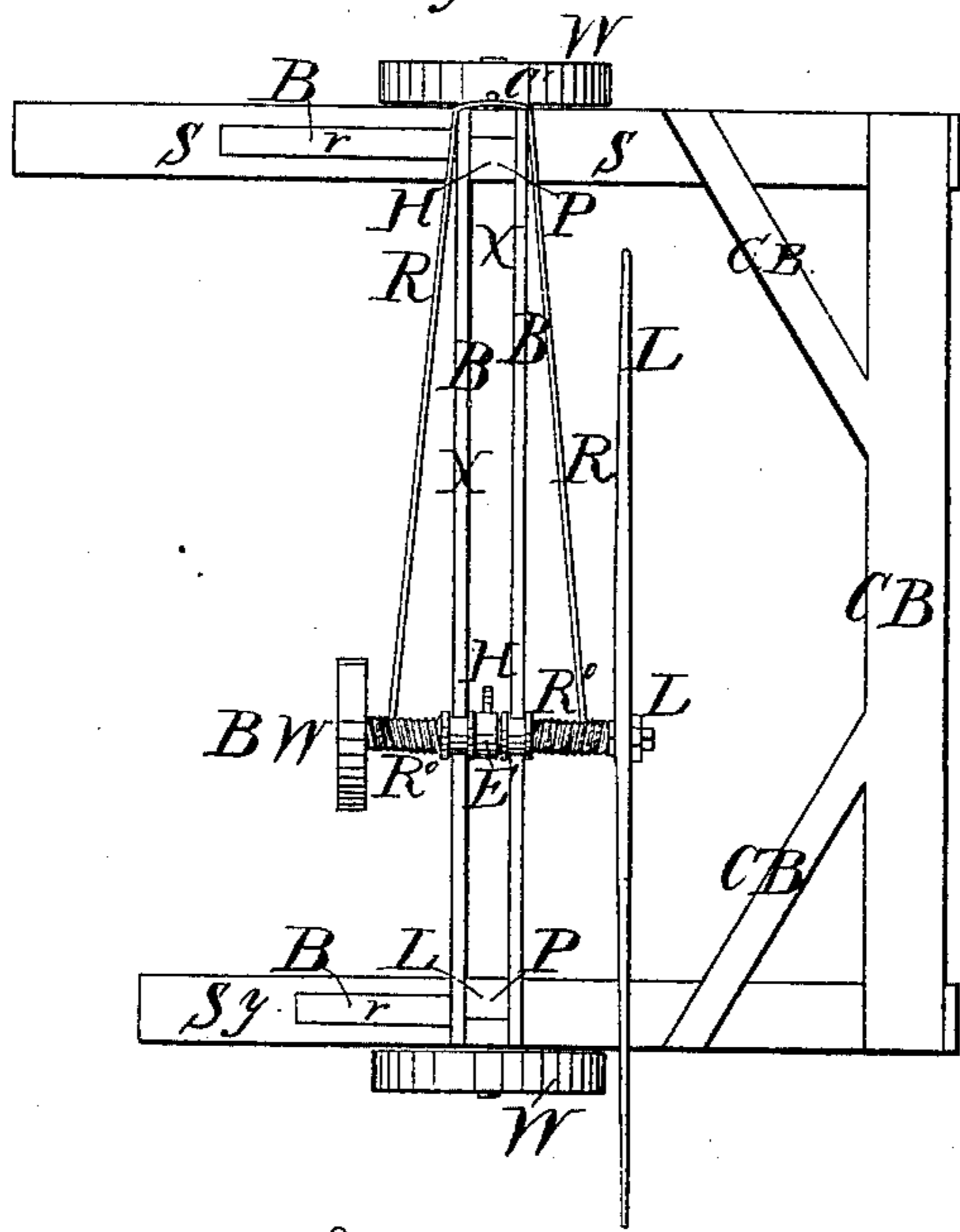
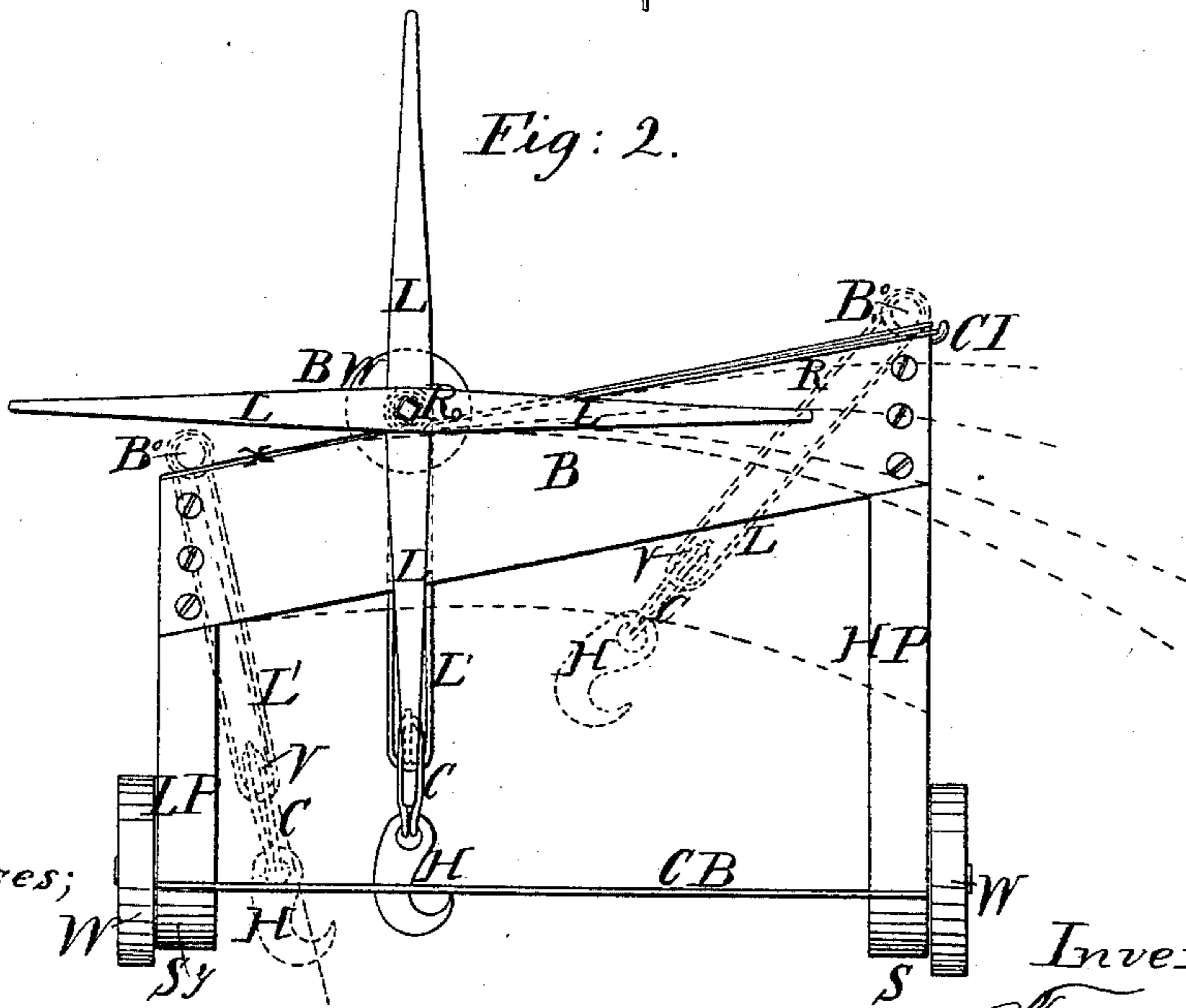


*F. M. Eagle,*  
*Stump Elevator.*  
*No. 22,415.* *Patented Dec. 28, 1858.*

*Fig: 1.*



*Fig: 2.*



Witnesses;  
*Justiciary*  
*H. C. Coffield*

Inventor;  
*Francis M. Eagle*

# UNITED STATES PATENT OFFICE.

FRANCIS M. EAGLE, OF NORTH MANCHESTER, INDIANA.

## STUMP-EXTRACTOR.

Specification of Letters Patent No. 22,415, dated December 28, 1858.

*To all whom it may concern:*

Be it known that I, FRANCIS M. EAGLE, of North Manchester, in the county of Wabash and State of Indiana, have invented a new and useful Improvement in Stump-Extractors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, forming part of this specification, in the several figures of which similar characters of reference denote the same part.

Figure 1 is a top view of the machine. Fig. 2 is a front view of the same.

It will be observed that this machine consists of a stout frame, a roller with a rope, a large link, clevis and chain or hook, and two wheels to facilitate the moving of the machine.

S and Sy are the sills or sled runners as the lower corner of both ends are taken off; they lie parallel with the right ends even.

LP, and HP, are perpendicular posts. LP is about five feet long from the bottom of sill Sy. HP is about eight feet high from the bottom of its sill s.

Br Br is bracing in any length to suit their posts. (The strain on them is light.)

B B are beams which are the fulcrum part of the machine and should be of firm solid dry oak. These beams B B extend each from the upper outer edge of post LP to the upper and outer edge of post HP, the upper edge of the beams B B being even with the upper end of posts LP and HP, and are let into said posts two inches, one beam on each side, and are there firmly fastened by bolts. These beams B B on their upper edges may be either straight, the segment of any disk, or spirally direct line which has a continual departure from the supposed place under the machine where the part of the stump or body fastened to by the hook, or chain, is; and which must be between the post LP, and its half distance to post HP; the higher you wish to lift the weight, or, in other words, the further you wish it to be moved from its position by one passage of the roller Ro along the whole length of the beams B B then the closer it should start from the post LP. The post HP is not necessarily eight feet high but may be of innumerable lengths, but

should be shorter when the beams are the segment of a circle and longer when they are straight, and depart outside of a tangent.

CB is cross bracing, with two short braces CB, which should be put on by pins so as to be easily taken off, as its only use is to keep the runner steady when the machine is drawn by a team, and which can frequently be dispensed with when the ground is even and the distance not great, or these braces may be fastened on in any ordinary manner considering the sills Sy and S a sled.

The wheels W are made of plank, and banded with iron, and revolve on a two inch iron axle fastened in the posts twelve inches from the bottom of their respective sill, and on the outside of the post H and LP. The wheels are secured by a linch pin in the axle; the only use of these wheels is in moving the machine.

X X are bars of iron laid on and along the upper edges of beams B B, one on each, they are firmly fastened thereon by iron pins and hooking the bars  $\frac{1}{2}$  inch down over the ends of the beams B B at post HP, and so that their upper edge will present a smooth surface for roller Ro, to roll over.

The hook CZ, is made of wood or iron and is to lay the rope RR in, and is so made and placed that it holds the upper edge of the rope RR even with the upper edge of the bars X X, and that by driving a wedge through it the rope will be confined in it. Ro, is the roller of cast or wrought iron and is forty two (42) inches long, four inches of the length of each outer end is three (3) inches square to receive the levers L L L L and balance wheel BW, said wheel being equal in weight to the lever L; the next eleven inches from both ends of said roller toward its middle, is round, and three inches in diameter (the same diameter of the bearing parts of it), having a hemispherical screw gutter seven-eighths inch wide, and three-eighths deep (viz. one-half the diameter of the rope RR) sunk in it, both gutters or screws leading toward said middle and making twelve revolutions around said rollers (one being known as a right and the other as a left screw); the next half inch toward said middle is four inches in cir-

cumference and forms the flange of one-half inch high seen on the outsides of bars X X; the next three inches is round and is three inches in diameter, and is the part of the roller that rolls and bears upon the bars X X. The next one-half inch are round and four inches in diameter, and from the flanges seen on the inside of bars X X; the middle three inches are round, three inches in diameter, and is the part that revolves in the link. L L L L are levers extending from the screw; they are made of oak, elm, or other firm wood. They can be placed on either end of the roller by changing the braces Br and balance wheel to the opposite end of the roller.

The end of the roller R<sub>0</sub> having the left screw on it is placed to the right of the bars X X when looking from the post LP; the end having the right screw to their left, and with the bearing part of the roller R<sub>0</sub>, on the bars X X.

RR, is a three fourth inch rope twenty one feet long, fastened in a hole through the balance wheel; as close to the screw as possible, then extending around through hook C', in which it can be fastened by a wedge to prevent its slipping when the machine is in operation; it then extends to the lever L at its nearest point to the screw and passes out through a hole in the lever L in which hole it can be fastened by a wedge.

The link L' is made of an iron bar (known as wagon tire iron), doubled and welded at the ends; the bend at the upper end should correspond to the three inch roller; the inside of the link bearing on the roller R<sub>0</sub>, should be laid with steel or other anti-friction metal. The link near the roller should be made heavy to prevent its binding on the roller when under a great strain. There should be a four inch space left between the sides of the link, eighteen inches below the roller bearing, which should be kept from drawing closer by a block of wood or metal, its use is to be able to slip the link over the flanges of the roller R<sub>0</sub> when necessary. The sides of the link near its opposite or lower end should be about one and a half inches apart, for the purpose of slipping wedges between to tighten the clevis C toward the roller R<sub>0</sub>. The clevis C is made of three fourth inch square iron. The hook H should be heavy, viz. short and thick, and should weigh about 35 pounds. Said hook H is attached to the roller R<sub>0</sub> links L and clevis C, by said clevis passing through its eye, and so of a chain. The beams stand parallel to each other and are four inches apart. There should be several clevises made and of different lengths to suit any distance to the hook from the link. The above description has been given where a rectilinear track is used for the roller.

My invention is not confined to this construction however, as the track may be a curve or a combined plane and curve, and in general terms may be stated as having all points except that at which the roller starts, exterior to a circle described from the attachment of the hook to the stump as a center with the invariable connection between stump and roller as a radius; except the movement of the roller is in the direction of the line passing through the point of attachment of the hook and starting point of the roller. If desired this track and the roller may be cogged.

I will now proceed to give the operation of the stump extractor as follows: Place the machine over the stump with the space between beams B B, directly over that part of the stump to be fastened to by the hook or chain for the purpose of extracting it. Roll the roller R<sub>0</sub> back toward the post LP until the roller is at its shortest possible distance from the hook H when fastened to the root or body to be raised. For to raise it then attach the hook H, clevis C and link L', to the roller R<sub>0</sub> by means of a wedge or wedges, driven through the clevis C and link L; then take hold of the lower end of a lower lever, draw it in direction of post LP, at the same time it will cause the roller R<sub>0</sub> to pass up the bars X X, toward their end at C'. At the same time the roller R<sub>0</sub> will draw the part of the stump or body fastened to by the hook H as far from its first position as the roller R<sub>0</sub> is removed from that body. The roller will start a stump that it cannot draw out at one move of the roller up the bars; in that case fasten the stump or body so that it cannot sink; then roll the roller back as in starting at first, take up the slack in the connections by driving additional wedges through the clevis and link L' so as to stretch them as tight as possible, and so on if it stalls other times. The machine has its greatest powers at first, and would raise 60 tons one fourth inch, when it would stall when lifting four tons at the end of three feet raise, this is so of the medium. The other modifications can have the comparative ratio, but the greater can be made to pull equally at all distances of raise, the beams taking the form of an inclined plane laid around a circle. The greater body of the stump should be on the balance wheel side of the beams.

I do not claim any construction in which the movement of the stump is the same as that of the power; but

What I do claim, is—

Overcoming the resistance by the movement of a roller invariably connected with the stump substantially as described upon a track either rectilinear or curved, all parts

of which except the starting part of the roller are exterior to a circle with the invariable connection for a radius and the point of attachment of the hook for a center; the operation being substantially as described.

In testimony whereof I have hereunto

signed my name before two subscribing witnesses.

FRANCIS M. EAGLE.

Witnesses:

JAS. D. CLARY,

JOHN S. HOLLINGSHEAD.