

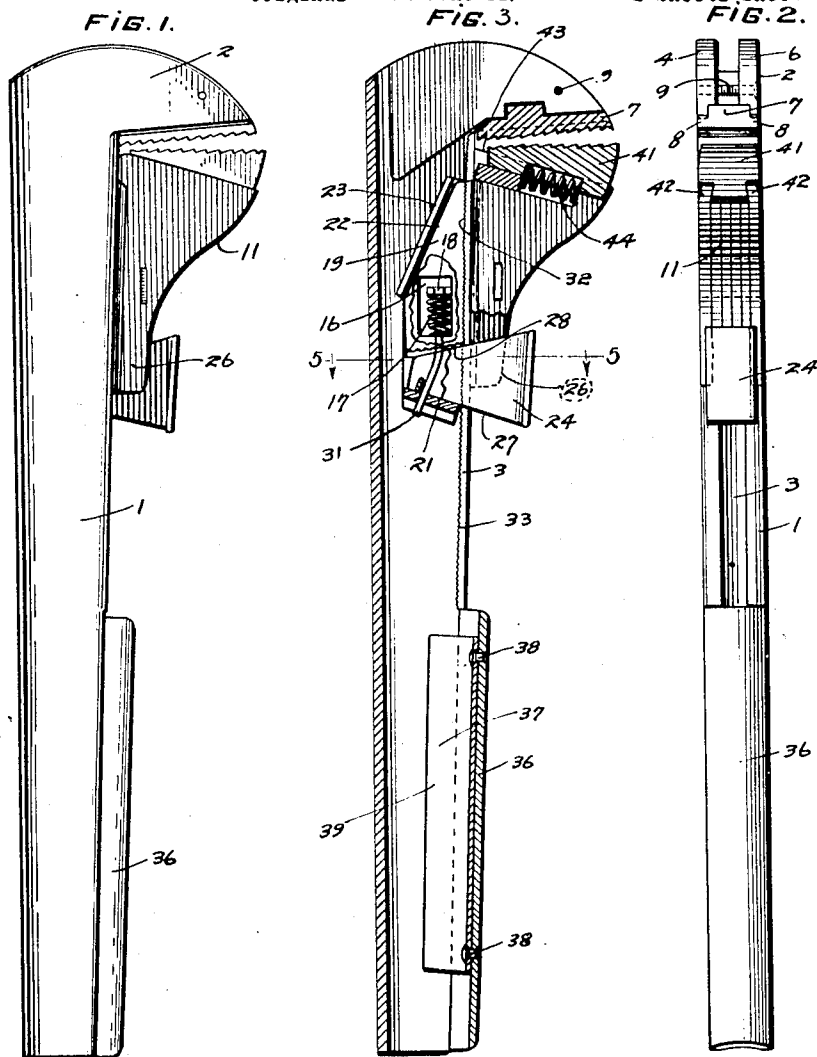
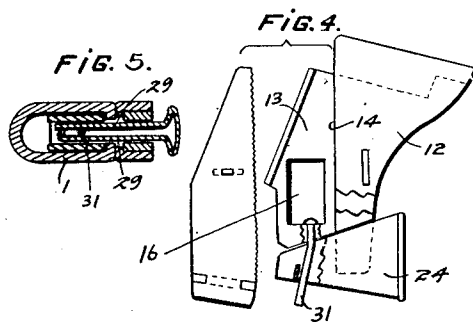
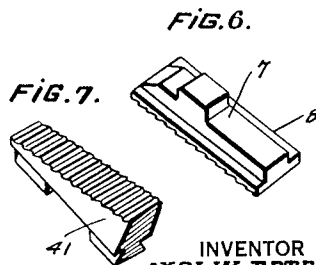
March 27, 1928.

1,663,920

A. W. PETERSON

WRENCH

Original Filed June 11, 1924 -- 2 Sheets-Sheet 1



INVENTOR
AXEL W. PETERSON

BY *Wm. H. Co.*
ATTORNEYS.

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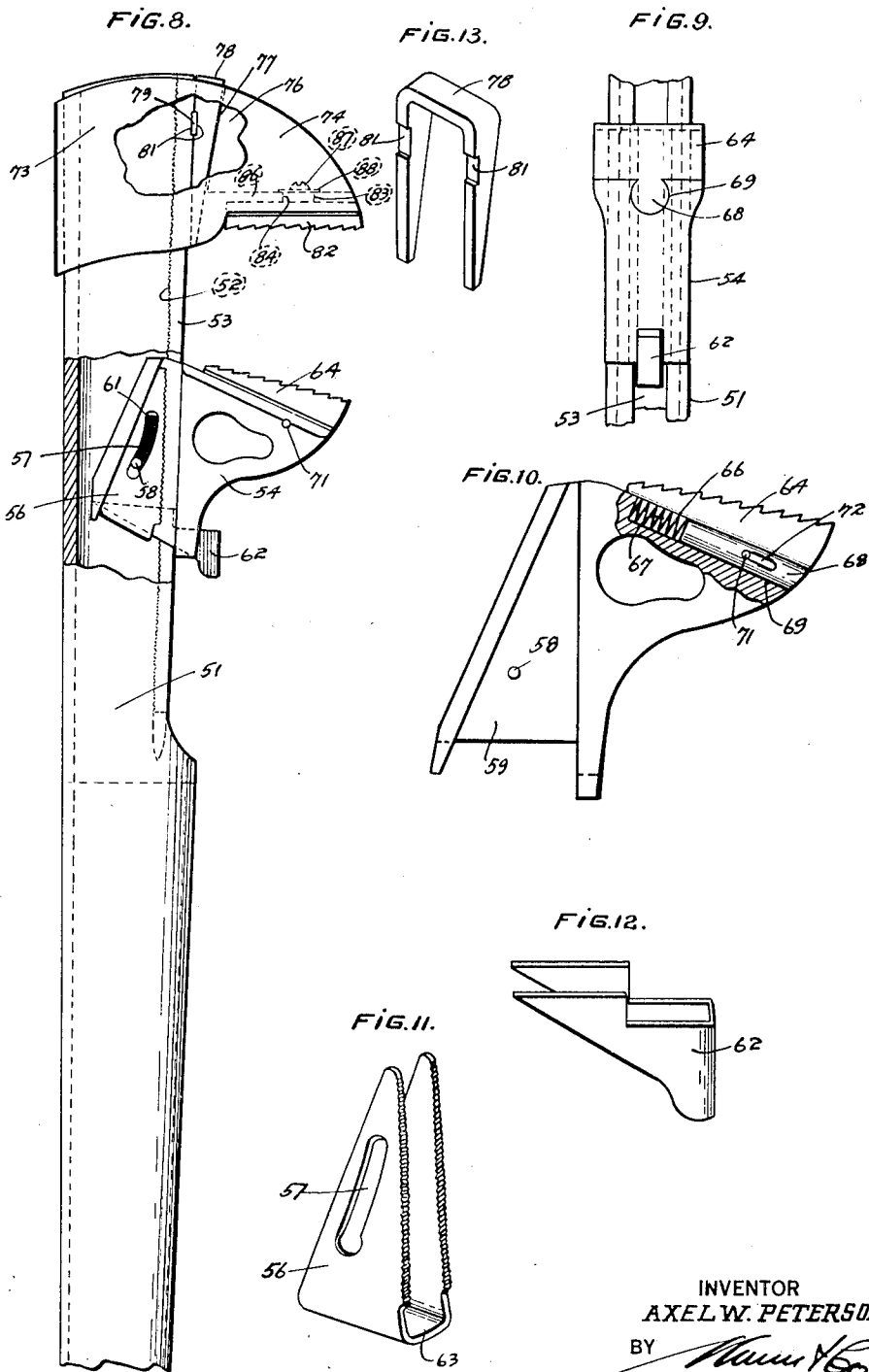
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WRENCH

Original Filed June 11, 1924

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

AXEL W. PETERSON, OF SAN FRANCISCO, CALIFORNIA.

WRENCH.

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The present invention relates to improvements in wrenches and has particular reference to a pipe wrench, although it may be used as an ordinary monkey-wrench. The principal object of the present invention is to provide a wrench of the character described in which the movable jaw, instead of reaching around the shank of the wrench, is secured to one face thereof, which allows of greater freedom in shaping the shank. Where the movable jaw reaches around the shank and slides on the same, the shank necessarily has to be of the same diameter throughout its operative length, while with my means of holding the movable jaw the shank may be tapered, for instance, so as to be lighter at its extreme end than at the head, whereby the amount of metal is decreased and the weight of the wrench diminished, the latter feature being of particular importance where heavy wrenches are involved. It is proposed for this purpose to provide a longitudinally slotted shank and to have the movable jaw slide in the slot while providing means on the inside of the shank adapted to cooperate with the jaw in clamping the same upon the edges of the slot.

Various other improvements are contemplated in the present invention relating to the general form of the shank, to its construction, to means for securing the stationary head to the shank, and for means for tightening the grip of the two jaws upon an element to be held while the shank is being manipulated. Further objects and advantages of my device will appear as the specification proceeds.

The preferred form of my invention is illustrated in the accompanying drawing, in which Figure 1 shows a side view of my wrench, Figure 2 an edge view taken at right angles to that of Figure 1, Figure 3 a vertical section through the same, Figure 4 a detail view illustrating a portion of the movable jaw, Figure 5 a sectional view taken along line 5—5 of Figure 3, Figure 6 a detail view of a jaw plate associated with the stationary jaw, Figure 7 a detail view of a jaw plate associated with the movable jaw, Figure 8 a side elevation of a modified form of wrench, certain portions being shown in section, Figure 9 an edge view taken at right angles to that of Figure 8 and embracing the movable jaw portion only, Figure 10 a side view of the main element of the movable

jaw, Figure 11 a perspective view of the element cooperating with the movable jaw in holding the same in place, Figure 12 a perspective detail view of a wedge member for effecting the release of the movable jaw and Figure 13 is a detail perspective of the wrench member for tightening the stationary head to the shank. While I have shown only the preferred forms of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

Referring first to the wrench illustrated in Figures 1 to 7, it will be seen that I preferably use a tapered shank 1 terminating at its heavier end in the jaw 2. The shank is preferably made hollow and of rectangular cross-section with a slot 3 provided in one of the faces thereof. The jaw 2 follows the general outline of the shank and consists of two spaced elements 4 and 6 between which may be received a projection 7 rising from the back of a gripping plate 8, while a screw 9 is used for tightening the two members 4 and 6 upon the projection 7.

The movable jaw 11 comprises a casting resembling in its form the jaw now commonly used, but having an extension 13 adapted to project through the slot 3 of the shank into the interior of the same in such a manner that the faces 14 of the element 12 on opposite sides of the extension 13 lie against the edges of the slot 3 so as to ride on the outside of the same. The extension 13 is formed with a central opening 16 adapted to have a spring 17 disposed therein so as to bear against a connecting element 18 of two plates 19 straddling the extension 13 and interconnected at the bottom by a slanting plate 21. The upper edges of the plates 19 are tapered as shown at 22 and run parallel to two flanges 23 projecting from the upper edge of the extension 13. A wedge 24 riding between two depending lips 26 of the jaw bears with its lower face 27 on the connecting plate 21 and with its upper face 28 on the bottom face of the extension 13. The wedge consists of two spaced elements straddling a pin 31 extending from the extension 13 downwardly through the wedge and the plate 21. This latter pin is curved away from the slot 3 and serves as a guide for the lower end of the two plates 19.

Normally the spring 17 forces the plates 19 upwardly and causes their toothed faces

32 to engage with the toothed inner faces 33 of the edges of the slot 3, the lower portion of the plates 19 being guided by the pin 31 and the upper portion of the plates being guided by the flanges 23. When the wedge 24 is pushed inwardly by the operator, a downward impetus is given to the two plates 19 through the connecting plate 21. The plates are now guided to move away from the toothed inner edges of the slot by the guide pin 31 as well as by the tendency of the spring 17, which in opposing the downward motion causes a close contact to be maintained between the lower edge 27 of the wedge and the connecting plate 21 and thereby causes the plates 19 to move without changing their vertical position, so that the whole inner face 32 of the plates 19 moves to the left as viewed in Figure 3 and separates from the inner edges of the slot, thereby allowing the movable jaw to be slid upwardly or downwardly for the purpose of adjusting its position.

The movable jaw has a gripping plate 41 associated therewith which is slidable between the spaced upper walls 42 of the movable jaw, the upper edges of the members 42 presenting a slope as shown at 43 causing the gripping plate to move toward the gripping plate on the stationary jaw when pushed inwardly. A spring 44 normally tends to push the plate outwardly into a position where its outer edge is substantially flush with the outer edge of the body portion of the movable jaw. It will be realized that, due to this construction, when the two jaws are engaged with a pipe and the shank is turned for the purpose of rotating the pipe, the gripping plate 41 is urged inwardly and when yielding is forced into closer contact with the pipe, whereby its grip is tightened.

The operating portion of the shank through which the slot 3 is continued to facilitate the insertion of the movable jaw may be closed by means of the member 36 fitting over the slot and formed to provide a convenient rest for the fingers when the shank is gripped for operating the same. The member 36 may be held in place by means of a plate 37 bent into U shape and fitting inside of the member 36, to which it is attached by means of rivets 38 in such a manner that its legs 39 project beyond the member 36 and are adapted to be sprung into the shank so as to hold the member 36 by its frictional engagement with the walls of the shank.

In Figures 8 to 13 is illustrated a wrench of slightly different construction, although built as a whole along the same general principles. This latter wrench is principally designed for heavy work, and the model from which the drawing was made is a wrench about three feet long. In a wrench

of this character it is very essential that the wrench be made as light as possible without impairing its strength for facilitating the handling as well as for the saving of material. The shank 51 is built substantially along the same principles as the shank previously described and presents internally toothed edges 52 on opposite sides of the slot 53 in which the movable jaw 54 is adapted to slide. The plates 56 in this instance are provided with elongated slots 57 riding on a pin 58 extending laterally from the extension 59 of the movable jaw with springs 61 serving to push the plates 56 upwardly into engagement with the toothed edges 52 while a wedge 62 bearing against the connecting plate 63 for the two plates 56 pushes the latter plates downwardly and inwardly and the form of the slots 57 as well as the spring action cooperates with the wedge in effecting a simultaneous disengagement of the toothed surfaces along the whole line. The gripping plate 64 is made slidable on the inclined plane 66 with a spring 67 tending to push the gripping plate outwardly, the latter being guided by a cylindrical projection 68 riding in a cylindrical groove 69, while a pin 71 riding in a slot 72 of the cylindrical member 68 limits its outward motion.

The stationary head 73 is preferably made removable and consists of a plate bent into U shape so as to fit on the extreme end of the shank 51 and to present the projecting legs 74. Plates 76 are secured to the inside of the legs 74 to provide slanting abutments 77 for the wedge 78, which latter is driven between the said abutments and the shank for tightening the jaw upon the shank and is held in place by means of a small transverse member 79 adapted to be driven laterally through registering grooves 81. The gripping plate 82 for the stationary jaw is provided with a projection 83 adapted to extend through a perforation 84 in a base plate 86 connecting the two plates 76, which latter projection is held in place by means of a screw 87 threaded into the same and bearing against a plate 88.

The operative principles of both wrenches are the same and the principal advantages of the same are that they allow any form of a shank to be used as long as the same presents one straight face and a longitudinal slot within the same in which the movable jaw may ride and be secured in place according to the principles outlined in the above specification.

I claim:

1. In a wrench of the character described, a longitudinally slotted shank having a jaw thereon, a second jaw extending into and slidable in the slot bearing on the outer edges thereof, an element within the shank having yielding means associated therewith causing

the same to bear against the inner edge of the slot for holding the second jaw in position, and a wedge manipulated from the outside of said shank for rendering said element inactive and allowing the second jaw to be moved in the slot.

2. In a wrench a slotted shank having co-acting jaws and an operating end for presenting parallel walls at the operating end and a closing element for the slot at said end having a U shaped element secured therein with the legs of the latter element projecting outside of the closing element and being adapted to be sprung between the parallel walls for holding the closing element in place.

3. In a wrench of the character described, a hollow shank formed with a longitudinal slot in the wall thereof and having a jaw thereon, a second jaw slidable in the slot made to bear on the outside of the shank and to extend into the hollow of the shank, an

element movable relative to the second jaw normally holding the latter in a fixed position relative to the shank, and a wedge manipulated from the outside of said shank for rendering said element inactive allowing the position of the second jaw to be adjusted.

4. In a wrench of the character described, a hollow shank formed with a longitudinal slot in the wall thereof and having a jaw thereon, a second jaw slidable in the slot made to bear on the outside of the shank and to extend into the hollow of the shank, an element carried by the said jaw and disposed within the shank and movable relative thereto for normally holding the second jaw in a fixed position relative to said shank and a wedge manipulated from the outside of said shank for rendering said element inactive allowing the position of the second jaw to be adjusted.

AXEL W. PETERSON.