J. C. CHAPMAN.
Spike-Extractor.

No. 197,997. Patented Dec. 11, 1877.

Fig. 1.

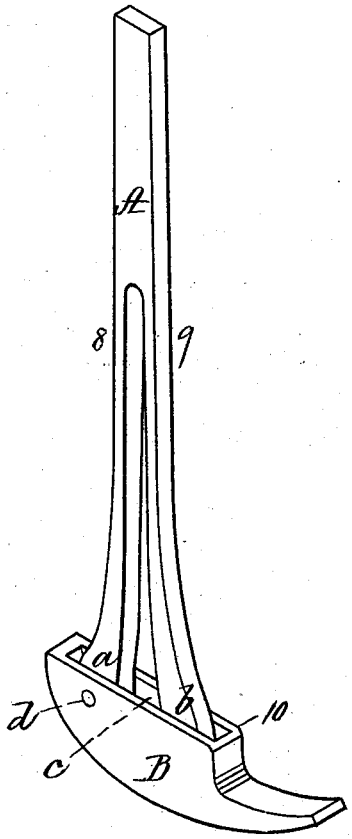


Fig. 2.

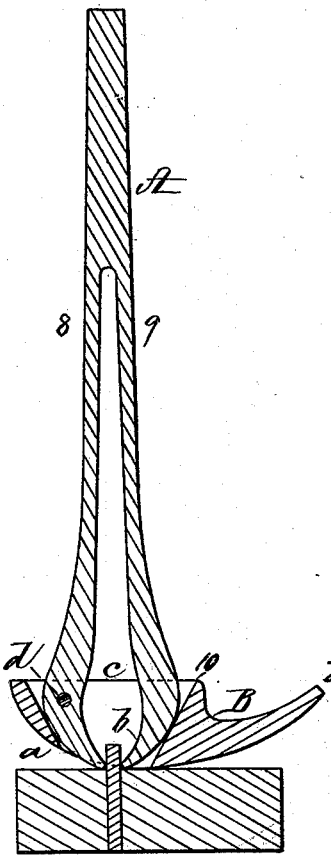


Fig. 3.

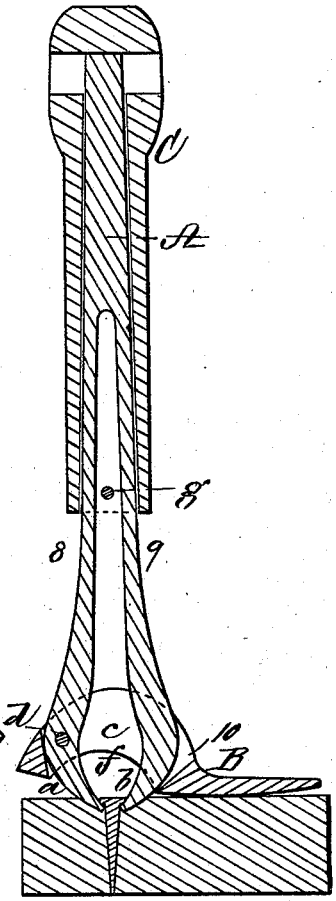


Fig. 4.

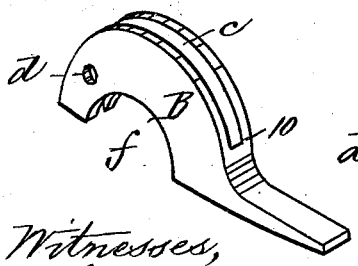


Fig. 5.

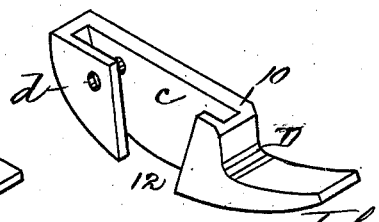
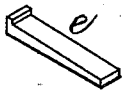


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN C. CHAPMAN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPIKE-EXTRACTORS.

Specification forming part of Letters Patent No. **197,997**, dated December 11, 1877; application filed November 1, 1877.

To all whom it may concern:

Be it known that I, JOHN C. CHAPMAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Bolt, Spike, and Nail Extractor, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved implement adapted for drawing bolts. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a vertical section through my improved implement provided with a different foot-piece to adapt it for drawing nails. Fig. 4 is a perspective view of the foot-piece shown in Fig. 3. Fig. 5 is a perspective view of a foot-piece similar to that shown in Fig. 1, a portion of one side being left open to allow of the passage of the head of a spike. Fig. 6 represents a narrow strip or piece of metal, to be hereinafter referred to.

This invention consists in a bifurcated bar, provided with two spring griping-jaws, which fit within a slotted foot-piece, to which one of the jaws is pivoted, the other jaw being free to spring out against the adjacent inclined end of the slot in the foot-piece, by which construction, when the bar or handle of the extractor is grasped and moved toward the fulcrum, the spring-jaw will slide down the incline and approach the pivoted jaw, causing the bolt or nail to be firmly griped between them, and as the handle is moved toward the fulcrum after the bolt or nail has been griped, it will be drawn, the gripe being released and a new hold taken by rocking the handle in the opposite direction, the bolt or nail, as it is being withdrawn by the successive movements of the handle, passing up through the slot in the foot-piece and between the bifurcations of the handle.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents an iron bar or lever, provided with two spring bifurcations or branches, 8 9, which are enlarged at their extremities, which form griping-jaws *a b*, the outer sides of which are curved, as seen in Fig. 2. The biting-edges of these jaws are notched, serrated, or otherwise suitably formed to adapt them to the purpose for which they are used. Both of these jaws enter a slot, *c*, formed through a foot-piece, B, the jaw *a* being pivoted therein at *d*, and the jaw *b* being free to spring away therefrom against the inclined end 10 of the slot *c*.

When the handle is vibrated on the pin *d* as a center, the curved outer side of the jaw *b* is forced down the inclined end 10 of the slot *c*, causing the jaw *b* to approach the jaw *a* against the resistance of the spring of the bifurcation 9, and the bolt is thus griped firmly between them, as seen in Fig. 2; and as the handle is still farther moved in the same direction to draw the bolt, the foot-piece (which rests upon the surface from which the bolt is being drawn) is rocked thereby, the curved form of the bottom of the foot-piece causing the distance of the fulcrum from the bolt to vary with the position of the bar or lever A; and it will be seen that the force with which the jaws gripe the bolt will increase in proportion to the resistance offered in drawing it.

After the bolt has been partially drawn, the gripe thereon is released by carrying the handle back in the opposite direction, which allows the jaw *b* to spring away from the jaw *a*, and slide up the inclined end 10 of the slot *c*, and a new hold is then taken, and the bar moved as before, to still farther draw the bolt, which, as it is withdrawn by the successive movements of the handle, passes freely up through the slot in the foot-piece and into the space between the two bifurcations 8 9 of the bar A; and by thus constructing the implement with a central space immediately over the axis of the bolt, to receive it as it is drawn out, it can be griped at any portion of its length by the jaws, and withdrawn in a straight line, without being bent, by a series of short successive movements of the bar, and a much more powerful leverage can consequently be exerted than would be the case if the implement were so constructed as to allow of the jaws taking but one hold upon the bolt at the head and drawing it out at a single movement of the bar or lever.

e, Fig. 6, is a short strip or piece of metal, which is intended to be introduced between the outer side of the jaw *b* and the adjacent inclined end 10 of the slot *c*, to reduce its size,

and thus close the jaws nearer together when a bolt of small diameter is to be grasped thereby.

When the implement is to be employed for drawing spikes with heads projecting out on one side—such as railroad-spikes—a foot-piece having an opening, 12, in one side, as seen in Fig. 5, is employed, this opening allowing of the unobstructed passage of the head as the spike is being drawn; and in this case the side of the foot-piece opposite to that provided with the opening 12 is made of double thickness, to insure the necessary strength.

In Figs. 3 and 4 is represented the foot-piece which is employed when the implement is to be used as a nail-extractor. This foot-piece is cut away at *f* on each side, so as to leave a clear unobstructed view of the lower portions of the griping-jaws *a b*, and thus admit of their being properly placed around the head of the nail to be extracted, after which the lower extremities of the jaws are driven into the wood, so as to enable them to gripe the nail under the head, by means of a ram, C, which is fitted to slide upon the lever A, and is confined thereon by a pin, *g*, which passes through the space between the bifurcations 8 9 of the lever A. This ram, however, is a well-known device, and forms no part of my present invention, and would only be applied to the implement when designed for use as a nail or spike extractor.

What I claim as my invention, and desire to secure by Letters Patent, is—

The bifurcated bar or lever A, provided with two spring griping-jaws, *a b*, in combination with the slotted foot-piece B, one of the jaws being pivoted thereto, and the other being free to spring out and bear against the inclined end of the slot *c* therein, all constructed to operate substantially in the manner and for the purpose set forth.

Witness my hand this 30th day of October, A. D. 1877.

JOHN C. CHAPMAN.

In presence of—

P. E. TESCHEMACHER,

W. J. CAMBRIDGE.