May 30, 1944. Q. E. CONNER 2,350,097

UNIVERSAL TOOL

Filed Feb. 13, 1943

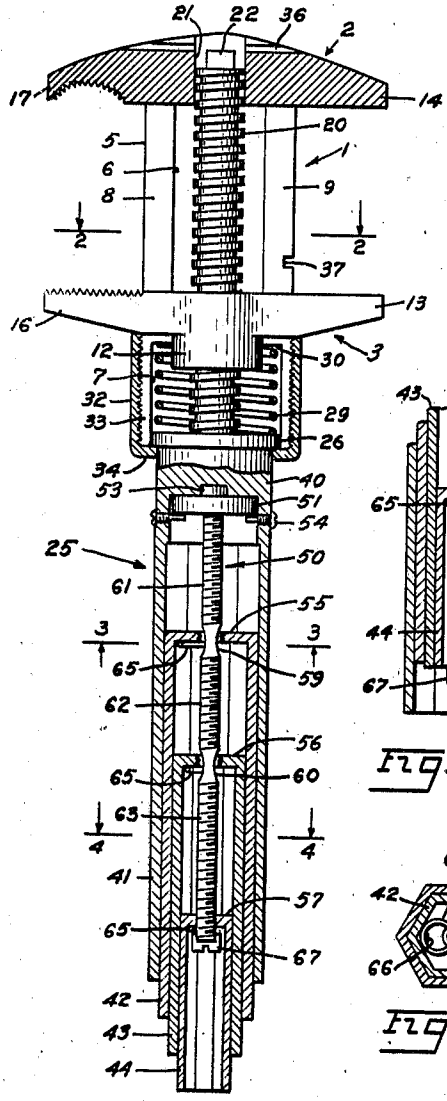


Fig. 1.

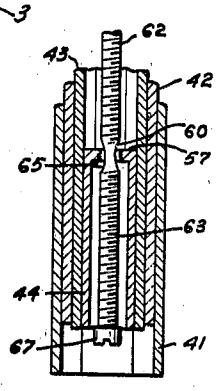


Fig. 1a.

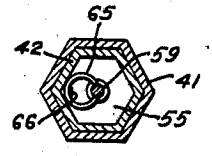


Fig. 3.

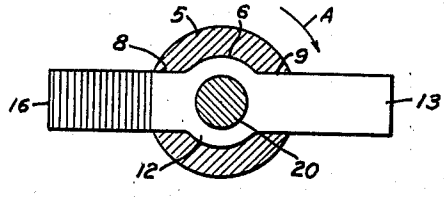


Fig. 2.

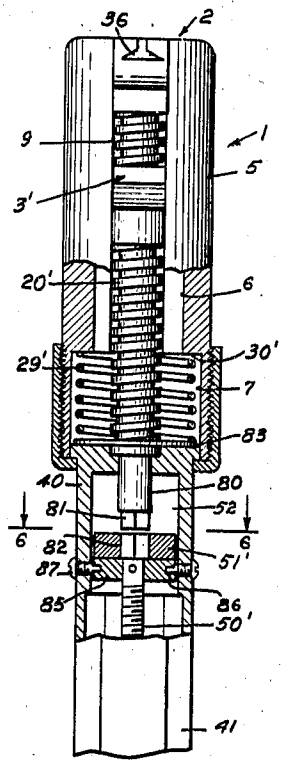


Fig. 5.

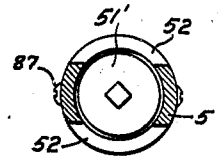


Fig. 6.

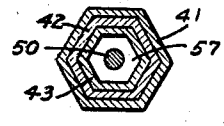


Fig. 4.

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2,350,097

UNIVERSAL TOOL

Quinten E. Conner, San Francisco, Calif.

Application February 13, 1943, Serial No. 475,838

2 Claims. (Cl. 81—135)

This invention relates to a universal tool and has for its objects the provision of a tool containing therein a monkey wrench, a pipe wrench, a wire cutter, a nail puller, a screw driver and a series of socket wrenches.

Another object of this invention is to provide a universal tool in which the component parts are so designed and fitted as to represent a clean-cut tool in which said parts do not interfere with the use of any one of them.

Another object of this invention is to provide a universal tool the component parts of which may be used selectively.

Another object of this invention is to provide a simple mechanism for selection of a tool to be used and for the use thereof.

Other objects and advantages will appear as the specification proceeds and the particular features of the invention will be specifically pointed out in the appended claims.

My invention is illustrated in the accompanying drawing in which:

Fig. 1 is a longitudinal cross-section of a tool showing certain parts in elevation.

Fig. 1a is a longitudinal cross-section through a portion of a handle, showing the parts thereof in a different position.

Fig. 2 is a cross-section taken along the line 2—2 of the Fig. 1.

Fig. 3 is a cross-section taken along the line 3—3 of the Fig. 1.

Fig. 4 is a cross-section taken along the line 4—4 of the Fig. 1.

Fig. 5 illustrates a modified form of the universal tool, certain parts being shown in section, and

Fig. 6 is a cross-section taken along the line 6—6 of the Fig. 5.

In detail, my universal tool comprises an adjustable wrench 1 having a stationary head 2 and a movable head 3 adapted to be advanced to or retracted from the stationary head. The latter is integral with a body 5, cylindrical in shape and having a central bore 6 which is enlarged at the lower end thereof as shown at 7. The body 5 also has two diametrically opposite longitudinal slots 8 and 9.

The movable head 3 has a cylindrical embossment 12 provided on the lower surface thereof of such diameter as to snugly fit the bore 6 with the freedom of the movement therein. The head 3 has a straight jaw 13 which in cooperation with a corresponding straight jaw 14 of the stationary head 2 forms a monkey wrench, and both jaws when closed may be used as a hammer. The jaw 13 is adapted to slide in a slot 9. The head 3 also has integral therewith a toothed or serrated jaw 16 which slides in the slot 8 and cooperates with an outwardly bent jaw 17 of the head 2, said jaw having serrations or teeth 18 on the surface thereof facing the jaw 16. The jaws 16 and 17 are intended to operate as a pipe wrench.

The head 3 is advanced toward the head 2 or retracted therefrom by means of a threaded shaft 20 which passes through the head 3, the latter being also correspondingly threaded. The shaft 20 extends the whole length of the body 5 and almost through an opening 21 in the stationary head 2 and terminates with a screw driver tip 22. The other end of the shaft 20 is integral with a handle generally indicated at 25. The latter is formed with a shoulder 26 at the end which carries said shaft 20. The shoulder 26 is of slightly smaller diameter than the bore 7 and is confined in the latter. A spring 29 is interposed between the top of the handle 25 and a shoulder 30 which limits the bore 7, which spring forces the handle 25 downwardly. But the downward movement of the handle is prevented by a retaining ring 32 screwed on a threaded end 33 of the body 5 and having an inwardly bent rim 34 engaging the shoulder 30, thus keeping the handle 25 and the body portion 5 slidably locked together.

By rotating the handle 25 in relation to the body 5 in the direction indicated by an arrow A in Fig. 2, the movable head 3 is advanced toward the stationary head 2, the jaws 13 and 16 sliding in the slots 9 and 8 correspondingly. The rotation of the handle 25 in the opposite direction will force the head 3 downwardly until it rests upon the upper rim of the retaining ring 32.

Further rotation of said handle 25 in the same direction will force the same to advance toward the head 3, whereby the shaft 20 will pass through the opening 21 in the head 2 and advance the screw driver tip 22 beyond said head so that the universal tool can be used as a screw driver.

The opposite rotation of the handle relative to the body 5 will force the screw driver tip 22 into its former position.

It is also desirable to provide in the upper portion of the head 2 a slot 36 of the form shown best in Fig. 5, which is adapted to engage nail heads and pull nails out.

The slot 36 may be made narrowing to one end so as to accommodate nails of various sizes.

A slot 37 may also be provided on a side of

the body 5, which in cooperation with the movable jaw 13 serves as a wire cutter.

The handle 5 is round at its upper end near the shoulder 30 as shown at 40, and the rest of it is hollow and of hexagonal cross-section so as to form a socket 41 within which is adapted to slide a socket 42 of a smaller diameter. The latter also slidably carries a socket 43 which in turn carries a socket 44. The size of the sockets is such as to fit a 1", ¾", ½" and ¼" nuts, or any other size, respectively, and may be used as socket wrenches.

A mechanism is provided to expose any of said sockets for the purpose of applying the same on a nut, said mechanism comprising a screw 50, arranged inside of said handle 5 and having a disk 51 affixed on the upper end thereof. The disk 51 has a stub-shaft 53 imbedded in portion 40 of said handle, around which stub-shaft the disk is adapted to be manually rotated. The handle 5 has its sides cut off as shown at 52 in Fig. 6, so as to expose the disk 51 for gripping the same by the fingers of an operator. Two or more retaining screws 54 are provided to hold the disk 51 in place.

The screw 50 passes through correspondingly threaded bottoms 55, 56 and 57 of the sockets 42, 43 and 44 respectively and has portions 59 and 60 of reduced diameter leaving threaded portions 61, 62 and 63 respectively. The bottoms 55 and 56 are held opposite the reduced portions 59 and 60 respectively by resilient split retaining rings 65 attached to said bottoms, the ends of which are adapted to ride along the threads of the screw 50. The rings 65 are preferably welded to the bottoms as shown at 66. The screw 50 terminates with a cup 67 securely affixed thereon limiting the outward movement of the socket 44.

The operation of the screw 50 is as follows. When the sockets are in the position shown in Fig. 1, the socket 44 may be used as a wrench. Rotation of the disk 51 and the screw 50 in the proper direction will force the socket 44 to slide into the socket 43, the latter and the socket 42 being retained in the positions shown in Fig. 1 by the retaining rings 65. When the socket 44 is within the socket 43, the latter may be used.

Rotation of the disk 51 will bring the bottom 57 of the socket 44 into contact with the ring 65 affixed to the bottom 56 and further rotation will force both sockets 44 and 43 to move toward the disk 51, because the bottom 57 still rides the threaded portion 63 of the screw 50. When the bottom 57 will finally leave the threaded portion 63 and rest opposite the reduced portion 60 of said screw it will be retained there by the retaining spring 65 attached to said bottom 57. The bottom 56 of the socket 43 will be pushed into engagement with the threaded portion 62. Further rotation of the disk 51 will bring the bottom of the socket 43 in contact with the ring 65 affixed to the bottom 55. At this time the socket 42 will be exposed for use as a wrench.

Further rotation of the disk 51 will force the bottoms 56 and 55 to move in direction to the disk 51 until the bottom 56 rests opposite the reduced portion 59 of the screw 50 and is retained there by the ring 65, at which time the bottom 55 will engage the threaded portion 61 and will travel to the retracted position as shown in Fig. 1*a*. At this time the sockets will take positions shown in Fig. 1*a*, exposing the socket 41 for use as a wrench.

Rotation of the disk 51 in opposite direction will reverse the process and will advance the sockets 42, 43 and 44 one at a time. By this arrangement any needed socket may be brought in a position ready for service.

Fig. 5 shows a modified form of the tool in which a disk 51' corresponding to the disk 51 of the Fig. 1 is adapted to serve to advance and retract sockets, as has been above described, and also to advance and retract the movable head 3'. For that purpose the shaft 20' is formed with a shank 80, which is rotatably supported in a body 5, and which terminates with a square portion 81 adapted to enter a square opening in said disk 51' and by means of which said shaft is rotated.

In order to retain the shaft in downward position, a disk 83 is affixed to the shaft 20', and the spring 29' is interposed between said disk and the shoulder 30'. The operation of the parts is exactly the same as that of the tool shown in Fig. 1.

The screw 50' is retained by a disk 85 affixed thereto which disk has a circular groove 86 on the periphery thereof in which two or more retaining screws 87 are adapted to enter. In this way the disk 85 can rotate with the shaft 20' and prevent the longitudinal displacement of the latter. It will be noted that the stationary and movable heads with their jaws provide leverage necessary to unscrew or tighten up a nut.

Having thus described my invention, I claim:

1. A tool comprising an adjustable wrench having a handle in the form of a socket, a plurality of sockets of diminishing diameters arranged within said socket and slidable one within another; means for advancing or retiring said sockets within one another so as to expose any one of them for service, said means including a screw extending within said sockets, said sockets having threaded bottoms through which said screw passes; said screw having portions thereof of a reduced diameter; means for rotating the screw; and means for retaining said sockets against the portions of the screw of the reduced diameter.

2. A tool comprising an adjustable wrench having a handle consisting of a plurality of sockets of diminishing diameters slidably arranged one within another; a screw arranged within said handle adapted to affect the relative movement between said sockets by rotation thereof; said sockets having threaded bottoms adapted to ride on said screw; said screw having portions thereof of reduced diameter so as to stop the movement of said sockets along said screw; and means for retaining said sockets when their movement is stopped, so as to expose any one of said sockets for use as a wrench.

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