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WRENCH HANDLE HAVING DETACHABLE HAND WHEEL AND FLEXIBLE SHAFT

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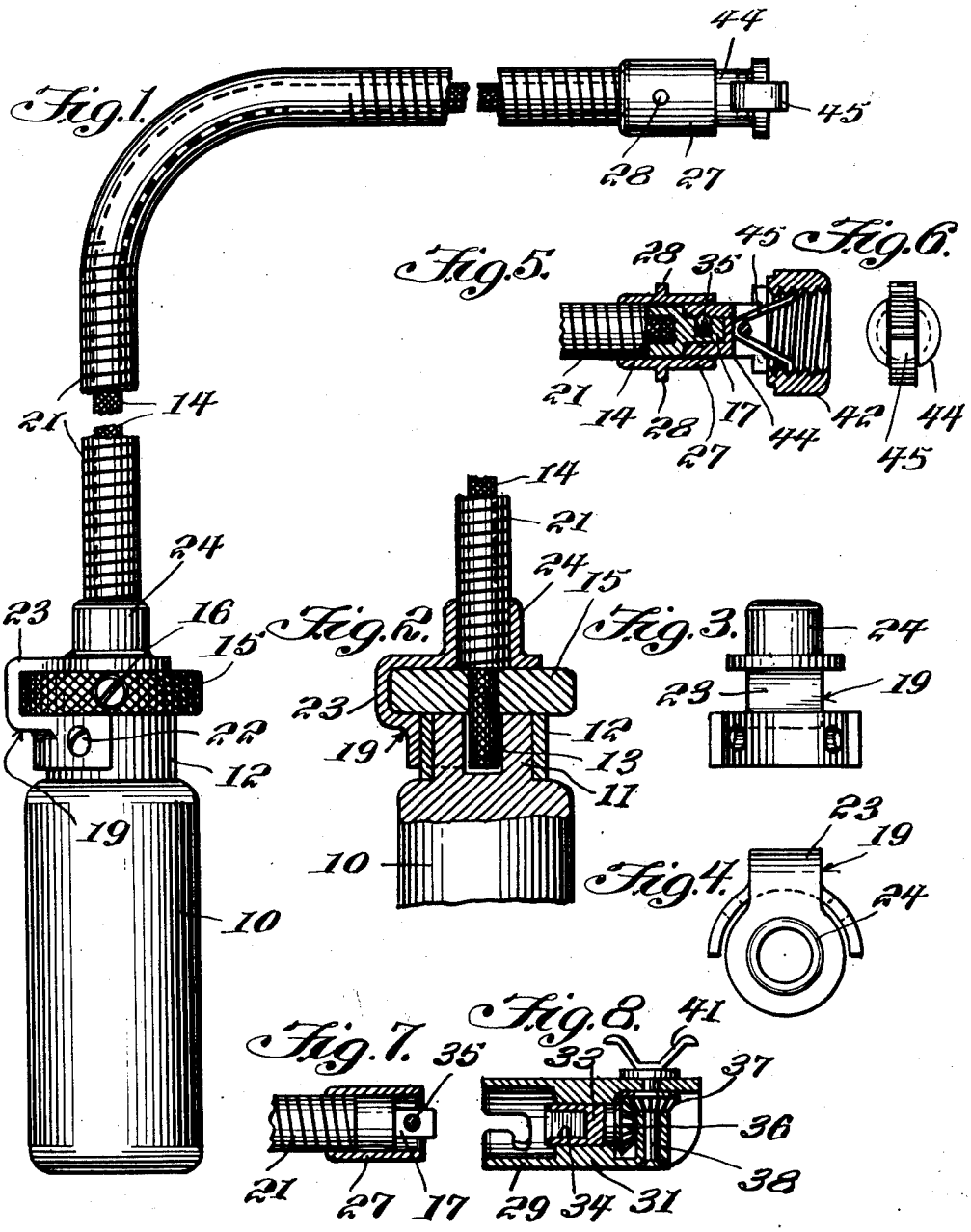

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WRENCH HANDLE HAVING DETACHABLE HAND WHEEL AND FLEXIBLE SHAFT

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2 Claims. (Cl. 81—54)

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This invention relates to a socket wrench.

It is an object of the present invention to provide a socket wrench having a flexible turning shaft which can be operated from a handle and to the outer end of which there can be connected a detachable driving element either of a type to operate coaxially with the shaft or of a type to provide for a right angle drive in order to permit the wrench to operate a nut extending to the side of the detachable head.

Other objects of the present invention are to provide a socket wrench with a flexible drive shaft and a releasable head or coupling member, which is of simple construction, inexpensive to manufacture and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which

Fig. 1 is a side elevational view of the wrench with portions broken away and with one form of head connected thereto.

Fig. 2 is a fragmentary sectional view taken through the driving wheel and its connection with the driving shaft.

Fig. 3 is an elevational view of a connector for mounting the driving wheel and driving shaft on the handle and for securing a sleeve to the handle.

Fig. 4 is a top plan view of the retaining elements shown in Fig. 3.

Fig. 5 is a sectional view of one form of coupling head.

Fig. 6 is an end view of the coupling head shown in Fig. 5.

Fig. 7 is a fragmentary sectional view of the end of the driving shaft.

Fig. 8 is a longitudinal sectional view of a detachable head having gearing to effect a right angle drive for the socket.

Referring now to the figures, 10 represents a handle having a reduced portion 11 adapted to receive a ring 12. The reduced portion has an opening 13 into which may extend the end of a shaft 14 to which is fixed a wheel 15 by a screw 16. The shaft 14 extends forwardly and is so constructed that it can be flexed or bent. The outer end of the shaft is secured to a cylindrical journal having a reduced and squared end formation or stud 17 thereon, as shown in Fig. 7.

A connector 19 has a half ring portion fitted about the ring 12 and a spaced tubular portion 24 connected to one end of a shaft-covering sleeve 21. The half ring portion of connector 19 is secured to the ring and to the handle by fastening screws 22. The connector 19 also has an offset portion 23 which extends about the wheel 15 and joins the portion 24 to the half ring portion. Surrounding the journal and square stud 17 of shaft 14 and secured to the sleeve covering 21 at its outer end, is a coupling ring 27 having diametrically opposite extensions 28 thereon for entering bayonet slots in a portion 29 of an angle drive fitting 31, as shown in Fig. 8. The angle fitting 31 has a cylindrical drive element or driving head 33 having in one end an axially extending square socket 34 for engagement with the square stud 17. A detent 35 is provided in stud 17 for maintaining its connection with the drive member 33. The driving member 33 has a bevel gear 36 which meshes with a bevel gear 37 on a transversely extending shaft 38. The shaft 38 has a Y-shaped formation 41 adapted to receive a socket or a nut as shown in Fig. 5 at 42. With the nut in place on the formation 41, it can be turned or started on a threaded member.

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If it is desired to have a straight coupling element secured thereto, there is provided a fitting, as shown in Figs. 5 and 6, which comprises a cylindrical member or driving head 44 having a Y formation 45 engaging with the nut 42 and having an opening for receiving the square stud 17.

It should be apparent that there has been provided a socket wrench of the flexible shaft and sleeve type wherein the turning of the driving shaft can be effected at the handle and wherein different socket or nut retaining heads can be connected to the end of the driving shaft.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the scope of the present invention as defined by the appended claims.

What is claimed is:

1. In a flexible socket wrench, the combination which comprises a flexible shaft, a flexible sleeve extended over the flexible shaft, a coupling ring carried by the outer end of the sleeve, a stud journaled in the coupling ring and carried by the outer end of the flexible shaft, a handle having a reduced portion thereon at one end thereof provided with a central opening to receive the end of the flexible shaft opposite to that end on which the stud is positioned, a ring on said reduced portion, a connector having a half ring portion and a tubular portion, said tubular portion being connected to that end of the flexible sleeve opposite to that end on which the coupling ring is positioned, means for securing the half ring por-

tion to said ring, an outwardly extending offset portion on the connector joining the half ring portion to said tubular portion and means connected to said flexible shaft for rotating said flexible shaft, said means being positioned between said tubular portion and said ring, and extending into said offset portion.

2. In a flexible socket wrench, the combination which comprises a flexible shaft, a flexible sleeve extended over the flexible shaft, a coupling ring carried by the outer end of the sleeve, a stud journaled in the coupling ring and carried by the outer end of the flexible shaft, a handle aligned with and extended from the end of the said flexible shaft and sleeve opposite to the end on which the coupling sleeve is positioned, a U-shaped bracket carried by the end of the handle and having a hub on the outer end in which the flexible sleeve is mounted, and a knurled disc fixedly mounted on said flexible shaft and positioned in the U-shaped bracket whereby the stud is rotated through the flexible shaft and knurled disc by the thumb of a hand on the handle.

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