June 5, 1923. 1,458,076

C. W. POTTS

EXTRACTING DEVICE

Filed June 3, 1922

Fig. 1.

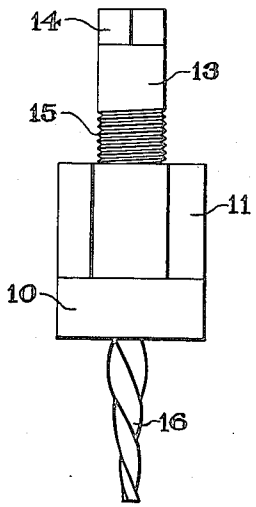
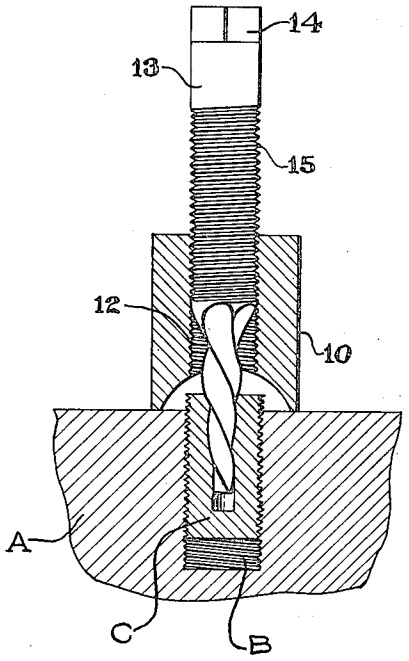


Fig. 3.



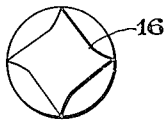
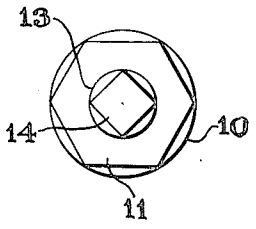


Fig. 4.

Fig. 2.



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WITNESS:

G. W. Potts INVENTOR

BY Victor J. Evans

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UNITED STATES PATENT OFFICE.

CLIFTON W. POTTS, OF PLANO, TEXAS.

EXTRACTING DEVICE.

Application filed June 3, 1922. Serial No. 565,529.

To all whom it may concern:

Be it known that I, CLIFTON W. POTTS, a citizen of the United States, residing at Plano, in the county of Collin and State of Texas, have invented new and useful Improvements in Extracting Devices, of which the following is a specification.

This invention relates to tools and has for its object the provision of a novel device for extracting broken off bolts, studs and the like from the holes into which they are screwed, the device being particularly designed for use in connection with the engines of automobiles for removing broken off cylinder head bolts.

An important object is the provision of an extractor of this character which will be of unusual advantage in obviating danger of spreading the stud or bolt and hindering its extraction. It is well known that the ordinary devices for this purpose frequently dig too deeply into the broken off element and cause such expansion that extraction is hindered if not entirely defeated. It is with this defect in view that I have designed the present device which includes a jam nut engaging the top of the casting for preventing too great penetration of the rotary element.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, positive in action, efficient and durable in service and a general improvement in the art.

With the above and other objects and advantages in view the invention consists in the details of construction to be hereinafter more fully described and claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the device,

Figure 2 is an end view,

Figure 3 is a longitudinal section showing it in the act of extracting a broken off bolt, and

Figure 4 is an end view of the bit.

Referring more particularly to the drawings the letter A designates a casting having a hole B within which is a broken off bolt or stud C to be removed.

In carrying out my invention I provide a nut member 10 which may be cylindrical in shape but which has an angular portion 11 for engagement by a wrench for effecting turning movement and which is provided with a threaded bore 12 having a right hand thread. Associated with this nut member is a shank 13 terminating at one end with a squared portion 14 engageable by a wrench and having its intermediate portion 15 threaded with a right hand thread and screwed into the nut member. The other end of this shank terminates in a left hand cork screw like reamer 16 designed as shown.

In the use of the device the broken off bolt or stud C is drilled by ordinary means to quite some depth and my device is then applied to this hole, the shank being rotated to the left by a suitable wrench to cause the reamer element 16 to enter the hole and jam firmly therein. The nut member 10 is then turned down by a suitable wrench until it engages the face of the casing A. The operator then rotates the shank 13 in a left hand direction, whereupon the rotary movement of the reamer element will naturally result in unscrewing the bolt or stud for effecting its removal from the hole in the casting. To use the tool with the greatest ease and efficiency the pitch of the threads on the screw 15 and stud C should be the same. Otherwise, if the pitch of the threads is different it is required that the nut 10 be continually operated throughout the operation of the screw 13 to insure proper seating engagement of the nut upon the casting. Such an operation will prevent the withdrawal from or further penetration of the reamer in the stud which would otherwise take place due to the different rates of travel between the stud C and screw 13.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed and consequently inexpensive tool which will readily remove broken off securing elements which are threaded into holes in engine cylinders and the like, the device operating rapidly and requiring practically no skill and remarkably little labor in its operation.

While I have shown and described the preferred embodiment of the invention it is of course to be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention I claim:

1. A tool of the character described comprising a nut member having an angular portion engageable by a turning tool, said

nut member having a right hand threaded bore, a right hand threaded shank screwed through said bore and formed with an angular portion engageable by a turning tool, and a left hand cork screw like reamer at the free end of said shank member.

2. A tool of the character described comprising a nut member having an angular portion engageable by a turning tool, said nut member having a right hand threaded bore, a threaded shank screwed through said bore and formed with an angular portion engageable by a turning tool, and a cork screw like reamer at the free end of said shank member, said reamer tapering and having left hand spiral flutes.

In testimony whereof I affix my signature.

CLIFTON W. POTTS.