(No Model.)

W. O. WHITE.

STUMP EXTRACTOR AND STONE LIFTER.

No. 332,368. Patented Dec. 15, 1885.

Fig. 3.

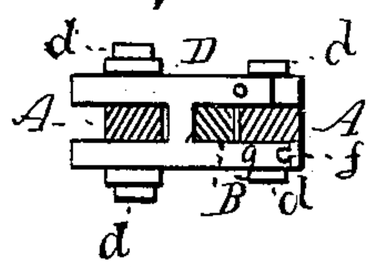


Fig. 1.

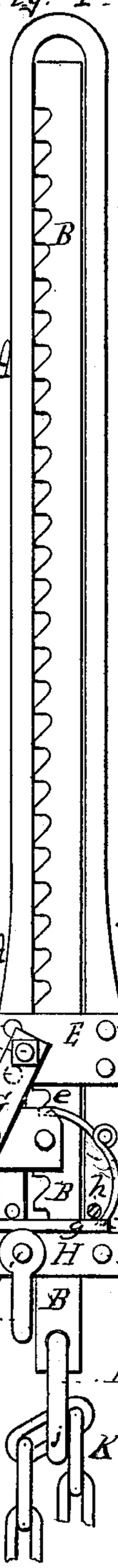


Fig. 2.

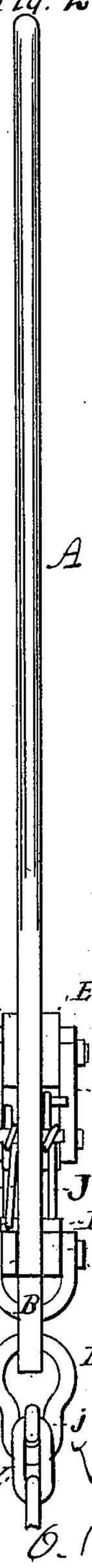


Fig. 4.

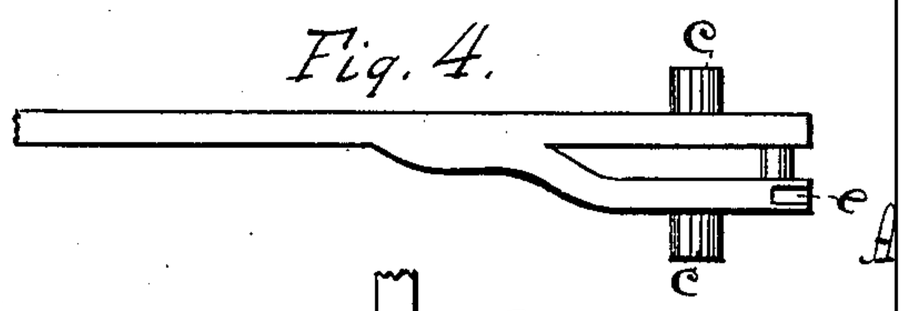


Fig. 5.

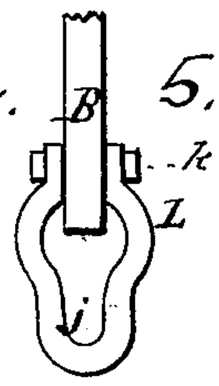
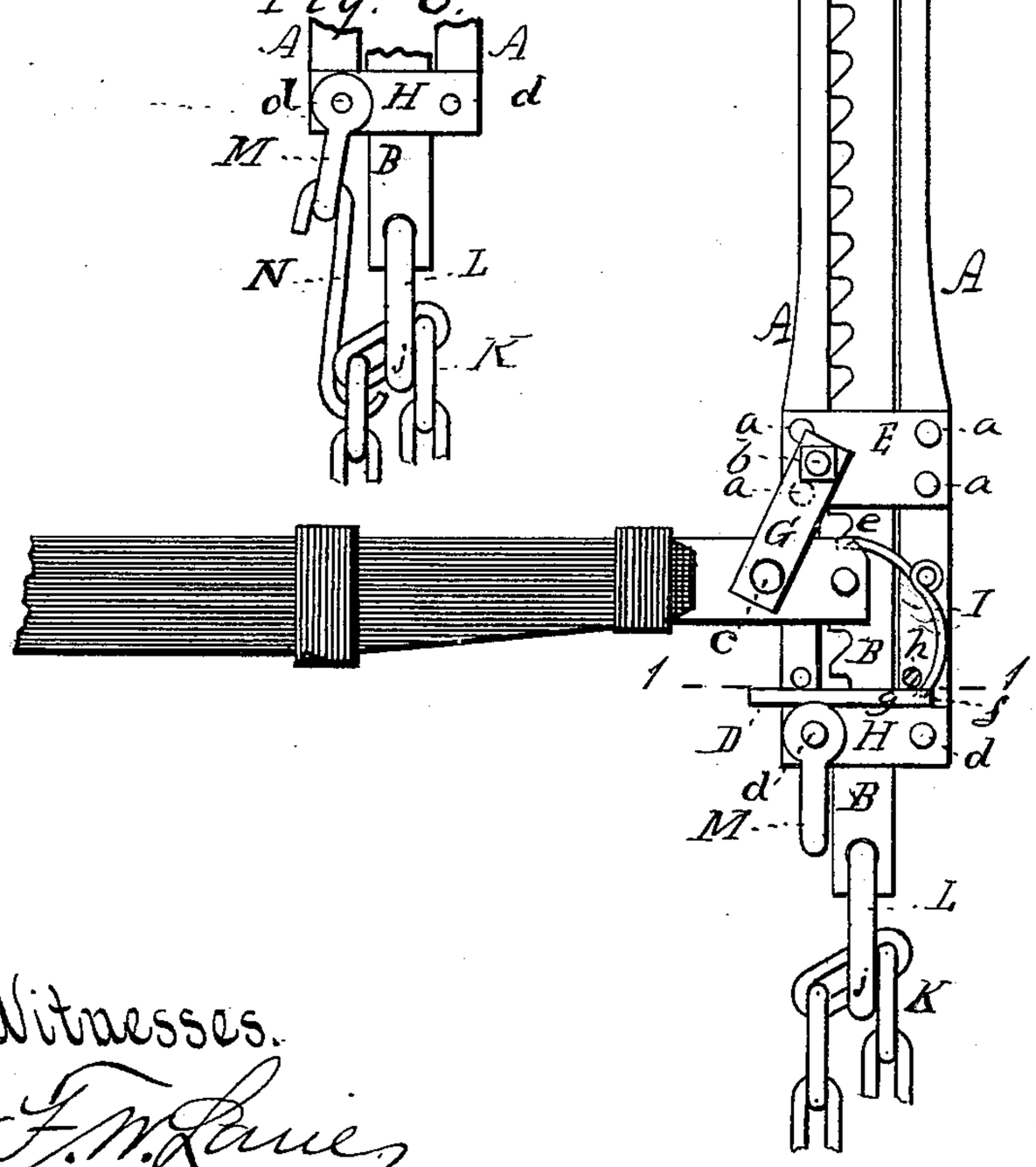


Fig. 6.



Witnesses.

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STUMP-EXTRACTOR AND STONE-LIFTER.

SPECIFICATION forming part of Letters Patent No. 332,368, dated December 15, 1885.

Application filed October 30, 1885. Serial No. 181,364. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. WHITE, of Lake Village, in the county of Belknap and State of New Hampshire, have invented certain Improvements in Stump-Extractors and Stone-Lifters; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The improvements herein set forth are specially upon the stump-extractor described in Letters Patent No. 227,087, granted to William H. Wright, April 27, 1880, the invention therein delineated and specified showing the construction which forms the basis of my invention; but it is to be understood that any and all of the improvements herein claimed by me may be employed in any other form of construction for the purpose to which they may be applicable.

In the accompanying drawings, Figure 1 represents a side view of the machine as improved by me; Fig. 2, a rear edge view of the same; Fig. 3, a longitudinal section thereof in a plane indicated by the line 1 1, Fig. 1; Fig. 4, a top view of the actuating-lever; Fig. 5, a view showing a modification of the clevis-link for attaching the suspending-chain; Fig. 6, a view showing the device for retaining the weight at the height to which it is raised.

In the drawings, the main parts of the machine are designated as follows: A, the U-shaped or bow frame; B, the ratchet-bar moving up between the two sides of the said bow-frame; C, the lever by which the ratchet-bar is lifted one notch at a time; and D, the pawl latch or detent, which retains the ratchet-bar at the height to which the lever lifts the same at each movement thereof.

The machine is suspended from a tripod or other support by hanging the bow end of the bow-frame in the hook of the support or otherwise.

I now proceed to describe successively the several features of improvement made by me. The two cross-bars E E, which connect the two sides of the bow-frame A above the lever, are constructed by me so as to serve as braces, to prevent the buckling of the two sides of the frame, and also to guard against a longitudinal sway motion thereof, which has been found to take place in the former construction when very heavy loads are lifted, caused by the intense strain exerted by the lifting-lever on the side from which it is suspended. The effect has been to turn the cross-bars on the single bolts which connect them with the side bars, thereby bringing the side bars nearer together and binding the ratchet-bar between them. I obviate this difficulty by employing two bolts, *a a*, at each end of the cross-bars, to connect them with each side of the bow-frame, the cross-bars being made of sufficient width to separate the bolts laterally at each end, so that they will serve as sufficiently strong braces to prevent the swaying of the sides of the bow-frame, about as shown in the drawings. It will be seen that since the sides of the bow-frame necessarily remain in a vertical position under the powerful downward pull of a heavy weight, the cross-bars cannot swerve out of their vertical and horizontal rectangular positions, which they must do to allow a change of angle necessary to forcing the side bars toward each other, and hence the greater the weight of the load the greater the security against the effect desired to be avoided. The bolts *a a* are best made of steel to give proper security against bending. The suspension-straps G G, by which the lever is suspended and also allowed a slight swinging movement toward and from the racthet-bar for alternately engaging and disengaging the lever with the teeth of the ratchet-bar, are pivoted to the bow-frame by a pivot-bolt, *b*, which also passes through the cross-bars E E and one of the sides of the bow-frame.

Another improvement consists in suspension pivot-trunnions *c c*, cast or otherwise formed on the sides of the lever C integral or solidary therewith, preferably made as to this part of the lever of cast-steel, which thus enables these lugs to be made solidary with the lever by casting. This improvement is in contradistinction to separate bolts or plug-screws formerly used, and which were liable to work loose or bend out of position. Below the lever, and attached to the lower ends of the bow-frame, are two other cross-bars, H H, which are secured to the side parts of the frame by two bolts, *d d*. On these cross-bars rest

the sliding pawl-latch D, which retains the ratchet-bar. The spring-lever I, by the placing of which in proper position the ratchet-bar is lowered when the lever C is vibrated, is by my improved construction held securely in position, so that it never gets out of place nor between the lever and the teeth of the ratchet-bar and be cut off, as heretofore has sometimes happened. This improvement consists in providing the short end of the actuating-lever C at the upper corner with a slot, *e*, into which the upper end of the spring-lever fits, and providing the outer end of the pawl-latch also with a slot, *f*, into which the lower end of the spring-lever fits and rests. The spring-lever is thereby securely held in position.

To place the lower end of the spring lever in proper position, the side *g* of the latch which is thus slotted is sufficiently lengthened for the purpose, as shown in Fig. 3. A slotted pin, *h*, is also provided in proper position to hold the lower end of the spring-lever when the lifting operation is going on.

Any fair equivalent of the slots above specified may be used instead thereof.

The spring-lever is best made of steel wire and formed cold, as it is less liable to break, and it may be changed in form at will, if desired.

The latch-engaging spring J on the other side of the machine is made as in the former patent.

For attaching the lifting-chain K to the lower end of the ratchet-bar, I make use of a loose clevis-link, L, enlarged at the upper end, *i*, and made narrower at the lower end, *j*, substantially as shown in Figs. 2 and 5. The enlarged upper end is loosely passed through a hole in the lower end of the ratchet-bar, and can by its construction swing or turn considerably therein, so that any sudden turning of a heavy load will not twist or break the ratchet-bar. The narrow lower end of the link is adapted to receive a link of a chain edgewise, and thus to hold the chain from drawing through or flying out of the clevis-link. The chain is inserted and withdrawn through the upper enlarged part of the clevis-link. For some purposes where there is no danger of a twisting strain, instead of passing the clevis-link loosely through the ratchet-bar it may be pivoted thereto by a bolt, *k*, as shown in Fig. 5. Another clevis-link, M, is pivoted to the bow-frame at the lower end of one side thereof, the bolt which supports it being for convenience and simplicity one of the bolts *d d* by which the lower cross-bars, H H, are secured to the bow-frame. In connection with the clevis-link a double or trammel hook, N, Fig. 6, is employed for connecting the supporting-chain with the clevis-link, to be used for supporting the load when lifted without requiring props or blocking.

I claim as my invention—

1. In combination with the bow-frame A and ratchet-bar B, sliding therein, the cross-bars E E, connected at each end thereof to the bow-frame by two bolts, *a a*, laterally separated from each other, substantially as and for the purpose herein specified.

2. The lever C, provided with suspension-trunnions *c c*, formed solidary therewith, in combination with the suspension-straps G G, substantially as and for the purpose herein specified.

3. The combination of the spring-lever I, the actuating-lever C, having a slot, *e*, in its short end to receive the upper end of the spring-lever, and the pawl-latch D, having a slot, *f*, in one end to receive the lower end of the spring-lever, substantially as and for the purpose herein specified.

4. In combination with the ratchet-bar B and lifting-chain K, the clevis-link L, enlarged at its upper end and narrowed at its lower end to receive links of the chain edgewise, substantially as and for the purpose herein specified.

5. The combination of the clevis-link M, suspended from the lower end of the bow-frame A, the double hook N, and the lifting or supporting chain, substantially as and for the purpose herein specified.

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