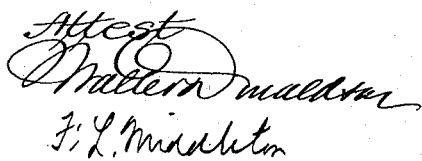


A. J. SMITH.
STUMP EXTRACTOR.

Patented Aug. 21, 1894.



Inventor
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UNITED STATES PATENT OFFICE.

ALLE J. SMITH, OF BIG RAPIDS, MICHIGAN.

STUMP-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 524,914, dated August 21, 1894.

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To all whom it may concern:

Be it known that I, ALLE J. SMITH, a citizen of the United States of America, residing at Big Rapids, in the county of Mecosta and State of Michigan, have invented certain new and useful Improvements in Stump-Extractors, of which the following is a specification.

My said invention relates to improvements in stump extracting machines, and the object of the invention is to simplify the construction and improve the arrangement of the parts with a view to reducing the weight of the device to a minimum without detracting from the strength of the parts or reducing the lifting power.

The invention consists in the arrangement of parts and the details of construction hereinafter described and particularly pointed out in the claims.

In the accompanying drawings which illustrate a machine constructed in accordance with my invention:—Figure 1, is an elevation of the device with the parts in position ready to extract a stump. Fig. 2, is a detail of the lifting lever with adjacent parts. Fig. 3, is a detail view of the suspending device at the upper portion of the frame, and Fig. 4, is an enlarged view of the "turn buckle" and "crow's foot." Fig. 5 is a view of a detail.

Referring more particularly to the drawings A, A', represent the three members or shears of the frame, these members being of sufficient size to give the desired height and strength to the frame. The members are surrounded at the upper ends by three ferrules or bands of iron a^x about six inches in width, and connected by suitable hinge connections, preferably by passing a steel rod B through the three ferrules.

When setting up the frame, I place the tackle blocks between the separated members as the device lies spread out upon the ground and one man and a team can raise it easily.

One of the members A' of the frame is extended upward a short distance beyond the ferrule upon which is secured an angle plate a , the upper end a^2 of which is turned over the end of the member A' and terminates in a hook a' . This plate supports a bail b , the ends of which are perforated to hook over or engage the free ends of the rod B. A mor-

tise X Fig. 5 is formed in the central member of the frame at the point where the rod passes through to permit the entrance of the 55 perforated end of a hook c , through the perforation c' of which the rod B passes. The lower end of this hook c^2 engages the upper end or bend of a clevis d , while between the perforated arms of the clevis, is located the 60 upper end of the hanger E, which supports the lifting lever, the hanger being confined in place by a bolt e , passing through the perforations d' in the clevis arms and the opening e' in the upper end of the hanger. 65

In order to relieve the hook of part of the weight, and distribute the strain as much as possible, the braces F F are provided, having perforated ends which engage respectively with the outer ends of the rod B, and the bolt 70 connecting the clevis and hanger. Part of the strain is thus transmitted through the braces and bail to the hook above. The hanger supports at the lower end, one end of a lifting lever G, while the other end of the 75 lever G is connected by block and tackle, with the supplemental hook a' , formed upon the angular or bent over portion of the top hook a^2 . This lifting lever I prefer to form as follows, in order to secure a maximum strength 80 with a minimum weight: I take two pieces of iron three-fourths of an inch by six inches by eleven feet and place at their lower edges a strip one inch by two inches one end of which is curved upwardly and terminates in an eye 85 or hook g' . This construction provides a channel or space between the two side plates into which I embed a bar of hard wood timber, preferably by shrinking the channel bar onto the wooden bar, the said wooden bar being of a greater depth than the side plates so 90 as to project above the upper edge of the same at the lower end. I then shrink on two or three bands g^2 , and the lever thus formed is very light, strong, and durable. The eye g' 95 is engaged by a clevis g^3 , which connects it with the hanger.

In order to connect the lifting lever with the stump, a bail H is provided consisting of two strips of iron h , connected at each end by 100 a steel pin and held sufficiently far apart to permit the lifting lever to move freely in the space between. A chain i is connected to the upper end of the bail H, which chain passes

up over a pulley i' , suspended from the apex of the frame, and down again in proximity to the bail where it is designed to be engaged by a hook or catch g . In starting the lifting operation, the upper edge of the lifting lever is adjusted so that one of the series of notches h' , is engaged by the pin at the upper end of the bail H , the lower end of the bail is connected to the stump, and the outer end of the lever being raised by the block and tackle, causes the stump to be raised. As the bail H travels upward the slack of the chain passes over the pulley, and when the lifting lever has reached the limit of its upward movement, the free end of the chain can be secured to the hook or catch before described. This will hold the bail H with its load in its elevated position and the lever can then be lowered for a fresh grip. In order to accomplish this a series of holes, are provided in each bar of the bail adapted to receive a removable bearing pin k , and when the lifting lever has been lowered for a fresh grip, this pin can be inserted in the proper holes to provide a fresh bearing for the lever which can be adjusted or moved longitudinally to cause the proper notch to engage said pin, and thus the lifting operation can be repeated. This operation can be repeated as often as necessary until the stump has been pulled or lifted to the desired height.

In order to prevent the bail H from being twisted to one side by reason of the position of the root to which it is secured and thus binding the lifting lever and preventing it from being lowered for a fresh lift, a turn buckle connection is provided between the lower end of the bail and the chain. This connection consists of a loop, link or eyebolt m passing over the pin in the lower end of bail H and carrying a vertical pin or short rod n from which rod the link o is suspended, the rod n and link o being free to rotate one upon the other.

The chain p for attachment to the stump may be secured to the link o in any desired manner (preferably by the crow's foot hereinafter described) and may be secured to any root without regard to the angle or position and without necessitating any particular adjustment of the frame as the swivel connection

effectually prevents the binding of the parts. This "crow's foot" just referred to consists of two parallel bars p' , p' , having upwardly turned ends p^2 and connected by bails or links p^3 by means of which they are held the requisite distance apart and suspended from the turn buckle, the bails passing through the lower end of the link o . This forms a very convenient means for connecting the chain q as after it has been passed around a root and drawn as tight as desired the proper links q' may be passed vertically between the ends of the parallel bars and the next links above q^2 being turned horizontally will rest upon the upper edges of the bars and hold the chain securely in position as the links q^2 are prevented from slipping off by reason of the upturned ends.

Having thus described my invention, what I claim is—

1. In a stump extractor, a frame comprising the members or shears, ferrules encircling the upper ends of the members, a rod passing through the ferrules and uniting the three members, one member being extended above its ferrule, a hook secured to said extended end, a bail engaging said hook and having its ends engaging the ends of the said rod, a hook having its upper end entering a mortise in the central member and engaging the central portion of the rod, a hanger for the lifting lever supported from said hook, and braces extending from the ends of the rod to the top of the hanger for distributing the strain, substantially as described.

2. In a stump extractor, the combination with the lifting bail of means for connecting the same to the stump consisting of a loop having a connection with the lower end of said bail, parallel bars connected together and suspended from said loop, and a chain adapted to be passed around the stump and engaged by the ends of said parallel bars, substantially as described.

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

ALLE J. SMITH.

Witnesses:

C. C. FULLER,
A. B. SUMNER.