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S. BLAISDELL.

SAWING MACHINE.

APPLICATION FILED FEB. 23, 1904.

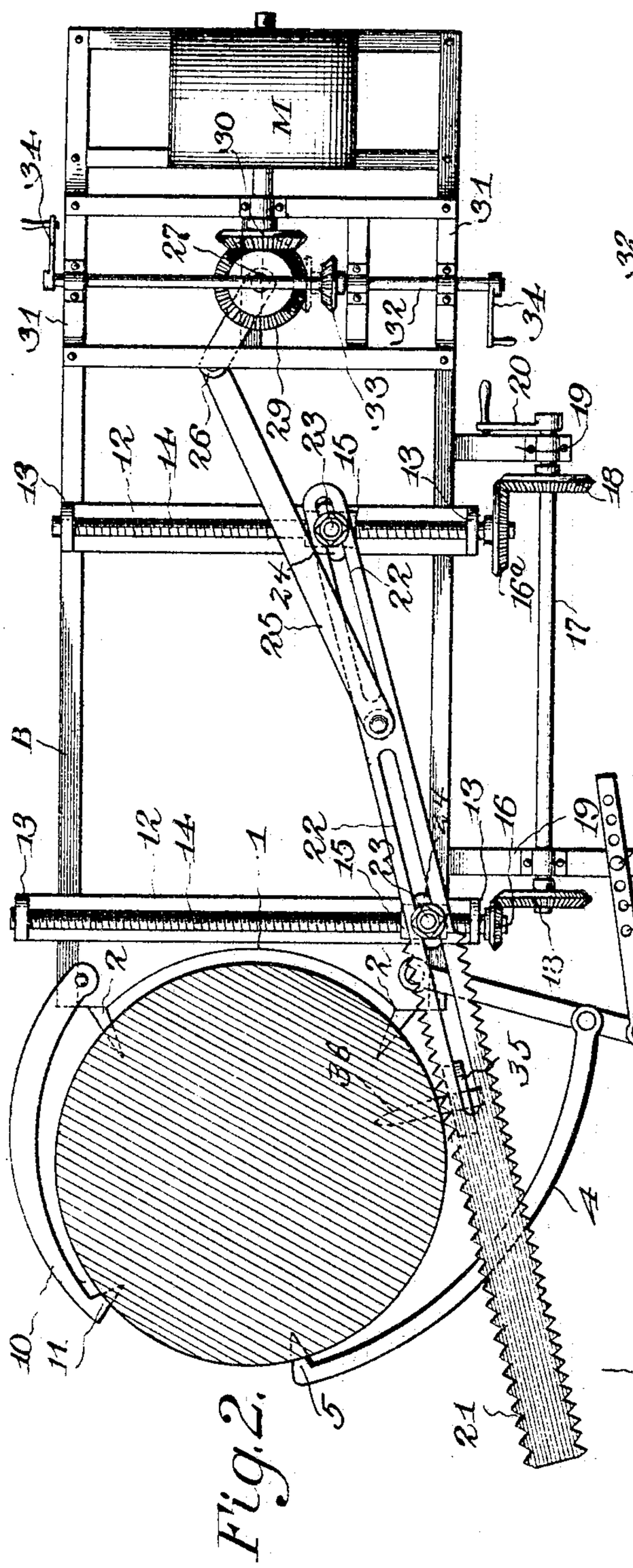

Fig. 2.

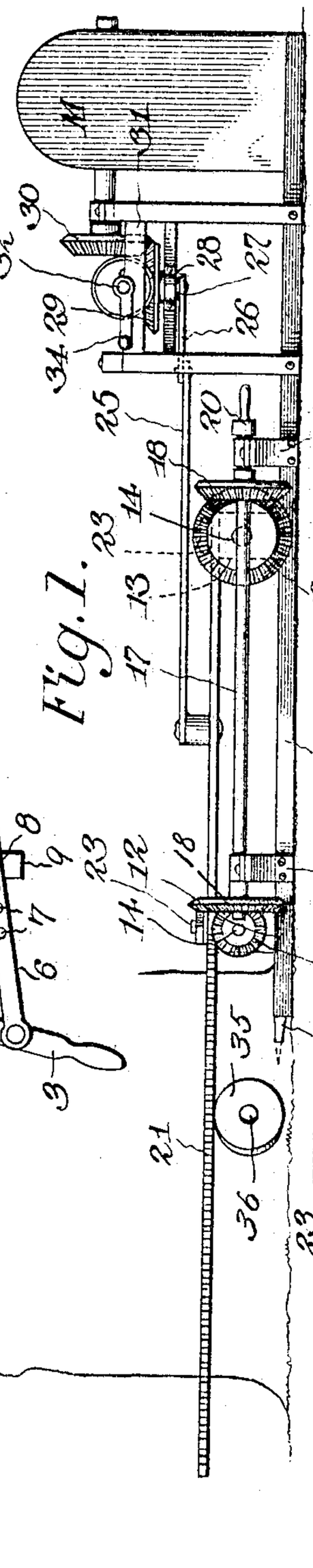

Fig. 1.

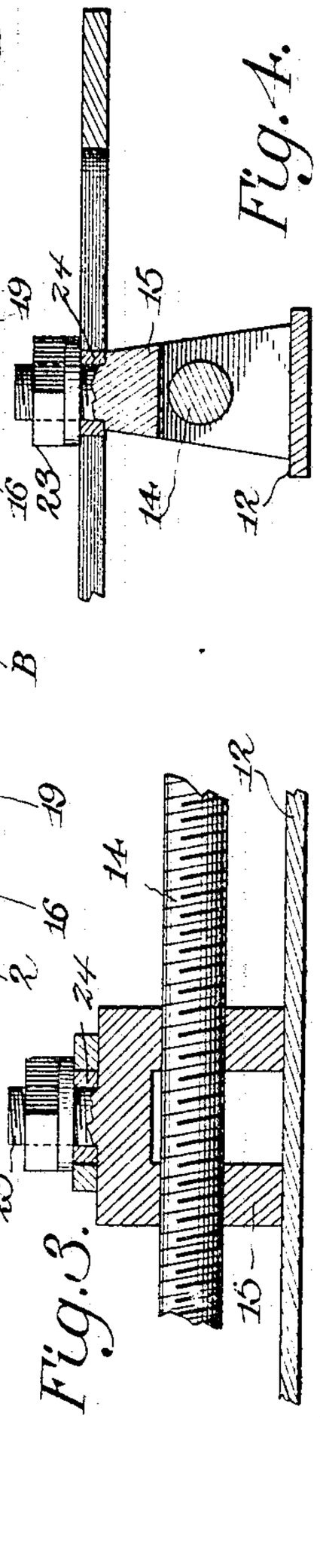

Fig. 4.

Fig. 3.

Witnesses
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No. 782,101. Patented February 7, 1905.

UNITED STATES PATENT OFFICE.

STEPHEN BLAISDELL, OF OAKLAND, MAINE.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 782,101, dated February 7, 1905.

Application filed February 23, 1904. Serial No. 194,844.

To all whom it may concern:

Be it known that I, STEPHEN BLAISDELL, a citizen of the United States, residing at Oakland, in the county of Kennebec and State of Maine, have invented a new and useful Sawing-Machine, of which the following is a specification.

This invention relates to sawing-machines, and has reference more particularly to power-operated drag-sawing machines especially designed for use in felling trees.

The principal object of the invention is to provide a simple, comparatively inexpensive, durable, and thoroughly efficient sawing-machine of the character specified in which means is provided for tightly clamping the bed of the machine to the lower portion of a tree-trunk and for gradually moving the saw-blade laterally as it cuts its way into the tree.

With the object above stated and others in view, as will appear when the invention is more fully disclosed, the same consists in a novel combination and arrangement of parts of a sawing-machine, as hereinafter fully described and claimed, and illustrated in a preferred form of embodiment in the accompanying drawings, it being understood that various changes in the form, proportions, and exact mode of assemblage of the elements exhibited may be made without departing from the spirit of the invention or sacrificing the advantages thereof.

In the drawings, Figure 1 is a view in side elevation of the machine in operative relation to a tree. Fig. 2 is a plan view of the machine in operative position. Fig. 3 is a longitudinal section through one of the guide-blocks and the associated structures. Fig. 4 is a transverse section through one of the guide-blocks and the associated structures.

Referring to the drawings, in which corresponding parts are designated by similar characters of reference throughout the several views, B designates the bed of the machine, which may consist simply of a heavy plank, as shown, or may be of any other suitable construction by which the requisite rigidity may be obtained. At the forward end of the bed B a portion is cut away along the curve 1 to allow the bed to be brought into close proximity to a tree-trunk and to bring the spurs 2 2, rigidly secured at the end of the bed, into engagement with the tree. In order to draw the spurs 2 2 into engagement with the tree and to hold the bed firmly in position, I mount upon the bed, adjacent to the forward end thereof, a lever 3, which has pivotally attached thereto a curved arm 4, provided at the end with a rearwardly-inclined spur 5. In order to hold the lever 3 in any position in which it may be set, an arm 6 is pivotally attached to the lever external to the arm 4 and extended rearwardly therefrom. The arm 6 is provided near its free end with a plurality of openings 7 for the reception of a pin 8, which is secured in a bracket 9, mounted on the bed and projecting laterally therefrom. To supplement the hold obtained upon the tree-trunk by the spurs 2 2 and the curved arm 4, a pivoted dog 10 is mounted on the side of the base opposite the lever 3 and is provided with a rearwardly-bent spur 11, which may be driven into the trunk of the tree, as shown.

Arranged transversely of the bed, intermediate of the ends thereof, are two ways 12 12, which support a pair of transversely-movable guide-blocks, as best seen in Fig. 2. The ways 12 12 have upturned ends 13, which are threaded to receive two screw-threaded shafts 14 14, which pass through the guide-blocks 15, which have threaded apertures to receive the shafts. The guide-blocks 15 serve to support and guide a horizontally-reciprocable saw, and means is provided for moving the guide-blocks transversely of the bed of the machine along the ways 12 at different rates of speed in order to feed the saw forward as it cuts its way through the tree-trunk. The means for imparting movement to the guide-blocks includes, in addition to the threaded shafts 14, beveled gears 16 and 16ª, mounted at the ends of said shafts, a counter-shaft 17, provided near its ends with beveled gears 18, meshing with the beveled gears 16 and 16ª and mounted for rotation in bearings provided by brackets 19, projecting laterally from the bed B. A crank 20 is rigidly secured at one end of the shaft 17 in order to impart rotative movement thereto at any desired speed, and the beveled gears 16 and 16ª, which mesh

with the gears 18, carried by the shaft 17, are of different diameters, the diameters of the gears 16 and 16ª being in inverse ratio to the distances of the two shafts 14 from the main driving-shaft of the machine.

The saw which I have preferably employed is of the form shown at 21 and is provided with teeth upon both edges, so that it may be fed in either direction. The saw is provided with longitudinal slots 22 and is secured in position upon the guide-blocks 15 by means of screws 23, mounted in the tops of the guide-blocks and extending through elongated washers 24, made, preferably, of hardened steel, which fit easily within the slots of the saw and take the wear which would otherwise come upon the threads of the screws 23. Motion is imparted to the saw by a pitman 25, pivotally connected at its forward end to the saw between the slots 22 therein and mounted at its rear end upon a crank 26, carried by the main driving-shaft 27 of the machine. The shaft 27 is preferably arranged in vertical position, as shown, being supported in bearing-brackets 28. At its upper end the shaft is preferably provided with a beveled pinion 29, which is in mesh with a beveled pinion 30, mounted upon the shaft of a motor M of any suitable construction, which is secured upon the bed of the machine at one end, as shown.

In order to provide for the operation of the machine by hand-power when a motor cannot be employed, I provide a pair of standards 31 upon the bed, and a shaft 32 is journaled in said standards at the top. The shaft 32 is shiftable longitudinally in its bearings and is provided intermediate of its ends with a beveled gear 33, which may be brought into engagement with the beveled gear 29 or disengaged therefrom at will. Cranks 34 are mounted at the ends of the shaft 32 and disposed in opposite directions, as shown. When a motor cannot be advantageously employed for supplying power to operate the pitman, the shaft 32 may be shifted to bring the gear 33 into engagement with the gear 29, and rotative movement may be imparted to the gear 29 by turning the shaft 32, the power being applied to the cranks 34 at the ends of the shaft.

In the operation of the machine as above described the bed of the machine having been clamped tightly to the tree-trunk as near the ground as possible the saw is brought into contact with the bark of the tree and is supported upon a roller 35, mounted upon a steel spike 36, with a pointed end, which may be easily driven into the tree-trunk. The machine is then set in operation, and the saw is reciprocated by means of the pitman and is simultaneously fed forward transversely of the frame by means of the threaded shafts which engage the guide-blocks. In feeding the saw across the frame the rates of advance of the two guide-blocks are proportionate to their distances from the main driving-shaft, and the two blocks are therefore always kept in a line which passes through the driving-shaft. This arrangement of the guide-blocks insures the most effective action of the pitman with a minimum lateral strain upon the saw. After the saw has passed entirely through the tree-trunk and the tree has been felled the machine may be transferred to another tree and secured to the trunk thereof without first returning the saw to its originalposition. The saw being double-edged it may be operated as well in one direction as the other.

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

1. In a sawing-machine, a bed plate or frame having a curvature at its front end adapted to engage the trunk of a tree, obliquely-extending spurs at the ends of said curvature, an arm mounted pivotally near one end of said curvature and having a rearwardly-extending spur, a lever mounted pivotally at the upper end of said curvature and having a pivoted arm provided with a rearwardly-extending spur, said fixed spurs and spur-carrying arms coöperating to secure the frame upon a tree to be felled.

2. In a sawing-machine of the class described, a saw-carrying frame having a curvature at one end, obliquely-disposed spurs fixed at the ends of said curvature, a spur-carrying arm pivoted at one end of said curvature, a lever pivoted at the other end of said curvature and having a spur-carrying arm, and means for securing said lever in adjusted position.

3. In a sawing-machine of the class described, a saw-carrying frame, a horizontally-disposed saw member having a pair of guide-slots, guide-blocks, elongated washer members supported upon the latter and engaging the slots in the saw, means for imparting a reciprocatory motion to the latter, and means for feeding the guide-blocks transversely across the frame of the machine.

4. In a sawing-machine of the class described, a saw-supporting base-frame, means for clamping and securing the latter upon a tree to be felled, a reciprocatory saw member provided with longitudinal slots and having teeth at both edges thereof, guide-blocks supporting said saw and having elongated washers engaging the longitudinal slots therein, a pitman having one end connected with the saw at a point intermediate the slots therein and connected at its other end with a driven crank-shaft, and means for feeding the saw-supporting guide-blocks transversely across the frame of the machine, the feeding mechanism being effective in either direction, thereby rendering the double-edged saw effective to start at either side of the machine.

5. In a sawing-machine of the class de-

scribed, a saw-supporting base-frame, means for clamping the latter upon a tree to be felled, screw-threaded shafts mounted transversely in said frame, guide-blocks having threaded perforations engaging said shafts, elongated washers supported upon the guide-blocks, a horizontally-disposed saw-blade having teeth at opposite edges thereof and provided with slots engaging the elongated washers upon the guide-blocks, a driven crank-shaft, a pitman connecting the crank of said shaft with a saw at a point between the slots of the latter, and means for operating the transverse screw-threaded feed-shafts.

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

STEPHEN BLAISDELL.

Witnesses:
DELLA B. HOLWAY,
R. W. EMERSON.