

Nov. 12, 1957

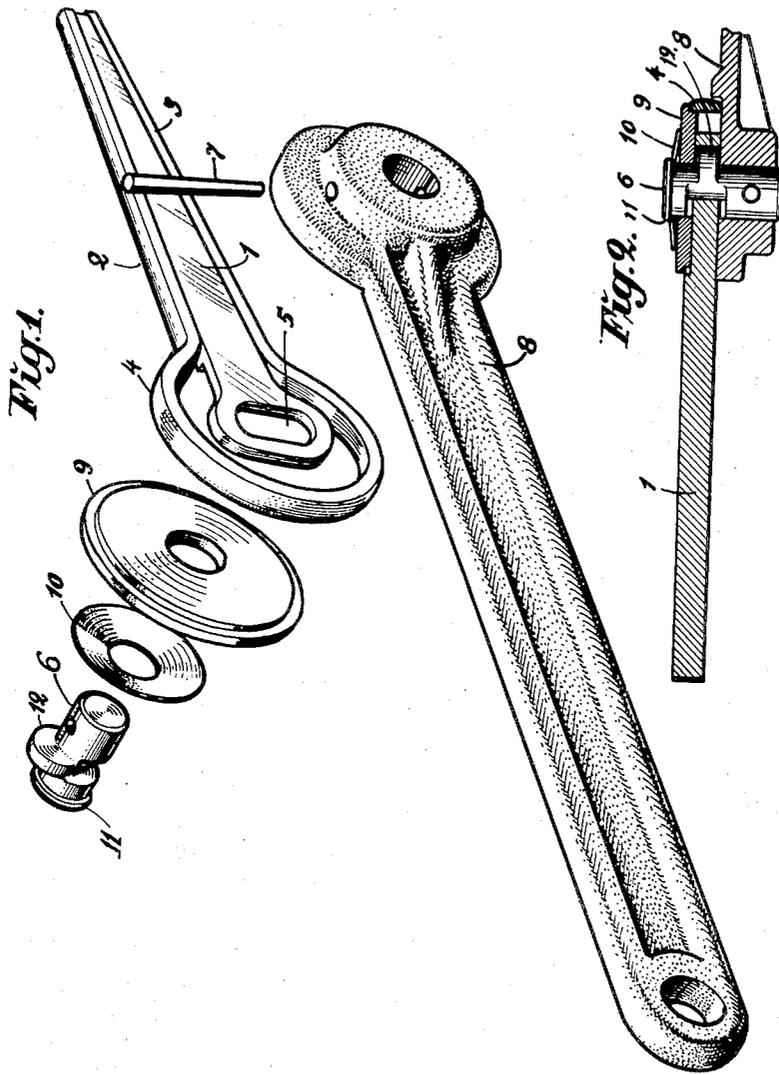
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2,812,675

INSTRUMENTS FOR REMOVING TOOLS FROM TOOL HOLDERS

Filed June 20, 1955

2 Sheets-Sheet 1



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Fig. 3

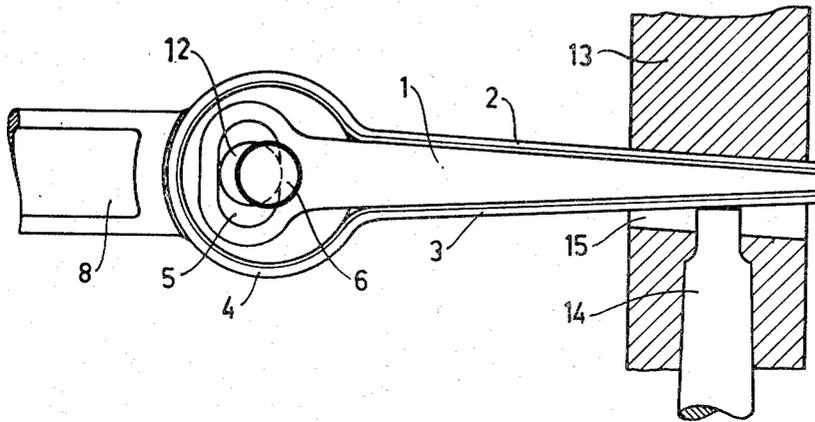
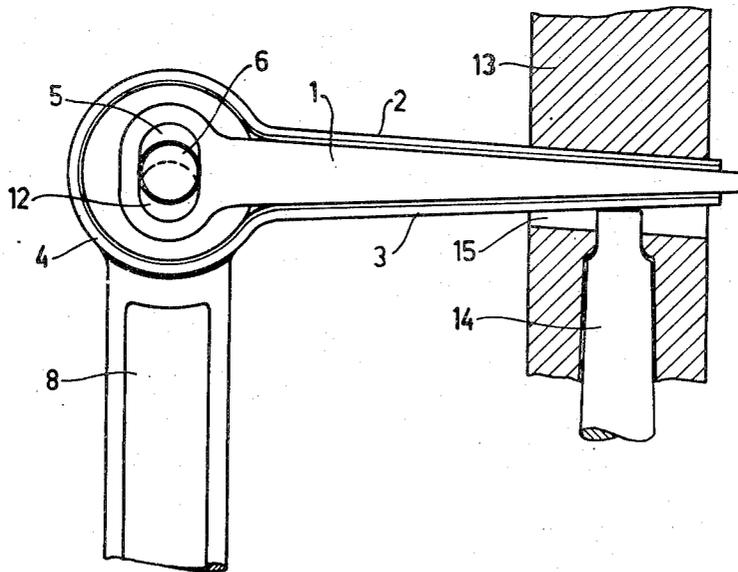


Fig. 4



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INSTRUMENTS FOR REMOVING TOOLS FROM TOOL HOLDERS

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Application June 20, 1955, Serial No. 516,485

1 Claim. (Cl. 81-3)

The present invention relates to an instrument which is intended to facilitate the removal of tools having a conical engagement portion, e. g. drills, reamers, milling cutters or the like from tool holders or spindles. The instrument comprises a pair of shanks which are positioned in a wedge-like arrangement and are joined by a resilient bow, a wedge disposed between said shanks, and a crankshaft adapted to displace said wedge longitudinally between said shanks by turning the crankshaft by means of a handle or the like.

Previously known instruments of this type have the disadvantage that the crankshaft can be turned in one direction only to displace the wedge. This may result in damage or destruction of the instrument if the user inadvertently tries to turn the handle in the wrong direction. The object of this invention is to obviate this disadvantage, which is achieved by arranging the crankshaft so that it displaces the wedge when it is turned in either direction from a neutral position.

The invention will be described in detail below, reference being had to the accompanying drawing which shows by way of example an embodiment form thereof.

Fig. 1 is a perspective exploded view of an instrument according to this invention.

Fig. 2 shows a fragmentary longitudinal cross-section through the instrument.

Figs. 3 and 4 show in two different positions how the instrument is used to remove a tool from a tool holder.

The instrument comprises a wedge 1 which is disposed between two shanks 2 and 3 which are joined by a resilient bow 4 which extends around the wider end of the wedge 1. Adjacent its wider end the wedge 1 has an elongated opening 5 which is disposed symmetrically and transversely to the longitudinal axis of the wedge. Through this opening there extends a crankshaft 6 to which is attached a handle 8 by means of a conical pin 7. The assembly is completed by means of a disc 9 and a resilient washer 10 which engages a flange 11 on the crankshaft 6. In Figs. 3 and 4 the disc 9 and the resilient washer 10 are supposed to be removed so that the remaining parts are clearly visible.

As evident from the drawings, the assembly is such

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that when the handle is in its neutral position, in alignment with the longitudinal axis of the wedge 1, the eccentric 12 of the crankshaft finds itself centrally in the opening 5, as shown in Fig. 3. When the handle is swung in either direction from the neutral position, the eccentric 12 will be moved towards the corresponding end of the opening 5, whereby it will displace the wedge longitudinally, so that its narrow end projects somewhat between the ends of the shanks 2 and 3. Thereby, the shanks will be moved slightly apart. This action is illustrated in Fig. 4.

In Figs. 3 and 4, the numeral 13 designates a spindle in a machine tool and 14 is a drill having a conical shaft which is inserted in the spindle. In Fig. 3 the instrument is inserted in the elongated hole 15 of the spindle 13. Fig. 4 illustrates how the drill is loosened when the wedge is displaced in the manner described above.

By virtue of the completely symmetrical arrangement of the instrument of this invention, the displacement of the wedge takes place by turning the handle either up or down from the neutral position and it is not necessary for the user to be careful to turn the handle in the right direction.

Having now particularly described the nature of my invention and the manner of the operation what I claim is:

An instrument for removing a tool having a conical engagement portion from a conical recess in a tool holder comprising a looped resilient web portion having spaced apart ends, a shank extending from each of the ends, said shanks being disposed in confronting converging relation and having adjoining free ends movable into a hole in a tool holder, a wedge longitudinally positioned between the shanks and extending substantially the entire length thereof and movable axially thereof to spread the free ends of the shanks apart, said wedge having a head positioned within the web portion, said head having an elongated opening disposed symmetrically and transversely to the longitudinal axis of the wedge, a crankshaft extending through the opening and having an eccentric disposed centrally within the opening when the crankshaft is in a neutral position and a handle means on the crankshaft for rotating it in a clockwise or counter-clockwise direction to move the eccentric in the opening and displace the wedge longitudinally for spreading the shanks apart against the urge of the resilient web portion.

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