May 9, 1961 T. E. GUARD 2,983,036

TOOL

Filed March 12, 1958

Fig. 4

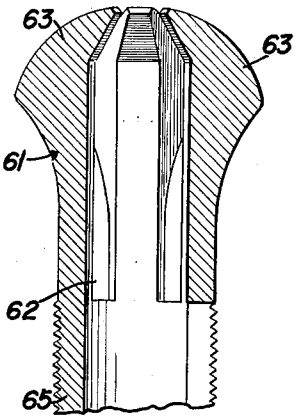


Fig. 1

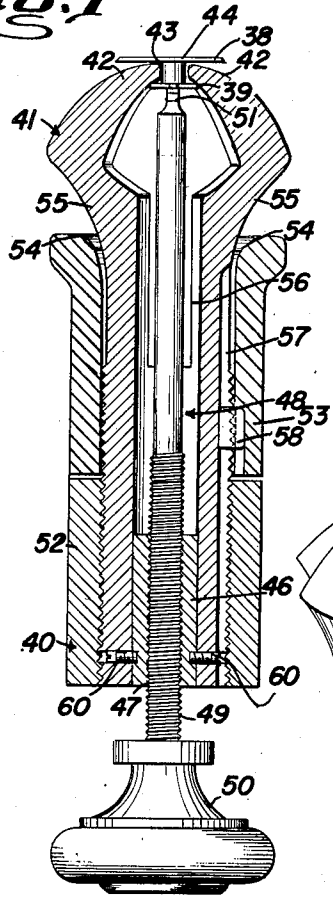


Fig. 3

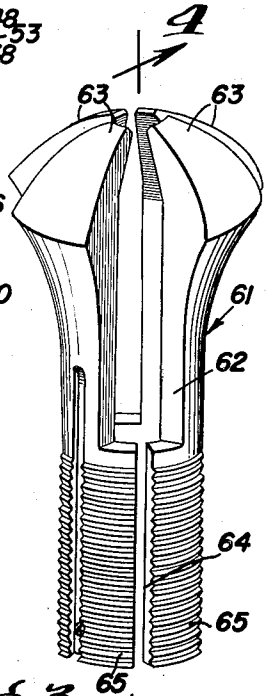
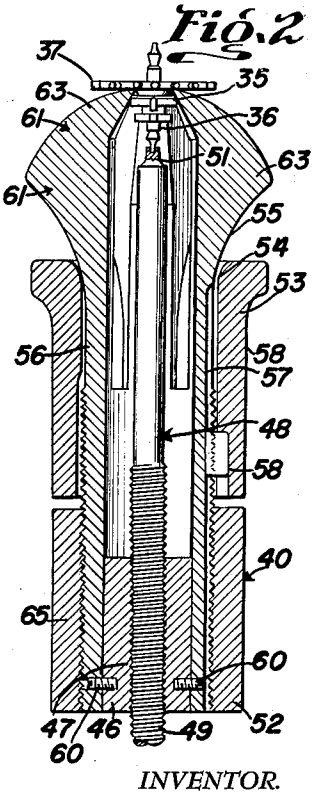


Fig. 2



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TOOL

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1 Claim. (Cl. 29—231)

This invention relates to a tool, and more particularly to a tool for use by watchmakers or watch repairmen and the like for use in removing hands and roller tables from timepieces such as watches.

The object of the invention is to provide a tool which is adapted to be used in watch repair work whereby the watch hands such as the hour and minute hands, as well as the roller table, can be removed without damaging the watch.

Another object of the invention is to provide a tool which includes a plurality of jaws that are mounted for movement into and out of engagement with the hands and roller table of a watch whereby the hands and roller table can be removed without defacing or bending the watch dial or breaking the hands and wherein the jaws can be adjusted to grip hands of different sizes or shapes.

A further object of the invention is to provide a tool which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same.

Figure 1 is a longitudinal sectional view taken through the tool of the present invention and showing a chuck having two jaws for use in removing the hands of a watch.

Figure 2 is a view similar to Figure 1, but showing a modification wherein the chuck has a plurality of jaws so that a roller table can be removed from a watch.

Figure 3 is a perspective view illustrating the modified chuck of Figure 2.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Referring in detail to the drawings, and more particularly to Figure 1 of the drawings, the numeral 40 indicates the tool which comprises a chuck 41 that includes a plurality of spaced apart jaws 42. The jaws 42 are provided with faces 43 which are adapted to engage a member such as the stem 44 of a watch or timepiece. In Figure 1 the numeral 39 indicates the watch hands, and the numeral 38 indicates the dial.

The interior of the chuck 41 is hollow, and mounted within an end portion of the chuck 41 is a cylindrical bushing 46 which is provided with a central threaded bore 47. The numeral 48 indicates a push pin which includes a shank that has a threaded portion 49 which engages the bore 47 in the bushing 46. A manually operable knob 50 is connected to the outer end of the push pin 48, and the inner end of the pin 48 is tapered as at 51 for engagement with an end of the stem 44.

Surrounding an end portion of the chuck 41 is a collar 52, and the numeral 53 indicates a body member which is arranged contiguous to the collar 52. The body member 53 includes a flaring or tapered surface 54 which is adapted to coact with an adjacent flaring surface 55, and the chuck 41 is provided with cut-outs or slots 56 so that sufficient resiliency is provided for permitting the

jaws 42 to expand and contract whereby workpieces of different sizes or shapes can be engaged.

The chuck 41 is provided with an elongated groove 57, and the numeral 58 indicates a securing element such as a key which extends through the body member 53 and engages the groove 57. Set screws 60 are provided for connecting the bushing 46 to the adjacent portion of the chuck 41.

Referring now to Figures 2, 3 and 4 of the drawings, there is shown a modified chuck which is indicated generally by the numeral 61, and the chuck 61 can be used in lieu of or instead of the chuck 41. The chuck 61 includes cut-out portions 62 and spaced apart jaws 63, and the chuck 61 may also be provided with slots or grooves 64 as well as threaded portions 65. In Figure 2, the numeral 37 indicates the balance wheel, and the numeral 36 indicates the bearing, while the numeral 35 indicates the roller table.

From the foregoing, it is apparent that there has been provided a tool which is especially suitable for use by watchmakers, watch repairmen or the like. In use, the tool can be actuated so as to cause the jaws such as the jaws 42 of the chuck 41 to engage a watch stem 44 whereby by properly turning the knob 50, the push pin 48 can be moved longitudinally in the tool so that with the surfaces 43 of the jaws 42 gripping the stem 44 and with the tapered end 51 of the push pin 48 engaging the end of the stem, it will be seen that the hands 39 can be readily removed from the timepiece which may be a watch, and wherein none of the parts of the timepiece will be damaged. The hands can be removed when desired, as for example when a timepiece is being cleaned or otherwise worked on.

In Figures 2, 3 and 4 there is illustrated a modified chuck 61 which can be used instead of the chuck 41, and the threaded portion 65 of the chuck 61 may be engaged by a collar such as the collar 52.

The coacting tapered surfaces 54 and 55 are arranged, so that pressure from the surface 54 will engage the tapered surface 55 whereby the jaws 42 can be moved together whereby parts of different sizes or shapes can be readily gripped for removal or replacement. The push pin 48 can be readily manually adjusted as desired by rotating the knob 50.

The parts can be made of any suitable material and in different shapes or sizes. The number of jaws in the chucks as well as the shape of the chucks and jaws can be varied as desired.

In use, with the parts arranged as shown in the drawings, the crystal of a watch may be removed and then the tool can be placed over the watch hand or hands to be removed and the pin 48 can be adjusted by means of the knob 50 until the end 51 abuts or engages the end of the stem 44 on which the hands are mounted. Then, the body member 53 can be adjusted or rotated so that the flaring surface 54 will engage the tapered surface 55 whereby the jaws 42 will clamp the stem 44 therebetween, and whereby the hands 39 can be removed. The entire device may be constructed so that it is small and compact whereby it can be readily held in the user's hand.

In Figure 2 the chuck 61 is shown being used instead of the chuck 41, and the chuck 61 has four jaws 63. The four jaws 63 permit a roller table 35 to be removed, and when the assembly of Figure 2 is being used, the end portion 51 of the pin 48 engages the bearing 36 so that the jaws 63 can grip the roller table 35 and remove the same, when the device is actuated.

Heretofore, it has been difficult to remove the hands and roller table of wrist watches without defacing or bending the dials and breaking such hands. With the present invention, such hands can be readily removed

without damaging the parts. Also, other types of timepieces such as pocket watches can be operated on or worked on with this tool. A chuck having four jaws may be used for removing the roller table, while a chuck having two jaws may be used for removing the watch hands. The jaws of the chuck are arranged so that sufficient clearance is provided for the moving parts, and the roller table will be kept from slipping out when pressure is applied to the balance staff pivot.

All chucks are made of resilient steel. The jaws **42** of Figure 1, and the jaws **63** of Figure 2 move outward when the body **53** is released by the collar **52**. The jaws are closed by rotating the collar **52** forward against the body member **53**. The screw member **60** holds the bushing **46** secure so it will not back out when pressure is applied to push pin **48**. The numeral **58** indicates a key which is fit in body member **53**. The key fits in groove **57** which keeps the chuck from turning when the collar **52** is rotated.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

In a tool, a chuck including a plurality of spaced apart jaws having externally threaded end portions, a bushing

positioned within the threaded end portions of said spaced apart jaws, and said bushing being provided with a central threaded bore, set screws extending through the threaded end portions of said jaws and engaging said bushing to retain said bushing in fixed relation to said threaded end portions, a push pin including a shank having a threaded portion engaging the bore in said bushing, a knob connected to the outer end of the threaded portion of said pin, the inner end of said pin being tapered, an internally threaded cylindrical collar surrounding and threadably engaging the threaded end portions of said jaws, a body member arranged, contiguous to said collar and surrounding a portion of said jaws, said body member and jaws having coacting adjacent tapered surfaces, there being a groove in the elongated threaded portions of said jaws, and a key engaging said groove.

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