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H. E. ROBERTSON

COTTER PIN EXTRACTOR

Filed Oct. 8, 1924

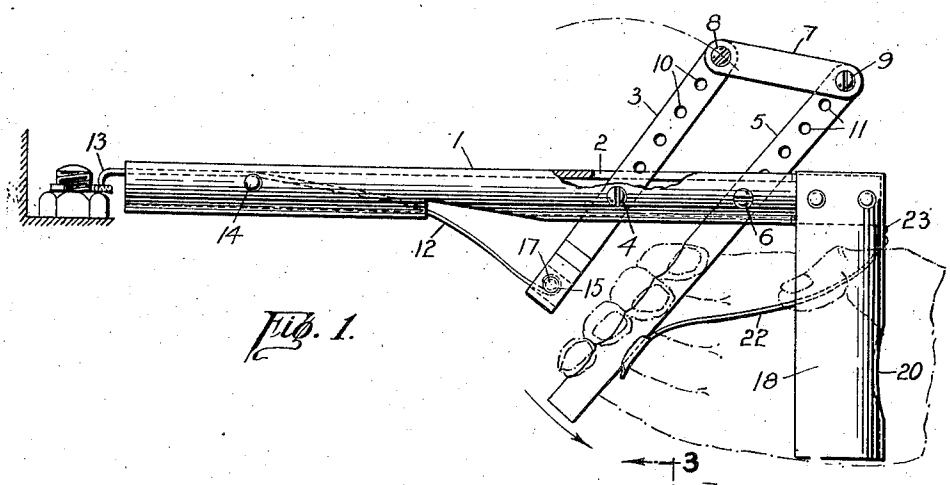


Fig. 1.

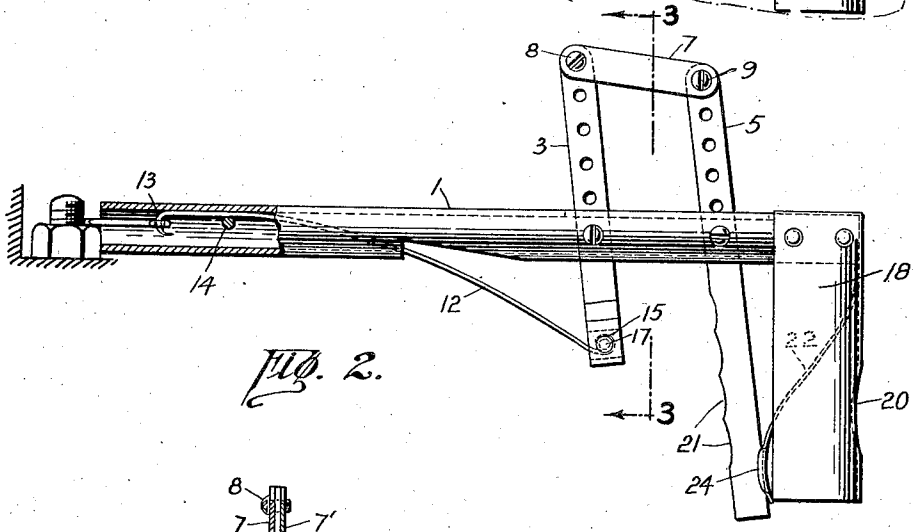


Fig. 2.

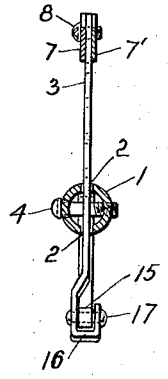


Fig. 3.

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UNITED STATES PATENT OFFICE.

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COTTER-PIN EXTRACTOR.

Application filed October 8, 1924. Serial No. 742,319.

This invention relates to cotter pin extractors, and by which a cotter key or pin may be removed from its seat or securement easily and quickly.

Heretofore, the extraction of a cotter pin from more or less inaccessible and remote places, has been very difficult, annoying and inconvenient and causing much time to be consumed. Ordinary pliers are generally used for easily accessible pins, but very often the pliers slip off the pin and in the aggregate, time is lost.

An important object of the invention, is the provision of a handy and convenient tool that can be hooked into the eye of a cotter pin, and by means of a suitable leverage extract the pin from service by a simple grip of the hand about a pair of handles on the tool.

Another object is to construct a tool for this purpose having but a few parts and strongly made throughout.

Another object is to provide hook means for engaging the eye of a cotter pin that positively will prevent the tool from slipping from the pin when once engaged.

Another object is to provide means for changing the leverage of the pulling members to suit the user of the device.

A further object is to produce the device somewhat in the shape of a pistol, using the trigger and handle for operating the pin-withdrawing member.

I attain the above objects by the novel construction of my device, and other objects and advantages of the invention will appear in the subjoined description of the accompanying sheet of drawings, in which:

Figure 1 is a side elevation of a cotter pin extractor constructed in accordance with my invention. The withdrawing member is shown in hooked engagement with the eye of a seated pin just previous to applying tension and operating the device by the hand shown in dot-and-dash lines.

Fig. 2 is a view similar to the above but showing the barrel engaging the nut and the hook pulled therein with the withdrawn pin after the device has been operated. Part of the barrel has been shown in section for clearness.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Adverting to the drawing and figures thereof: The device consists of the barrel or body represented by the numeral 1, which is preferably tubular in form with slots 2 cut through the opposite walls thereof, to receive the lever 3 pivotally connected as at 4, and the lever 5 similarly pivoted as at 6. These levers project from the opposite sides of the barrel as shown, and are removably joined together above the barrel by links 7 and 7′ by means of the screws 8 and 9. A series of holes 10 and 11 are provided in the respective levers, for changing their fulcrums and therewith also their relation with respect to each other for shorter or longer leverage conditions to suit the pulling power of the user of the device.

The withdrawing member 12 consists preferably of a rod or flat strip of spring steel mounted to slide within the barrel 1, and has a hook 13 formed at one end thereof adapted to project from the end of the barrel, and at the opposite end is formed an eye 15 for pivotally engaging the extreme lower end of the lever 3 by the pin 17. The said lower end is formed U-shaped as at 16 for strength and alignment purposes. A pin 14 in the barrel serves to hold the withdrawing member 12 in position therein and allow it to slide with ease.

A handle 18 preferably hollow or U-shaped in cross-section is made integral with the barrel 1 as by rivits 19, and a depression 20 may be formed on the handle to fit the hand for convenient gripping, and likewise the lever 5 may be provided with a series of wide and shallow serrations 21 to engage the fingers. A spring 22 is provided for the handle and is riveted to the same as at 23, and has side portions 24 turned up to form a groove for guiding the lower end of the hand-lever 5. The purpose of the spring is to aid in throwing the hook-rod 12 outward to expose the hook 13 for engagement.

In the operation of the extractor, the hook 13 thereof is inserted and hooked into the eye of the cotter pin that is to be withdrawn, and with the barrel and levers in the position as shown in Fig. 1 and the hand thus simultaneously engaging the handle and the lever 5, the lever 5 is pulled back to the handle 18, and through the cross-links 7 and 7′ move the lever 3 which pulls back the hook rod 12 and with it the cotter pin, the pull of the lever 5 exerting a reaction through the barrel on the stationary nut adjacent the cotter pin until the resistance of

the pin is finally overcome and thus its withdrawal is effected.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made, when desired, as fall within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is the following:—

1. A cotter pin extractor comprising a tubular body terminating in a rigid handle extending substantially at a right angle to said body; a member slidably mounted in said body and having a hooked end adapted to project from said body; and leverage means extending through and pivotally supported in said body and pivotally connected to the opposite end of said member for withdrawing the member into the body by the simultaneous manipulation of said leverage means and said handle, the leverage means being adjustably fulcrumed in said body.

2. A cotter pin extractor comprising a tubular body terminating in a rigid handle extending substantially at a right angle to said body; a member slidably mounted in said body and having a hook adapted to project from said body; a lever pivotally connected at one end with said member and pivotally connected between its ends with said body; and means pivotally connected with the other end of said lever and pivotally connected with said body for withdrawing the member into the body by the simultaneous manipulation of said means and said handle.

3. An extractor of the class described, comprising a body, a rod having a hook formed on one end adapted to engage the eye of a cotter pin and an eye formed on the other end of said rod, a lever pivotally connected at an end thereof to the eye in said rod and pivotally connected between its ends to said body, a second lever spaced from said first lever and similarly connected between its ends to said body, a cross-link pivotally connecting the said two levers together at their top ends, and a handle projecting from said body adjacent the free end of said second lever.

4. An extractor of the class described, comprising a tubular body, a flexible rod mounted therein having a hook on one end adapted to engage the eye of a cotter pin and an eye on the other end of said rod, a pair of levers spaced from each other and pivotally connected to said body in a slot therethrough, an arm of one of the said levers being pivotally connected in the eye of said rod and the other arm of said lever adapted to pivotally engage a link which is also adapted to be engaged by an arm of the other lever and the other arm of the latter lever remaining free, and a handle rigidly projecting from said body adjacent the said free arm whereby said arm may be pulled by the fingers of the hand grasping said handle to withdraw the said cotter pin from service.

5. A cotter pin extractor, comprising a tubular body, a flat strip of spring material adapted to slide longitudinally therein, a hook on one end of said strip and an eye on the other end thereof, a lever pivoted in said body and extending on opposite sides therethrough, the extremity of one arm of said lever being pivoted to the eye in said strip, a cross-link pivotally connected at one end with the other arm of said lever, an operating lever also pivoted in said body and having one arm pivotally connected with the other end of said cross-link and adapted to have its other arm extend freely, and a handle rigidly projecting from said body adjacent said free arm, the said levers provided with a plurality of holes whereby the leverage relation therebetween may be changed at will.

In testimony whereof I affix my signature.

HUGH E. ROBERTSON.