

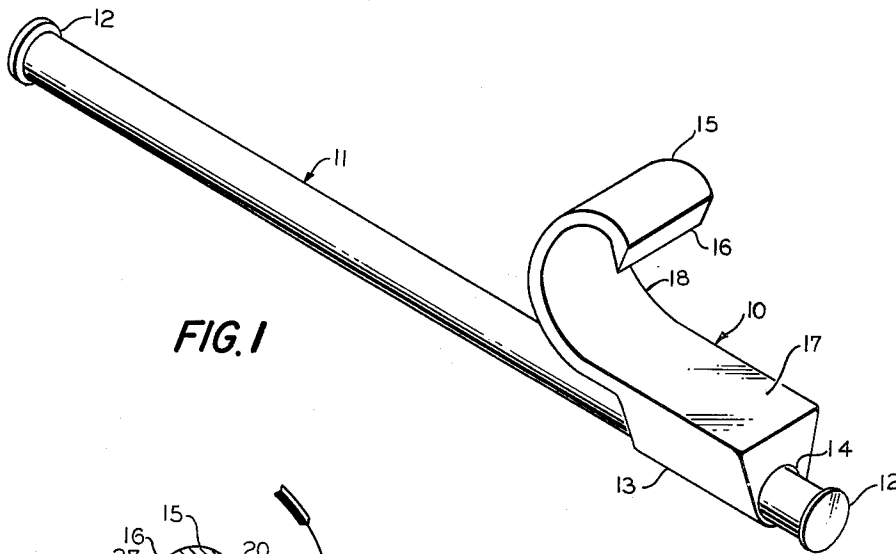
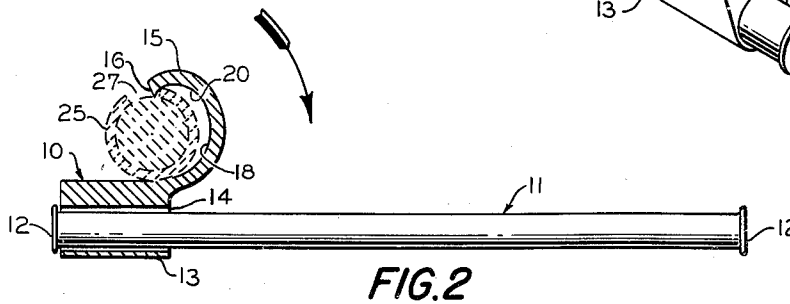
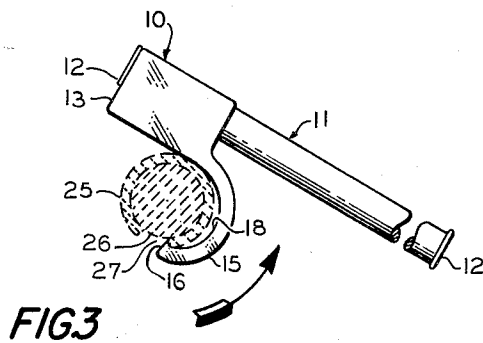
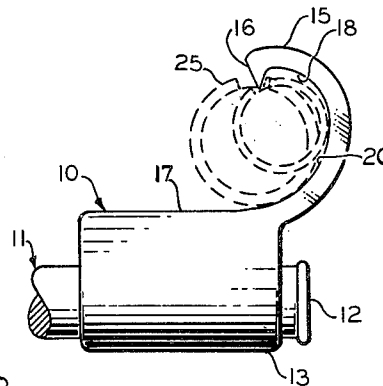
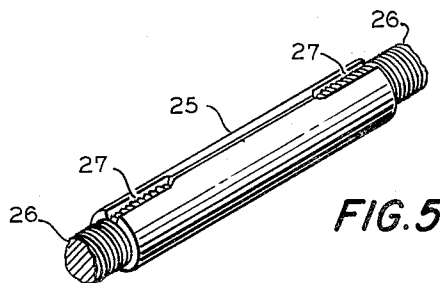
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SPANNER-TYPE WRENCH HAVING REVERSIBLE HANDLE LEVER

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SPANNER-TYPE WRENCH HAVING REVERSIBLE HANDLE LEVER

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1 Claim. (Cl. 81-90)

The present invention relates generally to hand-operated wrench-type tools, and more specifically to an improved spanner-type wrench tool used in turning (loosening or tightening) split-type, internally threaded sleeves or the like.

While not so limited, the present spanner wrench-type tool finds particular application for use in the rotative adjustment of turnbuckle sleeves of the type associated with the tie rod assemblies of automotive vehicles.

The tool of this invention is an improvement over the tool disclosed in my co-pending application Serial No. 842,273 filed November 25, 1959, now abandoned.

The tool of the present invention is similar to that disclosed in my co-pending application and is used for a similar purpose. However, it is so designed that when the handle thereof encounters an obstruction laterally of the sleeve or coupling being turned, the handle can be shifted to the opposite side of the coupling so that rotation or adjustment of the coupling can be continued without removing and re-engaging the tool head therewith. Therefore, it is not necessary to remove the wrench tool from the coupling each time the obstruction is encountered and replace the tool for further adjustment, but it is merely necessary to shift the handle relative to the wrench head or hook-like formation of the tool.

More specifically, according to this invention there is provided a spanner wrench-type tool which has a hook-shaped or claw-like head for engaging split couplings of various diameters and which has a slidable and reversible handle element which may be positioned so as to avoid rotation-impeding contact with obstructions located closely adjacent the coupling engaged by the tool head.

The detailed structure of the tool of the present invention is illustrated in the accompanying drawing in which:

Figure 1 is an isometric view of the spanner-type wrench or tool of this present invention;

Figure 2 is a view showing the tool head in section and the lever handle in side elevation and illustrating how the tool may be employed in turning in one direction internally threaded, split cylindrical sleeves;

Figure 3 is a side elevational view illustrating the tool being used for rotating the sleeve in an opposite direction;

Figure 4 is an enlarged view in side elevation showing the handle shifted to position the tool head at the opposite end thereof as compared to Figure 2 and illustrating diagrammatically how the tool will fit sleeves or couplings of varying diameters; and

Figure 5 is an isometric view illustrating a tie rod sleeve upon which the wrench or tool of this invention is adapted to operate.

With specific reference to the drawing, I have illustrated in Figure 1 a tool of the spanner wrench type embodying my present invention. This tool comprises mainly a head 10 of hook formation and a lever or handle 11. The lever or handle 11 is of elongated, preferably cylindrical, form and is provided with stop flanges 12 at the opposite ends thereof. The head 10 comprises a body 13 which has a bore 14 extending longitudinally there-

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through. This bore 14 receives the handle 11 which is mounted for axial sliding movement therein. The entire tool may be formed as a forging from a high carbon steel, or other metal or metal alloy having good tensile strength and hardness.

The body 13 of the head 10 has formed on one end thereof an offset hook portion 15. This hook portion terminates in an inwardly turned, sharp claw-like end extremity 16 which is disposed in spaced relation to the flat plane surface 17 formed on the body 10 parallel to the axis of the bore 14. The hook portion 15 is formed to provide a continuously curved inner wall surface 18 which defines on the tool head an open mouth undercut socket 20. This surface 18 merges with the flat surface 17. It will be noted that the curvature of the inner wall surface 18 of the hook formation, while being continuous, has a progressively diminishing radius of curvature from the straight plane surface 17 to the sharp end extremity 16. As will be hereinafter explained, this diminishing radius of curvature of the inner wall surface 18, which defines the socket 20, makes it possible for the tool to be used in turning or adjusting split cylindrical sleeves, collars, or couplings of different diametrical dimensions.

To illustrate the intended usage and operation of the present tool, there is shown in Figure 5 a typical tie rod adjusting sleeve or coupling 25 which, in the usual manner, is formed of a threaded bore into which is threaded the externally threaded end portions of a pair of tie rods 26. The internal bore of the sleeve contains at the opposite end portions thereof, oppositely pitched threads, and the respective rods 26 are also formed to provide threads of opposite pitch, in order that the sleeve or coupling 25, upon rotation, may either draw the rods axially inwardly toward one another or force the rods relatively apart. It should be understood, however, that the present tool is adaptable for use in turning substantially any type of internally threaded cylindrical sleeve, coupling or collar of the type provided with a split, slot, or other radially inwardly extending depression accessible from the exterior surface thereof. As shown in Figure 5, the sleeve 25 is formed at each end thereof with longitudinally extending relatively narrow slits or slots 27 which permit limited resilient expansion of the threaded end portions of the sleeve.

In operation, the present tool is applied to the sleeve 25 by fitting the socket 20 of the hook formation 15 over the periphery of the sleeve and hooking the corresponding sharp end extremity 16 into the slot 27 of the sleeve. This operation is illustrated in Figures 2 to 4, Figure 4 illustrating how the hook formation 15 may engage sleeves of different diameters, two different sleeves being shown by broken lines. In positioning the tool head on the sleeve or coupling 25, the flat or plane surface 11 will serve to engage the side of the coupling 25 tangentially and to guide it within the hook portion 15 since the surface or throat 18 of gradually diminishing radius is a continuation of the flat or plane surface 17. It will be apparent from Figure 4 that the hook formation 15 will fit sleeves 25 of different diameters. Thus, whether the sleeve 25 is large or small, as indicated in Figure 4, it will be grasped and wedged between the end extremity 16 and the continuous surface 18 of varying curvature. This self-adjusting feature of the hook formation 15 to a range of different sizes of sleeves, as indicated in Figure 4, is accomplished by the progressively diminishing radius of curvature of the inner wall surface 18 of the hook formation of the tool which causes the tool to tightly grasp the sleeve 25 at relatively spaced points thereon, and yet not conform concentrically to the outer cylindrical surface of the sleeve.

After engagement of the sharp end 16 with the slot 27 of the sleeve 25, as shown in Figure 2, the handle 11 may

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be swung in a clockwise direction and this action tends to crowd or tightly wedge the sleeve into the socket 20. Continued clockwise movement of the handle 11 exerts a clockwise turning movement upon the sleeve through the right-hand wall of the slot 27. If the sleeve is to be turned in the opposite direction, the sharp end 16 will be engaged with the opposite wall of the slot 27, as shown in Figure 3, and the handle 11 will be swung counter-clockwise. Thus, the forces applied through the hook-like portion 15 of the tool tend to resiliently expand or spread the walls of the sleeve 25 in the region of the split 27 to thus facilitate the turning or rotation of the sleeve upon the associated rods 26. If the handle 11 strikes an obstruction in turning the sleeve 25, assuming that the tool is being turned clockwise, as shown in Figure 2, it is merely necessary to slide the handle 11 axially from its right-hand position shown in Figure 2 to the left-hand position indicated in Figure 4. Then the handle can again be swung around clockwise to the position shown in Figure 2 before again striking the obstruction, when the handle 11 may again be shifted to the left as far as possible relative to the tool head 10. Thus, when an obstruction is encountered by the handle 11, the tool need not be removed and replaced on the opposite side of the sleeve 25 but it is merely necessary to slide the handle 11 to the opposite side of the tool head 10 so that the turning movement of the sleeve 25 can be continued.

In view of the foregoing, it will be seen that the present invention provides a mechanically efficient, yet structurally simple hand-operated tool for use in turning (tightening or loosening) cylindrical surfaces, split sleeves, couplings, collars, or the like. Due to the self-adjusting feature of the present tool, a single tool may be used upon a range of different sizes of sleeves and the like. Also, because of the relative adjustment of the handle and tool head, when an obstruction is encountered by the handle, it can be shifted to the opposite side of the tool head and the rotation of the split sleeve can be continued.

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While a preferred embodiment of my present invention has been illustrated and described in detail, it will be understood that the same is susceptible to further modification as to details of construction and design without departing from the spirit of my invention or the scope of the following claim.

Having thus described this invention, what is claimed is:

A spanner-type wrench comprising a tool head of integral, one piece construction including a body portion formed with a longitudinally extending, open-ended, handle-receiving bore and a flat, work-engaging surface disposed in spaced parallel relation to the axis of said bore, and a claw-like hook portion extending outwardly from one end of said body portion in generally transversely offset relation thereto, said hook portion being formed with a smooth, continuously curved, work-engaging inner wall formed as a smooth continuation of the flat, working-engaging surface of said body portion and terminating in an inwardly turned, pointed end extremity disposed in relatively spaced relation to the work-engaging surface of said body portion, the inner wall of said hook portion having progressively diminishing radii of curvature from the work-engaging surface of said body portion to the pointed end extremity of said hook portion and defining on said tool head an undercut, work-receiving socket adapted to accommodate workpieces of varying diameters; and a straight elongated handle lever slidably shiftable in the bore of said body portion between opposite, longitudinally extended positions with respect to said tool head.

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