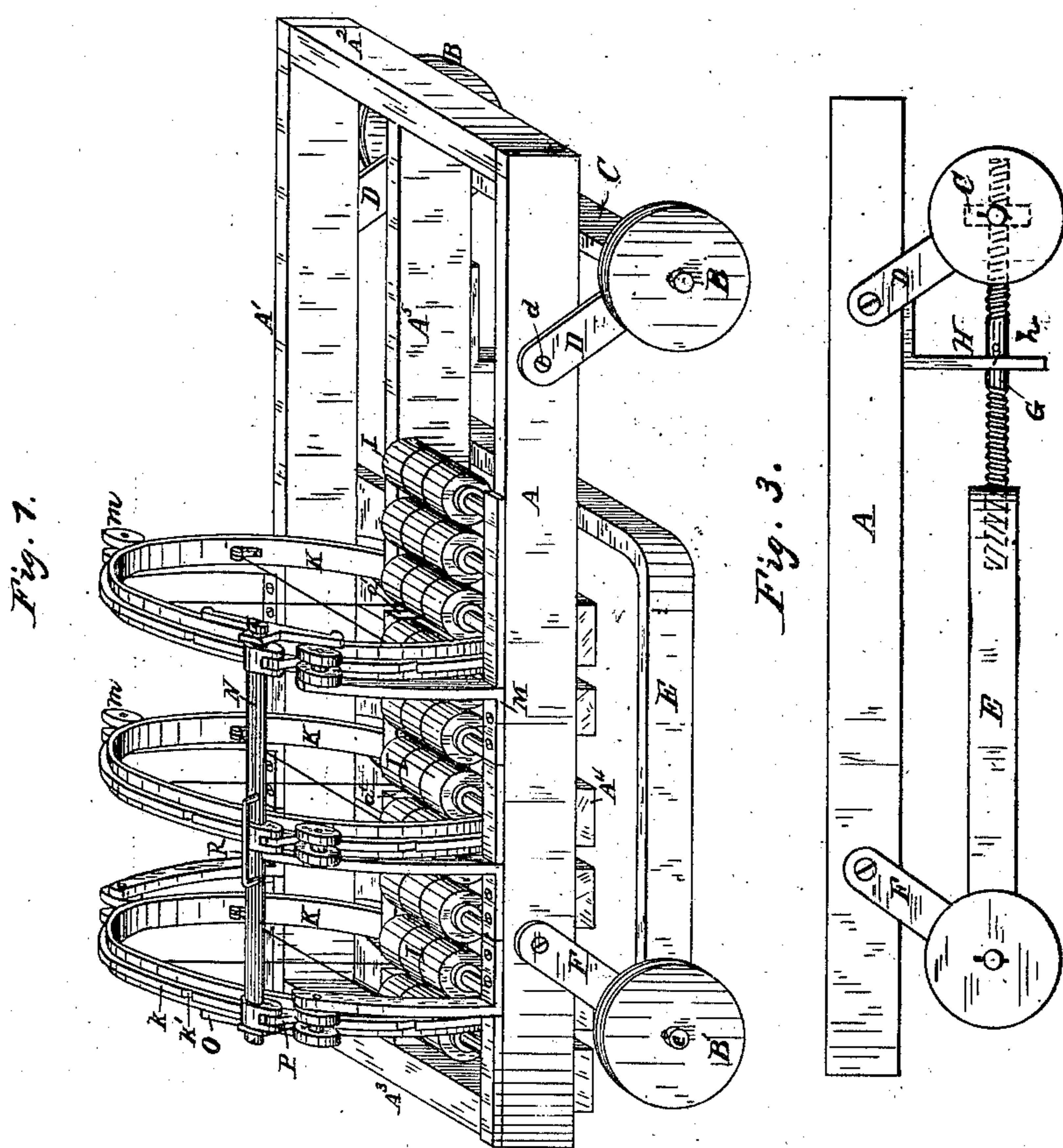


J. S. SMITH
Machine for Cutting off Bricks and Tiles.
No. 224,616. Patented Feb. 17, 1880.



Witnesses:

H. A. Low.

H. A. Bliss

Inventor:

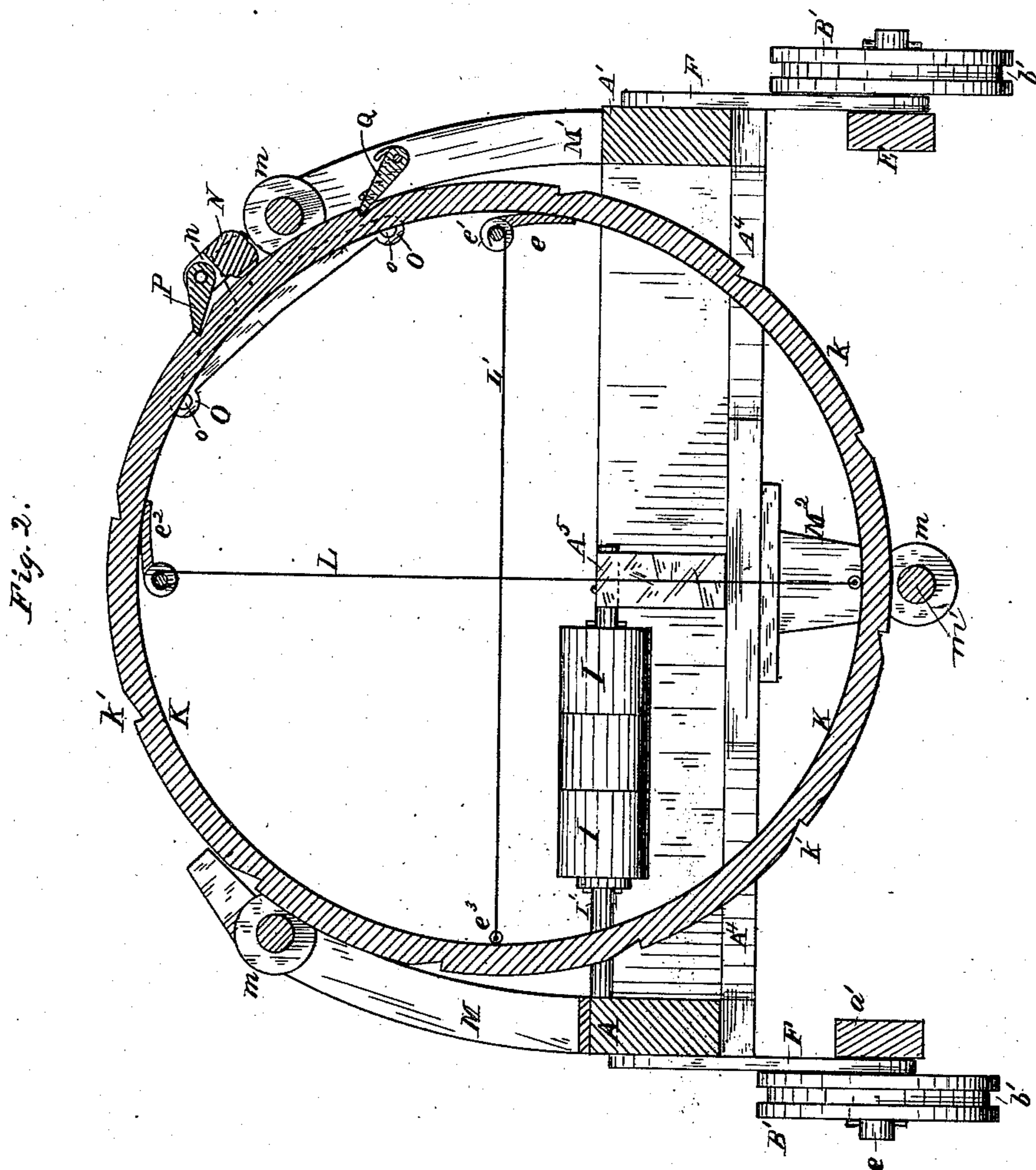
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UNITED STATES PATENT OFFICE.

JOHN S. SMITH, OF JACKSON, MICHIGAN.

MACHINE FOR CUTTING OFF BRICKS AND TILES.

SPECIFICATION forming part of Letters Patent No. 224,616, dated February 17, 1880.

Application filed July 29, 1879.

To all whom it may concern:

Be it known that I, JOHN S. SMITH, of Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Machines for Cutting Off Bricks and Tiles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of my improved machine for cutting off bricks or tiles. Fig. 2 is a transverse vertical section. Fig. 3 is a side elevation of the frame and the carrying-wheels.

A and A' represent the side sills of the main frame of the machine, and A² A³ end girts. A⁴ A⁴ are cross-pieces attached to the lower side of the sills A'. A⁵ A⁵ are beams arranged end to end on a line substantially parallel to the side sills, and having between them open spaces, as shown at a' a', for a purpose to be explained. The frame is mounted upon the forward wheels, B B, and the rear wheels, B' B'. The front wheels, B B, are mounted upon an axle, C, which is supported in brackets or hangers D, one at each end, and pivoted to the sills A A', as shown at d.

E represents a U-shaped yoke or stirrup, the free ends of which carry studs e, upon which are mounted the rear wheels, B' B', of the machine. F F are hangers pivoted to the sills A A' and to the studs e e. G is a shaft provided with a right-hand thread at one end and a left-hand thread at the other. It is arranged to engage at one end with the axle C, which, at the center, is provided with a screw-threaded aperture to receive it. At the other end the threaded shaft engages with the central part of the U-shaped stirrup E; and it will be seen that if the shaft G be rotated in one direction the axle C and stirrup E will be drawn together, which will result in elevating the frame, and if the shaft be rotated in the opposite direction the axle and stirrup will be forced apart and the frame be lowered. By this means I provide a ready adjustment of the position of the machine.

The shaft G is prevented from moving end-wise by a slotted bracket, H, depending from the frame, the jaws of which fit into a recess in the shaft, as shown at h.

The wheels B B' are provided with grooves b or flanges to hold them securely in place upon a track or way.

I I represent the rollers which receive and convey the clay from the machine that prepares it. These rollers are mounted upon shafts I' I', supported on the sills A and the beams A⁵ A⁵.

As the stream of clay moves along upon the rollers I it is cut at proper intervals to form the bricks or tiles by means of the following devices:

K K K are circular rims or bands, of iron or steel or other suitable material. They are all of the same diameter, and are arranged to carry the wires or cutting devices. Said wires are represented by L L, two of which are attached to each rim or wheel K, at right angles to each other and intersecting at the center. k³ is an eyebolt inserted into the rim K from the inside, and to it one end of the cutting-wire L is attached. The other end of the wire is secured by a screw, e', arranged to clamp it against a spring, e². This spring is rigid enough to hold the wire perfectly taut under any ordinary circumstances, but is at the same time sufficiently flexible to permit the wire to yield should it come in contact with a stone or other obstruction.

The wheels or rims K K are mounted in planes perpendicular to the path of the clay by means of devices substantially such as those shown.

M M M are standards secured to the upper side of the sill A. M' M' M' are similar standards secured to the top of the sill A'; and M² M² M² are hangers or brackets extending downward from the cross-pieces A⁴ A⁴, to which they are attached. Each of these standards and hangers M, M', and M² carries a roller, m, provided with a groove, m', adapted to receive and engage with a rib, k, upon the outer surface of each of the wheels or rims K.

By examining the drawings it will be seen that each wheel is thus provided with three supporting-rollers, there being one roller below the center (substantially) of each wheel,

and two others, each of which is about one hundred and thirty-five degrees from the lower one, and which are therefore about ninety degrees from each other, and that by these devices the rims K K can be permitted to rotate without requiring a central shaft, and therefore the cutting-wires can be made to extend the full length of the diameter of the cutter-carrier, they needing no support at the center of said carrier. Making the cutter thus extend from one side of the carrier to the other avoids the necessity of more than one spring *e* on the line of any diameter. Should the wires be attached at the center of the carrier, or between the center and the rim to any fixed part of the carrier, two springs would be required on the line of each diameter.

The rims K are simultaneously rotated by means of a cross-bar, N, which is held in place upon the outer edge of the rims by means of heads O O, having lugs or studs *o o*, adapted to pass under the rim and thus clamp the bar N. This bar is in a line substantially perpendicular to the planes of the rims K, and is arranged to reciprocate laterally over about one-fourth of their circumference.

P P are dogs pivoted to the bar N or to lugs *n n*, secured to the bar, there being a dog directly above the rib *k* on each rim K.

k' k' are notches formed in each rib *k*, adapted to engage with the dogs P P when the bar is moving forward, but permit the bar to pass freely in the opposite direction, and thus, as will be readily seen, a portion of a revolution is imparted to the rims K K at every reciprocation of the bar N.

Q Q represent spring-pawls pivoted to the rear standards, M' M', adapted to engage with the teeth or notches *k'* and prevent any backward movement of the rims while the bar N is being moved back toward said standard.

The bar N has a handle, preferably similar to that shown at R.

From the foregoing description and the drawings the operation of my machine will be readily understood.

Supposing the rims K to be in the position shown in Fig. 2 and the bar N at the rearward limit of its throw, the wires L being vertical and the wires L' being substantially horizontal, and that the clay is being fed in a continuous stream, the operator at the proper time draws the bar N, and with it the rims K K, forward into the position shown in Fig. 1, by which time the wires L' have passed through the stream of clay and have become vertical, the wires L at the same time having become horizontal and ready for the next cut.

In order to insure that the wires shall cut a perfectly straight edge, the machine is moved forward on its track with a speed sufficient to let the clay rest upon the rollers while the wires are passing through it.

The carrying-wheels are constructed to run with but little friction, so that as the stream of

clay is passing under the cutting-wires its friction upon the supporting-rollers will, after said steam has passed under the last wire, move the mechanism forward with but little or no assistance from the operator.

If, for any reason, it should be desired to stop the operation of cutting while the clay continues to be fed on the rollers, it can be readily done, inasmuch as the rotation of the carriers is entirely under the control of the operator, regardless of the mechanism which feeds the clay. The rotation of the carriers is therefore intermittent, and in order to insure a uniform length of bricks or tiles it is necessary to have two or more simultaneously-rotating carriers situated at a distance apart equal to the desired length of brick.

What I claim is—

1. In a machine for cutting off bricks, the combination of a reciprocating bed-frame, two or more rotating cutter-carriers mounted upon said reciprocating cutter-frame, and mechanism which simultaneously rotates said cutter-carriers, whereby several bricks can be formed at one operation, substantially as set forth.

2. The combination, with a continuously-rotating cutter-carrier mounted upon eccentric supports, of a flexible cutter extending continuously from one side of said carrier to the other through the center, substantially as set forth.

3. In a machine for cutting off bricks or tiles, a cutter-carrier which rotates in one direction only, with a motion intermittent relatively to the feeding of the clay, substantially as set forth.

4. The combination, with a flexible cutter extending continuously across the carrier, of the spring *e*, which permits the cutter to yield upon both sides of the center, substantially as set forth.

5. The combination of the bed-frame, the rotating cutter-carrier K, supported only at its perimeter, and the standards M M' M², mounted separately from each other on said bed-frame and arranged to bear against the outside of said cutter-carriers, substantially as set forth.

6. The combination of the cutter-carrier K, the rod N, and the pawl P, pivoted to said rod, substantially as set forth.

7. The combination of the cutter-carriers K K and the reciprocating rod N, provided with the heads O O and studs *o o*, adapted to engage with the under side of the cutter-carriers, substantially as set forth.

8. The combination, with the cutter-carrier K, provided with the flange *k*, which has the notches *k' k'*, whereby the rotating mechanism engages with the carrier, of the grooved pulleys *m m*, mounted outside the carrier and arranged to engage with said notched flange *k*, substantially as set forth.

9. In a machine for cutting off bricks or tiles, in combination with a continuously-rotating

cutter-carrier, a stop arranged substantially as set forth, to prevent backward movement of the carrier.

5 10. In a machine for cutting off bricks and tiles, in combination with a continuously-rotating cutter-carrier, a reciprocating bar adapted to engage with the carrier while moving in one direction and to be disengaged while moving in the other direction, substantially as
10 set forth.

11. In a machine for cutting off bricks or tiles, in combination with the axle C and the yoke

E, mechanism, substantially as described, adapted to draw together and force apart said axle and yoke, and thereby adjust the position 15 of the frame.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN S. SMITH.

Witnesses:

J. M. HOLLAND,
F. G. BENNETT.