2 Sheets—Sheet 1.

A. McKENNEY.

STUMP-EXTRACTOR.

No. 188,654. Patented March 20, 1877.

Fig. 1.

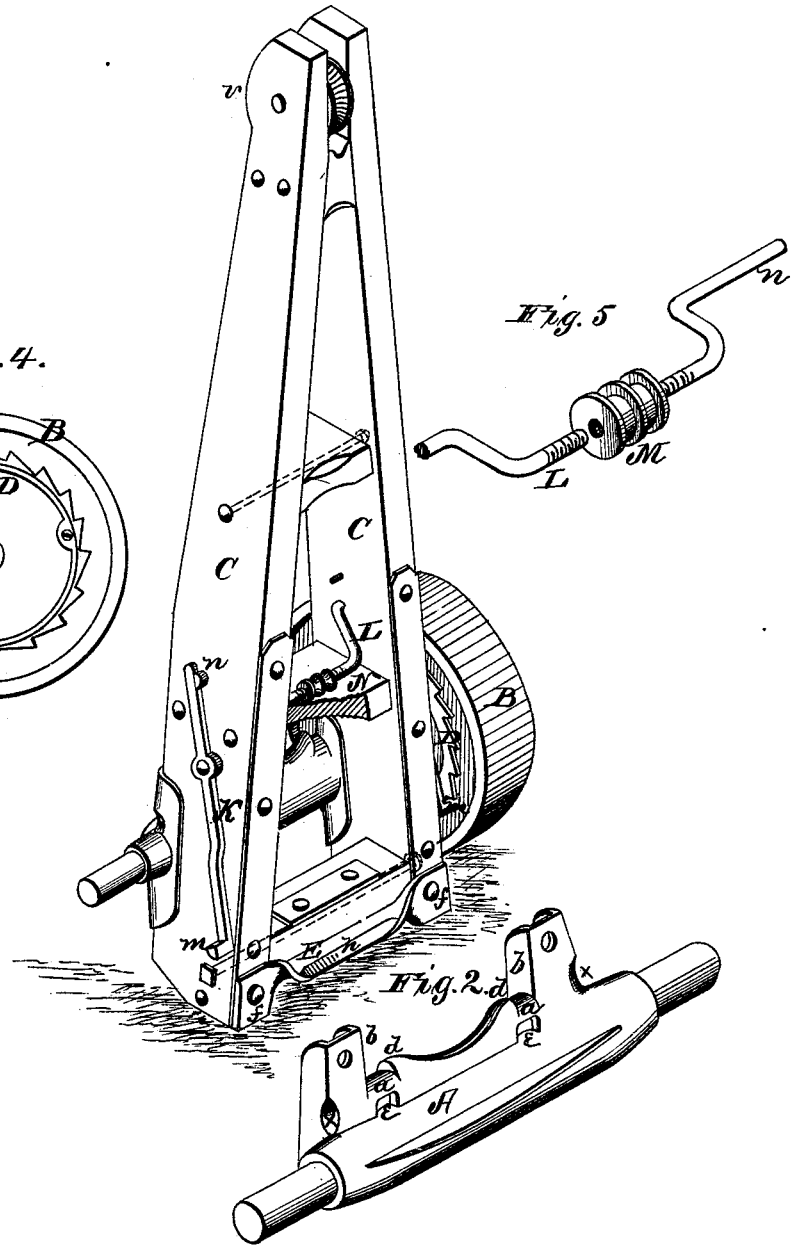

Fig. 4.

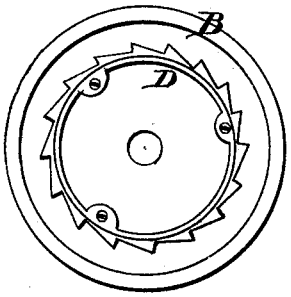

Fig. 5

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Fig. 3.

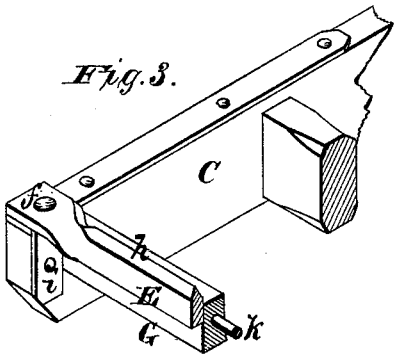


Fig. 6.

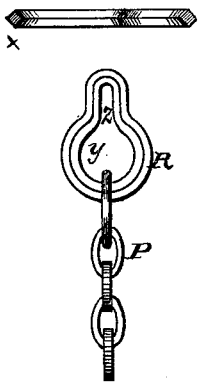


Fig. 7.

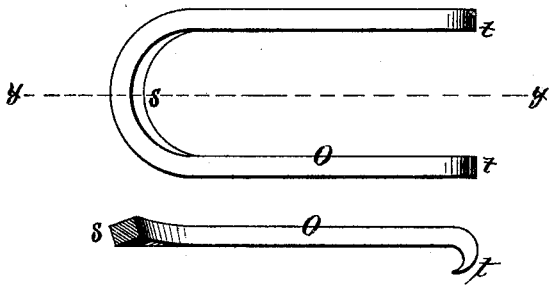
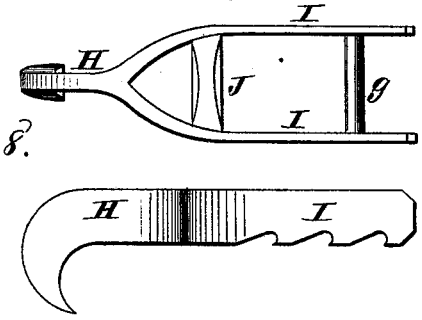


Fig. 8.



WITNESSES

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ALMERON McKENNEY, OF EVANSVILLE, WISCONSIN.

IMPROVEMENT IN STUMP-EXTRACTORS.

Specification forming part of Letters Patent No. **188,654**, 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 and Grub Puller; 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.

The nature of my invention consists in certain improvements upon grub-machines or stump-extractors, for which Letters Patent have been heretofore granted to me, 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 drawings, in which—

Figure 1 is a perspective view of my improved grub-machine. Fig. 2 is an enlarged perspective view of the axle. Fig. 3 represents a portion of the rear end of the crotched lever. Fig. 4 is a side view of one of the wheels. Fig. 5 is a perspective view of the mechanism for operating the ratchet-levers. Fig. 6 represents the chain, Fig. 7 the clevis, and Fig. 8 the hook.

A represents the axle, B B the wheels, and C C the crotched lever, as shown and described in my Patent No. 162,963, dated May 4, 1875, with the following differences:

In this case I use ratchet-wheels D attached to the main wheels B, instead of cog-wheels, as used in the former case.

The axle A is formed with two parallel lugs, *a a*, for the hook and clevis, instead of an iron rod passing through flanges parallel to the axle, as shown in said patent. These lugs *a a* rise high enough for the free operation of the clevis and hook, and are strongly supported in front and rear, as shown in Fig. 2, and by flanges *b* on the outer ends, and have shoulders or guards *d* on their inner ends, whereby the hook or clevis is prevented from pressing inward. The upper surfaces of the lugs are rounded, and cavities *e* are formed in front to admit of the hooks securing a firm hold.

This construction is deemed more economical and more secure on account of the liability of getting an unsound casting in the flow of metal around a cold rod of iron.

The crotched lever C is formed mainly in the same manner as described in my patent above referred to, and in connection therewith I use a bite, E, formed by twisting a flat bar of iron near the ends, so as to give the same a broad bearing, *f*, on the upper edge of the two arms of the lever at the lower ends, and to present a sharp edge, *h*, of the bar to the grub or tree. The flat side of the middle part of the bar E rests against a parallel girt, G, of wood, extending across between the two arms of the lever, to which said bar or bite is strongly riveted. This girt is gained into the wood of the lever, and is supported by iron plates *i*, riveted through near the ends of the lever, the edges of said plates resting against the girt, thereby keeping the girt and the bite from rocking over toward the ends of the lever. This girt is also supported by a joint-bolt, *k*, passing longitudinally through it and through the levers. The vertical and lateral strain on the bite E is too great to stand unsupported by other means without making it too heavy.

H represents the extension-hook used in the grub-machine.

In a patent granted to me April 17, 1866, a similar hook was described, formed by welding together three flat bars of iron, of sufficient weight to give strength in the bend of the same, and having two bars extending out to form the sides, with two blocks of iron placed in the crotch, and all firmly bolted together. These two extended sides straddle a single lever placed in the middle of an axle with hooks formed on the under edge to hook onto corresponding lugs on each side of the lever. Now, the construction and application of the above have proven more or less defective and more particularly on account of the heavy work of welding the three bars together, the great number of heats to be made, the imperfect welding and weakness of the same, and, further, the great length of the side bars being needed to straddle the broad wooden lever, and altogether the great weight, and yet the weakness, of the same.

The mode of constructing the present hook H is cheaper, and makes a lighter, and yet stronger, hook. I first form all of the bend and a part of the sides out of a solid bar of iron cut off to the proper length, and the end is then split far enough to form heavy sides near the crotch, and taper them out to where side pieces I I of even thickness may be welded on to extend the proper length. A single block, J, of iron is placed between the side pieces I in the crotch, and then all riveted firmly together.

I have thus a solid bar of iron for the bend, where the greatest strength is required, in the place of imperfectly-welded flat bars, and also have shorter and stronger side bars of a given weight, which are stronger and more securely applied on account of having room to fix a bolt, *g*, between them, near their outer ends, to keep them parallel.

This could not be done in the old hook, as the sides were made to straddle the lever; and, further, in connection with the crotch-lever C, these sides may be farther apart, being supported by the cross-bolt, thus forming a broad base for lateral support.

In the manufacture the workman has no heavy welding to do, and no heavy heating, except for bending, and that can be done on a former, and mainly done at one heat, thus saving a great amount of labor and fuel.

In a patent granted to me February 18, 1862, I have shown ratchet-hooks and ratchet-wheels for the purpose of locking the wheels of the machine, and yet allowing them to move forward. In such case the operation was imperfect on account of the ratchet-arms being placed diagonally in extending across from the lever to the wheels, and necessarily being too long, and having two or more bends, and which arms would spring off when a strong pull was made. Hence, cog wheels were adopted in some cases, which had to be unlocked before the machine could be moved forward much. Now, with the crotch-lever, I have found that ratchet-arms K may be used, as shown, when made as follows: These arms have a long bearing on the lever, are nearly straight, and have a short arm, *m*, extending to the wheel. They are stiff, and maintain a firm hold on the ratchet-wheels, and operate far more efficiently.

The advantage gained is that the ratchet-arms may be short and nearly straight, with only one slight bend, and the unsupported arm *m* being short, it must maintain a firm hold on the ratchet-wheel, and is not liable to spring off when a strong pull is made.

The device for operating the ratchet hooks or arms K consists of a bent iron rod, L, formed into a bail, placed between the arms of the lever C, and having gudgeons *n n* passing through the sides of the lever and across the ends of the ratchet-arms. These gudgeons are made eccentric either by flattening one side, or placing eccentric thimbles on them, so that a quarter turn or more of them may depress the ends of the ratchet-arms and so raise the ratchet-hooks out of place on the wheels and allow them to roll. The bail L is either formed and then placed in position when the lever-frame is being put together, or it may be formed in two parts, as shown in Fig. 5, and said parts connected in the center by a screw-thimble, M. This latter construction is preferred, as in that case the two parts can be placed in position and removed at any time after the machine is put together.

The side arms of the bail extend upward nearly parallel to the sides of the lever, so that when it is turned upward the contraction of the sides of the lever forms a stop in that direction, and when the bail is turned downward, the wooden girt N forms a stop, so that the gudgeons may not be turned too far. By this arrangement the operating parts are placed secure from damage, while any kind of handle fixed upon the outside of the lever for operating the ratchets is continually liable to be broken off in transportation, or in using the machine.

O represents the clevis, which hooks onto the lugs *a* of the axle A.

A peculiar feature of this clevis is its twisted form in the large bend of the same, as shown at *s*, in Fig. 7. The object of this feature in construction is to set the lower edge in the proper direction to catch the small grub or tree. This is done on a former, which makes them uniform and sure to operate perfectly, whereas without the twist, as here shown, it is difficult to get workmen to hammer the band into the right form to effect the purpose of holding both a large and a small grub or tree; and when made in this way, all are made perfectly reliable.

The clevis O has hooks *t* at the ends, hooking downward to hook over the lugs *a* of the axle.

At the upper end of the lever C is a curved block, *v*, of wood or iron, placed on the under side of each side piece of the lever as a shoe to keep the end up, and from striking any obstruction as the machine is dragged forward by the team.

On the under side of the lever-flanges *b* of the axle A, at the outer corners, are depressions *x x*, which are hollowed out to admit of a chain, P, extending around the flanges and arms of the lever, and passing through between the lever-arms and the wheels, and extending back around the stump or tree. This chain may be taken up to any desired length by what may be called a grab-link, R, the chain passing through the large part *y* of said link, and having one ring or link set edgewise and pressed into the narrow space *z*, where the grab-link will hold it for a strain equal to other parts of the chain. For this purpose the square bar of iron, of which said grab-link is made, is formed with the corners inward and outward, instead of flatwise, so that the sides fit in between the ends of the short link chain.

This mode of operation is used where neither the hook nor the clevis will answer the purpose, and operates well on clusters of saplings and willows, and alders, &c., with small machines; and also upon such and old stumps with large machines.

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

1. The axle A, constructed with the parallel lugs *a a*, flanges *b b*, and shoulders *d d*, and recesses *e e*, substantially as and for the purposes herein set forth.

2. The concave depressions *x x*, formed in the flanges *b b* of the axle A, for the purposes herein set forth.

3. The combination, with the crutch-lever C and wheels B B, of the ratchet-wheels D D secured on said wheels, and the straight ratchet-arms K K, having long bearings on the lever and short arms *m m* extending toward the wheels, substantially as and for the purposes herein set forth.

4. The bite E, constructed of a flat metal bar, twisted near its ends to form flat bearings *f f* at the ends, and sharp edge *h* along the middle, substantially as and for the purposes herein set forth.

5. The combination of the crotched lever C, girt G, bite E, constructed as described, and the plates *i*, substantially as and for the purposes herein set forth.

6. The hook H, formed of a single metal bar, having its end split, and side-bars I I welded to them, the block J and bolt *g*, all constructed and combined substantially as and for the purposes herein set forth.

7. The clevis O, twisted in the bend as shown at *s*, for the purposes herein set forth.

8. The bail L, constructed as described, and provided with eccentric gudgeons *n n*, in combination with the lever C and ratchet-arms K K, substantially as and for the purposes herein set forth.

9. The shoes *v*, attached to the arms of the lever C at the upper end on the under side, for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of February, 1877.

ALMERON McKENNEY.

Witnesses:
FRANK GALT,
FRANCK L. OURAND.