

H. Harris,
Drill Rod Grab.

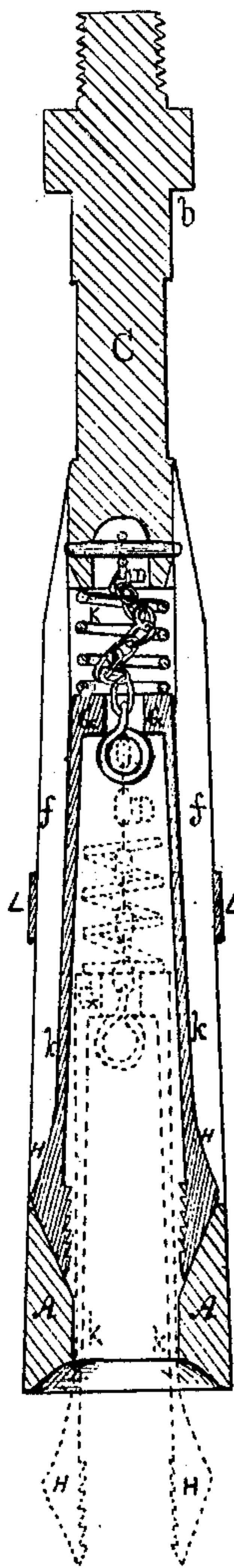
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FIG: 1.



FIG: 2.



WITNESSES

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HART HARRIS, OF TIDIOUTE, PENNSYLVANIA.

Letters Patent No. 112,142, dated February 28, 1871.

IMPROVEMENT IN EXTRACTORS FOR OIL-WELLS.

The Schedule referred to in these Letters Patent and making part of the same.

I, HART HARRIS, of Tidioute, in the county of Warren and State of Pennsylvania, have invented an improved "Extractor," or Grab-Tool for Oil-Wells, of which the following is a specification.

Nature and Objects of the Invention.

The tool for removing obstructions from oil-wells, to which my improvements relate, consists of an upwardly-tapering socket, presenting an outwardly-conoidal form, and made interiorly cylindrical, and which is provided with opposite longitudinal slots extending from the base of its shank to within a short distance of its lower end.

My invention relates to the combination, with said socket and its longitudinal slots, of serrated heads or grab-jaws, connected by elastic strips with a ring, the jaws, strips, and ring being entirely inclosed within the socket, so that the former may play outwardly in the slots, a spring being interposed between the ring and the upper end of the socket to force the jaws downward.

My invention relates also to the use of a ring slipped down exteriorly upon the tapering socket, to prevent the "wicker-reins" from springing out of their slots.

Description of the Accompanying Drawing.

Figure 1 is an elevation of my improved extractor, and

Figure 2 a central longitudinal section in the line *x* of fig. 1, illustrating the same, with the grab-jaws of the "wickers" elevated and sprung open in position to be closed upon any object passing up into the socket, the dotted lines indicating the position of the jaws when they have dropped entirely through the socket so far as the confining-chain will permit.

General Description.

A is the socket, made to taper exteriorly from its lower end or mouth upwardly, and terminating in a cylindrical shank, C, cast in one piece therewith.

The interior of this socket is bored out longitudinally and cylindrically to a diameter about equal to that of the shank, and to a depth nearly equal its own length.

A shoulder and collar, *b*, is formed on the upper end of the shank C, of an octagonal or other polygonal form, so that it may be readily seized by a wrench and be screwed upon the rod by which it is to be driven and withdrawn, its upper extremity being threaded to screw into a socket in the driving-rod.

Longitudinal slots *ff* are cut through, in the sides of the socket A, diametrically opposite each other, each extending from the base of the shank C to a point a short distance above the lower end of the socket,

at which point they terminate with an inwardly-inclined or beveled groove, *i i*, as illustrated in the drawing.

G is the "wicker-ring," made to fit and slide freely within the socket A, and whose movement within the socket is limited by means of a chain, D, secured thereto and to the head (or upper end of the bore) of the socket.

K is a spiral spring interposed between the wicker-ring G and the head of the socket.

H H are the grab-jaws or heads of the wickers, for taking hold of the object to be withdrawn from the well. They are roughened or serrated upon their inner faces, and their outer faces are inclined so as to form a gradual enlargement thereof upwardly to their thickest or widest part, as illustrated in the drawing, (see fig. 2,) whence they are reduced with a regular slope to the thinness required in the "reins" *k k*, which connect them with the wicker-ring G above.

As there are no sudden abrupt offsets in the connection of the "wicker-jaws" with the strips or reins *k k*, which carry them, they are not liable to break off at this point, as is the case in other grab-tools.

These wicker-reins *k k* work out into the longitudinal slots *ff*, so as to leave the bore of the socket entirely unobstructed. They are made of thin metal, of such a length as, that when the ring G is elevated nearly to the upper end of the bore in the socket A, the lower ends of the wicker-jaws will just reach the ends of the inwardly-beveled grooves *i i* at the foot of each slot, as illustrated by positive lines in the drawing, fig. 2. They are elastic, so that they spring outwardly; hence, as the wickers are drawn up they spring out into the slots, leaving the interior of the socket perfectly free, open, and unobstructed, as illustrated in fig. 2. When, however, the wickers are forced down by the action of the confined spring K, the outer inclined faces of the jaws H H work as wedges against the inclined faces of the grooves in which the slots terminate, and force them inward, causing them to approach or close toward each other within the socket to seize and hold any intervening object.

L is an outer ring slipped down exteriorly over and upon the socket A, to bind the same about midway and prevent the wicker-reins *k k* from swinging entirely out of the slots *ff*.

In using this, my improved extracting-tool, the wicker-ring G is drawn up so that the wicker-jaws H H may spring out into the slotted recesses *i i*, and not obstruct the interior of the socket, and they are kept open and apart, and prevented from springing back, by the insertion of a small block of wood between them. The spring K is compressed by this movement so as to exert full pressure upon the wicker.

ring to force down and close the jaws. The socket is then driven down upon the object to be withdrawn, so as to be forced over it.

So soon as the object has passed up far enough within the socket to displace the small block of wood, the jaws H H are thereby released, and, by the action of the spring K bearing thereon, are forced down and wedged in upon the object so as to gripe and firmly hold the same for withdrawal, their grasp becoming tighter in proportion to the resistance which the object presents to the force exerted to draw it up.

If a firm hold is not obtained because the object, such as a piece of tubing, yields to the pressure of the jaws, the socket may be jarred by repeated blows until the jaws close sufficiently to slip down below the end of the socket and open out, as illustrated by dotted lines, (see fig. 2,) when their hold is released, and the tool may be removed for another trial.

The tapering form of the socket enables it to be used successfully in wells wherein there are crooked places in which a cylindrical socket cannot be used.

Claims.

I claim as my invention—

1. The wicker-heads or jaws H H and reins k k, in combination with ring G, spring K, and chain D, constructed, connected, and arranged to operate within an interiorly-cylindrical socket, substantially as and for the purpose herein set forth.

2. In combination with the inclosed wicker-heads H H and their reins k k, the inclosing-socket A, having longitudinal slots f f cut therein to permit an outward play of the heads, substantially as and for the purpose herein set forth.

3. In combination with the subject-matter of the last claim, the outer ring or band L encircling the socket, to prevent too great a movement of the heads and reins, substantially as herein set forth.

HART HARRIS.

Witnesses:

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