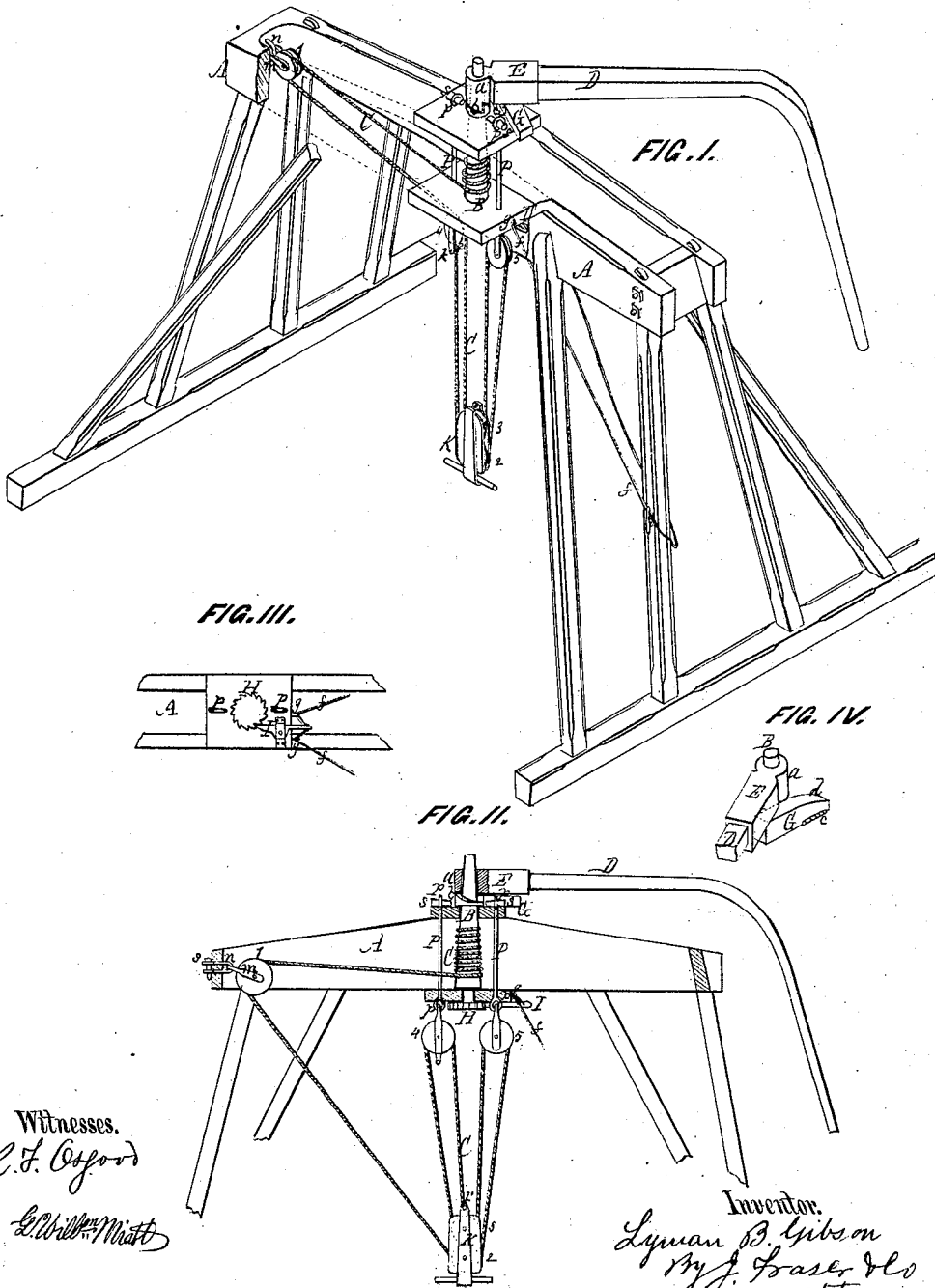


L. B. Gibson,

Stump Elevator.

No. 108901.

Patented Nov. 1. 1870.



Witnesses.
R. F. Osford
L. W. M. Mott

Inventor.
Lyman B. Gibson
By J. Foster & Co
attys

United States Patent Office.

LYMAN B. GIBSON, OF SOUTH ADDISON, NEW YORK.

Letters Patent No. 108,901, dated November 1, 1870.

IMPROVEMENT IN STUMP-EXTRACTORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LYMAN B. GIBSON, of South Addison, in the county of Steuben and State of New York, have invented a certain new and useful Improvement in Machines for Extracting Stumps, applicable also to other uses, of which the following is a specification.

Nature of the Invention.

This invention consists in an improved arrangement of the capstan and connecting parts, as hereinafter described, whereby the sweep is easily engaged or disengaged.

Also, in an improved arrangement of the tackle, blocks, and ratchet and pawl.

General Description.

In the drawing—

Figure 1 is a perspective view of my improved machine;

Figure 2, a sectional elevation;

Figure 3, a view of the ratchet and pawl on the under side of the frame for holding the strain; and

Figure 4, a diagram, showing the arrangement of the wedge-block for disengaging the the coupling.

A is the frame, which is braced, as shown, to resist the greatest strain.

B is the capstan or windlass, mounted vertically thereon.

This capstan is preferably made hollow, and at the top of the winding portion, for a short distance down, is made straight, and it is then made in the form of the frustum of a cone, so that the rope or chain C, which winds thereon, will exert the greatest leverage on starting, and gradually decrease as it winds up more rapidly.

This is adapted to the nature of the work, as the stump starts hard at first, and gradually weakens as the roots loosen.

D is the sweep, of curved or bent form, fitting in a socket, E.

This socket has a bearing, a, that fits loosely on the upper end of the capstan.

Both the eye of the bearing and the capstan on which it fits are slightly conical, so that when the bearing is raised, it will again fall in place when released.

The socket and the capstan are both provided with a notched coupling, b, which, as the sweep goes forward, engages and thus imparts motion to the capstan, but as the sweep goes back, disengages, thus releasing the capstan.

G is an inclined wedge-block, hinged at c, on top of the frame, under the inner end of the sweep.

When lying flat, as in fig. 1, the sweep passes over

it without affecting the coupling; but when the block is elevated, as in fig. 4, and the sweep is reversed by back action, the latter will ride up the inclined plane d, thus disengaging the coupling, and releasing the capstan from the sweep. This is frequently necessary, especially in working in positions where but half a revolution of the sweep can be attained, in which case, by successively backing up, and alternately engaging and releasing the coupling, the work can be performed.

In passing entirely around, if the wedge-block stands elevated from the point of starting, the sweep will strike it from the rear, and throw it down automatically, requiring thus no special attention from the operator.

H is a ratchet-wheel, secured to the lower end of the capstan; and

I, a pawl, which engages therewith, the object being to hold the strain of the capstan when the power on the sweep is released.

The pawl is operated by a double cord or connection, f, passing through loops g g, and its ends attached to the stem of the pawl. By drawing one way or the other, the pawl will be thrown in or out of gear.

The winding-cord C, from its attachment to the capstan, passes back over pulley 1, hung to the end of the frame, and also connects with pulleys 2 3 of block K, and also pulleys 4 5, suspended above.

A variety of connections with these pulleys may be attained; for instance, as in fig. 1, it may pass from pulley 1 over 4, thence down around 3, thence up over 5, thence down around 2, and thence up to hanger k of pulley 4, to which it attaches; or, as in fig. 2, from 1 around 2, around 5, around 3, around 4, to point k', of block K, where it attaches.

Other arrangements of the vertical adjustment of the rope or chain around the pulleys may be made, to which it is unnecessary to refer here. These several changes are essential in modifying the power, or in adapting to the stump, which is connected with block K, by a separate chain or rope passing around it.

This machine is also adapted for use horizontally; for instance, removing buildings, by removing the supporting part of the frame, letting the latter down near the ground, and using a straight sweep. In this case a change in the arrangement of the winding-cord or chain C is made. It passes over pulley 1, as before but the block K is carried back horizontally past the machine, and the chain is carried around one or the other of its pulleys 2 3, thence up to the end of the frame, either attaching there or passing around another pulley there, and carried back to the block and attached to it.

Various modifications in the arrangement of the

draft-chain or rope may also be made here, but unnecessary to particularize, as the operator will quickly comprehend them in use.

The pulley 1 is hung by a stirrup, *m*, to a staple, *n*, by which it can adapt itself easily to any incline that the rope makes in drawing the stumps.

Pulleys 4 5 are also hung by eyes *p p*, of simple bolt-rods P P, having also eyes *p' p'* above, but at right angles to those below.

Through the upper eyes keys *ss* are passed to hold them in place. The rods are kept from turning by means of the lower eyes resting in corresponding slots or sockets of the wood-work.

This arrangement of the pulleys 1 4 5, and method of connecting and hanging them, is one of the novel features of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. The sweep D, capstan B, rope or chain C, and pulleys 1, 2, 3, 4, and 5, arranged and operating substantially as herein shown and described.

2. The capstan B, sweep D, coupling *b*, hinged wedged block G, ratchet and pawl H I, bolt-rods P P, and block K, when combined and operating in connection with the rope or chain C, and pulleys 1, 2, 3, 4, and 5, substantially as described.

3. In combination with the above, a connection, *f*, for operating the pawl, substantially as described, for the purpose set forth.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

LYMAN B. GIBSON.

Witnesses:

WM. S. L. MUTTIAN,
M. J. GIBSON.