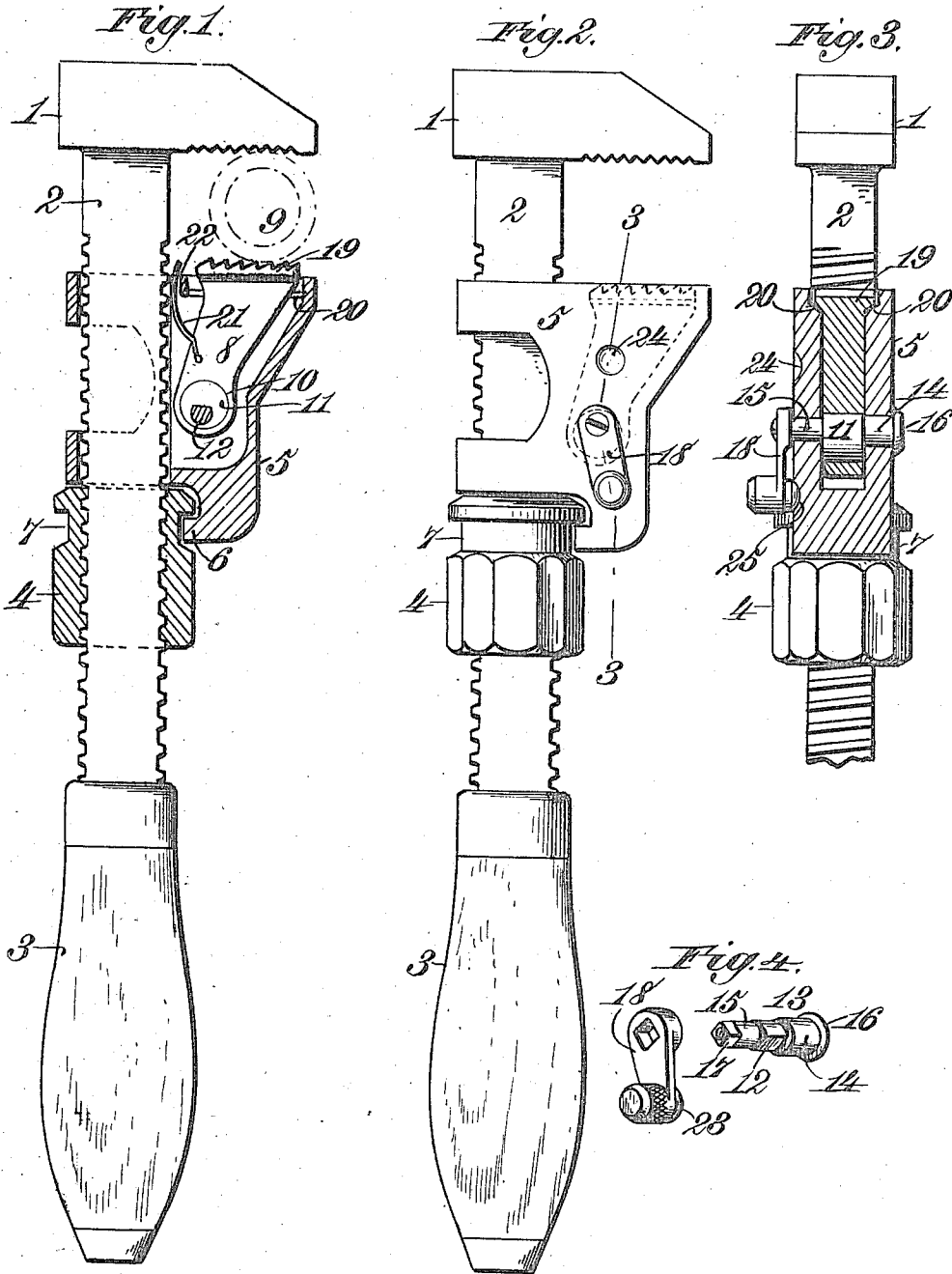


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WRENCH.

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1,004,522.

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UNITED STATES PATENT OFFICE.

SAMUEL R. ARCHER, OF MOORHEAD, MISSISSIPPI, ASSIGNOR OF FORTY-FIVE ONE-HUNDREDTHS TO ULYSSES S. WASSON AND RUFUS A. HOOVER, OF MOORHEAD, MISSISSIPPI.

WRENCH.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL R. ARCHER, a citizen of the United States, residing at Moorhead, in the county of Sunflower and State of Mississippi, have invented new and useful Improvements in Wrenches, of which the following is a specification.

The present invention has reference to improvements in wrenches, and especially in that type of wrench which includes fixed and movable cooperating jaws, adjustable relatively to each other to permit their engagement with objects of various shapes and sizes.

It resides, broadly, in the production of a wrench of the above described type wherein the movable jaw carries a serrated gripping dog arranged for endwise movement; on being projected or moved forwardly, this dog is brought into position for cooperation with the fixed jaw, to permit the wrench to be utilized for gripping tubular or cylindrical objects; whereas the retraction or inward movement of said dog leaves the gripping face of the movable jaw free to cooperate with that of the fixed jaw in engaging plane-faced objects.

Finally, and more particularly, it comprehends the mounting of the dog in such a manner as to provide for a rocking movement thereof in addition to its endwise movement; thereby enabling said dog to operate upon the principle of the well-known Stillson wrench.

A structural embodiment of the invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a side elevation of the improved wrench, the movable jaw being shown in section, with the dog in its projected or operative position; Fig. 2 is a side elevation of said wrench, showing the dog in its retracted or inoperative position; Fig. 3 is a fragmental vertical section taken on the broken line 3—3 of Fig. 2; and Fig. 4 is a collective view of the shaft on which the dog is mounted and the handle for operating said shaft.

In said drawings, 1 indicates the fixed jaw of the wrench, 2 the shank whereof said jaw is formed, and 3 the handle. The above parts are of the ordinary construction, and the shank is threaded in the usual manner for engagement with the threads formed on

the interior of the rotatable adjusting collar 4, which latter is slidable longitudinally on said shank and is connected with the movable jaw 5 through the medium of an inwardly bent nose 6 formed on the lower end of said jaw and engaging in a circumferential groove 7 provided in said collar. The serrated under face of the fixed jaw is adapted for cooperation either with the plane upper face of the movable jaw or with the serrated upper end face of a dog 8, according to the character of the object to be gripped. The said movable jaw 5 is hollow, as shown, and the dog above referred to is disposed in the interior thereof in front of the shank and is designed for endwise movement into and out of operative position. When it is desired to grip a plane-faced object, such, for example, as a nut, the dog may be retracted, or moved inwardly of the jaw 5, so as to permit the working faces of the latter jaw and the fixed jaw to cooperate in the ordinary manner, but when a pipe or other tubular or cylindrical object 9, (shown in Fig. 1), is to be turned or gripped, said dog is moved outwardly into the position shown in the figure last mentioned, whereupon its serrated end face will be brought into play. To effect this endwise movement of the dog, its lower portion is preferably formed with a circular opening 10 wherein an eccentric 11 is rotatably fitted, as best shown in Figs. 1 and 3, although other suitable operating devices may be employed in lieu thereof. The said eccentric 11 is fitted on the squared central portion 12 of a bolt 13, whose end or bearing portions 14 and 15 project through alining perforations formed in the sides of jaw 5. These bearing portions are preferably of different diameters, the larger portion 14 being formed with a head 16 which contacts with the outer surface of one side wall of said jaw, while the smaller portion terminates in a reduced square portion 17 that fits in a similarly-shaped opening in a crank handle 18 and is fastened to the same in any convenient manner.

By reason of the construction above described, it will be seen that the bolt 13 may be readily removed from the jaw and through the eccentric by means of its enlargement or head 16, after the handle 18 has been detached, whereupon the dog may,

in turn, be withdrawn from said jaw. It will also be seen that the dog may be quickly raised or lowered, by rotating the handle 18. As regards the dog itself, it may be stated that said dog is preferably constituted by a flat, substantially sector-shaped piece of metal widened laterally at its outer or upper end portion, as indicated by the numeral 19, and having that portion extended slightly forward, the projecting longitudinal edges of said portion being designed to rest upon transverse shoulders 20 formed upon the inner surfaces of the side walls of said jaw 5. These shoulders are located adjacent the upper or gripping face of the jaw.

A spring 21 is provided for normally forcing the upper portion of the dog away from the shank and toward the front wall of jaw 5, the spring being preferably secured at one end to the upper portion of said dog and having its free end engaged in a seat 22 formed in said jaw directly adjacent the shank, as shown in Fig. 1. The eccentric 11 disposed in the opening 10 in the dog constitutes a pivot whereon the latter can swing or rock, the purpose of this construction being explained at length hereinafter. Means is also provided for locking the dog both in its operative and in its inoperative positions. To effect such locking, the handle 18 is constructed of spring metal and is provided with a lug or shoulder 23 which is designed for interchangeable engagement in a pair of seats 24 and 25 formed in the adjacent side wall of the movable jaw 5, these seats being so located that when the handle has reached a position where lug 23 is in alinement with seat 24, and, consequently, is free to move thereinto under the resilience of said handle, said dog will occupy its operative position, and will occupy its inoperative position when said lug is engaged in the seat 25. The said lug may be constituted by an extension of the finger piece or operating portion of the handle, or may have any other suitable position on said handle.

The operation of the device when used for turning nuts and other plane-faced objects is believed to be fully apparent, and it is necessary to state only that the dog occupies its inoperative position at such time. It will be seen, however, that even when so used the toothed upper end of the dog may be called into play if the thickness of the nut be less than the width of said end, in which event the latter will effectively engage one edge of the nut. Where the device is employed for operating on a pipe or similar object, such object will be gripped between the serrated faces of the fixed jaw 1 and the dog, said dog having previously been moved outwardly of jaw 5. When so positioned, the dog will operate in the same manner as the movable jaw of a Stillson wrench; during the effective movement of the wrench in

the direction of the arrow, Fig. 1, the dog will be caused to rock inwardly, or toward the shank, and, in so doing, its toothed enlargement 19 will bite into the pipe and turn the same as the movement of the wrench is continued, but when the reverse movement of said wrench takes place, the tension of the spring against the dog causes the same to rock outwardly, away from said shank, thereby causing the teeth of enlargement 19 to loosen their grip upon the pipe, the eccentric constituting the bearing or pivot upon which the dog rocks. It will be seen, therefore, that the dog has a positive rocking movement upon a relatively fixed bearing, rather than a bodily lateral movement, and, in addition to such rocking movement, an endwise or longitudinal movement, both of these movements being relative to the movable jaw of the wrench.

I claim as my invention:

1. In a wrench, the combination of a shank provided with a fixed jaw; a jaw movable on said shank; an eccentric arranged within the second-named jaw; a gripping member mounted on said eccentric for coöperation with the first named jaw; and means for rotating said eccentric, to adjust said member longitudinally.

2. In a wrench, the combination of a shank provided with a fixed jaw; a jaw movable on said shank; an eccentric arranged within the second-named jaw; a gripping member mounted on said eccentric for coöperation with the first named jaw; means for rotating said eccentric, to move said member into and out of operative position; and means for retaining said member in either operative or inoperative position.

3. In a wrench, the combination of a shank provided with a fixed jaw; a jaw movable on said shank; a bolt rotatably mounted in the second-named jaw; a gripping member mounted on said bolt within said second-named jaw for coöperation with the first named jaw; and means for rotating said bolt, to move said member into and out of operative position, said means being arranged for positive engagement with said second-named jaw at one definite point, to hold said member in operative position, and at another definite point to hold said member in inoperative position.

4. In a wrench, the combination of a shank provided with a fixed jaw; a jaw movable on said shank; a bolt rotatably mounted in the second-named jaw; a gripping member mounted on said bolt within said second-named jaw for coöperation with the first named jaw; and a spring handle secured to said bolt for rotating the same, to move said member into and out of operative position, said handle being arranged for positive engagement with said second-named jaw at one point, to hold said mem-

ber in operative position, and at another point to hold said member in inoperative position.

5. In a wrench, the combination of a 5 shank provided with a fixed jaw; a jaw movable on said shank and having one of its side walls formed with a pair of seats; a bolt rotatably mounted in the second-named jaw; a gripping member mounted 10 on said bolt within said second-named jaw for coöperation with the first named jaw; and a spring handle secured to said bolt for rotating the same, to move said member into and out of operative position, said 15 handle having a portion thereof arranged for interchangeable engagement in said seats, to hold said member in either operative or inoperative position.

6. In a wrench, the combination of a 20 shank provided with a fixed jaw; a jaw movable on said shank; an eccentric arranged within the second-named jaw; a rocking gripping member mounted on said eccentric within said second-named jaw for 25 coöperation with the first named jaw; and means for rotating said eccentric to adjust said member longitudinally, said member being arranged to rock in one direction during the effective movement of the wrench, 30 to engage the object to be gripped, and in the opposite direction during the reverse movement of said wrench, to release such object.

7. In a wrench, the combination of a 35 shank provided with a fixed jaw; a jaw movable on said shank; a bolt rotatively mounted in the second-named jaw; an eccentric fast on said bolt; a gripping member mounted loosely on said eccentric for co- 40 operation with the first named jaw; and means for rotating said bolt, to move said member longitudinally into and out of operative position, said means being arranged for positive engagement with said second- 45 named jaw at one point, to hold said mem-

ber in operative position, and at another point to hold said member in inoperative position.

8. In a wrench, the combination of a shank provided with a fixed jaw; a jaw 50 movable on said shank and having one of its side walls formed with a pair of seats; a bolt rotatably mounted in the second-named jaw; an eccentric fast on said bolt; a gripping member mounted loosely on said 55 eccentric for coöperation with the first named jaw; and a spring handle secured to said bolt for rotating the same, to move said member longitudinally into and out of operative position, said handle having a por- 60 tion thereof arranged for interchangeable engagement in said seats, to hold said member in either operative or inoperative position.

9. In a wrench, the combination of a 65 shank provided with a fixed jaw; a jaw movable on said shank; an eccentric arranged within the second-named jaw; a rocking gripping member mounted on said eccentric within said second-named jaw for 70 coöperation with the first named jaw; means for rotating said eccentric to adjust said member longitudinally, said member being arranged to positively rock in one direction 75 on said eccentric during the effective movement of the wrench, to engage the object to be gripped; and a spring arranged within said second-named jaw and engaged with 80 said member above said eccentric for rocking said member in the opposite direction on said eccentric during the reverse movement of the said wrench, to release such object.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- 85 nesses.

SAMUEL R. ARCHER.

Witnesses:

PERCY H. VIRDEN,
A. H. TURNAGE.