W. H. THORNE.

MACHINE FOR EXTRACTING BROKEN SCREWS.

No. 174,030. Patented Feb. 22, 1876.

Fig. 2.

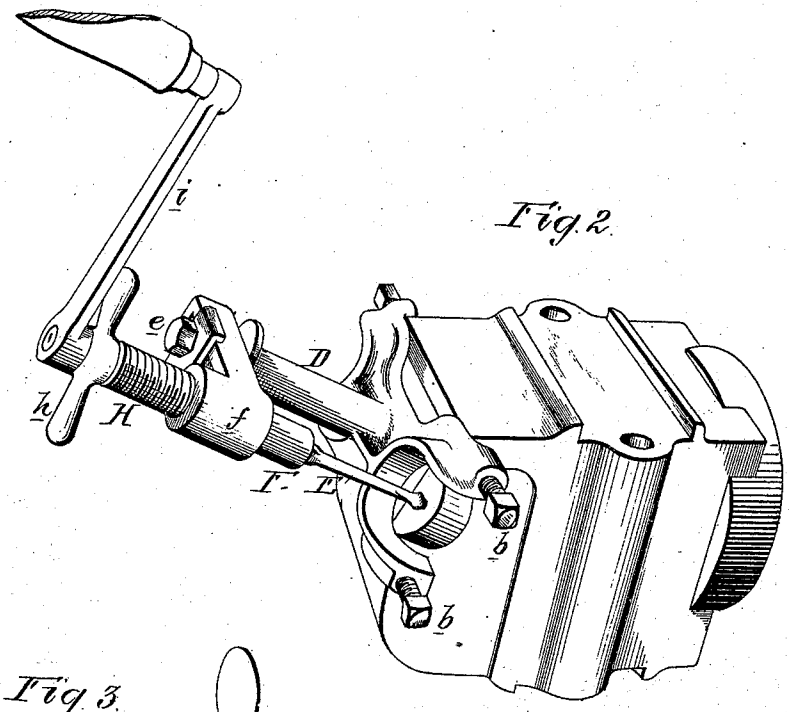


Fig. 3.

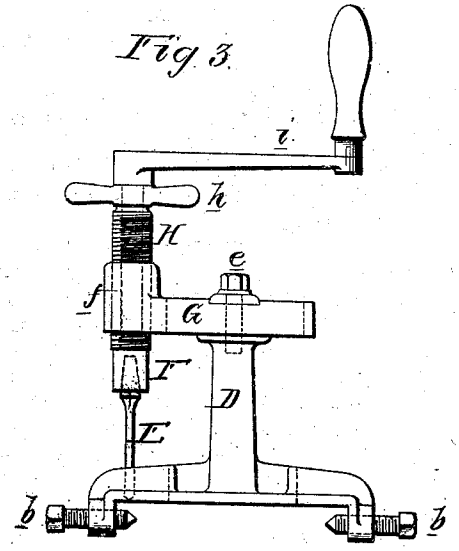


Fig. 4.

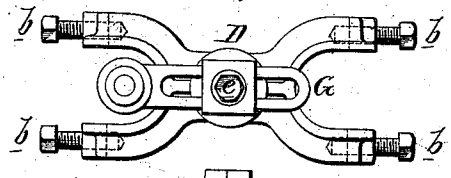
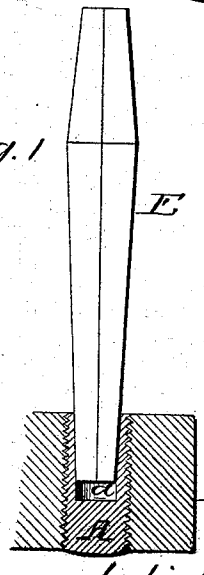


Fig. 1.



Witnesses
Harry Howson Jr.
Harry Smith

William H. Thorne
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

WILLIAM H. THORNE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, I. N. DE HAVEN, AND JOHN C. DA COSTA, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR EXTRACTING BROKEN SCREWS.

Specification forming part of Letters Patent No. **174,030**, dated February 22, 1876; application filed December 17, 1875.

To all whom it may concern:

Be it known that I, WILLIAM H. THORNE, of Philadelphia, Pennsylvania, have invented a Machine for Extracting Broken Screws, of which the following is a specification:

The object of my invention is to readily withdraw from axle-boxes and other objects the stems of set-screws from which the heads have been accidentally broken, and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a view illustrating the mode of extracting the threaded stem of a broken set-screw; Fig. 2 a perspective view of the machine; Fig. 3 a side view; and Fig. 4 a plan view of the machine.

On reference to Fig. 1, A represents the threaded stem of a set-screw from which the head has been broken, the stem being embedded in the metal B. In order to remove broken stems of screws it has been a common practice to first drill an orifice, *a*, into the stem and then force into it a tapering bit, E, having as many sides as are necessary for presenting comparatively sharp edges, which, under the pressure applied to the bit, indent the sides of the orifice *a*. By manipulating a suitable handle or wrench applied to the bit, the latter becomes the medium through which the stem may be unscrewed from the metal B.

The heads of screws which confine the covers of the axle-boxes to their places are frequently broken, and the machine which forms the subject of my invention has been especially designed for the purpose of extracting such broken screws. D is a frame or stand, the base of which is constructed, as shown in Fig. 4, so as to carry four horizontal set-screws, *b*, for the ready and secure attachment of the said stand to, and its removal from, the end of the axle-box, as seen in Fig. 2. To the top of this stand is secured a carrier, G, by means of a set-screw, *e*, which passes through a slot in the said carrier, so that the latter can be turned in any direction desired, or moved to and from the axis on which it is turned, and secured after adjustment.

The outer end *f* of the carrier is threaded for the reception of a tubular screw, H, which is provided at the top with a handle, *h*. In the interior of this screw is a drill-spindle, F, having at its upper end a handle, *i*, and at its lower end a socket for the bit E, as well as for an ordinary drilling-tool, the spindle being so adapted to the screw that it can be revolved freely, but cannot move longitudinally therein.

The carrier having been moved to such a position that a drill attached to the spindle F shall be presented to the stem of a broken screw, the carrier is secured, the drill-spindle turned by the handle *i*, and fed by manipulating the handle of the tubular screw.

When an orifice of sufficient depth has been bored in the stem, the screw H is elevated, the drilling-tool removed, and the bit E fitted to the socket of the spindle, and forced by turning the screw H into the orifice of the broken set-screw, until the edges of the bit indent the sides of the said orifice, when, by turning the handle *i* in the proper direction, and at the same time turning the tubular screw, the broken stem may be quickly withdrawn.

I claim as my invention—

The stand D, with its horizontal set-screws *b*, and carrier G, admitting of being adjusted on the said stand, with the tubular screw H and spindle F.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. H. THORNE.

Witnesses:

HARRY HOWSON, Jr.,

HARRY SMITH.