(No Model.) 2 Sheets—Sheet 1.

J. BENSING.

TILE OR BRICK CUTTING MACHINE.

No. 524,302. Patented Aug. 14, 1894.

Fig. 1.

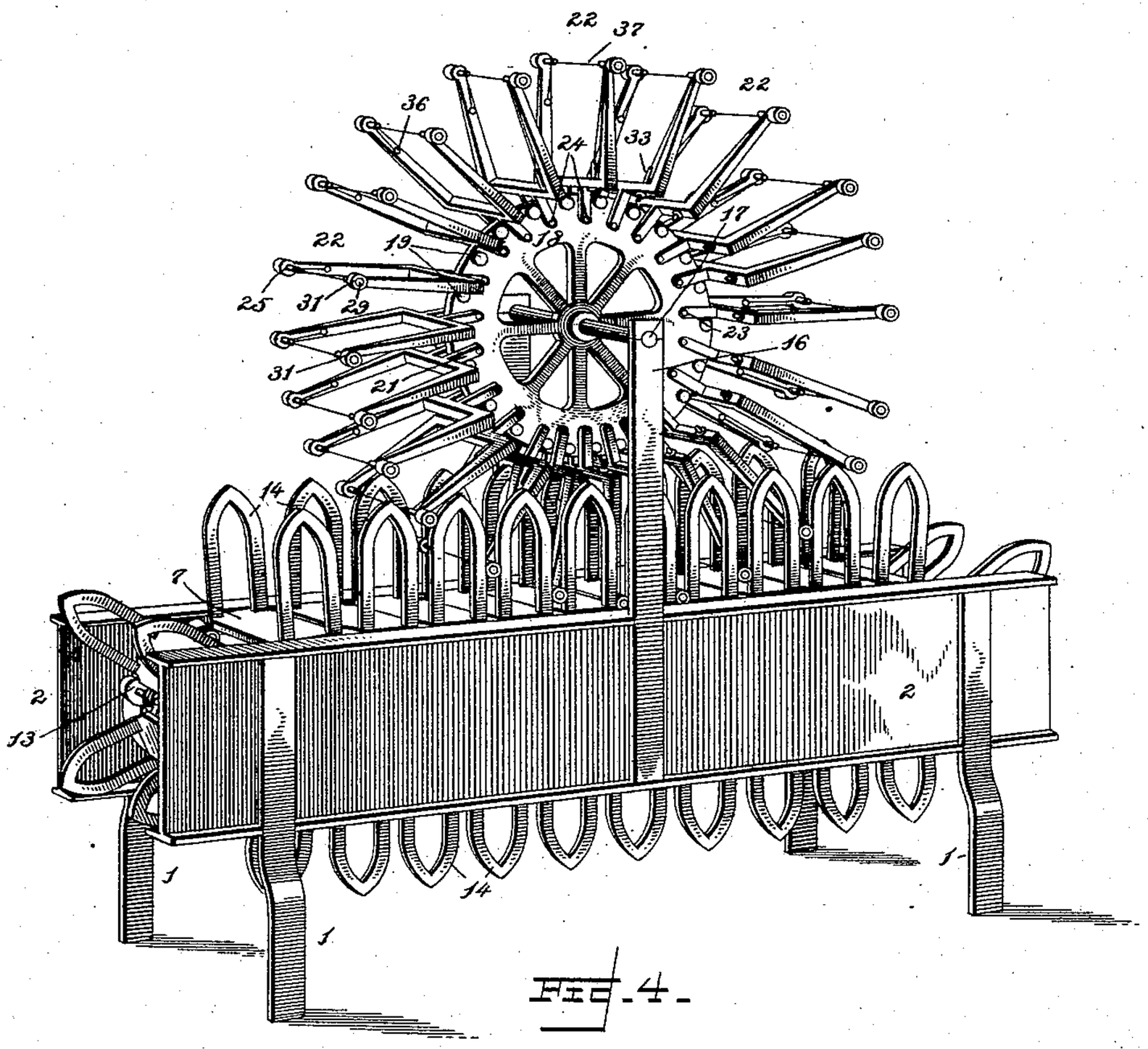

Fig. 4.

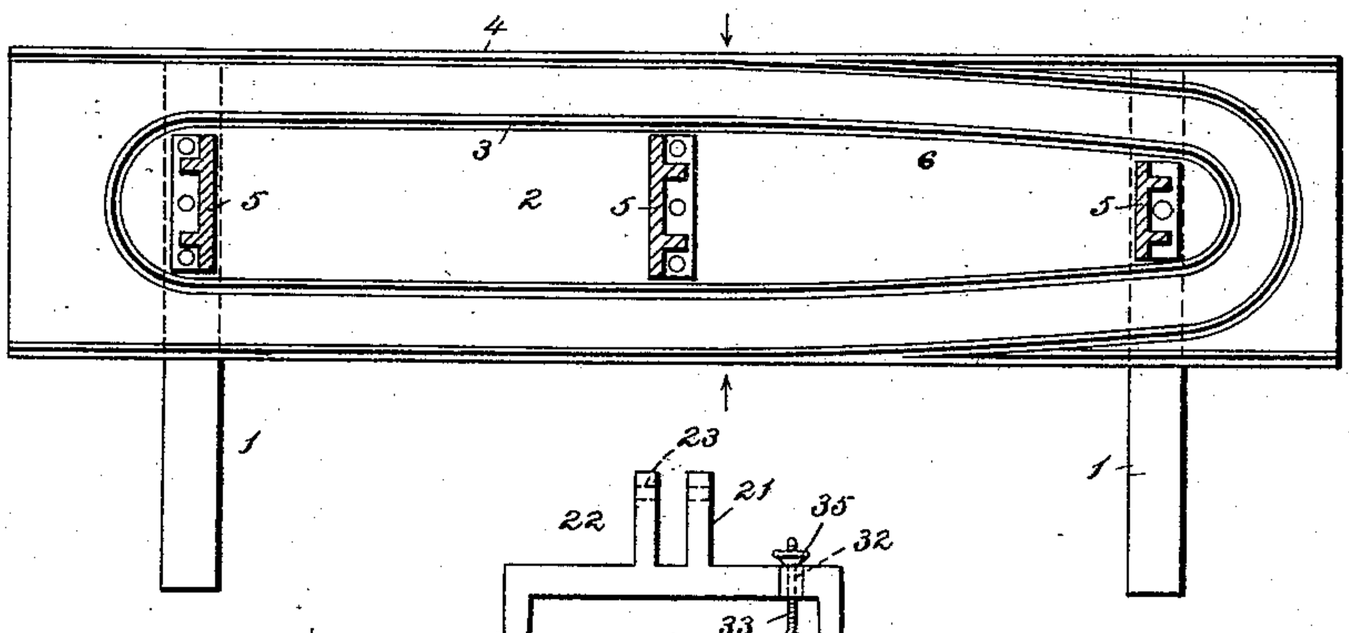

Fig. 5.

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Jacob Bensing.

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(No Model.) 2 Sheets—Sheet 2.

J. BENSING.

TILE OR BRICK CUTTING MACHINE.

No. 524,302. Patented Aug. 14, 1894.

Fig. 2.

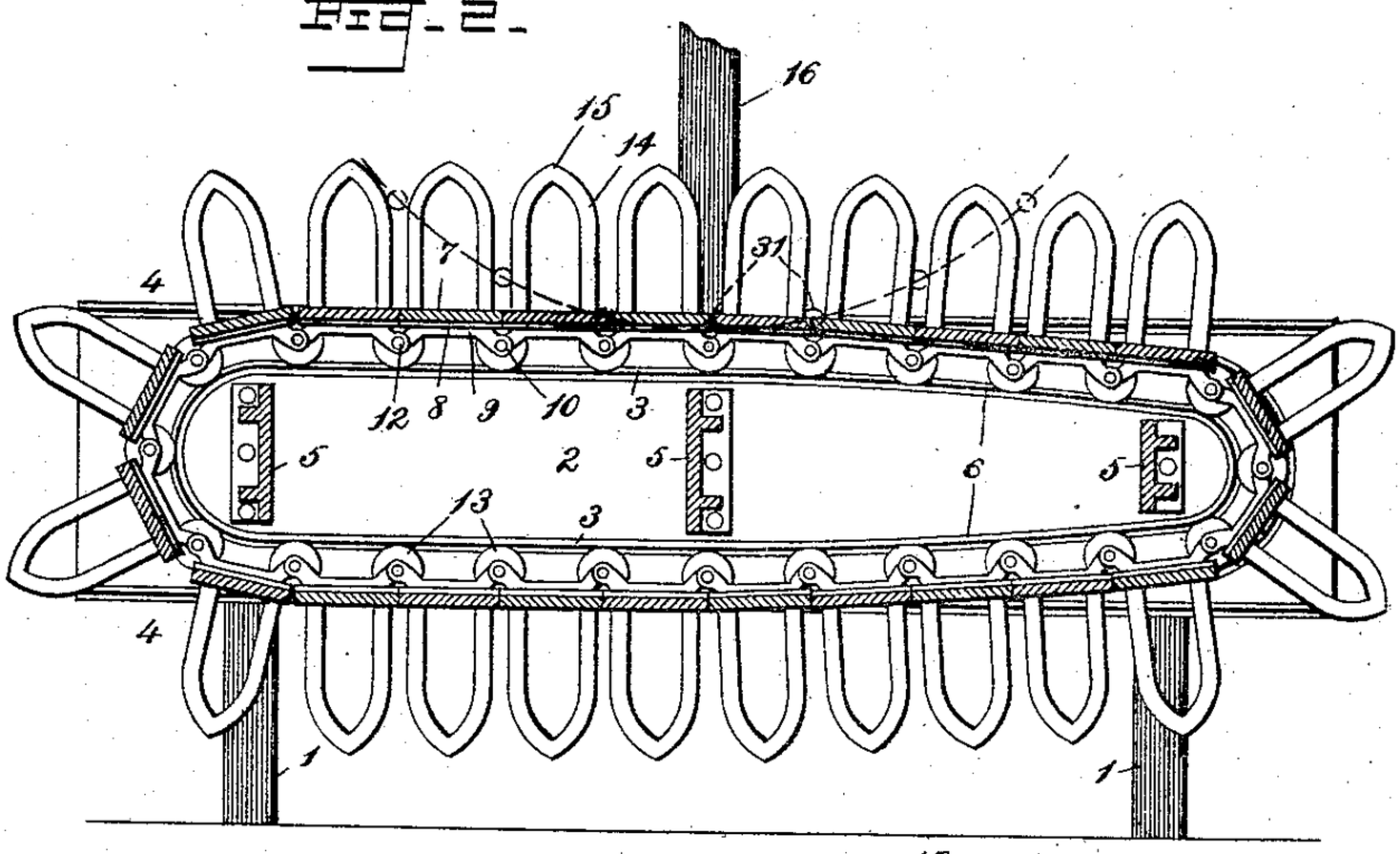
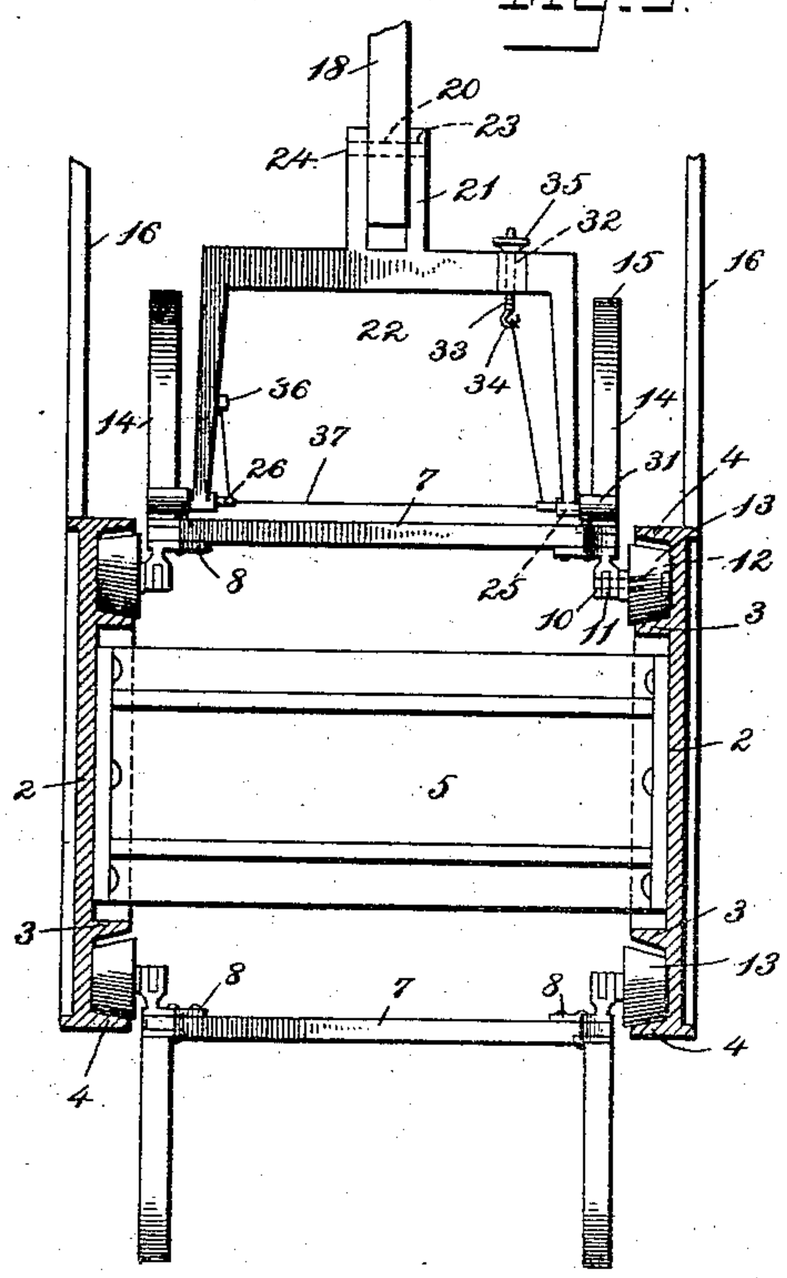


Fig. 3.



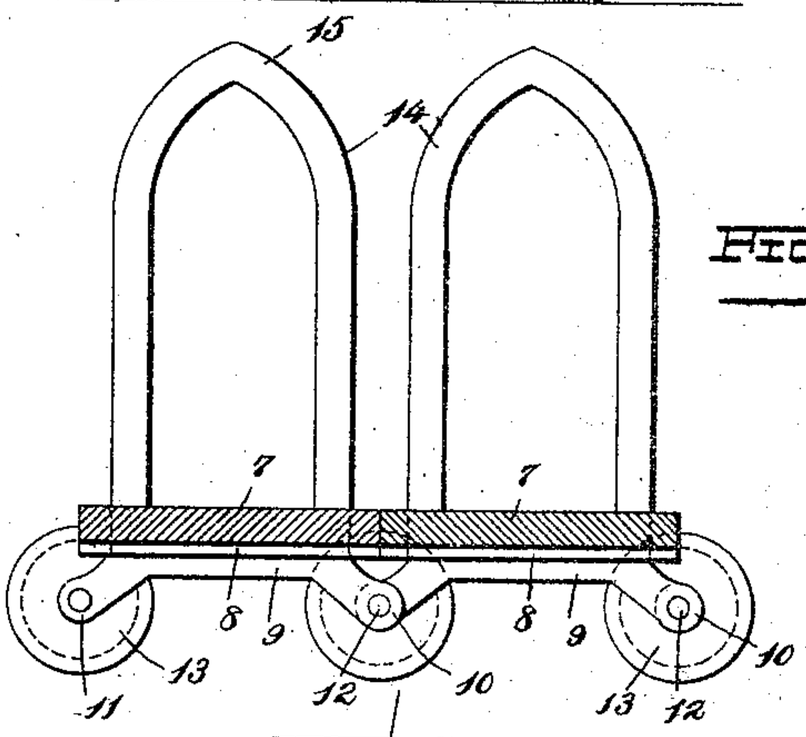


Fig. 6.

Fig. 7.

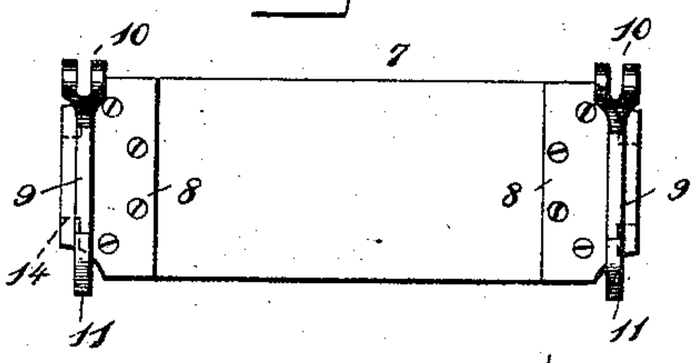
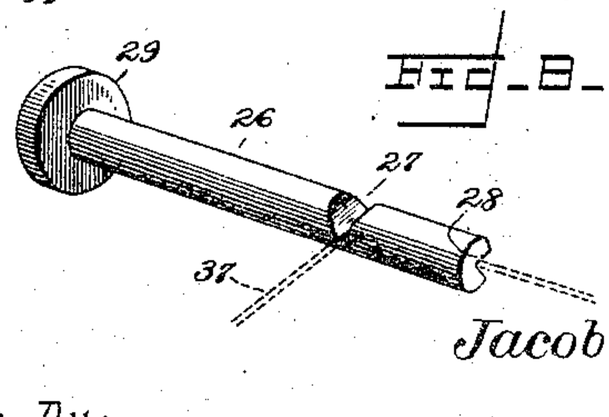


Fig. 8.



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UNITED STATES PATENT OFFICE.

JACOB BENSING, OF MALINTA, OHIO.

TILE OR BRICK CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,302, dated August 14, 1894.

Application filed January 4, 1894. Serial No. 495,685. (No model.)

To all whom it may concern:

Be it known that I, JACOB BENSING, a citizen of the United States, residing at Malinta, in the county of Henry and State of Ohio, have invented a new and useful Tile or Brick Cutting Machine, of which the following is a specification.

My invention relates to improvements in tile or brick cutting machines, and has special reference to certain improvements upon United States Patent No. 411,638, granted me September 24, 1889.

The objects of my present invention are, primarily, to simplify, strengthen, and improve as to the details of the machine shown, described and claimed in the before mentioned patent, and to these ends my invention consists in certain improved detailed features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a brick or tile-cutting machine, embodying my invention. Fig. 2 is a vertical, longitudinal, sectional view of the same. Fig. 3 is a transverse, vertical, sectional view. Fig. 4 is a vertical, longitudinal, sectional view of the table. Fig. 5 is an elevation of one of the cutter-frames. Fig. 6 is a transverse sectional view of two of the carrier sections. Fig. 7 is a bottom plan view of one of the carrier sections. Fig. 8 is a detail in perspective of one of the wire cutter supporting spindles, the same being reversed.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I arrange upon a suitable support or frame 1 the opposite parallel longitudinal side-plates 2, the same having formed upon their inner faces the inner and outer track-flanges 3 and 4 respectively. Within the inner flange 3 the plates are open and the opposite sides of the frame are connected by intermediate cross-ties 5. The track 4 extends parallel at the upper and lower edges of the machine from a point a slight distance beyond its longitudinal center to its front or receiving-end, and therefore said receiving end is open. Between the track 4 is located the endless inner track 3, which is parallel to the track 4, with the exception that it is not open at the receiving-end of the machine but is continuously curved, as shown. The two tracks at a point in rear of the longitudinal center thereof and at the upper and lower sides slightly converge and curve toward the delivery-end of the machine, thus forming the curved inclines 6, and at said delivery-end both tracks are as shown. The upper side of the inner track and the lower side of the outer track decline from their outer edges inward so that if continued to a point of meeting they would form an angular trough. Arranged between these tracks and adapted to travel upon the upper side of the inner track and the lower side of the outer track is the endless carrier. This carrier consists of a series of sections, each of which is designed to accommodate one brick or tile. Each section consists of an oblong block 7, which has secured to its under side and at opposite ends transversely disposed metal securing plates 8, the said plates being bolted to the blocks as shown. Formed integral or secured to the under sides of the plates 8 and near their outer edges are superficial bars or ribs 9, which project beyond the ends of the plates a short distance, each bar terminating at one end in a pair of bearing-lugs 10 and at its opposite end in a single bearing-lug 11. These lugs are axially perforated and their vertical diameters are in line with the ends of the metal plates and the aforesaid blocks to which the metal blocks are secured. A series of these sections being assembled, the single bearing-lug of one bar taking between the pair of bearing lugs of the next adjacent bar and having passed therethrough transverse bearing spindles 12, it will be observed that I thus form an endless carrier designed to ride over the tracks of the side plates. The spindles 12 project beyond the outer sides of the sections and form bearings for loose rollers 13 which are axially bored to accommodate the spindles and which have their peripheries made conical so that they are adapted to the transversely declining tracks and for operating upon the tracks in the same manner as a ball would in a trough that is angular in cross-section. Thus it will be seen that the carrier always seeks or tends to move toward the center of the machine, the wear of the parts being thus compensated for and the carrier caused to operate smoothly and with little friction. The opposite ends of each carrier

have bolted thereto an arch or standard 14, the opposite sides of the standards being coincident with the ends of the blocks 7, which as shown have their extremities slightly reduced so that between each pair of standards there will be produced a vertical way or slot. The standards are tapered at their upper ends and terminate in points 15 which are in alignment with the longitudinal centers of the sections.

At the opposite sides of the machine are arranged vertical posts 16 which at their upper ends accommodate a transverse rotary shaft 17 at whose center a disk-wheel 18 is mounted and designed to rotate therewith. The disk-wheel is of such diameter as to terminate above the upper ends of the arched standards 14 and has its opposite faces at its edge provided with lugs or stops 19 arranged at equidistant points. Between each pair of lugs or in other words alternating therewith, perforations 20 are formed in the disk-wheel and the said wheel is embraced between each pair of stop-lugs by the upper forked-end 21 of a cutter-frame 22 of U-shape. The prongs of the fork 21 are integrally formed with the frame 22 and have their upper ends transversely bored at 23, the aforesaid bores transversely aligning with the perforations 20 of the disk-wheel and being pivotally connected therewith through the medium of transverse bolts 24 which pass through the bores and the said perforations. In this manner the U-shaped cutter-frames are loosely hung upon the wheel and being of less width than the space between the stop-lugs 19 are free to oscillate from one to the other as they may be influenced by gravity.

The lower ends of the terminals of the U-shaped cutter-frames 22 are transversely bored at 25, and in each of the same there is located the cylindrical shank of a pin 26 which extends through and beyond the bore. The inner end of each pin is provided with a transverse notch 27 and from the same to its inner extremity with a longitudinal notch 28, the two notches of each pin therefore being at right angles to each other. The outer end of each pin terminates in a head 29 which is seated in a countersunk opening 30 formed in an anti-friction roller 31. The upper transverse portion of each U-shaped frame is perforated or bored at 32, and the same receives a rod 33 which is threaded and terminates at its lower end within the frame in a hook 34 and has arranged upon its upper end above the frame an adjusting nut 35. A stud 36 extends from the inner side of that terminal of the frame 22 opposite which the rod 33 is located and secured to said stud is a cutting-wire 37. The remaining end of the wire is passed down under and through the notch 27 of the pin therebelow, thence at a right angle through the longitudinal notch 28 thereof across to the longitudinal notch 28 of the opposite pin, thence under the transverse notch 27 of the latter pin, and inwardly, where it is connected to the hook 34 of the rod 33. The cutting-wire, it will be seen, is free to move through the notches 27 and 28 and its tension may be regulated through the medium of the nut 35 upon the adjusting rod 33.

This completes the construction of the machine, and the operation thereof may be stated as follows:—The cutter-wheel it will be understood is rotated in any suitable manner and at the proper speed, and a column of clay is fed from the mill by proper carriers to the receiving end of the machine on the endless carrier thereof. When the endless carrier is traveling upon a level portion of the track the sections thereof close together so as to produce a rigid moving platform, and in this position and condition the advance end of the column is fed toward the revolving wheel. It will be observed that the anti-friction rollers on the ends of the cutter-frames passing over the upper curved ends of the guide-standards 14 will cause the cutter to move at the proper speed and will be guided by the space between said standards in a perfectly vertical line to the column of clay resting on the carrier. As a given point of the column approaches the center of the machine, or in other words, a point opposite the vertical diameter of the cutter-wheel, the cut is produced, the cutting-wire passing through the column completely and between the blocks supporting the column. Immediately after the complete cut is made the carrier or that section thereof which now contains the brick or tile reaches the curved portion of the track and hence declines in conformity therewith, thus causing it to separate the severed brick or tile from the remainder of the column and produce a passage upward through which the cutting-wire may pass, said passage being unobstructed by any of the parts of the carrier or the clay.

It will be seen that the cutters are guided both in entering the column of clay and in leaving the same, and that they can only move in a perfectly vertical direction in both travels.

From the foregoing description in connection with the accompanying drawings it will be seen that I have improved upon several of the features of construction of my former machine. I have, first, improved upon the shape of the U-shaped arches so that the cutters can only move vertically whether entering or leaving the guide-spaces between the same; I have also improved upon the track by altering its disposition and causing a separation of the section containing the bricks or tiles immediately after the cut has been completed and the cutters are about to return or leave the carrier; I have also improved upon the track and the carrier, whereby the latter is always caused to seek the center thereof and to compensate for wear; I have also improved upon the construction of the cutter-frame, whereby I am enabled to make it lighter, stronger, and more positive;

and I have also improved upon the disk or wheel, and in the manner of connecting the cutter-frames.

I do not limit my invention to the precise details of construction herein shown and described, but hold that I may vary the same to any degree and extent within the knowledge of the skilled mechanic.

Having described my invention, what I claim is—

1. In a machine of the class described, the combination with the framework, and a track arranged at opposite sides thereof and inwardly declining from the said sides, of the endless carrier having its wheels beveled or tapered toward their outer sides to agree with the track, means for moving the carrier, and a cutting-device arranged above the same, substantially as specified.

2. In a machine of the class described, the combination with the framework, a track having a horizontal and a curved inclined-portion, of a carrier formed in sections mounted for travel over the track, and a movable cutter arranged transversely above the carrier and adapted to descend between the sections, substantially as specified.

3. In a machine of the class described the combination with a framework and a track having a straight and an inclined portion, of a carrier comprising a series of flexibly connected sections adapted to break at said bent portion, guides carried by the sections, a wheel journaled above the carrier, and a series of wire cutter carrying frames carried by the wheel and adapted to be guided by means of the guides between the sections, and means for moving the carrier and wheel, substantially as specified.

4. In a machine of the class described, the combination with the framework having an endless track, and the endless carrier arranged on the track and comprising a series of flexibly connected sections having opposite vertically disposed guide standards converged at their upper ends into points which are in alignment with the longitudinal centers of the sections; of the superimposed wheel having opposite pairs of stop lugs and intermediate perforations, the series of U-shaped frames having forked or bifurcated portions pivotally connected with the wheel at the perforations, said U-shaped frames extending between the lugs and having at their outer extremities transverse bores, the pins arranged in the bores and having at their inner ends wire engaging notches and at their outer ends provided with heads, the series of anti-friction rollers arranged on the pins and counter-sunk to receive the heads and adapted to pass between the guide standards of the sections of the carrier, and the cutter wires connected with the notches of the pins, substantially as set forth.

5. In a machine of the class described, the combination with the framework having the track, the carrier arranged on the track and having vertical guides, of the superimposed shaft, the wheel arranged thereon, the series of loosely hung U-shaped frames arranged on the wheels and having their outer ends bored, the pins arranged in the bores and having at their inner ends intersecting transverse and longitudinal grooves disposed at right angles to each other, anti-friction rollers on the outer ends of the pins adapted to enter the guides, adjusting rods at the inner ends of the frames, hooks on the outer ends of the adjusting-rods, studs on the opposite terminals on the frames, and cutting-wires connected to the studs, passed under the transverse notch of the adjacent pin, thence through the longitudinal notches of the two pins, under the transverse notch of the companion pin, and finally connected to the hook at the outer end of the adjusting-rod, and the adjusting-nut arranged on the inner end of the rod, substantially as specified.

6. In a machine of the class described, the combination with the framework having the track, of the superimposed cutter-wheel, and the intermediate endless carrier, the carrier consisting of a series of blocks, metal plates secured to the under sides at the opposite reduced ends of the blocks, superficial bars arranged under the metal plates, each terminating at one end in a single bearing lug and at its opposite end in a pair of bearing-lugs, the axes of which are coincident with the edges of the blocks, the transverse connecting spindles, and the anti-friction rollers arranged on the outer ends of the spindles and upon the tracks, substantially as specified.

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

JACOB BENSING.

Witnesses:
J. A. SMITH,
JOHN MANN.