Sept. 22, 1925. 1,554,963

W. H. FISHER

WRENCH

Filed Oct. 20, 1924

Fig. 1.

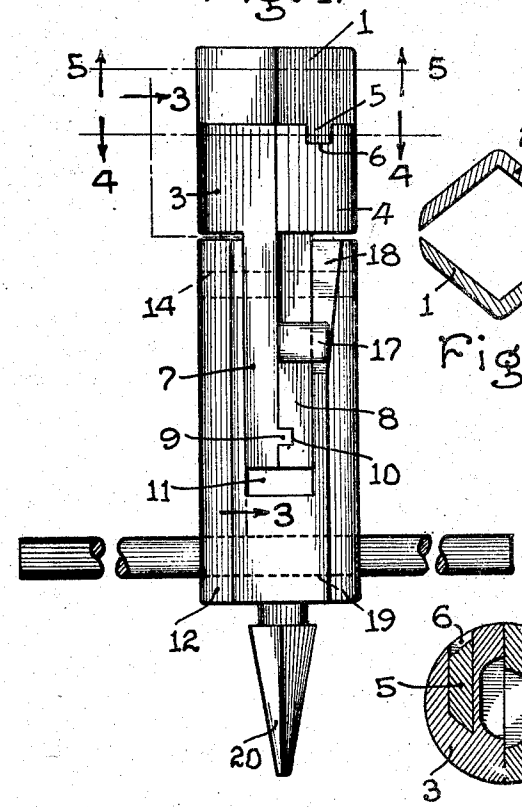
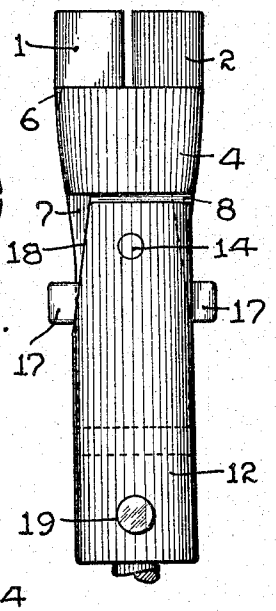


Fig. 2.



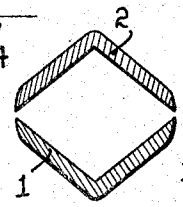


Fig. 5.

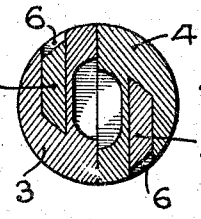


Fig. 4.

Fig. 3.

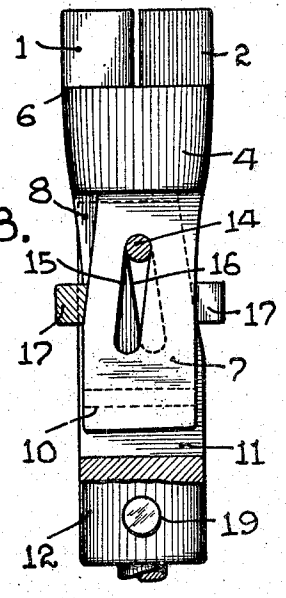
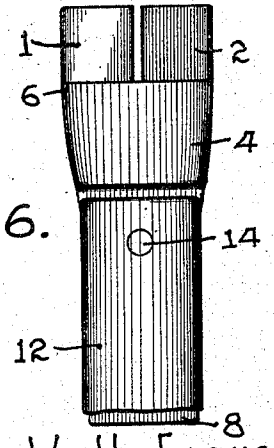


Fig. 6.



Inventor

W. H. FISHER.

By J. Bruce Talbert

Attorney.

Patented Sept. 22, 1925. 1,554,963

UNITED STATES PATENT OFFICE.

WILLIAM H. FISHER, OF ALTOONA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO ROBERT D. ELDER, OF JUNIATA, PENNSYLVANIA.

WRENCH.

Application filed October 20, 1924. Serial No. 744,818.

To all whom it may concern:

Be it known that I, WILLIAM H. FISHER, a citizen of the United States of America, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented new and useful Improvements in Wrenches, of which the following is a specification.

The purpose of the invention is to provide a wrench susceptible of use with a handle or with a brace and quickly adjustable to suit various sizes of nuts or bolt heads within its range.

With this purpose in view, the invention consists in the construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevational view of the invention.

Fig. 2 is an elevational view looking from a direction at right angles from that in which Fig. 1 is viewed.

Fig. 3 is a section on the plane indicated by the line 3—3 of Fig. 1.

Fig. 4 is a sectional view on the plane indicated by the line 4—4 of Fig. 1.

Figure 5 is a sectional view on line 5—5 of Figure 1.

Fig. 6 is an elevational view showing a modification wherein the lugs 17 are omitted.

The invention is shown as applied to a wrench of the socket variety having the complemental work engaging elements 1 and 2 mounted respectively on the cross sectionally semicircular jaw heads 3 and 4, having tongue and groove connections consisting of tongues 5 carried by the jaw heads 3 and 4. It is obvious that the tongues 5 may fit into the grooves 6 frictionally tight in order to hold the work-engaging elements connected to the jaw heads. It is also possible to connect the work-engaging elements to the jaw heads in any other well-known manner, for instance by making the tongues and grooves 5 and 6 dovetailed, for example, V-shaped. The heads are formed as integral parts of stems 7 and 8 having a slide connection consisting of a tongue 9 on the stem 7 which engages a slot 10 on the stem 8. The stems slidably engage a slot or bifurcation 11 in the shank 12, a pin 14 being carried by the shank and spanning the slot at the outer end of the latter. The pin constitutes a connecting means between the stems 7 and 8 and the shank and the stems are respectively provided with oppositely disposed inclined slots 15 and 16 through which the pin passes.

The slots in the stems being at opposite inclinations, obviously longitudinal movement imparted to the stems will serve to effect a relative lateral movement of the two and a corresponding movement of the heads 3 and 4 with a resultant movement of the jaws 1 and 2. Movement of the stems in one direction will, therefore, tend to separate the jaws and movement in the opposite direction will tend to close them, the disposition of the slots 15 and 16 being such that when the stems are completely housed in the slot 11, the jaws are in their closed position or the position for engaging a nut of the smallest diameter.

To preclude pivotal movement of the stems and, therefore lateral swinging movement of the jaws with reference to the shank, lugs 17 are carried one by each stem for contact with an inclined surface 18 on the shank at the open end of the slot 11. Where it is desired that the jaws may have a pivotal connection with the shank to preclude swinging them at an angle thereto, the lugs may be omitted as in the modification shown in Fig. 6.

A hole 19 is bored transversely through the shank for the reception of a pin wrench when such a device is desired to operate the wrench, the shank being provided further with a pyramidal terminal 20 for engagement by a brace chuck where a brace is used as the operating means. In using the wrench, the jaw heads 3 and 4 are moved longitudinally axially of the shank 12, in which case the slots 15 and 16, in cooperating with the pin 14, will cause the stems of the jaw heads to slide laterally relative to each other, in which case the work engaging elements will separate. Since the work engaging elements 1 and 2 are angular, they may cooperate to engage with the nut or the like, whereby the nut may be turned to remove it from a bolt. After the work engaging elements receive the nut, the shank 12 of the wrench is moved longitudinally of the stems 7 and 8 and the pin 14 cooperating with the slots 15 and 16 will cause the jaw heads to again slide but in directions opposite to those previously mentioned and bring the work engaging elements 1 and 2 toward each other in close engagement with the nut. The

pressure on the transverse pin passing through the opening or hole 19 will maintain the shank as moved toward the jaw heads and retain the work engaging elements 1 and 2 against the nut to be rotated. While this pressure is being applied, the wrench may be turned or rotated so as to unscrew the nut.

The invention having been described, what is claimed as new and useful is:

In a wrench, the combination with a substantially cylindrical shank provided with a longitudinal bifurcation, of a pair of jaws having flat stems flatwise and slidably engaging with each other and mounted for axial movement in the bifurcation of the shank, the adjacent faces of the flat stems having a tongue and groove sliding connection, the stems having oppositely disposed inclined slots and the shank carrying a transverse pin which passes through the slots so that longitudinal movement of the shank will effect relative sliding movements of the stems, whereby nut or other work-engaging elements on the jaws may move toward and from each other, said shank having diagonally opposite inclined cam surfaces and the stems on the jaws having lugs extending laterally in opposite directions and overlying and engaging said inclined cam surfaces to insure guiding the stems and effecting relative lateral movements of the jaws, work engaging elements on the jaws, and means carried by the shank, whereby rotating movement axially may be imparted to the shank, bearing endwise on the shank to retain the elements in engagement with the work.

In testimony whereof I affix my signature.

WILLIAM H. FISHER.