Nov. 8, 1927. 1,648,661

C. SENN

WRENCH

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Fig. 1.

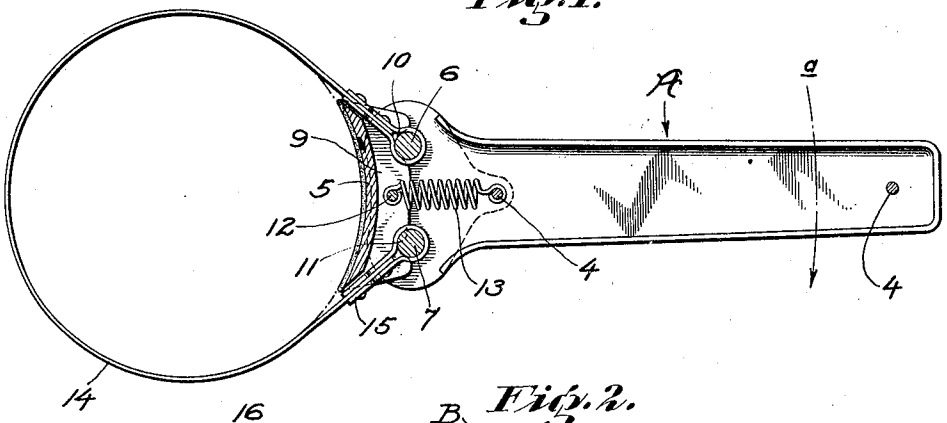


Fig. 2.

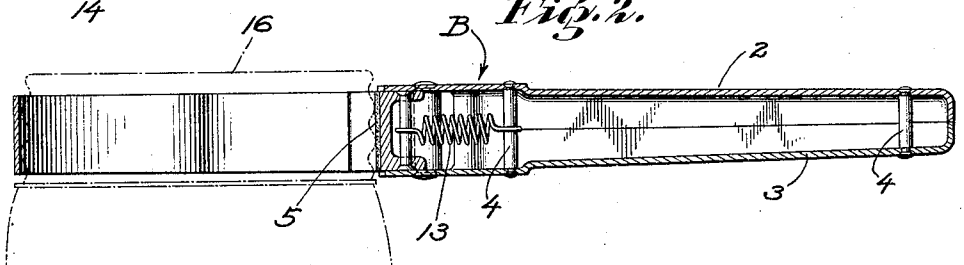


Fig. 3.

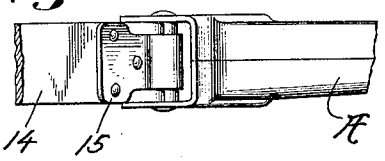
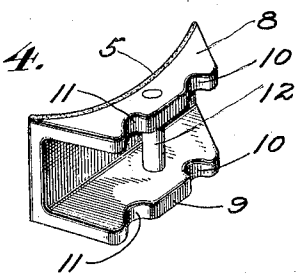
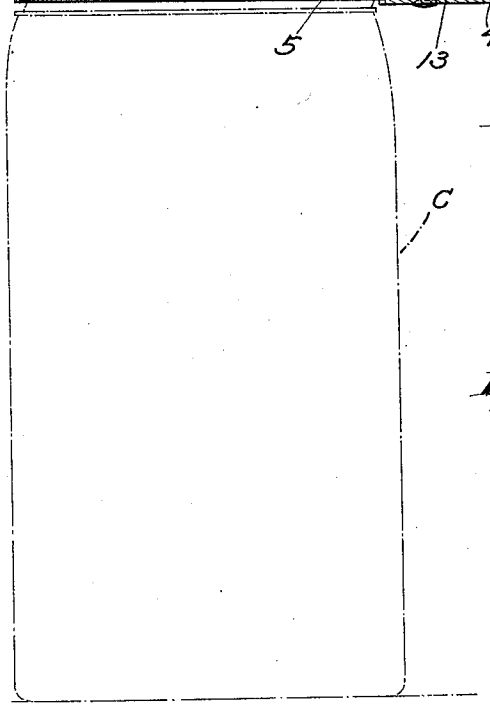


Fig. 4.





Inventor
Carl Senn
By Dewey, Strong, Drummond & Lafferty
Attorneys.

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C. SENN

WRENCH

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Fig. 7.

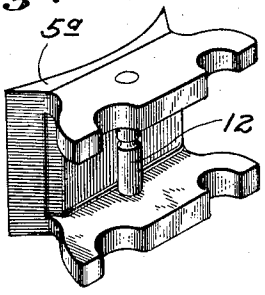


Fig. 5.

Fig. 6.

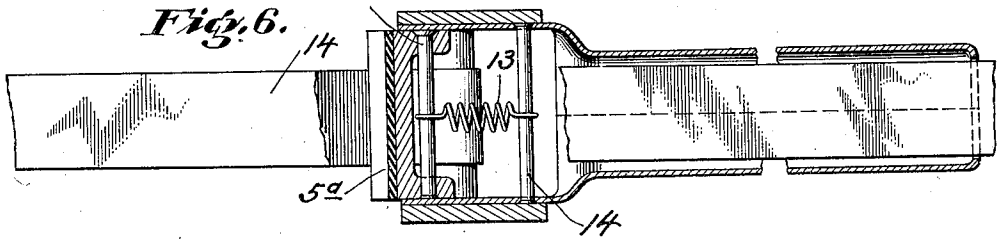


Fig. 8.

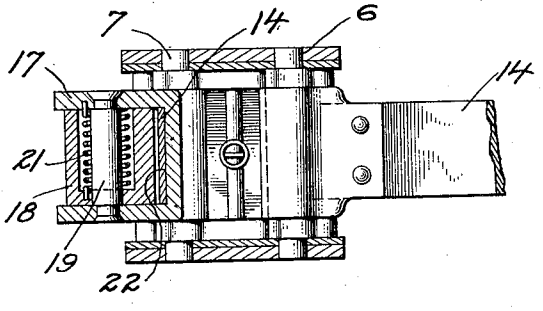
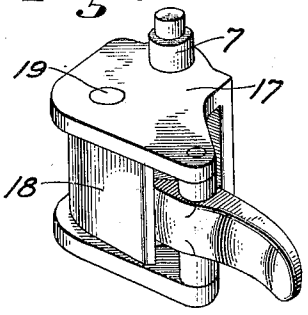


Fig. 9.



Inventor
Carl Senn

By Dewey, Strong, Jamieson & Lyftes
Attorneys

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C. SENN

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Fig. 10.

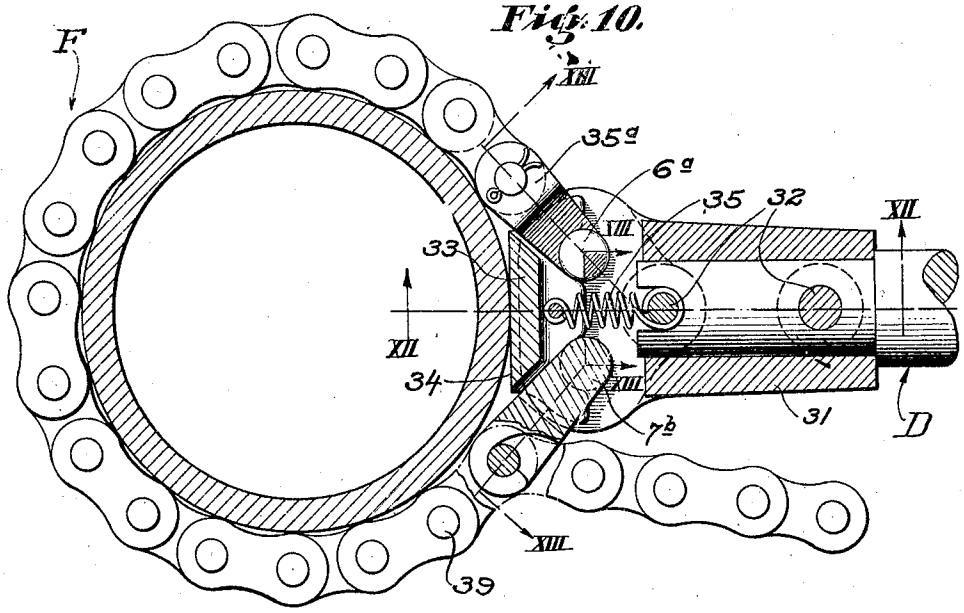


Fig. 11.

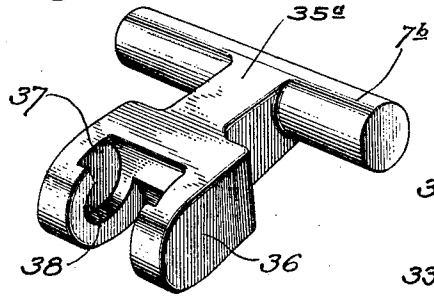


Fig. 12.

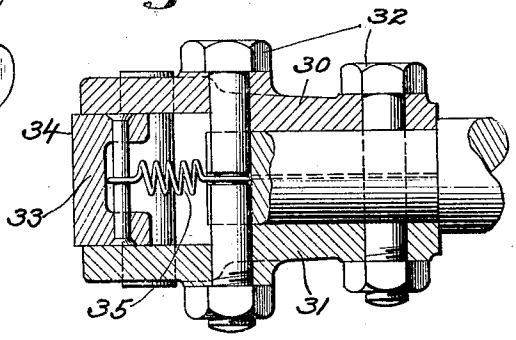
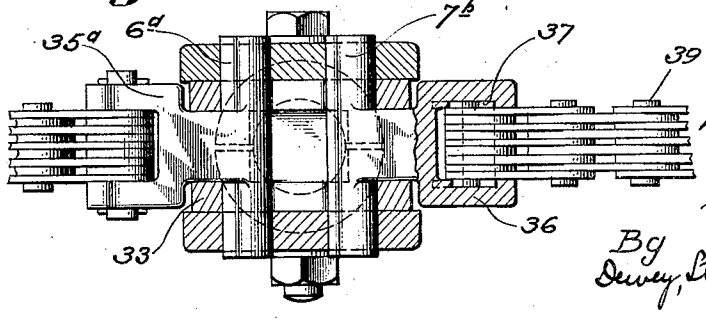


Fig. 13.



Inventor
Carl Senn

By Dewey, Strong, Jamand & Loftus
Attorneys

Patented Nov. 8, 1927. 1,648,661

UNITED STATES PATENT OFFICE.

CARL SENN, OF PETROLIA, CALIFORNIA.

WRENCH.

Application filed April 6, 1925. Serial No. 20,881.

This invention relates to a wrench and particularly to that type which employs a flexible gripping member.

The object of the present invention is to generally improve and simplify the construction and operation of the wrenches described; to provide a flexible gripping member in the form of a chain, a flexible steel band or the like which is adapted to completely encircle the object being gripped and turned; and to provide in conjunction an operating lever and a gripping jaw whereby the flexible gripping member may be tightened or released; to provide means whereby the flexible gripping member may be shortened or lengthened to snugly encircle pipes, caps, tubes, etc. of varying diameter; and further to provide a structure whereby a uniform pressure is exerted upon the flexible gripping member at all points when applied.

The invention is illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a plan view in section showing one form of the wrench, this form being particularly employed as a cap wrench for removing screw caps from fruit jars and the like.

Fig. 2 is a side elevation of the section.

Fig. 3 is a detail side elevation showing the manner of attaching the flexible gripping member.

Fig. 4 is a perspective view of the gripping jaw.

Fig. 5 is a plan view in section showing the modified form of the wrench illustrated in Fig. 1.

Fig. 6 is a central vertical section taken on line 6—6 of Fig. 5.

Fig. 7 is a perspective view of the gripping jaw employed in the wrench shown in Figs. 5 and 6.

Fig. 8 is a section taken on line 8—8 of Fig. 5.

Fig. 9 is a perspective view of the steel band gripping device employed in conjunction with the wrench shown in Figs. 5 and 6.

Fig. 10 is a plan view in section showing the wrench modified to serve the function of a chain pipe wrench.

Fig. 11 is a perspective view of a toggle employed in connection with the wrench shown in Fig. 10, said toggle serving the function of securing one end of the chain.

Fig. 12 is a vertical section taken on line 12—12 of Fig. 10.

Fig. 13 is a section taken on line 13—13 of Fig. 10.

Referring to the drawings in detail, particularly to Fig. 1, A indicates a handle member or lever which in this instance is constructed in two sections as indicated at 2 and 3, the handle being, in other words, divided longitudinally. These longitudinal sections are secured together by rivets shown at 4.

The inner end of the handle is enlarged to form a head member generally indicated at B. The sides and inner face of the head member is open and the space formed between the upper and lower sides of the head member serves the function of a pocket or receptacle for a gripping jaw 5 which is perhaps best illustrated in Fig. 4. Passing through the upper and lower sections of the head member B and secured between the same are a pair of pins generally indicated at 6 and 7.

The gripping jaw is provided with a front face 5 and side sections 8 and 9. These side sections are recessed as indicated at 10—10 and 11—11. The recesses 10 engage the pin 6 while the recesses 11 engage the pin 7. A pin or rivet is secured between the side sections 8 and 9, as indicated at 12, and a spring 13 connects this pin with the rivet 4, the spring serving the function of preventing accidental removal of the gripping member 5, and also serving the function of retaining the recesses 10—10 and 11—11 in engagement with the pins 6 and 7. The ends of the gripping jaw are open, as shown in Fig. 4, and a flexible gripping member in the form of a steel band, such as shown at 14, may thus be employed and may be secured to the pins 6 and 7. The ends of the steel band pass through the open ends of the gripping jaw 5. They are then passed around the respective pins 6 and 7, and are then folded back on themselves and riveted or otherwise secured, as indicated at 15.

The wrench shown in Figs. 1 and 2 is particularly designed for removing screw caps 16 from fruit jars or the like, such as generally indicated at C. Most fruit jars in use, whether quarts or pints, employ the same sized cap and adjustability of the band 14 is therefore unnecessary. If a cap is to be removed, the band is merely slipped over the end of the cap so that it assumes the position shown in Fig. 2. If it is desired to tighten the cap, lever A is swung in the di-

rection of the arrow —*a*—. Such swinging movement causes the lever to swing about the pin 7. The pin 6 swings away from the gripping jaw and the recesses 10, and the band 14 is thus tightened and grips the screw cover. The shoe 5 is at the same time forced against the cover and a uniform pressure is thus exerted around the entire periphery of the cap and is thus readily tightened.

If the cover is to be unscrewed, lever A is merely swung in the opposite direction. It will then swing about the pin 6 and the recesses 10 and pin 7 will move away from the recesses 11, thus again tightening the band 14 and at the same time applying pressure to the gripping shoe 5. The wrench is thus operable in either direction and the same results are obtained.

Where adjustability of the flexible gripping member 14 is required, the type of wrench such as shown in Figs. 5 and 6 is employed. The same gripping shoe is employed as indicated at 5^a (see Fig. 7). The same type of handle A is employed. The pins 6 and 7 are used. In fact, there is no difference in construction, except that means are employed for shortening or lengthening the loop formed by the steel band 14.

This is accomplished by pivoting a member 17 on pin 7, as shown in Figs. 5 and 9. This member carries a cam 18 which swings about a pin 19. This member also carries an operating lever 20 which engages the cam 18. A coil spring surrounds the pin 19, as at 21, and this spring serves the function of normally turning the cam into gripping engagement with the steel band 14 which is interposed between the cam and the inner face 22 of member 17. With the cam in locking position, the extension or shortening of the band 14 cannot take place.

Hence, if it is desired to lengthen or shorten the band, it is merely necessary to depress the lever 20, so that the cam is swung to a released position. The free end of the band passes through the handle A and it may thus be gripped and pulled if it is desired to shorten the loop, or it may be pushed inwardly toward the handle if it is desired to lengthen the loop. The band is immediately gripped and locked, after adjustment by merely releasing the lever 20. The wrench as a whole functions identically with the wrench shown in Fig. 1, and a description of the rocking movement of the lever A about the pins 6 and 7 if it is desired to tighten or release the band 14, is therefore thought unnecessary.

A further modification of the wrench is shown in Fig. 10. In this instance a lever in the form of a rod is employed, as indicated at D. The head member consisting of two plates 30 and 31, are riveted or bolted to the rod, as indicated at 32. Pins are passed through and secured in the head sections 30 and 31, as indicated at 6^a and 7^b, and a gripping jaw is secured between the head sections as indicated at 33. This gripping jaw is practically seating identically to the jaws shown in Figs. 4 and 7, the only difference being that the outer face is flat, as shown at 34. The jaw is secured between the head sections by a spring 35 and its operation is identical to the other wrenches.

The chain indicated at F, which forms the flexible gripping member in this instance, is permanently secured at one end to the pin 6^a, and it is adjustably secured to a toggle arm 35^a, which in this instance forms a part of the pin 7^b. The outer end of the toggle arm is forked, as shown at 36. The inner faces of the block are grooved as at 37, and pockets are formed at the bottom thereof as at 38, which are adapted to receive the pins 39 on the chain. That is, the chain is provided with pins which are sufficiently long to project, as shown at 39 (see particularly Fig. 13). The pins are dropped into the recesses 37 and pockets 38, and the chain may thus be lengthened or shortened as desired.

The chain wrench is rather substantial in construction, as it is employed for heavy duty work, and it is for this reason that a handle of special construction is employed. Otherwise, it operates the same as other wrenches and also includes the same adjustability as shown in Fig. 5.

While I have shown the preferred forms of my invention as now known to me, I wish it understood that various changes may be made in its construction without departing from the spirit of the invention as defined in the appended claims.

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

1. A wrench comprising a handle, a head on one end thereof, a pair of interspaced fulcrum members on the head, a jaw attached to the head, a pair of interspaced bearing members on the jaw and normally maintained in engagement with the respective fulcrum members, said bearing members forming pivotal supports for the fulcrum members to permit the handle and head to pivot and swing with relation to either bearing member and the jaw, and a flexible gripping member adapted to encircle an object to be gripped and having two ends attached to the head.

2. A wrench comprising a handle, a head on one end thereof, a pair of interspaced fulcrum members on the head, a jaw attached to the head, a pair of interspaced bearing members on the jaw and normally maintained in engagement with the respective fulcrum members, said bearing members forming pivotal supports for the fulcrum

members to permit the handle and head to pivot and swing with relation to either bearing member and the jaw, a flexible gripping member adapted to encircle an object to be gripped, said flexible gripping member having two ends and means securing the ends of the flexible gripping member to the respective fulcrum members.

3. A wrench comprising a handle, a head on one end thereof, a pair of interspaced fulcrum members on the head, a jaw attached to the head, a pair of interspaced bearing members on the jaw and normally maintained in engagement with the respective fulcrum members, said bearing members forming pivotal supports for the fulcrum members to permit the handle and head to pivot and swing with relation to either bearing member and the jaw, a flexible elongated gripping member adapted to encircle an object to be gripped and having one end attached to one of the fulcrum members and means whereby the other end of the flexible member may be adjustably attached to the other fulcrum member to increase or decrease the length of the flexible member.

4. A wrench of the character described comprising a handle section, a head on one end thereof, said head consisting of a pair of interspaced plates, a pair of pins interposed between the plates and separated with relation to each other, said pins forming independent fulcrum members about which the head and handle may be swung, a jaw disposed between the plates and having recesses formed therein engageable with the respective fulcrum pins, and an elongated flexible gripping member adapted to encircle a device to be gripped, said flexible member having two ends, and said ends being attached to the fulcrum pins.

5. A wrench of the character described comprising a handle section, a head on one end thereof, said head consisting of a pair of interspaced plates, a pair of pins interposed between the plates and separated with relation to each other, said pins forming independent fulcrum members about which the head and handle may be swung, a jaw disposd between the plates and having recesses formed therein engageable with the respective fulcrum pins, a spring attached to the jaw at one end and to the handle at the opposite end and normally maintaining the jaw in engagement with the fulcrum pins, an elongated flexible gripping member adapted to encircle an object to be gripped, said flexible member having two ends, and a pivotal connection formed between said ends and the fulcrum pins.

6. A wrench of the character described comprising a handle section, a head on one end thereof, said head consisting of a pair of interspaced plates, a pair of pins interposed between the plates and separated with relation to each other, said pins forming independent fulcrum members about which the head and handle may be swung, a jaw disposed between the plates and having recesses formed therein engageable with the respective fulcrum pins, a spring attached to the jaw at one end and to the handle at the opposite end and normally maintaining the jaw in engagement with the fulcrum pins, an elongated flexible steel band adapted to encircle an object to be gripped, said steel band being pivotally secured at one end to one of the fulcrum pins, and means for adjustably securing the other end of the steel band to the other fulcrum pin.

CARL SENN.