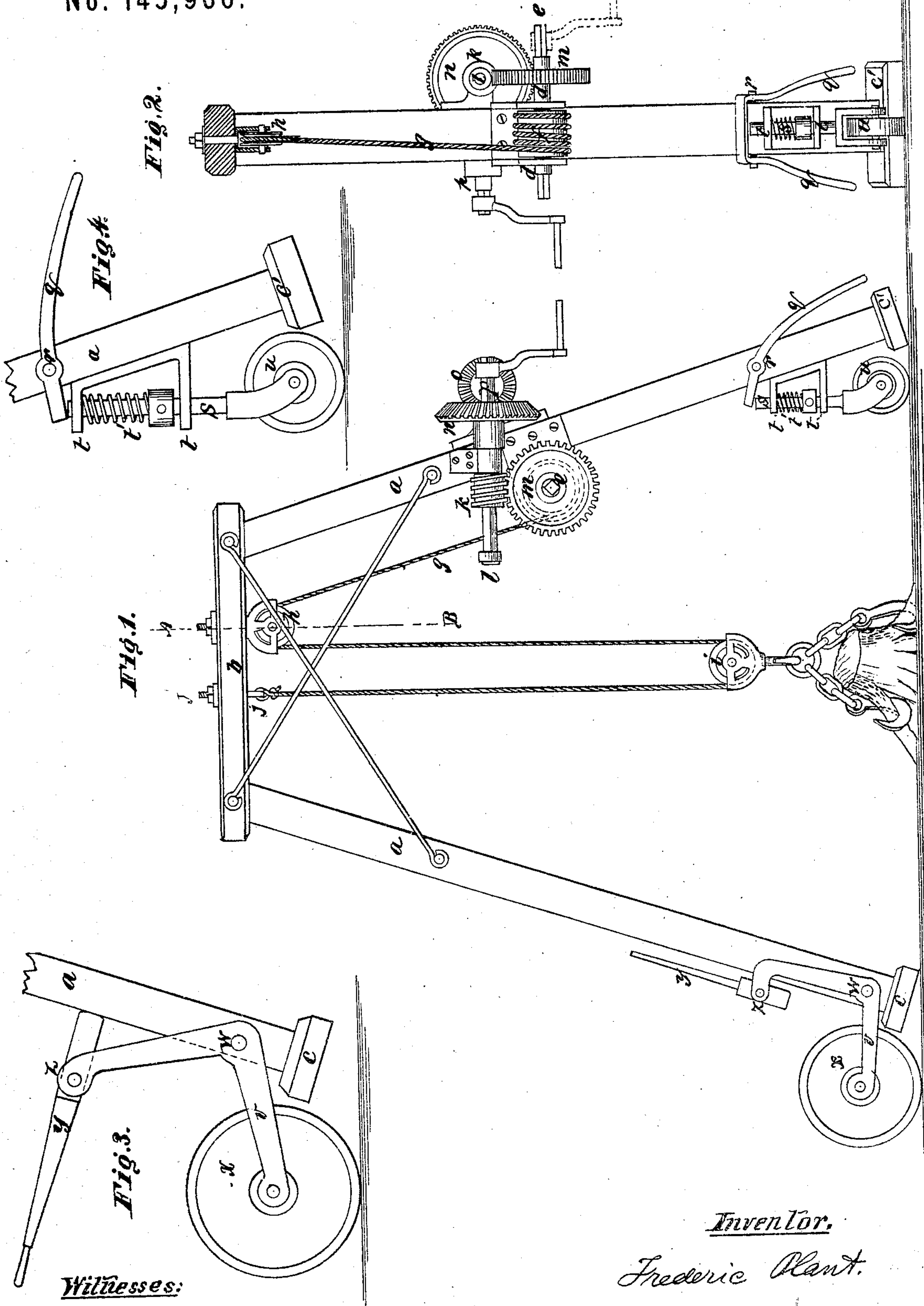


F. PLANT.
Stump-Extractors.

Patented Dec. 30, 1873.

No. 145,966.



Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN STUMP-EXTRACTORS.

Specification forming part of Letters Patent No. **145,966**, dated December 30, 1873; application filed April 11, 1871.

To all whom it may concern:

Be it known that I, FREDERIC PLANT, of Bricksburg, Ocean county, New Jersey, have invented certain Improvements in Stump-Extractors, of which the following is a specification:

The nature and objects of my invention consist in certain mechanical contrivances and improvements for the purpose of facilitating the extraction of stumps; also, rendering the stump-machine more portable.

Figure 1 is a side elevation. Fig. 2 is a transverse section through A to B. Fig. 3 is an additional elevation of the lifting motion, showing the position of levers, &c., when fore-foot of machine is raised; Fig. 4, an elevation, showing the position of arms, &c., when the hind foot is raised for locomotion.

a a are the side standards; *b*, the cross-head; *c* and *c'*, the feet; *d d*, Fig. 2, iron bearings supporting the shaft *e*, on which is made tight the spiral-grooved barrel *f*, and to which is attached one end of the rope or chain *g*, the other end of rope being carried over pulley *h*, under pulley *i*, and up to the cross-head *b*, and there held by the eyebolt *j*. *k* is a worm or endless screw sliding on the shaft *l*, gearing into and driving the wheel *m*, fixed on shaft *e*. On the shaft *l*, and at opposite end to the worm, is screwed the bevel-wheel *n*, gearing into and driven by the small bevel-wheel *o*, fixed on the shaft *p*. *q q* are arms, movable on the bolt *r*. *s* is a forked rod, moving in the fixed bearings *t t*, and at the lower end spanning the wheel *u*. *v* is a bent arm, secured to both sides of the standard, pivoted on the bolt *w*. On the lower end of these arms the axle of the wheel *x* runs, and at the upper end of these arms works the lever *y* on the pivots *z*.

I will now describe the mode of using the machine.

A small machine, suitable for extracting small stumps, is moved from place to place by lifting up the hind foot, by means of the arms *q q*, till the wheel *u* takes a bearing on the ground; but with a large machine for extract-

ing large stumps it is necessary to use the lever *y*, by depressing which the front foot is raised a few inches from the ground, as shown in Fig. 3; and for extra heavy and strong machines, I also lift the hind foot by making the short end of the levers or arms *q q* depress the rod *s*, which, compressing the spiral spring *t*, and forcing the wheel *u* to the ground, raises the hind foot of the machine from the ground, and relieves the operator's arms from a considerable portion of the weight. The machine is then moved to and placed over the stump. The arms *q q* are dropped, which permits the hind foot to again rest on the ground, and the lever *y*, being turned up, allows the fore-foot also to settle down on the ground. The grappling-irons being next fixed to the stump, the winch is placed on the shaft *e*, the slack of the chain drawn taut, and, if a small or somewhat rotten stump, it may be drawn with this power; but when the stump is large or firmly fixed in the ground, I apply the second power by moving the winch to the worm-shaft *l*, and sliding the worm *k* into gear, which gives ample power for ordinary large stumps; but for very large stumps it is necessary to apply a still greater power, in which case, I place the winch on the shaft *p*, which again greatly increases the power. The worm *k*, when in gear, acting the part of a pawl and ratchet, allows the winding to cease, and the handle to be shifted without in the slightest degree lowering the stump.

What I claim as new in this machine is as follows:

1. The combination of the frame *a a b*, barrel *f*, chain *g*, screw *k*, wheel *m*, bevel-wheels *n o*, and shafts *p l e*, substantially as and for the purpose herein specified.

2. In combination with the stump-extractor herein described, the wheel *x*, controlled by means of the bent lever or arm *v* and lever *y*, substantially as herein specified.

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Witnesses:

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