

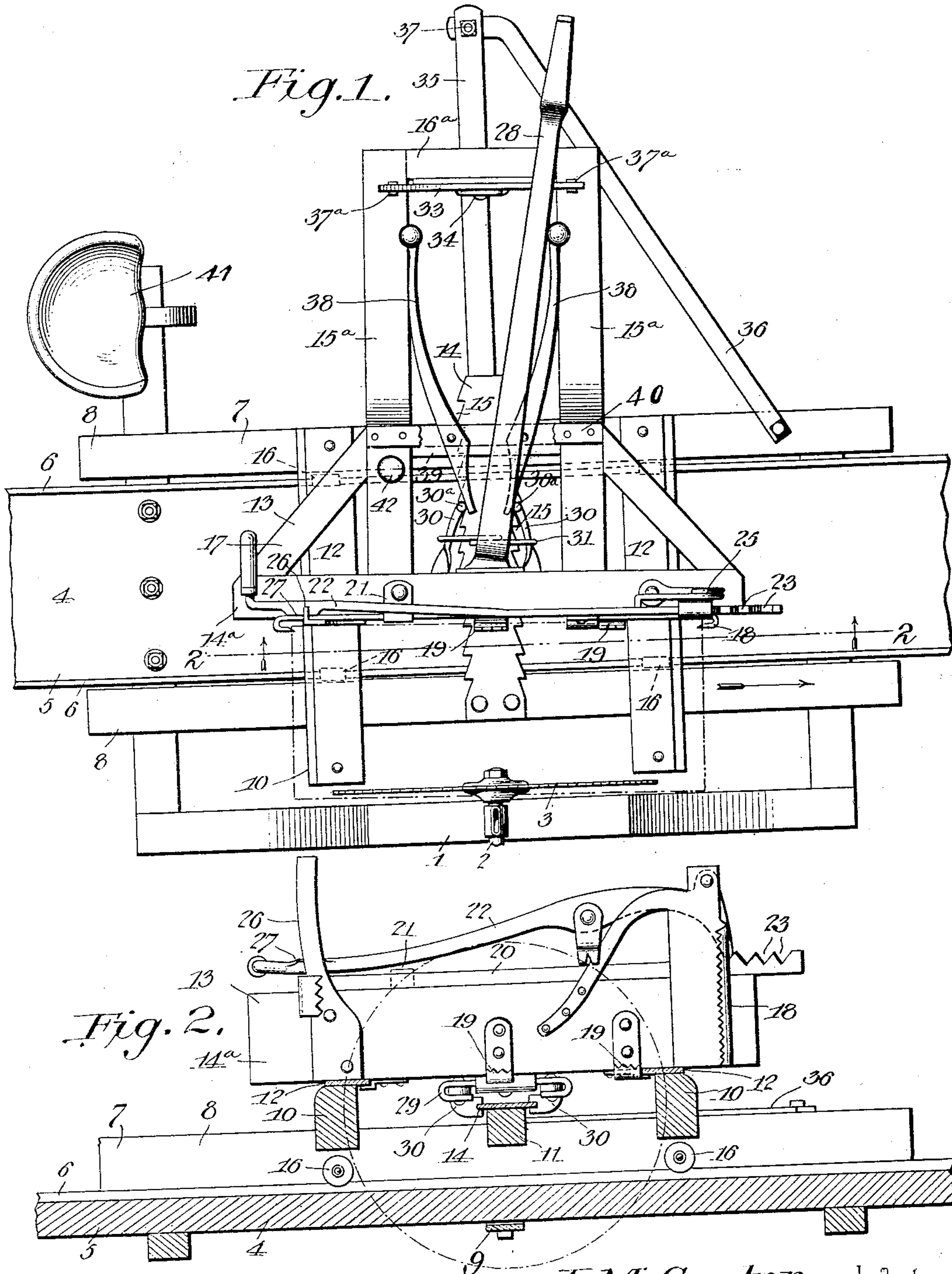
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PATENTED FEB. 9, 1904.

J. M. CUSTER.  
SHINGLE SAWING MACHINE.  
APPLICATION FILED AUG. 17, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
*E. C. Stewart*  
*Baxter Norton*

J. M. Custer, Inventor.  
by *C. A. Snow & Co.*  
Attorneys

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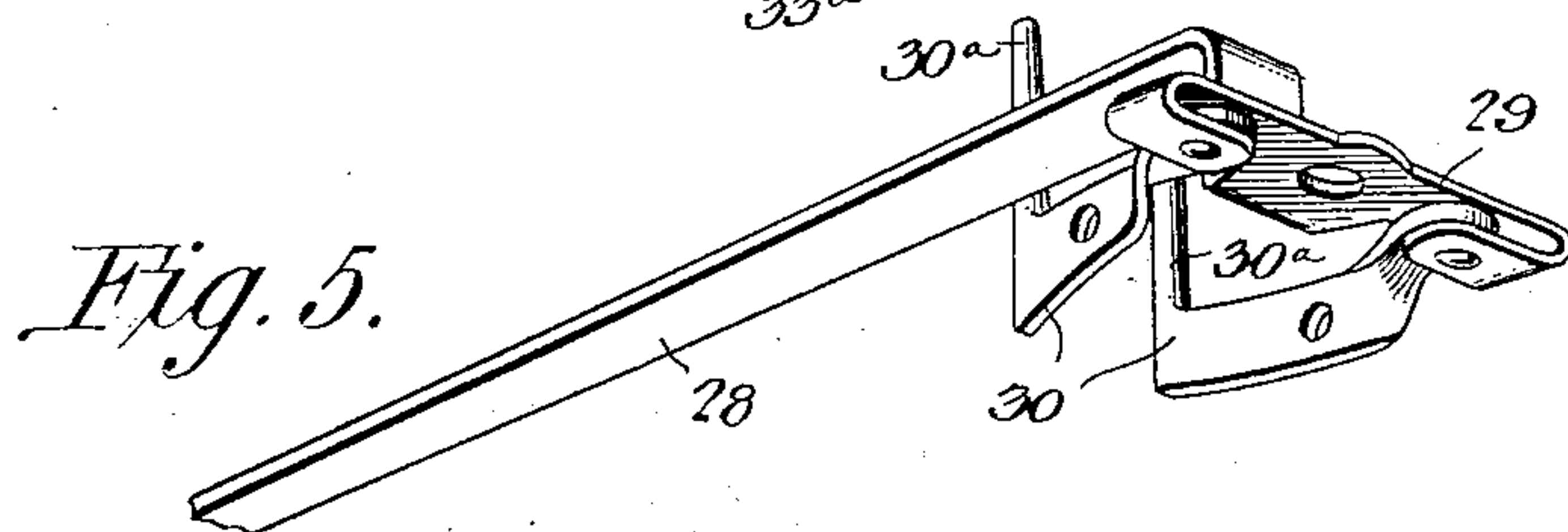
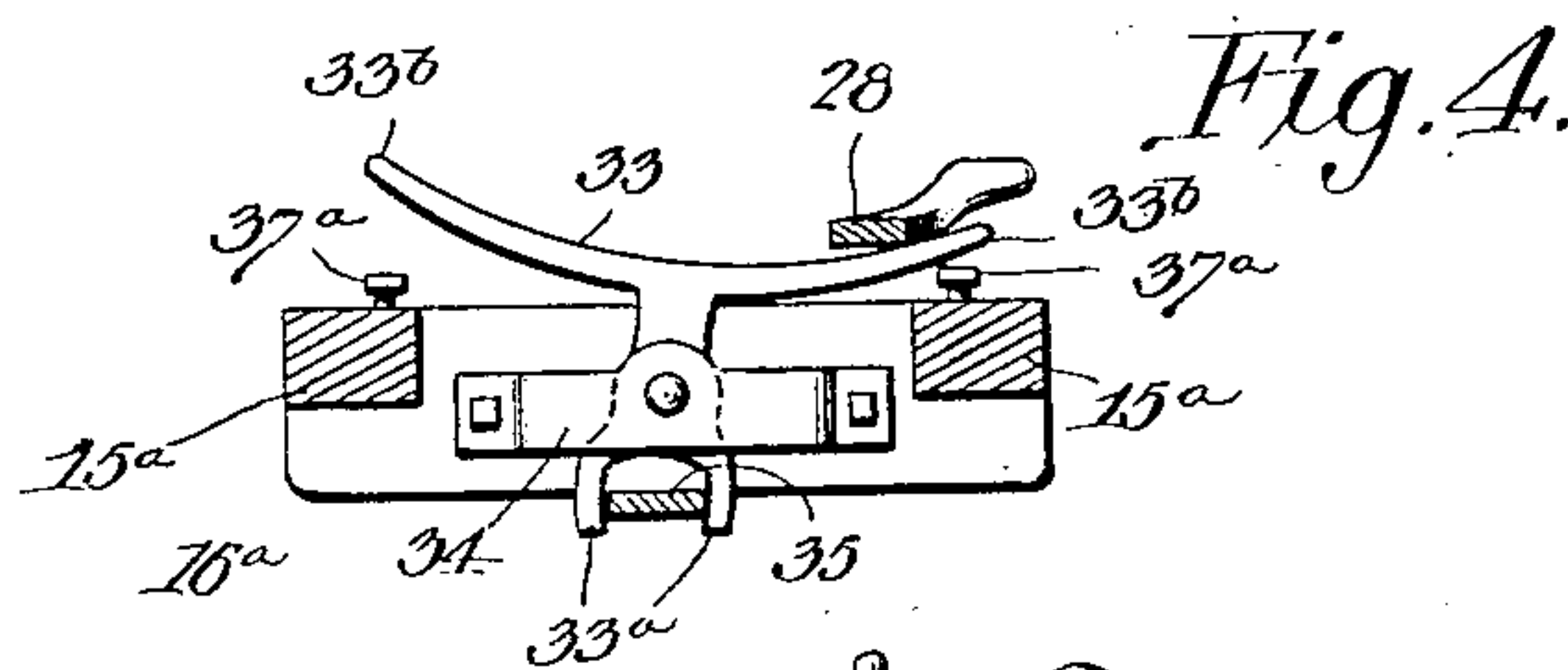
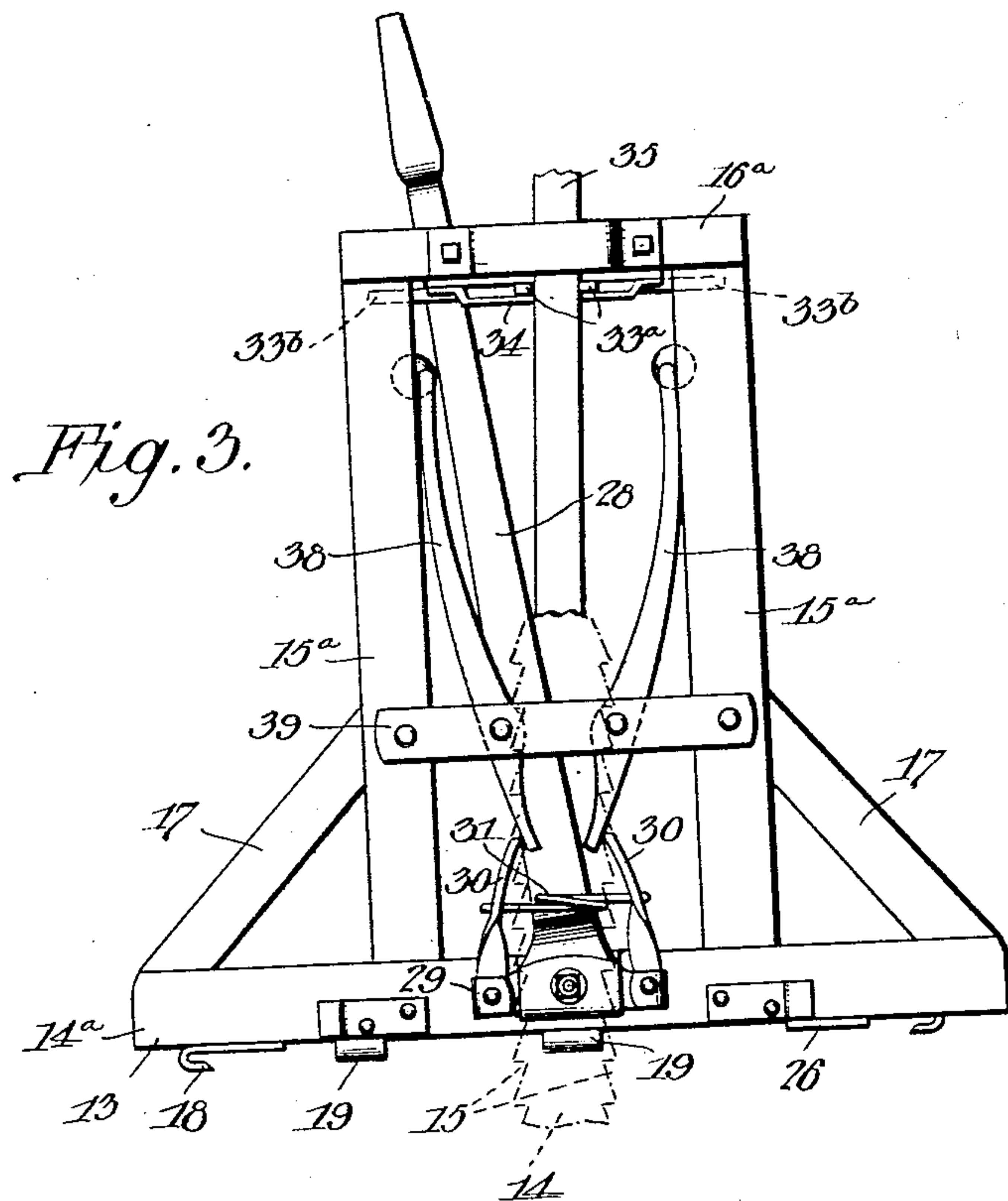
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Attorneys



# UNITED STATES PATENT OFFICE.

JOSEPH MONTGOMERY CUSTER, OF GRAYSVILLE, VIRGINIA, ASSIGNOR OF  
THREE-FOURTHS TO GRAHAM LUMBER COMPANY, OF CHRISTIANBURG,  
VIRGINIA.

## SHINGLE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 751,719, dated February 9, 1904.

Application filed August 17, 1903. Serial No. 169,781. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MONTGOMERY CUSTER, a citizen of the United States, residing at Graysville, in the county of Floyd and State of Virginia, have invented a new and useful Shingle-Sawing Machine, of which the following is a specification.

This invention relates generally to shingle-sawing machines, and more particularly to that type of shingle-sawing machines in which the block from which the shingles are sawed is mounted upon a reciprocating carriage and is fed forward transversely of the carriage by a step-by-step movement first of one side of the block and then of the other in order to cause the saw to cut the block into shingles without waste of the material.

The object of the invention is to provide in a shingle-sawing machine of the type specified an improved form of mechanism for securing the block upon the carriage and an improved mechanism for feeding the block transversely of the carriage to present it to the saw in proper position.

A special object of the invention is to provide in the mechanism for feeding the block transversely of the machine-carriage means for varying the angle of advance of the block to permit the cutting of shingles of different degrees of taper, according to the length of the block, and to so construct the block-feeding devices that it will be easy to change the rack-bar by which the thickness of the shingles is determined and adapt the machine for the manufacture of shingles of different thickness.

A further object of the invention is to construct the block-feeding mechanism in such manner that the operator in reciprocating the block-carriage will operate the block-feeding devices simultaneously with the reciprocation of the carriage and without special effort.

With the objects above stated and others in view, as will hereinafter appear when the invention is fully described, the same consists in the construction and combination of a shingle-sawing machine hereinafter fully described, illustrated in the accompanying drawings, forming part of this specification, and

having the novel features thereof specifically pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of the machine with the shingle-block indicated by means of dot-and-dash lines. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 1. Fig. 3 is a reverse plan view of the block-holder and the mechanism for advancing it. Fig. 4 is a detail view in section through the block-holder, showing the operation of the oscillating shifter. Fig. 5 is a perspective view of the operating-lever and the dogs carried thereby.

In the drawings corresponding parts are designated by the same characters of reference throughout the several figures in which they appear, and it is to be understood that various changes in the exact form, proportions, and mode of assemblage of the elements exhibited may be resorted to without departing from the spirit of the invention.

Referring to the drawings by reference characters, 1 designates a bench or frame, upon which is supported a saw-mandrel 2, bearing a saw 3, which may be driven in any suitable manner by mechanism not shown. Mounted upon the bench 1 is a track 4, comprising, preferably, the bed 5 and side rails 6.

The block-carriage (designated generally as 7) is mounted for reciprocation upon the track 4 and consists, essentially, of the parallel side bars 8, connected on the bottom by an iron cross-bar 9, bolted thereto and connected on top by the cross-bars 10 10 and 11, the bars 10 10 being raised considerably above the surface of the side bars 8 and provided on their upper surfaces with plates 12, over which moves a block-holder 13. The cross-bar 11 rises but slightly above the upper surface of the side bars 8 and has fastened thereon a rack-bar 14, provided on both sides with notches 15 of the form shown. In order to diminish the friction of movement of the carriage 7 over the rails 6, rolls or wheels 16 are preferably provided on the carriage and engage with the upper surfaces of the rails.

The block-holder 13, which is mounted for movement on the plates 11, consists of a frame comprising a front bar 14<sup>a</sup>, side bars 15<sup>a</sup>,



mounted at right angles to the front bar and extending to the rear thereof, a rear cross-bar 16<sup>a</sup>, and braces 17 between the ends of the front bar 14<sup>a</sup> and the side bars 15<sup>a</sup>. Upon the front bar 14<sup>a</sup> is mounted the mechanism for gripping the block. This comprises a dog 18, secured to the front bar at one end and provided with a plurality of teeth for engagement with one end of the block, dogs 19, secured to the front of the block 14<sup>a</sup> and presenting upturned teeth for engagement with the bottom of the shingle-block, a bar or rod 20, mounted for longitudinal movement on top of the bar 14<sup>a</sup> and secured there by the dog 18 and a retention-lug 21, and a lever 22, pivotally mounted on the dog 18 and provided with downwardly-disposed teeth for engaging the top of the shingle-block. The bar 20 is provided at the end opposite the lug 18 with teeth for engagement with the end of the block and at the other end is provided on its upper surface with a plurality of notches 23, with which the end of the lever 22 is adapted to engage. When the lever is raised sufficiently, the end thereof is thrown out of engagement with the bar 20, and the bar may be moved by hand to bring in one of the notches 23 into position for engagement with the end of the lever when it is lowered, thus affording means for adapting the gripping devices to operate upon blocks of different lengths.

The lever 22 is normally held in elevated position by means of a spring 25, mounted on top of the bar 14<sup>a</sup> and engaging the lever 22 near its pivotal point. In order to secure the lever in any desired position which it may occupy when the teeth of the dogs engaging the block have secured a hold thereon, there is provided on the base of the bar 14<sup>a</sup> opposite the dog 18 a curved rack-bar 26, which extends upward from the bar 14<sup>a</sup> and is engaged by a lip 27 on the lever.

In order to insure the proper feeding of the shingle-block to the saw, means is provided for advancing the block-holder first at one side and then at the other. This means comprises a lever 28, pivotally mounted on the under side of the bar 14<sup>a</sup> and provided at the pivotal point with a head 29, which is disposed almost at right angles to the lever, the departure from a right angle being just half of the angle through which the lever may be swung. Pivotally mounted on the head 29 on opposite sides of the rack-bar 14 are a pair of spring-pressed dogs 30, both of which are kept constantly in contact with the notched sides of the rack-bar by means of a spring 31, which connects the two dogs. Owing to the angle at which the head 29 is disposed to the lever 28 when the lever is swung to one side of the frame of the block-holder, the head 29 will lie at right angles to the rack-bar 14, and the two dogs will engage with corresponding notches upon the sides of the rack-bar. When the lever 28 is swung to the opposite side of the frame, the

head 29 will be disposed at an angle to the bar 14, and the dog upon the end of the head which is farthest advanced will engage with a notch on the rack-bar just in advance of that corresponding to the notch with which the other dog is still in engagement. Consequently when the lever is swung back to its original position the block-holder will be advanced and the dog which was behind will be moved up to engage with the notch corresponding to that engaged by the advance dog.

From the preceding paragraphs it will be seen that at every complete oscillation of the lever 28 the frame of the block-holder will be advanced a distance equal to the distance between one pair of notches on the rack-bar and the pair next in front; but in order to advance first one side of the block-holder and then the other means must be provided to cause a pivotal movement of the block-holder about the pivotal point of the lever 29. The means by which this movement is effected comprises a shifter 33, which is pivotally supported in the metal frame 34 on the front side of the rear cross-bar 16<sup>a</sup> of the block-holder frame. The shifter 33 is provided at its bottom with arms 33<sup>a</sup>, extending downward on opposite sides of a stationary bar 35, which is bolted to one of the side members 8 of the carriage and forms a continuation of the rack-bar 14. The bar 35 is braced by means of a diagonal member 36, connected with the bar 35 at its outer end by means of a bolt 37 and bolted to the carriage 7, as shown. The bar 35 is thus held perfectly stationary and forms a support for the rear of the block-holder frame and a fulcrum for the shifter 33. The shifter 33 has at the top two arms 33<sup>b</sup>, which extend laterally far enough to overlie the side bars 15<sup>a</sup> of the block-holder frame, and the arms 33<sup>b</sup> are upwardly curved toward their ends to present upon their upper surfaces a concavity in which the lever 28 moves as it swings from side to side. As the lever 28 contacts with the upper surface of the arms 33<sup>b</sup> its lateral swings cause the oscillation of the shifter 33 upon its pivot, and as the shifter engages by means of the downwardly-projecting arms 33<sup>a</sup> with the fixed bar 35 the oscillations of the shifter cause the rear end of the block-holder frame to swing in the direction of movement of the lever 28. The amount of the swing of the frame is determined by the magnitude of the oscillations of the shifter, and these oscillations may be limited to any desired magnitude by means of adjusting-screws 37<sup>a</sup>, which are inserted into the bars 15<sup>a</sup> below the ends of the arms 33<sup>b</sup>. In order to return the block-holder to initial position after it has been fed forward sufficiently for the block held thereby to be completely sawed up, it is necessary to provide means for releasing the dogs 30 from engagement with the notches of the rack-bar, and the means preferably employed for this purpose comprises a pair of levers 38, provided with upturned ends adjacent to the



shifter 33. The levers 38 are mounted on an iron bar 39, connecting the side bars 15<sup>a</sup> of the block-holder frame just beneath a similar bar 40, secured on the upper side of the bars 15<sup>a</sup> and serving to hold the lever 28 in contact with the upper surface of the shifter 33. The levers 38 engage at their forward end with upwardly-projecting arms 30<sup>a</sup> on the dogs 30, so that when the upturned ends of the levers 38 are pressed together the dogs will be disengaged from the rack-bar, and the block-holder frame will be free, so that it may be retracted to initial position.

In operating the machine the operator will preferably sit upon a seat 41, mounted on the frame or bench 1, and will grasp with one hand a handle 42, projecting upward from the block-holder frame adjacent to the bar 14<sup>a</sup>, and will grasp with the other the free end of the lever 28 and by alternately pulling and pushing will reciprocate the carriage 7 over the rails 6. It is of course to be understood that the block-holder will be retracted to the outer end of the bar 35 and that the block from which the shingles are to be sawed will be gripped by means of the gripping devices already explained. The strain applied to the lever 28 in reciprocating the carriage will cause the lever to swing to and fro on its pivot, passing from one end of the shifter 33 to the other and alternately advancing first one side of the block-holder and then the other. The total amount of the advance occasioned by a complete oscillation of the lever 28 will depend upon the size of the notches in the rack-bar 14, and the angle of advance of one side of the block-holder at each half-oscillation of the lever 28 will be determined by the adjustment of the screws 37<sup>a</sup> by which the play of the shifter 33 is limited.

The clamping of the block from which the shingles are to be cut is very easily effected by merely supporting the block on the plates 12 in contact with the front of the bar 14<sup>a</sup> and then lowering the lever 22 to force the teeth thereon into the top of the block and to move the bar 20 longitudinally of the block to bring the hooked teeth on the end thereof into engagement with the block. The pressure downward and longitudinally of the block by the teeth on the lever 21 and the bar 20 will force it into engagement with the stationary dogs 18 and 19 and will insure the holding of the block with sufficient tightness for the purposes contemplated. When it is desired to cut shingles from a block of greater length, the adjusting-screws 37<sup>a</sup> will be raised to limit the throw of the shifter 33, so as to decrease the angle of advance and so lengthen the taper of the shingle. If, on the other hand, it is desired to saw the shingles from a shorter block, the adjusting-screws 37<sup>a</sup> will be lowered to increase the throw of the shifter 33 and shorten the taper of the shingles.

When it is desired to cut shingles of differ-

ent thickness, it will be necessary to remove the rack-bar 14 and replace it with another bar whose notches are placed closer together or farther apart, according as it is desired to lessen or increase the thickness of the shingles.

By removing the shifter 33 and using a rack-bar whose notches are of suitable size the machine may be readily adapted for cutting laths and slabs of the same thickness throughout.

While the invention has been described and illustrated as embodied in a machine making use of a single mandrel and saw only, it will be obvious that, if desired, two mandrels and two saws may be mounted upon the bench 1 and driven in opposite directions. It will also be obvious that while it will in general be found more convenient for the operator to occupy the seat 41 in operating the machine the machine may be supported at such a height that the operator will find it convenient to stand.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely of said carriage, a block-holder slidably mounted on said ways, a rack-bar beneath said block-holder, an operating-lever pivotally mounted beneath said block-holder, a pair of spring-pressed dogs on said lever engaging said rack-bar, and means operated by said lever for swinging said block-holder laterally.

2. The combination in a shingle-machine, of a reciprocating carriage, ways arranged transversely thereof, a block-holder slidably mounted on said ways, a rack-bar mounted on said carriage beneath the block-holder, a lever pivotally mounted on the block-holder and having a head disposed obliquely thereto, and a pair of spring-pressed dogs pivotally mounted on said head and engaging said rack-bar.

3. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely thereof, a block-holder slidably mounted on said ways, a rack-bar projecting laterally from said carriage beneath said block-holder, an operating-lever pivotally mounted on the block-holder and having a head arranged obliquely thereto, a pair of spring-pressed dogs mounted on said head and engaging the opposite sides of said rack-bar, and means provided on said block-holder to throw said dogs out of engagement with said rack-bar.

4. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely of said carriage, a block-holder slidable on said ways, a rack-bar rigidly mounted on said carriage beneath the block-holder, a lever pivotally mounted on the block-holder, a pair of pivoted dogs mounted on said lever and held normally in engage-



ment with said rack-bar, and a pair of pivoted levers mounted on said block-holder and having their ends disposed between said dogs.

5. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely of the carriage, a block-holder slidably mounted on said ways, a rack-bar rigidly mounted on said carriage beneath said block-holder, a lever pivotally mounted on said block-holder, dogs pivotally mounted on said lever and held normally in engagement with said rack-bar, and an oscillating shifter for said block-holder mounted at the rear thereof and adapted to be operated by the movements of said lever.

6. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely thereof, a block-holder slidably mounted on said ways, means on said block-holder for advancing the block-holder by a step-by-step movement, said means comprising a lever pivotally mounted on said block-holder, and means at the rear of said block-holder for shifting the rear portion thereof alternately first to one side and then to the other at each forward feed of the block-holder.

7. The combination in a shingle-sawing machine, of a reciprocating carriage, ways arranged transversely thereof, a block-holder slidably mounted on said ways, a fixed bar beneath said block-holder projecting laterally from the carriage, an oscillating member pivotally mounted at the rear of said block-holder and engaging said bar, and means provided on the block-holder for feeding it forward with a step-by-step movement, said means engaging said shifter and causing said shifter to swing once in each direction with each forward movement of the block-holder.

8. The combination in a shingle-sawing machine, of a reciprocating carriage, a block-holder mounted for movement transversely of said carriage, means for advancing said block-holder with a step-by-step movement, said

means comprising a laterally-swinging lever, and a pivoted shifting device at the rear of said block-holder having a concave upper surface over which said lever swings.

9. The combination in a shingle-sawing machine, of a reciprocating carriage, and a block-holder mounted thereon, said block-holder comprising stationary dogs to engage the bottom and one end of the block, a lever having teeth for engagement with the top of the block, and a sliding bar actuated by said lever and having teeth for engagement with one end of the block.

10. In a shingle-sawing machine, a block-holder comprising stationary dogs for engagement with the bottom and one end of a block, movable dogs for engaging the top and the other end of the block, and means for simultaneously forcing said movable dogs into engagement with the block.

11. In a shingle-sawing machine, a block-holder comprising stationary dogs for engagement with one end and the bottom of a block, a reciprocating bar having means to engage the other end of the block, a lever for reciprocating said bar having means for engaging the top of the block, and means for securing said lever in any desired position.

12. In a shingle-sawing machine, a block-holder comprising stationary dogs for engaging the bottom and one end of a block, a reciprocating bar having means for engaging the other end of the block and being provided with a series of notches for engagement by the end of an operating-lever, and an operating-lever having an arm for engagement with the notches on said bar and having means for engagement with the top of the block.

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

JOSEPH MONTGOMERY CUSTER.

Witnesses:

AARON GRAHAM,  
R. M. CHARLTON.