

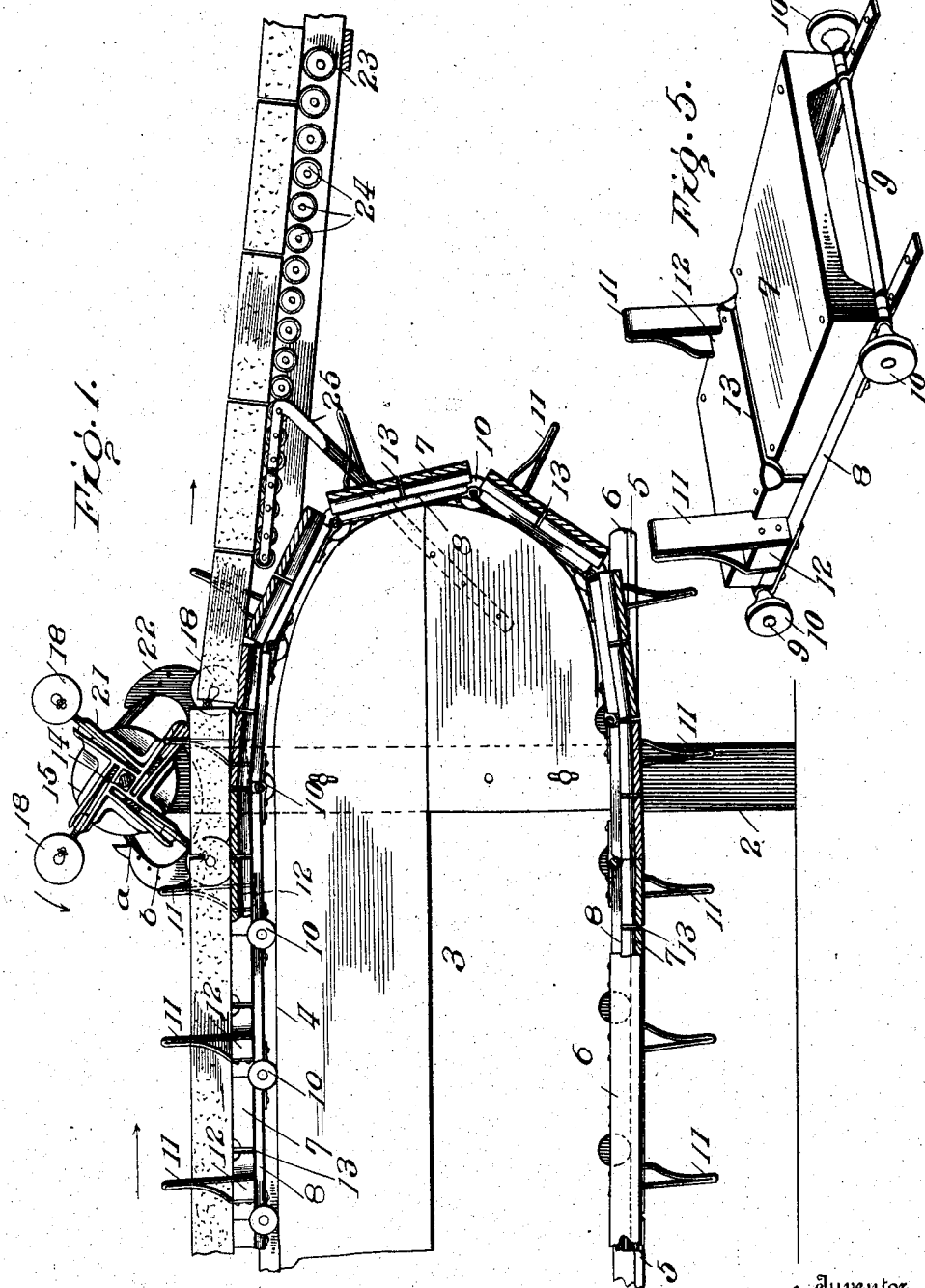
No. 790,170.

PATENTED MAY 16, 1905.

B. E. BECHTEL.
BRICK, BLOCK, OR TILE CUTTER.

APPLICATION FILED JAN. 14, 1905.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 2.

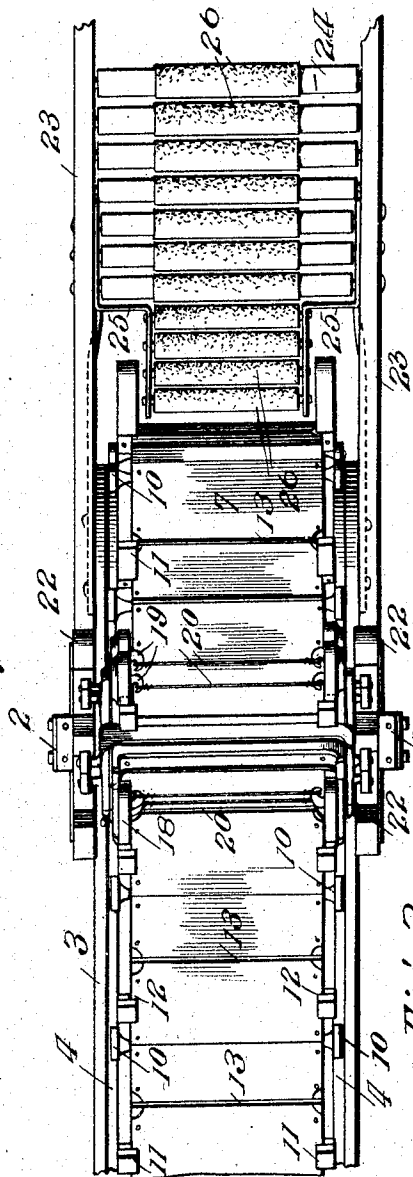


Fig. 3.

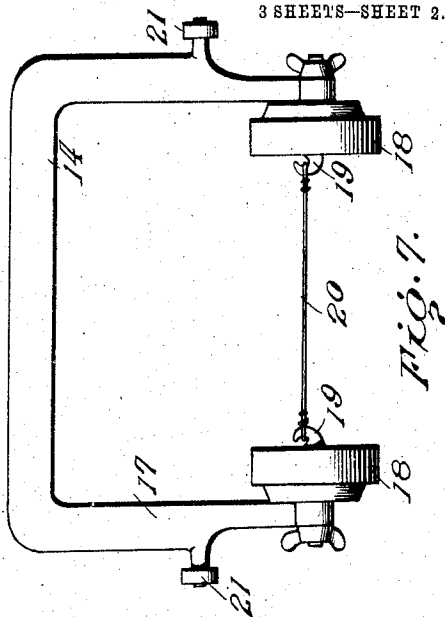
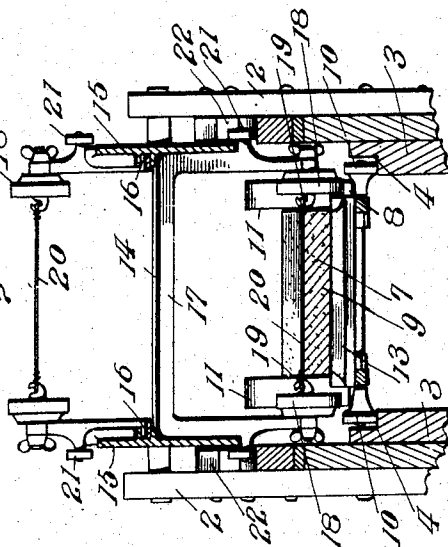


Fig. 7.

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3 SHEETS—SHEET 3.

Fig. 4.

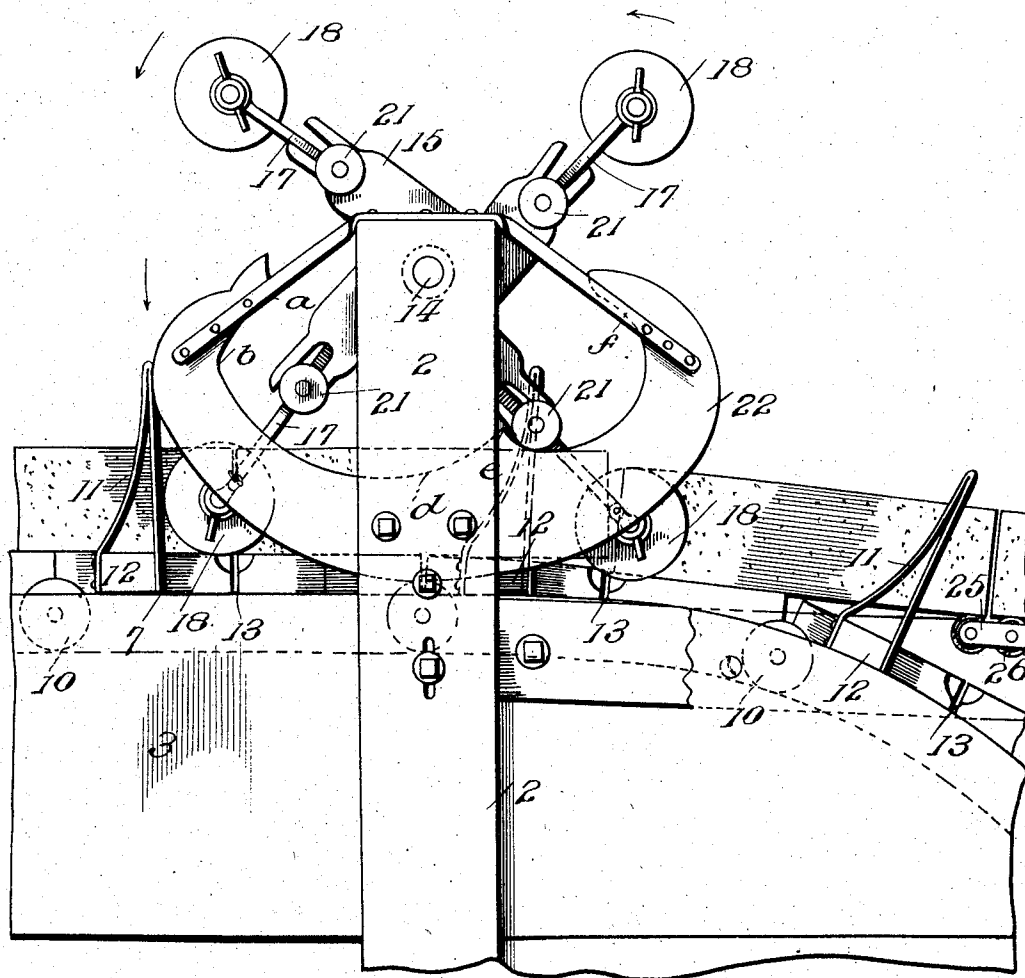
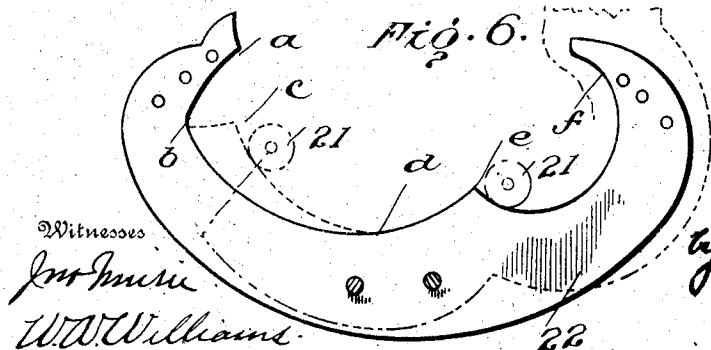


Fig. 6.



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UNITED STATES PATENT OFFICE.

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BRICK, BLOCK, OR TILE CUTTER.

SPECIFICATION forming part of Letters Patent No. 790,170, dated May 16, 1905.

Application filed January 14, 1905. Serial No. 241,160.

To all whom it may concern:

Be it known that I, BYRON ERB BECHTEL, a subject of the King of Great Britain, residing at Waterloo, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Brick, Block, or Tile Cutters; 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.

This invention relates to certain improvements in brick, block, or tile cutters; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the construction shown in the accompanying drawings merely as an example of a preferred embodiment of my invention from among other constructions and arrangements within the spirit and scope of my invention.

The invention consists in certain novel features in construction and in combinations or arrangements of parts, as more fully and particularly set forth hereinafter.

Referring to the accompanying drawings, Figure 1 is a vertical longitudinal section of the rear portion of the machine. Fig. 2 is a top plan thereof. Fig. 3 is a vertical cross-section taken through the machine in the plane of the cutting-reel. Fig. 4 is a detail enlarged side elevation of the upper rear portion of the machine, showing the cutting-reel. Fig. 5 is a detail perspective of a portion of the endless carrier or table, portions being broken away. Fig. 6 is a detail view of one of the wire-frame-controlling cams, dotted lines indicating the path traveled by said frame. Fig. 7 is a detail elevation of one of the cutting-wire frames of the reel.

The machine shown comprises an endless traveling table or conveyer made up of loosely-connected plates or sections, a frame providing tracks or ways for the table, a rotating cutting-reel driven by engagement with standards rigid with the table-sections, and a roller bed or platform to receive the cut bricks discharged from the table.

The frame of the machine can be of any suitable and desirable construction, although

I prefer to employ opposite end pairs of posts or uprights and longitudinally-arranged sides carried thereby. The rear end vertical posts 2 are projected upwardly from the frame sides to provide supports for the cutting-reel and the cams which coöperate with the wire-carrying frames of said reel. 3 represents the two longitudinal side walls of the frame, extending from end to end thereof. These sides 3 are arranged in parallel vertical planes and are spaced a suitable distance apart to accommodate the traveling table. Said sides are usually formed with horizontal longitudinal edges and rounded or approximately semicircular vertically-disposed end edges and are provided at their inner vertical faces with inwardly-extending ledges forming the tracks or runways 4, on which the supporting-rollers of the horizontal top ply and depending end portions of the traveling table move. At the opposite ends of the frame these tracks 4 curved downwardly or are semicircular, forming vertical curved end continuations of the top horizontal portions of the tracks. The top portions of the track are horizontal and are depressed below the top edges of the sides, and the curved end portions are also depressed or arranged inwardly beyond the curved end edges of the sides.

The horizontal bottom or return tracks 5 are formed in the inner faces of the horizontal beams or bars 6, arranged at the lower edges of the sides 3, and the tracks 5 project inwardly from the inner faces of the bars 6 and are arranged below the top edges of said bars. The front end of the frame is approximately the same so far as the tracks are concerned as the rear end shown, for instance, in Fig. 1.

Each plate or section of the traveling table or conveyer comprises a floor 7, usually rectangular in shape, having a flat top face and having the bottom face hollowed out to reduce its weight, but so as not to affect its rigidity, and in length approximately equal to the length of brick cut by the machine, and parallel longitudinal bottom bars 8, on which the floor is rigidly secured. The sections of the table are arranged end to end and are pivotally united or hinged together to form an end-

less chain and preferably so that the sections forming the top ply of the table will about approximately at their ends and form the horizontal top floor or table on which the bar or bars of clay rest and which receive the same from the bar-forming machine, so that the endless table is propelled by the forward movement of the bar or bars of clay. The hinge-pivots between the sections are preferably located below the meeting ends of the sections, and each hinge-pivot is shown consisting of a rod or axle 9 arranged below the plane of the floor 7 of the sections of the top ply and immediately below the adjoining end faces of the sections and loosely coupled in any suitable manner to the end portions of the bottom bars 8 of adjoining sections, so that the sections can freely swing vertically on said hinge-pivots 9. Said hinge-pivots 9 are projected laterally beyond the sections and form the axles for the comparatively small table-supporting rollers 10, located beyond the planes of the side edges of the sections. If so desired, the axles 9 can be loosely confined to the sections so far as endwise movement is concerned, and the rollers 10 can be loose on the ends of the axles 9, as the rollers are arranged at the inner faces of the depressed tracks. The inner faces of the sides 3 and of the bars 6 will hence confine the rollers against endwise movement from the axles 9 and will also confine the loosely-mounted axles 9 against endwise movement.

Each section of the table near its rear end is provided with two upright side cutting-reel-operating guide-standards 11. These standards are arranged at the opposite side edges of each section and can be of any suitable and desirable construction, although I prefer the arrangement shown wherein each standard consists of a strip of doubled metal having the lower ends of its legs fitted down on opposite sides of and secured to a lateral projection 12 from the edge of the floor 7. I also provide vertical slots in the edges of the floor 7, into which the metal plates forming the standards fit to add strength to the standards. The front faces of the standards are preferably flat for engagement with the guide-rollers of the cutting-reel, and these front faces of the standards when in their normal positions are preferably inclined upwardly and rearwardly to a slight extent from the perpendicular, as hereinafter set forth.

Each section of the table is formed with a vertical slot 13, extending transversely through the floor 7, from edge to edge thereof, and downwardly through the flat top face thereof to or approximately to the bottom bars 8. This slot 13 is located near the central portion of the length of the floor 7—that is, a short distance in rear of the exact center of the floor 7 and a short distance in front of the standards 11.

The cutting-reel is approximately the same

construction disclosed in my Patent No. 770,625, dated September 20, 1904. This reel comprises the shaft 14, arranged a suitable distance above the rear end portion of the horizontal top ply of the traveling table and carried by and turning freely in boxes or bearings in the end posts 2. End heads 15 are rigidly secured to this shaft and at their inner faces are formed with the outwardly-extending slideways 16.

17 represents the sliding cutting-wire frames confined in the slideways 16 to move therein about radially of the reel. At its two outer ends each frame 17 is provided with the guide-rollers 18, arranged to engage the standards 11 of the traveling table. Suitable means are provided to loosely confine these rollers to the frame ends, and adjustable hooks or bolts 19 extend through said rollers and carry the cutting-wire 20, which is stretched between the ends of the frame and the rollers. This wire is arranged eccentrically to the axis of the two rollers by being located a short distance—say about an eighth of an inch—nearer the axis of the cutting-reel than is the axis of the two rollers 18 located with respect to the axis of the cutting-reel.

21 represents the two stop or frame-controlling rollers or projections of each wire-frame, which project laterally beyond the sides of the frame to travel, respectively, in the vertical planes of the cams 22 and to engage the top edges of said cams during certain portions of the movement of the frames.

The cutting-wire frames are equally spaced, and any suitable number of these frames can be employed in the cutting-reel.

The cams or wire-frame-controlling tracks 22 are rigidly secured to the posts 2 at opposite sides of the traveling table and are peculiarly curved at their upper edges to cooperate with the stop-rollers 21, as hereinafter more fully set forth.

A brick-receiving table or platform is arranged at the rear end of the machine and inclined downwardly and forwardly from the discharge or delivery end of the top ply of the traveling table to receive the cut bricks from the table-sections as said sections move downwardly at the discharge end of the machine. 23 is the frame of this receiving table or platform, rigidly secured to the sides 3 of the cutting-table frame. 24 represents loosely-mounted parallel rollers arranged transversely in this frame 23 and forming a series of closely-arranged rollers approximately from end to end of the frame 23 and constituting a roller floor or platform. The rollers at the front end of this platform are reduced in length and are mounted in the angularly-bent bars 25 to afford spaces between the bars 25 and the side bars of the frame 23 for the downward passage of the standards 11 of the traveling table. I usually provide the rollers 24 with a soft surface covering 26, composed

of any suitable fabric which will act as a cushion for the bricks.

I do not wish to limit all features of my invention to the downwardly-inclined receiving-platform having a floor composed of the idler-rollers, as the inclined floor of this receiving-platform might be otherwise formed to permit the easy feeding movement of the bricks or to accelerate the movement of the bricks away from the traveling table than by the rollers.

As the bar of clay moves forwardly on the top ply of the traveling table, thereby propelling the table, the cutting-reel is rotated by the engagement of the guide-standards 11 with the rollers 18 of the cutting-wire frames. The rotation of the cutting-reel carries the cutting-wires successively down through the clay bar, and thereby severs the bricks therefrom.

Each cutting-wire frame as it travels downwardly slides forwardly by gravity as it passes down from the horizontal position until its rollers 18 engage the standards 11 of an approaching table-section. When the wire-frame thus slides forward by gravity, its stop-rollers 21 engage the upwardly and rearwardly projected front ends of the cams 22 somewhere between the points *a* and *b*, Fig. 6, and the frame is thus stopped from sliding forward from the reel. As the reel revolves the rollers 21 travel on the surfaces of the cams until they reach the points *b*. The guide-standards 11 of the said advancing table-section then engage the rollers 18 of said frame and push the said frame back until it reaches the abutments at the inner ends of its slideways 16, thereby causing the stop-rollers 21 of said frame to move along the imaginary line *b c* and away from the cam-surfaces. The downward cutting movement of the wire then begins, and the guide-rollers 18 move down along the guide-standards 11, and the stop-rollers 21 move concentric with the reel-axis along the imaginary line *c d*. When the stop-rollers 21 have reached the point indicated by *d*, Fig. 6, the wire-frame is in the vertical position, the cutting-wire is in the lowest point in its path of movement, the cut through the clay bar has been completed, and the stop-rollers 21 are again in contact with the surfaces of the cam. The wire-frame then starts on its upward movement, the cutting-wire being located down in the slot 13, and the stop-rollers 21 travel along the cam-surfaces rearwardly from the point *d* and upwardly and rearwardly along said curved cam edges until the point *e* is reached. When the point *e* is reached, the cutting-wire is located between and out of contact with the two severed edges of clay, and the table-section in front of the wire is so tilted as to remove the brick carried thereby some distance from the wire, so that the wire-carrying frame can be permitted to slide forward to carry the wire

away from the forwardly-tilting edge of the brick behind said first-mentioned brick. Hence the rear ends of the cams are recessed or depressed along curved lines from the point *e* to the extremity *f*, thereby permitting the wire-frame to slide forward after leaving the point *e*, allowing the cutting-wire to move upwardly through the cut midway between the ends of the bricks and without engaging the surfaces thereof. The stop-rollers 21 move along the cam-surfaces between points *e* and *f*, which are so formed as to allow rollers 21 to travel up along the guide-standards 11 and be lifted clear of the upper ends of the guide-standards without binding thereon, the cams holding the wire-frame in its reel-slideways until said wire-frame has reached or passed the horizontal position in its upward movement.

As the cutting-wire of each wire-frame is about an eighth of an inch nearer the reel-axis than is the axis of the guide-rollers 18, it is necessary to incline the guide-standards 11 just as much off the perpendicular as the cutting-wire is off the guide-roller center or axis in order to make the perpendicular cut through the clay bars—that is, in order to cut the ends of the brick squarely at right angles to the side faces of the brick. It will hence be noted that as the guide-rollers 18 pass down the guide-standards 11 the cutting-wire passes down through the clay bar slightly in advance of the axis or center line of the rollers 18 and that as the cutting-wire moves up or back through the opening between the bricks it is slightly behind the said axis of the guide-rollers 18. Now the relation of the tracks for the traveling-table-supporting rollers with respect to the reel is such that as soon as the cutting-wire has passed down through the brick into the slot 13 and has started on its return movement the table-section having the guide-standards 11 in engagement with the particular guide-rollers 18 begins to drop from the horizontal position. This movement tips the guide-standards forwardly from the perpendicular position, and hence as the guide-rollers 18 travel up said standards the wire-carrying frame is moved forward, so that the wire is carried up clear of and out of contact with the edges of the bricks. The guide-standards hold the frame to prevent the wire engaging the brick surfaces behind the same, while the cam-surfaces hold the frame to keep the wire from engaging the brick surfaces in front.

It will be observed that the bricks are not cut between or over the adjoining ends of the table-sections, but that the cuts are made just in rear of the center of each section, so that a little more than half of each brick rests on one table-section and the remainder of the brick projects forwardly onto the rear portion of the next table-section in front, so that said

table-section in front can drop down from the brick in passing down on the curved front ends of the tracks without causing the brick to tilt and drop from the traveling table.

5 This arrangement permits the advantageous employment of the inclined receiving-platform hereinbefore referred to, as the receiving end of the roller-platform is so arranged that the front end of each brick left projecting from the section carrying the greater portion thereof by the dropping of the section in front drops onto the receiving-platform and is pushed forward thereon as the table-section carrying said brick moves down past the inner end of said receiving-platform. As the receiving-platform at the delivery end of the cutting-table is inclined downwardly, the bricks easily slide onto the roller table or platform and are easily pushed forward by each succeeding brick delivered onto the platform by the table.

It is evident that various modifications might be resorted to in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the exact constructions set forth.

Having thus described my invention, what I claim is—

30 1. In a cutting device, the combination of a traveling table with a cutting-reel actuated thereby and having guide-rollers, and cutting-wires arranged eccentrically with respect to the axes of the guide-rollers.

35 2. A cutting-reel comprising movable frames having guide-rollers, each frame having its cutting-wire arranged to one side of the center or axial line of its guide-rollers.

40 3. In combination, a traveling table comprising sections having guide-standards inclined from the perpendicular, and a cutting-reel comprising frames having guide-rollers and cutting-wires arranged to one side of the axial line of the guide-rollers, and provided with means for controlling the positions of said frames.

4. In a cutting-machine, in combination, a cutting-reel comprising independently-movable frames, each frame having guide-rollers and a cutting-wire arranged eccentrically thereto, a traveling table, and means for engaging said rollers to rotate the reel to perpendicularly cut the bricks.

5. In a cutting mechanism, in combination, 55 a traveling table, a cutting-reel actuated thereby and comprising independently about radially movable frames carrying the cutting-wires, and fixed cams engaging portions of said frames during portions of their movements, and having rear depressed or recessed portions to permit the rearward movement of the frames when moving upwardly.

6. In a cutting mechanism, in combination, a cutting-reel comprising independently-mov-

able frames provided with cutting-wires, a 65 traveling table comprising sections having reel-operating standards, each section in length about equal to the distance between the cuts formed by said reel and between its ends formed to receive the cutting-wire, and 70 tracks supporting said sections and inclined in rear of the point at which each cut is completed, whereby the sections assume a tilted position immediately after each cut is completed.

7. In a cutting mechanism, in combination, a traveling table comprising sections, each section having between its ends a cutting-wire-receiving slot, and a cutting-reel having the cutting-wires, and actuated by said table, each 80 section in length approximately equal to the distance between consecutive cuts.

8. In combination, a traveling table comprising loosely-joined sections, each section between its ends formed to receive the cutting-wires and having reel-operating means adjacent its rear portion, and a cutting-reel having the cutting-wires and engaged and rotated by said means, whereby each wire performs its cut over an intermediate portion in 90 the length of a section.

9. In combination, a traveling table comprising the plurality of sections hinged together at their ends and having supporting-rollers, a cutting-reel cooperating therewith, 95 and means whereby said reel forms the cuts intermediate the length of each section and between the end hinge connections so that each brick rests on two sections and bridges the joint between the same.

10. In combination, a traveling table comprising a plurality of sections arranged end to end and hinged together at their ends, a rotary cutting-reel having the cutting-wires, and reel controlling and actuating means determining the cutting position of each wire with respect to the table-sections and arranged to cause the wires to form the cut just in advance of the center of each section, whereby each brick projects forwardly onto the section in 110 front for a distance less than one-half the length of the brick.

11. In combination, a traveling table comprising a plurality of sections arranged end to end, hinges between the ends of the sections, 115 and supporting-rollers arranged at the ends of the sections, a frame having tracks for said rollers, each section having guide-standards near its rear end and a cutting-wire-receiving slot between said standards and its center, and 120 a rotary cutting-reel comprising frames arranged to be engaged by said standards and having the cutting-wires.

12. In combination, an endless traveling table comprising sections hinged together at 125 their ends, a cutting-reel, means causing said reel to form the cuts intermediate the lengths of the sections so that the bricks each rest on

two sections, and tracks for supporting the table, said tracks inclining downwardly immediately in rear of the cutting-reel so that each section will assume an inclined position before it leaves the reel.

13. In combination, an endless traveling table comprising sections hinged together and arranged end to end, a cutting mechanism arranged to form the cuts intermediate the length of each section so that each brick rests on two sections, a receiving-platform arranged closely adjacent to and inclined down from the delivery end of the table, and section-controlling means causing said sections to successively drop down past the receiving end of said platform and from the forward ends of the bricks supported on the next succeeding sections, whereby the projecting ends of the bricks pass forward from the sections directly onto the platform.

14. A traveling table comprising sections arranged end to end and hinged together, and cutting mechanism, in combination with a receiving-platform arranged closely adjacent to and inclined downwardly from the delivery end of the table and having its receiving-floor composed of rollers, said platform arranged with respect to said table to permit said sections to successively pass the same and to strip the bricks from said sections, whereby the forward movement of said table pushes the bricks forward on said platform.

15. In combination, an endless table comprising sections arranged end to end and hinged together, a supporting-frame for the table having tracks therefor curving down at the delivery end of the table, a cutting mechanism, and a brick-receiving platform arranged at the delivery end of the table with its receiving end closely adjacent to and receiving the bricks directly from the table and at a point where the sections have successively assumed an inclined position in their downward course past the receiving end of said platform, whereby the bricks are successively pushed by the movement of the table onto the receiving end of said platform.

16. In combination, a traveling endless table comprising sections hinged together, the hinge-pivots provided with supporting-rollers for the table, and a frame comprising sides having depressed track-forming ledges arranged at the inner faces of the sides so that the rollers are arranged between the inner faces of the sides, and bars having depressed ledges forming the bottom or return tracks, said table being free to move vertically above said tracks.

17. In combination, an endless traveling table made up of pivotally-united sections having supporting-rollers, each section in length approximately equal to the length of the brick or other article to be cut and having its floor divided into two brick-receiving portions of unequal length, and cutting mechanism arranged to form the cut between said portions

of each section, whereby each brick or other article rests to a greater extent on one section than on the succeeding section.

18. In combination, a frame having supporting-tracks, an endless traveling table comprising pivotally-united sections having supporting-rollers traveling on said tracks, each section having uprights in rear of the center of the length of the sections, and a rotary cutting-reel having portions engaged by said uprights to rotate the reel and arranged with respect to said uprights to form each cut just in advance of the uprights of the section and intermediate the length of a section, whereby two bricks, one in advance of the other, rest on each section.

19. In combination, a frame, an endless traveling table carried by the frame and moving downwardly at the delivery end of the table, cutting mechanism cooperating with the table for severing a clay bar into lengths, and a receiving-platform having its receiving end arranged closely adjacent to the delivery end of said table so that the table can move downwardly past said receiving end, and whereby said receiving end will strip the cut lengths directly from the table, and the onward movement of the table will push said lengths forwardly on the platform.

20. In combination, a frame having tracks inclining downwardly at the rear or delivery end, an endless traveling table on said tracks comprising pivotally-united sections which drop downwardly in succession at the delivery end of the table, cutting mechanism cooperating with the table for severing a clay bar thereon into lengths, and a receiving-platform having its receiving end arranged closely adjacent to the delivery end of the table and so that the said sections can drop down past said receiving end and from said lengths thereon, and whereby said receiving end of the platform will catch said lengths and strip them directly from said sections, substantially as described.

21. In a machine for severing clay bars into lengths, the combination of a frame having tracks curving downwardly at the delivery end of the machine, an endless traveling table moving on said tracks and comprising pivotally-united sections, cutting-reel-operating uprights, a cutting-reel to sever said bar on the table into lengths, and a receiving-platform having its receiving end arranged closely adjacent to the delivery end of the table to permit said sections to drop down past said receiving end but so as to catch and strip the lengths directly from said sections, said receiving end reduced in width to permit said uprights to pass down beside the same.

22. In a machine for severing clay bars into lengths, the combination of a frame having tracks curving downwardly at the delivery end of the machine, an endless traveling table moving on said tracks and comprising pivotally-united sections which successively drop

down at the delivery end of the machine, a cutting device cooperating with said table for cutting said bar into lengths, and a receiving-platform inclined downwardly from its receiving end and having its receiving end arranged closely adjacent to the delivery end of said table to permit the sections to drop down past the same but to catch and strip the lengths therefrom, the receiving-surface of said platform comprising closely-arranged parallel idler-rollers.

23. In a machine of the character described, the combination, a frame comprising sides having depressed tracks forming the complete circuit, an endless traveling table comprising sections, transverse axles loosely confined and forming the hinge-pivots between said sections, and rollers loosely confined on the ends of said axles and traveling on said tracks, said rollers arranged at the inner faces of said sides, whereby the rollers are confined on the axles and the axles are held in longitudinal position by engagement with the inner faces of said sides.

24. In combination, an endless traveling table, a rotary cutting-reel cooperating therewith to sever the clay bar into lengths, and a receiving-platform arranged at the delivery end of said table, the receiving and supporting surface of said platform composed of a downwardly-inclined series of parallel closely-

arranged idler-rollers, the receiving end of said platform arranged closely adjacent to the delivery end of said table to receive the clay lengths directly therefrom, whereby the advancing movement of the clay lengths on the table pushes the lengths forward on said rollers.

25. In combination, a frame, an endless traveling table receiving the bar of clay to be severed, said table moving downwardly at the delivery end, a rotary cutting-reel cooperating with the table to sever the clay bar into lengths, movable reel-engaging uprights determining the length of cut made by the reel, and a receiving-platform at the delivery end of said table, the receiving end of said platform arranged closely adjacent to the delivery end of said table to receive the severed lengths directly from the delivery end of said table as said table moves downwardly and said lengths project therefrom, whereby said platform strips the severed lengths directly from said table as said table moves down past the receiving end of said platform.

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

BYRON ERB BECHTEL.

Witnesses:

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ELLA HILLIARD.