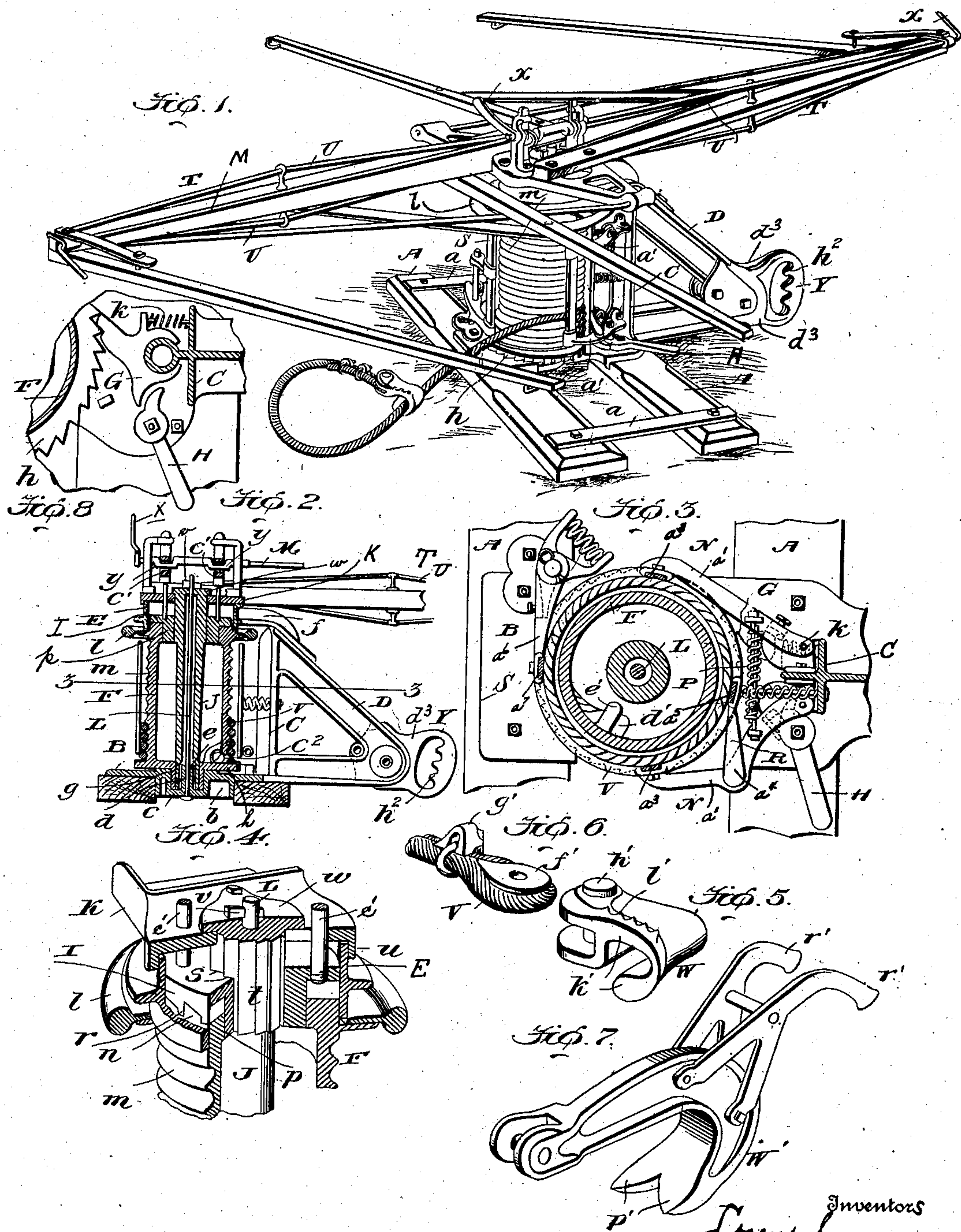


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PATENTED JULY 31, 1906.

L. & J. S. SWENSON.
STUMP EXTRACTOR.
APPLICATION FILED JAN. 16, 1906.



Witnesses
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LORENS SWENSON AND JOHN S. SWENSON, OF CRESCO, IOWA.

STUMP-EXTRACTOR.

No. 827,271.

Specification of Letters Patent.

Patented July 31, 1906.

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To all whom it may concern:

Be it known that we, LORENS SWENSON and JOHN S. SWENSON, citizens of the United States, residing at Cresco, in the county of Howard and State of Iowa, have invented new and useful Improvements in Stump-Extractors, of which the following is a specification.

Our invention pertains to stump-extractors, and has for one of its objects to provide a stump-extractor embodying a simple and inexpensive construction for preserving even winding of the cable on the drum—i. e., preventing one coil of the cable from overlapping another.

Another object of the invention is the provision of a stump-extractor embodying means for obviating the difficulties due to a sudden reverse movement of the sweep with a view of assuring a firm and continuous grip on the stump to be extracted.

Another object is the provision in a stump-extractor of two sweeps, either of the sweeps being readily removable, so that either one or more draft-animals may be employed in the operation of the extractor, as conditions require.

Other advantageous features peculiar to our invention will be fully understood from the following description and claims, when the same are considered in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the extractor constituting the present and preferred embodiment of our invention. Fig. 2 is a detail vertical section of the extractor with one of the anchor-block sections removed. Fig. 3 is a horizontal section taken in the plane indicated by the line 3 3 of Fig. 2. Fig. 4 is an enlarged detail view, partly in perspective and partly in section, illustrating the relative arrangement of the drum and the vertically-adjustable ring through the medium of which rotary motion is transmitted to said drum. Fig. 5 is a perspective view of the grip comprised in our improvements. Fig. 6 is a similar view of the eye provided at one end of the cable and designed to be connected to the grip. Fig. 7 is a perspective view of a grubber which is employed in some instances in lieu of the grip. Fig. 8 is an enlarged detail horizontal section showing the means for preventing casual retrograde movement of the cable-winding drum.

Similar letters designate corresponding

parts in all of the views of the drawings, referring to which—

A A are bed-timbers on which the extractor is arranged to permit of its being conveniently hauled from one point of operation to another. The said bed-timbers may be and preferably are connected at points adjacent to their ends through the medium of straps or bars *a*, so as to form a rigid and durable bed for the machine as a whole.

B is the base-plate of the main frame of the extractor. The said plate is arranged on and fixedly connected to the bed-timbers A, Fig. 3, and is provided between said timbers with a depending flange *b*. It is also provided with a depending cup *c*, from the bottom of which rises a central post *d*, in which is a vertical bore or aperture *e*, as best shown in Fig. 2. At one end the base-plate B is formed integral with an upright bar C, from which extends outwardly a lateral wing D, designed to be connected with an anchor-cable in the manner hereinafter pointed out in detail.

At the upper end of the upright bar C is a ring E, which is provided with an arm *f*, bolted or otherwise fixed to the upper side of the wing D, and is comprised in the main frame of the extractor.

F is the cable-winding drum of the extractor. This drum is provided at its lower end with a trunnion *g*, arranged to turn in the cup *c* of base-plate B, and is also provided adjacent to said base-plate with a toothed flange *h*. (Best shown in Fig. 1.) This toothed flange is provided for the engagement of the pawl G, which is backed by a spring *k* and is designed to hold the drum against retrograde rotary movement while the cable is being wound thereon with a view of avoiding loosening of the cable. The pawl G is designed to be disengaged from the toothed flange *h* of the drum F through the medium of the foot-lever H. (Best shown in Fig. 8.) Adjacent to its upper end the drum F is provided with a ring *l*, which affords a convenient handhold and is designed to enable an attendant to expeditiously rotate the drum by hand to take up slack of the cable. The drum F is peculiar in that it is provided throughout its length with a helical circumferential groove *m*, and it is also peculiar in that it has at its upper end an annular series of teeth *n* for a purpose to be presently pointed out.

The upper end of the drum F is arranged

to turn within the ring E of the main frame, and above it is disposed a vertically-movable ring-clutch I, which has a reduced depending portion *p*, disposed in the upper end of the drum, as shown in Figs. 2 and 4. The said ring-clutch I has depending teeth *r* complementary to and designed to intermesh with the teeth *n* of the drum, and it also has recesses *s* in the inner side of its depending sleeve portion *p* for the reception of the circular series of ribs *t* on the sleeve J of the sweep-support. The said sleeve or hollow shaft J is arranged at its lower end in the cup *c* of base-plate B and is interposed between the bottom of said plate and a cap K, which is also comprised in the sweep-support and has a marginal flange *u*, surrounding the upper portion of the ring E, as shown. Said cap K is connected to the base-plate B through the medium of a bolt L, which is headed at its lower end and is provided adjacent to its upper end with a transverse aperture to receive a fastening-pin *v*. This fastening-pin rests on the flange *w* at the upper end of the hollow shaft J, and the said flange in turn rests on and is bolted to the cap K after the manner shown in Fig. 4.

M is a rock-shaft provided at its ends with handles *x* and at intermediate points of its length with cranks *y*, Figs. 1 and 2. The said cranks engage upright rods *c'*, connected to the ring-clutch I, and hence it will be apparent that when the rock-shaft M is moved in one direction the ring-clutch will be raised out of engagement with the drum F, so as to leave said drum free to be turned by hand.

The teeth *n* at the upper end of the drum F are peculiar in that each has a perpendicular or vertical side and an inclined top, which merges at its lower end into a rectangular recess disposed between said tooth and the next succeeding tooth. The teeth *r* of the ring-clutch I are shaped to fit in the interdental spaces of the drum F—that is to say, they have rectangular depending portions designed to seat in the recesses between the teeth *n* and also have inclined top walls arranged to rest close to the sloping tops of said teeth *n*. By virtue of the teeth *n* being shaped as described it will be apparent that when the ring-clutch is moved downwardly the projections of the teeth on said ring-clutch will slide downwardly on the inclined tops of the teeth *n* until said projections reach the rectangular recesses between the teeth *n*, when it will be observed that the projections will snugly occupy the rectangular recesses and in that way will effectually prevent casual upward movement of the ring-clutch I in the event of the draft animal or animals suddenly backing. A clutch-ring may be used without the rectangular recesses, as it is not necessary to prevent the backing of the sweep.

N N are cable-guides. These guides are

disposed vertically at opposite sides of the drum F and respectively comprise lower and upper arms *a'*, pivoted to the upright frame-bar C, so as to enable said arms to swing horizontally, and wear-plates *a''*, secured in recesses in the arms *a'*, as shown. The lower arms *a'* of the guides N are connected by a coiled spring P, which operates to draw the guides in toward the drum.

R is an auxiliary cable-guide which is made up of lower and upper horizontally-swinging arms *a''* and wear-plates *a'''*, set in recesses in the arms *a''*, and is yieldingly held by a spring against the periphery of the drum, and S is another auxiliary guide comprising lower and upper horizontally-swinging arms *a'''* and wear-plates *a''''*, set in recesses in said arms *a'''* and yieldingly pressed by a spring against the periphery of the drum. The guide S is arranged diametrically opposite the guide R, as best shown in Fig. 3.

By virtue of the drum F being provided with a helical groove *m* it will be apparent that as the cable is wound on the drum the several cable-guides will assure the coils, of the cable resting in the groove, with the result that the even winding of the cable in its course around the drum will be preserved and lapping of one portion of the cable over another will be effectually prevented, which is an important desideratum.

T T are sweeps secured to the top of the cap K at opposite sides of the center thereof. These sweeps when of extra length have braces U to prevent buckling thereof, and each is preferably equipped with a suitable tongue and a lead-pole, as shown. One, if not both, of the sweeps are detachable from the cap K, and hence it will be apparent that the extractor may be operated by one or more draft-animals, as conditions require.

In its side at a point adjacent to one end, preferably, though not necessarily, the lower end, and in communication with one end of the helical groove *m* the drum F is provided with an opening *c''*. This opening is for the passage of one end of the cable V, which is provided with a knot or enlargement *d'* or a metal clamp attached and is designed to be held in drum by an eye *e'* after the manner best shown in Fig. 3. The eye, however, is not necessary, as the wall of the drum will prevent rope pulling out. At its opposite end the cable V is provided with an eye *f'*, around which the end of the cable is arranged and secured by clevis-blocks *g'* of the ordinary construction or by any other suitable means.

W is a grip designed to be connected to the eye *f'* by a pin *h'* extending through the said eye. The grip is hook-shaped to permit of its being engaged with the main portion of the cable after the manner shown in Fig. 1, and it has outwardly-flaring lips *k'* and also has teeth *l'* projecting from the upper of said

lips. The function of the teeth l' on grip W is to prevent the stump or tree from slipping out of the snare formed by the cable in combination with the grip. As the tree or stump leans toward the machine the said teeth l' are embedded in the stump or tree and in that way operate to prevent slipping of the same.

Y, Figs. 1 and 2, is an adjustable anchor-block attached to the wing D of the main frame. The said anchor-block is formed in two sections d^3 , designed to receive the wing D between them, and it is securely bolted to said wing and is provided with an opening and teeth h^2 , forming a series of notches in which the anchor-cable may be arranged so that the said cable may be placed in the most desirable position, according to the pull thereon.

In the practical operation of our novel machine after the drum is freed and the cable is pulled out to the point desired the cable is passed around the stump to be extracted and the hook-shaped grip W is engaged with the cable in the manner shown in Fig. 1, after which the slack cable is taken up by rotating the drum through the medium of the ring l , the pawl G being thrown back into engagement with the ratchet-teeth h to hold the drum against retrograde movement. When it is desired to exert pull on the cable, the ring-clutch is restored to the position shown in Figs. 2 and 4 relative to the drum, when, as will be readily apparent, rotary motion will be transmitted from the sweep to the drum.

In the event of it being desired to permit the horse or horses hitched to the sweep or sweeps to move forward without exerting pull upon the cable it is merely necessary for an attendant to rock the shaft M so as to lift the ring-clutch out of engagement with the drum.

W' is a grubber designed to be used on the cable V in lieu of the grip W when the same is necessary. The said grubber is formed with teeth p' and is provided with handles r' , similar to those employed on a plow.

When deemed expedient, the drum F may be made with a plain or smooth instead of a grooved periphery.

We claim—

1. In a stump-extractor, the combination of a frame, a drum having a circumferential, helical groove in its periphery, a cable, and a cable-guide comprising pivoted, spring-pressed arms and wear-plates inserted in and carried by said arms.

2. In a stump-extractor, the combination of a metallic eye, a cable surrounding and embracing said eye, fastening means securing the cable in rear of and adjacent to the eye, and a grip pivotally connected to the eye and having a hook-shaped portion provided with flared lips and a jagged portion on one of said lips.

3. In a stump-extractor, the combination of a main frame, a drum mounted therein, a cable, and a grip pivotally connected with the cable and having a downwardly and rearwardly curved hook-shaped portion provided with flared lips and also having a jagged portion on one of the upper lips.

4. In a stump-extractor, the combination of a main frame, a shaft arranged therein and having exterior ribs, a cap carried by the shaft and disposed below and connected to the flange thereof, a drum having an annular series of teeth at its upper end, a vertically-movable ring-clutch disposed above the drum and having an opening and recesses in the wall of said opening receiving the ribs on the shaft, and means connected to the ring-clutch and extending through the cap for moving said clutch vertically.

5. In a stump-extractor, the combination of a metallic eye, a cable surrounding and embracing said eye, fastening means securing the cable in rear of and adjacent to the eye, and means connected to the eye for effecting connection between the cable and a stump to be extracted.

6. In a stump-extractor, the combination of a main frame having a lateral wing, a drum mounted in said frame, a sweep mounted on the frame and connected with the drum, and an anchor-block having an opening the outer wall of which is toothed; the said anchor-block comprising sections receiving the wing of the frame between them, and transverse bolts connecting said sections and wing.

7. In a stump-extractor, the combination of a main frame, a drum, a cable, and one or more cable-guides comprising pivoted arms and wear-plates inserted in and carried by said arms.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

LORENS SWENSON.
JOHN S. SWENSON.

Witnesses:

HENRY RUSTAD,
A. L. PETERSON.