

(No Model.)

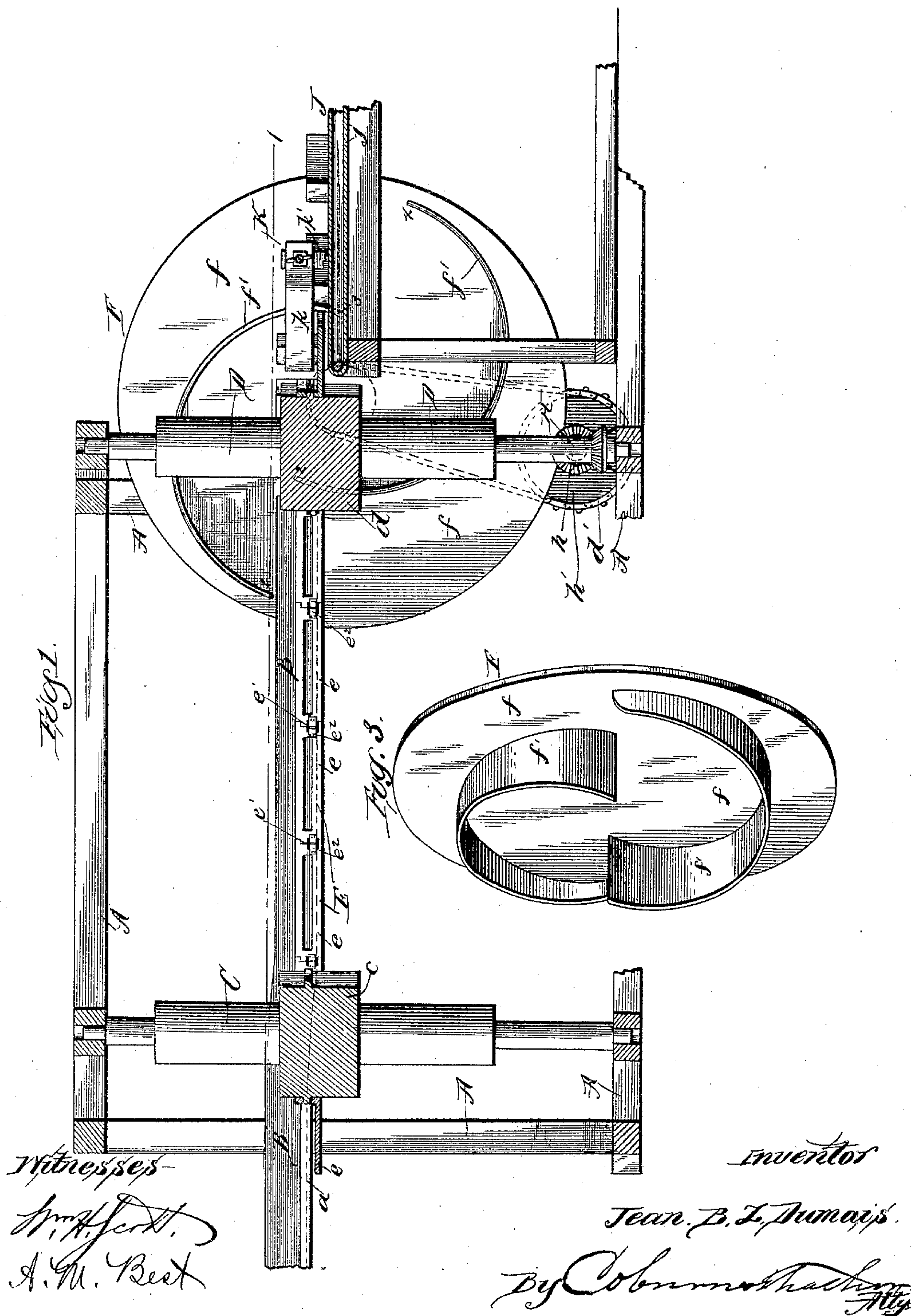
2 Sheets—Sheet 1.

J. B. Z. DUMAIS.

CUTTER FOR BRICK OR TILE MACHINES.

No. 436,341.

Patented Sept. 16, 1890.



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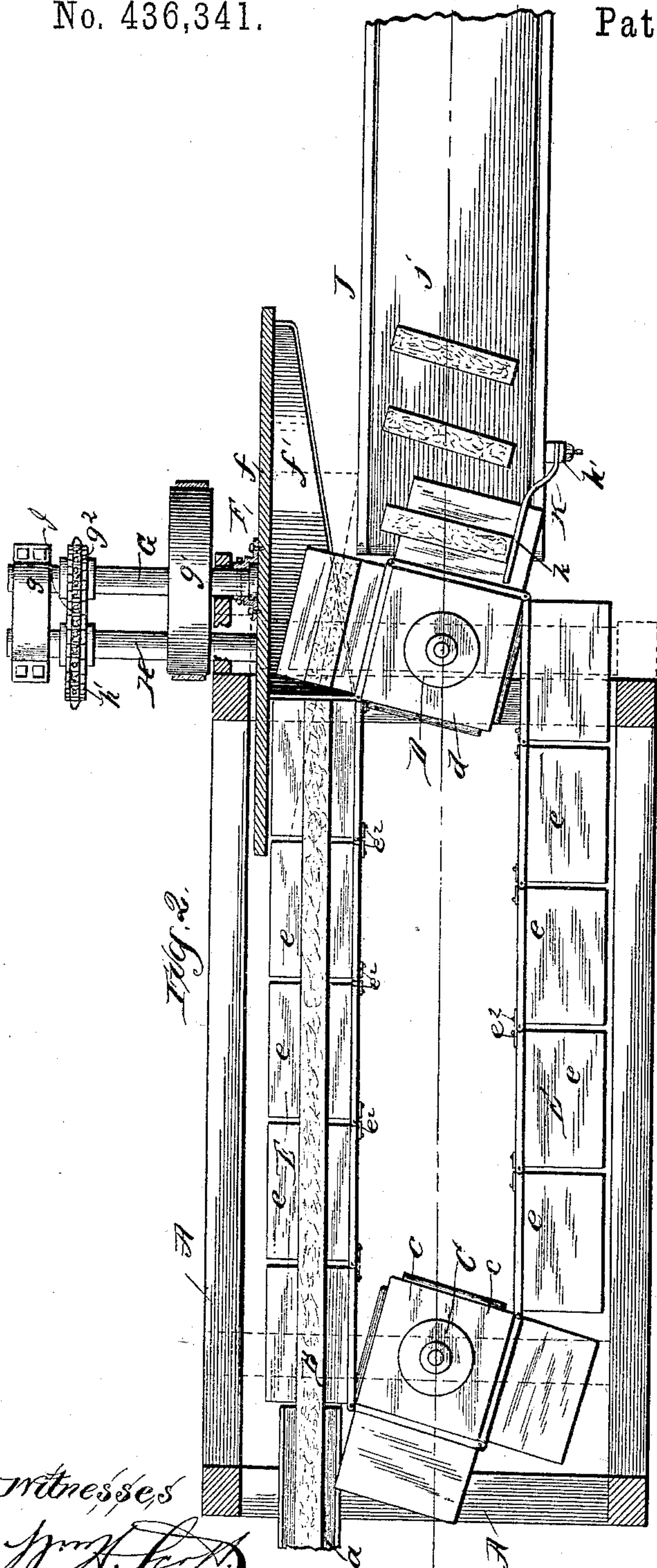
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witnesses

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JEAN B. Z. DUMAIS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
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CUTTER FOR BRICK OR TILE MACHINES.

SPECIFICATION forming part of Letters Patent No. 436,341, dated September 16, 1890.

Application filed January 18, 1890. Serial No. 337,281. (No model.)

To all whom it may concern:

Be it known that I, JEAN B. Z. DUMAIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cutters for Brick-Machines, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a vertical section of a brick-cutter embodying my invention, taken on the line 2 2 of Fig. 2; Fig. 2, a plan section of the same, taken on the line 1 1 of Fig. 1; Fig. 3, a perspective view of the cutter detached, 15 and Fig. 4 a detail rear elevation of a portion of the carrier on an enlarged scale.

My invention relates to mechanism for cutting up into bricks continuous strips of pressed and molded clay as delivered from 20 brick-machines of a well-known type.

The present improvement relates to a device whereby the said strips of clay are cut up into bricks without stopping their forward progress as they are run out from the machine 25 and conducted by a suitable carrier to the cutter.

I will proceed to describe in detail the mechanism by which I have embodied my invention in one practical form, and will then point 30 out definitely in claims the special improvements which I believe to be new and wish to protect by Letters Patent.

In the drawings, A represents an upright frame, rectangular, as shown in the drawings, 35 though this is a matter of arrangement and adaptation. This frame is adapted to be set up close to the machine for grinding, mixing, and pressing the clay, which may be of any ordinary construction that will deliver the 40 clay in a continuous pressed strip of rectangular form corresponding to the width of the brick, the object being to deliver a strip of clay, which is designated B in the drawings, from said machine to the cutting mechanism.

45 This is represented in Fig. 2 of the drawings, where at the front end of the frame, which is set up next to the said machine, is a narrow trough or guideway *a*, into which the clay strip is delivered.

50 I have not shown the main machine for grinding and pressing the clay and making

the said strips, as machines of this kind are well known and have been in public use for many years, and their particular construction constitutes no part of my present invention. 55 It will be understood by those familiar with the art that this cutting mechanism may be used in connection with any of the said main machines which deliver a continuous strip of pressed clay. At this same end of the frame, 60 where the said guideway is located, there is mounted an upright shaft C about centrally of the width of the frame and provided with a fixed drum or pulley *c* about midway of its length. At the other end of the frame a simi- 65 lar upright shaft D is mounted, similarly arranged, and also provided with a similar drum or pulley *d*, and at its lower end near its journal with a bevel-gear *d'*. A horizontal carrier E is arranged upon these drums or pulleys, so 70 as to be driven by the revolution of the said shafts, as will be presently described. This carrier is for the purpose of conveying the clay strips to the cutter, and so is arranged about on a level with the delivery end of the guideway 75 *a*—that is, its horizontal portion is thus arranged. It is composed of a number of sections *e*, which are each of about the length desired for the clay brick when cut off. These sections are composed of a broad horizontal part 80 and an upright or perpendicular portion rising as an upright flange from the rear edge of the flat or horizontal portion—that is, the sections are angular in cross-section. These separate pieces are linked together by hinges 85 at their backs, these hinges being preferably arranged in the upright flanges of the pieces, as shown in Fig. 4 of the drawings. This arrangement of the sections and hinging at their backs only will of course permit the 90 carrier to be moved around the drum-shafts, the sections opening as they pass around the drums to accommodate this movement, as shown in Fig. 2 of the drawings. The upright flanges at the backs of the sections are 95 cut out slightly on each side of the hinge-pivots and at the lower portion of the flanges, so as to make openings *e'* through the back flanges on each side of the hinge. These openings are covered by thin spring-plates *e''*, 100 fastened at their outer ends to the upright flanges and extending inward toward the

hinge, so as to cover the openings just described, but free at their inner ends, so that they will yield to permit the escape of anything pressed out against them. It will be
 5 seen from this description and upon reference to the drawings that this carrier passes forward on one side of the main frame and back on the other, and that it is adapted to move forward the strip of clay horizontally from
 10 one end to the other of the said frame on the side thereof first mentioned.

The cutter F is mounted on a horizontal shaft G, which is arranged at right angles to the path of the carrier, and is mounted at its
 15 inner end in a suitable bearing fastened to the frame, and its outer end in a bearing *g* on any suitable support standing slightly at one side from the machine. This shaft does not extend across the frame, and is arranged
 20 nearly on a level with the hinged carrier and just about in front of the upright shaft D, which drives the carrier, as will be seen on reference to Fig. 1 of the drawings. The cutter-shaft G is provided with a driving-pulley
 25 *g'*, by means of which it is rotated by a band from a main driving-pulley on any suitable shaft of the main machinery. These connections are not shown, as they will be readily understood by those skilled in the art.

30 The cutter F is of peculiar construction. It consists of a disk *f* and two knives *f'*, arranged spirally on the face of this disk. These knives are set perpendicular to the disk, and the initial of each is close to the edge
 35 of the latter, whence it is carried around and inward spirally, the terminals being about on the same diametrical line. These four points—that is, the two initials and the two terminals of the knives—are all about on the
 40 same diametrical line across the disk. It will be seen then that each knife runs about half-way around the disk, as seen in Figs. 1 and 3 of the drawings. The curve of the spiral is such that the knife will be drawn in from its
 45 initial point to its terminal a distance equal to the length of the bricks of clay into which it is desired to cut the strips. It will be seen then that the distance between the initial point of each knife and the terminal point
 50 of the other knife will be the length of one of these bricks—that is, the distance from 1 to 2 and from 3 to 4 on the disk, Fig. 1 of the drawings, will be the length of a clay brick. These knives are also tapering on their cutting-edges, being very narrow, or almost to a
 55 point, at the initial and gradually widening toward the terminal, where they should be as wide or a little wider than the width of the linked sections composing the carrier E, as
 60 seen in Figs. 2 and 3 of the drawings. The rotary movement of the disk is calculated relatively to the travel of the said carrier, so that the disk will make a half-revolution while the carrier is moving forward a distance
 65 equal to one of its hinged sections. It will be evident then that as the disk is rotated the cutting-knives will be progressed by reason

of their curve coincidently with the progressive movement of the carrier. If, then, in setting up the machine the link-carrier and the
 70 cutter are arranged relatively so that the initial of one of the knives will be brought by the revolution of the disk to the carrier just at the proper time to coincide with the division between two sections of the carrier, it is
 75 evident that this narrow end of the knife will strike into the space between two sections, as indicated in the drawings, and, as already explained, the spiral will cause the
 80 said knife to progress coincidently with the carrier, so that it will travel in its rotation in this space between two sections which are all the time moving forward. As the tapering
 85 knife is thus carried down through the said space its inclined edge will of course be carried inward farther and farther, so that it will come in contact with and sever the strip of clay which is carried forward by the carrier, this movement continuing until the knife
 90 about fills the space between two sections at its terminal, and at this point the next knife is just in position to enter the next dividing-space, so that the strip or strips of clay will be successively severed into the required
 95 lengths for brick. It will be seen that the shaft of the cutter is arranged at right angles to the line of progression of the clay strip, so that the cutter revolves with the travel of the strip and not across it.

I have shown in the drawings means for
 100 driving the linked carrier from the shaft of the cutter. This is accomplished by means of a shaft H, arranged below the cutter-shaft G and mounted in suitable bearings. This shaft
 105 extends inward to the upright shaft D, where it is provided with a small bevel-gear *h*, arranged to engage with the similar gear-wheel *d'* on the said upright shaft D. This shaft is also provided with a sprocket-wheel *h'*, and a similar sprocket-wheel *g''* is fixed on the cutter-shaft G. The drive-chain I, running over
 110 these two sprocket-wheels, communicates motion from the cutter-shaft to the shaft H, and thence to the upright shaft D, whereby the carrier is driven. This is a convenient way
 115 of driving the carrier, because the relative movement of the cutter and carrier is thus easily maintained; but this particular means for driving the carrier is not an essential. A plain endless carrier J is arranged on the
 120 inside of the cutter just in front of the shaft D, which drives the linked carrier, and about on a level with the said carrier, being arranged, however, so that its inner end will come just underneath the horizontal portion of the
 125 linked sections of the said carrier when they are brought around the turn at this end of the machine, as shown in Figs. 1 and 2 of the drawings. This carrier J is of any ordinary construction, it being a device well known
 130 and in common use in brick-machines for the purpose for which it is here used—namely, to carry off the clay bricks from the cutter and deliver them wherever desired. The transfer

is accomplished by a wide belt *j*, passing over rollers at each end and driven in any convenient way. I do not deem it necessary to show and describe these devices, for they are
 5 so well known as to be readily understood and applied.

It will be seen from the description above and by reference to Fig. 2 of the drawings that each section of the carrier E will have
 10 upon it a clay brick just as it begins to turn around the shaft D, and in its movement around the turn this brick will be brought immediately over the inner end of the delivering-carrier J. In order to transfer the brick
 15 from the linked section *e* to the delivery-belt *j* I mount on the inner end of the carrier J a stop K, which is shown in the drawings as a strip *k*, of considerable width, mounted at one end on a post *k'*, attached to the frame of the
 20 carrier J and on the outer edge thereof. This strip extends backward toward the linked carrier and inward somewhat over the belt *j*, so as to have an inclined position, as seen in Fig. 2 of the drawings. The continuous move-
 25 ment of the carrier E will bring the forward end of the clay brick against this inclined stop, which arrests the further movement of the clay brick by the linked section *e* which carries it, and the latter will pass out from
 30 under the brick, leaving it upon the delivery-belt *j*, and the bricks thus delivered will be transferred to the desired point by said belt *j*. It will be seen that I thus obtain a cutter of simple construction and operation which will
 35 satisfactorily divide the strips of clay into suitable brick-lengths without interrupting the progressive movement of the strip as it is delivered from the main machine.

The operation is not attended with undue
 40 friction, and is absolutely certain, for, as described above, the knives pass down through the strips of clay their entire length, thus insuring the complete division of the clay strip. If the knives meet with obstruction in the
 45 shape of hard lumps or small pebbles, which will sometimes appear, these obstructions will be crowded to one side by the inclined edge of the knives and will be forced out through the openings *e'* in the backs of the
 50 hinged sections, the spring-plates *e²* yielding for this purpose. These openings and spring-plates are provided to permit this discharge of such obstructions, thereby preventing the stoppage of the machine or injury thereto
 55 when they may be met.

I do not wish to be understood as limiting myself to the actual details of the mechanism herein shown and described in all respects, for changes may be made in many parts with-
 60 out losing the main features and characteristics of the invention, and more than two

knives may be used, the relative arrangement and movement of the parts being observed, as described above.

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

1. In a brick-cutting machine, a clay-strip carrier composed of sections about the length of a brick, in combination with a revolving
 70 cutter rotating with the travel of the strip and provided with spiral knives arranged perpendicular to the line of movement of the strip and curved to correspond with said movement, substantially as and for the pur-
 75 poses specified.

2. The strip-carrier E, composed of sections *e*, hinged together at their backs, in combination with the revolving disk F, arranged to rotate with the forward movement of said
 80 carrier, and the knives *f*, mounted on the face of said disk perpendicular thereto and curved spirally thereon, so that the terminal of each blade will be the length of a brick farther in-
 85 ward than its initial and relatively arranged to permit the initial of each cutter to strike into the dividing-space between two sections of the carrier, substantially as and for the purposes specified.

3. A rotary brick-cutter consisting of the
 90 disk *f*, or suitable knife-support, in combination with the knives *f'*, set on edge perpendicular to the face of the support and curved inward spirally, with the initial of one knife separated from the terminal of the preceding
 95 knife a distance equal to the length of a brick, substantially as and for the purposes specified.

4. The sectional strip-carrier E, having its sections hinged together at their backs, in
 100 combination with the rotary cutter F, rotating with the progressive movement of the carrier, the delivering-carrier J, and the stop K, substantially as and for the purposes specified.

5. The strip-carrier E, composed of the sec-
 105 tions *e*, having openings *e'* in their backs at the connecting-joint, in combination with the knives *f'*, provided with inclined cutting-edges, and the spring-plates *e²*, arranged to cover the openings *e'*, substantially as and
 110 for the purposes specified.

6. The sectional strip-carrier E, in combination with its upright driving-shaft D, the horizontal shaft H, geared to the shaft D, the driven cutter-shaft G, and chain gearing con-
 115 necting said cutter-shaft with the shaft H, substantially as and for the purposes specified.

JEAN B. Z. DUMAIS.

Witnesses:

A. M. BEST,
 WM. H. SCOTT.