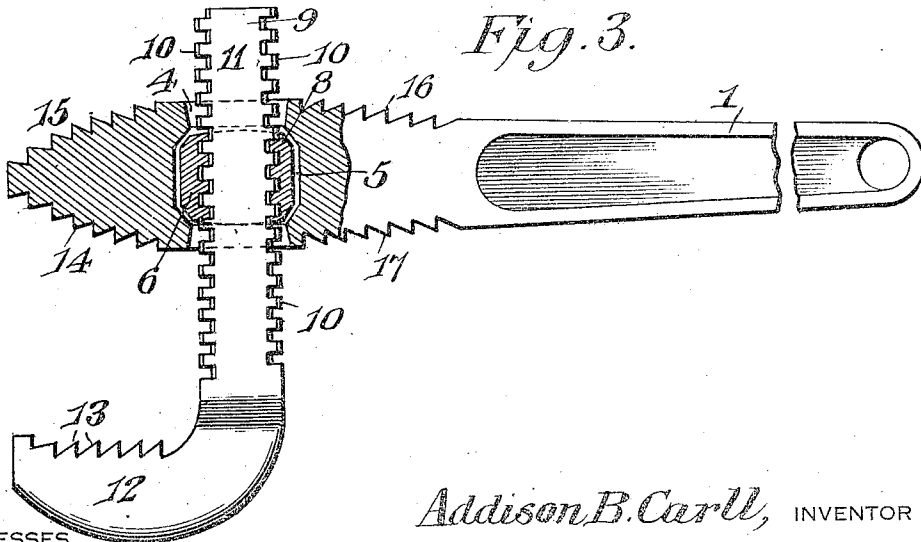
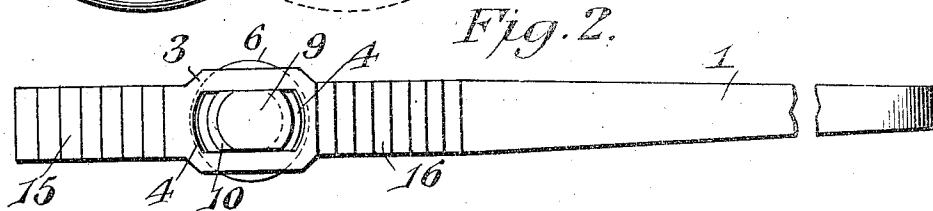
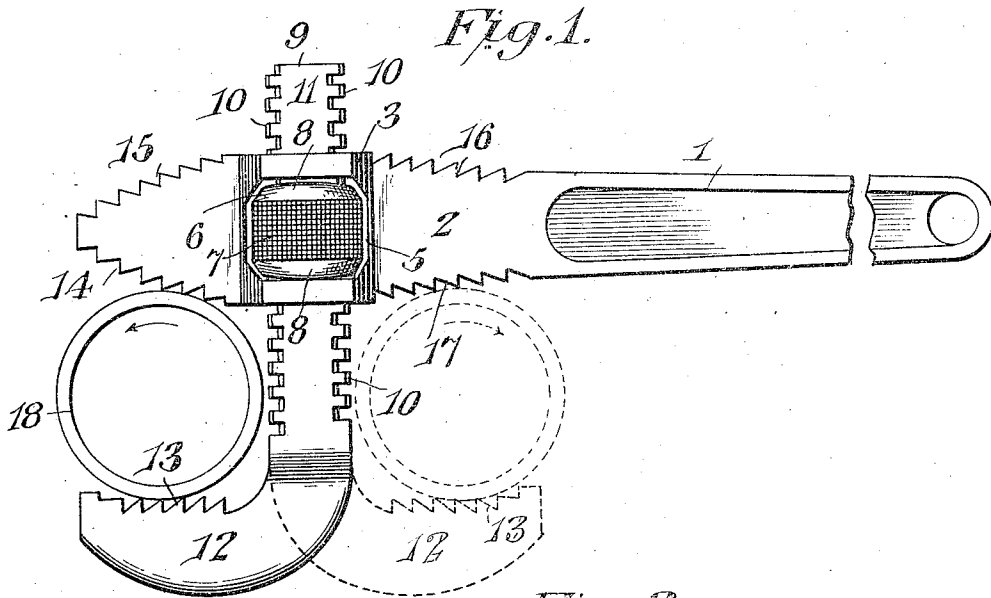


A. B. CARLL.
PIPE WRENCH.
APPLICATION FILED APR. 27, 1912.

1,052,313.

Patented Feb. 4, 1913.

3 SHEETS-SHEET 1.



WITNESSES

Jas. E. McLaughlin
F. J. Chapman

Addison B. Carll, INVENTOR

BY

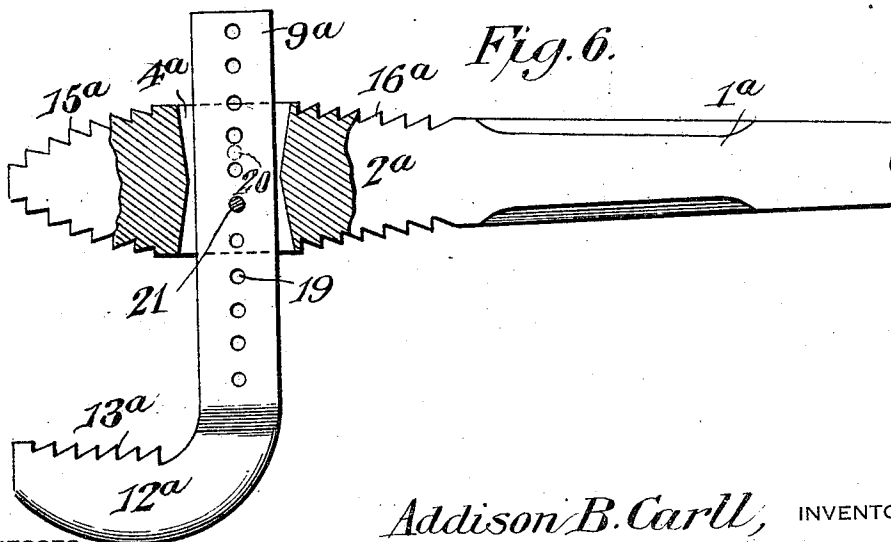
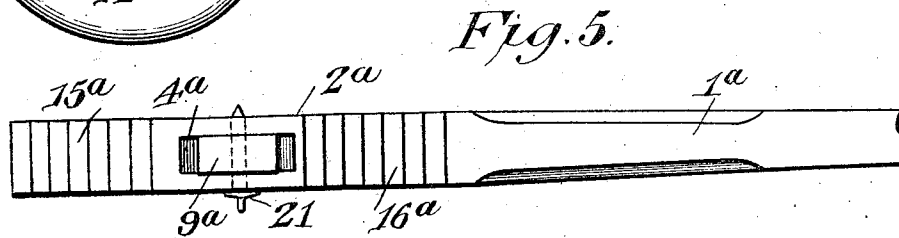
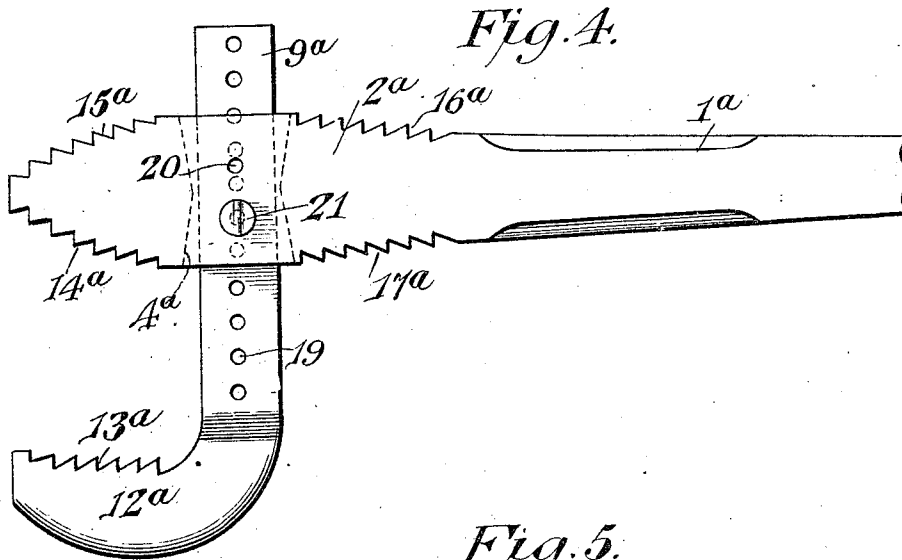
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1,052,313.

Patented Feb. 4, 1913.

3 SHEETS—SHEET 2.



WITNESSES

Jas. K. McLaughlin
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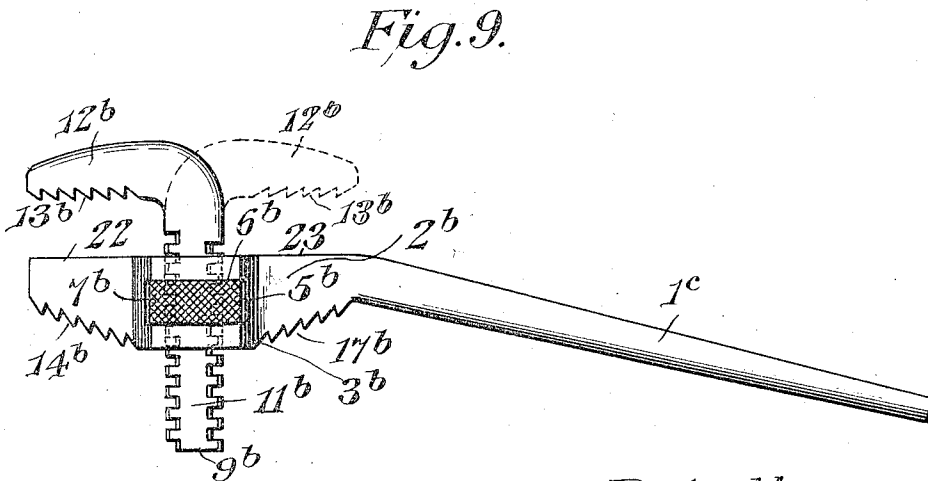
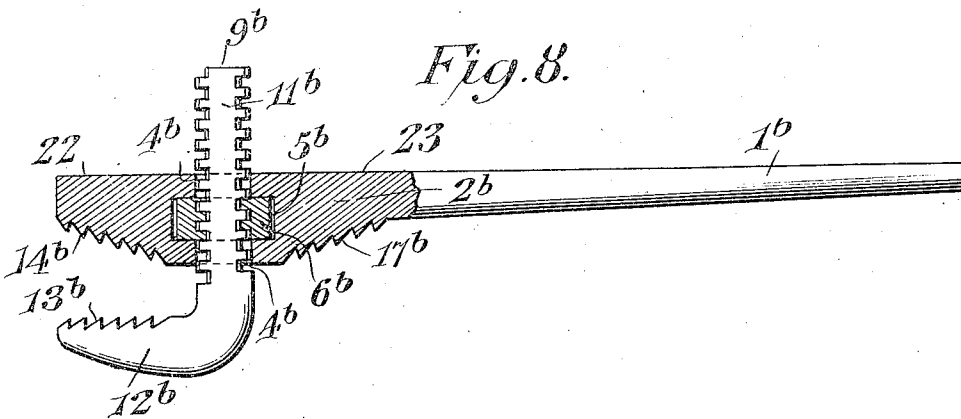
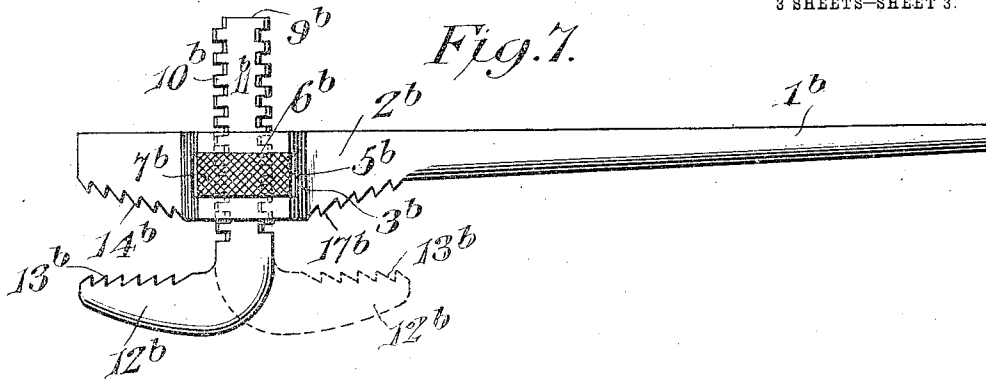
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1,052,313.

Patented Feb. 4, 1913.

3 SHEETS—SHEET 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

ADDISON B. CARLL, OF BOOTHWYN, PENNSYLVANIA.

PIPE-WRENCH.

1,052,313.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed April 27, 1912. Serial No. 693,507.

To all whom it may concern:

Be it known that I, ADDISON B. CARLL, a citizen of the United States, residing at Boothwyn, in the county of Delaware and State of Pennsylvania, have invented a new and useful Pipe-Wrench, of which the following is a specification.

This invention has reference to improvements in wrenches for pipes and other purposes, and its object is to provide a pipe wrench of simple construction having numerous wearing or gripping surfaces with which a single movable jaw may be brought into operative relation, whereby not only is the life of the more expensive portion of the wrench greatly prolonged, but the movable jaw may be reversed and the wrench operated in the opposite direction. Also, the wrench may be used at an angle to the axis of the pipe being turned.

The wrench of the present invention is provided with a plurality of fixed jaws and with a single movable jaw which may be adjusted into operative relation to any one of the fixed jaws at will, and has a degree of movement other than that providing for the accommodation of the jaw to pipes of different diameters, whereby the wrench is caused to grip the pipe with a force commensurate with the force applied to turn the pipe.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification, with the further understanding that while in the drawings there are shown two forms of the invention it is susceptible of other practical embodiments, wherefore the invention is not confined to any strict conformity with the showing of the drawings but may be variously changed and modified so long as such changes do not mark any material departure from the salient features of the invention.

In the drawings:—Figure 1 is a plan view of a wrench constructed in accordance with the present invention, with the movable jaw shown in one position in full lines, and in another position in dotted lines. Fig. 2 is an edge view of the wrench as seen from the side opposite the gripping portion of the movable jaw. Fig. 3 is a view similar to Fig. 1 with the head of the wrench partly in section. Fig. 4 is a view similar to Fig. 1 showing a modified construction. Fig. 5

is a view similar to Fig. 2 but of the construction shown in Fig. 4. Fig. 6 is a view similar to Fig. 3 but showing the construction illustrated in Fig. 4. Fig. 7 is a plan view of another modified construction. Fig. 8 is a view similar to Fig. 7 with part of the wrench in section. Fig. 9 is a view like Fig. 7 with the movable jaw in another position and showing a modified form of the handle.

Referring to the drawings, and more particularly to Figs. 1, 2 and 3, there is shown a handle member 1 which in the larger types of wrenches may be several feet in length, and this handle member terminates at one end in a head 2 expanding toward an intermediate portion, and then tapering toward the end remote from the handle portion. Ordinarily the head is flat on opposite faces which are customarily parallel one to the other, except at the middle portion where the head is thickened, as indicated at 3, and extending transversely of the head through the thickened portion 3 is a passage 4, and extending through the head intermediately of the width thereof is another passage 5 substantially perpendicular to the passage 4 and opening through the opposite flat faces of the head.

The opening 5 is shaped to receive a nut 6 having a peripheral milled portion 7 and terminal portions 8 having rounded end faces. The passage 4 is somewhat elongated in the direction of the length of the head 2 and is designed to permit the passage of a shank 9 having marginal screw threads 10 on opposite sides adapted to the interior of the nut 6 which is screw threaded to fit the shank 9, while opposite faces 11 of the shank 9 between the marginal screw threads are flattened to conform to the elongated cross sectional shape of the passage 4, wherefore the shank is movable through the passage 4, but is held against rotation therein because of the flattened faces 11 of the shank 9 conforming to the corresponding faces of the passage 4. With the nut 6 lodged in the passage 5 the shank 9 may be introduced into the passage 4 and moved into engagement with the nut, and when the latter is turned being of a size to present the milled surfaces 7 beyond the flat faces of the head 2, the shank 9 is moved lengthwise of the passage 4 to any desired extent.

One end of the shank 9 is formed into a laterally offset jaw 12 having that edge toward the shank 9 provided with teeth 13,

while the head 2 has a series of like teeth 14, 15, 16 and 17, the teeth 14 and 15 being on opposite sides of the head 2 between the passage 4 and the outer end of the head, while the teeth 16 and 17 are on similarly opposite sides of the head 2 between the passage 4 and the handle 1. In the particular arrangement shown in Figs. 1 and 3 the teeth 13 are presented toward the teeth 14, but by removing the shank 9, which together with the head 12 constitutes the movable jaw of the wrench, the gripping head 12 may be presented toward the teeth 17, or by introducing the shank 9 through the passage 4 from the opposite end of the showing of Figs. 1 and 3, the teeth 13 may be presented toward the teeth 15 or 16 in accordance with the position of the movable jaw.

Two of the positions are shown in Fig. 1, one being in full lines, and the other in dotted lines, and by a suitable manipulation of the nut 6 the movable jaw of the wrench may be brought into such coactive relation with the teeth 14 then constituting the fixed jaw of the wrench that a pipe indicated at 18 may be engaged between the teeth 13 and 14. Now by grasping the handle 1 and moving it in a counterclockwise direction with reference to the showing of the pipe 18 in Fig. 1 about the longitudinal axis of said pipe, the head end 12 of the movable jaw is caused to move toward the outer end of the head 2, the corresponding rounded end of the nut 6 rocking on that wall of the passage 5 toward the head 12, the passage 4 being expanded toward the outer ends to permit such rocking movement, wherefore the approaching of the head 12 toward the active teeth 14 produces a cramping or clamping of the pipe between the teeth, so that the teeth will, when pressure enough is exerted, bite into the outer wall of the pipe and cause the rotation of the pipe when the exerted force is sufficient for the purpose. In this respect the action of the wrench is similar to pivoted jaw pipe wrenches where the fixed and movable jaws both project laterally with respect to the longitudinal axis of the wrench and the movable jaw carrier has a rocking movement causing such cramping motion.

The wrench of the present invention varies from the ordinary pipe wrench in that both jaws extend in the direction of the longitudinal axis of the handle instead of transversely thereof, and the feed of the movable jaw is substantially perpendicular to the length of the handle instead of being parallel therewith. This insures the gripping surfaces always being parallel to the direction of the stress and prevents the wrench from being broken by the gripping head turning or twisting at an angle to the direction in which the force is applied, as is very often the case in other wrenches, espe-

cially when used on the narrow edges of cast iron fittings, where there is room for only half the gripping surface to take hold. This construction also allows the handle of the wrench to be swung at an angle to the axis of the pipe, which cannot be done with other wrenches and which is very often desirable in working in close places.

Pipe wrenches as found on the market are most generally of the well known Stillson type, and are usually not made for larger than three or four inch pipe, it being customary to use chain wrenches for pipes of larger size. With the present invention the same type of wrench may be used for many sizes of pipe up to the largest size without unduly increasing the weight of the wrench, while in wrenches for the larger sizes of pipe the weight of the movable jaw will not equal the weight of a chain such as would be necessary in a chain wrench, and, moreover, toothed or serrated pipe gripping jaws are provided, thus preventing slipping.

In Figs. 4, 5 and 6 parts similar in form and function to like parts in the structure shown in Figs. 1, 2 and 3 are indicated by the same reference numerals with the exponent "a," thus in Figs. 4, 5 and 6 there is shown a handle member 1^a, a head 2^a, a transverse passage 4^a, a shank 9^a, a lateral extension 12^a of said shank provided with teeth or serrations 13^a, while the head 2^a has teeth or serrations 14^a to 17^a, respectively. The passage 4^a expands from about its middle portion toward the end portions and the shank 9^a is a simple rectangular shank adapted to the passage 4^a, and because of the double expansion of the passage 4^a the shank 9^a may rock upon an axis perpendicular to the longitudinal axis of the passage 4^a and the longitudinal passage of the head member of the wrench. The shank 9^a is provided with a longitudinal series of centrally located perforations 19 preferably equally spaced, while the head 2^a coincident with the longitudinal center line of the passage 4^a is provided with spaced passages 20, the spacing of these passages being different from the spacing of the passages or perforations 19, but so positioned that either of the passages 20 may match any one of the passages or perforations 19. A pin 21 is provided to traverse either of the perforations 20 and any one of the perforations 19 then matching it, this pin thereby serving as a fulcrum about which the shank 9^a may turn to cause the teeth or serrations 13^a to act in combination with a matching series of teeth 14^a to 17^a to grip the pipe in the same manner as described with reference to the wrench of Fig. 1. By providing a plurality of perforations 20 in the head 2 spaced apart to a different extent than the perforations 19 a considerably greater degree of adjustability is provided for the movable jaw than

would be the case were but a single perforation 20 provided, and by making the spacing between the perforations 20 equal to one and one-half times the spacing of the perforations 19 approximately double the adjustability of the movable jaw is provided in steps, but half as great as the spacing between the perforations 19. In other respects the wrench of Figs. 4, 5 and 6 may be substantially the same as the wrench of Figs. 1, 2 and 3.

In Figs. 7, 8 and 9 the parts similar in form and function to like parts in the structure shown in Figs. 1, 2 and 3 are indicated by the same reference numerals with the exponent "b." Thus in Figs. 7 and 8 there is shown a handle member 1^b, a head 2^b, transverse passages 4^b and 5^b, a shank 9^b, a lateral extension 12^b of said shank and provided with teeth or serrations 13^b, the shank and lateral extension forming the movable jaw of the wrench, and the adjusting nut 6^b is provided. In the construction shown in Fig. 9 there is a handle 1^b having a head 2^b like that shown in Figs. 7 and 8, but the handle and head are at an angle one to the other. Otherwise the structure of Fig. 9 is the same as that of Figs. 7 and 8. The head 2^b is provided with teeth or serrations 14^b and 17^b corresponding in position to the teeth 14 and 17 of the structure shown in Fig. 1, but in place of the teeth 15 and 16 of Fig. 1 the head is formed with a straight portion made up of surfaces or jaws 22 and 23 in line one with the other, the jaws having the teeth 14^b and 17^b receding from the center line of the handle member of the wrench as they approach that portion of the head of the wrench carrying the movable jaw. Furthermore, the passage 4^b is made of a size that the shank 9^b has no material play therein laterally. The movable jaw of the wrench of Figs. 7, 8 and 9 is reversible with respect to the direction of projection of the extension 12^b and also with respect to the head 2^b, so that the active portion of the movable jaw may be brought into coincidence with any one of the relatively fixed jaws of the head 2^b and designated by the numerals 14^b, 17^b, 22 and 23. The structure of Figs. 7, 8, and 9 provides for the use of the wrench as an alligator wrench, or when the extension 12^b is in operative relation to either jaw 22 or 23 as a nut or bolt wrench, and to such uses as a wrench of this character is adapted.

The structure of Figs. 7, 8 and 9 is particularly adapted for the smaller types of wrenches and no pivotal action of the movable jaw is provided. The wrench of Figs. 7, 8 and 9 is an alligator adjustable straight or angle wrench, and an adjustable open-ended straight or angle wrench irrespective of the size of the wrench.

While the handle member, which consti-

tutes the larger member of the wrench, and wherein the jaws are for convenience of description considered as fixed, has been considered as a relatively stationary member and the movable jaw as tilting on the nut or pin as a fulcrum in the construction shown in Figs. 1 to 6, the action of the wrench in operation might be more accurately described by stating that the handle member actually moves and the extension 12 of the adjustable jaw actually stands still until the pipe is firmly gripped and begins to turn and the adjustable jaw is considered as the rocking member only because of its smaller size.

Suppose the operator desires to use the wrench on a pipe below him. Then the movable jaw would usually be located as shown in Fig. 1 in full lines. If, however, the pipe be overhead, then the movable jaw is reversed as shown in dotted lines in Fig. 1, and in this position the wrench may be hooked over the pipe with the handle above it and could not fall off.

While the handle member is shown with the several portions constituting the relatively fixed jaws as integral with the handle member, it will be understood that they may be otherwise formed, although usually the construction shown in the drawings is to be preferred.

What is claimed is:—

1. A wrench comprising a handle member having an enlarged terminal portion constituting a head integral therewith, said head being provided with a passage there-through in a direction substantially perpendicular to the longitudinal center line of the head and said head being also provided on opposite sides of the longitudinal center line with oblique jaws extending from opposite ends of the passage, and an adjustable jaw adapted to any one of the jaws on the head and having a shank adapted to the passage through the head and movable therealong in a direction transverse to the longitudinal center line of the head.

2. A wrench comprising a handle member having an enlarged head portion integral therewith and provided with a passage there-through in a direction substantially perpendicular to the longitudinal center line of the head, said head being also provided on opposite sides of the center line with jaws extending from the opposite ends of the passage toward that end of the head remote from the handle, and an adjustable jaw having a shank adapted to the passage through the head and introducible into the passage from either end to bring the jaw into operative relation with either of the jaws formed on the head, and an adjusting means for the movable jaw located midway of the passage and serving as a fulcrum about which the movable jaw may rock with

relation to either of the jaws formed on the head.

3. A pipe wrench comprising a handle member enlarged at one end to form a head
5 provided on opposite sides of the longitudinal center line with pipe gripping jaws which are arranged obliquely to said center line and having a passage therethrough adjacent the pipe gripping jaws, an adjustable jaw provided with a shank introducible
10 into and adjustable along the passage from either end thereof, and an adjusting nut for the shank located in the passage intermediate thereof and constituting a swivel and
15 fulcrum support for the adjustable jaw, and permitting the adjustable jaw to be placed in working position with any of the gripping faces of the head.

4. A pipe wrench comprising a handle
20 member with an enlarged head at one end provided on opposite sides of the center line

with oblique pipe gripping jaws and also with a passage adjacent the pipe gripping jaws and extending through the head in a direction substantially perpendicular to the
25 longitudinal center line of the head, an adjustable jaw having pipe gripping means thereon, and a shank adapted to the transverse passage and introducible therein from either end, and an adjusting nut for
30 the shank located midway of the passage-way and having rounded end faces, said passage being shaped with relation to the shank of the adjustable jaw to permit rocking of said jaw on the rounded ends of the nut. 35

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ADDISON B. CARLL.

Witnesses:

E. C. DUFF,

MERLE MACFARLAND.