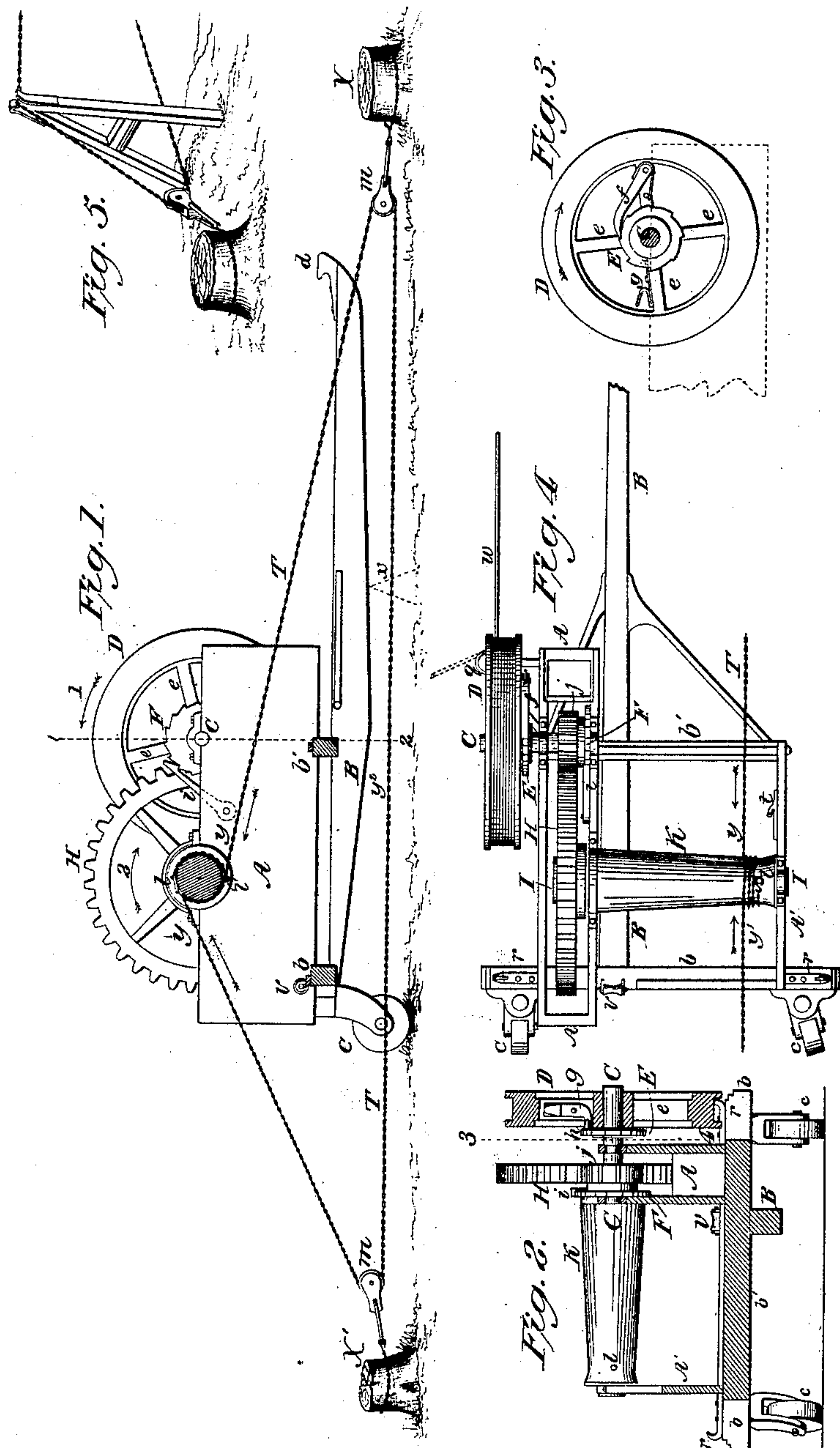


L. R. DYE.
Stump Extractor.

No. 67,738.

Patented Aug. 13, 1867.



Witnesses
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Letters Patent No. 67,738, dated August 13, 1867.

IMPROVEMENT IN STUMP-EXTRACTER.

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, LEWIS R. DYE, of Cranberry, Middlesex county, New Jersey, have invented an improved Stump-Extractor; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of a stump-extractor, the construction of which is fully described hereafter, by means of which stumps of any size can be readily withdrawn from the ground, without changing the position of the machine during the operation or submitting it to any detrimental strains.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a sectional view of my improved stump-extractor, showing the operation of the machine.

Figure 2, a sectional elevation of the same on the line 1 2, fig. 1.

Figure 3, a section on the line 3 4, fig. 2.

Figure 4, a plan view, and

Figure 5 a view illustrating a device which may be used in connection with my invention.

Similar letters refer to similar parts throughout the several views.

The side frames A and A' of the machine are connected by the cross-beams *b* and *b'*, and rest upon swivel-wheels *c c*. A pole or tongue, B, is secured to the under side of the cross-beams *b* and *b'*, close to the box-shaped side frame A of the machine, and is braced, as shown in fig. 4, and has at its outer end a hook, *d*. At each end of the cross-piece *b* is a hook, *r*, for a purpose described hereafter. A short shaft, C, turns in suitable bearings secured to the side frame A, and at its outer end is hung loosely a large driving-pulley or drum, D, round which is wound a rope, *w*. To one of the spokes *e* of the drum is pivoted a spring-pawl, *f*, the end of which bears against a ratchet-wheel, E, permanently secured to the shaft C, and to another spoke of the said pulley D is hung a bell-crank lever, *g*, fig. 2, one arm of which (under the circumstances described hereafter) strikes a pin, *h*, on the side of the ratchet-wheel E. A second ratchet-wheel, F, is secured to the shaft C, its pawl *i* being hung to the side frame A, and upon the shaft is a pinion, *j*, which gears into a large cog-wheel, H, hung to the outer end of a shaft, I, the latter turning in suitable bearings secured to the side frames A and A'. Upon the shaft I, and extending between the side frames, is a conical or tapering drum, K, from the sides of which, at the point of its smallest diameter, project pins *l l'*, for a purpose described hereafter.

In fig. 1 the machine is shown between two stumps, X and X'. The former, and larger, I term an anchor-stump; the latter, which is the stump to be extracted, is considerably smaller. A short chain, to which is hooked a block and pulley, *m*, is passed around and secured to each of the stumps, as shown in fig. 1. A chain, T, is passed through the pulleys *m m*, and its opposite ends, *y y'*, are passed round the smaller end of the drum K, and are secured to the pins *l l'*, as shown in fig. 1. The drum D is turned in the direction of the arrow 1, fig. 1, by means of its rope *w*, fig. 4, which is unwound and drawn off by horses or oxen, in the usual manner. When thus turned the pawl *f* bears against the teeth of the ratchet-wheel E, and the shaft C necessarily turns with the drum, the pawl *i* at the same time slipping over the teeth of its ratchet-wheel F. The pinion *j* gearing into the cog-wheel H turns the latter, the shaft I, and the drum K in the direction of the arrow 2, fig. 1, and the opposite ends *y* and *y'* of the chain slowly wind upon the drum K, the large stump X remaining immovable, while the smaller stump X' is gradually dragged from its bed. As the chain is tightened and begins to pull upon the stump to be extracted the resistance of the latter is greatest, and the chain is then wound upon that portion of the drum having the smallest diameter, but as the stump is drawn out its resistance becomes less, and the chain travels upon the drum towards its widest end, as shown in fig. 4, the greater power being thus exerted at the time when it is most required, while the rapidity of the operation increases as the stump becomes loosened. After having extracted the stump X' the rope *w* is rewound upon the drum D, the latter being turned by hand in the direction of the arrow, fig. 3. When turned in this direction the drum revolves loosely upon the shaft C, the pawl *f* slipping over the ratchet-wheel E, and the pawl *i* catching in the teeth of the wheel F and preventing all motion of the same and the shaft.

The next operation is to unwind the chain from the drum K. To accomplish this the pawl *i* is thrown back clear of the wheel F, and the lever *g* of the drum D is turned to such a position that its short arm will strike the pin *h* of the ratchet-wheel E, fig. 2. The drum D is then again turned in the direction of the arrow, fig. 3, the lever *g* and pin *i* preventing the drum from turning independently of the shaft C, the motion communicated to the latter being imparted to the drum K, from which the chain is thus unwound.

If convenient, after having extracted the stump X', the anchor-stump X may be again used until all of the smaller stumps in its vicinity have been removed.

The machine rests upon its wheels *c c*, and may be supported in the upright position shown in fig. 1 by an additional wheel secured to the pole B at about the point *x*, or by any suitable prop.

The machine may be readily shifted from one point to another, either laterally or longitudinally, by horses or oxen, which can be hitched to the hooks *r r* or *d*, the wheels *c c* adapting themselves to the direction in which the machine is moved, in the same manner as ordinary casters.

When a small or decayed stump, that will not offer much resistance, is to be extracted, it is not necessary to employ an anchor-stump. In this case the end *y* of the chain is detached from the drum K, and one of the links of the portion *y*² of the chain, fig. 1, is secured to a hook, *t*, fig. 4, on the side frame A' of the machine, after which the stump is extracted, as before described.

When the stumps are of greater height than those represented in the drawing, the portion *y*² of the chain is carried over instead of under the cross-beams *b* and *b'*. In this case one or more friction-pulleys, *v*, may be secured to the said cross-piece for the chain to pass over.

Sometimes there are obstacles in the way which prevent the rope *w* from being carried directly forward. When such is the case the rope may be passed around a pulley, *q*, and thence taken off in any convenient direction, as shown by red lines, fig. 4.

When a very large stump has to be extracted a device similar to that shown in fig. 5 can be used, in connection with the above-described machine, the object of the said device being to gain an increased leverage upon the stump.

It will be evident, from the above description of my machine, that stumps of all sizes can be readily removed from their beds, without subjecting the machine to that great strain which is generally so detrimental to stump-extractors of ordinary construction.

I claim as my invention, and desire to secure by Letters Patent—

1. The tapering drum K, in combination with the operating devices herein described, or any equivalent to the same, and with the chain T, when the latter is attached to the said drum, in the manner and for the purpose specified.

2. The shaft I, with its drum K and cog-wheel H, in combination with the shaft C, its pinion *j*, ratchet-wheels E and F, and the loose drum D, the whole being constructed, arranged, and operating substantially in the manner described for the purpose herein set forth.

3. The combination of the shaft C, its loose drum D, pawl *f*, and the ratchet-wheel E, substantially as and for the purpose described.

4. The above, in combination with the lever *g* and pin *h* of the ratchet-wheel E.

5. The pulley *q*, arranged in respect to the drum D, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEWIS R. DYE.

Witnesses:

JOHN WHITE,

W. J. R. DELANY.