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DEVICE FOR REMOVING AND REPLACING BUSHINGS

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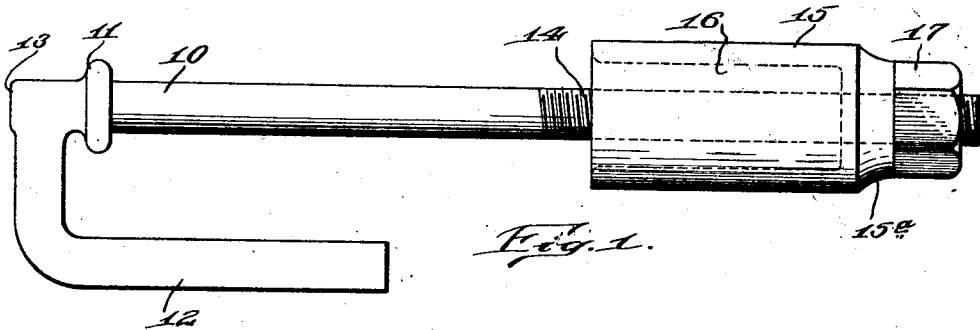


Fig. 1.

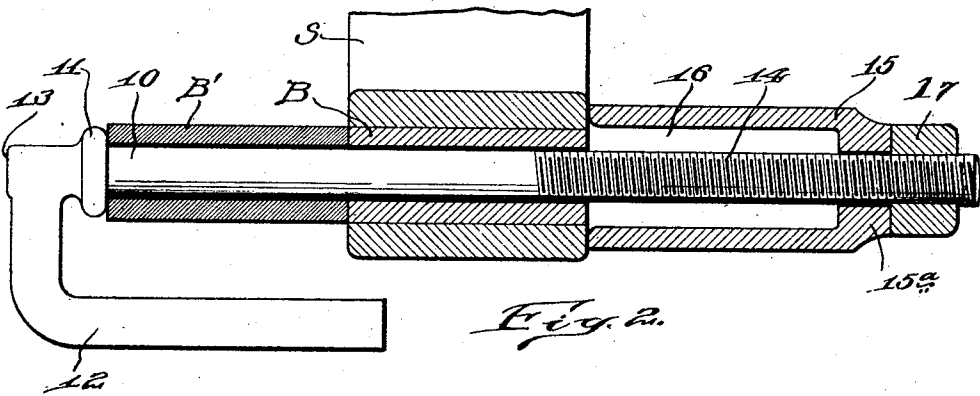


Fig. 2.

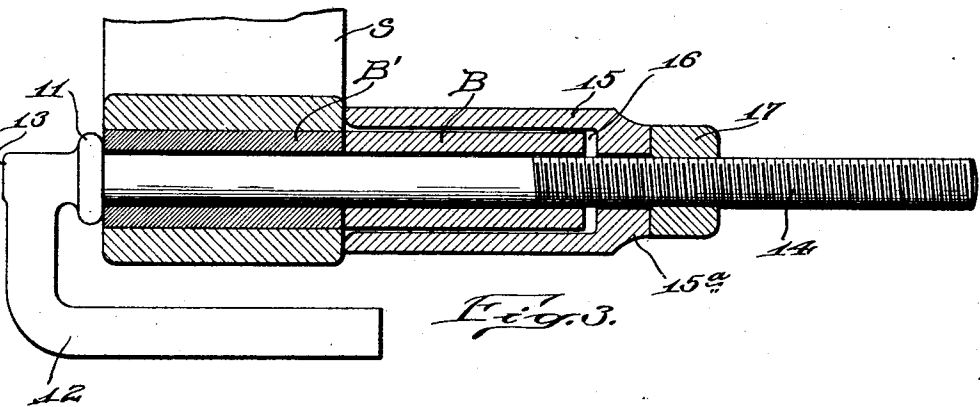


Fig. 3.

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DEVICE FOR REMOVING AND REPLACING BUSHINGS.

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This invention relates to devices for removing and replacing bushings, and its preferred embodiment comprises a device adapted to simultaneously remove a worn out or defective bushing and by the same operation insert a new bushing in its place. While having other and more general fields of usefulness, the invention is well adapted and designed for removing and replacing bushings in the spring shackles of automobiles. The foregoing and other objects and advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawings, and the distinctive features of novelty will be pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevation of a device embodying the invention;

Fig. 2 is a view partly in elevation and partly in longitudinal section showing the device in use, with a new, and a worn bushing, and the spring shackle in section, and showing the position of the parts at the beginning of an operative movement; and

Fig. 3 is a view similar to Figure 2, but showing the relative position of the parts at the completion of an operative movement.

10 indicates a stout rod or stem circular in cross section and of a dimension to permit the bushings, for which the device is designed to be slipped thereon. This rod has at one end portion thereof a head 11 constituting an abutment to engage the end of the bushing with an extension 12 outward therefrom and with its extremity bent alongside the rod and spaced therefrom. The end of the rod where the extension 12 branches out therefrom is preferably provided with a flattened area 13 adapted to receive hammer blows to assist in dislodging the bushing when required. The other end portion of the rod 10 is threaded as indicated at 14 for a substantial distance, i. e. to a point intermediate the length of the rod and a sleeve 15 is applied to this end portion of the rod, this sleeve having a head portion 15^a at one end thereof, which has a fairly close sliding fit upon the rod. From this head 15^a the sleeve extends around the rod with an annular clearance space 16 extending to the end of the sleeve and of a dimension to receive the bushing as it is pressed thereinto. 17 indicates a

nut engaging the threaded portion of the stem 10 and adapted to engage an outer bearing surface of the head 15^a of the sleeve to exert pressure on the stem for removing and replacing the bushing.

In use, for removing and replacing a bushing in the spring shackle S, the nut 17 and sleeve 15 being removed, the new bushing B' is first slipped upon the stem 10. Then the stem 10 is passed through the worn bushing B and the sleeve 15, and nut 17 applied to the threaded end of the stem 10 as seen in Figure 2. The function of the bent extension or tail piece 12 of the stem is, by engaging with the spring structure to prevent turning of the stem. Then by turning up the nut 17 the new bushing B' being engaged by the head 11, will press the worn bushing B gradually outward and into the clearance space 16 of the sleeve, and be itself pressed into place at the same time as will be readily understood from an inspection of Figure 3. In case the bushing should stick and require hammer blows to dislodge the same, these may be applied to the area 13 at the end of the stem. In case it is desired to use the device for removing shouldered bushings, this may be accomplished by applying the sleeve 15 to the other end portion of the stem, i. e. so that the head 11 will engage with the end of the sleeve, and pressure exerted as already described. In this case however, it is not practicable to insert the new bushing simultaneously with the removal of the old one. I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the kind described comprising a stem having a head constituting an abutment at an inner end portion thereof and with its outer end portion threaded for a substantial distance, said stem being of a length to permit both a new and a worn bushing to be slipped thereon with said threaded portion extending beyond said bushing, means carried on the head for en-

gaging a stationary member to prevent rotation of the stem, a sleeve slidably fitted on said stem provided with a clearance space to receive a bushing as it is pressed there-
 5 into, and a nut engaging the threaded portion of said stem and adapted to react against said sleeve as an abutment, to exert pressure for pressing one of said bushings into said sleeve, and the other of said bush-
 10 ings into operative position.

2. A device of the kind described comprising a stem having a head constituting an abutment for a bushing adjacent the inner end thereof with an outer portion there-
 15 of threaded for a substantial distance, means for engaging a stationary member to prevent rotation of the stem, a sleeve fitted to said stem having an annular clearance space to receive a bushing, and a nut outward of
 20 said sleeve and adapted to abut thereagainst, the length of said stem outward from said head being sufficient to receive a new bushing and also a worn bushing with said sleeve and said nut also in place on said stem, and
 25 with said sleeve located on said stem wholly outward of said bushings.

3. A device of the kind described comprising a stem equipped at its inner end with a head constituting a bushing engaging
 30 abutment, and also with means adapted to engage a stationary member to prevent turning thereof, said stem having a threaded outer portion, a nut engaged with said threaded portion, a sleeve fitted on said
 35 stem inward of said nut and provided with a clearance space adapted to receive a bushing, the extent of said stem inward of said sleeve and between it and said head being sufficient to receive a worn bushing and also
 40 a new bushing.

4. A device of the kind described comprising a stem having a head constituting a bushing engaging abutment at its inner end
 45 portion, with a bent tail piece extending from said inner end adapted to engage a stationary member to prevent turning thereof, said inner end being also provided with an area adapted to receive hammer blows, said stem having a threaded outer portion,
 50 a nut engaged with said threaded portion, and a sleeve fitted on said stem to constitute

an abutment for said nut and having a clearance space to receive a bushing, the extent of said stem between the inner end of
 55 said sleeve and said head being sufficient to receive both a worn and a new bushing in endwise alinement on the stem.

5. A device of the class described, comprising a stem having a head constituting a bushing-engaging abutment at one end and
 60 threaded at its opposite end, said head having a flattened area adapted to receive hammer blows directed in the line of the stem, positively acting means for engaging a stationary member to prevent turning of the
 65 stem, a removable sleeve slidably fitted on the stem and having a clearance space surrounding the the stem to receive a bushing, and a threaded member engaging the threaded portion of the stem outward of
 70 the sleeve and adapted when actuated to react against said sleeve as an abutment for actuating the sleeve inward.

6. A device of the kind described, comprising a stem having a head constituting
 75 a bushing-engaging abutment at one end and threaded at its opposite end, means carried on said head for engaging a stationary member to prevent turning of the stem, a removable sleeve slidably fitted on the stem
 80 and having an annular clearance to receive a bushing, and a nut carried on the stem outward of the sleeve and adapted for actuating the sleeve inward, said stem being of a length to permit a bushing to be inter-
 85 posed between said head and said sleeve.

7. A device of the kind described, comprising a stem having a head constituting a bushing-engaging abutment at one end and
 90 threaded at its opposite end, an extension member carried on the head and having an outwardly extending offset portion adapted to engage a stationary member for preventing turning of the stem, a removable sleeve
 95 slidably carried on the stem, and a nut carried on the threaded portion of the stem outward of the sleeve and adapted for actuating the sleeve inward.

In testimony whereof, I have signed my name to this specification.

FREDERICK C. HERSEE.