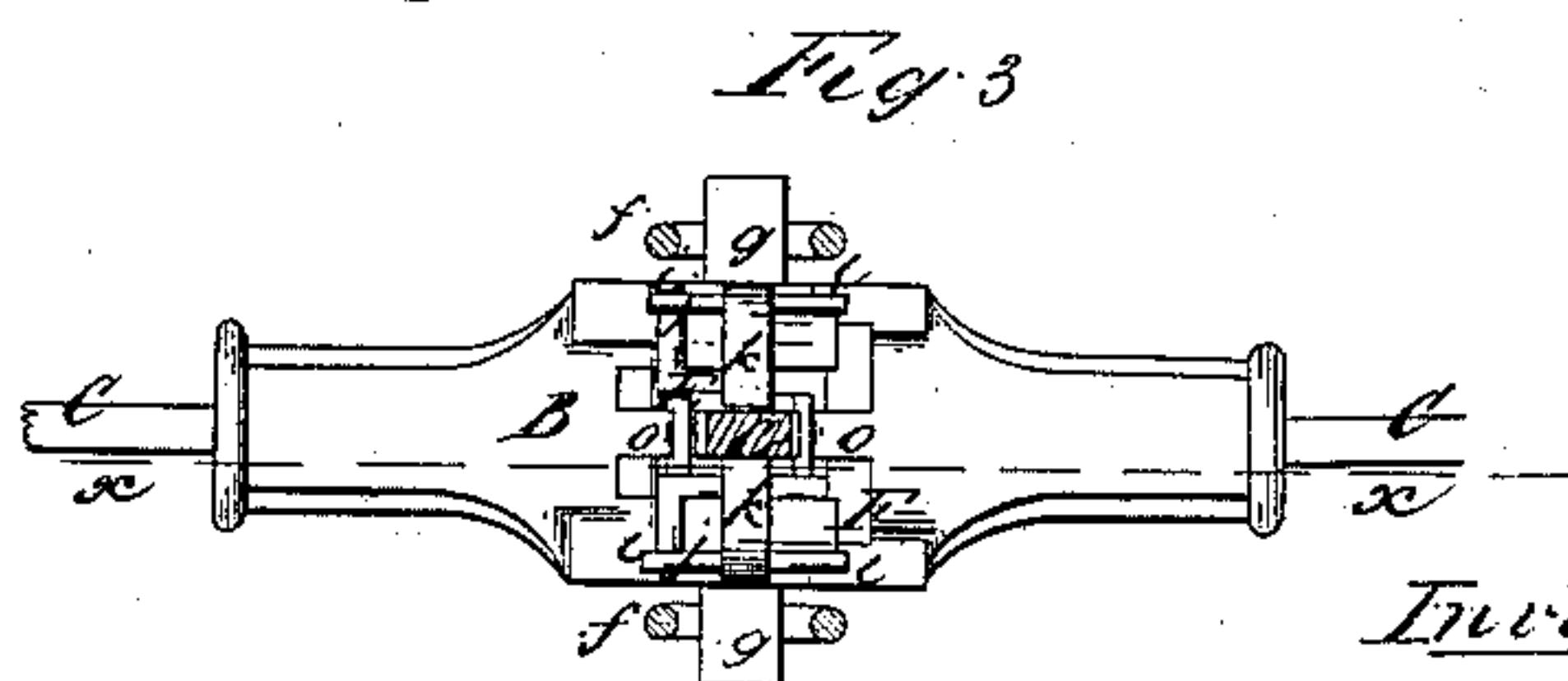
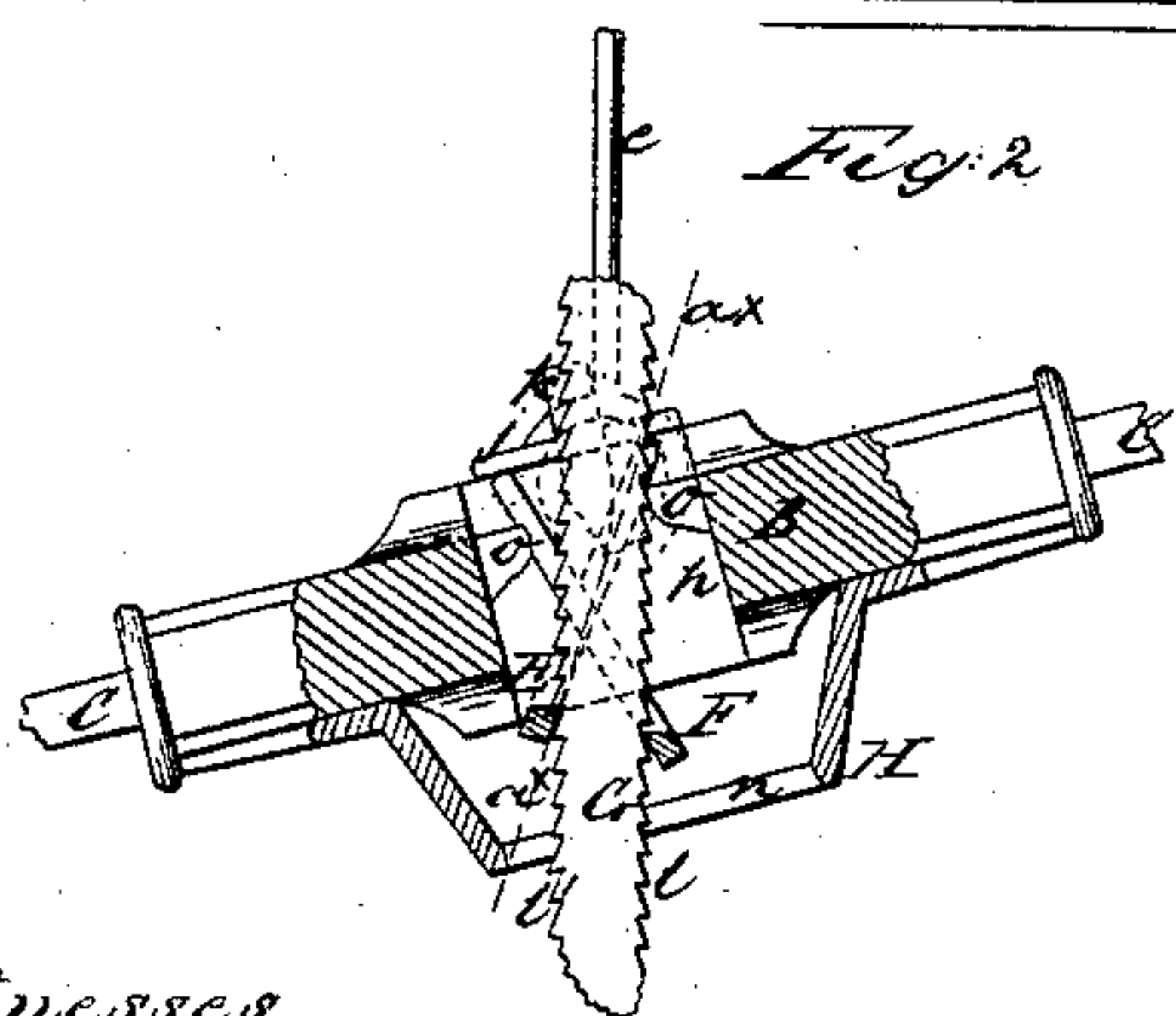
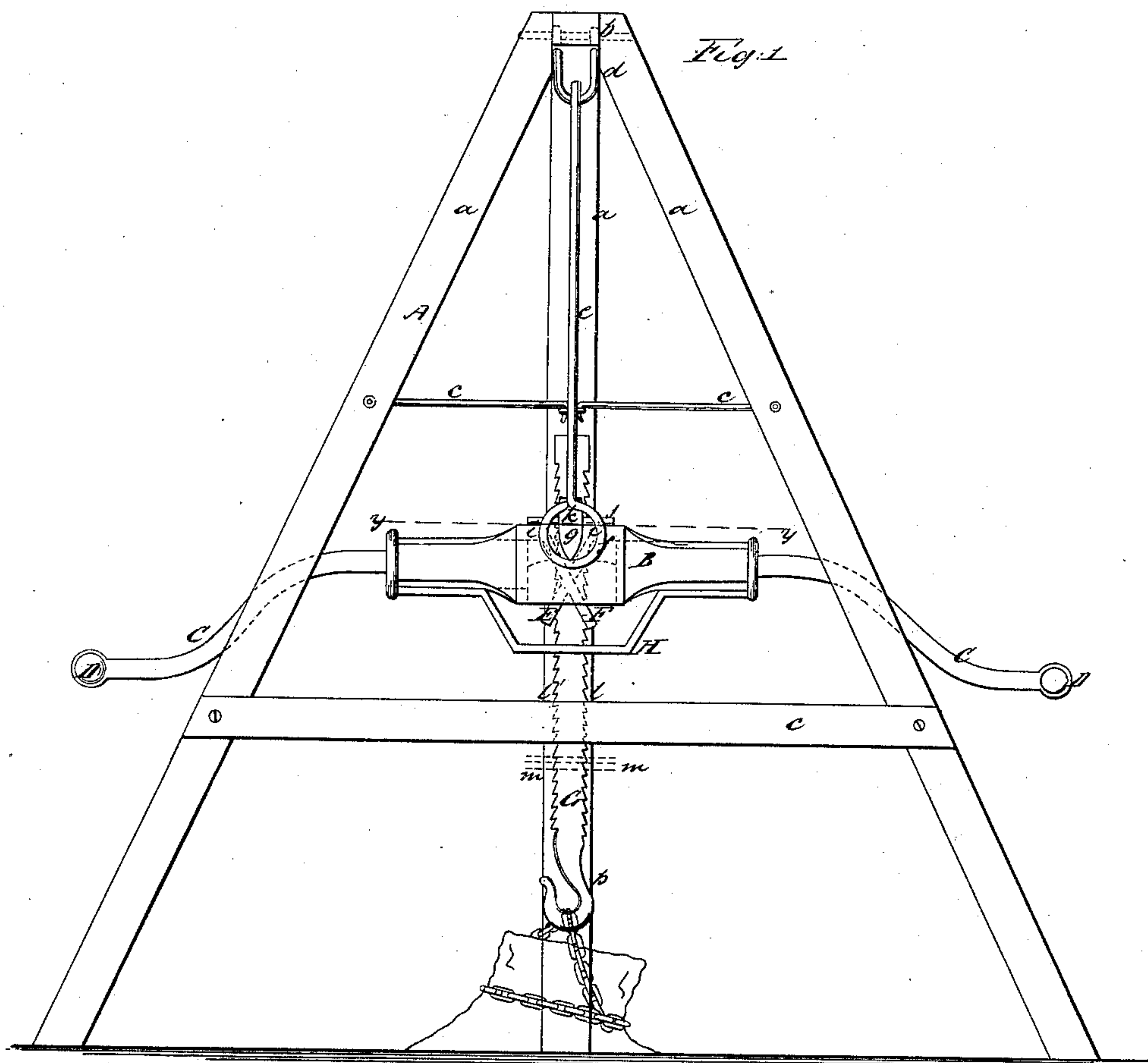


C. Bates,
Stump Elevator.

N^o 27,879.

Patented Apr. 17, 1860.



Witnesses

Jas. A. Loven
Joseph Stetson

Inventor
Caleb Bates

UNITED STATES PATENT OFFICE.

CALEB BATES, OF KINGSTON, MASSACHUSETTS.

STUMP-EXTRACTOR.

Specification of Letters Patent No. 27,879, dated April 17, 1860.

To all whom it may concern:

Be it known that I, C. BATES, of Kingston, in the county of Plymouth and State of Massachusetts, have invented a new and Improved Device for Extracting Stumps, Raising Weights, and for like Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is an elevation of my invention—shown in a suspended state ready for use. Fig. 2, a detached side sectional view of the same, taken in the line x, x , Fig. 3. Fig. 3, a detached horizontal section of the same, taken in the line y, y , Fig. 1.

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

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, Fig. 1, represents a framing which may be a simple tripod or three supports a, a, a , connected at their upper ends by a joint b , and secured in a proper position by braces c , the supports admitting of being folded together when the braces are removed.

To the pintle of the joint b a swinging staple d is attached, and from this staple two rods e are suspended each of which has a circular eye f at its lower end. The two rods e , may be formed of one piece bent at the center and passed through the staples d . The eyes f, f , of the rods e form bearings, for knife-edged trunnions g, g , which project from the sides of a cast-iron head B, at corresponding points, see Fig. 3. The head B is simply a bar having an arm or lever C attached to each end, said arms or levers being of any convenient length and having handles D secured to their ends at right angles. At the center of the head B, there is a vertical square opening h which extends entirely through the head. In this opening h two pawls E, F, are fitted said pawls being in the form of loops or links as shown clearly in Fig. 3, and one E smaller than the other F, so that they may cross each other or one pass through the other, as clearly shown by the dotted lines in Figs. 1 and 2. The upper ends of the pawls E, F, are fitted loosely in bearings on the upper surface of the head B the pawls being provided with suitable journals i which are retained in their bearings by rods j , said rods passing through vertical

projections k , on the upper surface of the head B.

G is a rack bar which is provided with two racks l, l' , at opposite sides of it. These racks are provided with teeth of equal size, but the faces of the teeth of one rack are in lines or planes which cross the centers of the teeth of the other rack as shown by the dotted lines m in Fig. 1. The rack bar G passes upward through the crossed pawl E, F, so that each pawl will engage with the rack that is at the side of the bar opposite to that which faces its journals the pawl E engaging with the rack l , and the pawl F engaging with the rack l' . See Figs. 1 and 2.

To the under side of the head B a curved bar H is attached, said bar being slotted centrally and in line with the opening h , of head B as shown at n Fig. 2, to form a guide for the rack bar G. The projections K, K , also form guides for the rack bar and so do projections o, o , at two opposite sides of the opening h . At the lower end of the rack bar G a hook p is formed.

The operation is as follows: The framing A has its legs or supports a distended and secured in proper position by the braces c . The rods e are then fitted to the staple d , and the head B secured to the rods e , the knife edged trunnions g, g , being fitted in the eyes f, f . The pawls E, F, are then crossed, and the rack bar G fitted between them as shown clearly in Fig. 2, and the device is ready for use. If a stump is to be extracted a chain is secured around and to it in a suitable way said chain being attached to the hook p as shown in red Fig. 1. The operators then grasp the handles D, D, and work the arms or levers C, C, up and down and the pawls E, F, engage alternately with racks l, l' . Each pawl as it rises engaging with its rack, and consequently elevating the rack bar G. As the head B is vibrated it will be seen that the relative position of the journals i of the pawls E, F, the trunnions g , and the point of contact of the pawls and their racks l, l' , change, and this change produces a progressive power; for as the operating pawl approaches its culminating point its journals i approach a plane indicated by a^x at Fig. 2, which intersects the points of contact of the operating pawl and its rack, and the bearing edges of the trunnions g, g . The lifting power therefore increases from the

commencement to the termination of each vibration the speed of course correspond-
ently decreasing. This is essential for in
operating the arms or levers C, C, the power
5 of the operators cannot be so advantageously
applied as the levers approach their cul-
minating points and the increasing leverage
compensates for this disadvantage. By
having the rack *l, l'*, arranged with the
10 faces of the teeth of one rack in lines or
planes which cross or intersect the centers
of the teeth of the other rack, the rack bar
is raised the distance of just half a tooth at
each movement of the head and good sized
15 holding teeth are obtained with a limited
length of vibration of the head B.

The machine as will be seen may be read-
ily transported from place to place as it
admits of being taken apart and placed
20 within a small compass. The several parts
may also be adjusted together, and the de-
vice fitted up in working order very expe-
diently.

Having thus described my invention what
I claim as new and desire to secure by Let- 25
ters Patent is—

1. The employment of the crossed pawls
E, F, in combination with the rack bar G,
head B, and levers C, C, as and for the pur-
pose herein shown and described. 30

2. I also claim the arrangement of the
pivots or pins on which the pawls E, F,
turn, above the plane of the bearing edges
of the trunnions *g, g*, so that the fulcras of
the lifting levers will shorten as the levers 35
descend, and the lifting power will be cor-
respondently increased.

3. I further claim the employment of the
knife edged trunnions *g, g*, in combination
with the head B, and pendulous rods *e, e*, 40
as and for the purpose herein shown and
described.

CALEB BATES.

Witnesses:

JAS. N. SEVEN,
JOSEPH STETSON.