C. F. KNAUER.
Nail-Extractor.

No. 210,041. Patented Nov. 19, 1878.

Fig: 1.

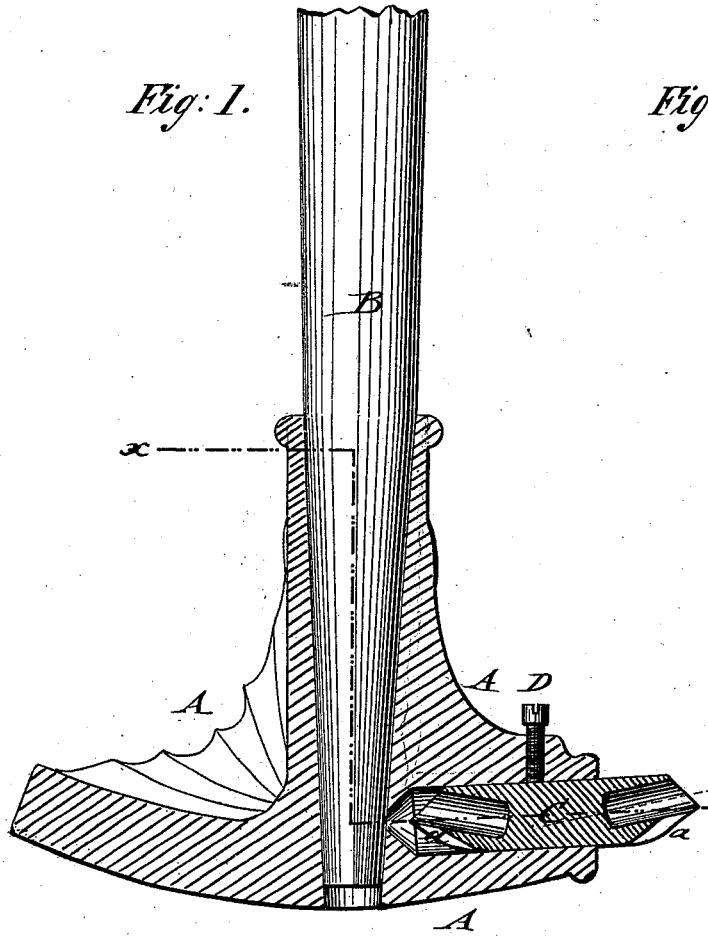


Fig: 2.

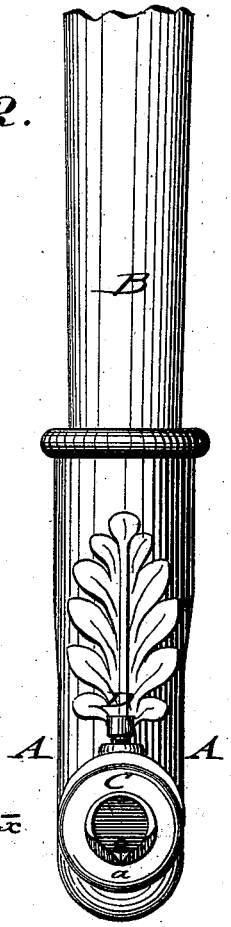
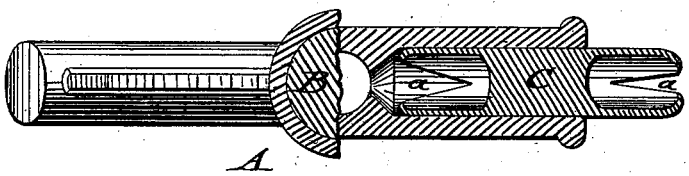


Fig: 3.



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UNITED STATES PATENT OFFICE.

CHRISTIAN F. KNAUER, OF URACH, WÜRTTEMBERG, GERMANY.

IMPROVEMENT IN NAIL-EXTRACTORS.

Specification forming part of Letters Patent No. **210,041**, dated November 19, 1878; application filed September 12, 1878.

To all whom it may concern:

Be it known that I, CHRISTIAN F. KNAUER, of Urach, Württemberg, Germany, have invented a new and Improved Nail-Extractor, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved nail-extractor; Fig. 2, an end view; and Fig. 3, a horizontal section of the same on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention has reference to an improved nail-extractor, by which the nail-head is readily taken hold of, and then the nail drawn without bending the nail or injuring the lid of the box, so that both nail and box may be used again; and the invention consists of a hammer-head, that is secured by a center sleeve or socket to a handle, and provided at one end with a socket and set-screw for a double claw, while the other end, or tail, is solid, for striking thereon with a hammer when driving the claw under the head of the nail. The lower part of the hammer is arc-shaped, for swinging thereon in lifting the nail, and the claw-piece drilled with inclined holes or cavities cut at both ends, and provided with slits having sharpened and pointed edges.

Referring to the drawings, A represents a hammer-head, that is, preferably, made of cast-iron and of inverted T shape. The middle portion of the hammer-head is of sleeve or socket shape, into which the handle B is firmly driven. One end of the hammer-head A is bored out, so as to form a socket or cavity for a double steel claw, C, that is fitted into the same. The other solid end, or tail, of the hammer-head serves to receive the blows of a hammer for driving the projecting end of the claw under the nail-head.

The lower edge of the hammer-head A is made in the shape of an arc of a circle, along which the head rolls when drawing the nail, the handle acting then as the lever for lifting the nail.

The double steel claw C is rigidly secured in the socket of the hammer-head by a set-screw, D, and may be readily removed therefrom by loosening the screw.

The steel claw C is made of a solid piece of steel, that is drilled out at both ends, so as to form cavities whose axes are at an oblique angle to the longitudinal axis of the claw, as shown in Fig. 1. The tubular ends of the claw C are slitted at the under side, so as to form angular openings *a*, whose front edges are sharpened, for being readily driven in the wood below the head of the nail.

The slits of the claw ends are of different width, so that the larger one may be used for larger nails and the smaller one for smaller nails. The cavities are large enough to let the head of the nail pass in, while the slits pass along the shank of the nail. The upper part of the drilled-out ends of the claw are cut off at an angle of about forty-five degrees to the axis of the claw, so as to give point to the sharpened edges of the slits, and facilitate the application of the claw end to the nail-head, as by the cut-off part the nail-head may be readily observed.

The extractor is operated as follows: The handle is taken hold of and the slitted and pointed end of the claw set close to the head of the nail, at a suitable angle of inclination thereto. The solid end of the hammer-head is then struck by a few blows from a hammer held in the other hand, which drives the claw under the nail-head, so that the shank enters the slit and the head the cavity of the claw. By pushing, then, the handle in the direction of the hammer-head the hammer-head will roll on its arc-shaped base-line, so as to draw gradually the nail. The change of the fulcrum along the arc-shaped base-line as the nail is extracted exerts a greater power at the start, where it is most needed, than at the end of the motion, where the power is gradually diminished as the nail is drawn.

In this manner a cheap, handy, and durable tool is obtained for extracting nails in opening boxes, by which the lids are not split or spoiled, nor the nails broken or bent, so that box or nail may be used again.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a nail-extractor, the combination, with a lever-handle and hammer-head having a hol-

low end, of a double reversible steel claw, substantially as described, and for the purpose set forth.

2. In a nail-extractor, a double steel claw having end cavities, with angular slits and sharpened edges, substantially as herein shown and described.

3. In a nail-extractor, a double steel claw having holes or cavities drilled at an oblique angle to the axis of the claw, angular slits with sharpened ends at the under side, and the upper portion of the ends cut off at an angle to give point to the sharpened slit ends, substantially as described, and for the purpose set forth.

4. In a nail-extractor, the combination, with a hammer-head having a solid tail and a socket or cavity, and set-screw at the other end, of a double reversible slitted and pointed steel claw, substantially as specified.

CHRISTIAN FRIEDRICH KNAUER.

Witnesses:

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F. SCHWARZ.