E. COLYAR.

Stump-Extractors.

No. 137,420. Patented April 1, 1873.

Fig. 1.

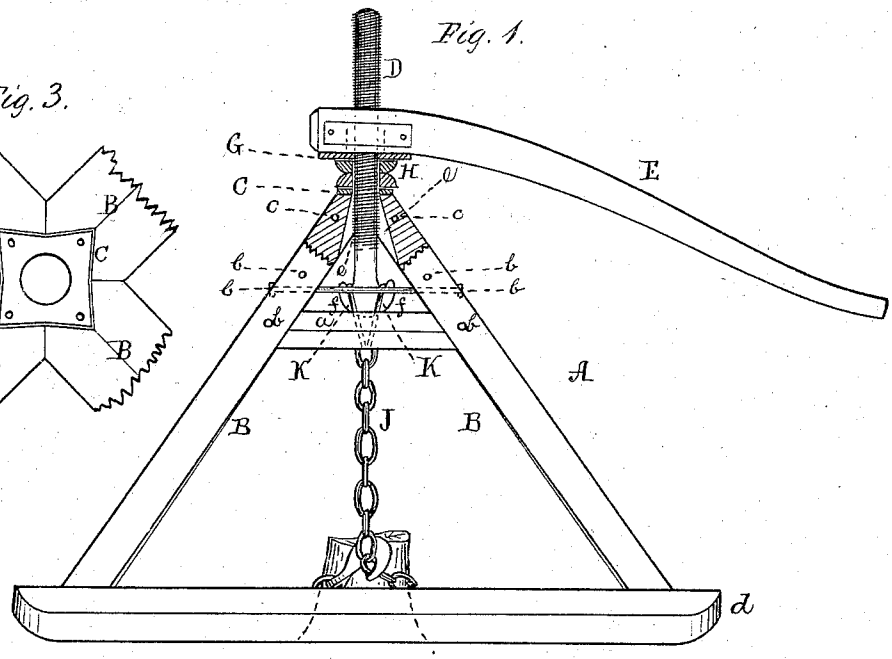


Fig. 3.

Fig. 4.

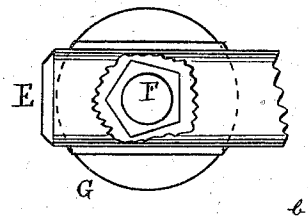
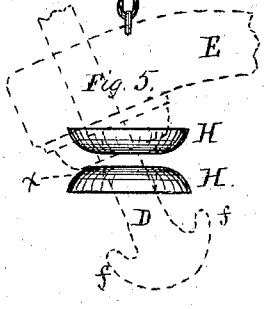


Fig. 2.

Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDNEY COLYAR, OF CLAYTON, IOWA.

IMPROVEMENT IN STUMP-EXTRACTORS.

Specification forming part of Letters Patent No. **137,420**, dated April 1, 1873; application filed January 15, 1873.

To all whom it may concern:

Be it known that I, EDNEY COLYAR, of Clayton, in the county of Clayton and State of Iowa, have invented a new and useful Improvement in Stump-Extractors; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation of the device illustrating my invention. Fig. 2 is an end view thereof. Fig. 3 is a view of the top of the frame. Figs. 4 and 5 are views of detached parts.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a stump and stone extractor, wherein a screw-rod is elevated by a rotary sweep or lever, and the rod is caused to operate uniformly with the sweep, regardless of the irregularities of the ground or line of resistance of the stump or stone, so as to prevent lateral strain on the screw; and the invention consists of two similar bearing-rings with enlarged openings, and fitting loosely on the screw-rod, said rings being flat on their outer faces, and convex or rising on their inner faces, the convex faces being in contact, and the flat face of the upper ring having the inner end of the sweep resting against it, and the flat face of the lower ring resting on the top of the supporting-frame, whereby, in the swinging movement of the screw-rod, the convex face of one ring rides on the convex face or rise of the other ring, and the two outer flat faces, respectively, rest perfectly flat against the sweep and top of the frame, so that, during said swinging movements of the rod, there is no lateral or irregular strain on the sweep, frame, or screw-rod. The rings being similar, either one may be placed above or below, and, in case of fracture or breakage of one of them, a new one may be substituted without necessitating change in the construction of the other one. It also consists in a plate or flange fitted on the under side of the sweep about the opening through which passes the screw-rod, the diameter of the plate being greater than that of the rings, so as to form an enlarged bearing for the upper ring, and consequently distribute the strain which would otherwise fracture the sweep and likewise produce an enlarged surface to permit the outer face of the upper ring to lie perfectly flat against said plate or flange. The invention also consists in the construction of the upper portion of the frame.

Referring to the drawing, A represents a frame, consisting of uprights B B, which form a pyramidal structure, braced at top by bars *a* and rods *b c*, respectively connecting the uprights in pairs, the rods passing through the portions of the uprights that meet at the top. The top of the frame is truncated, and on the same is placed a plate, C, which is bolted to the uprights B B, and thereby braces the extreme top of the frame, all of which bracing mechanism is at and near the upper portion of the frame, and which, in connection with bases or cross-pieces *d*, firmly knit or unite the parts of the frame, and leaves the same open at the lower portions, whereby access is had from all sides to the space within the frame for manipulating the chain and reaching the stump or stone. The plate C has an opening in its center, and an opening, *e*, is formed in the upper portion of the frame at the junction of the uprights, said opening *e* being conical or flaring, as seen in Fig. 1. D represents a screw-rod, which is inserted in the openings of the plate and top of the frame and moved freely therein. The lower end of the rod is formed with two hooks, *f f*, which project from opposite sides of the rod and face upward. E represents a sweep or lever, in the enlarged end of which passes the screw-rod D, which is fitted in a nut, F, having a flange, G, the nut being angular on its outside, and entering a corresponding angular opening in the enlarged end of the sweep E (see Fig. 4) and the flange G bearing against and bolted or screwed to the under side of the sweep, whereby the nut is firmly connected to the sweep. The sides of the enlarged end of the sweep surrounding the nut F may be braced and strengthened by strips or bars, as may be desired or found necessary. On the screw-rod, between the plate C of the frame A and flange G of the nut on the sweep E, I place two bearing-rings, H,

which consist of two disks, flat on one side and convex on the other side, and openings in their centers, which are larger than the diameter of the screw-rod, so that the latter passes freely through the said openings. When the rings are in operative position the convex faces are in contact: the flat face of one disk bears on the plate C, and on the flat face of the other disk bears the flange G or nut F. It will be seen that the screw-rod fits in the threads of the nut F, but passes freely through the bearing-rings the opening in plate C of the frame, and opening *e* of the top of the frame. J represents a chain, which carries at one end a hook for attachment of the chain to the stump or stone, and at the other end two links, K K, which fit on the two hooks *f* of the screw-rod D, whereby the following advantages are derived: The strain is at all times in the central line of the screw-rod, and consequently uniform thereon, besides being spread over a wide surface, due to the hooks on both sides of the rod.

Operation.

To prepare the machine for use, the rod is passed through the opening *e* at the top of the frame A, and the sweep E applied to the rod; the links K of the chain being now, or having been previously, hung on the hooks *f* of the rod, and the lower end of the chain attached to the stump or other article to be removed, the device is ready for operation. As the sweep is rotated the screw is elevated, and the stump or stone correspondingly raised and extracted. Should there be any inequality in the ground, or line of resistance of the stump or stone, or the frame sink so that the said frame does not set truly perpendicular, then, when the strain is taken up while the outside faces of the bearing-rings H, respectively, resting against the sweep and top plate of the frame, the upper ring is raised at an acute angle to the lower ring, and bears on the latter, as shown at *x*, Fig. 5, both when the sweep is rotating and stationary, whereby the chain draws on the stone or stump in the right line of the screw-rod, and consequent bending and twisting are prevented. The flaring opening *e* in the top and opening in plate C of the frame allow the various swinging movements of the screw-rod, without interfering with the adjacent portions of the frame or said plate C.

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

1. The combination, with the screw-rod, of the two loose bearing-rings H, flat on their outer faces and convex on their inner faces, and with enlarged openings, when arranged on the rod in reverse order, so that the outer faces, respectively, rest flat against the sweep and top of the frame, and the convex faces are in contact, and rise or ride on each other, substantially in the manner and for the purpose described.

2. The combination, with the bearing-rings H and with the sweep E, of the plate G, arranged with the screw-nut F on the lower side of the sweep, and forming an enlarged bearing and surface for the upper ring, substantially as and for the purpose set forth.

3. The construction of the frame A, the same consisting of the uprights B B, connected in pairs and bearing against each other, with rods *b c* passing through the portions of the uprights which meet, and the flaring opening *e* at the junction of said uprights, in combination with the plate C secured to and bracing the top of the frame and engaging with the screw-rod D, substantially as and for the purpose set forth.

The above signed by me this 23d day of November, 1872.

his
EDNEY + COLYAR.
mark.

Witnesses:
H. C. STINSON,
GEO. H. HENDERSON.