

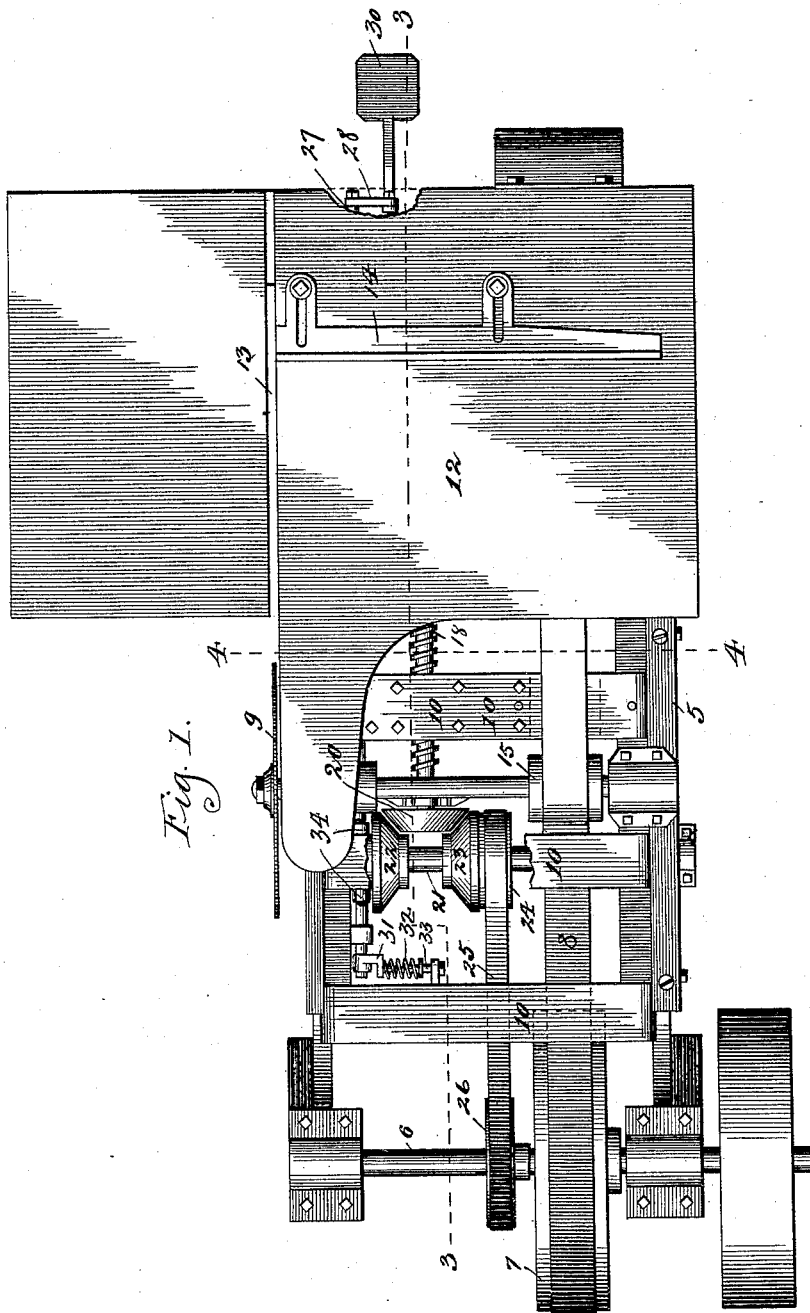
(No Model.)

4 Sheets—Sheet 1.

R. S. & R. L. GREENLEE.
CROSSCUT SAWING MACHINE.

No. 419,848.

Patented Jan. 21, 1890.



Witnesses,
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Frederick Goodwin

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By *Offield & Son, Attys.*

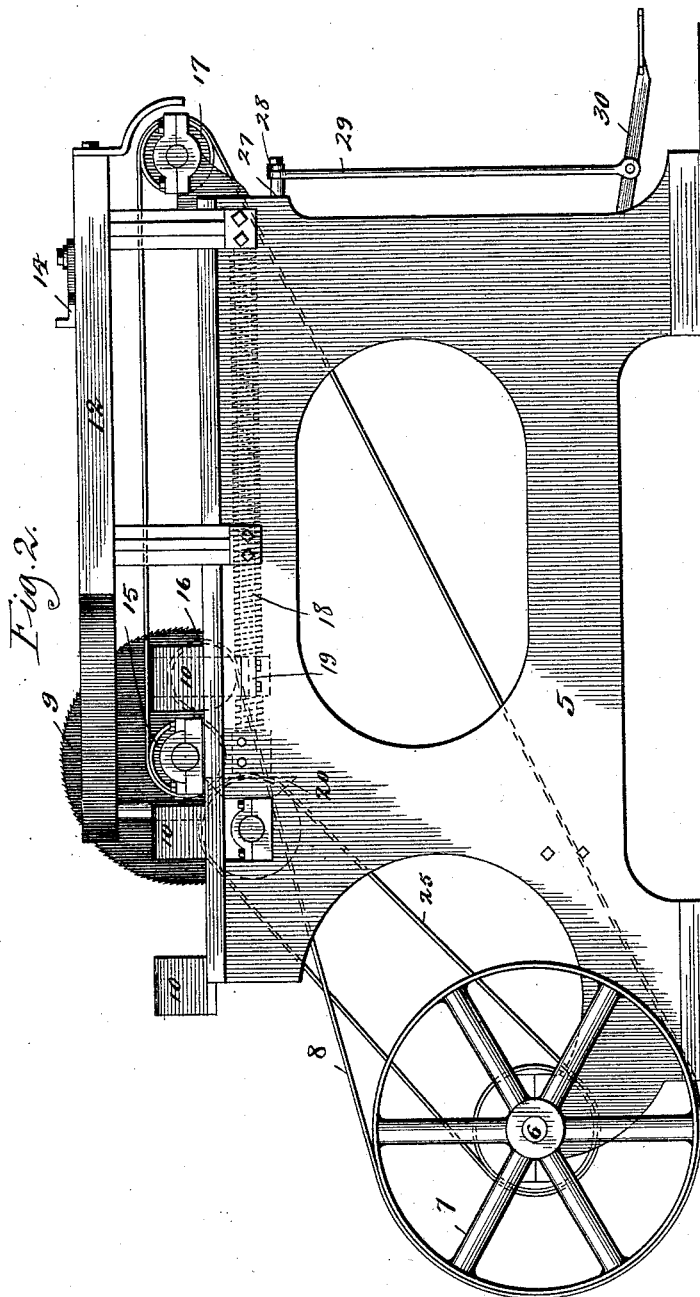
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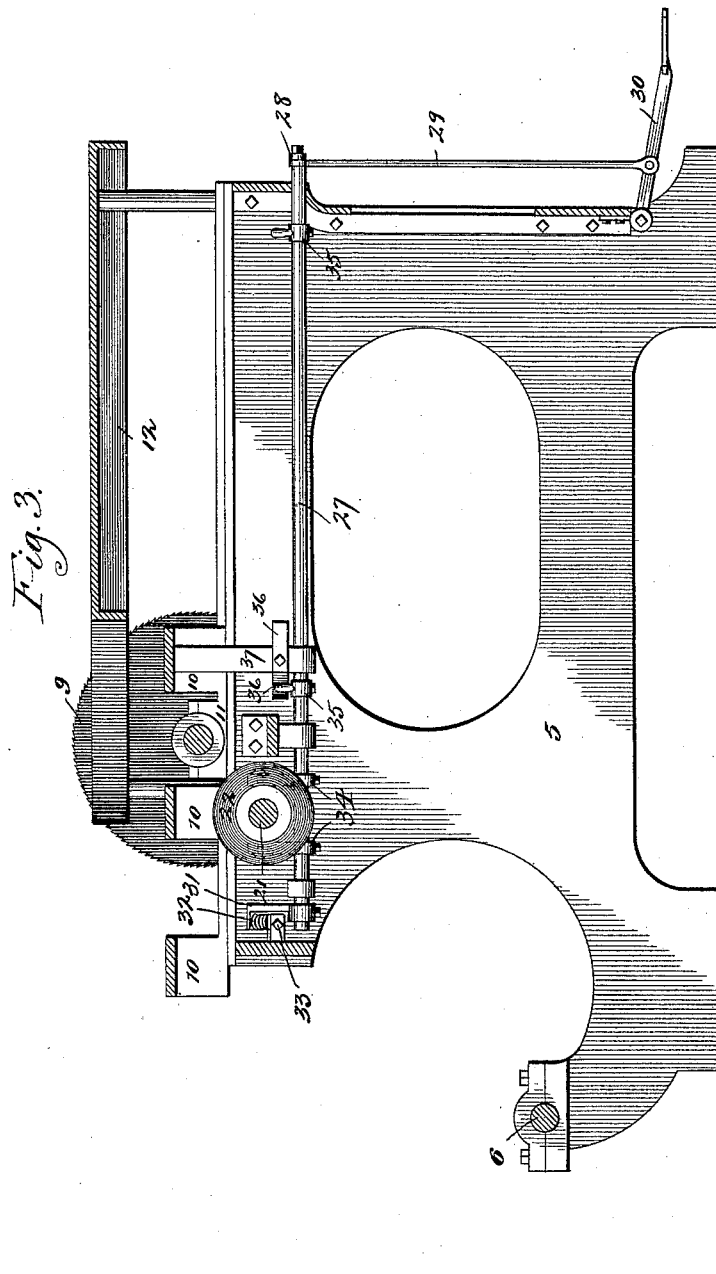
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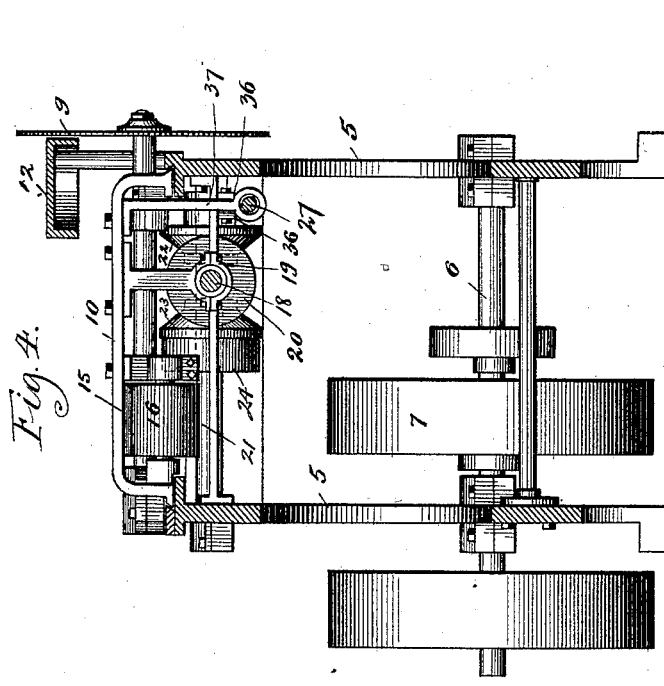
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UNITED STATES PATENT OFFICE.

RALPH S. GREENLEE AND ROBERT L. GREENLEE, OF CHICAGO, ILLINOIS.

CROSSCUT-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,848, dated January 21, 1890.

Application filed March 5, 1889. Serial No. 302,027. (No model.)

To all whom it may concern:

Be it known that we, RALPH S. GREENLEE and ROBERT L. GREENLEE, citizens of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Crosscut-Sawing Machines, of which the following is a specification.

Our invention relates to that class of sawing-machines in which the material is placed upon a stationary table and a circular saw having its shaft journaled in a traveling carriage is advanced to the work and then withdrawn while the material is placed in position for the succeeding operation; and our invention consists in certain devices for operating the saw and sliding carriage, as hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of a sawing-machine embodying our improvements, and fragmentary portions being broken away to show otherwise concealed parts. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section on the line 3 3 of Fig. 1, and Fig. 4 is a cross-section on line 4 4 of Fig. 1.

5 represents the frame-work of the machine, upon the forward end of which is journaled a driving-shaft 6, having a band-wheel 7, over which a belt 8 is carried, said belt being intended to drive the saw 9, whose shaft is journaled on a sliding carriage comprising arched bars 10, having a bearing in suitable ways in the top of the frame-work, and cross-pieces 11, joining said vertical bars and supporting thereon the journal-boxes for the saw-shaft.

12 represents a table on which the material is placed, said table having a working-aperture 13 for the saw. The usual fence 14 is provided. On the saw-shaft is a belt-pulley 15, and an idler 16 is supported by a short shaft journaled in hangers forming a part of the traveling carriage. A pulley 17 is rotatably secured at the rear of the frame-work, and the belt 8 is carried from the band-wheel 7 over the idler 16, around the pulley 15 on the saw-shaft, and thence over the pulley 17 at the rear of the machine.

The mechanism for causing the saw-car-

riage to reciprocate comprises a screw-threaded shaft 18, which passes through a nut 19, supported by an arm or plate secured to one of the arched bars of the sliding carriage, said worm-shaft having on its end a conical friction driving-wheel 20, a rotatable shaft 21, journaled at right angles to the screw-threaded shaft and bearing thereon two conical friction driving-wheels 22 23, said conical driving-wheels being placed a distance apart a little greater than the diameter of the wheel 20, and the shaft 21 having a slight endwise movement on its bearings, so as to bring the surfaces of one of the wheels 22 23 into contact with 20 by the endwise movement of the shaft 21, and a driving-pulley 24, keyed on shaft 21 and around which a belt 25 is carried from a driving-pulley 26 on shaft 6.

The means for reciprocating the shaft 21 comprise a rock-shaft 27, carried in suitable bearings parallel to the screw-threaded shaft and having at its rear end an arm 28, Fig. 1, to which is connected a rod 29, the latter being pivoted to a foot-treadle 30. The forward end of the rod 27 has an arm 31, against which a coiled spring 32 is seated, the other end of said spring being confined by a stud 33. Said rod has crank-arms 34, Figs. 1 and 3, which are pivotally connected to the hub of friction-gear 22. The rod 27 has adjustable stops 35 thereon, which are adapted to rock said rod in its bearings whenever they come in contact with the shifting blocks 36, which are supported on an arm 37, depending from the traveling carriage. A detail of this device is shown in Fig. 5.

The travel of the carriage may be varied by the adjustment of the stops 35 on their rod, as it is obvious that when the blocks 36 engage said stops the shaft 21 will be moved endwise sufficiently to disengage the gearing, and the screw-threaded shaft comes to rest at either end of the movement of the said carriage.

The operation of the machine is as follows: Starting from the position shown in Fig. 1, wherein the screw-threaded-shaft gearing is shown disengaged, the rotation of shaft 6 will operate through belt 26 to drive shaft 21, and by means of the belt 8 to put the saw in motion. The treadle 30, being depressed by

the foot of the operator, will rock the rod 27 in its bearings, forcing shaft 21 endwise and bringing the cone-wheel 22 into contact with the cone-wheel 20 on the end of the screw-threaded shaft, and thus imparting motion to the latter. The rotation of the screw-threaded shaft causes a movement of the carriage toward the rear end of the machine by reason of the turning of said shaft in the nut 19, which is connected to the carriage. The saw having advanced and severed the lumber, the shifting blocks 36 will have reached stop 35 at the rear end of the machine, which will rock rod 27 in its bearings, moving shaft 21 endwise sufficiently to disengage the friction-gear, when the foot is raised from the treadle and the spring 32 will rock the rod 28 sufficiently to shift the shaft endwise until the cone-gearing 23 comes in contact with the beveled face of the cone-wheel 20 on the screw-threaded shaft, whereby the latter is rotated in the opposite direction, and by means of the nut causes the carriage to return to its original position.

The belting of this machine is peculiar, the use of the idler permitting the saw to be driven during the reciprocation of the carriage without slackening the belt. We regard this feature as novel in a machine of this character.

It is obvious that the construction herein shown and described may be varied within wide limits without departing from the spirit of our invention. As, for example, we have shown and described herein friction-gear for driving the screw-threaded shaft; but it is obvious that bevel-toothed gear may be substituted therefor. We have also described and prefer to use a rock-shaft to cause the endwise movement of the gear-shaft; but other equivalent devices may be employed and many such will suggest themselves to any mechanic skilled in the art. A weight connected to an arm of the rock-shaft might be substituted for the coiled spring shown to effect the endwise movement of the gear-shaft in one direction.

We claim—

1. In a sawing-machine, the combination, with a reciprocating saw-carriage, of a screw-threaded shaft provided with a friction-gear, a rotatable and endwise-movable shaft journaled at right angles to the screw-threaded shaft and bearing thereon two friction-gears, and a rock-shaft adapted to be rocked by the carriage in its reciprocation, and thereby to cause the endwise movement of the shaft bearing the two friction-gears, whereby to bring them alternately into engagement with the worm-shaft gear, substantially as described.

2. In a sawing-machine, the combination, with a reciprocating saw-carriage, of a screw-threaded shaft provided with a friction-gear, a rotatable and endwise-movable shaft journaled at right angles to the screw-threaded shaft and bearing thereon two friction-gears, a rock-shaft having provisions for moving the shaft bearing the two friction-gears, and a spring having one end confined and the other bearing upon an arm of said rock-shaft, whereby to rock said shaft in its bearings, substantially as described.

3. In a sawing-machine, the combination, with a reciprocating saw-carriage, a screw-threaded shaft enmeshed with a fixed nut on the carriage, bevel-gearing to drive said screw-threaded shaft mounted upon a rotatable and endwise-movable shaft, and a shifting device to move said shaft endwise, comprising a rock-shaft having stops adjustably secured thereon, and shifting blocks moving with the carriage and adapted to engage said stops at the limits of the movement of the carriage, whereby to disengage the screw-threaded-shaft gearing, substantially as described.

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