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P. O. SAMPSON

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TOOL

Filed July 11, 1930

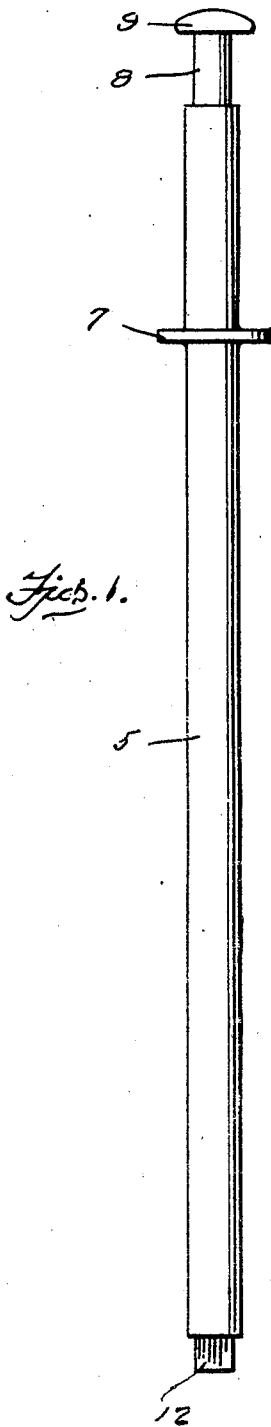


Fig. 3.

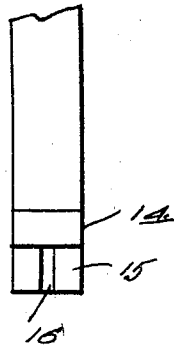
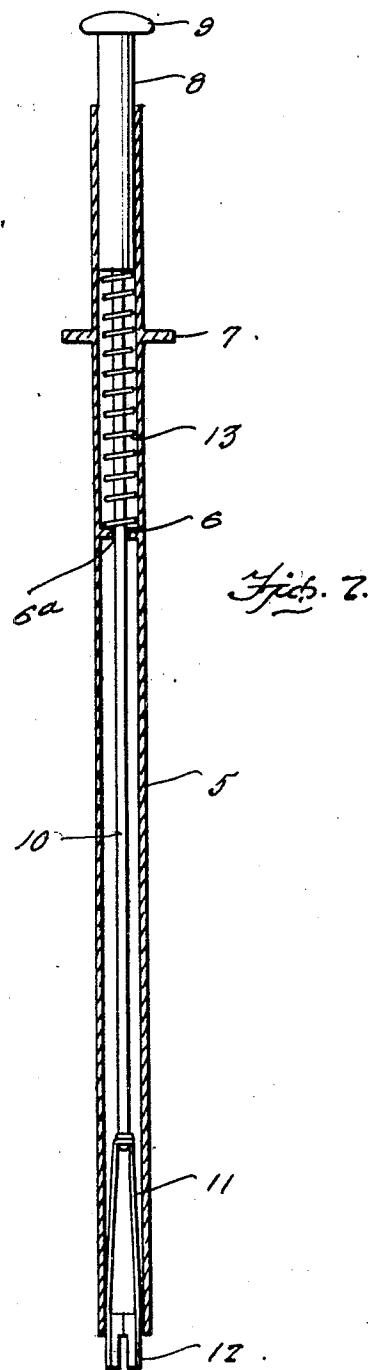
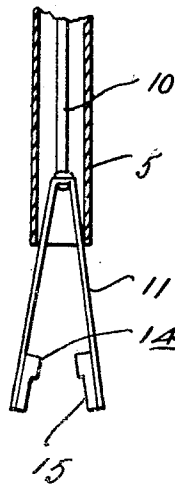


Fig. 4.



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TOOL

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The invention relates to tools for reaching pins, washers, screws or nuts in confined and difficult to reach places, such as the confined space connected with in placing and withdrawing the pins and washers of the valves in a present day automobile engine.

It is the particular scope of this invention to provide a device of this kind which is spring plunger operated and has expanding jaws adapted to be constructed by said spring plunger, said jaws being formed to grip objects of the kind alluded to of different shapes and types.

It is the object of this invention to provide a device of this kind which is cheap to manufacture and which is highly efficient and attractive in operation and otherwise admirably suited for the purposes for which it is designed in a manner superior to that now known in the art.

I wish to have it understood that I do not desire to restrict the application of this invention to the particular modification set out herein but any changes in material and construction may be resorted to within the scope of the invention.

These and other objects, the nature of the invention, its composition and arrangement and combination of parts and the details thereof will be understood by any one acquainted with the art to which this invention relates by referring to the following description of the drawings, in which:—

Figure 1 is a perspective view of an embodiment of my invention.

Figure 2 is a longitudinal cross section on a plane to the center of said device.

Figure 3 is a detail of a face of one of the jaw members.

Figure 4 is a detail fragmentary view showing the jaws in expanded position.

Referring to the drawings in detail 5 constitutes a tubular casing open at both ends provided with an interior partition 6 intermediate its ends, and an external right angularly projecting flange 7 to act as a finger rest.

Slidably mounted in the upper end of the tool is an operating handle 8 provided with a knob 9 and having connected to its lower

edge an operating rod 10 to the lower end of which is connected a pair of expanding arms 11 provided at their free ends with gripping jaws 12. A spring 13 is disposed about the rod 10 and has its ends contacting the lower portion of the operating handle 8 and its lower portion engaging the partition 6 through a centralized hole 6a on which, the rod 10 slides. This spring 13 normally retains the operating handle 8 and the rod 10 and the jaws and spring arms 11 in retracted position, in which position the jaws 12 co-act to grip the pin, screw or other object desired to be handled. When the operating handle 8 is pressed downwardly against the action of the spring 13 the spring arms 11 are pushed out of the lower end of the tube 5 and thereby permitted to function to spread the jaws 12 as indicated in Figure 4, and position the jaws in this way so as to receive the object to be handled by the tool.

Special attention is directed to the construction of the jaw 12. Figure 3 is a view of a gripping face of one of the jaws showing one of the projections 14 from the face of the plate portion 15, which projections 14 function as stop members for exerting pressure upon a pin or washer when inserting the same in a valve stem or the like. The face of the plate portion 15 is flat and is provided with a longitudinal groove 16, which provides a gripping and retaining means when the tool is used to handle pins and the like of cylindrical cross section.

The operation of this tool is as follows:—

The operating handle 8 is pressed into the tube 5 against the action of the spring 13 thereby spreading the jaws 12, and a pin, nut, screw or other object is placed in the jaw 12 and the operating handle is then released and the tension of the spring allowed to operate to withdraw the arms 11 within the casing thus forcing together the jaws 12 in a clamping action upon the object to be handled. It will be noted that the flange 7 provides a means for the finger to grip while forcing the operating handle inwardly with the palm of the hand or the fingers.

The jaw spring members 11 are formed of flat spring steel or the like material and the

jaw members 12 formed of steel block fastened to said spring arms or integral therewith. The side view disclosed in Figure 3 is of the formation of the spring jaw.

- 5 It will be evident at this point that I have provided a device admirably suited for the purposes for which it is designed, which will produce a superior result and relates to a high degree of convenience in performing
10 the operation for which it is adapted, and which is simple and inexpensive in construction, attractive in form and outline, and extremely effective and simple in operation which makes it durable and not apt to get out
15 of order.

I claim:—

1. A device of the character described comprising a plain tube having slidably mounted therein an operating handle in one end,
20 an operating rod connected to the end of said operating handle, an integral centrally apertured internal partition in said tube through which the rod passes, to act as a stop, an expanding spring engaged with said partition
25 and having said operating rod disposed within its coil, and operatively contacting the inner end of the operating handle, to project said operating handle and its connected operating rod into extended position
30 outwardly of said casing, said rod having at the end opposite the handle a V-shaped body of spring material constituting a pair of jaws the juncture of which is apertured to receive the end of the rod which is riveted thereto.
- 35 2. As a new article of manufacture, a tool of the class described comprising a plain straight tube having a centrally apertured, washer-like disk across an intermediate point of the interior thereof, and an annular flange
40 constructed on the exterior of the upper end portion of the tube, a straight solid cylindrical plunger slidable on the upper end of the tube and provided on its upper end with an enlargement forming a finger grip knob,
45 an operating rod of relatively small cross section secured centrally of the end of the plunger and projected through the aperture in said disk, an expanding coil spring in the upper end portion of the tube and about said
50 rod engaging said disk and the lower end of the plunger, a jaw structure on the lower end of the rod consisting of a piece of flat spring bar bent in the form of a V with a flattened, apertured portion at the apex of
55 the arms of the V to receive the lower end of the rod, said lower end of the rod being riveted to retain said jaw structure.

3. As a new article of manufacture, a tool of the class described comprising a plain
60 straight tube having a centrally apertured, washer-like disk across an intermediate point of the interior thereof, and an annular flange constructed on the exterior of the upper end portion of the tube, a straight solid
65 cylindrical plunger slidable in the upper

end of the tube and provided on its upper end with an enlargement forming a finger grip knob, an operating rod of relatively small cross section secured centrally of the end of the plunger and projected through the aperture in said disk, an expanding coil spring in the upper end portion of the tube and about said rod and engaging said disk and the lower end of the plunger, a jaw structure on the lower end of the rod consisting of a piece of flat spring bar bent in the form of a V with a flattened, apertured portion at the apex of the arms of the V to receive the lower end of the rod, said lower end of the rod being riveted to retain said jaw structure, said arms being provided on the inner faces of the outer ends with plates in the form of rectangular blocks having a uniform rectangular centrally disposed groove in their opposed faces, and a rectangular inwardly extended projection on the upper portion of each block adapted to be abutted and when abutted to space said grooved blocks parallelly and form shoulders for engaging the work.

4. As a new product of manufacture, a tool of the type described, comprising a plain uniform tube having an exterior flange near one end, and inwardly of the exterior flange an interior centrally apertured disk adapted to slidably receive a thin operating rod and about an end of a coil spring on the operating rod outwardly of the disk and an end of a handled plunger slidably fitting into the end of the tube contiguous to the exterior flange and connected with the operating rod, and an integral jaw structure riveted on the free end of the operating rod consisting of a flat V-shaped spring bar having its apex flattened and apertured and passed over the end of the operating rod and riveted against a shoulder on the operating rod, each leg of the structure having a jaw consisting of a rectangular plate having the lower portion of its inward face centrally grooved and the upper portion thereof formed with a rectangular projection, the projections adapted to be abutted and parallelly space the lower portions of the jaws.

In testimony whereof I affix my signature.
PHILLIP O. SAMPSON.