

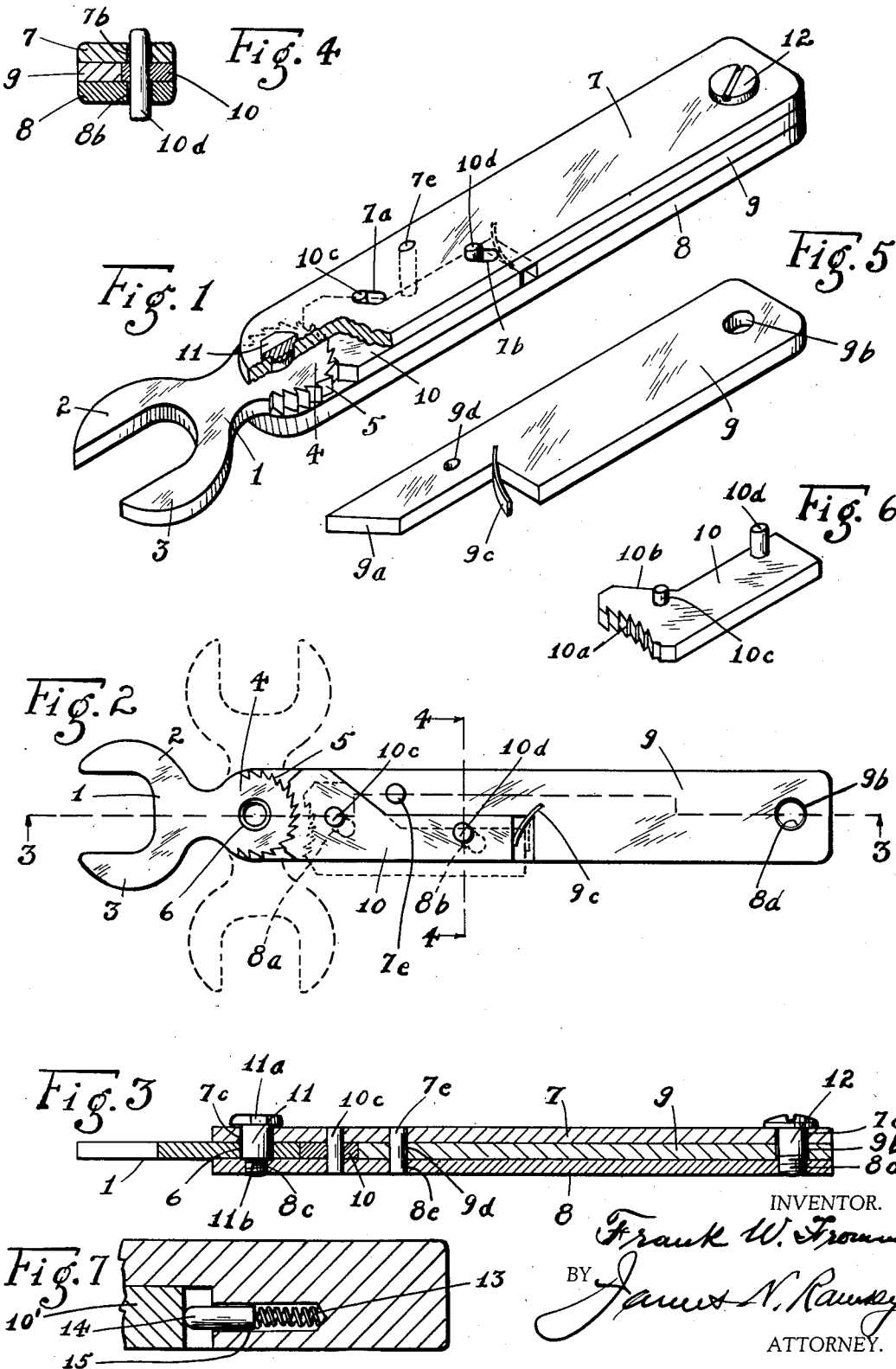
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WRENCH

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WRENCH

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1 Claim. (Cl. 81—59)

- The object of my invention is to provide a wrench whereby the user is able to tighten or loosen nuts on bolts that are in close quarters, not having much room above or on either side; in other words, the object is to provide a simple, efficient and compact wrench which is adapted to be used in various difficult positions where a wrench of ordinary construction will not operate.
- Another object is to make it readily adjustable to a plurality of positions to adapt it for use under varying conditions.
- Still another object of the invention is to provide a wrench of this type which is provided with a plurality of interchangeable detachable jaw-heads of different sizes to enable the user to readily and easily adapt the wrench for use in turning nuts of different sizes.
- In the drawing:
- Fig. 1 is an isometric view partly broken away showing the jaw-head in one of its operating positions for turning a nut;
- Fig. 2 is a plan view of the wrench with the upper outer plate removed, showing by full lines the jaw-head in one operative position and by dotted lines in other operative positions;
- Fig. 3 is a longitudinal section on the line 3—3 of Fig. 2;
- Fig. 4 is a cross-section on the line 4 of Fig. 3;
- Fig. 5 is an isometric view of the inner handle plate;
- Fig. 6 is an isometric view of the slide-clutch which is adapted to engage the ratchet-teeth of the jaw-head when in operative position and to be disengaged therefrom to turn the head to a different operative position, and;
- Fig. 7 is a longitudinal section of the wrench handle showing a modification.
- In the embodiment of my invention as illustrated and which shows a preferred construction, the jaw-head 1 is provided with jaws 2 and 3 respectively for engaging a nut. The shank 4 of the jaw-head is formed circular and is provided on its periphery with undercut teeth 5. Said shank 4 is also provided with pivot-bearing 6. The wrench handle is composed of outer holding-plates 7 and 8 respectively and inner plate 9. Inner plate 9 is cut away and beveled at one end to provide space between the holding-plates 7 and 8 for the slide-clutch 10 and shank 4 of the jaw-head.
- Slide-clutch 10 is provided with undercut teeth 10a which are adapted to intermesh with clutch-teeth 5 on the jaw-head shank 4. Said slide-clutch 10 has an enlarged end which is provided with bevel 10b on one side adapted to engage bevel 9a on the end of the inner plate 9. Said slide-clutch is also provided with lateral studs 10c adapted to traverse oblique slots 7a and 8a respectively. Said slide-clutch is also provided with studs 10d adapted to traverse slots 7b and 8b respectively. Said studs 10d project laterally beyond the surface of the outer plates in order to form a finger or thumb catch by which the clutch may be moved into or out of operative engagement with the clutch-teeth of the jaw-head shank.
- The beveled and narrow end of plate 9 serves as an abutment or bearing against which slide-clutch 10 bears and is held in firm position while turning a nut. The beveled surface 9a of plate 9 and the beveled surface 10b of slide-clutch 10 permits the spring 9c to force and hold the clutch-teeth of the slide-plate and jaw-head shank in intermeshed and operative relation to each other; also when the stud 10d is moved from the position shown in Fig. 1 to the dotted line position shown in Fig. 2, said bevels permit the easy and ready disengagement of the respective clutch-teeth as shown in Fig. 2 by the dotted line position of the slide-clutch, whereupon the jaw-head may be adjusted and set to any desired position.
- The pressure of the jaw-head shank against the slide-clutch when the jaw-head is turning a nut forces the bevel of the slide-clutch to ride up on the bevel of plate 9 and the spring 9c holds the slide-clutch in that position.
- Holding-plate 8 is provided near one end with a threaded opening 8c and holding-plate 7 is provided with an opening 7c registering therewith for the insertion of screw-bolt 11 through plate 7, shank 4 and into threaded opening 8c of plate 8, whereby the jaw-head is pivotally mounted. Screw-bolt 11 is provided with an angular head 11a or other suitable means whereby said bolt may be rotated in either clockwise or anti-clockwise direction. Said screw-bolt is also provided with a shoulder 11b to abut against the inner wall of holding-plate 8 to permit said screw-bolt to be screwed tightly into position and prevent it from binding the jaw-head from pivotal movement. Holding-plate 7 is provided with a bolt-hole 7d near its other end adapted to register with bolt-hole 9b near the end of inner-plate 9 and with threaded-opening 8d near the end of plate 8 to receive screw-bolt 12 whereby the handle members and the jaw-head and slide-clutch 10 are held in cooperative relation with each other. Inner plate 9 is provided with

flat-spring 9c adapted to bear against the end of slide-clutch 10 and hold said clutch in operative engagement with the teeth of the jaw-head, but said jaw-head may be disengaged by moving said clutch endwise out of operative position against the pressure of said spring. When said pressure is released the slide-clutch will automatically return into operative engagement with the teeth of the jaw-head. Holding-plate 7 is provided with a lateral stud 7e which is adapted to extend through hole 9d in inner plate 9 and also through hole 8e in holding-plate 8 for the purpose of holding the beveled end of inner plate 9 in proper fixed relation with the outer holding-plates.

In order to assemble the parts, place the inner plate 9 and slide-clutch 10 and shank 4 of jaw-head 1 upon holding-plate 8, then place holding-plate 7 thereon, inserting lateral stud 7e through the registering openings of inner plate 9 and outer plate 8, then secure the shank of the jaw-head clutch in position between the ends of holding-plates 7 and 8 by screw-bolt 11, then secure the other end of the plates together by screw-bolt 12. When the parts are thus assembled the jaw-head may be turned to about fourteen different adjusted positions from one extreme position to the other by merely releasing the slide-clutch by pressure against the spring, whereupon said jaw-head may be adjusted to any desired position, and whereupon the device is ready for use as a ratchet-wrench, whereby if the nut cannot be turned by a straight wrench, such as represented by the full lines of Fig. 1, the jaw-head may be turned to other positions as indicated by dotted lines in Fig. 2, and particularly to a position which will adapt it for use depending upon the peculiar situation of the obstructions which prevent the use of a straight wrench but which are overcome by the adjustment of the jaw-head to the proper angle for use in each particular and peculiar situation. It will be noted that the

wrench handle can be held in one hand and the adjustable clutch manipulated with the thumb and finger of the same hand while the pivotally mounted jaw-head may be then moved to the desired position for use.

It will be understood that my invention is capable of considerable modification without material departure from its scope or spirit as defined by the claim; as, for example, instead of forming the handle of laminated plates, the handle may be cast solid as shown by Fig. 7, which shows one end of a solid handle in which a coil-spring 13 bearing against a plug 14 in socket 15 is adapted to hold the slide-clutch 10' in operative engagement with the jaw-head shank.

An advantage of my invention consists in providing a jaw-head which may be adjusted to a large number of different operative positions, which I accomplish by means of a plurality of undercut-teeth on the periphery of the jaw-head shank engaging a plurality of undercut teeth on the slide-clutch thereby effecting a very sturdy and substantial construction which will withstand all of the possible strain which may be put thereon in the turning of a nut.

What I claim and desire to secure by Letters Patent, is:

A wrench having a handle, a jaw-head pivotally mounted thereon, ratchet teeth on said jaw-head, an elongated slide clutch having an enlarged end provided with teeth adapted to engage the teeth of said jaw-head and having a beveled surface on said enlarged end and a cooperating beveled surface on said handle, slots in said handle disposed obliquely of its length, studs on said clutch extending into said slots whereby when said clutch is moved longitudinally said studs and said bevels permit the easy and ready adjustment of the respective clutch teeth for the purpose specified.

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