June 5, 1923. 1,457,719

J. WAHL

WRENCH

Filed Aug. 5, 1921

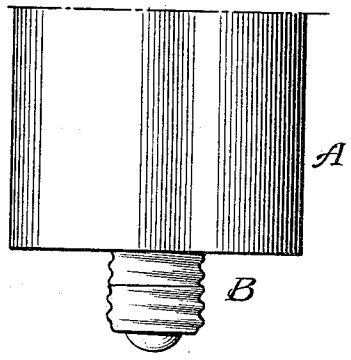


Fig.1.

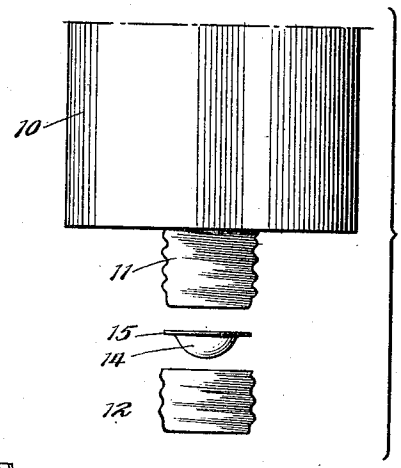


Fig.2.



Fig.3.

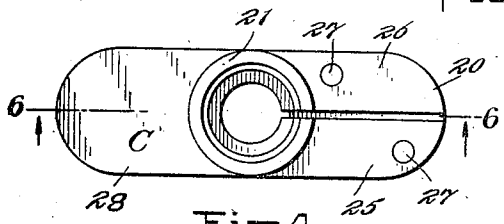


Fig.4.

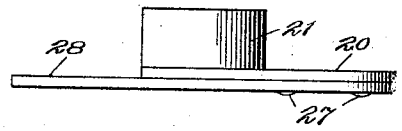


Fig.5.

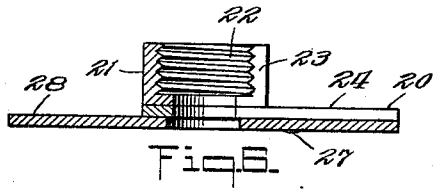


Fig.6.

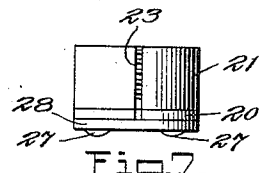


Fig.7.

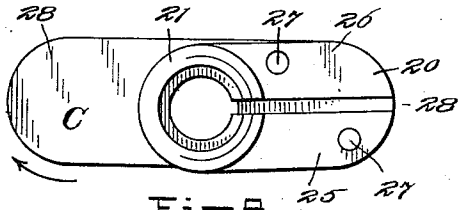


Fig.8.

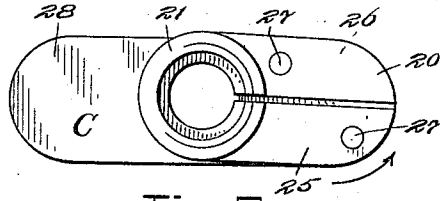


Fig.8.

INVENTOR

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BY

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ATTORNEYS

Patented June 5, 1923. 1,457,719

UNITED STATES PATENT OFFICE.

JOHN WAHL, OF BROOKLYN, NEW YORK, ASSIGNOR TO A. SCHRADER'S SON, INCORPORATED, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

WRENCH.

Application filed August 5, 1921. Serial No. 490,101.

To all whom it may concern:

Be it known that I, JOHN WAHL, a citizen of the United States of America, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to socket wrenches, and aims to provide certain useful improvements therein.

This invention is applicable to wrenches in general, although the preferred embodiment as herein illustrated and described is particularly adapted for applying sheet metal cap closures to receptacles adapted to hold volatile and readily combustible organic liquids. In receptacles for holding and shipping such volatile liquids it is essential that an absolute seal is maintained between the cap closure and receptacle. This seal is usually provided by tightly screwing a metal cap upon a projecting nipple on the receptacle to form a metal to metal seal therewith, which seal is intended to be permanent. To withdraw the liquid from said receptacle the top of the cap is cut open or punctured. The caps usually employed for this purpose are made from thin sheet metal with a rolled or stamped thread thereon.

In applying caps of this type to receptacles, it is obvious that the ordinary wrench of the Stillson type can not be employed to advantage because of the tendency to crush the thin cap and destroy the threads thereon. Accordingly, socket wrenches are employed for this purpose. However, in employing the ordinary form of socket wrench for this purpose great difficulty is experienced in maintaining the tight connection between the cap and receptacle when the wrench is being removed because of the frictional engagement between the wrench and the cap.

It is an object of the present invention to obviate this difficulty and to overcome the tendency to loosen the cap when the wrench is being removed.

It is a further object of the present invention to provide a simple, durable and efficient wrench which may be readily assembled and cheaply manufactured.

Certain other objects are also attained which will become apparent from the disclosure.

Referring to the drawings:

Fig. 1 is a side elevation of a receptacle with a cap mounted thereon.

Fig. 2 is a composite side elevation of a receptacle showing its nipple and two-part cap adapted to fit thereover.

Fig. 3 is a longitudinal section of one part of the cap shown in Fig. 2.

Fig. 4 is a top plan view of the wrench.

Fig. 5 is a side elevation thereof.

Fig. 6 is a longitudinal section of the wrench taken on the plane of line 6—6.

Fig. 7 is an end elevation of the wrench.

Figs. 8 and 9 are plan views showing the relative widths of the slot in the wrench when it is subjected to turning forces as indicated by the arrows.

In the drawings, let A designate the receptacle as a whole, B the cap closure therefor and C the socket wrench for applying the cap closure to the receptacle.

The receptacle A may be of any desired construction and as herein shown consists of a cylindrical body portion 10 and a reduced threaded nipple 11 which may be made integral therewith or from a separate piece of metal, secured to the body portion by any known method, such as soldering or brazing. Over this nipple is mounted the cap closure B, which according to the present construction comprises a sheet metal sleeve 12 formed with an inturned flange 13 on its upper edge, and a flanged dome-shaped closure member 14. The sheet metal sleeve is provided with a screw thread which may be either rolled or pressed into said sleeve. The closure member 14 is provided with a flange 15 which bears against the top of the nipple 11 and the inturned flange 13 on the sleeve, when the cap is screwed tightly over the nipple. When said cap closure is applied as described a leak-tight seal is provided between the nipple 11 and the dome shaped member 14. This leak tight joint is intended to be permanent and when it is desired to obtain the liquid from the receptacle, the dome shaped member may be cut open or punctured with a suitable instrument.

After applying the cap B over the nipple 11 some difficulty has been experienced in retaining the tight seal between said members when the wrench is sought to be removed by a reverse turning operation, owing to the great frictional contact between

the wrench socket and the exterior of the cap, which frictional engagement is substantially equal to the frictional engagement between the nipple and the interior of the cap. To overcome this tendency, the wrench member designated by the reference character C has been devised.

The wrench C as disclosed, which may be considered as the preferred embodiment of applicant's invention, consists of a socket carrying member 20 carrying the socket 21, which may be made integral therewith or from a separate piece of metal fastened thereto in any suitable manner as by soldering or brazing. The socket member 21 is formed interiorly with a screw thread 22 of a size to engage over the external thread on the cap sleeve 12, with which it is to co-operate. To provide for increasing and decreasing the circumference of the socket member for a purpose to be more fully hereinafter set forth, the said socket member is provided with a longitudinal slit 23 which is in alinement with a longitudinal silt 24 in the socket carrying member 20. This slit divides the member 20 into two arms designated 25 and 26 each of which is mounted upon a suitable handle 28 by means of rivets or other equivalent devices. The mounting as herein disclosed shows the rivets which provide for a pivotal mounting of each of said arms as being arranged at points diagonally opposite one another with respect to the carrying member. This manner of mounting provides for a limited pivotal rotation of each of said arms 25 and 26 about the pivot points 27 with respect to the handle 28. Through the pivotal action of the arms, the circumference of the split socket member may be either increased or decreased depending upon the directon of the turning force being applied to the handle. As diagrammatically shown in the drawings (Figs. 8 and 9) a turning force applied to the handle in the direction of the arrow in Fig. 8 tends to cause a separation of the arms 25 and 26 and consequently provide an increase in the circumference of the socket member 21 and conversely, a turning force applied in the opposite direction, as indicated by the arrow in Fig. 9, tends to cause a contraction or a forcing together of the arms and accordingly provide a decrease in the circumference of the socket member.

In the use of the wrench as herein disclosed for the purpose set forth, the socket wrench is applied over the exterior threads on the cap member after said cap has been applied to the receptacle by hand or by any other suitable means and a turning thereof in a clockwise direction will tighten the cap upon the receptacle to form a leak-tight seal therewith. To withdraw the wrench from the cap, all that is necessary, is to apply a turning force in the opposite or counter clockwise direction. This turning force tends to separate the arms 25 and 26 and increase the circumference of the socket member 21 which increase greatly reduces the frictional engagement between the wrench socket and the cap, and the wrench may be removed without turning the cap. It will be noted that the action of the wrench depends upon the varying of frictional contact between the wrench socket and the member co-operating with it.

It will be understood that when the handle is turned the socket member 21 is held in substantially fixed position by the can nozzle and the two legs of the wrench tend to turn about their studs 27, so that a slight transverse movement of the socket member with relation to the handle takes place.

While I have shown and described one particular embodiment of the invention as applied to socket wrenches, it is to be understood that it is applicable to any type of wrench which depends upon varying the frictional contact between it and the member co-acting with it for the purpose herein set forth.

It will also be understood that I do not wish to be limited to the precise construction herein shown and described, since various changes may be made therein without departing from the spirit of the invention.

What I claim is:

1. A wrench or the like comprising a handle and a screw-threaded socket member connected to said handle and adapted for a limited movement with relation thereto, the normal diameter of the socket member being adapted to be expanded and contracted by the movement of the handle.

2. A wrench or the like comprising a handle and a screw-threaded socket member connected to said handle and adapted for a limited movement with relation thereto, the normal diameter of the socket member being adapted to be expanded and contracted by the movement of the handle and said socket being connected to said handle by means of an extension member on said socket member.

3. A wrench having a handle and a portion adapted to engage an article such as a nut or the like, such portion being capable of expansion and contraction and operating means therefor having two points of swinging connection with the handle, whereby when the handle is turned relatively to said portion the latter is caused to expand or contract.

4. A wrench having a handle and a portion adapted to engage an article such as a nut or the like, such portion being capable of expansion and contraction and operating means therefor having two points of swinging connection with the handle, whereby when the handle is turned relatively to said

portion the latter is caused to expand or contract, and one of said swinging connections being located nearer said portion than the other.

5. A wrench or the like comprising a handle and a split substantially circular socket member, the normal circumference of the socket being adapted to be increased by the application of a turning force to the handle.

6. A wrench or the like comprising a handle and a split socket member, the normal circumference of the socket being adapted to be diminished by the application of a turning force to the handle in one direction, and to be increased by the application of the force in the opposite direction.

7. A wrench having a handle and a substantially circular engaging portion adapted to frictionally engage a projecting member, and means for decreasing the frictional engagement between such engaging portion and said member when the handle is turned without removing the wrench from engaging position.

8. A wrench having an internally threaded portion adapted to engage an externally threaded member, and means for decreasing the frictional engagement between the wrench and the threaded member when a turning force is applied to the wrench.

9. A wrench having an internally threaded portion adapted to engage an externally threaded member, and means on said wrench for increasing the frictional engagement between the wrench and the threaded member when a turning force is applied to the wrench in one direction and for decreasing the frictional engagement when the turning force is applied in the opposite direction.

10. A wrench or the like comprising a handle and a contractible and expansible screw-threaded socket member connected to said handle and adapted for a limited movement with relation thereto, said socket being connected to said handle by means of an extension member on said socket member, said extension member being slitted.

11. A wrench or the like comprising a handle and a contractible and expansible screw-threaded socket member connected to said handle and adapted for a limited pivotal movement with relation thereto, said socket being connected to said handle by means of an extension member being slitted, and each of said slitted portions being pivotally connected with the handle.

In witness whereof, I have hereunto signed my name.

JOHN WAHL.

Witnesses:
G. J. SANSOM,
E. E. BRECHNER.