

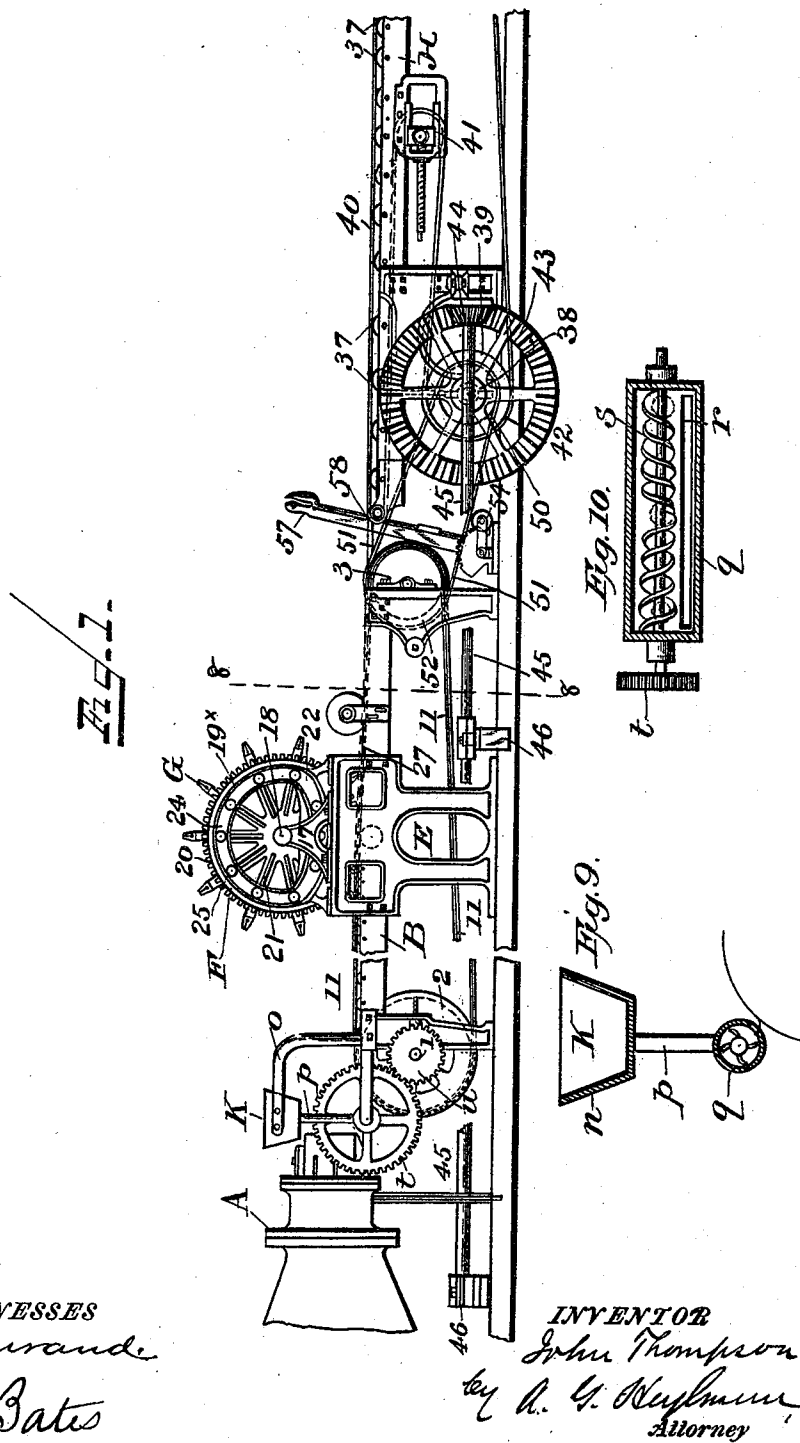
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3 Sheets—Sheet 1

J. THOMPSON.
BRICK OR TILE CUTTING MACHINE.

No. 496,286.

Patented Apr. 25, 1893.



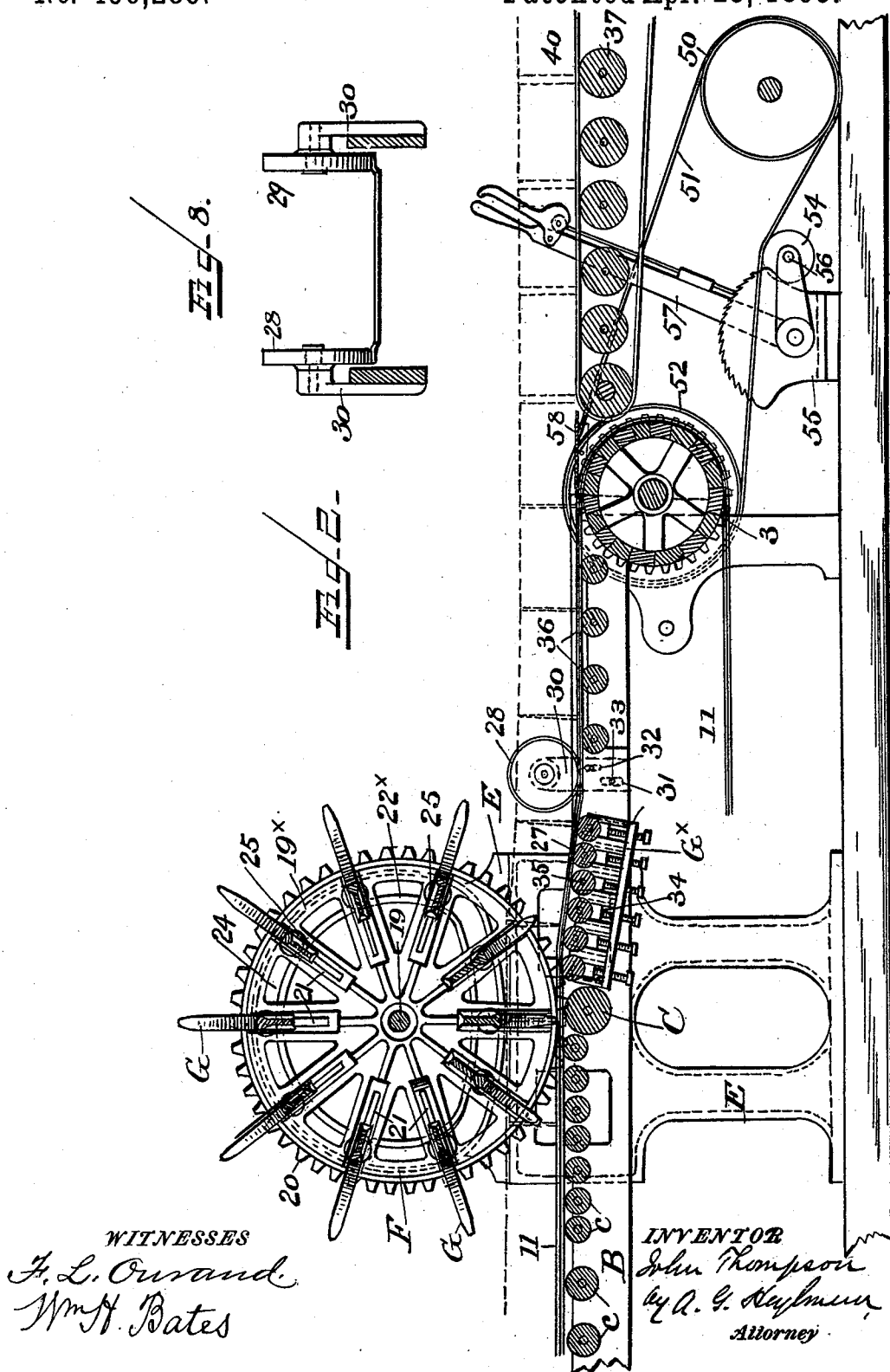
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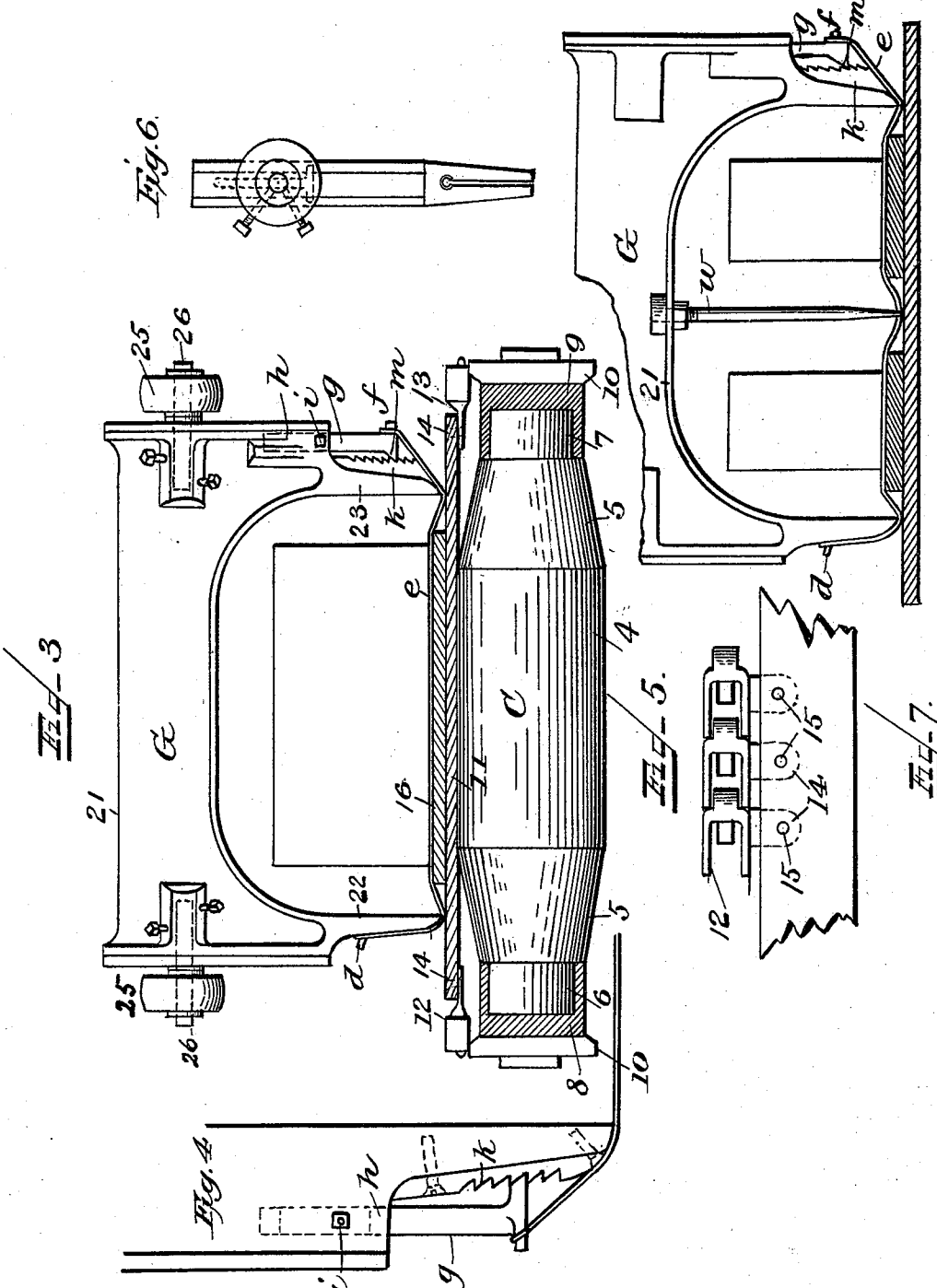
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JOHN THOMPSON, OF BUCYRUS, OHIO, ASSIGNOR TO THE FREY-SHECKLER COMPANY, OF SAME PLACE.

BRICK OR TILE CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 496,286, dated April 25, 1893.

Application filed November 18, 1892. Serial No. 452,471. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMPSON, a citizen of the United States of America, residing at Bucyrus, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Cutting-Tables for Brick or Tile Machines, of which the following is a specification.

My invention has relation to improvements in cutting-tables or cut-off mechanisms for brick or tile machines wherein the actuating mechanism for severing the slab of clay consists of a cut-off wheel having disposed therein radially moving wire-frames, having means to automatically project and retract or withdraw the wire-frames.

It also has relation to improvements in the carrying mechanism of the primary or cutting-table and of the carrying-off table, as hereinafter specified.

The present invention has special relation to improvements in the cutting and carrying-off mechanism of that character shown and described in Letters Patent No. 478,436, dated July 5, 1892, in name of O. W. Johnson, for cutter for brick and tile machines.

In the accompanying drawings illustrating my improvements,—Figure 1 is a side view of the complete machine; the cutting-table being broken away that the connected cutting-table and the delivering-table may be shown; the belt connections of the tables are also shown. Fig. 2 is a longitudinal vertical section of the cutting-table and delivering-table, the roller adjacent to the clay mill and that portion of the table not being shown. Fig. 3 is a transverse view in section through the cut-off wheel showing the roller below the same, and the means for holding and adjusting the wires. Fig. 4 is a detail of the ratchet-bar for holding and adjusting the wires. Fig. 5 is a detail of the carrying-belt for the cutting-table. Fig. 6 is a detail end view of one of the cutting wire-frames. Fig. 7 is a view of one of the wire-frames equipped for cutting end cut bricks. Fig. 8 is a transverse section through the table on the line 8—8 of Fig. 1, showing the rollers which bear on the carrying-belt. Fig. 9 is a section of the sand-box and sand-screw. Fig. 10 is a longitudinal section of the sand-screw casing showing the screw arranged therein.

Referring to the drawings, A designates the delivering end of the clay-mill which may be of any approved construction to compress and deliver the clay in a column, or slab, on the carrying-belt of the table to be cut by the cutting-wires.

B designates the frame of the carrying and cutting table, composed of side-rails supported at the ends and provided with intermediate supports if required, substantially as shown in the drawings.

At the end of the frame B adjacent to the clay mill are mounted bearings 1, in which is journaled a drum or roll 2. The bearings of this drum are made adjustable longitudinally through the agency of threaded bolts and nuts, so that the carrying belt may be stretched to the desired tension at any time as required.

At the outer end of the frame B is journaled a drum 3, preferably made smaller in diameter than the drum 2 at the other end of the frame, to shorten the distance between this roller 3 and the adjacent end of the carrying-off table. The upper surface of the roller 3 is placed at a lower plane than the upper surface of the drum 2, in order that the incline in the apron may be effected.

In the frame B is journaled a roller C, the vertical radius of which is on a line with the vertical radius of the cutting-wire wheel or reel so that the limit of the cut of the wire-frame will be on a line with the axes of both the roller and the wheel. This roller C is of particular and novel construction. The middle portion of the roller is substantially a true cylinder as at 4, from the termination of which the roller tapers outwardly as at 5, and is formed with projecting ends 6, 7, on which are fitted end-caps 8, 9, having annular rims or flanges 10, on which the sprocket-edges of the carrying-belt or apron ride, as shown, to insure engagement of the chain and the sprockets of the cutting-wheel. The deficiency of operation overcome by this construction is, that when the roller is a plain cylinder extending substantially the length of the cutting-wire the column of clay may not be completely and cleanly severed, but when the roller is tapered at the ends the wires at the portions beyond the column of clay may be depressed below the surface of the apron as indicated in Fig. 3 of the draw-

ings, and the spring or lag of the wires thus taken up and the cut made entirely through the column. Between the drum 2 and the roller C the apron is carried on rollers *c* as usual.

About the drums 2 and 3 is arranged the carrying-belt 11, to the opposite edges of which are secured sprocket-chains 12, 13, the links of the chains having lateral projections 14, reaching over the belt a distance, through which are projected rivets 15, fastening the chains to the belt, as shown.

In the middle portion of the body of the belt, which may be of rubber or leather material, is disposed and secured a belt of cotton or similar material, 16, of the desired thickness, which allows the wire of the gate or wire-frame to descend by indenting the yielding covering of the belt clear through and even below the under surface of the moving column of clay being acted upon by the cutting-wires.

At a proper determined place in the region of the carrying-belt adjacent to the roller C, is a frame and support E, on which are mounted box-supports 17, carrying bearings 18 in which is journaled a shaft 19 to which is fixed the cutting-wheel or reel F. The end-disks or pieces 19^x of this wheel F have formed thereon sprocket-gears 20, which engage with the sprocket-chain on the sides of the carrying belt or apron. The end-pieces of this cutting-wheel have formed in them radially arranged ways or slots 21 in which are disposed the end of the sliding wire-frames G consisting of substantial cross-bars 21 having arms 22, 23, (see Fig. 3) to which the wires are attached and between which the clay from the machine moves.

The cutting-wires are fastened to the wire-frames as follows: On an arm of the wire-frame is a lug or pin *d* to which the end of the wire *e* is fastened and from thence carried down under the end of the arm across the frame and under the end of the opposite arm and fastened to a lug *f* on a sliding-pawl *g* in a way or groove *h* in the end portion of the wire-frame and is prevented from falling out, in case of the wire breaking, by a screw *i* let through the frame into a way or slot in the bar of the sliding-pawl. On the end of the wire-frame is a ratchet-bar *k* which is engaged by the tooth *m* on the pawl, the engagement being such that the pawl is held locked in the ratchet by the tension of the wire. On the supports E are mounted frames 22^x, formed with cam grooves or races 24, in which rollers 25, journaled on the stud-shafts 26 project from the ends of the wire-frames, substantially as shown. The cam-grooves or races 24 are concentric to the axis of the cutting wheel to opposite points below the axis from where the race extends horizontally, with a slight depression and curve with its lowest point over the roller C under the apron and wheel. The cam-races are thus formed to carry the wire-frames down straight

through the moving column of clay with a straight cut, and is also designed to lift the frames after the brick or form is severed, without scraping or marring the faces; but under ordinary circumstances of rotation and lift of the frames the wires will scrape and cut the upper portion of the form, and to obviate this and preserve the face of the brick or form square and true, the carrying-belt or apron is inclined downward from the roller C for a distance, as shown at 27, which operates to tilt the form away from the upward stroke of the wire, and leaves the face of the form intact. The incline of the apron is effected by means of rollers or wheels 28, 29 journaled to bear with their perimeters on the opposite edges of the carrying-belt. I have shown these rollers journaled on supports 30, adjustably secured to the sides of the frame; the supports being provided with vertical slots 31, 32 through which fastening bolts 33, are projected in to the frame, to hold the supports.

To prevent the carrying-belt from sagging at the inclined portion a frame G^x, having adjustable bearings 34 in its side pieces, is arranged under the belt, and in the bearings are rollers 35 on which the carrying-belt bears, as shown. Through the agency of the rollers 28, 29 and the roller C sustaining the apron or belt, the incline therein may be made to suit the size or width of the forms being severed. It will be perceived from the foregoing description in connection with the drawings, see Fig. 2, that after the forms pass from over the roller C they tilt to open the cut between them at the top, so that the wire has the increasing distance to travel in, and thus the form escapes injury from the upward movement of the wire. From the rollers 28, 29, to the roller or drum 3, the carrying-belt is carried out on a plane substantially horizontal and the apron is supported on rollers 36, journaled in the side-rail of the frame.

H designates the carrying-off table consisting of substantial side-rails and supports of any suitable construction. This carrying-off table may be of any desired length, the outer end carrying a drum on which the carrying-belt is arranged. This portion of the table is not illustrated as its construction is well known and the extension a substantial duplication of the frame and rollers shown. The table is provided with a series of rollers 37, as shown, over which the carrying-off belt travels. In the frame of the table H, at the end adjacent to the cutting-table, is journaled a shaft 38, on which is fixed a drum 39, having the carrying-off belt 40, thereon, and carried therefrom about an adjustable idler-drum 41, where the belt is taken over the end roller 42, of the table thence over the table rollers 37, over the drum (not shown) at the end of the table, and from thence to the drum 39.

In soft and easily yielding clays the cutting mechanism may be operated by the action of

the moving column of clay on the apron of the cutting table; but the present tendency in the art is to work the clay as stiff as possible; this stiff clay-body has a tendency to retard at the cutting-table, and requires additional power to make a certain and even cut. To give this power and to impart a positive movement to the carrying off belt, I have devised the following described mechanism: On the shaft 38 of the drum 39 in table H is mounted a large bevel gear 43, with which meshes a bevel pinion 44, on a shaft 45, journaled in supported bearings 46, and extending back has connection to a power (not shown) properly applied to rotate the shaft. On the end of the shaft 38 opposite to the bevel gear 43 is a pulley 50, carrying a belt 51, running over a pulley 52, on the shaft of the drum 3 of the cutting-table. To adjust the tension of the belt 51 to do its work with certainty, a tightener-pulley 54, is employed. This pulley is carried in a frame 55 on an axle 56, to which is fixed a handle 57, having a pawl and ratchet adjustment, as shown. It will be stated that the tension of the belt 51 should be such as to turn the drum 3 with the apron thereon, but not so great as to prevent the belt from slipping if the movement of the clay on the table requires it. The adjustment of this auxiliary mechanism for moving the aprons of the respective tables is such that it will move the apron of the cutting-table at the same rate as the movement of the column of clay thereon; and so that the apron of the carrying-off table is moved faster than the apron of the cutting-table. The forms by this arrangement will then be separated or carried apart at the point of leaving the cutting table and being taken up on the carrying-off belt.

On the end of the cutting-table adjacent to the clay-mill, is mounted the sanding-mechanism K. This consists of the following described elements:—*n* designates a trough or box of proper size to hold the desired quantity of sand; the trough being supported on an arm *o*, connected to the frame of the table, or to any suitable support. From the bottom of this sand box *n* depends a pipe or pipes *p*, leading into a sand-receptacle *q*, and feeding the sand from the sand-box to the receptacle *q*. The receptacle *q* is arranged below the column of clay proceeding from the clay-mill and has in it an opening *r*, extending across the length, or for the width of the carrying belt, and through this opening *r* the sand is distributed on the carrying apron and from thence adheres to the column of clay on the apron. In the sand receptacle *q* is journaled a right and left screw *s*, the reverse sections meeting at the middle of the screw, so that as the sand is delivered to the screw it is carried from the outer ends toward the middle, and distributed evenly as it is so carried. To rotate the screw a gear wheel *t*, is fixed on the extended journal of the screw

which meshes with a gear wheel *u* on the shaft of the drum 2, on which the carrying apron is arranged.

In Fig. 7 of the drawings I have illustrated the wire-frames equipped for cutting end-cut bricks. Reference being had thereto, *v* designates a rod or bar having its upper end fastened to the cross piece of the wire-frame and bearing with its lower end on the cutting-wire substantially as shown. By this means the wire is sustained and supported in the middle and the cut insured through both columns of the clay. The bar *v* is made detachable so the change of the wire-frames from end-cut to side-cut bricks is readily made.

Between the adjacent ends of the cutting-table and carrying-table is arranged a bridge-plate 58, supported by any suitable means. This bridge plate prevents the forms from dropping down at this point and insures them a safe carriage over on to the carrying-off table.

Having described my improvements, what I claim, and solicit Letters Patent for, is—

1. The combination with the carrying apron and cutting-wires of a cutting-table, of a roller under the apron adjacent to the cutting-wires formed with tapering-ends having annular end-flanges whereby the outer edges of the apron are supported, substantially as described.

2. The combination with the carrying-apron and cutting-wire frames, of a roller under the apron, having a cylindrical middle portion, tapering end portions, and cap-pieces formed with annular flanges arranged to carry and support the edges of the carrying-belt, substantially as and for the purpose specified.

3. In a brick and tile cutting table, a continuous carrying-apron extended beyond the cutting mechanism in both directions and arranged on its rotated supports with an inclined section at the rear of the cutting wires, substantially as described.

4. The combination with the carrying-apron, and a supporting roller intermediate of the end supports of the apron, of oppositely arranged rollers having their faces bearing on the upper face edges of the apron, whereby the apron is inclined between the adjacent supporting roller and the oppositely arranged rollers.

5. In a brick and tile cutting table the combination of end-drums, the apron arranged thereon, the intermediate apron and wire supporting roller, the cutting-wire frame, and rollers arranged adjacent to the cutting-frame to bear with their faces on the edges of the apron.

6. In a brick and tile cutting-table, a continuous carrying on and off apron, having its upper line arranged at the end-portions on parallel planes of different heights, and an intermediate inclined portion between them.

7. The combination of the carrying-apron,

the supporting roller under the apron, and the adjacent oppositely arranged rollers to depress the plane of the belt, as specified.

8. In a cutting-table for brick and tile, the carrying-apron composed of a body-belt and sprocket-chains having lateral side-lugs secured to the edges of the apron.

9. In a cutting table for brick and tile machines, the carrying apron having a body-belt, a yielding upper cover narrower than the body-belt, and sprocket-chains secured to the side-edges of the body of the belt.

10. The combination of the carrying apron, the cut-off wheel having radially arranged slots, cutting-wire frames arranged to slide in the slots and formed with projecting bearings on the ends of the wire frames, rollers on the projecting bearings of the wire frames, and cam-races to take the rollers between them and bear on and under the rollers, whereby the wire frames are positively carried outward and inward, as specified.

11. The combination with the cutting-table, the cutting-wire wheel provided with sprockets on its rims, the carrying-apron on the cutting-table having sprocket-chains on its edges to engage the wire-wheel, the carrying-off table, the bevel-gear wheel journaled therein, a belt-pulley on the shaft of the bevel-gear, a belt on the pulley and carried about a pulley on the drum of the carrying-apron of the cutting-table, and means to rotate the bevel-gear, substantially as and for the purpose specified.

12. The means for fastening the cutting-

wires to the frames consisting of a ratchet fixed in the wire-frame, and a sliding pawl to engage the ratchet, as described.

13. In combination with the wire-frames provided with a lug to receive and hold the end of the cutting-wire and a ratchet rack on the other end of the frame, a sliding-pawl to engage the ratchet, and the wire secured to the lug on the wire-frame and to the sliding-pawl.

14. The combination with the carrying apron of the cutting table of a frame, adjustable bearings in the frame and rollers in the bearing whereby the rollers may be adjusted and the series disposed at an incline.

15. The combination of the carrying-apron a roller to support the apron, intermediate of its ends, rollers to bear on and depress the belt at a distance from the supporting-roller, and rollers under the apron to support the apron at the incline between the support and depression.

16. The combination with the wire-cutting frame and the cutting-wire, of a bar secured at its upper end to the frame and arranged to bear with its lower end on the cutting-wire.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

JOHN THOMPSON.

Attest:

W. CLARENCE DUVALL,
J. L. LEONARD.