March 26, 1929. A. J. WACHSMUTH 1,706,427

WRENCH

Filed July 13, 1925

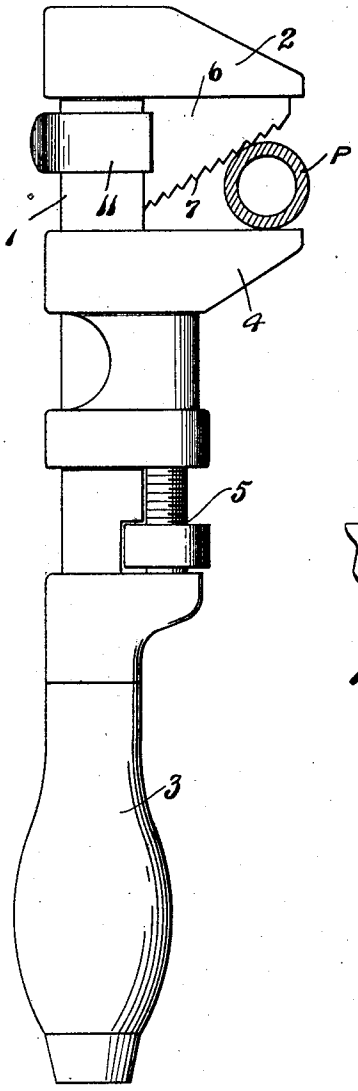


Fig. 1.

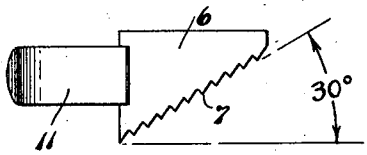


Fig. 2.

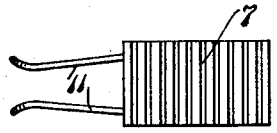


Fig. 3.

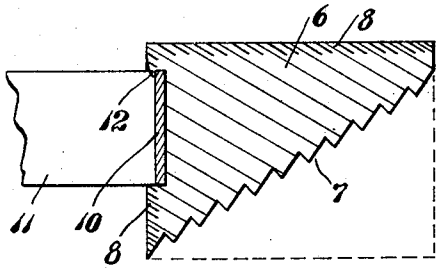


Fig. 4.

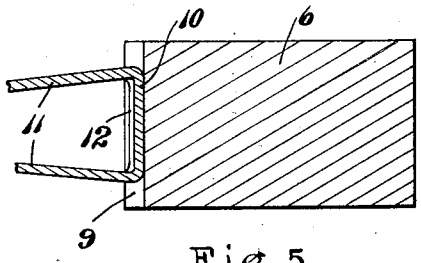


Fig. 5.

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Patented Mar. 26, 1929. 1,706,427

UNITED STATES PATENT OFFICE.

ALBERT J. WACHSMUTH, OF MUSKEGON, MICHIGAN.

WRENCH.

Application filed July 13, 1925. Serial No. 43,061.

This invention relates to wrenches and is particularly concerned with a novel jaw construction which may at any time be detachably connected with the well-known type of monkey wrench to convert the same into a pipe wrench. It is desirable that this jaw shall be very quickly and easily detachable, and my invention comprises means to this end whereby it can be almost instantly changed from a pipe wrench to a monkey wrench or vice versa; and the detachable jaw which converts the monkey wrench into a pipe wrench is small and may be readily carried in the pocket of the workman for use at any time.

With jaws of this character which are very quickly and easily detached it is imperative that the angle of the jaw which engages with and bites into the pipe shall be correct, otherwise the jaw will pull loose if the angle is less or will not grip the pipe if it is greater. After long experiment and trial I have provided a jaw in which the proper angle is obtained and which cannot be successfully changed.

A further feature of the invention resides in the novel manner whereby the attaching clip for connecting the removable jaw to the shank of the monkey wrench is connected with the jaw which, being of tool steel and necessarily tempered, toughened and hardened at its face where it is to engage the pipe, must be treated in a certain manner for the simple and easy connection of the attaching clip thereto and this after the jaw has been tempered and toughened to the desired degree.

My invention has for its object and purpose the construction of a convertible monkey and pipe wrench whereby all of the desirable features and characteristics above enumerated are incorporated as will be apparent from the following description taken in connection with the accompanying drawing, in which,

Fig. 1 is an elevation of a monkey wrench with the pipe jaw attachment connected therewith.

Fig. 2 is a side elevation of the pipe jaw attachment.

Fig. 3 it an under plan view of the device shown in Fig. 2.

Fig. 4 is a vertical section taken through said pipe jaw attachment, and

Fig. 5 is a horizontal section therethrough, Figs. 4 and 5 being enlarged.

Like reference characters refer to like parts in the different figures of the drawing.

The monkey wrench is of usual construction including the shank 1 and a stationary jaw 2 extending at right angles from the upper end of the shank, the lower end of the shank being equipped with a handle 3. The adjustable or movable jaw 4 is adjusted by means of a screw 5 in the manner usual with monkey wrenches and completes the monkey wrench construction which is no different than that of any well-known type of monkey wrench.

The pipe jaw 6 has an upper horizontal face and an inner vertical face located at right angles to each other, while the under serrated or toothed face 7 comprising the side which is to engage with the pipe is located at an angle of thirty degrees to the horizontal. This angle is one which I have found substantially essential to the successful operation of the device. The jaw 6 is cut from a rectangular block of tool steel which in its manufacture is rolled to the proper size and then annealed. The annealing of the block has the effect of decarbonizing the outer side portions of the block for a certain distance inward in the block. This is indicated at 8 and the decarbonization destroys the quality of tempering the steel thereafter to the depth that the steel is decarbonized but as the serrated jaw face 7 is located at the interior of the block this annealing and decarbonizing, taking place at the outer faces, has no effect thereon.

The block of steel, the outline of which is indicated in dotted lines in Fig. 4, is machined to make the jaw 6 with the toothed side 7 and in the inner vertical face a horizontal slot 9 is cut. This jaw 6 is then tempered but as before stated the outer surface portions where the steel has been decarbonized do not take temper. This from a functional standpoint is of no consequence with respect to the upper horizontal face of the block but is of exceptional consequence in connection with those portions of the jaw above and below the slot 9.

The attaching clip is substantially of U-shape having spaced apart spring sides 11 connected by a cross member 10 which is adapted to be placed within the slot 9, after which the metal of the block adjacent at least one edge of the cross member 10 is peaned over said edge of the member 10 permanently securing the clip to the jaw 6.

While I have shown such peaning of the metal only at one side 12 of the part 10 it is evident that this process may be carried out at both edges thereof and the attaching clip be permanently secured to the jaw 6 having the serrated pipe engaging under face 7.

This separable jaw is adapted to be readily attached to the shank 1 of the wrench, its upper horizontal face coming against the under side of the permanent jaw 2, the sides of the clip 11 passing one at each side of the shank 1, while the inner vertical face of the jaw 6 lies against the inner vertical side of the shank 1. The jaw may be instantly attached or removed. When attached in place, as shown in Fig. 1, it is adapted to engage and bite into the surface of a cylindrical pipe such as indicated at P, the angle of thirty degrees to the horizontal for the serrated or toothed face 7 causing the teeth to bite into the surface of the pipe and at the same time insuring against any component of force tending to move the jaw outwardly. If the angle is less than thirty degrees there is a tendency for the jaw member to be pulled out and with a less angle the jaw must be permanently connected with the wrench, but with the angle at thirty degrees this permanency of connection is not necessary and makes it possible for me to provide a quickly and easily detachable jaw so that the wrench may have a double purpose, one as a pipe wrench and the other as an ordinary monkey wrench. If the angle is greater than thirty degrees the teeth of the jaw will not bite into the pipe satisfactorily.

The construction while of simple character is very effective, durable and efficient. The appended claim defines the invention and I consider myself entitled to all forms of structure coming within its scope.

I claim:

A pipe attachment for wrenches made of hardened steel, one edge of which has been decarbonized in annealing whereby said edge remains soft after the body of the attachment has been hardened, a groove in said decarbonized edge, and a clip arranged in said groove and held in place by swedging the metal of the edge of said groove over said clip.

In testimony whereof I affix my signature.

ALBERT J. WACHSMUTH.