

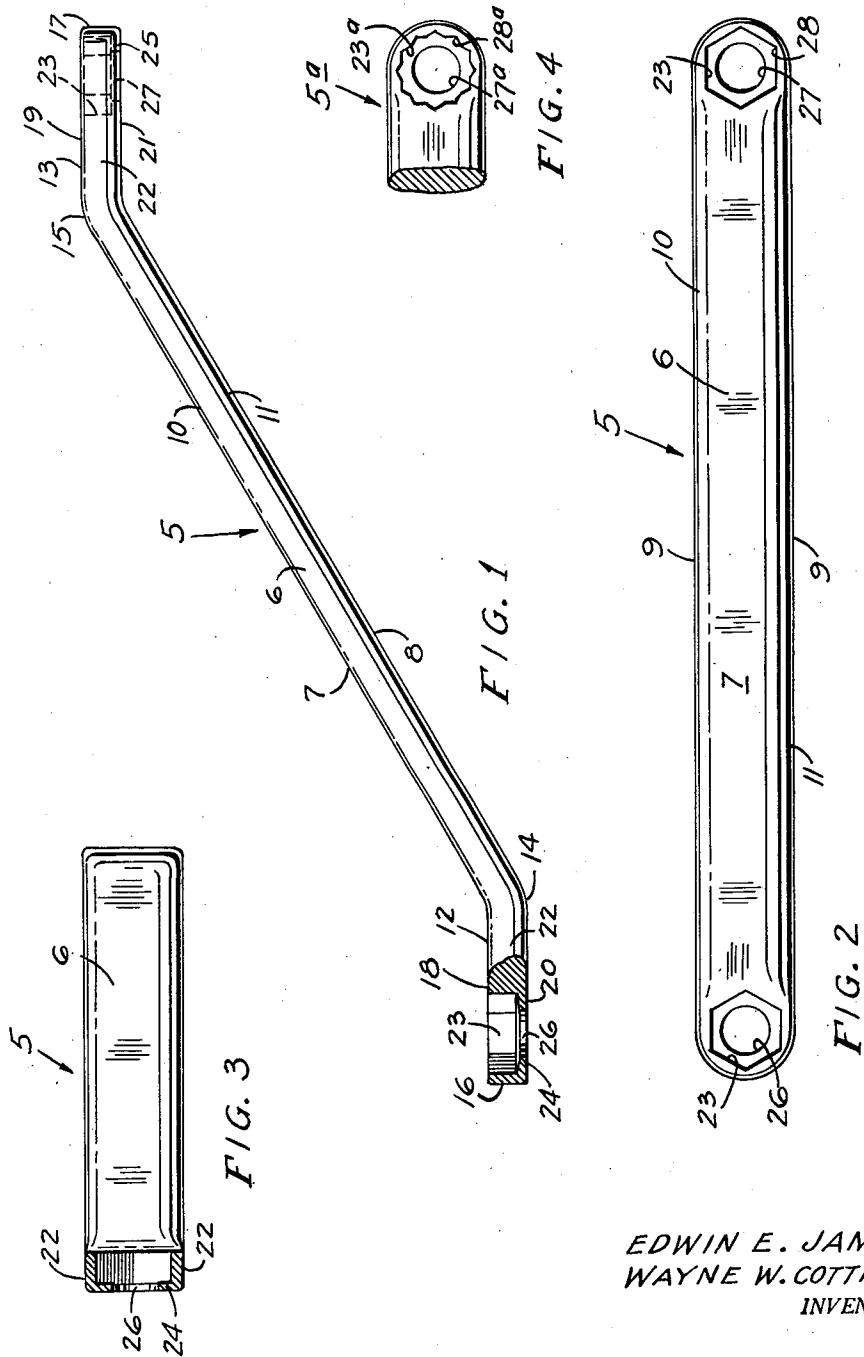
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ANGULAR WRENCH HEAD HAVING UPWARDLY OPENING SOCKET

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ANGULAR WRENCH HEAD HAVING UPWARDLY OPENING SOCKET

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This invention relates to an improved socket wrench of the double ended type wherein the handle portion between the sockets or socket heads is angulated relative to the heads and the heads are in parallel planes.

The primary object of the invention is to provide a wrench of the character indicated above whose handle portion and whose socket heads are of minimal cross section so as to permit reaching into and operating in confined and difficult to reach places, for tightening and loosening nuts on studs, as in the assembling and servicing of aircraft.

Another important object of the invention is the provision of a wrench of the character indicated above which has means in its socket heads for holding nuts in the heads while being handled and while being applied to or removed from studs, the said means providing free passage for studs reaching beyond the nuts.

A further important object of the invention is to provide a more efficient and practical wrench of the character indicated above which can be made in a rugged, serviceable and attractive form at relatively low cost.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific embodiment of the invention is set forth in detail.

In the drawings:

Figure 1 is a side elevation, parts being broken away.

Figure 2 is a plan view of Figure 1.

Figure 3 is a left-hand end elevation of Figure 1, parts being broken away, and

Figure 4 is a fragmentary plan view of another embodiment having a twelve point socket instead of a hexagonal socket.

Referring in detail to the drawings, wherein like numerals designate like parts throughout the several views, and first to Figures 1 to 3 thereof, the wrench therein illustrated and generally designated 5, comprises a straight, preferably solid bar stock handle portion 6, having straight flat parallel upper and lower surfaces 7 and 8, respectively, and straight parallel side edges 9, 9 which are rounded, as indicated at 10 and 11, where the side edges merge into the upper and lower surfaces 7 and 8, respectively.

The opposite ends of the handle portion 5 terminate in elongated socket heads 12 and 13, which are straight and of the same cross section as the handle portion 6, but are angulated at 45° relative to the handle portion 6 so that the heads extend in directions parallel to each other.

The socket heads 12 and 13 have inward ends 14 and 15, respectively, where they join the handle portion 6, and outer ends 16 and 17, respectively, which are semi-circular in plan, the outer semicylindrical surfaces of which are disposed at right angles to the longitudinal planes of the heads.

The socket heads 12 and 13 have flat upper sides 18 and 19, respectively, and flat undersides 20 and 21, respectively, the upper and lower sides being parallel to each other.

In the heads 12 and 13, which have parallel sides 22, 22, are formed similar sockets 23 of hexagonal shape which open through the upper sides 18 and 19 of the

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heads. The sockets 23 are located as close to the semi-circular head ends 16 and 17 as feasible, and the walls of the sockets 23 are as thin as feasible. Because of these arrangements, the heads 12 and 13 can be inserted in spaces not substantially larger than the nuts to be turned.

Since the sockets 23 open through the upper sides 18 and 19 of the heads 12 and 13, respectively, the wrench 5 can be applied either to depending bolt heads or to nuts on depending studs of an assembly without reversing the wrench.

As apparent in Figures 1 and 3, the socket heads 12 and 13 are slightly thicker than the depth of the sockets 23 so as to provide retaining walls 24 and 25, at the under sides of the sockets 23, which serve to retain or hold nuts in the sockets while being carried to or away from overlying studs and while being applied to or removed from such overlying studs, the retaining walls being as thin as feasible.

In each of the retaining walls there are provided central holes 26 and 27, respectively, which are provided to freely pass studs which may project beyond a nut while the wrench is engaged with a nut.

In a wrench in accordance with the present invention for turning three-eighths inch nuts, the side walls of the heads 12 and 13 around the sockets 23 will be approximately one-sixteenth of an inch thick.

In Figure 4 of the drawings is illustrated a socket 23^a having twelve points 28^a instead of six points 28 in the form of the invention shown in Figures 1 to 3, both wrenches 5 and 5^a being otherwise similar.

What is claimed is:

1. In a wrench, a straight handle portion having parallel side edges and upper and lower sides, an elongated socket head on an end of said handle portion, said head being a continuation of said handle portion and being of similar external size and dimensions as said handle portion, said head being angulated relative to said handle portion away from the lower side of the handle portion, said head having an upper side, a nut socket in said head having an open end opening through the upper side of the head, said head having an underside, and a retaining wall partly closing the other end of the socket.

2. In a wrench, a straight handle portion having parallel side edges and upper and lower surfaces, said handle terminating at one end in an elongated socket head, said head being a continuation of said handle portion and being of the same transverse dimensions as the handle portion, said head being angulated relative to said handle portion toward the upper surface of the handle portion, said head having an upper side, a nut socket in said head having an open end opening through the upper side of the head, said head having an underside, and a retaining wall partly closing the other end of the socket, said head having a terminal end, said terminal end having a semi-cylindrical periphery and said socket being concentric to and located close to said terminal end, said head having parallel sides and said socket being located close to said opposite sides and defining socket walls of minimal thickness.

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