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WRENCH

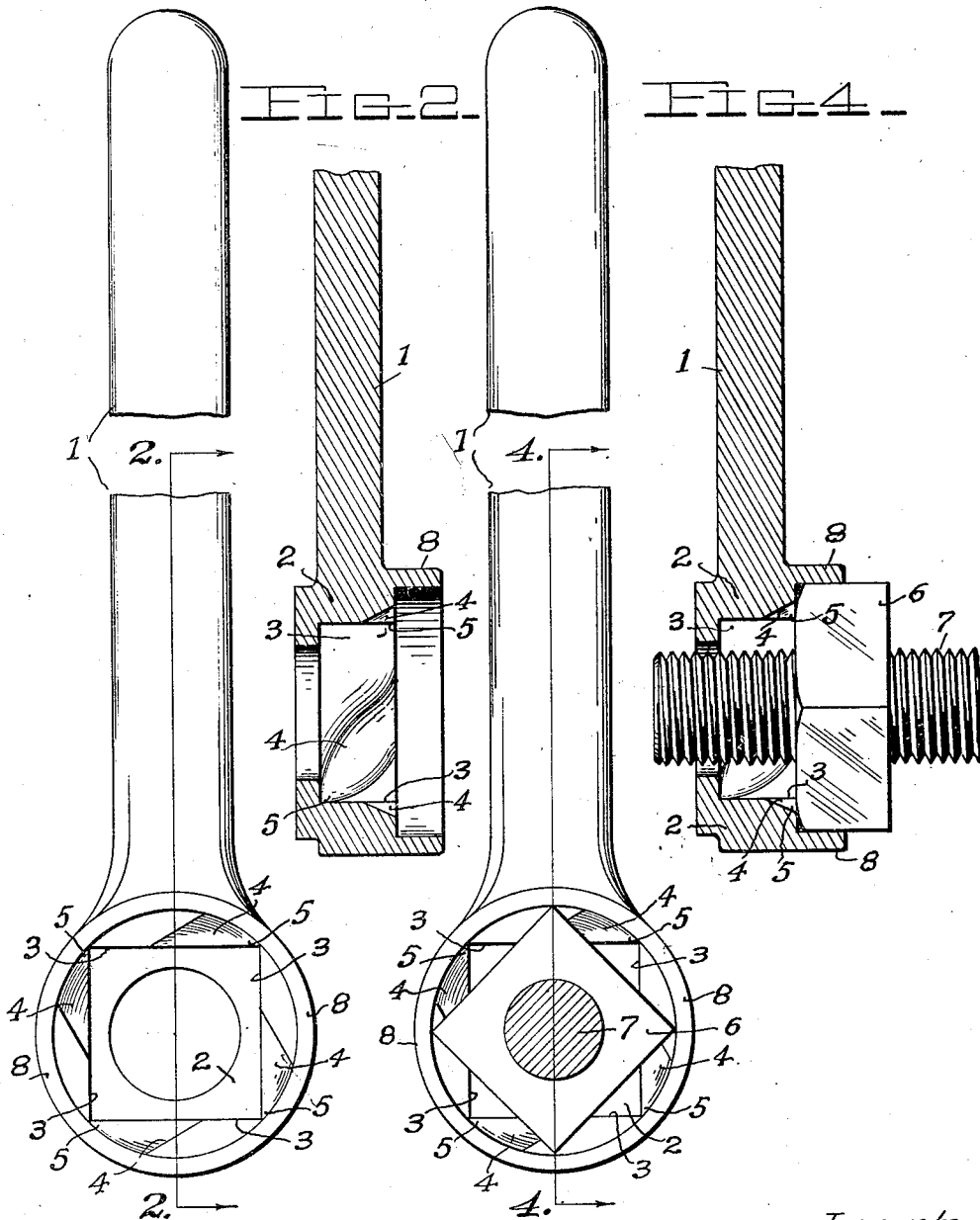
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Fig. 1--

Fig. 3--

Fig. 2--

Fig. 4--



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WRENCH

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This invention relates to wrenches, but more particularly has reference to devices of this description which are operated after the manner of a ratchet wrench, the handle of the wrench being always operated in a vertical plane with the faces engaging the nut.

The object of the present invention is to prevent the wrench from slipping off the nut at the end of the idle movement of the wrench.

The particular form of nut engaging faces and cam surfaces, which release the nut from these faces during the idle or ratchet movement of the wrench are not new, and wrenches having such faces and cams have heretofore been used for the purpose of tightening nuts that are disposed in a horizontal plane, and wrenches of this description are, of course, operated in a horizontal plane, and at the end of the idle or ratchet stroke of the wrench, the latter will drop by gravity so as to cause the nut engaging faces to be properly positioned with respect to the nut.

But the present invention aims to so equip wrenches of this description that they may be used as track wrenches for railroads, it being merely necessary, at the end of the ratchet or idle stroke of the wrench, for the operator to thrust the wrench inwardly with his foot so that the wrench engaging faces may be properly positioned with respect to the nut, and as this foot pressure may be always constant, the wrench may be readily operated, after the manner of a ratchet wrench, with great facility.

In the accompanying drawings which must be read as a part of this description,

Figure 1 is a face elevation of the wrench—

Figure 2 a section at the line 2—2 of Figure 1—

Figure 3 a view similar to Figure 1, but showing a nut in the process of being driven on a bolt with the nut as it appears at the end of the ratchet or idle stroke of the wrench, and

Figure 4 is a section at the line 4—4 of Figure 2.

Similar numerals of reference denote like parts in the several figures of the drawings.

The particular style of wrench with which this invention is identified is known as a "box" or "socket" wrench, which, in the present instance, comprises a handle 1 and a head 2 at the bottom of the handle.

Within this head are integral flat or nut engaging faces 3 which merge into cam surfaces 4, each cam surface being so inclined as to lead outwardly toward a nut engaging face 3. In other words these cam surfaces 4 are slanted from their point 5 of junction with the nut engaging faces 3, at or near the bottom of the head 2, outward to the outer terminals of the faces 3, so that when a nut is engaged with the faces 3 on the operative stroke and the handle 1 is carried through the nut will be driven on its bolt.

On the return or ratchet movement of the handle the inner parts of the cam surfaces 4, or, in other words, at their points of junction 5, will come into contact with the nut, which will cause the wrench to back off of the nut, until the cam surfaces 4 have been freed from contact with the nut, and when the handle, on its return or ratchet stroke, has been carried far enough, the faces of the nut will have been brought into alignment with the nut engaging faces 3, whereupon pressure with the foot or hand of the operator against the head 2 will cause the latter to be thrust inwardly so that the faces 3 will again engage the nut preparatory to another effective movement of the handle.

At Figure 3 a nut 6 is shown on a bolt 7, and the handle has been swung so as to back off the head so that the cam surfaces 4 will be entirely clear of the nut, and it will be obvious that a further movement of the handle will bring the faces 3 into alignment with the sides of the nut.

8 is a ring integral with the head and extending beyond the faces 3, 4, so that when the head is backed off the nut in the manner above described, the nut will be housed within this ring, so that it cannot leave the wrench, as it would do if the ring were omitted, this being clearly shown at Figure 4, and when the wrench is in this position, near the end of its idle or ratchet stroke, it will be clear that a pressure by the foot or hand

of the operator against the outside of the head 2, will cause the head to move inwardly with the faces 3 engaged with the sides of the nut when the handle has been moved far enough to bring these faces and sides into alinement. By the provision of this ring 8 the handle may be moved forward or backward in a vertical plane, after the manner of a ratchet wrench, the cam faces constantly operating to back the wrench off the nut on the idle or ratchet stroke of the handle without any likelihood of the wrench leaving the nut.

This invention makes a "socket" or "box" wrench very desirable as a railroad track wrench, because the nuts always stand in a vertical plane, while at the same time the wrench is operated with great facility after the manner of a ratchet wrench.

The ring hereinbefore referred to is really an extension of the head, and is of such depth, beyond the nut engaging faces and cam surfaces, as to provide a circumvallation of the nut when the latter has assumed a position beyond said faces and surfaces.

What is claimed is:—

A ratchet wrench comprising a handle, a socket head, alternate nut engaging members and cam faces within said head, and an extension of said socket beyond the outer planes of said members and faces, the cam faces being inclined outwardly whereby on the idle movement of the wrench they will engage the nut and cause the socket head to back off the nut until the latter is clear of said members and faces and is contained within said extension, the interior of said extension being circular and coinciding with the outer corners of the nut engaging faces, so that the wrench is always maintained axially alined with the nut, and by maintaining axial pressure on the wrench during the ratcheting stroke assures immediate re-engagement with the nut faces as soon as they are again alined with the driving faces of the socket.

In testimony whereof I affix my signature hereto.

ROBERT L. COCHRANE.