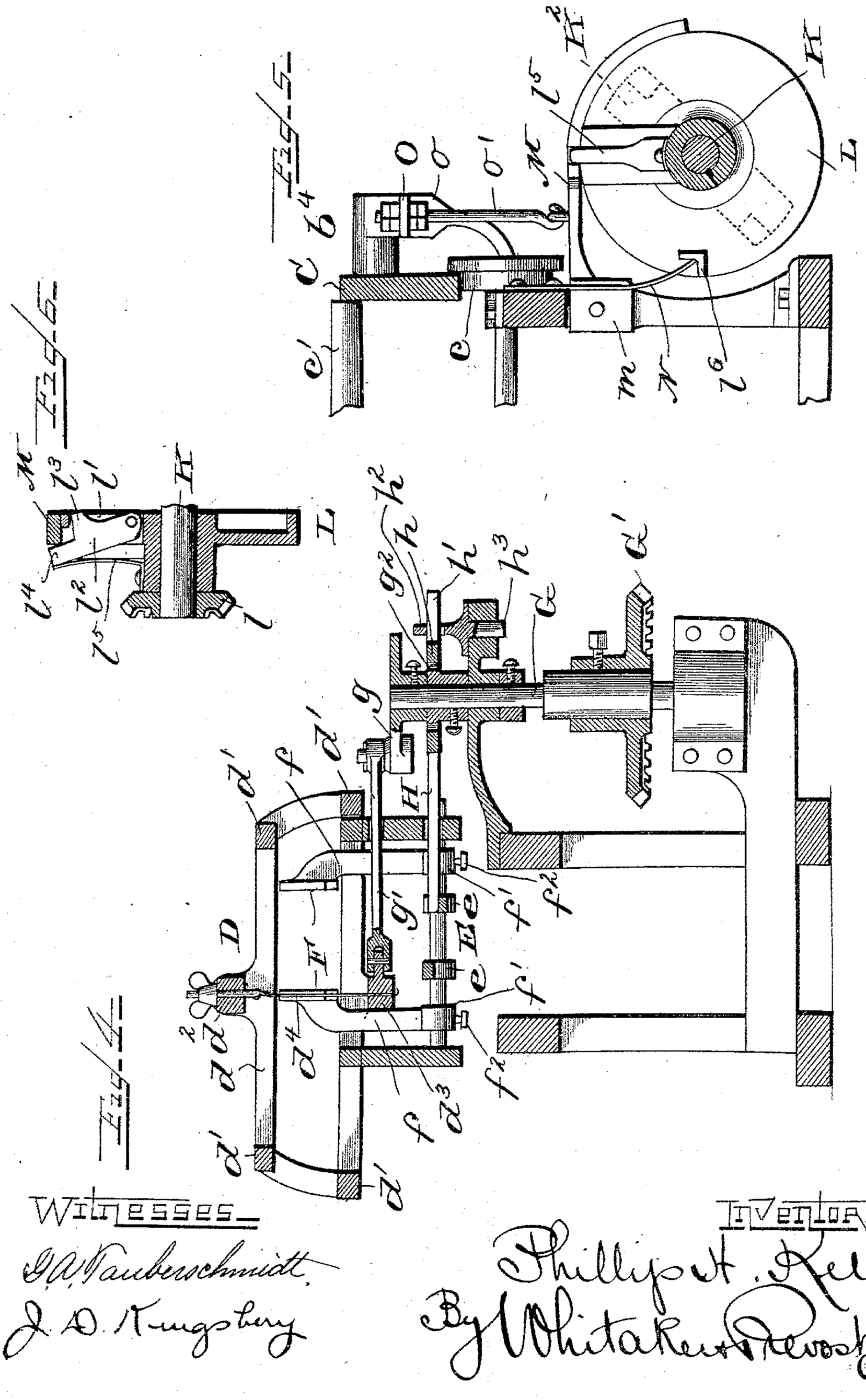

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By Whitaker & Wood Attys.

UNITED STATES PATENT OFFICE.

PHILLIP H. KELLS, OF ADRIAN, MICHIGAN.

BRICK-MACHINE CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 565,210, dated August 4, 1896.

Application filed February 10, 1896. Serial No. 578,729. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP H. KELLS, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Brick-Machine Cut-Offs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features of construction and combination of parts hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a side elevation of a machine embodying my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a top plan view of the machine, a portion of the belt being removed. Fig. 3^a is a detail sectional view showing the sliding frame carrying the guide-plates. Fig. 4 is a vertical transverse sectional view of the machine through the cut-off frame. Fig. 5 is a detail view, partly in section, showing the stopping device for the driving-shaft. Fig. 6 is a detail sectional view of part of the same.

In the drawings, A represents the main frame of the machine, and B represents the clay-supporting belt, which passes around a grooved roller B′ at the rear end of the machine, and a similar roller B^2 adjacent to the central part of the machine. The upper lap of the belt is supported between the rollers B′ B^2 by a series of smaller idle-rolls *b b*, mounted suitably in the machine-frame.

C represents a reciprocating carriage which is supported by rollers *c c*, suitably mounted in the frame A, so as to bring the upper part of the carriage substantially in a horizontal plane with the top of the belt B, and the said carriage is provided throughout its length with a series of transverse rolls *c′ c′*, having their upper surfaces in line with the top lap of said belt B.

On the shaft *b′* of the roller B′, and preferably outside the frame A of the machine, is placed a cam b^2, rigidly secured to said shaft and provided with a cam-groove b^3 in one of its lateral faces, which is engaged by a stud or friction roll c^2 on an arm c^3, secured to carriage C. By this construction as the column of clay is fed from a suitable brick-machine upon the belt B the belt will move forward, thus rotating the roller B′ and thereby imparting a slow reciprocatory movement to the carriage C, the parts being so timed that the carriage will move forward with the column of clay at the same speed as the clay.

D represents the transversely-reciprocating cut-off frame, which consists of two side frames *d d*, connected at each end by cross-bars *d′ d′*. The side frames engage suitable guiding grooves or recesses in the carriage C, so that the frame can be reciprocated transversely of the carriage. Adjacent to its center the cut-off frame D is provided with an upper cross-bar d^2 and lower cross-bar d^3, to which are secured a series of cutting-wires d^4. These wires are provided with the usual screw-threaded adjusting devices, in this instance secured to the upper cross-bar d^2. The cut-off frame D is of such length that when it is reciprocated the cutting-wires will be moved entirely across the column of clay, so as to cut a portion of the same into individual bricks at each transverse movement.

Below the plane of the cut-off frame D is a transversely-reciprocating frame which carries a series of adjustable guide-plates. This frame consists in this instance of a pair of bars E E, mounted in guiding apertures or bearings in the side pieces of carriage C and connected by suitable cross-bars *e e*.

F F represent the guide-plates, which are provided with downwardly-extending arms *f*, terminating at their lower ends in collars *f′*, encircling one of the cross-bars E and secured thereto by a set-screw f^2. These guide-plates are of a width just sufficient to permit the cutting-wires to pass at either side of them, and they are set on opposite sides of the column of clay and at a distance apart slightly greater than the width of the column. I also provide mechanism for moving the guide-plate frame before the cut-off frame is moved, so as to press the guide-plates on the side opposite the cutting-wires up against the clay to hold the same against lateral movement as

the cutting-wires are forced through the clay toward said plates.

A vertical shaft G is mounted in suitable bearings secured to the frame A of the machine adjacent to the cut-off frame. At its upper end this shaft is provided with a crank g, which is connected by a pitman g' with the cut-off frame for reciprocating the same. (See particularly Fig. 4.)

Below the crank g the shaft G is provided with a cam g^2, which engages a yoke h on the end of a bar or rod H, which is pivotally connected with one of the cross-bars e of the guide-plate frame E, to give it its reciprocatory movement. The yoke h is also provided, preferably, with an extension or arm h', which has a sliding engagement with a pivotally-mounted collar h^2, which has a stud h^3 engaging a bearing in the support which forms the upper bearing for the shaft G. (See Fig. 4.) In order to time the parts conveniently, I prefer to form the crank g and cam g^2 separate from the shaft and to provide their collars or hubs with set-screws or other similar means for adjustably securing them to the shaft G, so that the cut-off frame and guide-plate frame may be given the proper movements at the desired times.

The shaft G is driven by means of a bevel gear-wheel G', which meshes with a bevel-pinion l, loosely mounted on the main driving or cut-off-operating shaft K, mounted horizontally in suitable bearings and extending preferably longitudinally of the machine. I provide means for operating vertical shaft G and the cut-off and guiding devices intermittently and devices for locking the parts against movement when not in use. To this end, I provide a stop wheel or disk L, the hub of which is secured to or formed integrally with the pinion l, so that both are independent of the shaft K. The stop-wheel is provided with a radial recess l', in which is pivotally mounted the pawl l^2, (see Fig. 6,) having a lug or nose l^3, adapted to project beyond the face of the stop wheel or disk L when in operation, and having also an arm l^4, projecting beyond the periphery of the disk. A spring l^5 is secured to the hub of the disk and bears against the pawl l^2, so as to force the nose or lug l^3 to project from the face of the disk.

A driving-pulley K' is rigidly secured to the shaft K for driving the same continuously, and said shaft is also provided with a spider K^2, having two or more arms, (two being shown,) each of which is provided with a lug k, adapted to engage the nose or projection l^3 of the pawl l^2 when said nose projects from the face of the disk L, and thereby rotate the shaft G and operate the cut-off and guiding devices. The pinion l has only half as many teeth as the gear G', so that each revolution of the driving-shaft produces a movement of both the cut-off and guiding devices in one direction only.

M represents the stop-lever, which is pivoted to the main frame at m, and has its outer end provided with a curved portion conforming to the periphery of the stop wheel or disk L. This curved portion of the stop-lever is provided on one side with an inclined or cam-face m', (see Fig. 3,) terminating in a stopping-shoulder m^2. The inclined face is so arranged that it will engage the arm l^4 of the pawl l^2 and move it laterally, so as to withdraw the nose or lug l^3 from engagement with the spider K^2, (see Figs. 2, 3, 5, and 6,) and when the said arm of the pawl strikes the shoulder m^2 the wheel L will be instantly stopped, while the shaft K still revolves, thus stopping the shaft G and its connected mechanism. In order to prevent any rebound or backlash on the part of the stop-wheel, I provide a locking-arm N, (see Fig. 5,) in this instance formed of spring metal and secured to the frame A, its lower end being adjacent to the peripheral portions of the stop-wheel L. The wheel L is provided with a lug or projection l^6, in this instance V-shaped, which engages and passes the end of the locking-arm N at the instant that the pawl l^2 strikes the shoulder m^2, thus locking the stop-wheel from backward movement, while the shoulder m^2 locks it from forward movement. It will now be seen that if the lever M is raised, so as to release the pawl l^2, said pawl will instantly be thrown forward, so as to project its nose l^3 into the path of the rapidly-revolving spider and instantly starting wheel L, shaft G, and its connected mechanism.

O represents a trip-lever pivotally supported on a bracket o, secured to the frame of the machine, and having one end connected by a link o' with the stop-lever M. The other end o^2 of said lever O is in position to be engaged by a short arm b^4 on the shaft b' of the belt-roller B^2, so that as the roller B^2 is rotated the said trip-lever is automatically tripped once for every revolution of said roller.

The operation of the entire machine is as follows: A column of clay upon leaving a brick-machine of any usual construction is delivered upon the carrying-belt B, the said belt being slowly moved forward by the advancing column of clay as it is fed from the brick-machine. The movement of the belt of course imparts movement to the idle supporting-rollers and to the rollers B and B', thus causing the rotation of shaft b' and the reciprocation of the carriage C and the operation of the trip-lever O. The advancing column of clay upon reaching the end of belt B passes upon the rolls c' c' of the carriage C and between the guide-plates F F, the cutting-wires being upon one side of the column of clay. The tripping-arm b^4 on shaft B' and the grooved cam b^2 are so arranged that as soon as the tripping-arm b^4 engages the trip-lever O and raises the stop-lever M the cam b^2 begins to move the carriage C forward at the same speed as the column of clay. As soon as the stop-lever M is raised the cut-off

mechanism is started, as previously described, first moving the guide-plates F F on the side opposite the cutting-wires up into close engagement with the clay and then forcing the cut-off frame across the carriage, so as to cut the clay into individual bricks. It will be noticed that as the carriage is moving with the column of clay and at the same speed the cutting-wires will produce a clean, straight cut, the clay being held from movement laterally by the guide-plates during the cutting operation. As soon as the cut-off frame has been moved across the carriage C the stop-lever stops and locks this part of the mechanism and the carriage is retracted by the cam b^2. Upon the next revolution of shaft b' the same result is produced, except that the cutting-wires move in the opposite direction from their former movement, as will be readily understood. The operation of the machine is therefore continuous and is controlled by the continually advancing column of clay. The severed bricks are delivered from the carriage upon some suitable platform or device in any usual or preferred manner.

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

1. The combination with means for supporting a column of clay, and a transversely-reciprocating cut-off mechanism, of the guide-plates located on opposite sides of the path of the column of clay and at a distance apart greater than the width of the column, means for moving all of said guide-plates transversely in the same direction to bring the guiding-plates on the side opposite the cut-off mechanism into engagement with the clay column and means for operating the cut-off mechanism, substantially as described.

2. The combination with means for supporting a column of clay, and a reciprocating cut-off mechanism, of a transversely-movable frame provided with guide-plates, and means for adjusting said guide-plates on said frame, transversely of the machine and operating devices connected with said cut-off mechanism and said movable frame, substantially as described.

3. The combination with means for supporting a column of clay, and a transversely-reciprocating cut-off mechanism, of a sliding guide-plate frame adapted to slide transversely of the machine, guide-plates rigidly secured to said frame, on opposite sides of the path of the clay column and located a distance apart greater than the width of said column, adjusting devices for adjusting said guide-plates on said frame transversely of the machine and operating devices for said cut-off mechanism and said sliding frame, substantially as described.

4. The combination with means for supporting a column of clay, and a transversely-reciprocating cut-off mechanism of guide-plates situated a distance apart greater than the width of the clay column and located on each side of the path of the same, means for moving all of said clamping-plates transversely in the same direction to bring the guide-plates on the side opposite the cut-off into engagement with the column of clay and means for adjusting said guide-plates with respect to each other to accommodate columns of clay of different widths, substantially as described.

5. The combination with the longitudinally-movable carriage for supporting a column of clay, of a transversely-reciprocating cut-off frame provided with cutting devices, an independent transversely-reciprocating guide-plate frame, guide-plates rigidly secured to said frame, on opposite sides of the path of the clay column and at a distance apart greater than the width of the said column, devices for moving said guide-plate frame to bring the guide-plates on the side of the column opposite the cutting devices into engagement with the clay, and devices for moving the cut-off frame transversely of the carriage, substantially as described.

6. The combination with the longitudinally-reciprocating carriage for supporting a column of clay, of the cut-off frame mounted in said carriage and movable transversely thereof, the guide-plate frame mounted in said carriage and movable transversely thereof, the guide-plates rigidly secured to said guide-plate frame and extending on opposite sides of the column and at a greater distance apart than the width of said column, and operating devices for said guide-plate frame and said cut-off frame, substantially as described.

7. The combination with movable devices for supporting a moving column of clay, of a longitudinally-reciprocating carriage adjacent to one end of said clay-supporting devices, a transversely-reciprocating cut-off mechanism carried by said carriage, a transversely-movable guide-plate frame, mounted in said carriage and provided with rigid guide-plates on opposite sides of the path of the column of clay and located at a distance apart greater than the width of said column, operating devices for operating said cut-off mechanism and for moving the clamping-frame transversely to bring the plates on the side opposite the cut-off into contact with the said column, and a part operatively connected with said clay-supporting devices for controlling said operating devices, substantially as described.

8. The combination with means for supporting a moving column of clay of an operating-shaft driven by the movement of said column, a longitudinally-reciprocating carriage, a transversely-reciprocating cut-off mechanism carried thereby, a transversely-reciprocating guide-plate frame carried by said carriage and provided with guide-plates, rigidly secured thereto and located a distance apart greater than the width of the clay column, connections from said operating-shaft

to said carriage for reciprocating the same, devices for operating said cut-off mechanism and guide-plate frame, a stopping device for said operating devices, a trip for releasing said stopping device and a part connected with said operating-shaft for releasing said trip, substantially as described.

9. The combination with the belt for supporting a moving column of clay, and the belt-shaft operated by said belt, of a longitudinally-reciprocating carriage adjacent to one end of said belt, operatively connected with said shaft, the cut-off mechanism and guide-plates carried by said carriage, operating devices for said cut-off and guide-plates including the stop-wheel provided with the pivoted spring driving-pawl, the driving-shaft provided with a part for engaging said pawl, the stop-lever for engaging said pawl and stopping said wheel, and a part on the said belt-shaft for tripping said stop-lever, substantially as described.

10. The combination with means for supporting a column of clay, of the longitudinally-reciprocating carriage, the transversely-reciprocating cut-off frame carried by said carriage, the transversely-reciprocating guide-plate frame carried by said carriage and provided with guide-plates rigidly secured thereto and located a distance apart greater than the width of the clay column, a stationary shaft and direct connections between said shaft and the cut-off frame and the said guide-plate frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

PHILLIP H. KELLS.

Witnesses:

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CLARA HOPKINS.