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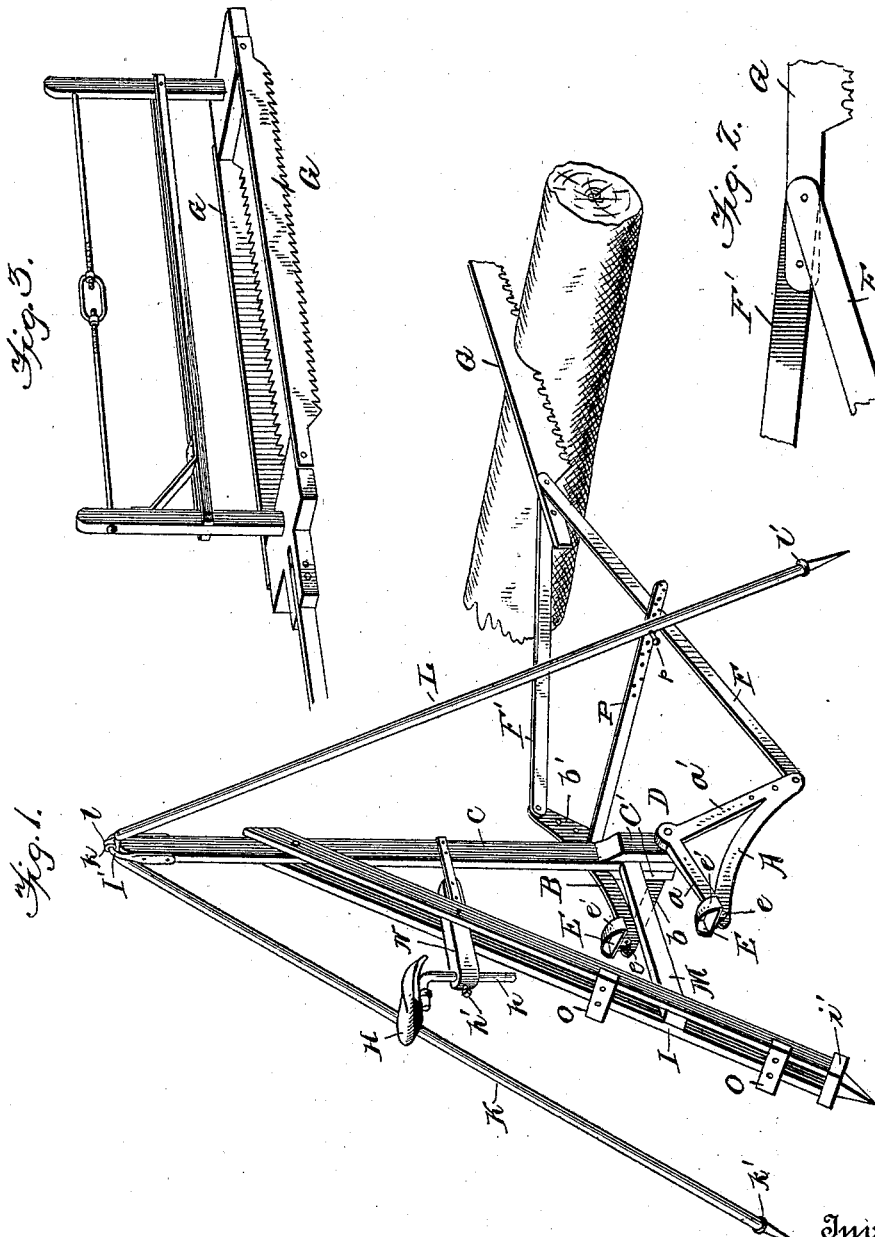
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J. W. STOW.

MACHINE FOR ACTUATING RECIPROCATING TOOLS.

(Application filed July 1, 1899.)

(No Model.)



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MACHINE FOR ACTUATING RECIPROCATING TOOLS.

SPECIFICATION forming part of Letters Patent No. 646,924, dated April 3, 1900.

Application filed July 1, 1899. Serial No. 722,581. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. STOW, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Mechanism for Actuating Reciprocatory Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to machines for operating a reciprocatory tool, and being especially applicable to wood-sawing machines operated by hand or foot power and commonly designated as "drag-saws" it will hereinafter be described with reference to its use in such a connection.

The requisites of a drag-sawing machine are, among others, simplicity, portability, low cost, an easy and natural position for the operator when at work, capacity for good service irrespective of the unevenness of the surface on which the machine stands, ability to work equally well with the saw at different heights, and the possibility of varying the length of the stroke at will without stopping the machine. My invention aims to meet all these requirements, as will hereinafter appear.

Owing to the fact that the muscles of the legs are far stronger than those of the arms, I have so arranged my machine that the operator can use his legs in propelling the saw, thus enabling him to accomplish a much greater amount of work than he could with a hand-operated device. The machine consists, essentially, of two bell-crank levers suitably supported side by side, with one arm of each lever adapted to be engaged by the foot of the operator. The other arm of each lever is connected by a rod with the saw. One of the levers stands in an inverted position with relation to the other, so that when one foot of the operator is depressed it will push the saw and when the other foot is depressed it will pull the saw back. The mechanism, with a

suitable seat for the operator, is mounted upon any suitable support, but preferably upon a portable frame or tripod.

In the drawings, Figure 1 is a perspective view of the entire machine in its preferred form. Fig. 2 shows the connection between the actuating mechanism and the saw. Fig. 3 shows a multiple saw.

The two bell-crank or L-shaped levers A B are pivoted at their angle to an upright bar C, which is shown as forming part of a portable tripod, but may be a permanent stationary structure, if desired. The lever A has one arm *a* extending in a substantially-horizontal direction and its other arm *a'* downwardly. The lever B has its arm *b* lying on the same side of the bar C as the arm *a* of the lever A and its other arm *b'* extending upwardly. Both levers are pivoted, preferably, on a single bolt D, passing transversely through the lower end of the bar C, which is preferably widened by side blocks C' to give a suitable bearing for the bolt and to separate the levers a proper distance horizontally. On the arms *a b* of the levers are provided foot-rests or pedals of any suitable construction, but preferably separate pedals E, provided with ears *e*, by means of which the pedal is pivotally connected with the lever, so as to permit it to rock to a certain extent in the plane of the lever. If desired, the pedal may also have a toe-clip *e'*.

Pivoted in one of several bolt-holes in the end of the upright arm of each lever is a connecting-rod F F', which is attached to the heel of the saw G. This attachment is preferably effected by bolting one of the rods rigidly to the saw and pivoting the other rod thereto, as clearly indicated in Fig. 2. The saw is preferably of the usual cross-cut type, with teeth that cut in both directions of movement of the saw.

A seat H is provided a suitable distance above the rear ends of the pedal-arms of the levers, so that a person sitting thereon can place his feet on the pedals. The seat may be supported in any suitable manner; but it is preferably carried on a portion of the portable frame hereinbefore referred to. This frame preferably consists of three legs I K L.

The main leg I is preferably composed of two parallel strips of material spaced apart by blocks and all firmly united. The upright bar C passes up through the upper end of this leg, to which it is securely bolted. A brace M runs from the bar to the leg, so that the bar, the leg, and the brace form a firm central frame to support the levers. The seat H is preferably provided with a seat-post *h*, passing through a hole in a short beam N and vertically adjustable therein by means of a set-screw *h'*. The beam is adjustably bolted to the leg I and also to the bar C, as clearly shown in Fig. 1. This construction enables the position of the seat to be shifted back and forth and up and down. Steps O may be fastened to the leg I to give easy access to the seat. The legs K L are poles of suitable length pivotally connected with the upper end of the central frame. This connection may be simply effected by means of an arched iron strip or clevis I' on the upper end of the bar C engaging with screw-eyes *k l* in the upper ends of the legs K L. The lower ends of all three legs are preferably furnished with collars *i' k' l'* to prevent their pointed ends from sinking too far into the ground in case it is soft.

The operation of my machine is as follows: The operator mounts to the seat H and slips his feet into the toe-clips on the pedals. An easy and natural movement of the legs, as in riding a bicycle, causes the levers to oscillate on the pivot-bolt. The downward pressure on the lever A forces the saw outwardly, and the alternate downward pressure on the lever B draws the saw back. As the teeth of a cross-cut saw cut in both directions, each leg of the operator has an equal amount of work to perform, so that there is no liability of tiring one leg more than the other. If desired, the downward pressure on one lever can be augmented by lifting on the opposite toe-clip.

The length of the stroke can be made more or less at will by varying the amount of depression imparted to each lever. The speed is entirely within control of the operator. The saw can be placed at any convenient height within a considerable range without interfering with the easy and smooth operation of the device. The saw can even be moved laterally several inches without detriment. The three legs of the tripod enable the machine to be set up on uneven ground or on a hillside and yet be perfectly steady. It does not require to be level, but will work equally well in an inclined position.

While I have shown the pedal-arms of the levers about half as long as the others, it is evident that these dimensions are not essential and that any relative proportional length of these arms can be used that best suits the work in hand. Moreover, while I have described the arms *a b* as being substantially horizontal I do not wish to thereby limit myself to that position, since it is evident that

their successful operation does not depend thereon.

As hereinbefore mentioned, my invention is applicable to other uses than sawing. For instance, in place of a saw I may use a polishing-block, or a planer-tool, or a mortising-chisel, or any other implement to which a reciprocating movement is to be given.

If desired, a multiple or gang saw can be used making more than one cut at once. Fig. 3 shows a two-bladed gang-saw, the teeth on one blade being inclined in the opposite direction to those on the other, so that the saw cuts at each stroke and the effort of the operator is equalized.

In case the tripod develops a tendency to vibrate sidewise a brace P can be run from the central frame to one of the legs K L, being made adjustable in length by a plurality of holes for the fastening-pin *p*.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a suitable support, of two bell-crank levers pivoted side by side, one of said levers being inverted with relation to the other, pedals on the adjacent arms of said levers, and connecting-rods pivoted to the other arms of said levers and attached to a reciprocatory tool.

2. The combination with a reciprocatory tool, of two bell-crank levers pivoted side by side a suitable distance apart, one of said levers being inverted with relation to the other, the adjacent arms of said levers lying on the same side of the pivot, and being provided with pedals, and a connecting-rod pivoted to the other arm of each lever and attached to the tool.

3. The combination with a reciprocatory tool, of two L-shaped levers pivoted at their angles on the same axis, one of said levers being inverted, and connecting-rods pivoted to the upright arms of said levers, and attached to the tool, one of said rods being rigidly fastened to the tool and the other being pivoted thereto.

4. The combination with a tripod, of an upright bar rigidly secured to one leg thereof, two bell-crank levers pivoted on said bar, and provided with pedals on one of their arms, and connecting-rods pivoted to the other arms of said levers, and attached to a reciprocatory tool.

5. A tripod for supporting a tool-operating mechanism, comprising a central frame composed of a main leg, an upright bar secured thereto, and a brace connecting the bar and the leg, a seat mounted on the main leg and two legs pivotally attached to the upper end of the central frame.

6. A tripod for supporting a tool-operating mechanism, composed of a main leg, an upright bar secured thereto, a brace connecting the bar and the main leg, a short beam secured to the main leg and adjustable length-

wise thereon, a seat-post adjustable vertically in the beam, a seat supported on the post, and two legs pivotally attached to the bar.

5 7. A tool-operating machine composed of the main leg I, the upright bar C, the brace M, the legs K, L, pivoted to the bar, the seat H supported on the main leg, two L-shaped levers A, B, pivoted on the bar C, one of the levers being inverted, pedals on the levers,

connecting-rods F, F', pivoted to the upright ro
arms of the levers, and a tool G attached to
the ends of the rods.

In testimony whereof I affix my signature
in presence of two witnesses.

JAMES W. STOW.

Witnesses:

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