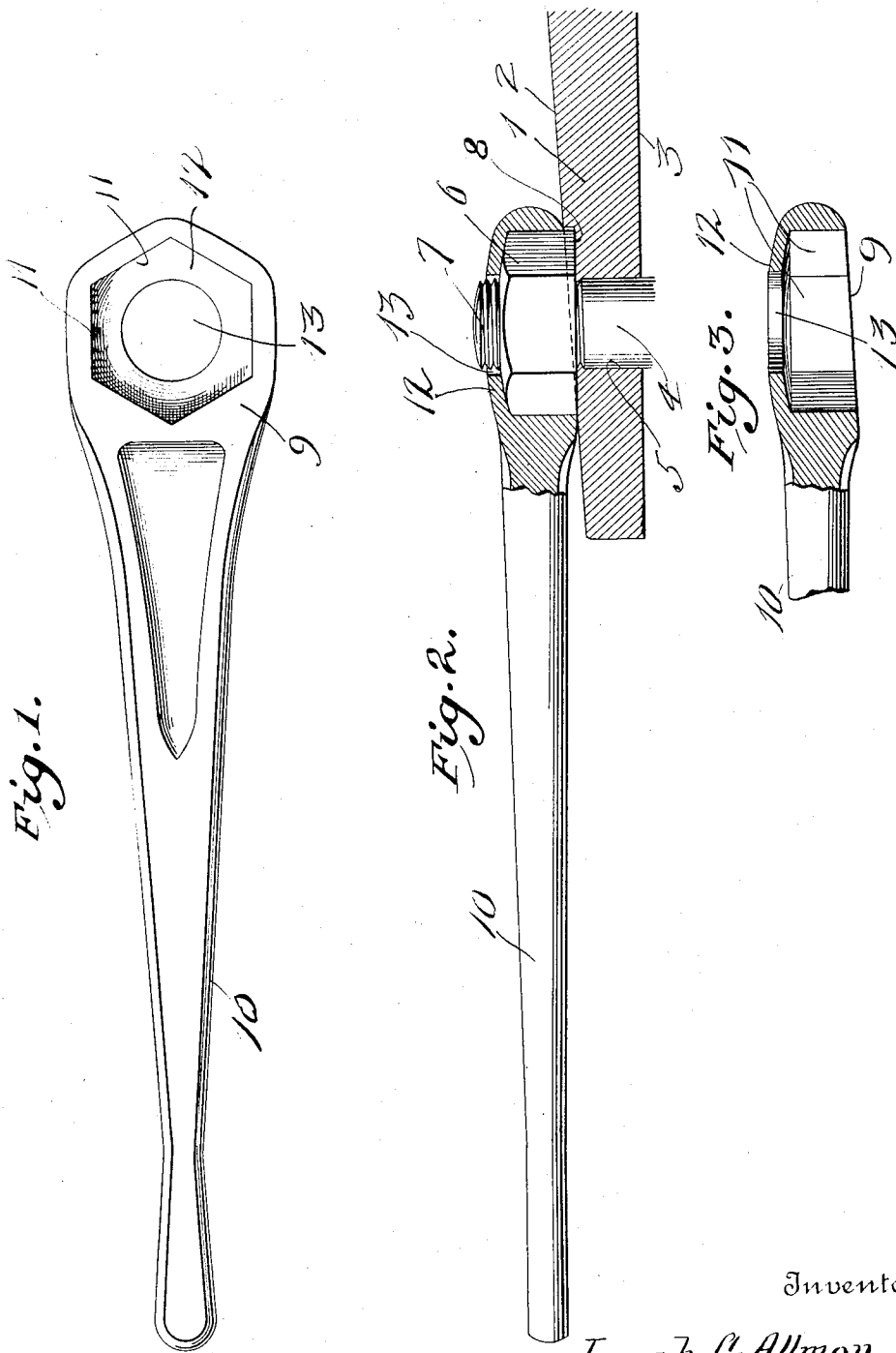


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WRENCH.

1,384,655.

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To all whom it may concern:

Be it known that I, JOSEPH G. ALLMON, a citizen of the United States, residing at West Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to wrenches of the inclosed, rigid jaw type.

It is my object to produce a special wrench designed to fit any one size of nut or cap screw; to produce a wrench adapted to work in places where the space is limited and to operate on nuts or cap screws countersunk in a surface which is somewhat inclined with respect to the axis of the stud or cap screw to be tightened or loosened by the wrench.

It comprises details of construction particularly set forth in the following description, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings:

Figure 1 is a plan view of the improved wrench viewed from the under side, or that side which engages over the cap screw or nut:

Fig. 2 is a view partly in side elevation, and in section along the axis of the wrench showing the wrench engaged with a nut;

Fig. 3 is a section through the head of the wrench longitudinal of the axis.

It is well understood that a special rigid jaw wrench designed to fit a particular size and shape of nut, bolt, cap screw, or other threaded member, is more satisfactory in use than an adjustable jawed wrench, because, in general, the former secures a better hold on the nut, bolt or other body to be screwed up or unscrewed than the adjustable wrench, and does not mutilate the nut or bolt head. Rigid jaw wrenches are also, in general, better adapted to work in close quarters.

The wrench herein described and illustrated in the drawings, is particularly designed for operating on nuts, bolts or cap screws which are countersunk in a surface somewhat inclined to the axis of the stud or bolt. The nuts, bolts, or cap screws upon which it is designed to operate with the wrench are screwed up very tight and require great force to loosen them or set them up. It is therefore desirable to use upon

them a wrench which makes snug engagement with every available part of the surface to which force can be applied for turning them. The improved wrench is intended for use on nuts or bolts secured to a flange or plate 1, as illustrated in Fig. 2, which has an upper surface 2 that is slightly inclined to the under surface 3. Such a flange or plate is designed to be bolted firmly down upon a surface parallel with the surface 3. It is desirable that the stud 4, (or bolt, it may be) pass through an opening 5 in said flange or plate, the axis of which is perpendicular to the surface 3. If the nut 5 were screwed upon the threaded end 6 onto the inclined surface 2, it is obvious that the nut and stud or bolt would be distorted. It is customary, therefore, in such constructions to countersink the flange or base 1, as at 8, so that the lower surface of the nut 6 may be forced down upon the bottom of the countersink, which is parallel with the under surface 3 of the plate and with the under side of the nut. The ordinary wrench, rigid jawed or otherwise, commonly has the nut or bolt head engaging surfaces of its jaws perpendicular to the under side of the jaws, it being expected that the under side of the jaws will lie flat upon the work or base, so as to get as large an engaging surface as possible on the nut or bolt head in screwing or unscrewing a nut or bolt. Such a wrench applied to the nut in the position shown in Fig. 2 in the drawing would be awkward and inefficient, since, if the under surface of the jaws were rested upon the inclined surface 2, either a distorted engagement would be had with the nut, or, if an accurate engagement should be had by bringing the jaws into parallel engagement with the sides of the nut, only a limited portion of the available surface of the nut would be gripped by the wrench. One of the features of my invention lies in the angular relationship between the under surface 9 of the jaws or wrench head and the axis of the wrench. By axis of the wrench is meant the axis about which it rotates in operation. Another feature is the relation between said under surface 9 and the handle 10. By reason of these features of construction, when the handle is held in the normal and most effective position, the under surface of the jaws will rest upon the inclined surface and the jaw surfaces 11 will engage all of the available exposed surface of the nut

or bolt head, so as to get the greatest efficiency in turning the nut on or off the stud, or in screwing the bolt. The sides 11 of the socket, or the nut engaging surfaces or jaws, are not, in this wrench, perpendicular to the lower side 9 of the jaws (or undersurface of the head) that is designed to rest upon the plate or flange against which the nut or bolt head is to be screwed, as is usual with wrenches, but are, on the contrary, perpendicular to the general surface at the upper side of the socket or substantially perpendicular to the axis of the handle, and the said under surface is at such an angle that when resting flat upon the flange or plate through which the stud passes, in the position in which the wrench is to be operated, that the sides will at that time be parallel with the axis of the stud or bolt.

In the embodiment shown, a perforated stop surface 12 partially closes one end of the socket and is adapted to rest upon the top of the nut or cap screw, so that when the socket, the sides of which constitute the wrench jaws, is applied over the nut, the wrench will fit over it far enough so that all the effective surfaces of the nut or screw head will be engaged by the wrench jaws, and no more. The stop surface or web 12 is centrally perforated at 13 so as to permit passage of a stud 7 therethrough in case the latter should project above the nut. By this construction the wrench head or socket may be dropped over a nut on a stud to exactly the right distance without the necessity of particular care on the part of the operator and any projecting portion of the stud will pass through the opening 13. It will be apparent also that the web 12, in addition to its already stated functions, strengthens the wrench and adapts it to the very heaviest service required for the particular size of wrench.

In the structures for which I have particularly intended the wrench, the nuts and studs are placed quite close together and the working space is limited; also, as illustrated in Fig. 2, the handle 10 projects at right angles to the axis of the wrench head or jaws, in which relation it is at its most efficient angle, when operating as intended, in a section the plane of which is perpendicular to the stud or bolt 4, overlying the thinnest portion of the flange or plate 1. The dimensions and design of the wrench are such that the work can be gotten at and the wrench operated in limited spaces. The most effective grip possible is obtained upon the

nuts or bolts and no effort is required on the part of the mechanic and no particular care to place the wrench precisely.

Having described my invention in such manner as to enable those skilled in the art to make and use the same, what I claim and desire to secure by Letters Patent is:

1. In a wrench, nut or bolt engaging jaws having engaging surfaces parallel with the axis of the wrench, and an under face oblique to said axis.

2. A rigid jaw wrench having nut or bolt engaging jaws in which the nut or bolt engaging surfaces are parallel with the axis of the wrench, the under surface of the jaws being oblique to said axis.

3. An inclosed, rigid jaw wrench having nut or bolt engaging faces parallel with the wrench axis, the under surfaces of the jaws being oblique to said axis.

4. A rigid jaw wrench having nut and bolt engaging surfaces parallel with the axis of the wrench and a handle extending substantially perpendicular to said axis, the under surface of the jaws being oblique to the axis of the wrench.

5. A rigid jaw wrench having nut or bolt engaging surfaces parallel with the axis of the wrench, a handle extending substantially perpendicular to said axis, the under surface of the jaws being oblique to said axis and to said handle.

6. An inclosed, rigid jaw wrench having nut or bolt engaging surfaces parallel with the axis of the wrench, the jaw portion having an under surface oblique to said axis and a stop flange adapted to rest upon a nut or bolt head to limit the position of the wrench with respect to said nut or bolt head.

7. An inclosed, rigid jaw wrench, having nut engaging surfaces parallel with the axis of the wrench, the jaw portion having an under surface oblique to said axis, a perforated stop web adapted to permit the passage of a stud and to rest upon the top of a nut, thereby limiting the descent of the wrench over said nut, and a handle extending laterally with respect to the axis of the wrench.

8. An inclosed, rigid jaw wrench, having nut engaging surfaces parallel with the axis of the wrench, an under face oblique to said axis, a perforated stop web opposite said under face, and a handle extending substantially at right angles to the axis.

In testimony whereof I affix my signature.

JOSEPH G. ALLMON.