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TOOL FOR REMOVING STUDS OR THE LIKE

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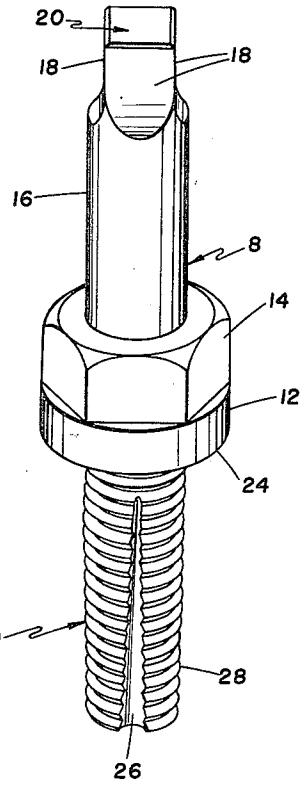


Fig. 1

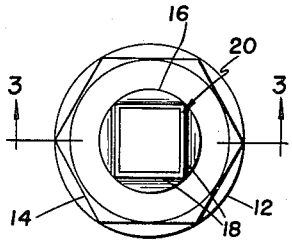


Fig. 2

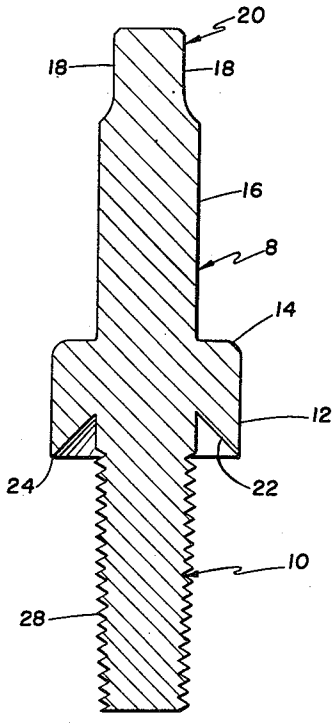


Fig. 3

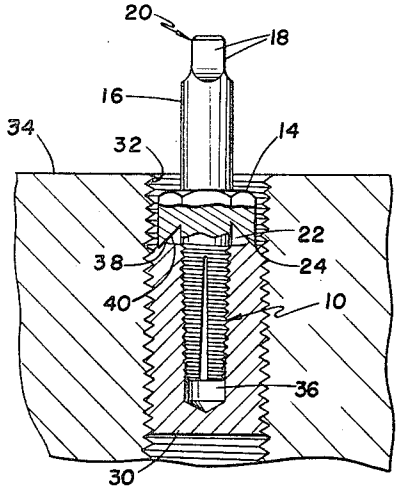


Fig. 4

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TOOL FOR REMOVING STUDS OR THE LIKE

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5 Claims. (Cl. 81—53)

The present invention relates generally to hand tools and more particularly to a tool for removing studs, broken bolts, or the like.

The primary object of this invention is to provide a stud removing tool of unitary construction which is shaped to exert extreme clamping or gripping action on studs or broken bolts and comtemporaneously insuring against splitting or spreading the outer ends of the studs or bolts, during dislodgement thereof.

Another object of this invention is to provide a stud removing tool which is suitable for removing studs from deep sockets or cavities.

Another object of this invention is to provide a stud removing tool which may be operated by conventional wrenches or similar tools, provision being made for application of wrenches alternatively upon intermediate and terminal portions of the tool.

Another object of this invention is to provide a stud removing tool which is inexpensive and practicable to manufacture.

Finally, it is an object to provide a stud removing tool of the aforementioned character which is simple, safe and convenient to use, and which will give generally efficient and durable service.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions as will be hereinafter fully described in the specification, particularly pointed out in the claims, and illustrated in the drawing which forms a material part of this disclosure and wherein similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawing, and in which:

Fig. 1 is a perspective view of the tool.

Fig. 2 is an end elevation view of the tool.

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

Fig. 4 is a sectional view showing the tool engaged with a stud, the tool being shown partially in elevation for clarity.

Referring now to the drawing, the tool comprises a body member **8** with an integral screw threaded shank **10** having at one end an enlargement or integral collar **12** which is provided with a hexagonal portion **14** to fit a standard wrench. Extending upwardly from the collar **12** is a plain shank **16** having at its end a plurality of flats **18** constituting a wrench engaging member or plug **20**.

The collar **12** surrounding the threaded shank **10**, has a V-shaped undercut or groove **22** which extends to the periphery of the collar to provide a knife edge **24** around the lower edge thereof. This knife edge will always be generally annular but it is interrupted or serrated when greater penetration is desired.

The threaded shank **10** is slightly tapered towards its end and is provided with a plurality of flutes **26** to receive cuttings in the manner of a conventional screw threading tap. The threads **28** thereon are hardened so that the threaded shank **10** is self tapping, the threads extending upwardly into the undercut **22**. Ordinarily the shank **10** has a left hand thread, although the essential feature is that the shank **10** shall have threads opposite to the threads of the stud or bolt to be removed.

The primary use of the tool is for removing broken bolts, studs or the like from cavities or sockets in mechanical structures. Various devices have heretofore been used for this purpose but they usually have required specialized tools for their successful operation. The present device may be actuated by a conventional wrench or similar tool engaging either the hexagonal portion **14** or the plug **20**.

The use of the tool is illustrated in Fig. 4 in which a stud **30** is lodged within the bore **32** of a structure **34**. In order to remove the stud **30**, a socket **36** is first drilled therein and the tool is inserted in the socket. By rotating the tool with a wrench, the threaded shank **10** is screwed into the stud and, since it has left hand threads, a right handed stud will be loosened and start to unscrew from the bore **32** when the threading torque overcomes the resistance to turning of the stud. Should the stud **30** be tightly jammed in place, the tool may be screwed into the socket **36** until the knife edge **24** cuts into the top of the stud. The inclined wall **40** of the V-shaped groove **22**, behind the knife edge **24** causes the material of the stud to be forced inwardly as indicated at **38**, so wedging the stud tightlv on the threaded shank **10**. This combination of the knife edge **24** and bevel **40** also prevents the spreading and splitting of the stud.

Further rotation of the tool unscrews the stud from the threaded bore **32**. It will be evident that the relatively small diameter of the collar **12** and the hexagonal portion **14** allows the tool to penetrate into structures as shown in Fig. 4.

The operation of this invention will be clearly comprehended from a consideration of the foregoing description of the details thereof, taken in connection with the drawing and the above recited objects. It will be obvious that all said objects are amply achieved by this invention.

Further description would appear to be unnecessary.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of this invention, and that the specification and drawing are to be considered as merely illustrative rather than limiting.

I claim:

1. A stud removing tool comprising a body member having a wrench receiving portion and a threaded shank, a collar on said body member at one end of and unitary with said shank, said collar having a generally annular, continuous knife edge on the side thereof adjacent said shank, said knife edge extending in spaced relation to and coaxially of said shank, said collar having a wall inclining from said knife edge to define the outer wall of a groove encircling said shank, whereby material at the end of a stud engaged by said knife edge is urged inwardly of said groove to prevent the stud from binding.

2. A stud removing tool comprising a body member having a screw threaded shank and a collar at one end of and unitary with said shank, said collar having a generally annular, continuous knife edge on the side thereof adjacent said shank and extending in spaced relation and coaxially of said shank, said collar having a wall inclining from said knife edge to define the outer wall of a groove encircling said shank, whereby material at the end of a stud engaged by said knife edge is urged inwardly of said groove to prevent the stud from binding, and wrench receiving means on said collar.

3. A stud removing tool comprising a body member having a screw threaded shank and a collar at one end of and unitary with said shank, said collar having a generally annular, continuous knife edge on the side thereof adjacent said shank and extending in spaced relation and coaxially of said shank, said collar having a wall inclining from said knife edge to define the outer wall of a groove encircling said shank, whereby material at the end of a stud engaged by said knife edge is urged inwardly of said groove to prevent the stud from binding, and wrench receiving means on said collar, said knife edge being disposed at the periphery of said collar, said threaded shank extending into said groove.

4. A stud removing tool comprising a body member having a screw threaded shank and a collar at one end of and unitary with said shank, said collar having a generally annular, continuous knife edge on the side thereof adjacent said shank and at the periphery of said collar, wrench receiving means on said collar, said collar having an undercut groove disposed inwardly of said knife edge, said threaded shank extending into said groove, said

groove being defined in part by an inclined wall extending from said knife edge to the root of said groove, said body member including a plain shank extending from said collar on the side remote from said threaded shank, said plain shank having wrench receiving means at the end thereof.

5. A tool according to claim 4 and wherein said collar has a diameter less than twice the diameter of the shank, whereby the tool is dimensioned so that it can ordinarily be inserted beyond the collar in extraction of a deeply imbedded stud with the wrench receiving means at the end of the plain shank then being used.

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