June 15, 1948. J. WILK 2,443,215

COMBINATION CUTTING TOOL AND WRENCH FOR REMOVING STUDS

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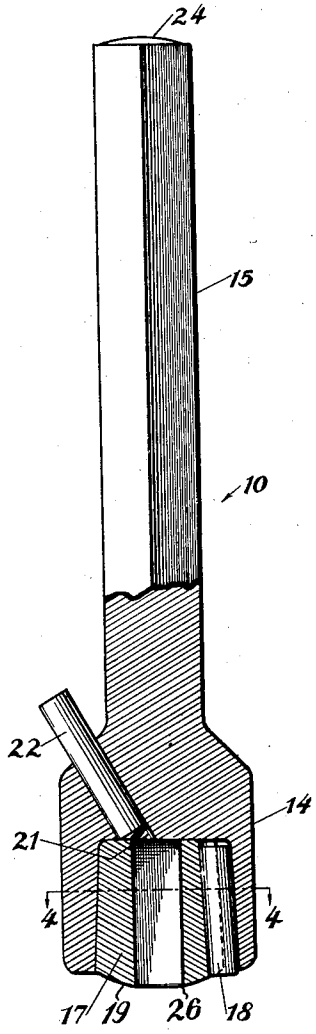


Fig. 1

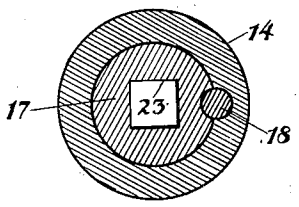


Fig. 4

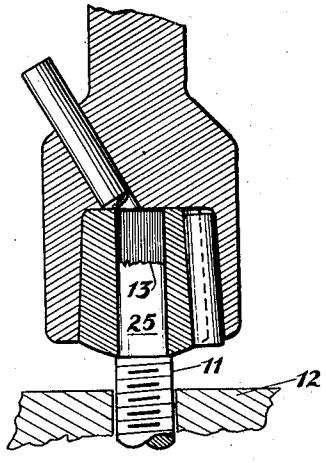


Fig. 2

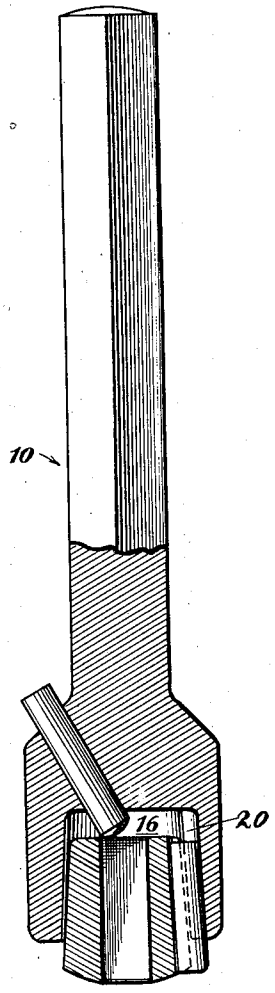


Fig. 3

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COMBINATION CUTTING TOOL AND WRENCH FOR REMOVING STUDS

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1 Claim. (Cl. 81—53)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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This invention relates to a stud remover and has for an object to provide an improved stud remover less liable to breakage than the usual stud puller.

A further object of this invention is to provide an improved stud remover wherein the parts of the remover are in tight contact with each other when in operation, and hence, are not so easily broken.

A still further object of this invention is to provide an improved stud remover made of a minimum number of parts.

Another object of this invention is to provide a stud remover wherein a plurality of cutting heads of various sizes may be used with the same wrench socket, thus reducing the number of wrench sockets needed to a minimum for handling a great variety of sizes of studs.

With the foregoing and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter set forth, claimed and illustrated in the drawing in which:

Fig. 1 is a partly sectional, partly elevational view of the stud remover assembly of this invention.

Fig. 2 is a similar sectional view showing a stud about to be removed.

Fig. 3 is a partly sectional, partly elevational view showing the cutting head being removed from the wrench socket, and

Fig. 4 is a sectional view on line 4—4 of Fig. 1.

There is shown at 10 the stud remover of this invention particularly intended for removing a stud, broken or otherwise, from any location, such as a stud 11 that it is desired to remove from the metal block 12, the stud 11 having been broken off accidentally, as at 13, making it impossible to apply a conventional wrench thereto.

The stud remover includes a wrench socket 14 having a squared shank 15 and provided with a slightly tapered bore 16. Adapted to be inserted in this tapered bore 16 is a tapered cutting head 17. The taper of the head 17 and the bore 16 is very slight, preferably one-half a degree, and the showing on the drawing has been exaggerated for purposes of illustration. As a result of such slight taper, the cutting head 17 makes a very tight fit into the bore 16 and a key pin 18 is provided in a pin hole 20 extending partly into the wall of the bore 16 and the wall of the head 17. Extendable through a diagonal opening 21 in the wrench socket 14 is a head removing pin 22 adapted to contact the inner end of the head 17. The cutting head 17 is provided with a

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squared axial opening 23 of appropriate size for cooperation with the stud 11. The forward face 19 of the cutting head is beveled to provide a cutting edge 26 at the intersection of the wall of the squared opening and the beveled end. A series of cutting heads 17 having squared openings 23 of sizes ranging from one-quarter to one-half inch by sixteenths may be provided for a single wrench socket 14 and a corresponding larger series may be provided for a larger wrench socket. Thus, five cutting heads may be provided for the one wrench socket illustrated in making up the set.

In operation, in order to remove the stud 11, the cutting head 17 having the squared opening 23 of appropriate size is placed in the bore 16 of the wrench socket 14 with the key pin 18 occupying its cooperating aperture 20. Due to the slight taper the cutting head 17 will make a snug and tight fit in the bore 16. The squared opening 23 is placed over the stud end 13 and a hammer force is applied against the end 24 of the squared shank 15 until the cutting head 17 has been driven over the stud 11, as shown, the cutting edge 26 shearing off a portion of the stud and cutting a squared end 25 thereon. A conventional wrench is then applied on the squared shank 15 for rotating the stud 11 out of the metal block 12.

To remove the stud 11 from the squared opening 23 the cutting head 17 is first removed from the bore 16 by means of the pin 22, being forcefully extended through the opening 21 against the inner end of the cutting head 17. Then with the cutting head 17 removed from the bore 16, the same pin 22 or other appropriate tool may be inserted through the other end of the squared opening 23 to knock the stud 11 out of the cutting head 17.

Other modifications and changes in the number and arrangement of the parts may be made by those skilled in the art without departing from the nature of this invention, within the scope of what is hereinafter claimed.

The invention herein described and claimed may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

A stud remover comprising a wrench socket provided with a slightly outwardly tapered bore at one end and a wrench cooperating shank at the other end, a similarly tapered stud cutting head adapted to be inserted in the tapered bore,

said stud cutting head having a squared opening extending axially therethrough, the end of the wall surrounding the squared opening being provided with a beveled face to form a cutting edge at the intersection of the wall of the squared opening and the beveled face for cutting a squared portion on a stud to be removed, a key pin, said key pin adapted to be inserted into an aperture formed by cooperating recesses in the bore wall and the cutting head wall, and cutting head removing means comprising a pin, said wrench socket having a pin opening therethrough extending angularly to the inner side of said cutting head whereby said pin may be driven against the head to remove it from said wrench socket.

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