

(No Model.)

2 Sheets—Sheet 1.

L. KRING & J. BAUGHMAN.  
STUMP EXTRACTOR.

No. 445,676.

Patented Feb. 3, 1891.

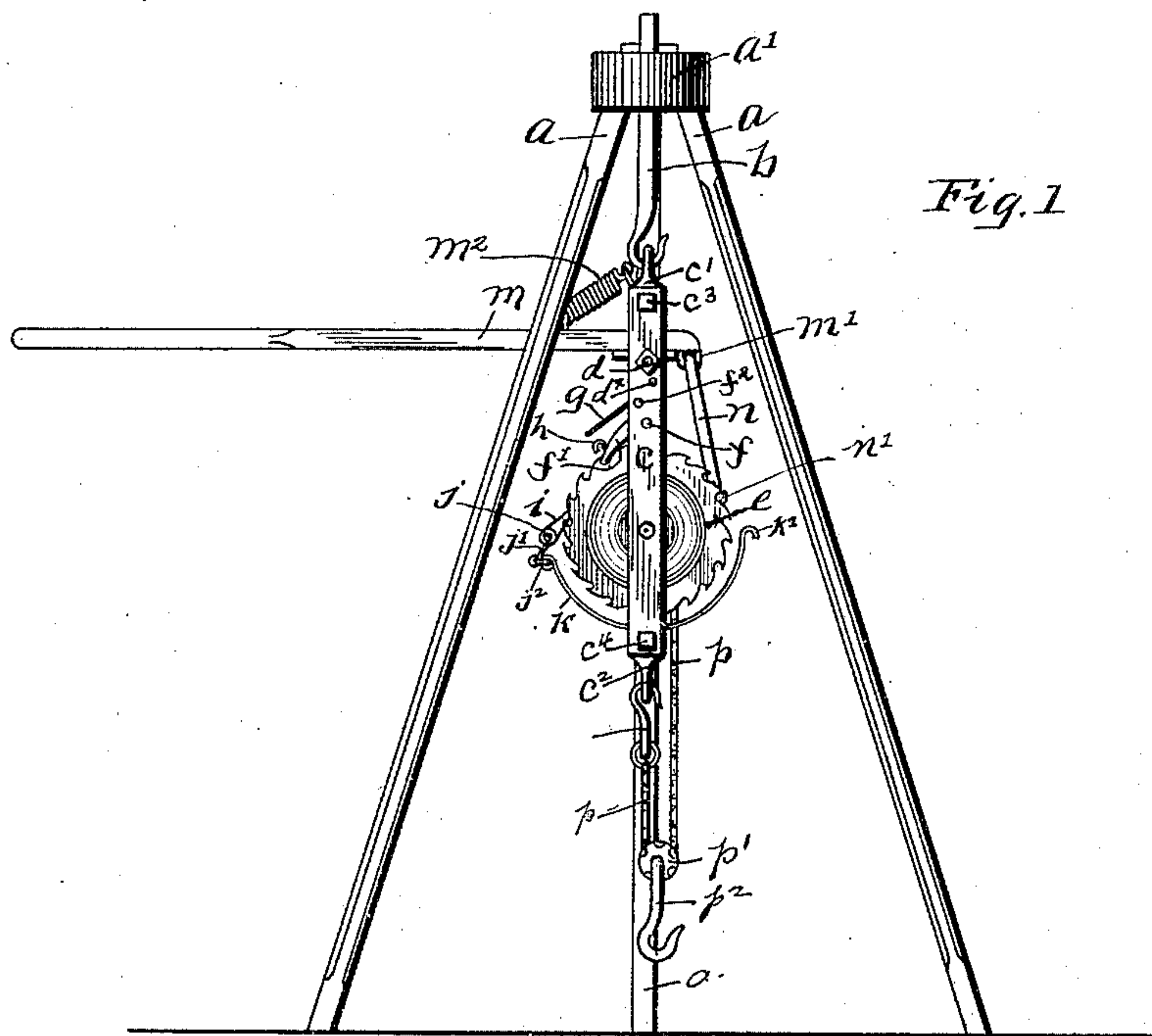


Fig. 1

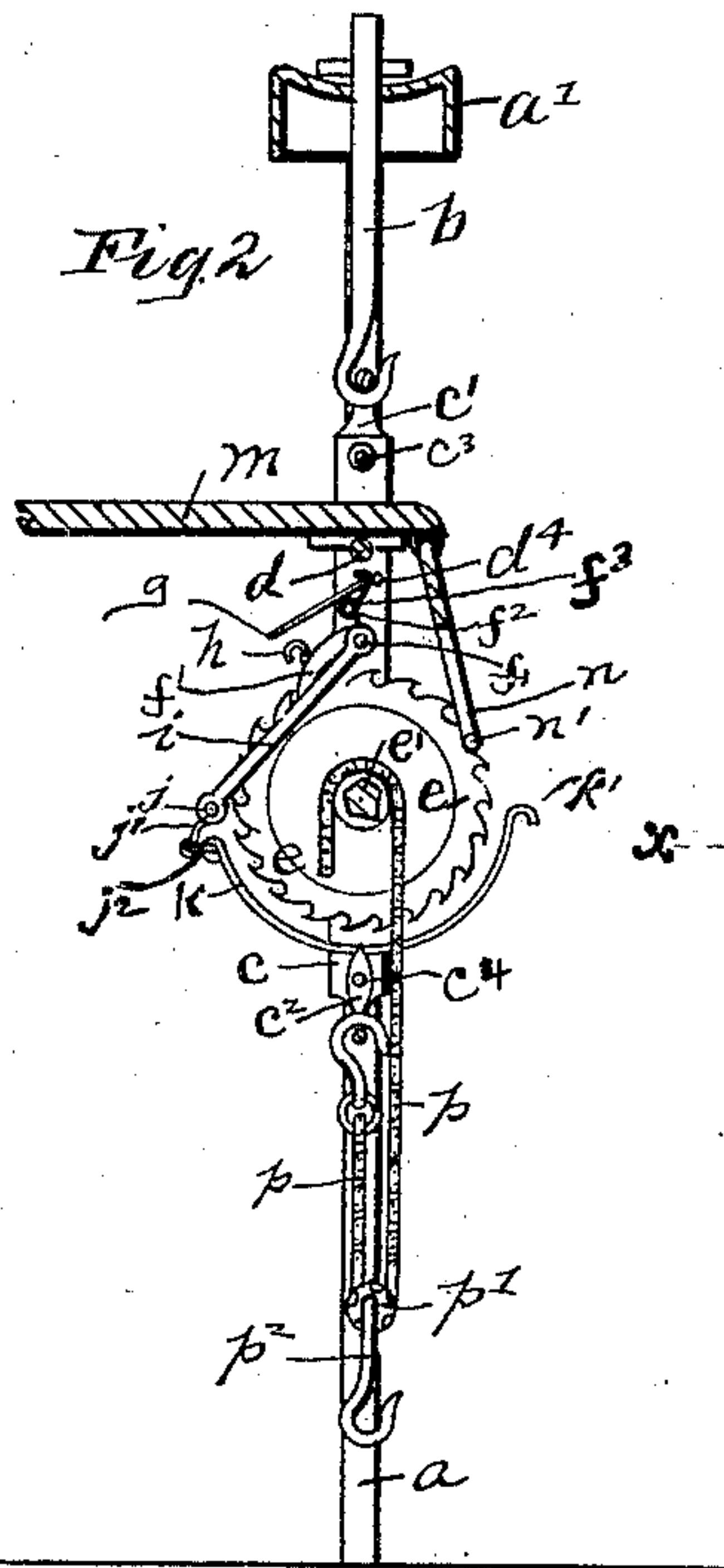


Fig. 2

Fig. 3

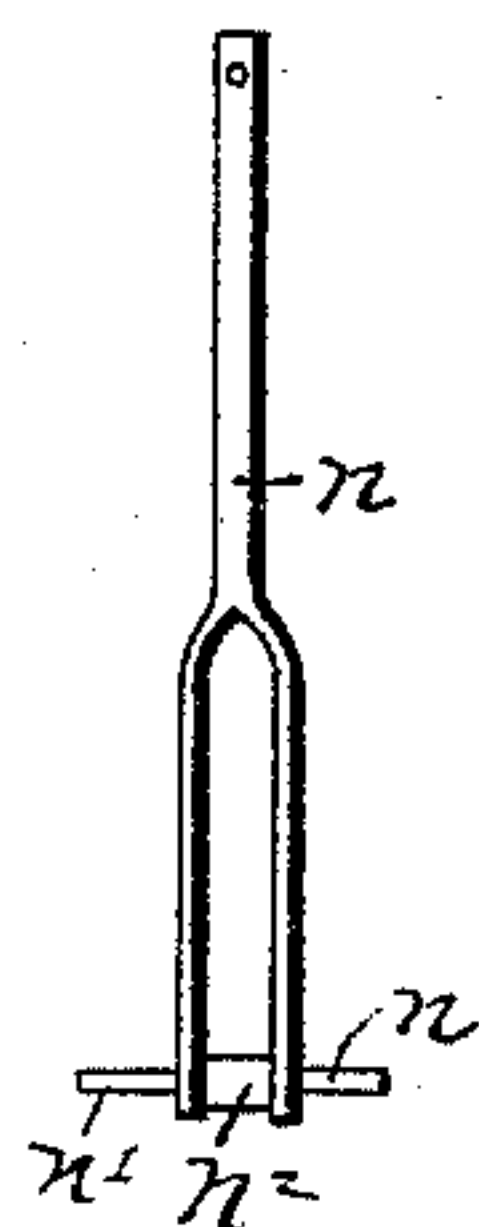
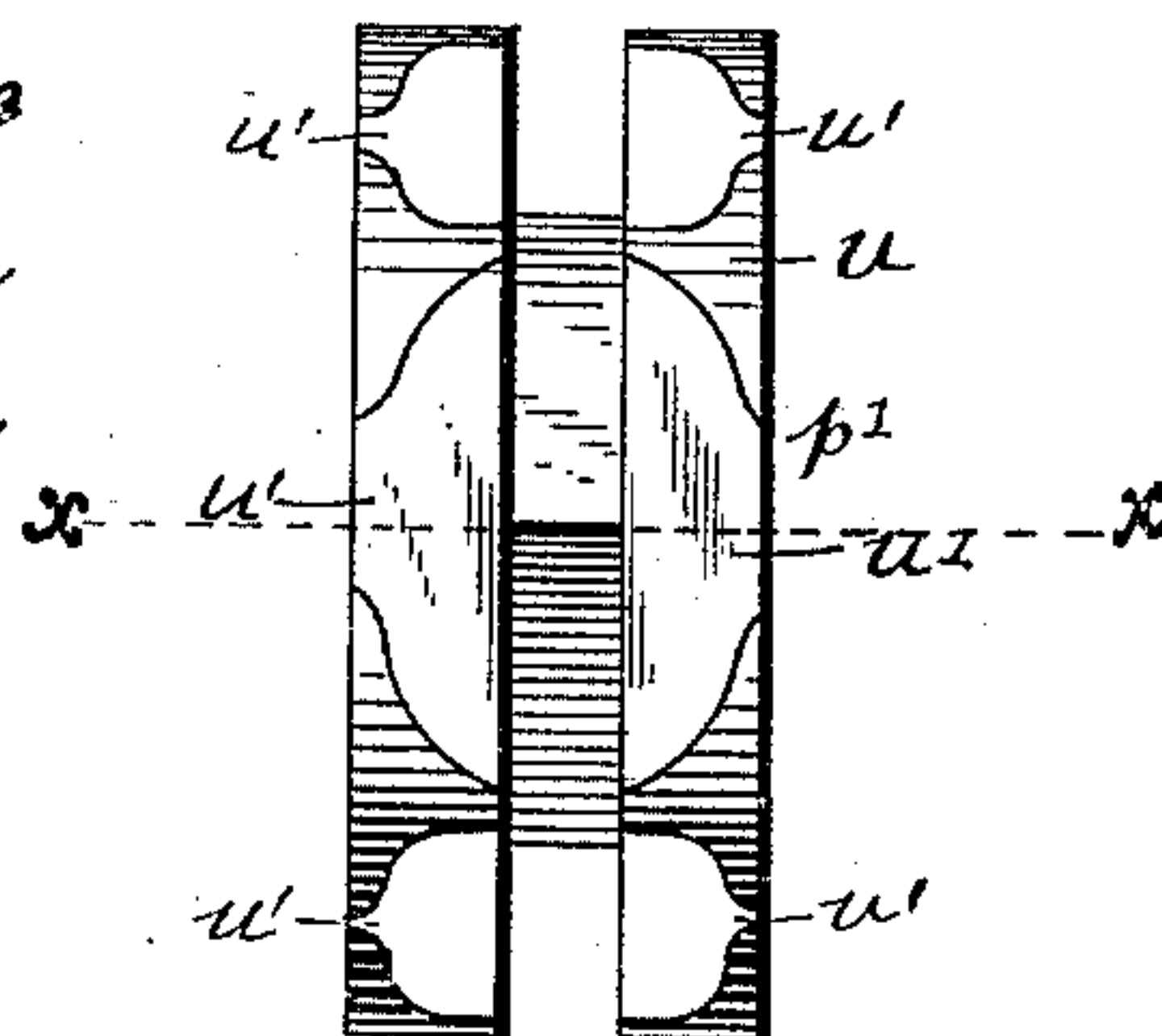


Fig. 4



WITNESSES:

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Staley and Shepherd  
ATTORNEYS

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Fig. 5

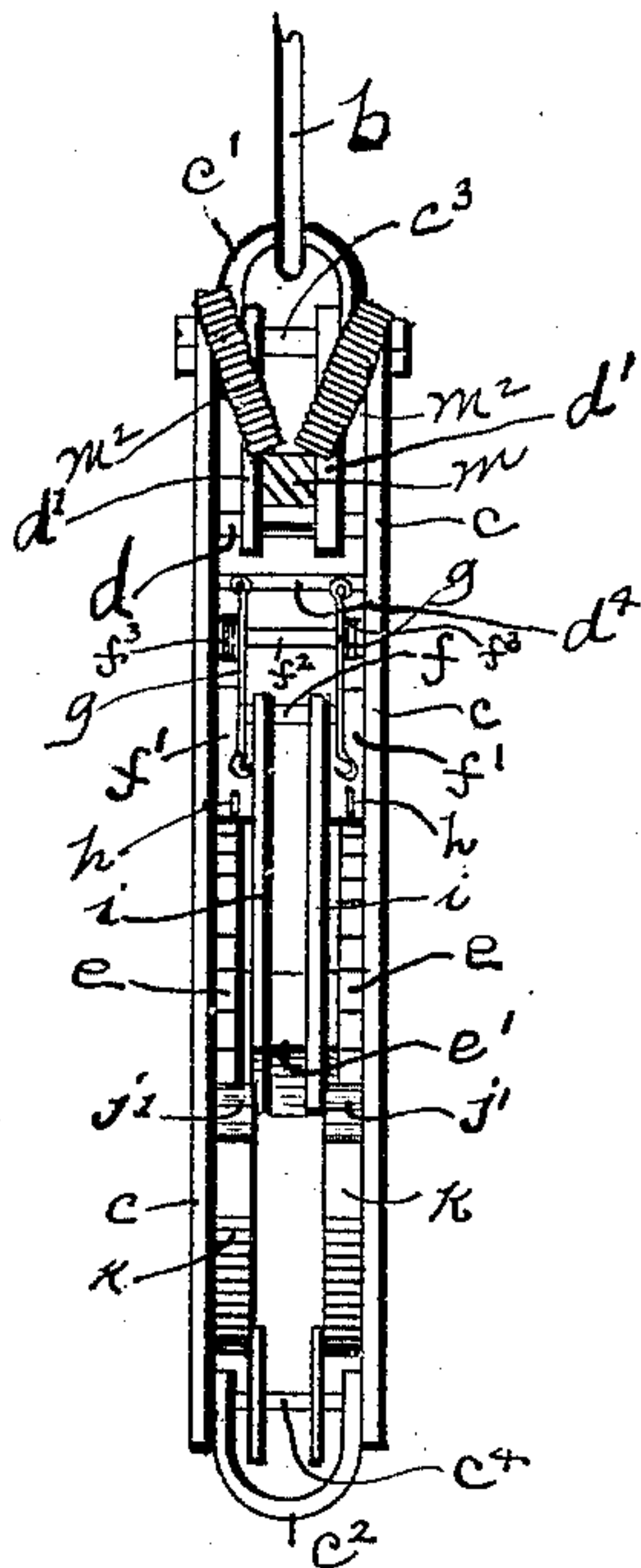


Fig. 6

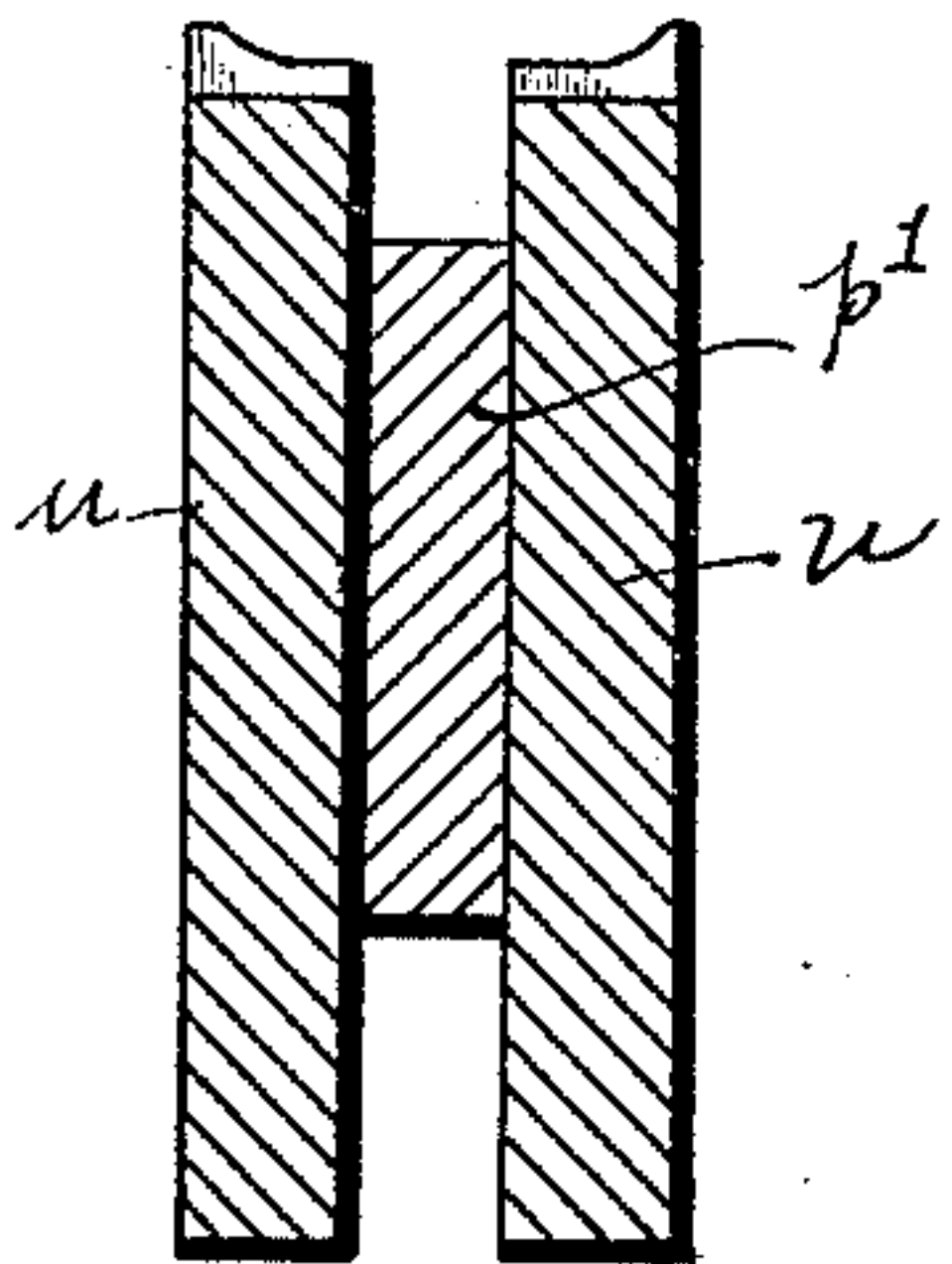
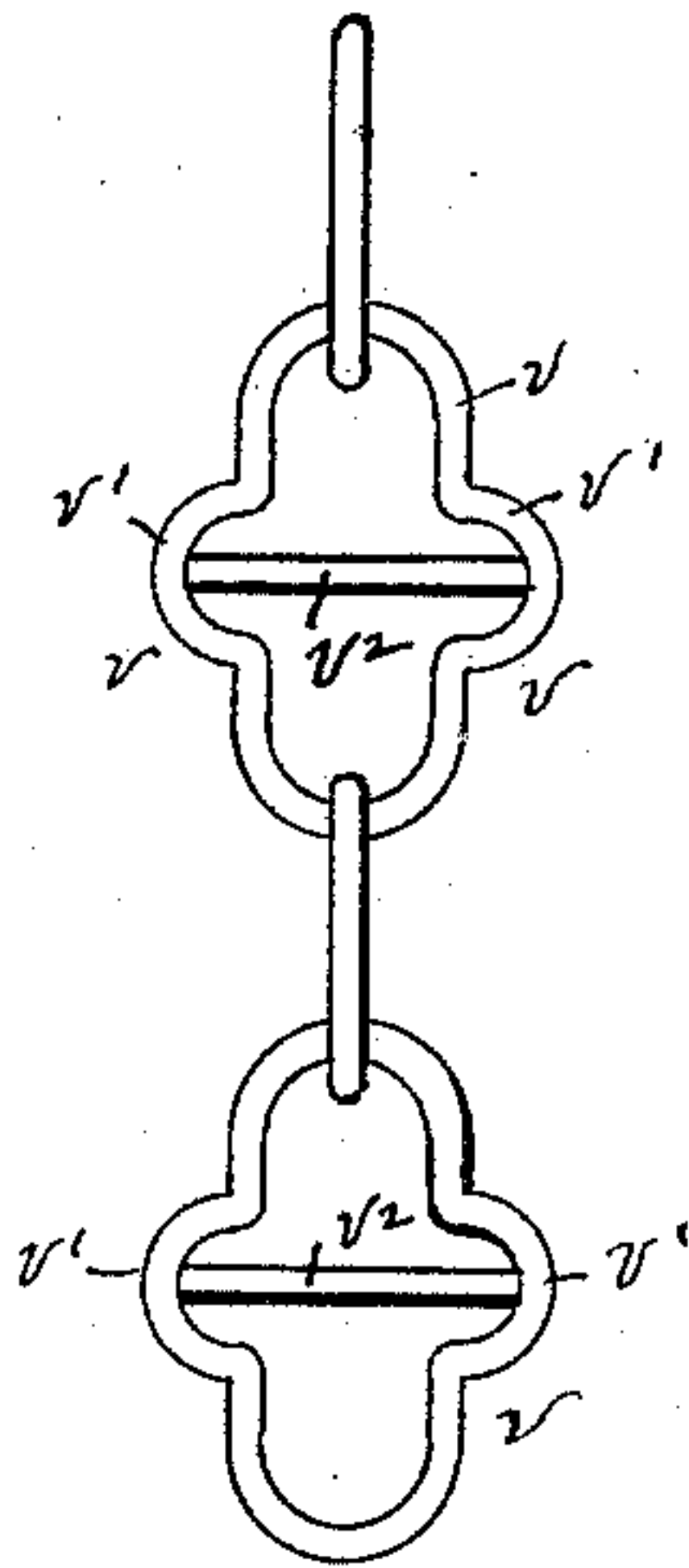


Fig. 7



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# UNITED STATES PATENT OFFICE.

LEVI KRING AND JOSIAH BAUGHMAN, OF WESTERVILLE, OHIO; SAID  
BAUGHMAN ASSIGNOR, BY MESNE ASSIGNMENTS, TO A. W. KRING,  
OF FRANKLIN COUNTY, OHIO.

## STUMP-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 445,676, dated February 3, 1891.

Application filed June 18, 1890. Serial No. 355,829. (No model.)

*To all whom it may concern:*

Be it known that we, LEVI KRING and JOSIAH BAUGHMAN, citizens of the United States, residing at Westerville, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Stump-Extractors, of which the following is a specification.

Our invention relates to devices for pulling stumps and the elevating of heavy weights; and the objects of our invention are to provide an improved stump-puller of such construction as to facilitate the removal or elevation of heavy weights with the expenditure of a comparatively slight power, to so construct said device as to obviate any side draft or unequal leverage, to provide in connection with our device an improved brake for the operating-wheels, to construct the same in a durable and reliable form, and to produce other improvements in the construction and arrangement of the parts, which will be fully set forth hereinafter. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our improved stump-puller. Fig. 2 is a central vertical section of the same. Fig. 3 is a view in detail of the ratchet holding and operating arm. Fig. 4 is a peripheral view of the sprocket-wheel. Fig. 5 is a front elevation of our device. Fig. 6 is a transverse section on line *xx* of Fig. 4, and Fig. 7 is a detail view in elevation of a portion of the sprocket-chain used in our device.

Similar letters refer to similar parts throughout the several views.

*a* represents the derrick or supporting-frame, which, as shown, is in the form of a tripod, the upper ends of the legs forming said tripod being connected by a suitable cap *a'*.

*b* represents a vertical supporting hook or rod, which has its upper end connected centrally with the cap *a'*, from which it depends. This rod *b* is made to support, as shown, a yoke or oblong frame consisting of two vertical and parallel bars *c*, which have

their upper and lower ends connected by clevises *c'* *c''*. The ends of these clevises or U-shaped pieces are jointedly connected to the bars *c* by suitable transverse bolts *c<sup>3</sup>* *c<sup>4</sup>*. *d* represents a transverse leverage-pin, which connects said bars *c* at points below the top bolt *c<sup>3</sup>*. The bolt *c<sup>3</sup>* and pin *d* are further connected by two vertical parallel bars *d'*, the upper ends of which are secured to bolt *c<sup>3</sup>* adjoining the inner sides of the clevis *c'*.

Journaled between the side frame-bars *c* of the yoke, to the lower portion thereof, are two separated ratchet-wheels *e*, said ratchet-wheels connected by a central hub *e'* in the form of a sprocket-wheel. Extending between the two side bars *c* above the wheels *e* is a pin or bolt *f*, upon which are journaled the rear ends of two separated pawls *f'*, said pawls being supported in such position as to drop into engagement with the teeth of the ratchet-wheels.

Beneath and slightly in rear of the leverage-pin *d* is a transverse stop pin or bolt *d<sup>4</sup>*, and between the pawl-pin *f'* and the stop-pin *d<sup>4</sup>* and slightly in front of the latter is a spring-supporting pin *f<sup>2</sup>*. This spring-pin has coiled thereon above each of the pawls a spring *f<sup>3</sup>*, one end of each of said springs being connected with the pin and its remaining end projecting upwardly above said pin and normally bearing through the tension of its coil against the stop-pin *d<sup>4</sup>*. With the upwardly-projecting ends of each of the spring-wires is jointedly connected one end of a forwardly-extending hook *g*, the hook-shaped outer end of which is adapted to be made to engage, for the purpose hereinafter described, with a hook *h*, projecting from the outer end portion of the pawl.

*i* represents two parallel brake-supporting arms, the upper ends of which are pivoted or journaled on the pawl-supporting pin *f* between the pawls, as shown. These arms *i* extend forwardly and downwardly between the ratchet-wheels to points slightly in front of the forward sides of the latter, where they are connected by a suitable transverse pin *j*. Journaled or jointedly connected with each



of the outer projecting ends of the pin  $j$  in front of each of the wheels  $e$  is a short link-bar  $j'$ , the lower or outer end of which is jointly connected with a brake-bar  $k$  by means of a connecting-link  $j^2$ . Each of these brake-bars  $k$  extends downwardly and thence rearwardly in the arc of a circle, passing beneath the ratchet-wheels and terminating at a point on the rear side and about the center of the height of the latter in an outward hook  $k'$ , as shown.

$m$  represents the operating-lever, which has its forward end portion fulcrumed on the pin  $d$ , the intermediate frame-bars  $d'$  forming, as shown, lateral bearings for said lever-head. As shown in the drawings, the lever-head projects slightly in rear of the yoke and has depending therefrom a suitable eye or staple  $m'$ . To this staple is linked or jointly connected the upper end of a downwardly and slightly-rearwardly extending elevating-bar  $n$ . The lower half of this bar is forked, and the ends of said forks are connected by a transverse pin  $n'$ , which passes through and projects on each side of said fork-arms. A suitable separating collar or nut  $n^2$  surrounds the pin  $n'$  between said forks. The projecting ends of the transverse pin  $n'$  are, as shown, adapted to engage with oppositely-located teeth of the ratchet-wheels  $e$ . The lever  $m$  is normally supported in approximately a horizontal position by means of one or more coiled springs  $m^2$ , the upper ends of which are connected with the yoke-frame and the lower ends of which are connected with said lever, as shown.

Hooked in the center of the lower clevis  $c^2$  is one end of a sprocket-chain  $p$ . This sprocket-chain passes downward and around a small sprocket-wheel  $p'$ , which said chain supports. From the sprocket-wheel  $p'$  the chain passes upward, and, as shown in Fig. 2 of the drawings, passes over and engages with the sprocket-hub  $e'$  between the ratchet-wheels  $e$ . Depending from the axle of the sprocket-wheel  $p'$  is a suitable hook  $p^2$ , the upper portion of which is divided to form a fork, said forked portion embracing the ends of said sprocket-wheel. The sprocket-hub and the sprocket-wheel  $p'$  are formed by producing a deep circumferential groove at the center of the periphery of the short shaft or wheel, thus forming separated circumferential flanges  $u$ . As shown in the drawings, the peripheries of these flanges are provided with oppositely-located transverse depressions  $u'$ . The chain which we employ to engage with the above-described sprocket-wheel has its engaging or flat links  $v$  of oblong form, and each of said links has formed in opposite sides laterally-projecting bends  $v'$ , which when the chain is surrounding the sprocket wheel or hub drop into the depressions  $u'$  of the latter. Each of these links is strengthened by a central cross-bar  $v^2$  formed there-with.

The manner of using our device is substantially as follows: The hook  $p^2$  being first made

fast to the stump or other object which it is desired to lift, the chain  $p$  having one of its ends hooked in the clevis  $c^2$  and its remaining end passing over the sprocket-hub  $e'$ , a downward pressure on the lever-handle  $m$  will operate through the connection of the elevating-arm  $n$  with the teeth of the ratchet-wheel  $e$  to turn the latter, and in so doing rotate the sprocket-hub  $e'$ . The lever  $m$  having been forced downward until the arm  $n$  is out of engagement with the teeth of the ratchets, the pawls  $f'$  will have dropped into engagement with said ratchet-teeth, and by such engagement prevent the reversal of the ratchet-wheels. This movement of the lever-arm is repeated until the stump or other object to be lifted has through the taking up of the chain  $p$  by the rotation of the sprocket-hub sufficiently elevated the object. During the above-described lifting movement the brake-bars  $k$  are, as shown in the drawings, pressed from engagement with the ratchets  $e$ . The load having been elevated to the desired point, the elevating-arm  $n$  is forced outward from engagement with the ratchet-wheels and the projecting ends of its cross-pin made to engage with the hooks  $k'$  of the brake-bars  $k$ . By pressing downward on the lever said brake-bars are thus brought into close frictional contact with the teeth of the ratchet-wheels. The projecting spring rods or fingers  $g$  may now be pressed downwardly and made to engage with the hooks  $h$  of the pawl  $f'$ . The tension of said spring-rods will operate to draw the pawls upward from engagement with the ratchet-wheels. The stump or load supported by the hook  $p^2$  may now be lowered by reversing the motion of the ratchet-wheels, which may be accomplished by decreasing the binding pressure of the brake-bars against the ratchet-teeth, which is accomplished by the necessary elevation of the lever  $m$ .

From the construction and operation herein shown and described it will be seen that a direct central draft or leverage is had, which will add greatly to the power acquired. By this construction the ordinary side draft of stump-pulling machines is obviated.

It will be observed that the double brake herein described and shown is so arranged as to provide an equal frictional bearing against the ratchet-wheels, and through the link-connections of the brake-bars and their supporting-arms is produced a joint, which admits of the brake-bars being thrown sufficiently forward to prevent interference in any manner with the operation of the machine during the pulling or lifting of the stump.

The parts herein shown and described are of strong and durable construction and may be produced at a reasonable cost of manufacture.

It is obvious that without changing the principle of our invention, as herein shown and claimed, a second lever corresponding with the lever  $m$  might be employed and an arm depending therefrom corresponding to



the arm *n* allowed to come into engagement with the forward side of the ratchet-wheels, thus increasing the power, if necessary.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a stump-extractor, the combination, with a tripod *n*, a yoke-frame suspended therefrom, and elevating ratchet-wheels *e*, journaled in said yoke and connected centrally by a central sprocket-hub *e'*, of a lever *m*, fulcrumed vertically above said sprocket-hub, and a lever-arm *n*, depending from said lever and engaging, as described, with both the wheels *e*, substantially as specified.

2. In a stump-extractor, the combination, with a tripod *n*, a yoke-frame centrally suspended therefrom, elevating ratchet-wheels *e*, journaled in said yoke and connected centrally by a central sprocket-hub *e'*, brake-supporting arms *i*, pivoted, as described, within the yoke, and brake-bars *k*, having end hooks *k'* and jointedly connected with said brake-supporting arms by a link and supported beneath said ratchet-wheels, of a lever *m*, fulcrumed

vertically above the hub-sprocket, and arm *n*, depending from said lever-head and adapted to engage, as described, with the teeth of both ratchet-wheels or with both the hooks *k'*, substantially as specified.

3. In a stump-extractor, the combination, with the derrick and a frame-yoke suspended centrally therefrom, of ratchet-wheels journaled within said yoke, a central sprocket-hub connecting said wheels, a chain depending from the yoke-frame and a sprocket-wheel suspended by said chain, the latter leading from said sprocket-wheel to the said sprocket-hub, a suitable hook depending from said suspended sprocket-wheel, a lever fulcrumed vertically above the sprocket-hub, and a ratchet-operating arm depending from said lever-head and engaging both the ratchet-wheels, substantially as described.

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JOSIAH BAUGHMAN.

In presence of—

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A. P. LATHROP.