

955,737.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.

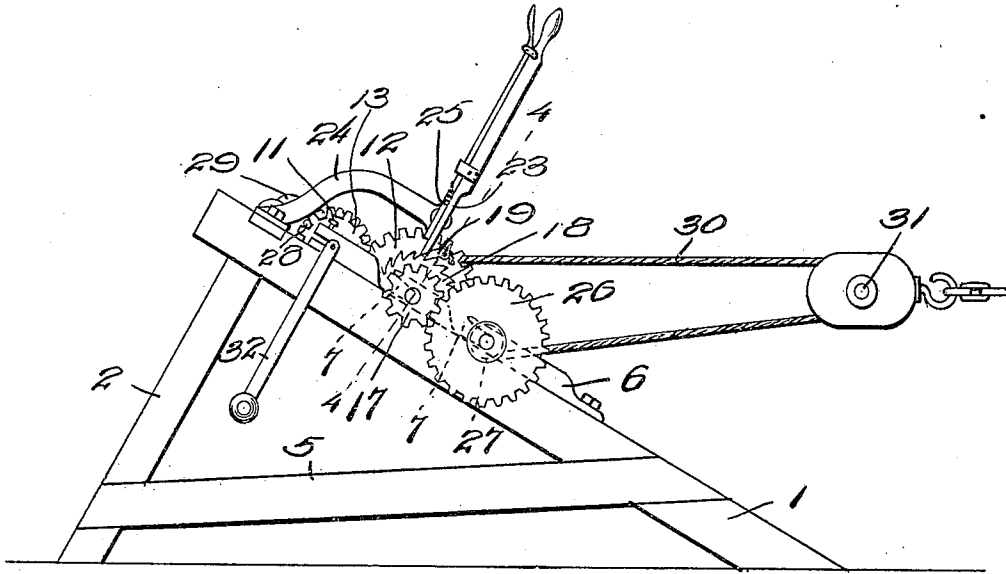


Fig. 1.

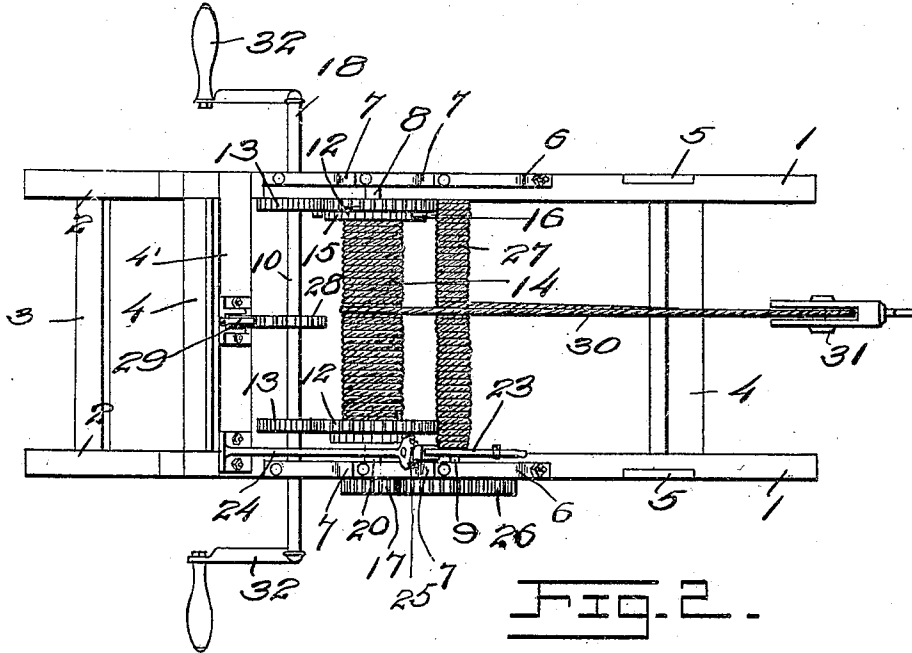


Fig. 2.

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STUMP EXTRACTOR.
APPLICATION FILED AUG. 21, 1909.

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2 SHEETS—SHEET 2.

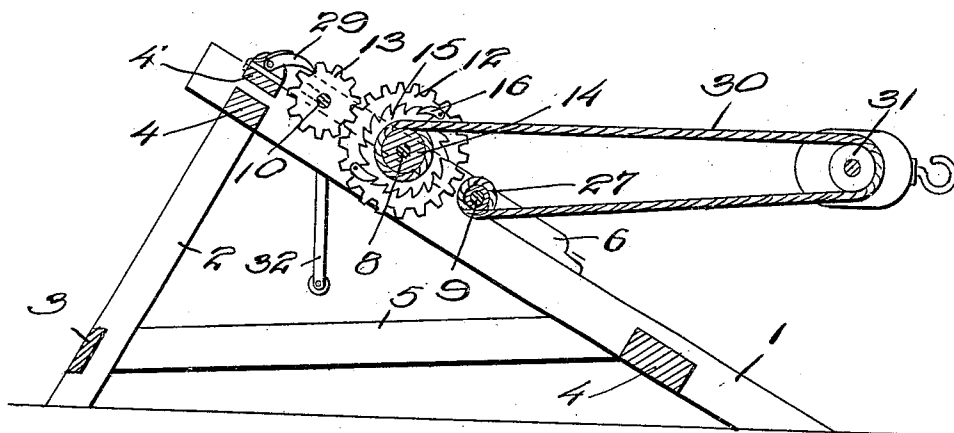


Fig. 3.

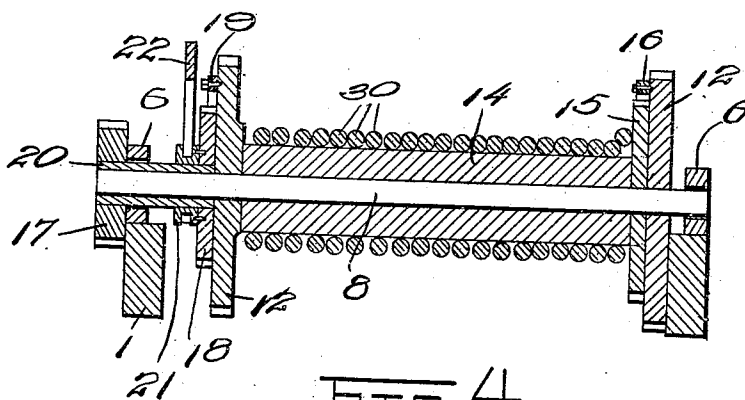


Fig. 4.

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UNITED STATES PATENT OFFICE.

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STUMP-EXTRACTOR.

955,737.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed August 21, 1909. Serial No. 513,990.

To all whom it may concern:

Be it known that I, EPHRAIM A. ABLEMAN, a citizen of the United States, residing at Gheen, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Stump-Extractors, of which the following is a specification.

This invention relates to improvements in stump extractors, and has for its object to provide a device of this character, which is so constructed that three different degrees of power may be easily secured, for different grades of work.

Another object is to provide a simply constructed stump extractor, which is very substantially constructed whereby large and small tree stumps may be pulled with equal facility.

A further object is to provide two drums transversely mounted in the supporting frame, which may be rotated in unison, or independently of one another, as may be desired.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of my improved stump extractor. Fig. 2 is a plan view thereof. Fig. 3 is a central vertical section through the same. Fig. 4 is a transverse section taken on the line 4-4 of Fig. 1.

Referring to the drawings, 1 indicates the two inclined side bars of the supporting frame, to which are secured at their rear ends, the standards 2. The standards 2 are connected at their lower ends by a suitable brace bar 3, and the front and rear ends of the inclined bars 1 are likewise connected by the brace bars 4. Guide bars 5 connect the standards 2 and the bars 1, and complete the supporting frame. Thus a very substantial frame is constructed, which will be extremely rigid when placed in position, and will not be moved during the operation of the device.

Upon the upper edges of the bars 1 the metal bearing blocks 6 are secured, and are formed with the slots or recesses 7 to receive the ends of the transverse shafts 8 and 9. An operating shaft is also removably supported in the rear ends of the blocks 6, and may be confined therein by the keys or set screws 11. Secured upon the shaft 8, and disposed within the side bars 1 of the frame, are the gear wheels 12, which are engaged by pinions 13 secured upon the operating shaft 10. Loosely disposed upon the shaft 8, and extending approximately the entire width of the frame, is the spool 14, upon one end of which a ratchet wheel 15 is secured. Pawls 16 are secured to the inner face of one of the gears 12 and are normally adapted to engage with the teeth of the ratchet 15, thus rotating the spool 14 upon the rotation of the shaft 8. These pawls, however, may be held out of engagement with the ratchet, so that the spool 14 may remain stationary upon the shaft 8 when the same is rotated. Keyed upon the end of the shaft 8 is the gear 17 and the ratchet 18. The ratchet 18 is normally locked upon and rotates with the gear wheel 12, by means of a spring pressed pawl 19 pivoted upon the side of the gear and engaged with the teeth of the ratchet 18. The pinion 17 and ratchet 18 are carried by a sleeve 20, which is longitudinally movable upon the shaft 8. The sleeve 20 extends through the slot 7 in the bearing block 6 and the pinion 17 is disposed upon the outer end thereof. A collar 21 is secured upon the sleeve 20, and the yoke 22 formed upon the lower end of the pivoted lever 23 is engaged in the annular groove of the collar. The adjusting lever 23 is pivoted upon the bracket 24 secured to the transverse bar 4'. The upper edge of the bracket 24 is formed with the rack 25, the teeth of which receive the spring-actuated bolt mounted upon one side of the lever and actuated by means of the pivoted handle at the upper end thereof.

A gear wheel 26 is secured upon one end of the shaft 9, exteriorly of the inclined frame bars 1. This gear 26 is normally engaged with the pinion 17 upon the end of the shaft 8, and thus transmits rotary motion to the shaft 9. Secured upon the transverse shaft 9, and rotatable therewith, is a roller 27, which is of considerably smaller diameter than the spool 14. It will, of

course, be readily seen that when the pinion 17 is adjusted outwardly upon the end of the shaft 8, the rotation of the roller 27 will cease. Secured upon the operating shaft 10, and centrally disposed between the side bars of the frame, the ratchet 28 is located. The teeth of this ratchet are engaged by a spring pressed dog 29 which is pivoted between the ears of a plate secured to the transverse bar 4'. Thus any retrograde movement of the pinions 13 is prevented.

A cable 30 has its ends secured to the spool 14 and the roller 27, and passes around the sheave 31, to which a suitable chain is attached which is adapted to be securely fastened to the tree stump. To the ends of the shaft 10 operating handles or cranks 32 are secured, by means of which the spool and roller are rotated.

In the normal operation of the device, the pawls 16 are engaged with the teeth of the ratchet 15, and the pinion 17 is engaged with the gear 26, whereupon rotary movement will be imparted to both the spool 14 and the roller 27. As will be seen from Fig. 3, when the various parts are thus associated, the cable 30 will be unwound from the roller 27, and wound upon the spool 14. Owing to the larger diameter of the spool 14, the sheave 31 will be gradually drawn inward or toward the drum, and the tree stump will be extracted from the ground. Both of the drums, however, are only used upon light work, and when heavier work is to be done either one of the drums is used independently of the other. The smaller drum or roller 27 is used upon the heaviest work, while the spool 14 remains stationary, the shaft 8 rotating within the same. To attain this result, it is only necessary to slip the pawls 16 from engagement with the teeth of the ratchet 15 and as the spool 14 is loosely mounted on the shaft 8, the rotation of the spool will be stopped, while the pinion 17 engaging with the gear 26 will rotate the roller 27. One end of the cable 30 is now attached to the roller 27, the other end thereof being secured in any suitable manner to the supporting frame, whereby the full power of the drum 27 may be had. Should it be desired, however, to use only the larger drum 14, the lever 23 is first operated to adjust the pinion 17 and ratchet 18 upon the end of the shaft 8. By moving the pinion 17 outwardly, as shown in dotted lines in Fig. 2, the same is disengaged from the gear 26 upon the end of the shaft 9, and the rotation of the drum 27 is stopped. The dogs 16 are now again engaged with the teeth of the ratchet 15 and the spool 14, upon which the ratchet is secured, will be rotated. This drum is used singly for work which is somewhat lighter than would be necessary for the use of the drum 27. Thus it will be seen that three separate and dis-

ting degrees of power may be secured, whereby the device may be readily adapted for heavy or light work.

Each of the shafts 8, 9 and 10 is removable from the slots 7 provided in the bearing blocks 6. These shafts are, however, securely confined in the blocks by means of the set screws 11. When it is desired to move the device from place to place, the drums 14 and 27, and the operating shaft 10 may be readily removed from the frame, thus greatly lightening the same so that it may be readily carried.

From the foregoing it will be seen that I have provided an extremely simply constructed device, which may be employed for the extracting of tree stumps and for moving or elevating various objects of considerable weight. The differential drums may be instantly connected so that they will operate in unison, and as quickly disassociated so that either one of the drums may be singly employed. The device is very simply and inexpensively constructed and highly durable and efficient in its operation.

What is claimed is:

1. A machine of the class described, comprising a supporting frame, transverse differential drums mounted in said frame, an operating shaft mounted in said frame in parallel relation to said drums, gears arranged at the end of one of said drums, and pinions secured to said shaft and engaging with said gears to coöperatively or independently rotate said drums.

2. A machine of the class described, comprising a supporting frame, transverse shafts removably mounted in said frame, a roller secured upon one of said shafts, a spool loosely mounted upon the other of said shafts, gears secured to the ends of said shaft, a ratchet secured on one end of said spool, dogs pivoted upon the gear and normally engaged with said ratchet, a pinion longitudinally movable upon the spool shaft and normally engaged with a gear upon the end of the other of said shafts, and an operating shaft removably supported on said frame carrying pinions engaging with the gears upon the spool shaft and adapted to impart rotary movement to said shaft.

3. A machine of the class described, comprising a supporting frame, transverse shafts removably supported upon said frame, a roller secured upon one of said shafts, a spool loosely disposed upon the other shaft and of larger diameter than said roller, a gear secured upon the end of the roller shaft, gears secured upon the spool shaft, a ratchet and pinion longitudinally movable upon the spool shaft, said pinion being normally engaged with the gear upon the end of the roller shaft, a pawl pivoted upon the gear secured to the spool shaft and engaged with said ratchet, a ratchet secured to the end of

said spool and engaged by dogs pivoted upon the gear wheel to rotatably connect the spool to the shaft, an operating shaft removably supported in the frame, pinions upon said shaft engaged with the gears upon the ends of the spool shaft, a ratchet secured upon the operating shaft, and a spring pressed dog pivoted upon said frame and engaged with said ratchet.

- 10 4. A device of the class described, comprising a supporting frame having inclined parallel upper bars, bearing blocks secured to the upper edges of said bars, slots in said blocks, transverse shafts mounted in said
15 slots, set screws for confining said shafts therein, rollers disposed upon said shafts, one of said rollers being of greater diameter than the other, gears upon the ends of said

shafts, a longitudinally movable pinion upon one of said shafts, said pinion being movable into and out of engagement with the gear secured upon the end of the other of the roller shafts, a lever supported upon the bearing block and adapted to move said pinion, an operating shaft removably supported in said bearing blocks, pinions upon said shaft engaging with the roller gears, a ratchet secured upon said shaft, and means engaging therewith to prevent the retrograde movement of said rollers.

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

EPHRAIM A. ABLEMAN.

Witnesses:

CHESTER O. OLDS,
ARTHUR S. CORDERY.