

S. DILLON & E. E. SLICK.
SAWING APPARATUS.

APPLICATION FILED SEPT. 25, 1907.

Patented Aug. 1, 1911.

5 SHEETS—SHEET 1.

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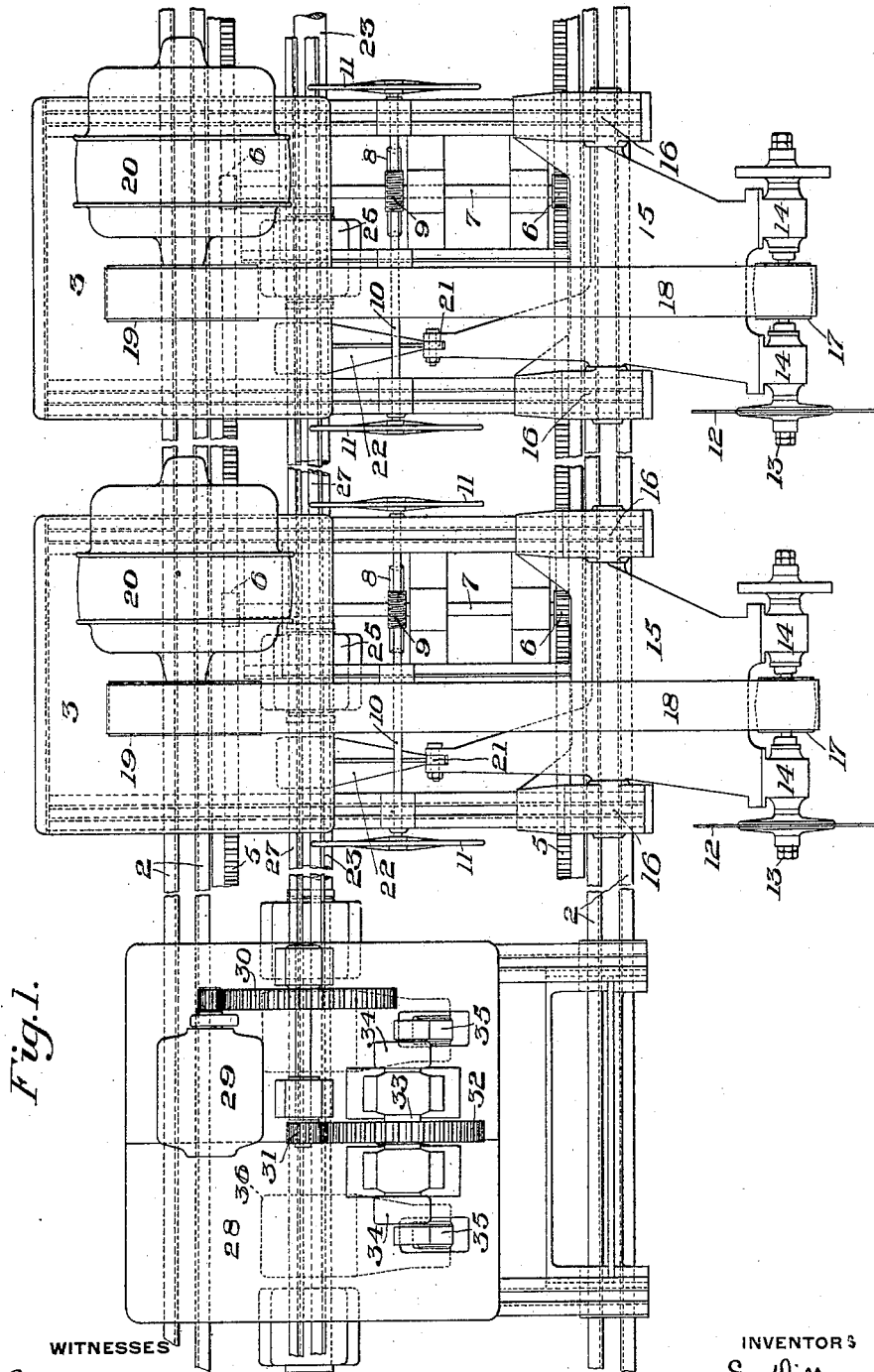


Fig. 1.

WITNESSES

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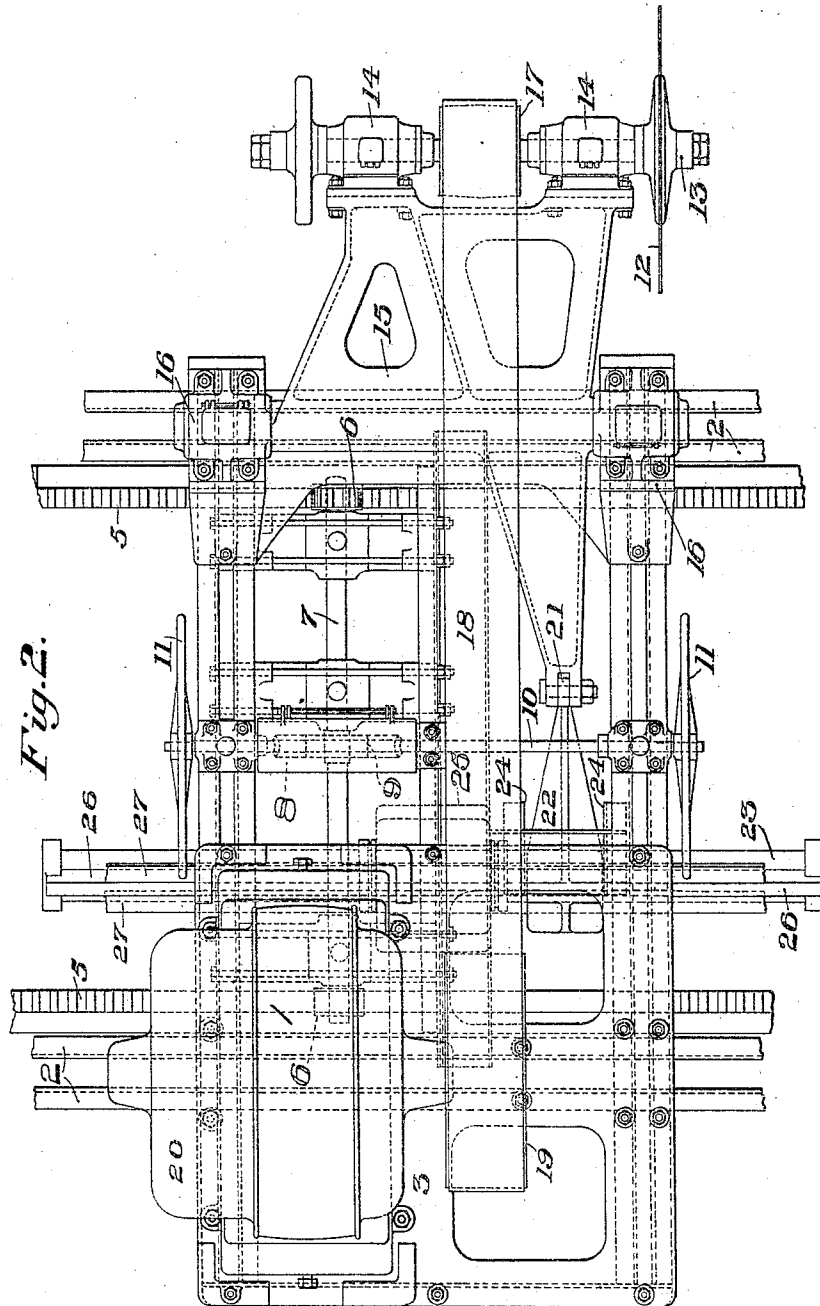


Fig. 2.

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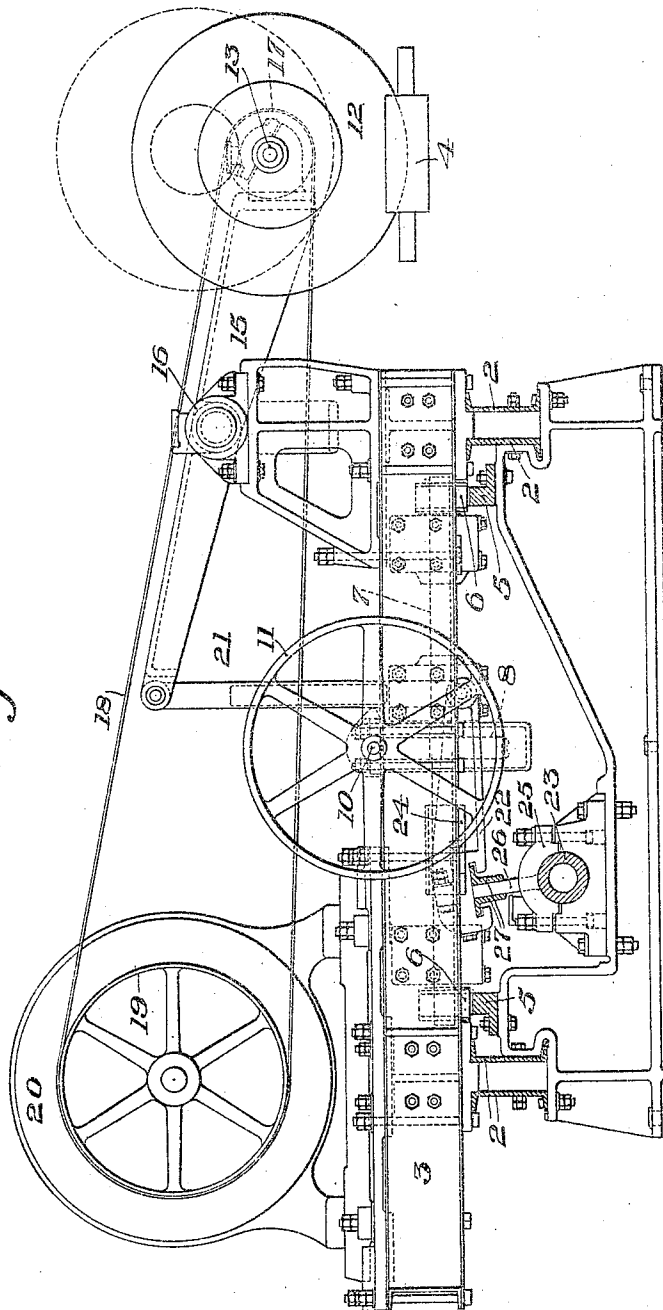
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Fig. 3.



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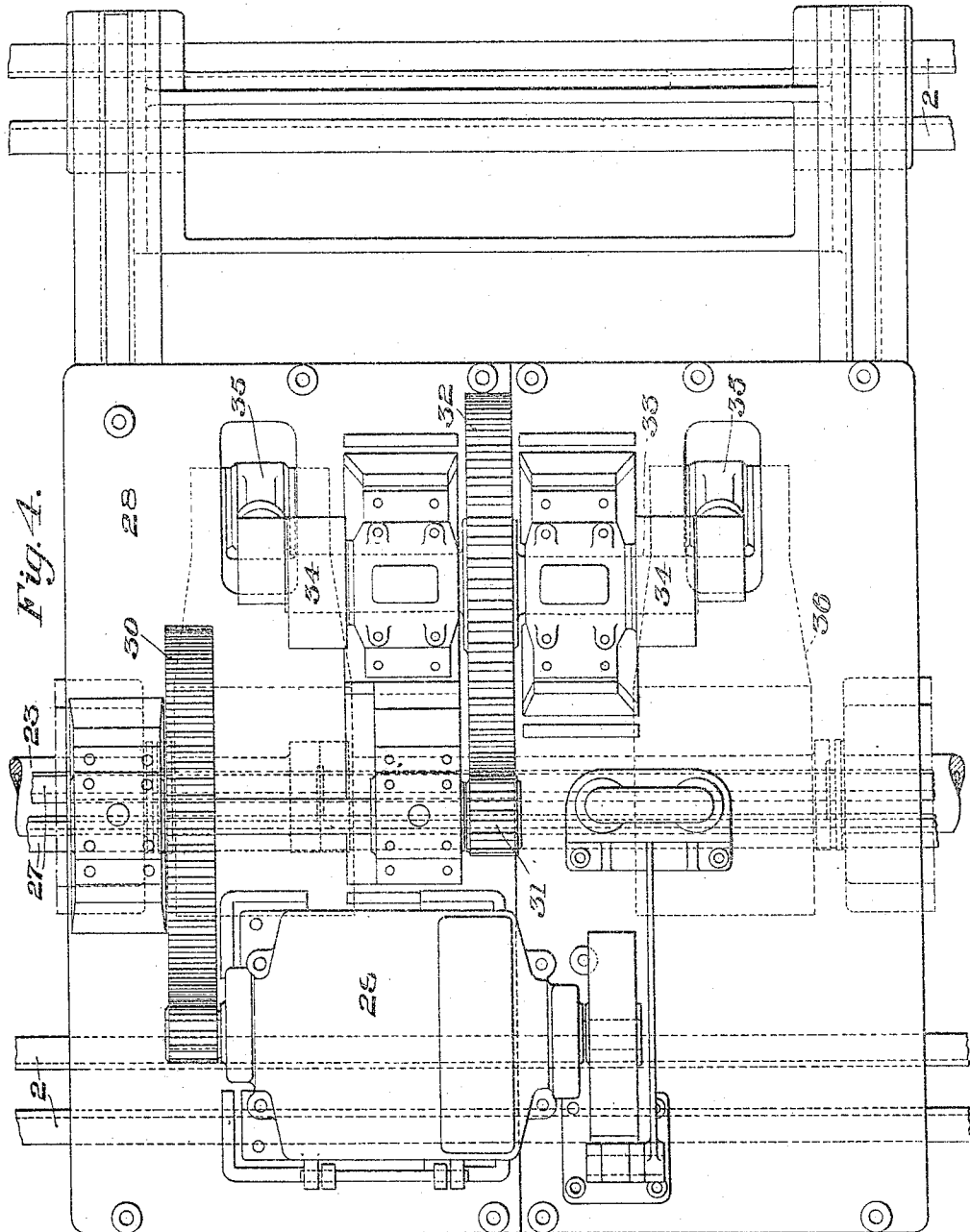


Fig. 4.

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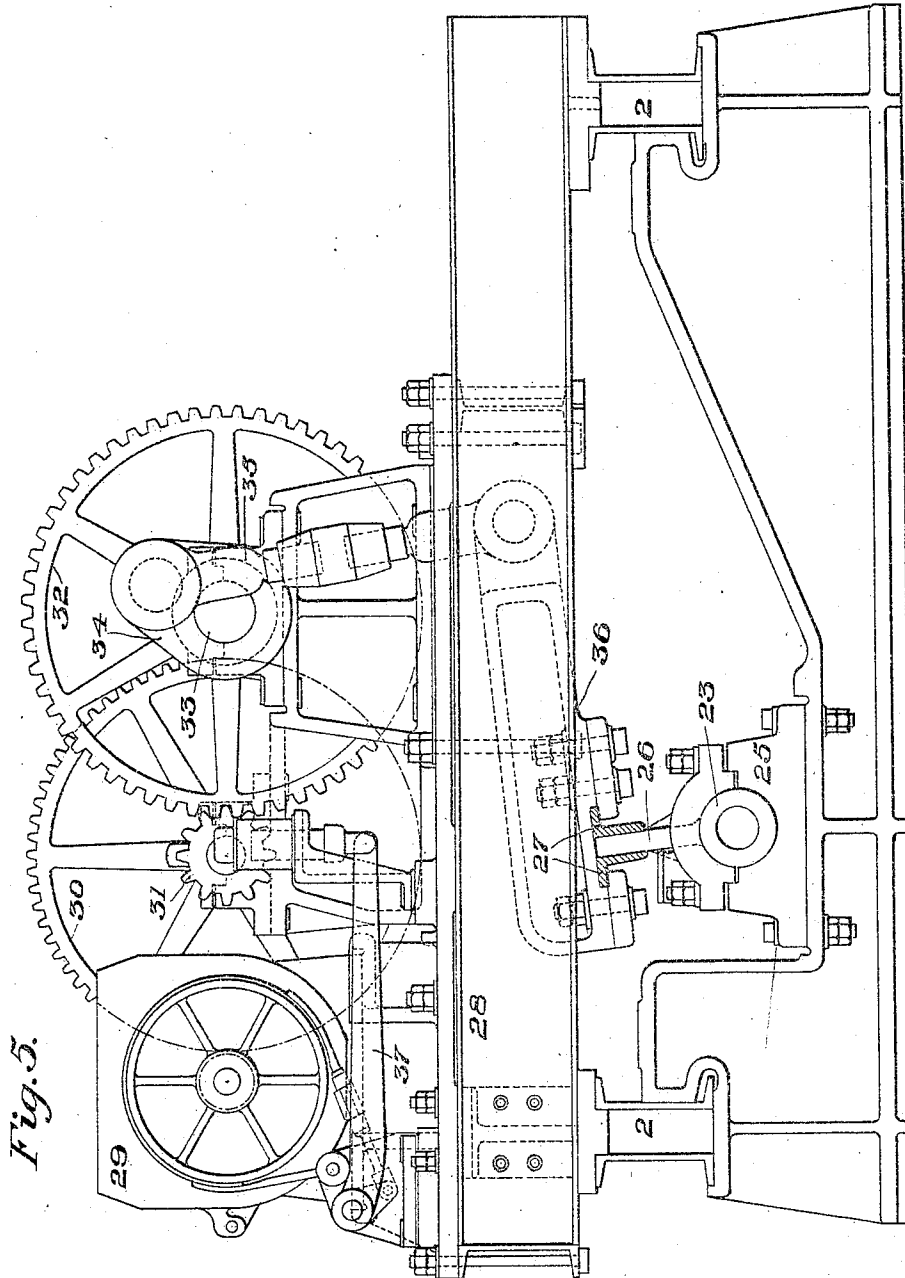


Fig. 5.

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UNITED STATES PATENT OFFICE.

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SAWING APPARATUS.

999,212.

Specification of Letters Patent.

Patented Aug. 1, 1911.

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To all whom it may concern:

Be it known that we, SYDNEY DILLON, of Edgewood Park, and EDWIN E. SLICK, of Pittsburg, county of Allegheny, Pennsylvania, have invented a new and useful Improvement in Sawing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a plan view showing the saws and saw-operating mechanism arranged in accordance with our invention; Fig. 2 is a plan view on a larger scale of the sawing apparatus forming part of our invention; Fig. 3 is a side elevation of the apparatus shown in Fig. 2; Fig. 4 is a plan view of the saw-tilting mechanism; Fig. 5 is a side elevation of the tilting mechanism shown in Fig. 4.

Our invention relates to sawing apparatus and mechanism for moving the saw into and out of engagement with the materials to be cut, and it more particularly relates to saw mechanism in which a number of saws are employed to simultaneously cut long rolled blanks, such as rails, beams and similar articles, into pieces of a predetermined length.

The object of our invention is to provide improved mechanism for operating the saws and for bringing them into contact with the material to be cut.

A further object of the invention is to provide sawing apparatus having means for adjusting the saws relatively to each other on the shoes forming the saw bed so as to easily and quickly vary the distance between the saws to change the length of the cut piece of material in any degree within the length of the saw bed.

Another object of our invention is to provide novel means by which the adjustable saws are connected to the saw-tilting mechanism.

In the drawings 2, 2 represent the shoes forming the bed on which a series of saw-carrying frames 3 are mounted so as to be movable toward and away from each other to vary the distance from saw to saw in order to cut a long blank into pieces of different lengths. A feed table 4 is arranged in line with and in front of the shoes, so as to deliver successive multiple length blanks in front of and beneath the saws, in position to be cut when the saws are actu-

ated and are brought into contact with the blank. On each of the shoes 2 is a rack 5, having teeth which mesh with the teeth in the spur gears 6, which are located on the opposite ends of the gear shaft 7. A worm-wheel 8 is also secured on the shaft 7, which is meshed with the teeth in the worm 9 on the worm shaft 10, and on the outer ends of the shaft 10 are hand-wheels 11, by which the saw frame 3 is moved on the shoes 2, 2, forming the bed of the apparatus.

The saw-carrying frames 3 are each provided with a saw 12, which is secured on the saw mandrel 13, the saw mandrel being rotatably mounted in bearings 14 on the ends of the pivoted saw arm 15, the arm 15 being secured in pivot bearings 16, which are on the saw-carrying frame 3. Each of the saw mandrels 13 has a driving pulley 17, which is connected by means of a belt 18, with the pulley 19 on the saw-driving motor 20, also mounted on the saw frame 3. The rear end of the pivot saw arm 15 is connected by means of a link 21 with the outer end of the sliding lever or arm 22, which is secured on the rocking shaft 23, so as to be movable lengthwise on the shaft as the saw frame is shifted on the shoes 2, 2. The arm 22 is secured to the shaft 23 between guides 24, fastened to the saw frame, so as to cause the arm 22 to be moved in parallel lines and prevent any possibility of binding or sticking of the arm on the shaft, while the saw frame is being moved. The rocking shaft 23 is mounted in bearings 25 and extends beneath the saw frame 3 and parallel with the shoes 2, 2. This shaft 23 is provided with wing portions 26, and on the outer ends of the wings 26 are oppositely facing angles or bars 27, these bars extending from end to end of the shoes 2, 2, forming the saw bed. The inner end of the lever arm 22 is loosely connected to the bars 27 on the shaft 23, so as to be movable lengthwise on the shaft when the frame 3 is shifted on the shoes 2, 2, by the operators, through the hand wheels 11 and the connecting gearing. Also mounted on the shoes 2, 2, forming the bed of the apparatus, is the frame 28 of the saw-tilting mechanism, and on this frame is a tilting motor 29, which is connected by means of slow-down gears 30 and 31 with the gear 32 on the crank shaft 33. On each end of the shaft 33 is a crank 34, the outer ends of the cranks being connected by means of adjustable

links 35 with the opposite sides of the outer end of the tilting arm 36, by which the rocking shaft 23 is actuated. The motor 29 is provided with the usual solenoid brake apparatus 37.

In the operation of our improved apparatus, the saw-frames 3 are first adjusted relatively to each other so as to bring the saws 12, 12 at the right distance to cut the blanks into the desired lengths, the shifting operation being easily and quickly performed by means of the hand-wheels 11, and the connecting gearing. As shown in the drawings, each of the shoes 2 is provided with a rack 5, in this way causing the saw bed 3 to move in parallel lines, although one rack may be used and other means provided for preventing the saw frame 3 from binding on the shoes. The motors 20 are then started, causing the saws 12 to rotate through the pulleys and the connecting belt 18. After a long blank has been delivered by the rollers of the feed table 4 in position to be cut, the operator starts the motor 29 into operation and this motor, through the slow-down gearing 30, causes the cranks 34 to rotate. The cranks 34, through the connecting link 35 and arm 36, rock the shaft 23 in its bearings 25. As the shaft 23 is rocked, it also rocks the pivoted saw arms 15, through the connecting lever arms 22 and links 21, this tilting action of the arms 15 first lowering the saws into engagement with the blank to cut it and then retracting the saws out of the path of the cut material.

It will be noted that as the saw-tilting motor 29 is rotated, the saws will be successively lowered and raised without the necessity of reversing the direction of rotation for the motor, in this way avoiding the necessity of the operator stopping the motor and then reversing it and preventing the possibility of jamming of the saw on account of the motor not being stopped quickly enough after the material has been cut.

The advantages of our invention are many and will be apparent to those skilled in the art. The saws can be adjusted to any distance desired within the limits of the length of the shoes forming the saw bed, without the necessity of dismantling any part of the apparatus. By the use of the rotary tilting mechanism shown, the saws are advanced and automatically retracted, and have a fixed stroke which prevents any possibility of jamming by the operator not gaging correctly the time to stop the rotary tilting motor forming part of the apparatus.

Many modifications may be made in the

form and arrangement of the parts without departing from our invention. The saw-tilting mechanism is adapted to be used in moving a reciprocating saw mechanism back and forth on its bed when such construction is used instead of the oscillating or tilting mechanism shown, and a separate saw-tilting mechanism may be provided on each saw frame instead of one saw-tilting mechanism for a number of saws, as shown.

The apparatus is simple and easily kept in repair, and by the use of the adjusting mechanism shown, the necessity of regulating the distance between the saws by the use of liners on opposite sides of each saw on its mandrel is avoided.

We claim:

1. A sawing machine including a bed, a rock-shaft disposed longitudinally of the bed, a saw carriage movable upon the bed longitudinally thereof, a rocking saw-arm mounted upon the carriage, a saw carried by the arm, a crank arm slidable upon the rock-shaft, and a link connection between the crank arm and the saw-arm, substantially as described.

2. A sawing machine including a bed, a rock-shaft disposed longitudinally thereof, a carriage upon the bed and movable longitudinally thereof, a rocking saw-arm mounted upon the carriage, a saw carried by the arm, a crank arm slidable longitudinally upon the rock-shaft, guide members upon the carriage and associated with the crank arm to move the latter upon the rock-shaft by the movement of the carriage, and a link connecting the crank arm with the saw-arm, substantially as described.

3. A sawing machine including a bed, a rock-shaft disposed longitudinally of the bed, radial wings upon the shaft, a flanged bar carried by the wings longitudinally of the shaft, a crank arm slidably embracing the flanged bar, a saw carriage movable longitudinally upon the bed and associated with the crank arm to move the same with the carriage, a rocking saw-arm mounted upon the carriage, a saw carried by the saw-arm, and a link connecting the crank arm and the saw-arm, substantially as described.

In testimony whereof, we have hereunto set our hands.

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