(No Model.)

B. MONTROSS.

STUMP EXTRACTOR.

No. 446,224. Patented Feb. 10, 1891.

Fig. 1.

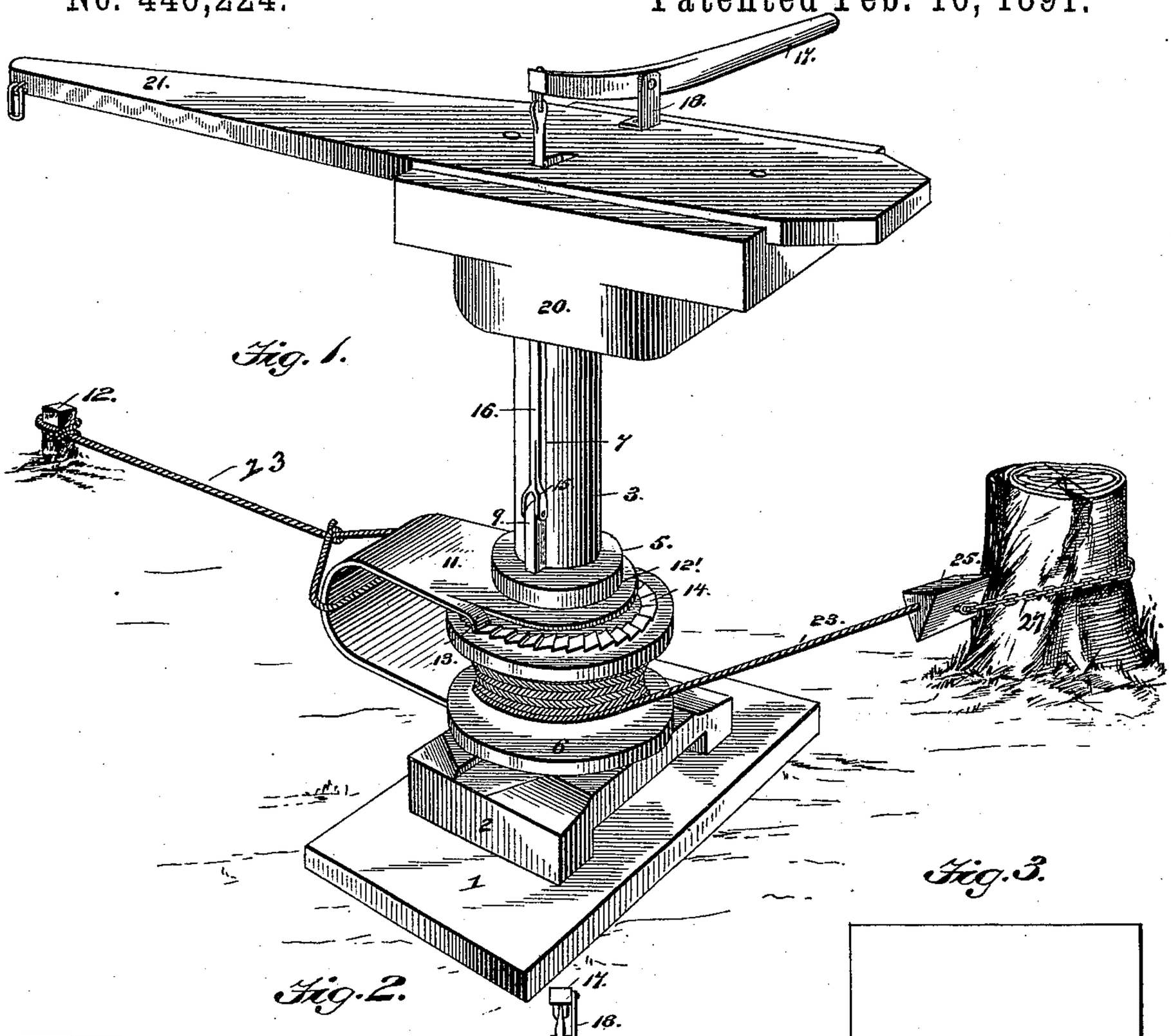

Fig. 2.

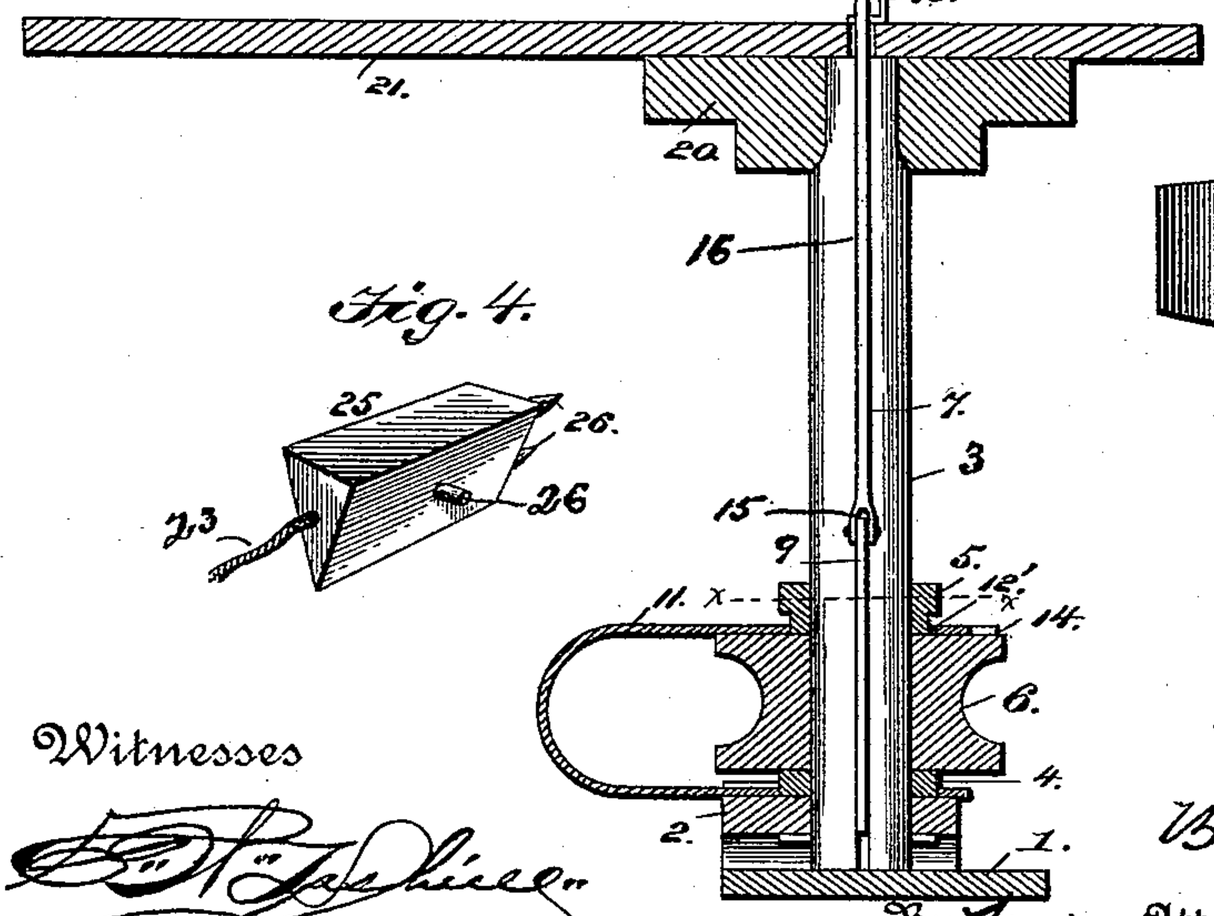

Fig. 3.

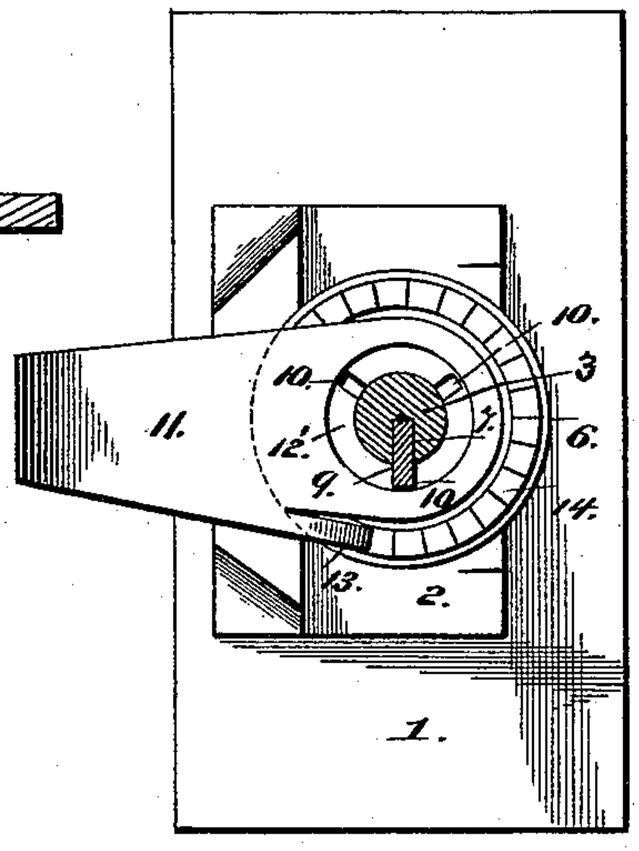

Fig. 4.

Witnesses

E. T. Johnson

Jos. A. Jennings

Inventor

Benjamin Montross

By his Attorney

Howey Spalding & Sons

UNITED STATES PATENT OFFICE.

BENJAMIN MONTROSS, OF MILLERSBURG, IOWA.

STUMP-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 446,224, dated February 10, 1891.

Application filed August 23, 1890. Serial No. 362,859. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN MONTROSS, a citizen of the United States, residing at Millersburg, in the county of Iowa and State of Iowa, have invented certain new and useful Improvements in Grubbing-Machines or Stump-Extractors, of which the following is a specification.

My invention relates to improvements in that class of power appliances technically known to the art as "grubbing-machines" or "stump-extractors" for removing stumps of trees and other objects from the ground by the application thereto of horse or other power; and my invention has for its object the provision of a simple, strong, and efficient means for removing stumps with a minimum application of power; further, to provide means for throwing the winding-drum into and out of gear by the simple adjustment of a lever; further, to provide mechanism for preventing retrograde rotation of the winding-drum, and, finally, to provide a simple and efficient means for connecting the pulling cable or chain to the stump or other object without liability of becoming detached therefrom.

With these and other ends in view my invention consists in the combinations of devices and novel construction and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

To enable others to understand my invention, I will now proceed to a detailed description thereof in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a stump-extractor constructed in accordance with my invention. Fig. 2 is a vertical central sectional view of the same. Fig. 3 is a transverse sectional view on the line *x x* of Fig. 2. Fig. 4 is a detail view of the fastening appliance for securing the pulling cable or chain to the stump or other object.

Referring to the drawings, in which like numerals of reference denote corresponding parts in all the figures, 1 designates the base of my improved stump-extractor, which base preferably consists of a flat piece of board or plank of suitable dimensions, and upon this base is securely fastened or bolted a solid metallic bearing 2, in which is stepped or otherwise suitably journaled the lower end of a vertical power-shaft 3. This power-shaft is of suitable diameter in proportion to the strain it is to undergo, and it extends above the base and metallic bearing for a suitable distance. To this vertical power-shaft are affixed two collars 4 5, one of said collars being situated immediately above the main bearing or step 2, while the other collar 5 is located a suitable distance above the lower collar and the main bearing, as indicated. Between these two collars is arranged the winding or power drum 6, which is fitted loosely on the power-shaft and is free to rotate thereon between said collars.

The collars are suitably secured to the main power-shaft in a very rigid and firm manner, and in one face of the shaft is cut a longitudinal way, key-seat or groove 7, which way, groove or seat is also cut in the two collars, as at 8, the key-seat in the collars being coincident with the seat in the shaft, as shown. In this key-seat of the collars and main shaft is fitted a movable key 9, which is adapted to move or slide freely in said ways, seats, or grooves of the shaft and collars, and this sliding movable key is of such length as to extend from a point above the upper collar to a point below or within the lower collar, thus passing along the portion of the shaft and through the winding-drum 6. This winding-drum is further provided on its inner surface with a series of three or more radial key seats or grooves 10, either one of which is adapted to align with the corresponding key-seats in the shaft and collars, and thereby receive the adjustable key 9 when it is lowered, whereby the key serves to rigidly couple or connect the winding-drum or the shaft and to cause the latter to actuate or wind the drum when power is applied to the shaft through the sweep or lever hereinafter described. By lifting the key it is caused to clear the winding-drum and lower collar, while at the same time it remains in engagement with the main shaft and upper collar, so that the winding-drum can turn rapidly on the shaft, which is desirable in adjusting the pulling cable or chain to the object to which it is desired to apply power; but when the key is lowered the winding-drum is rigidly connected to the shaft to rotate therewith,

and the two collars provide an ample bearing or connection between the shaft and drum to withstand the great strain to which the extractor is subjected in practical use.

The extractor is held in a stationary position when in use by means of an anchor-clevis 11, which is adapted to be connected by ropes to a stake or stakes 12, firmly planted in the ground, the machine or extractor being situated between the anchor-stakes and the stump or other object to which power is to be applied, whereby the extractor is made self-adjusting in relation to the parts to which it is connected. This anchor-shaped clevis 11 is in the form of a U-shaped bail, and through the free ends of the arms of said bail or clevis are made openings 12′, which receive the collars on the main shaft, thus loosely connecting the anchor-clevis to the main shaft on opposite sides of the winding-drum and enabling the shaft and collars to turn freely within the arms of the anchor-clevis. This clevis also carries a pawl or equivalent locking contrivance 13, which extends outwardly from the clevis, and this pawl is adapted to engage or take into a series of notches or ratchet-teeth 14, formed on one side of the winding-drum, whereby retrograde movement of the drum and the main shaft is prevented and the liability of accidents avoided. A limited play or movement of the arm of the clevis and the pawl is permitted on the upper collar of the main shaft to enable the pawl to clear the notches or teeth on the winding-drum.

The movable key 9 is connected at its upper end to the bifurcated end 15 of a link or pitman 16, which is in turn connected to the free short end of an operating-lever 17, which lever is fulcrumed on a standard or other suitable support 18, fixed to the cap of the machine.

The upper end of the main power-shaft is made square or of other desired polygonal form, and on this polygonal end of the shaft is fitted a cap 20, the lower part of which is in the form of a circular base. This cap is adapted to rotate with the main shaft, and to the cap is rigidly secured the power lever or sweep 21, said lever fitting in a groove or between flanges on the cap and bolted rigidly to the same. The sweep extends outwardly from the cap, and in it is formed a vertical slot which aligns with the key-seat in the shaft 3, so that the link or pitman from the operating-lever to the adjustable key is free to pass and operate in the slot in the sweep, as is obvious.

The winding-drum is provided, preferably, with a groove or annular depression, and to this drum is secured one end of a cable or chain 23, adapted to be connected to a stump or other object. This connection between the chain and the object is preferably attained by the employment of the fastening-block 25, as shown in detail in Fig. 4 of the drawings, in which figure I have represented the block as provided with the lateral or outwardly-extending prongs 26 and the chain 27, whereby the prongs and chain serve to rightly connect the block and pulling-cable to the stump and to hold the block tighter to the stump as the strain on the pulling-rope increases.

This being the construction of my improved stump-extractor or grubbing-machine, the operation thereof may be briefly described as follows: The lever is raised to release the winding-drum from the main shaft, and the pulling-rope can be readily uncoiled therefrom to enable the block 25 to be readily fastened to a stump, &c., after which the machine is anchored to the stake or stakes by means of the rope or ropes between the anchor-clevis 11 and said stakes. The lever is lowered to rigidly couple the winding-drum to the power-shaft and power by horses or other suitable source applied to the sweep to rotate the cap and main shaft, and through said shaft to turn the winding-drum and strain the cable or chain, so as to draw the stump out of the ground. Retrograde movement of the parts is prevented by the pawl-and-ratchet mechanism should the machine be temporarily stopped, and the parts thrown out of gear simply by depressing the lever, which elevates the key and withdraws the same from the winding drum.

The parts are simple, strong, and durable in construction, and the machine as an entirety is efficient and reliable in operation and exerts a maximum force with a minimum expenditure of power.

Modifications in the form and proportion of parts can be made without departing from the spirit of my invention.

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

1. The combination of a grooved power-shaft having rigid collars, a winding-drum fitted loosely on the shaft between said collars and provided with the interior key way or ways, an anchor-clevis fitted loosely on the collars of the shaft, a movable key 9, fitted in the groove in the power-shaft and adapted to fit in one of the keyways of the winding-drum, and a lever linked to the movable key for withdrawing the same from engagement with the winding-drum, substantially as described.

2. The combination of a grooved power-shaft provided with the rigid collars, a winding-drum fitted loosely on said shaft between the collars and provided with the notches or teeth, an anchor-clevis fitted loosely on the shaft and having the pawl adapted to engage the notches or teeth of the winding-drum, the movable key, and a sweep attached to the power-shaft, substantially as described.

3. The combination of a base, a main bearing thereon, a vertical power-shaft stepped in said bearing and provided with the longitudinal key way or seat and the grooved collars, a winding-drum loosely fitted on the

shaft between the collars and provided with a series of interior key ways or seats and the notches or teeth in one of its faces, the movable key fitted in the longitudinal way or seat of the power-shaft, the cap mounted on said shaft, the operating-lever fulcrumed on the cap and linked to the movable key, the sweep rigidly connected to said cap, the anchor-clevis connected loosely to the power-shaft and having the locking-pawl adapted to engage the notches or teeth on the winding-drum, and the pulling rope or chain attached to the drum, for the purpose described, substantially as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

BENJAMIN MONTROSS.

Witnesses:

WILL N. SARGENT,

M. T. FITZGERALD.