C. G. PALMER.

SOCKET WRENCH.

APPLICATION FILED MAY 9, 1921.

1,410,032. Patented Mar. 21, 1922.

Fig. 1.

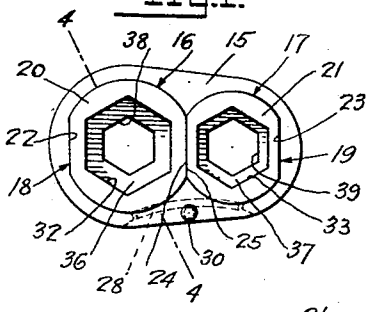


Fig. 3.

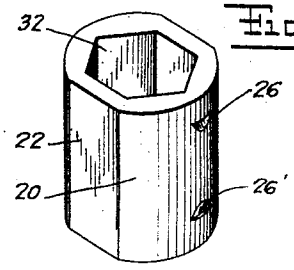


Fig. 2.

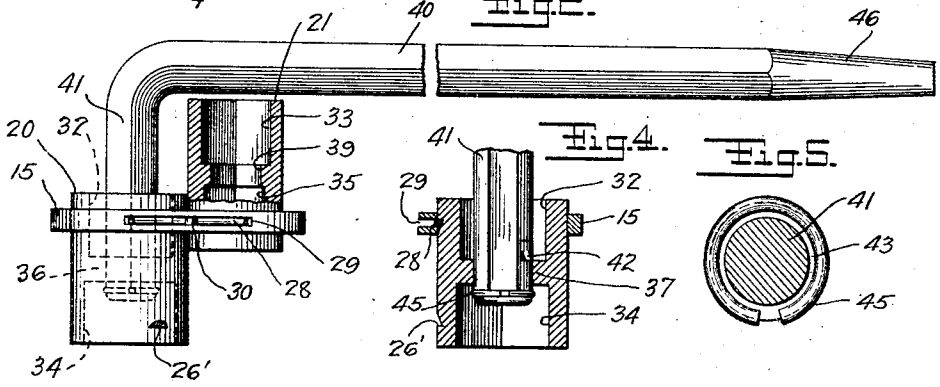


Fig. 4.

Fig. 5.

Fig. 7.

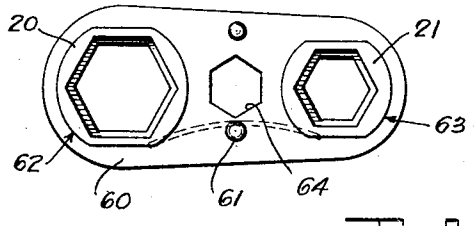


Fig. 6.

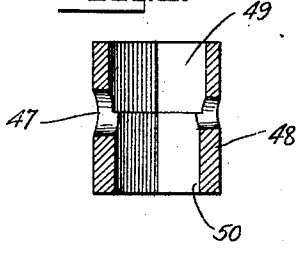
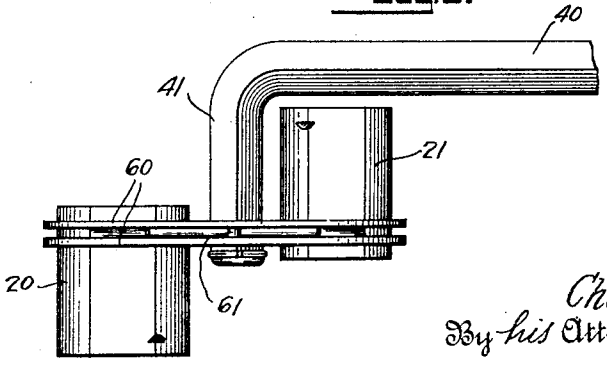


Fig. 8.



Inventor

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UNITED STATES PATENT OFFICE.

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SOCKET WRENCH.

1,410,032. Specification of Letters Patent. Patented Mar. 21, 1922.

Application filed May 9, 1921. Serial No. 467,997.

To all whom it may concern:

Be it known that I, CHARLES G. PALMER, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Socket Wrenches, of which the following is a specification.

One of the main objects of this invention is to provide a simple, neat and compact wrench of the socket or box type which can be used in contracted quarters as well as in more accessible positions, in the turning of nuts, bolts and like parts.

Another object is to provide a wrench having a plurality of sockets or jams of different sizes, each being instantly available without confliction or interferences with others.

A further object is in the provision of means whereby the handle element may be attached and held in connection with the head, or detached to permit folding into small compass for storage.

These and other analogous objects are attained by the novel construction, combination and arrangement of parts hereinafter described and shown in the annexed drawings, constituting an essential portion of this disclosure, and in which:—

Figure 1 is a plan view of a wrench head made in accordance with the invention, the handle being omitted.

Figure 2 is a side elevation of the complete wrench, parts being broken away to disclose the construction.

Figure 3 is a perspective view of one of the socket elements in detail.

Figure 4 is a longitudinal sectional view taken on line 4—4 of Fig. 1, showing a fragment of the handle in operative position.

Figure 5 is a transverse sectional view of the operative or engaging end of the handle bar, drawn to an enlarged scale.

Figure 6 is a longitudinal sectional view of a socket as used with the outer end of the handle bar.

Figure 7 is a plan view showing an alternative form of wrench head.

Figure 8 is a fragmentary side elevation of alternative form of construction.

Stated briefly in general terms, the wrench, although fully capable of general, ordinary purposes, is particularly adapted for use in connection with automobiles for adjusting the several sizes of bolts and nuts used thereon, and forms a convenient and satisfactory substitute for the usual motley collection of wrenches deemed necessary in the tool kit carried by such vehicles.

The device includes a flat head bored to receive two adjacent cylindrical socket elements, each having unlike openings to receive the object to be turned, the selected socket being projected outward from the head and held in operative position, while the mating socket is retracted and held to avoid interference.

The handle is comprised of a leverlike bar, bent at one end and suited to engage in appropriate openings, either in the head or directly in the sockets, and means are provided to maintain the handle in operative position but permitting it to be disengaged when not required for use.

Referring now more particularly to Figs. 1 to 6 inclusive, of the drawings which show the preferred embodiment of the invention, the numeral 15 designates the head of the implement, the same consisting of a flat metal plate, generally ovoidal in profile and containing a pair of round openings 16 and 17, the latter being of lesser diameter, these openings communicating at the center of the plate and having flat surfaced edges 18 and 19 adjacent the ends of the plate, these ends being curved concentrically to the openings.

The sockets 20 and 21 are made in the form of short cylinders fitted to slide freely in their respective openings 16 and 17 and are flattened as at 22 and 23, to suit the elements 18 and 19, their adjacent flats 24 and 25 being juxtaposed as shown.

In one of the cylindrical surfaces of each socket, relatively near their ends, are notches 26 and 26′ adapted to receive the ends of a spring wire detent 28 carried in a central lateral recess 29 formed in one of the flat edges of the head plate 15 and held in place therein by the pin 30, it being understood that the detent, when engaged in any of the notches, will normally hold the socket in adjustment, but that the resiliency of the detent permits the socket to be forced from one position to another, due to the inclined approaches of the notches on their adjacent sides.

The longer socket 20 contains polygonal openings, 32 and 34 respectively, in its opposite ends and the smaller socket 21 has similar openings 33 and 35, all of the several openings being of different size progressively, to suit varying requirements.

Partial webs or abutments 36 and 37 extend transversely across the middle of the sockets and in them are angular sided openings 38 and 39.

The handle consists of a bar 40 preferably hexagonal in cross section and bent at one end at a right angle, this portion 41 being engageable in any of the correspondingly shaped openings 38 or 39.

In order to prevent the element 41 from entering the openings more than sufficient to properly engage therein, lugs 42 are raised on its opposite side adapted to contact with the webs 36 or 37, and an annular groove 43 is formed near the end of the element 41 in which is loosely secured a ring 45, made of thin resilient wire, its ends being spaced slightly apart to permit the ring to be forced into the groove when the element 41 is entered into the opening, the ring then springing outward sufficiently to act as a detent preventing inadvertent withdrawal of the handle.

The outer, straight end 46 of the handle 40 is superficially reduced and finished with a slight taper, the same being adapted to enter a transverse tapered bore 47 formed in a socket 48, having openings 49 and 50 of different sizes in its opposite ends, thus providing a socket wrench having six sizes of openings.

In the form shown in Figs. 7 and 8, the same general construction is employed, except that the head plate is comprised of two relatively thin plates 60 spaced slightly apart and held by rivets 61 in a rigid manner.

These plates are also somewhat longer than the solid plate previously described and the openings 62 and 63 spaced apart sufficiently to permit a polygonal opening 64 to pass through the centers of the plates for the reception of the handle element 41 which is in all respects similar to that formerly described.

The sockets 20 and 21 are also identical but the center webs may be omitted and the flats are disposed parallel to the side edges of the plate as shown.

As changes of construction could be made within the scope of the invention, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A socket wrench comprising a rigid plate, containing spaced circular openings having flattened sides, sockets slidably engaged in the mentioned openings, said sockets having differently sized openings in each end, and a handle by which said plate and sockets are rotated.

2. A socket wrench comprising a rigid plate, containing spaced circular opening having flattened sides, double ended sockets adjustable in the mentioned openings, means carried by said plate to hold said sockets in adjusted position, and a handle for manipulating the wrench.

3. A socket wrench comprising an elongated plate containing openings, double ended sockets slidably engaged in the openings, a spring detent carried by said plate for locating said sockets in operative or inoperative adjustment, and a lever handle having a bent portion by which the operative socket is turned.

4. A socket wrench comprising an elongated plate containing openings, double ended sockets slidably engaged in the openings, means to prevent said sockets from turning in the openings, said sockets having notches in their outer surfaces, a spring detent in said plate engageable in either of the notches whereby the sockets are held in adjustment, and a removable handle by which the wrench is manipulated.

5. A socket wrench comprising an elongated plate containing openings, double ended sockets slidable in the openings, means for independently adjusting said sockets, a removable handle for manipulating the wrench, means for limiting the entrance of said handle, and means for tensionally maintaining said handle in operative position.

6. A socket wrench comprising an elongated plate containing openings, double ended sockets slidable in the openings, means for independently adjusting said sockets, a removable handle for manipulating the wrench, and means for tensionally maintaining said handle in operative position.

This specification signed and witnessed this sixth day of May, 1921.

CHARLES G. PALMER.

Witnesses:
FRED'K C. FISCHER,
F. NOLL.