Dec. 19, 1944. H. P. MILLER 2,365,425

PIN PUNCH

Filed Aug. 16, 1943

Fig. 1

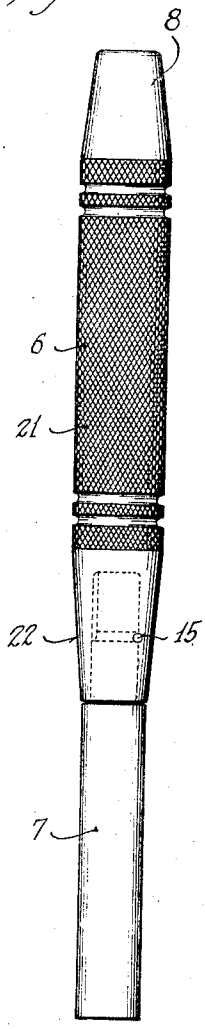


Fig. 2

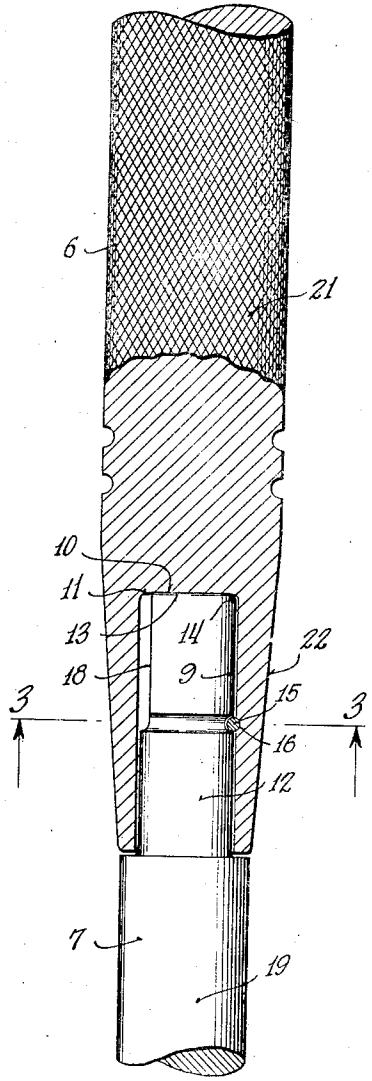


Fig. 4

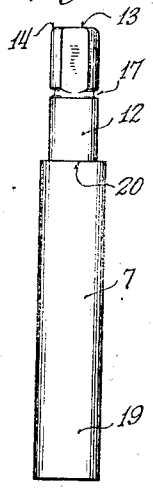


Fig. 5

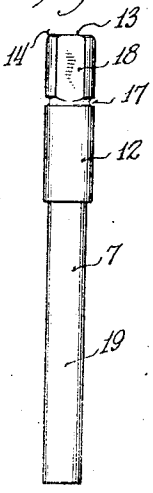
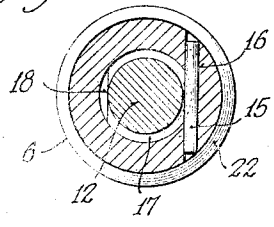


Fig. 3



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Patented Dec. 19, 1944 2,365,425

UNITED STATES PATENT OFFICE

2,365,425

PIN PUNCH

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Application August 16, 1943, Serial No. 498,844

2 Claims. (Cl. 164—119)

The invention relates to hand tool pin removers.

Usually hand tool pin removers are formed with integral handles, and where a mechanic has to use a number of different sizes in his work, the weight of these tools and the space occupied by them in his tool-box become important items. In order to reduce the weight and space of these tools I have provided a pin remover structure in which a single handle will serve a great number and variety of sizes of pin removers, the pin removers each having a short shank for detachable connection with said single handle with a driving contact between the handle and the end of the pin remover.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawing:

Fig. 1 is an elevation view of a pin remover embodying the invention;

Fig. 2 is an enlarged detailed view of parts of the pin remover, parts being broken away and part of the handle being shown in section;

Fig. 3 is a detailed horizontal sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is an elevation view of one of the pin remover members;

Fig. 5 is a view similar to Fig. 4 showing a smaller size pin remover member.

Referring to the drawing, the tool comprises a handle 6 and a series of interchangeable pin remover elements 7 having detachable connection with the handle and a driving contact with said handle.

The handle 6 is a tubular metal member whose hammering end 8 may be slightly tapered inwardly to allow for peening over of said end by the hammering operation. The other end of the handle is provided with a bore 9 forming a cylindrical socket whose bottom 10 is flat and whose joint between the sides of said bore and bottom is preferably curved or filleted as at 11.

Each of the pin remover elements 7 has a shank portion 12 adapted to loosely fit in the socket 9, so that its flat end 13 abuts the bottom 10 of said socket to provide a direct end impact contact therewith, and the edges of this end are slightly relieved or rounded as at 14 on a greater curvature than that of fillet 11, so that there is no contact between this end and the sides of the bore 9. For the loose fit between the shank portion 12 and the socket 9 the over all clearance may be from four to six thousandths of an inch.

For loosely holding the pin remover element in assembled relation with the handle, I provide a steel pin 15 extending through a transverse bore 16 in the handle eccentric to or tangent to the bore 9 so as to project slightly into the bore 9. Each pin remover element has an annular groove 17 to loosely receive the pin 15 and a flat 18 extending from its inner end to said groove to allow the pin 15 to pass to said groove when said flat 18 is alined with the said pin. The over all clearance between the pin 15 and the sides of the groove 17 may be about eight thousandths of an inch.

As shown in Figs. 4 and 5, the pin remover elements have pin portions 19 formed thereon of different sizes for use in driving out different size pins from assembled structures. Where the diameter of the pin is larger than the diameter of the bore 9, as in Fig. 4, a shoulder 20 is formed between the shank and the pin, but this shoulder, as shown in Fig. 2, is spaced from the end of the handle, so that it does not have driving contact therewith.

The handle 6 may have its gripping portion 21 knurled so as to improve the hold of the operator thereon, and its socketed end 22 may be tapered, as shown in Fig. 1, to provide for better visibility of the pin remover element.

In use the device operates similar to an ordinary pin remover, and the loose connection between the pin remover element and its handle including the pin 15 permits a direct impact connection between the end 13 of the pin remover element and the bottom 10 of the handle and prevents freezing of the pin remover element in the holder under rigid impacts, so that the pin remover element may be readily removed, when desired.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. In a device of the character described, the combination of a handle for pin remover elements having pin ends of different sizes, said handle having a socket with its bottom forming an impact surface, an interchangeable pin remover element having a shank loosely fitting in said socket with its end in impact engagement with the bottom of said socket, said shank portion fitting so loosely in said socket that repeated impacts will not freeze said shank portion in said socket and having a groove therein, and a fixed metal retainer member mounted in said holder and loosely engaging in said groove

for holding said shank portion loosely in said socket to permit relative lengthwise movement between said shank portion and said socket and relieve said holding means of impact strains.

2. In a device of the character described, the combination of a handle for pin remover elements having pin ends of different sizes, said handle having a socket with a flat bottom forming an impact surface, an interchangeable pin punch element having a shank portion loosely fitting in said socket with a flat end in impact engagement with the bottom of said socket, the said flat end of said shank adjacent its circumference being relieved and the sides of the socket adjacent the bottom being filleted, said shank portion fitting so loosely in said socket that repeated impacts will not freeze said shank portion in said socket and having an annular pin receiving groove and a flat on one side extending from its inner end to said groove, and a pin extending cordwise across said socket intermediate its ends and in a position to loosely engage in said groove for holding said shank portion loosely in said socket to permit relative lengthwise movement between said shank portion and said socket to relieve said holding means of any impact thrust.

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