A. McKENNEY.

STUMP-EXTRACTOR.

No. 188,655. Patented March 20, 1877.

Fig. 1.

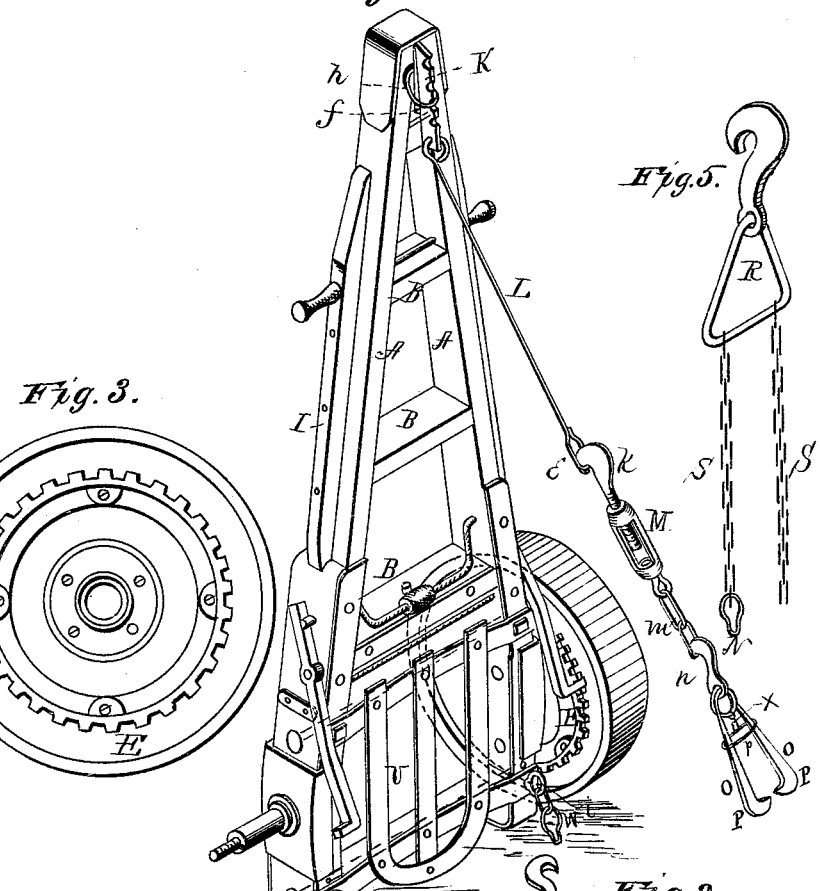


Fig. 5.

Fig. 3.

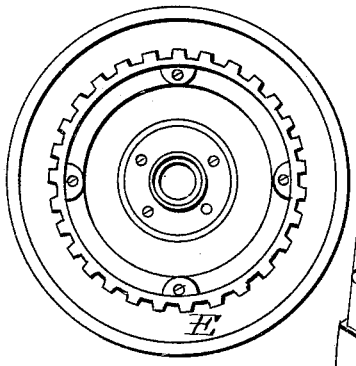


Fig. 2.

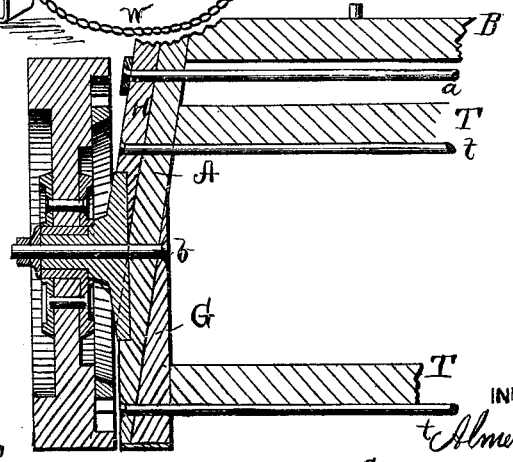
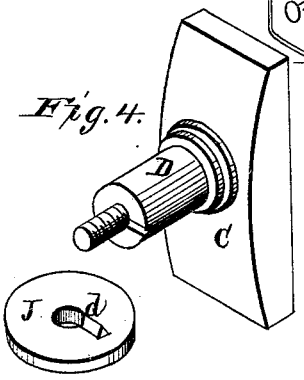


Fig. 4.



WITNESSES

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IMPROVEMENT IN STUMP-EXTRACTORS.

Specification forming part of Letters Patent No. **188,655**, dated March 20, 1877; application filed March 3, 1877.

To all whom it may concern:

Be it known that I, ALMERON McKENNEY, of Evansville, in the county of Rock and in the State of Wisconsin, have invented certain new and useful Improvements in Stump-Puller and Rock-Lifter; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to stump-pullers and rock-lifters; and it consists in certain improvements upon Letters Patent Nos. 162,936, and 162,937, granted to me May 4, 1875, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is an enlarged section of a part thereof; and Figs. 3, 4, and 5 are detailed views.

In the patents above referred to are shown what is termed a "double-crotch lever" and a "single-crotch lever."

In the present case I adopt the form of the single-crotch lever without the axle, and having independent wheels on journal-bearings placed outside of the levers, and give the lower ends of the two arms of the lever an even bearing with the wheels on the ground, and the fulcrum is placed near the weight to be raised on the start, to economise the power.

In the construction of the lever-frame I use two lever-arms, A A, two and one-fourth inches thick by eight inches wide and eleven feet long. These arms are tapered from the middle on the under edges to four inches at the upper ends, and they are set two and a half feet apart at the bottom, and tapering upward until they meet at the top.

Between the arms are three cross-girts, B, the lowest one being three feet from the bottom, and the balance of the space equally divided.

To avoid the difficulty of bending heavy pieces of plank, and to secure strength of the levers below the cross-girts in the unsupported parts of the same, and to set the wheels perpendicular, cast-iron flanges C, with right-angle journal-bearings D, and side flanges to set over the edge of the levers, are used. To adapt these to their position the outside faces of the levers A are chamfered downward in a wedging shape sufficient to set the castings C parallel to the face of the wheels E in length equal to the length of the casting. Now, to maintain the strength and thickness of the lever-arms, a wedging-piece, G, of plank of sufficient thickness is placed on the opposite sides with reversed ends, which, with the casting, shall make an even thickness of about three and a half inches, said inside wedge G extending up far enough to preserve the even surface, and all are then firmly bolted together.

On the outside, also, each lever-arm A has an additional plank, H, extending from the iron flange upward to about eight inches above the lower cross-girt B, and firmly bolted. This lower cross-girt has two joint-bolts, *a*, passing through the levers on the under side of it.

The lever-arms A A are also supported above the doubled part by a rib-piece, I, placed edgewise in the middle of the outside of the arms, which rib-pieces are bolted firmly to the same, and are let into the flat pieces H near the lower girt, to break the joints. These pieces I extend upward to about eighteen inches from the top.

The lower ends of the lever-arms A are rounded to the exact curve of the wheels E, and have an even bearing with them on the plank or shoe, which is commonly used to keep them from settling into the ground, and said ends and upper edges of the lever-arms are protected with band-iron.

Through each lever, casting, and journal is passed a strong bolt, *b*, having a broad washer for its support on the inner side of the lever-arm, and a cap, J, with a tongue, *d*, setting into the end of the journal, and a nut on the end to keep the wheel up to its proper shoulder. Thus, it will be seen that the arms of the lever below the cross-girt are made stiff and strong, to resist the tendency of spreading with the great pressure downward, and

are strongly supported by the outside pieces H passing upward above the girt, and by the two strong cross-bolts *d*. By means of the ends of the levers and the bottoms of the wheels having an even bearing, the weight is in a great measure taken off from the journals, nor will there be too much weight on the wheels alone.

At the top of the lever projects the middle iron plate *f* between the arms of the gripe-link *h*. The outer edge of this plate is rounded for the bearing of the notched bar K below the connection of the link with said plate.

This construction is to give the notched bar K chance to rock and to keep it straight.

By experiment I have found that this bar cannot be confined down to a straight surface, but must be free for a rocking motion, and the bearings must be in the proper position in relation to the length of the link, otherwise it will continue to bend until it becomes unfit for use.

The wooden ribs I, above mentioned, maintain the lever stiff, and prevent any lateral sway when the great weight of all the power to be applied is suspended from the top by means of the connection of the extension-bar.

A round iron bar, L, is connected to the notched bar K and extends downward about half-way to the ground, and has an eye, *e*, in the lower end. The connection of the bars K and L is flexible, as shown.

M is a screw-swivel, with hook *k* at its upper end to fasten in the eye *e* of the rod L, and at the lower end are links *m m* to form connection with the grappling-hooks. These are formed of a coiled-wire spring, N, with side arms O O extending downward, and having a gradual enlargement by widening out into a width sufficient to form heavy hooks P P to be driven into the wood. The arms O O have a link, *p*, extending around them, resting loosely near the coil and suspended by a small hook, *n*.

When the hooks P are sprung outward sufficient to allow the points to rest against the root or a small stump, and the link *p* allowed to drop, as the hooks are driven into the wood the link will drop down still farther, and thus holding firm by all they gain. The hooks P in some cases may be made double, so as to cover more timber and avoid tearing out.

A hook used in this way need not be confined to a coiled-wire spring, but may be constructed with other kinds of springs.

A small hook, *x*, may suspend the link *p* until it is required for use.

In place of these grappling-hooks a triangle-shaped ring, R, with hook, is connected with the links *m*. This ring has two chains, S S, suspended from the lower end, it being made broad to admit of them. One of these chains has a grab-link, *s*, on the end which serves to connect with the other end around the stump.

These chains are commonly used by passing them downward under a root, and then bringing them up, crossing them and passing them around the stump, and connecting by the grab-link. In this way the chain draws firm around the stump, and a firm and sure hold is had on the old or low stump, and where they cannot be fastened to in any other way.

To hitch under a root separately the root is likely to tear off if it is hard to pull, and to hitch around the stump the chains are always raising, and power is lost.

The chains are intended to be used where great power is required, as the grappling-hooks would then tear out.

In applying this machine to the use of raising and moving rocks the bed or carrier V is placed low down between the wheels, and yet large wheels may be used to move the heavy load, it being firmly bolted to the lever-frame and supported by cross-girts T and joint-bolts *t*, making the lever-frame and iron bed a strong supporting-platform.

At the lower end of the bed are screw-eyes *v*, with which chains W are connected. These chains are intended to pass down partly under one end or side of the rock, and extend up on the back side, and come together in the triangle-ring R. In this the tendency is for the chains to draw together. In such case a separate ring, with hook, may be had for this purpose to connect with the swivel-links; or, the chains S may be used to extend under the edge of the rock first, and then connect with the eyebolts *v*. These eyebolts may be placed at the upper end of the platform, if desired.

In some cases it is best to cross the chains, either on the front or back side of the rock, in order to have them draw together sufficient to hold small and round rock.

It is usual to hitch the chains so as to give the rock a rolling lift, and to stop and prop up and take up the slack. It will be seen that a take-up can be had by the notched bar and gripe-link at the top, or by the screw and swivel in the middle, or by the links at the bottom of the swivel, and also by the grab-links on any common link in the cable-chain.

With these improvements the machine is adapted to a great variety of situations for both stump pulling and moving, and rock lifting and moving.

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

1. The lever-arms A A, provided with castings C C, having projecting journals D and wheels E, all arranged as described, so that the lower ends of the lever-arms and bottoms of the wheels will have an even bearing, for the purposes herein set forth.

2. The combination of the V-shaped lever A A, chamfered, as described, to receive the castings C C, the cross-girts B, inside wedge-pieces G, outside strengthening-pieces H, ribs I, and bolts *a*, substantially as and for the purposes herein set forth.

3. The rounded projecting plate *f*, in combination with the lever-arms, link *h*, and notched bar K, for the purposes herein set forth.

4. The grappling-hooks, consisting of the spring N, arms O, with hooks P, and sliding links *p*, substantially as and for the purposes herein set forth.

5. The combination of the notched bar K, round bar L, with eye *e*, swivel M, with screw-hook *k*, and links *m*, and the grappling-hook, or its equivalent, for the purposes herein set forth.

6. The open triangle R with chains S S, in combination with the swivel M and bars L and K, as and for the purposes herein set forth.

7. The combination, with the lever-arms A A, of the platform V, girts T, cross-bolts *t*, eyebolts *v*, and chains W, all as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of March, 1877.

A. McKENNEY.

Witnesses:

FRANK GALT,

HENRY N. MILLER.