

(No Model.)

3 Sheets—Sheet 1.

G. CHAMBERLIN.

STUMP EXTRACTOR.

No. 302,467.

Patented July 22, 1884.

FIG 1

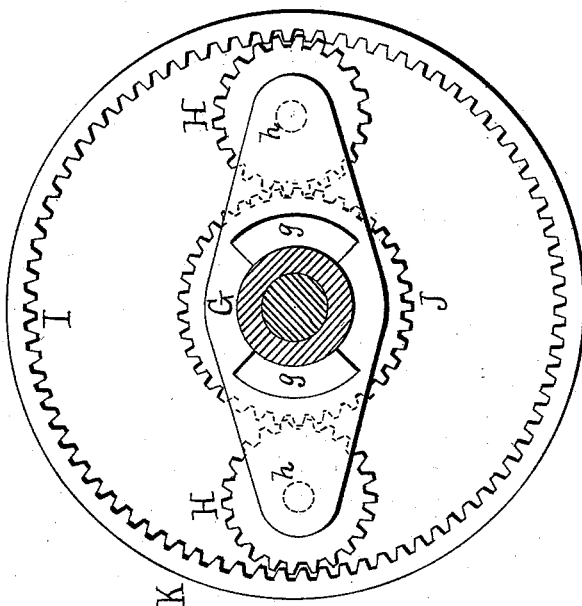
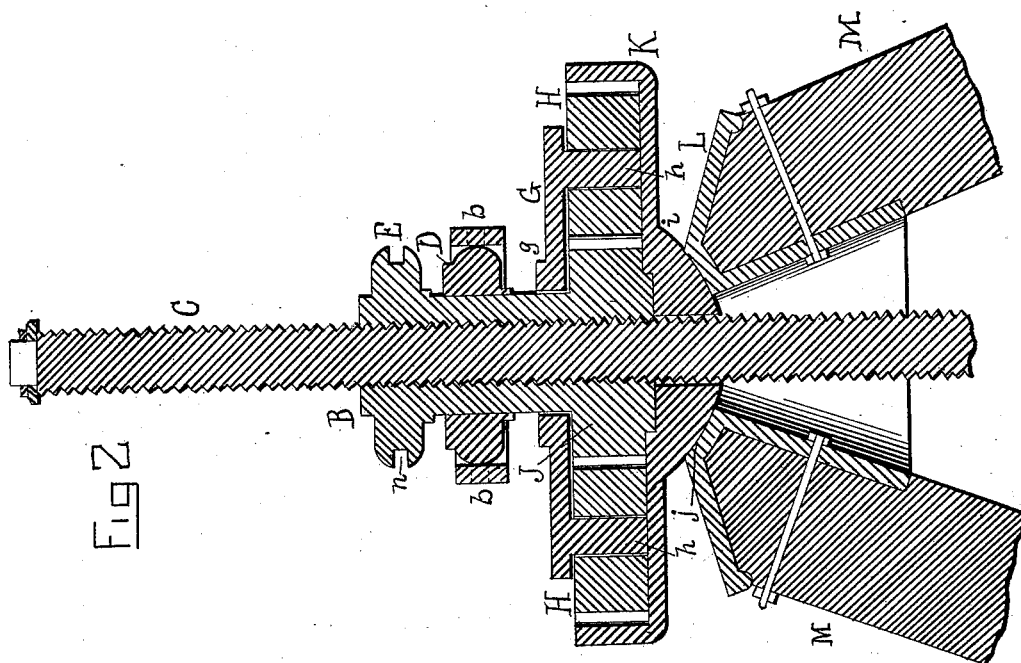


FIG 2



WITNESSES

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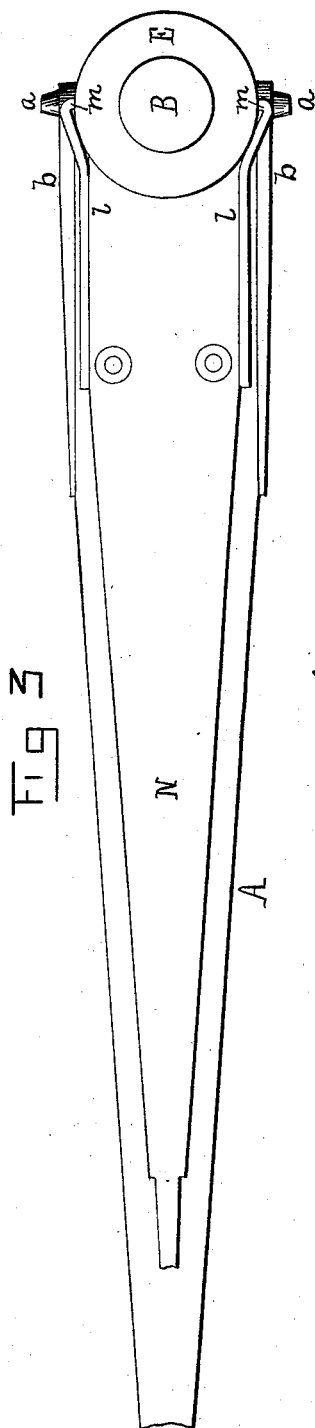


FIG 3

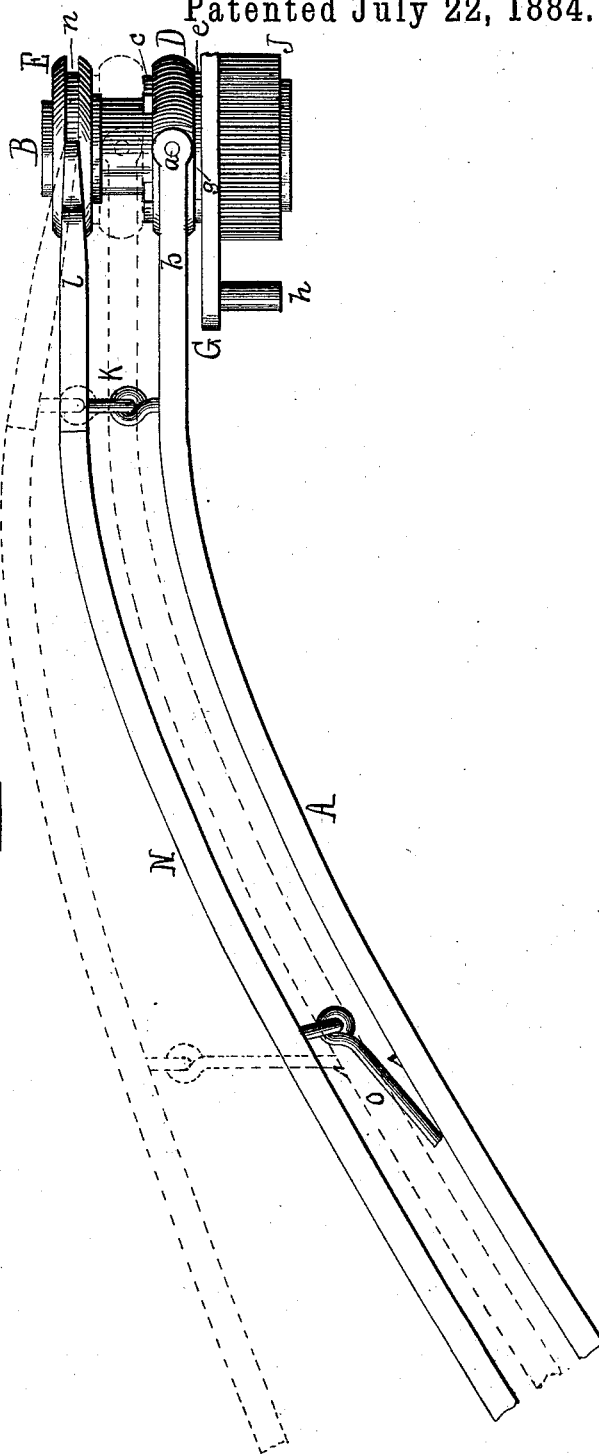


FIG 4

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3 Sheets—Sheet 3.

No. 302,467.

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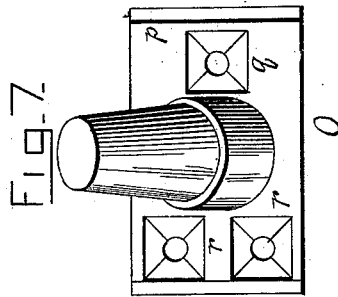


Fig. 10.

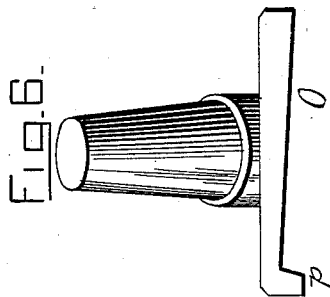
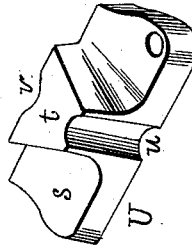


Fig. 9.

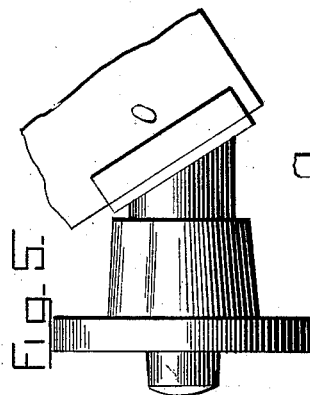
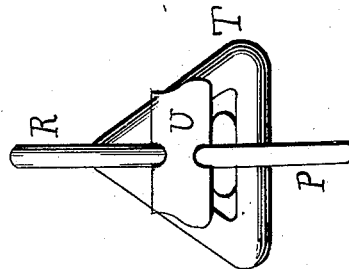
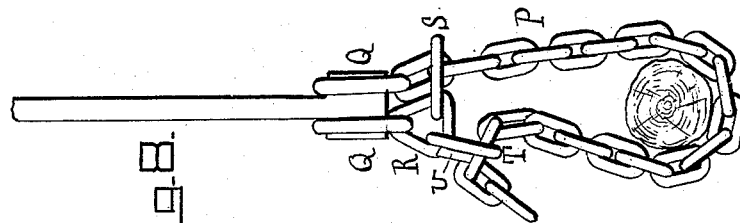


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE CHAMBERLIN, OF OLEAN, NEW YORK.

STUMP-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 302,467, dated July 22, 1884.

Application filed June 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CHAMBERLIN, a citizen of the United States, residing at Olean, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Stump-Extractors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a top view of the speed-gear employed in my present invention, the screw being shown in cross-section. Fig. 2 is a central vertical section of the main portions of the machine, showing the speed-gear and means for alternately coupling the sweep-lever to the speed-gear and the nut. Fig. 3 is a top view of the main lever or sweep and of the coupling-lever thereon. Fig. 4 is a side view of the main lever and coupling-lever, shown in connection with the nut and speed-gear. Fig. 5 is a side view of one of the wheel gudgeon-flanges attached to the lower end of one of the legs. Fig. 6 is a side view of the gudgeon and its flange. Fig. 7 is an edge view of the same. Fig. 8 is a side view of my improved device for suspending the root-chain from the screw-swivel and for fastening the chain. Fig. 9 is a partial view of the chain and links at right angles to the view in Fig. 8. Fig. 10 is a perspective view of the toggle used for fastening the free end of the chain.

Like letters designate corresponding parts in all of the figures.

My invention consists in several special improvements on the stump-extractor patented by me June 11, 1867, No. 65,724, as follows:

First, I provide for changing the speed of the lifting-screw, so as to adapt it either to heavy work and a slow movement or to light work and a quick movement. The means employed by me for effecting this change of speed I show substantially in Figs. 1, 2, 3, and 4 of the accompanying drawings. Instead of attaching the driving-lever or sweep A directly to the revolving nut B, which raises the lifting-screw C, I attach it to a clutch-collar, D,

which is free to turn around and to slide up and down on the nut B; and I construct this clutch-sleeve to couple by its upper side to the lower side of a fixed head, E, on the upper end of the nut, for giving motion directly to the nut without speeding, and to couple it by its lower side to the upper side of a cross-bar, G, which carries, respectively, at its two ends two speeding gear-wheels, H H, and these gear-wheels, as the cross-bar G is rotated, gear into a circular stationary rack, I, to give the gear-wheel a revolving motion, and they also gear into a pinion or gear-wheel, J, on the nut B. The circular rack I is of such size as to cause a speeding motion of the pinion J and the nut on which it is secured, or with which it is cast, three, four, or more revolutions to one revolution of the drawing-lever and of the cross-bar G, as may be desired. The driving-lever or sweep A is preferably attached to the clutch-collar D by means of two trunnions, *a a*, on opposite sides of the collar, which turn in bearings in arms *b b* of the lever, which embrace the collar, as shown. This allows the outer end of the lever to be raised and lowered at will. On the upper side of the clutch-collar are raised sections *c c*, with spaces or sunk portions between, into which raised sections *d d* on the under side of the fixed head E fit, there being spaces or sunk portions between the sections *d d* to receive the sections *c c* on the collar. Any suitable form of sections or teeth and intermediate spaces may be adopted for this purpose. In like manner raised sections *e e*, with intermediate spaces on the under side of the clutch-collar, couple with raised sections *g g*, with intermediate spaces on the upper side of the cross-bar G. The said cross-bar G fits around the nut B at its middle, as shown, so that it turns freely thereon. It has pivot-journals *h h* projecting from the under sides of its two ends, on which the gear-wheels H H turn. The circular rack I is formed on the inner periphery of a cup-shaped casting, K, which surrounds the lifting-screw C and supports the nut B, as shown in Fig. 2. It also has a convex bottom portion, *i*, on its central part around the screw, to fit in the concave socket *j* of the cap or head L, to which the legs M M of the machine are bolted, thereby forming a

limited ball and socket, operating as the ball and socket of my former machine. Thus it will be seen that when the lever A is coupled to the head E of the nut B the nut is turned direct with a slow motion, like that of my former machine. This is admirably suited for large stumps and heavy work; but for small stumps and light work it is desirable to operate faster, and thus gain time. In such cases I couple the lever to the cross-bar G, as above described, whereby I get a speed three, four, or more times greater than by the direct coupling with the nut. For shifting the clutch-collar D from the nut-head E to the cross-bar G and the reverse I have the following simple device: In Fig. 1 I show the clutch-collar midway between the nut-head and the cross-bar, and consequently disengaged from both. In Fig. 4 I show it in full lines coupled to the cross-head, and in dotted lines coupled to the nut-head. The shifting is effected by means of a shifting-lever, N, mounted on or over the driving-lever A, as shown in Figs. 3 and 4. It is pivoted to the driving-lever by a loose hinge-joint, *k*, which holds the levers separated somewhat at that point, thereby allowing either end of the shifting-lever to be moved nearer to or farther from the driving-lever. The shifting-lever has two arms, *l l*, which embrace the head E of the nut B, and has two inwardly-projecting fingers, *m m*, at the ends of these arms, which fingers enter a peripheral groove, *n*, formed in the edge of the head E. With this construction, when the outer end of the lever N is brought near that of the driving-lever A, the inner end will be farther separated from the inner end of the said driving-lever, as shown by the full lines in Fig. 4. This enables the clutch-collar D to drop down and be coupled with the cross-bar G, as shown; but when the outer end of the lever N is raised from the driving-lever, as shown by dotted lines in Fig. 4, the under ends of the two levers will be forced near together, thereby coupling the clutch-collar to the nut-head, as indicated. To hold the outer end of the lever end raised in that position, a prop, *o*, is braced between the two levers, as shown in the same figure by dotted lines.

Second. The gudgeon-flange O, Figs. 5, 6, and 7, which is attached to the lower end of each of two of the supporting-legs of the machine, for mounting the supporting-wheels on the legs, is of peculiar construction. On one edge only is an outwardly-turned lip, *p*, to fit against one side of the leg. The other edge has no lip, so that the flange can be applied to legs of any thickness without fitting, and the single lip serves to keep the flange in position and prevent turning. One bolt, *g*, in this side of the flange is sufficient, and the flange at this edge may be thinner than the opposite edge, as shown in Fig. 7. In the opposite edge two bolts, *r r*, are employed, making three bolts in all for attaching the flange.

Third. I have a peculiar construction of

links, in which the grappling or root chain is held, to add strength thereto and render the fastening of the free end of the chain easy and expeditious, as well as strong and reliable, as shown in Figs. 8 and 9. One end of the grappling-chain P is suspended from one of the hooks Q Q. From the opposite hook Q is suspended a combination of three links, R S T. The link R is suspended from the hook, and the other two links are suspended from the link R. Through the link S the chain P is passed, and this holds the upper end of the chain close to the work and relieves the swivel-hooks of lateral strain. Through the remaining link, T, the free end of the chain is passed after it is carried around a stump or stump-root, as shown in Fig. 8. The links S T are triangular, or wider at the lower or free ends than at the end hanging in the link R, to give full room for passing the chain through them. The link R should also be of nearly the same form, or wider at the lower end, to allow room to hold the two links S T.

Fourth. I employ a toggle, U, of peculiar construction for holding the free end of the chain in the link T after it is drawn into the said link. This toggle is shown separately in Fig. 10. It is made of cast or wrought iron, and consists of a flange or body, *s*, to fit against the side of the link T, and of a wedge or stop portion, *t*, to fit into the link over the chain, a groove, *u*, in the upper edge, where the lower end of the suspending-link R fits, and a groove, *v*, in the lower edge to fit over a link of the chain, enables the toggle to fit closely into the link T and hold the chain from being drawn out of the link. The mode of applying it is shown in Figs. 8 and 9. It is quickly applied and easily withdrawn, and it holds the chain securely.

I claim as my invention—

1. In a stump-extractor, the combination, with the driving-lever A, nut B, and screw C, of a cross-bar, G, carrying speed gear-wheels H H, circular stationary rack I, pinion J, and means, substantially as described, for coupling the lever to the cross-bar, for the purpose specified.

2. In combination with the driving-lever A, nut B, and screw C, the cross-bar G, carrying speed gear-wheels H H, circular stationary rack I, pinion J, head E on the nut B, and movable clutch-sleeve D, attached to the lever A, and adapted to be coupled alternately to the head E and cross-bar G, substantially as and for the purpose herein specified.

3. In combination with the lever A, provided with the clutch-sleeve D, cross-bar G, carrying the speed gear-wheels H H, and nut B, having the fixed head E, the coupling-lever N, hinged to the lever A, and having fingers reaching into a peripheral groove in the said fixed head, substantially as and for the purpose herein specified.

4. The gudgeon-flange O, having a projecting lip, P, at one edge only, made thinner at

the lip edge than at the opposite edge, and having one bolt-hole near the lip edge, and two bolt-holes near the opposite edge, for the purpose herein specified.

5 5. The three suspending-links R S T, constructed as described, in combination with the root or grappling chain P, and swivel screw-hooks Q Q, substantially as and for the purpose herein specified.

10 6. The toggle U, constructed substantially

as described, in combination with the grappling-chain Q and links R T, for the purpose specified.

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

GEORGE CHAMBERLIN.

Witnesses:

EDWARD TROY,

HENRY W. CHAMBERLIN.