July 17, 1951 L. C. BROSEMER 2,560,843

TILE CUTTING MACHINE

Filed July 3, 1950 3 Sheets-Sheet 1

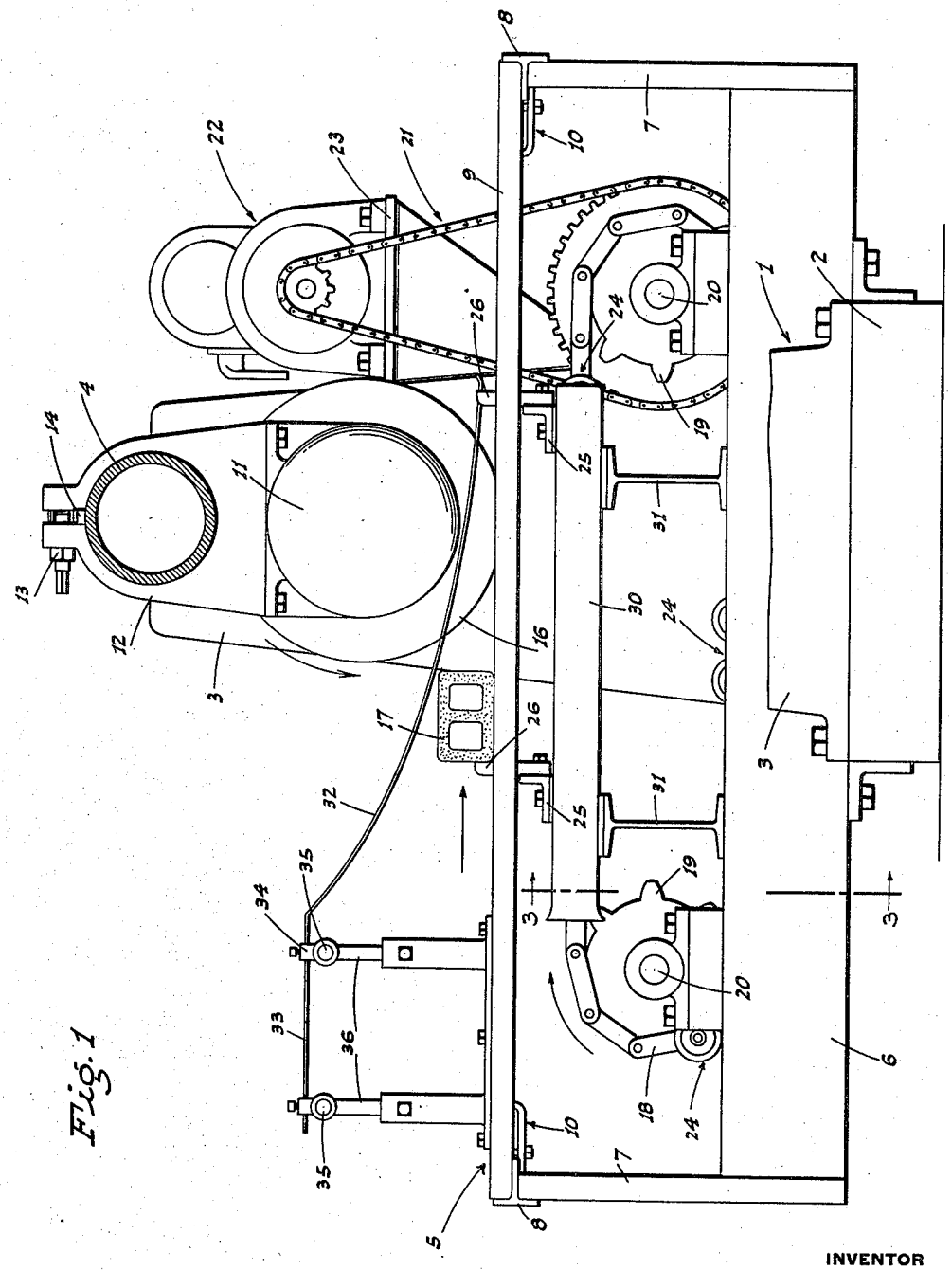


Fig. 1

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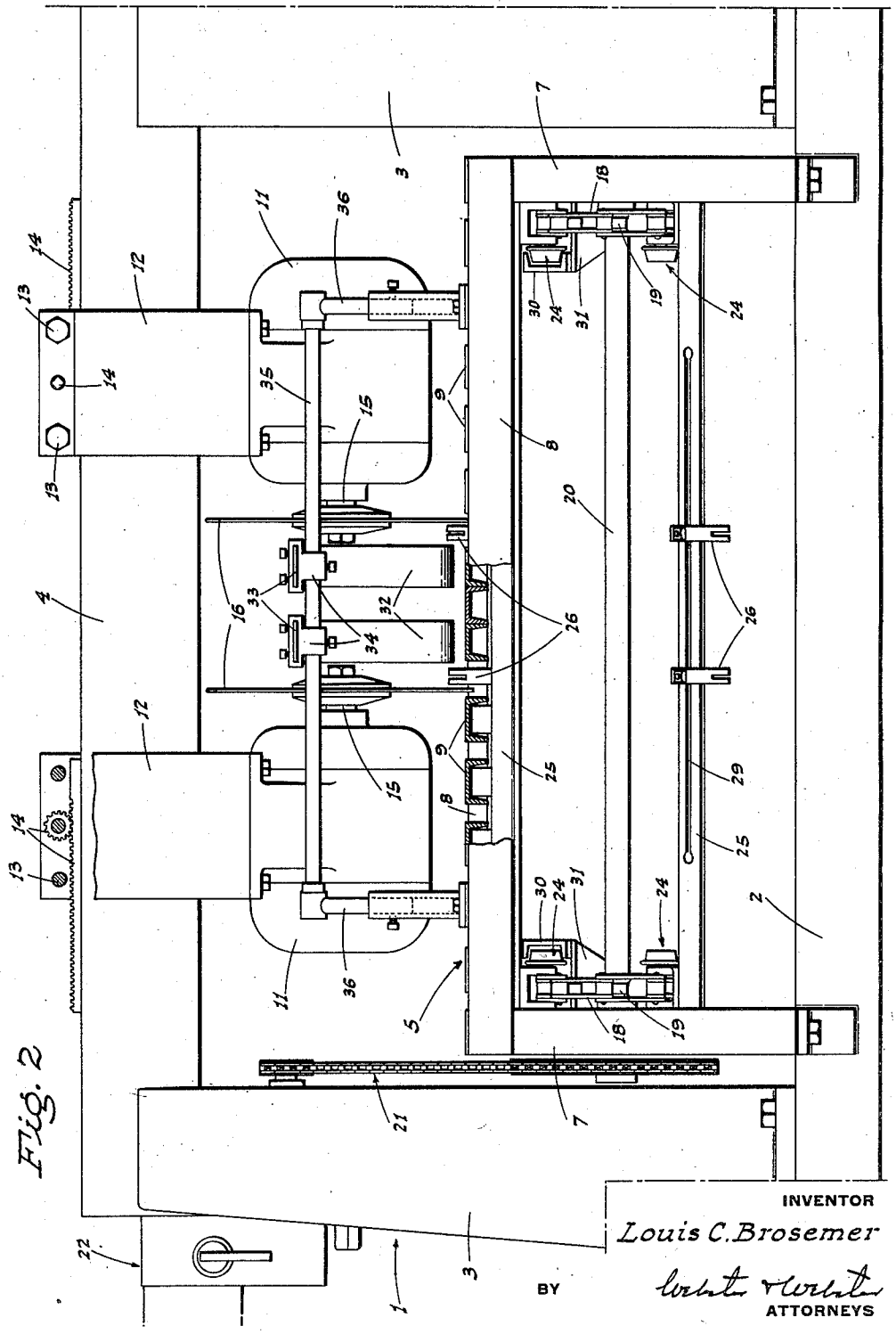


Fig. 2

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Fig. 3

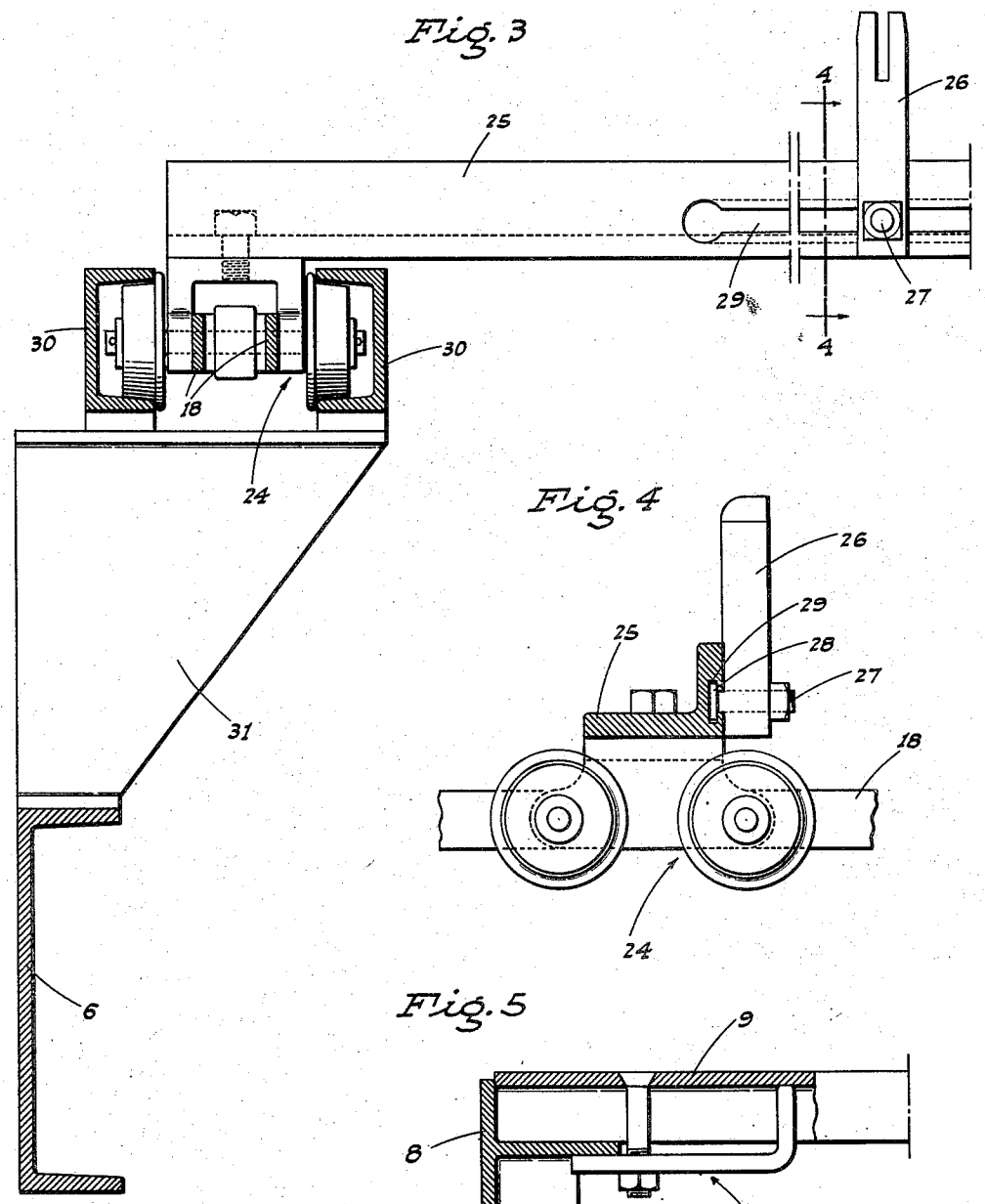


Fig. 4

Fig. 5

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TILE CUTTING MACHINE

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Application July 3, 1950, Serial No. 171,816

6 Claims. (Cl. 125—13)

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This invention provides a power actuated machine, of novel structure and function, operative to trim—to square—the opposite, initially rough ends of construction tile, such as cement or clay tile building blocks or the like.

The invention additionally provides a machine, for the purpose, which is adapted for continuous operation; the tile being fed successively, by feeding mechanism, through a rotary cutter unit which simultaneously trims opposite ends of the tile.

The invention further provides a tile cutting machine wherein all of the tile engaging working parts are arranged for ready and convenient adjustment so that tile of different lengths may be trimmed in the machine.

Another object of the invention is to provide the machine with a novel assembly of spring hold-down straps which act, while the end cutting or trimming operation is in progress, to hold the tile down on the table so that chattering is prevented and the tile will travel in a fixed plane, and to prevent the rotating cutters from pulling the tile forward faster than the feeding mechanism is set to move the tile and thus preventing said cutters from possibly throwing the tile out of the machine.

It is also an object of the invention to provide a tile cutting machine designed for simplicity and economy of manufacture; the machine being sturdy, easy to use, and requiring a minimum of maintenance or repair.

Still another object of the invention is to provide a practical and reliable tile cutting machine, and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a side elevation, partly broken away, of the tile cutting machine.

Fig. 2 is an elevation, partly broken away, of the feed-in end of the machine.

Fig. 3 is an enlarged fragmentary cross section on line 3—3 of Fig. 1.

Fig. 4 is a cross section on line 4—4 of Fig. 3.

Fig. 5 is an enlarged fragmentary longitudinal section of the clamping device between one of the table rails and adjacent cross beam of the main frame.

Referring now more particularly to the characters of reference on the drawings, the tile cutting machine comprises an upstanding, transversely extending main frame, indicated generally at 1, supported from a base 2; such main frame including end posts 3 connected, at the top, by a tubular cross bar 4.

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An elongated table, indicated generally at 5, is supported by the base 2 and extends horizontally between the upstanding posts or columns 3.

The elongated table 5 includes lower sides 6, corner legs 7, and end cross beams 8. The end cross beams 8 are each formed of a T-iron set horizontal, as shown.

The table top comprises a plurality of longitudinally extending, transversely spaced rails 9 which are inverted channel shape in cross section.

At their ends the table top rails 9 each seat on the adjacent cross beam 8, being laterally adjustably secured thereto by an L-clamping device 10.

The machine is provided, above the table 5, intermediate the ends of the latter, with a rotary cutter unit which comprises the following:

A pair of transversely spaced electric motors 11 are suspended from the tubular cross bar 4 by motor mounting brackets 12; said brackets being of split type, normally fixed clamped to the cross bar 4 by clamping bolts 13. However, upon loosening of the clamping bolts 13, the brackets 12, together with the motors 11, are adjustable to alter the spacing therebetween. Such adjustment is accomplished by a rack and pinion assembly 14 between each bracket 12 and the cross bar 4.

The motors 11 are set so that their shafts 15 project toward each other in alinement, each shaft having a high speed cutting disc 16 affixed thereon.

The cutting discs 16 are of such diameter that they extend at the bottom into the space between certain of the table top rails 9.

Construction tile, such as cement or clay tile building blocks, one of which is indicated at 17, are fed, one at a time and lengthwise along the table, in a path such that high speed cutting discs 16 trim opposite ends of such tile to square; the tile extending transversely of the direction of travel.

The tile are thus fed by the following feeding mechanism:

A pair of longitudinally extending, transversely spaced endless chains 18 extend beneath the table top; such chains being carried, at opposite ends, on sprockets 19 on cross shafts 20. The cross shafts 20 are journaled in connection with, and extend between, the lower sides 6 of the

table. One of the cross shafts 20 is driven by an endless chain and sprocket unit 21 from an electric motor and reduction gear box assembly 22 mounted on a platform 23 which extends from one of the end posts 3. With this arrangement the chains 18 are simultaneously driven in the direction indicated by the arrow in Fig. 1; to wit, with the upper runs of said chains traveling forwardly.

At spaced points in the length thereof the chains 18 are fitted with double-ended roller carriages 24, and the corresponding carriages on the chains 18 are connected by an angle iron cross bar 25. Each of the cross bars 25 is fitted with a pair of transversely spaced, upstanding pusher fingers 26, said pusher fingers being adjustable lengthwise of the cross bar 25 by means of securing bolts 27 having heads 28 which engage in a longitudinal holding groove 29.

The pusher fingers 26 are adjusted so that they project upwardly between certain of the spaced table top rails 9, and in position to pass closely adjacent but clear of the high speed cutting discs 16.

In order to prevent any sagging, the roller carriages 24 ride in longitudinal guide channels 30 when in the upper run of the chains 18, and such guide channels 30 are supported by short I-beams 31 which seat on the lower sides 6 of the table.

With the foregoing arrangement it will be evident that as each set of the pusher fingers 26 reaches the upper run of the conveyor comprised of the chains 18, such fingers will project through the table top and thus be in position to engage and advance a tile 17 lengthwise of the table through the rotary cutter unit for end trimming of said tile by such unit.

In order to hold the tile down on the table while it is being moved along, and to prevent said tile being moved by the rotating cutters faster than the speed of the feed chains and pusher fingers 26, the following hold-down device is provided:

A pair of transversely spaced, spring hold-down straps 32 extend at a forward and downward incline from ahead of the rotary cutter unit through the latter between the cutting discs 16; such hold-down straps having straight rear end portions 33 secured by clamps 34 laterally adjustably mounted on cross rods 35. There is a pair of such cross rods 35 in spaced relation lengthwise of the machine, and said cross rods are supported, at opposite ends, by vertically adjustable posts 36.

As each tile 7 is advanced on the table top such tile is engaged from above by the spring hold-down straps 32, and is thus held firmly against said table top during the period of passage through the rotary cutter unit.

As the motors 11, together with the discs 16; the table top rails 9; the pusher fingers 26; and the spring hold-down straps 32 are all adjustable laterally of the machine to alter their spacing, the machine can be easily adjusted to accommodate tile of different length.

Also, the posts 36 are adjustable vertically to accommodate the spring straps 32 to tile of different heights so that all tile may be held down by the same spring pressure.

The invention provides a very practical and reliable machine for the simultaneous end trimming of construction tile or the like; the machine functioning smoothly, positively, and accurately for the intended purpose.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A tile cutting machine, comprising a table, a feeding mechanism adapted to feed tile along the table, a pair of cutter discs in transversely spaced, axially alined relation mainly above but cooperating with the table for simultaneously cutting tile as so fed, said discs each being mounted on the shaft of a corresponding electric motor, a cross bar above the table, and means suspending each electric motor from the cross bar for adjustment therealong; said last named means comprising a motor-mounting bracket split lengthwise of and releasably clamped on the cross bar, a rack fixed on and extending along the bar in the split of the bracket, and a manually rotatable pinion mounted on the bracket and engaging the rack.

2. A tile cutting machine comprising a table, the table top including separate longitudinal rails certain of which are spaced, means mounting the table top rails for lateral adjustment, a feeding mechanism mainly below the table including pusher fingers which recurringly project upward through the spaces between the rails and advance to feed tile along the table, said feeding mechanism being an endless conveyor having transverse cross bars thereon, the pusher fingers being secured to said cross bars for adjustment lengthwise of the latter, a cross bar above the table, a pair of electric motors suspended from the cross bar for adjustment therealong, the motors having horizontal shafts projecting toward each other in alined but spaced relation, and cutting discs on said shafts cooperating with the table to simultaneously cut tile as fed along the table; there being a cross rod above the table ahead of the motors, and a spring hold-down strap assembly secured to the cross rod for adjustment therealong and extending at a forward and downward incline toward the table and between the discs for engagement in hold-down relation to said tile as the same advances and is cut.

3. A tile cutting machine comprising a table, a tile cutting unit disposed above the table to cut tile thereon, and a mechanism to feed tile along the table and against the cutting unit; said mechanism comprising a pair of longitudinal transversely spaced endless chains having their upper runs below and parallel to the table, the latter having transversely spaced longitudinal slots therethrough, cross bars connected to the chains, push fingers on the cross bars adapted to project upwardly through the slots to engage and advance the tile, roller carriages mounted in connection with the chains at the ends of the cross bars and rigid with said bars, and longitudinal guide channels in which the roller carriages travel when on the upper run of the chains and which hold said run of the chain against both upward or downward deflection from a straight path of travel.

4. A tile cutting machine comprising a table, a feeding mechanism to feed tile along the table,

a cutter unit positioned above the table to make simultaneous cuts at opposite ends of tile so fed, and means operative to hold the tile down on the table as it is being advanced; said means comprising a support disposed above the table ahead of the cutter unit, a spring hold-down strap secured to the support and inclining thence forwardly and downwardly for tile engagement, and means mounting the support in connection with the table for vertical adjustment relative thereto whereby to enable the hold-down effectiveness of the strap to be maintained substantially constant regardless of the height from the table of the engaged tile.

5. A tile-end cutting machine comprising a table which includes longitudinal pairs of rails leaving slots therebetween, means to adjust the pairs of rails laterally to alter the lateral spacing between the slots, cutting units disposed above the table and including horizontal-axis cutting discs whose lower edges depend into the slots, means to adjust the cutting units laterally to correspond to a change in the position of the slots, and a tile feeding mechanism including laterally spaced endless chains extending lengthwise below the table, transverse cross bars thereon and pusher fingers mounted on the cross bars and when on the upper run of the chains projecting upwardly through the slots to one side of the plane of the cutting discs, and means to adjust the fingers along the bars whereby the fingers may be maintained in the same relationship to the cutting discs when said discs and the rails are laterally adjusted.

6. A tile cutting machine comprising a table whose top is provided with a pair of transversely spaced and parallel longitudinal slots therethrough, a pair of alined transverse-axis cutting discs mounted above the table and depending into the slots, and a tile feeding mechanism comprising an endless conveyor mounted under the table top and having an upper run parallel thereto, and tile engaging pusher fingers mounted with and projecting upwardly from said upper run and through the slots adjacent but laterally inward from the discs.

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