

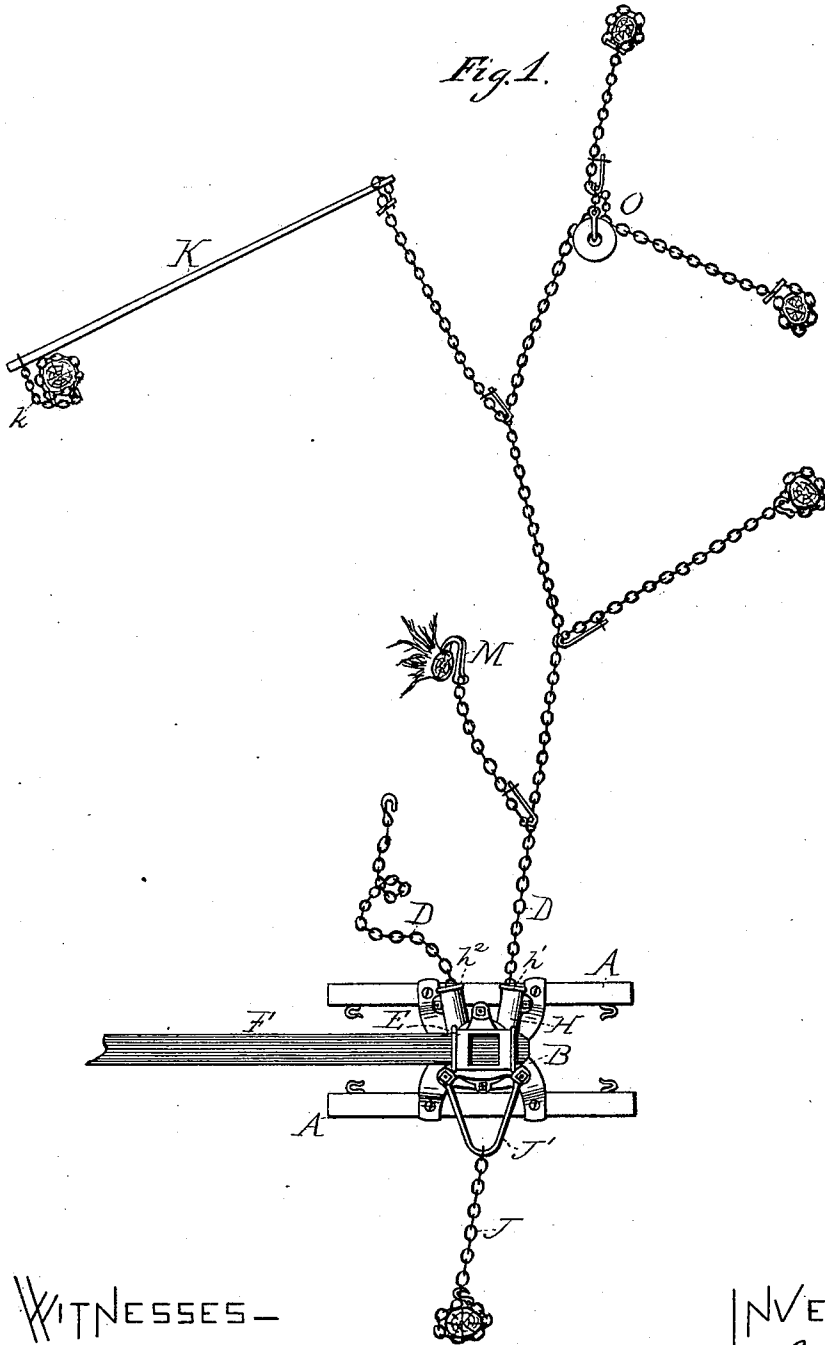
(No Model.)

3 Sheets—Sheet 1.

J. C. SHARP.
Stump Extractor.

No. 234,728.

Patented Nov. 23, 1880.



WITNESSES—
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T. W. Hasekagen.

INVENTOR—
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(No Model.)

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Fig. 2.

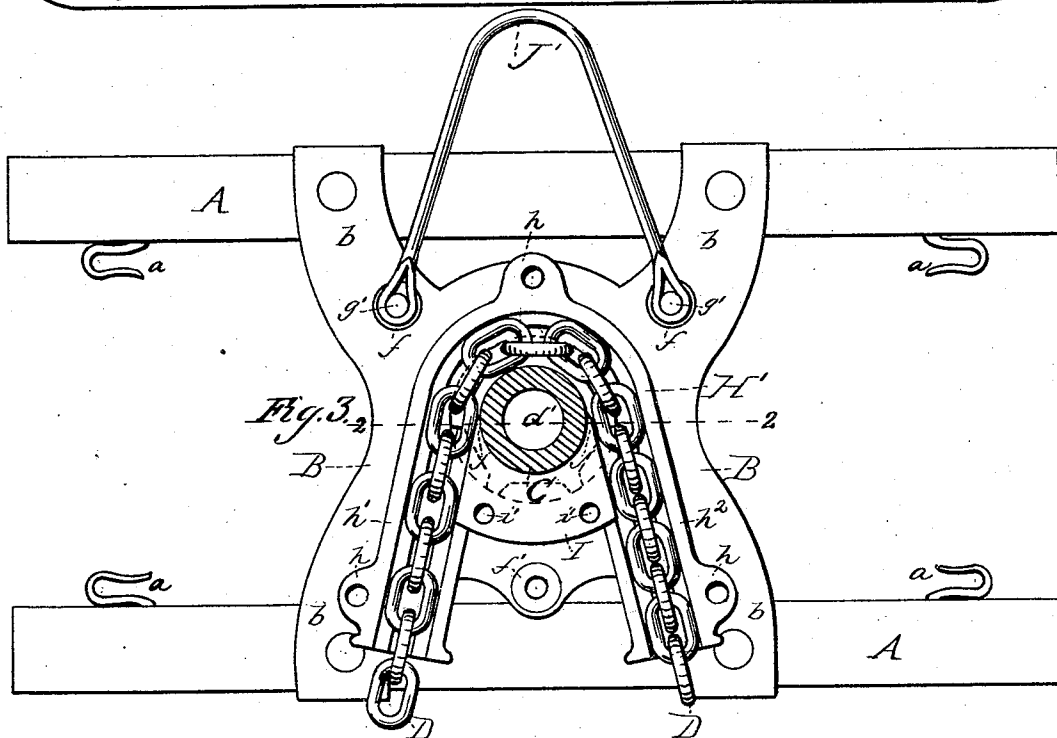
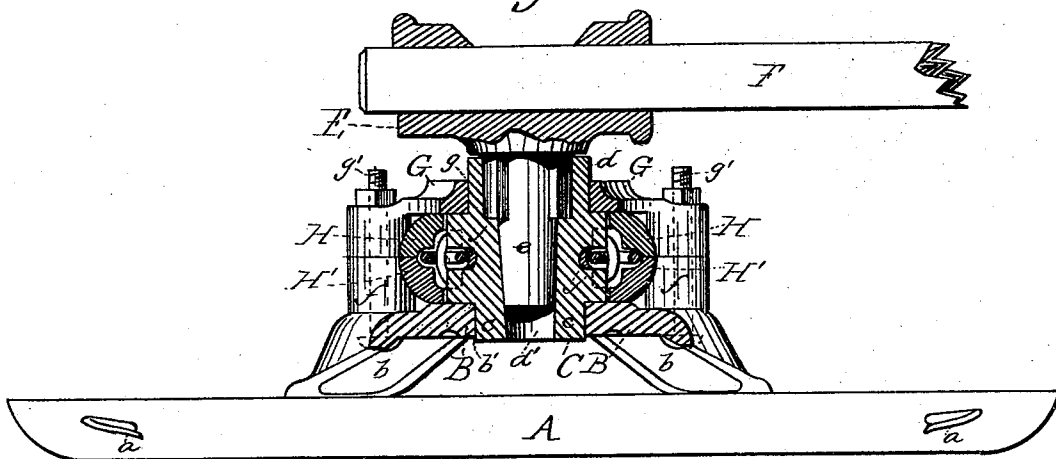
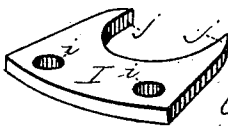


Fig. 4.



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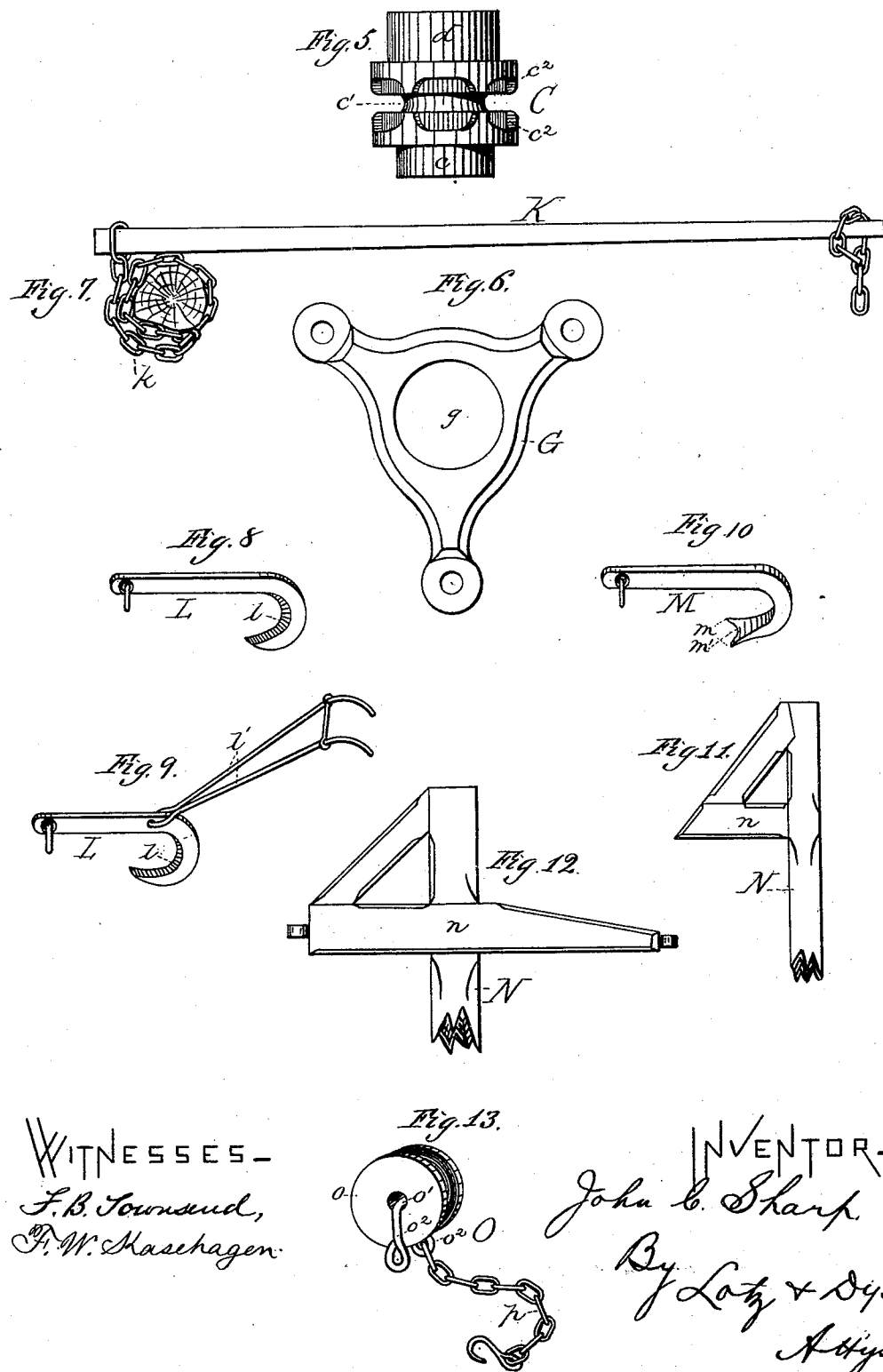
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UNITED STATES PATENT OFFICE.

JOHN C. SHARP, OF EVANSVILLE, WISCONSIN.

STUMP-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 234,728, dated November 23, 1880.

Application filed September 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SHARP, of Evansville, in the county of Rock and State of Wisconsin, have invented a certain new and useful Improvement in Grub and Stump Pullers, of which the following is a specification.

In the accompanying drawings, illustrating my invention, Figure 1 is a plan view of the machine in operation; Fig. 2, a vertical section of the machine on line 2 2 in Fig. 3; Fig. 3, a plan view of the machine, with the upper half of the guide-box and the parts above it removed, the chain-wheel being in central horizontal section; Fig. 4, a separate perspective view of the stripper removed from the machine; Fig. 5, an elevation of the chain-wheel removed from the machine; Fig. 6, a separate top view of the spider which forms a part of the frame; Fig. 7, a top view of the twisting-lever secured in position to a stump; Fig. 8, a view of the cutting-hook; Fig. 9, a modification of such cutting-hook; Fig. 10, a view of the low stump-hook; Figs. 11 and 12, views of two forms of my artificial anchor, and Fig. 13 a view of the snatch-block.

Like letters denote corresponding parts in all the figures.

My grub and stump pulling machine is mounted preferably on runners A, provided with hooks a, by which the machine can be drawn from place to place. These runners are preferably of wood, and the whole frame of the machine is otherwise made of metal, by reason of which the machine is given sufficient weight, so that it will not be tipped up in use by the weight of the lever or sweep.

If desired, the machine could be mounted on rollers instead of upon the transverse runners shown.

B is the bed of the machine, made of cast metal and having legs b, which rest upon the runners A and are secured thereto. The bed B is provided with a central circular opening, b', in which turns the extended hub c of the chain-wheel C, the body of such chain-wheel resting upon the bed around this opening.

The chain-wheel has a groove, c', to receive the horizontal links of the chain D, and pockets c² to receive the vertical links of the chain. The chain-wheel is also constructed with a pro-

jecting hub d on its upper end, and with an opening, d', extending down through it, in which opening the key-shank e of the sweep-socket E rests removably. The socket E receives the inner end of the sweep or lever F, to the outer end of which the horse is attached that operates the machine.

The bed B is provided with three studs, f f f', two of such studs being situated upon the rear side of the bed, while the third is located centrally upon its front side. Upon these studs rests a three-armed spider, G, having a central opening, g, which fits over the upper hub, d, of the chain-wheel and forms the upper bearing for such chain-wheel. The spider G is secured in position by bolts g', passing upwardly through the studs f f f' and through the ends of the spider-arms.

Between the bed B and the spider G is situated the chain-guide box. This is composed of two similar halves, H H', cast from the same pattern, and provided with a sufficient number of lugs, h, by which they are bolted together. The parts H H' form a box, which completely surrounds the chain-wheel and conforms to the contour of so much of the chain as projects from the wheel, serving to hold the chain in position in the pockets and groove of the wheel, so that the links cannot work out of operative connection with the wheel or become cramped thereon.

In front of the chain-wheel the guide-box has two forwardly-projecting hollow arms, h' h², which entirely inclose the chain, having vertical and horizontal grooves to accommodate the vertical and horizontal links of the chain. The openings at the outer ends of the hollow guide-arms are flared somewhat, so that the links will run smoothly into and out of such arms without catching. These hollow guide-arms preferably project obliquely to each other, and are situated on opposite sides of the stud f'. They conduct the chain onto and off of the chain-wheel.

The guide-box is held down in position by the spider G, but it is capable of swinging freely from side to side on the bed, this swinging movement being limited by the striking of one or the other of the guide-arms h' h² against the stud f'. The hollow guide-arms also serve to conduct the chain clear of the bed of the ma-

chine, and assure the correct arrangement of the links before they reach the pockets of the wheel. The swinging movement allows the guide-arms to adjust themselves to any change in the draft of the pull-chain with a more gradual movement of the machine and with less friction.

To prevent the links of the chain from following the wheel around past the guide-arms and becoming cramped on the delivery side of the wheel, I provide a stripper-plate, I, which is held in front of the chain-wheel between the parts H H' of the guide-box by means of holes *i* in the stripper-plate and studs *i'* on such parts H H'. This stripper-plate projects into the groove *c'* of the chain-wheel and conforms thereto, and has two tapering fingers, *j*, which follow the groove around to the sides of the wheel. These fingers *j* strip the chain from the wheel or force the horizontal links outwardly, compelling the links to pass smoothly into the hollow guide-arm on the delivery side of the machine without possibility of their becoming cramped. The stripper-plate swings with the guide box and arms, so as to act uniformly in connection therewith.

A bail, J', is secured by the bolts that pass up through the lugs *f f*, and to this bail is attached the anchor-chain J, Fig. 1.

When a stump requires more power than usual to dislodge it, I employ a twisting-lever, K, Figs. 1 and 7, which has a chain, *k*, at one end, by which it is secured to the stump, and at its other end it is connected either directly or by a connecting-chain with the main pull-chain D of the machine.

It will be seen that the power of the machine will be greatly increased by means of this lever, so that a stump which could not be extracted by a direct pull from the machine can be twisted horizontally from position through the instrumentality of this lever.

It is often desirable to cut off some of the roots of large stumps beneath the surface of the ground before it is attempted to pull them up. For this purpose I use the cutting-hook L, Fig. 8, which has a sharp cutting-edge, *l*, and has also a ring or hook at the forward end of its shank or beam, by which it can be secured to the pull-chain. This cutting-hook may have suitable handles *l'*, preferably similar to plow-handles, Fig. 9, by which it can be guided.

The hook M, Fig. 10, for pulling low stumps, is also peculiarly constructed. It has a broad point, *m*, provided with one or more notches, *m'*, so that the hook will not split the stumps and will not slip around the stumps in use.

The features of the cutting-hook and low-stump hook could be combined in one implement, if desired; but I prefer to construct them separate.

The machine is usually anchored to a stump, as shown in Fig. 1; but where one suitable for the purpose is not within convenient reach I provide an artificial anchor. Two forms of

the same are shown in Figs. 11 and 12. The artificial anchor is composed of a post, N, which is set into a hole bored by a post-auger, and has a horizontal piece, *n*, secured thereto and projecting on one or both sides, which horizontal piece bears upon the surface of the ground to prevent the tipping of the post in its hole. This horizontal piece may be braced from the post, and may be staked down to the ground at one or both ends.

The artificial anchor may be composed of two posts connected by a horizontal piece extending along the top of the ground, to the center of which the machine would be attached; or I can use a single post set into the ground and held by one or more guy-ropes.

In addition to the twisting-lever before described, I also use, in connection with my machine for pulling up large stumps, the snatch-block O, Figs. 1 and 13. This snatch-block is constructed so that it can be placed upon the chain at any point without the trouble of reeving the chain through it. The snatch-block is preferably composed of a sheave, *o*, a mandrel, *o'*, upon which it turns, arms *o''* connected with the ends of the mandrel, and a short chain, *p*, which is secured at one end to one of the arms *o''*, and has a hook at the other end, which engages with an eye in the other arm, so that by unhooking the short chain *p* the block can be attached to the pull-chain at any desired point, and by hooking the short chain to the arm a loop is formed for connecting the block with the stump to be pulled up.

In use the machine is anchored and the pull-chain is connected with a number of stumps and grubs, as shown in Fig. 1, when a horse is attached to the sweep and the machine operated. After the chain is drawn in upon one side the other end of the chain is connected with several stumps or grubs, or both, and the horse pulls the sweep in the opposite direction. The operation is repeated in this manner until all the grubs and stumps within the range of the machine are pulled up, when the machine is drawn to a new anchorage.

As a modification of the guide-box of my machine, any portion of the same with which the chain comes in moving contact could be replaced by guide pulleys or wheels mounted in a swinging frame surrounding the chain-wheel.

If I wish to produce a geared machine having greater power and a slower movement than the machine described, I mount a large cog-wheel on the shaft of the chain-wheel, and on another shaft back of the chain-wheel I mount a pinion meshing with the large cog-wheel. The sweep would be connected with the pinion or its shaft. The bed of the machine and the spider would have to be extended back far enough to provide bearings for the extra shaft.

What I claim as my invention is—

1. In a stump and grub puller, the combination, with the chain-wheel, of the horizontal guide-box entirely surrounding said chain-

wheel, and adapted to swing a limited distance around such chain-wheel independent of the frame of the machine, substantially as described and shown.

5 2. In a stump and grub puller, the combination, with the chain-wheel, of the horizontal hollow guide-arms projecting in front of such chain-wheel, and adapted to swing a limited distance independent of the frame of the machine, substantially as described and shown.

10 3. In a stump and grub puller, the combination, with the chain-wheel, of the horizontal guide-box surrounding the chain-wheel and the hollow guide-arms projecting from the front of the guide-box, said guide box and arms being adapted to swing together independent of the frame of the machine, substantially as described and shown.

20 4. In a stump and grub puller, the combination, with the chain-wheel and the swinging guide-box, of the stripper mounted in said guide-box and swinging therewith, substantially as described and shown.

25 5. In a stump and grub puller, the combination, with the chain-wheel and swinging guide-box, of the hollow guide-arms and the stripper, substantially as described and shown.

30 6. In a stump and grub puller, the combination, with the bed B and spider G, secured together, of the chain-wheel C, having extended hubs, which turn in bearings in said bed and spider, and the swinging guide-box surrounding the chain-wheel and situated between the bed and spider, substantially as described and shown.

35 7. In a stump and grub puller, the combination,

with the bed B and spider G, secured together, of the chain-wheel C, having extended hubs, which turn in bearings in said bed and spider, and provided with socket *d'*, 40 the swinging guide-box surrounding the chain-wheel and situated between the bed and spider, and the sweep-socket E, having key-shank *e*, which sets removably in the socket *d'* of the chain-wheel, substantially as described and shown. 45

8. The combination, with the pull chain or rope of an anchored stump-puller, of the horizontal lever K, having means for attaching it to a stump, whereby the stump will be twisted 50 from position when the machine is operated, substantially as described and shown.

9. The combination, with an anchored stump and grub puller, of the cutting-hook L, having cutting-edge *l*, substantially as described and shown. 55

10. The combination, with an anchored stump and grub puller, of the low stump-hook M, having broad point *m* and one or more notches *m'*, substantially as described and shown. 60

11. The combination, with a stump and grub puller, of the artificial anchor, substantially as and for the purpose set forth.

12. The combination, with an anchored stump and grub puller, of the snatch-block O, composed of sheave *o*, mandrel *o'*, arms *o''*, and hooked chain *p*, substantially as described and shown. 65

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Witnesses:

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