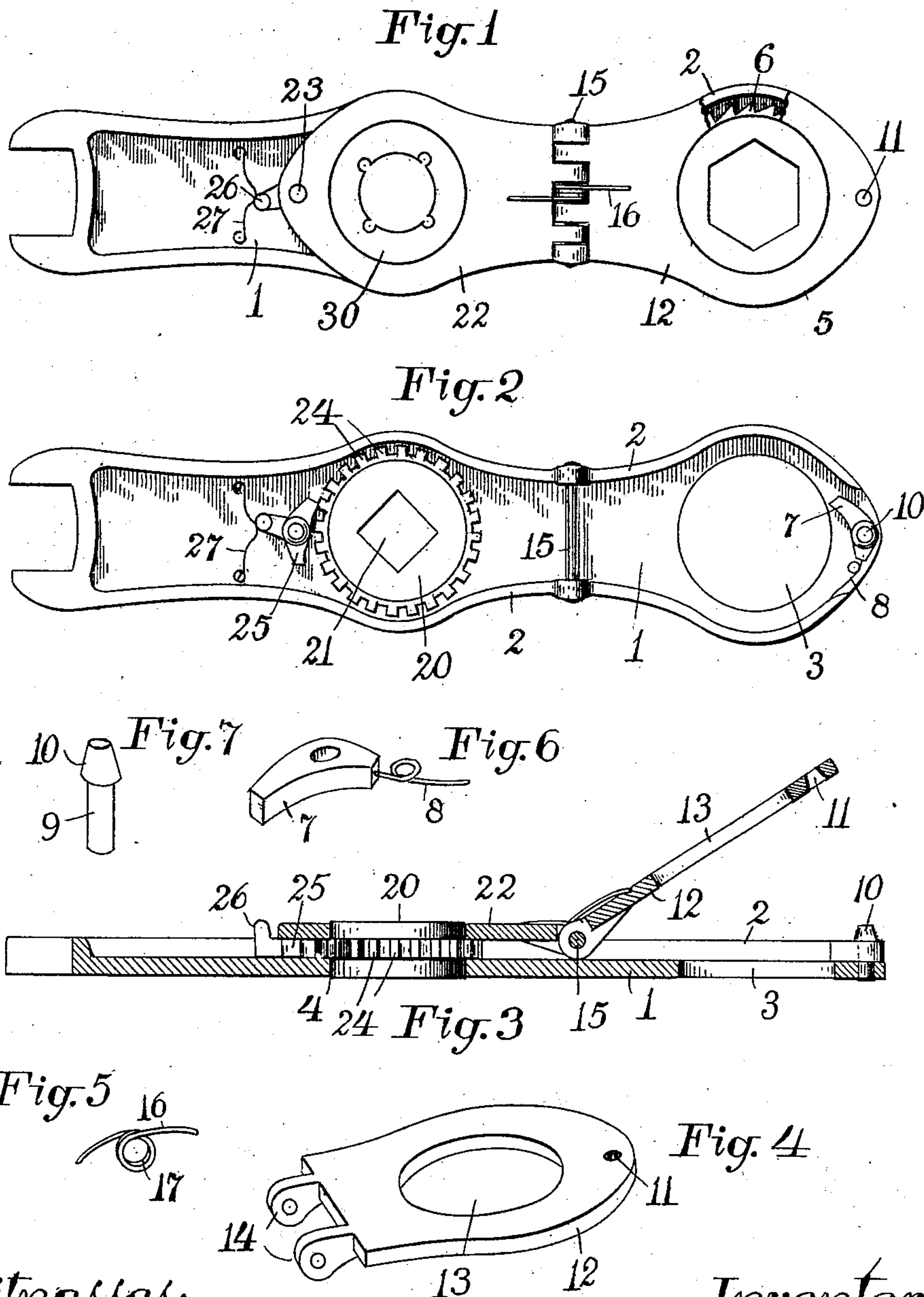


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COMBINATION RATCHET WRENCH.  
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912,338.

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# UNITED STATES PATENT OFFICE.

FREDERICK E. WALDEN, OF WORCESTER, MASSACHUSETTS.

## COMBINATION RATCHET-WRENCH.

No. 912,338.

Specification of Letters Patent.

Patented Feb. 16, 1909.

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*To all whom it may concern:*

Be it known that I, FREDERICK E. WALDEN, a citizen of the United States, and a resident of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Combination Ratchet-Wrenches, of which the following is a specification.

The object of this invention is the construction of an instrument or tool which can be used at will either as an interchangeable ratchet wrench, or as an interchangeable tap wrench, and which shall embody the improvements in details of construction herein-after set forth.

Referring to the drawings forming part of this specification, Figure 1 is a plan view of a wrench embodying my improvements. Fig. 2 is a plan view of the wrench body with the greater part of the mechanisms removed. Fig. 3 is a central longitudinal section of the wrench, with one part only removed. Fig. 4 is a perspective view of one of the hinged members of the wrench. Fig. 5 is a view of the spring for retaining the hinged members in position. Fig. 6 is a perspective view of one of the pawls controlling the ratchet wrench. Fig. 7 is a perspective view of one of the pawl pivot pins.

As shown in Figs. 2 and 3, the wrench body 1 is substantially a thin flat bar formed with undulatory flanged edges 2, and two circular openings 3 and 4, one near an end and the other near the midlength of said body. Within the opening 3 is rotatably located the wrench jaw 5 about whose periphery is formed a line of ratchet teeth 6 projecting far enough radially from such periphery to keep such jaw from dropping through said opening. Pivoted to the body by the pivot-pin 9, is the pawl 7 resiliently pressed into engagement with said teeth by means of a suitable spring 8. The head 10 of this pin is tapered somewhat, as shown in Fig. 7, for the purpose of readily entering the hole 11 of the lid 12 when the latter has its opening 13 brought into engagement with said ratchet jaw 5. Said lid is formed with ears 14 through which loosely pass the pin 15 terminally held in the rim or flanges 2. Thus hinged, this lid or confining member can be raised as shown in Fig. 3 for the removal of one of the jaws 5 and the substitution therefor of another of different size. To retain said lid in place, the spring 16 is provided, the coil 17 of which is penetrated by said pin,

while one end presses upon the lid and so keeps the latter in engagement with the jaw and also the tapering head of the pin 9.

In the opening 4 of the wrench body is located a second jaw substantially like that above described, but formed with a square hole instead of the hexagonal one preferred for the other. This jaw 20 is designed for holding taps, and is consequently given a square hole 21 for fitting the same; but it is provided with a hinged lid 22 preferably pivoted upon the same pin 15 as the other, and held down by the other end of the spring 16, a hole 23 being provided for the pivot-head. I prefer, however, to make the teeth 24 of this tap-jaw 20 two-faced, and have the pawl or dog 25 double-ended, and adapted to be engaged at either end at will, in order that the tap can be unscrewed without removing the wrench and turn it upside down. To this end, said dog is formed with a finger 26 projecting rearwardly into contact with the spring 27, and thereby resiliently held into engagement with the teeth 24 at either end, as desired. This finger is made to rise a short distance above or flush with the surface of the lid 22 for its easy manipulation. Consequently, in the use of this tool as a tap-wrench, the jaw 20 is fitted to the tap and the dog 25 adjusted for holding such tap to its work, whether for tapping a right or a left hand thread. Then, when it is desired to remove the tap, the dog is given a move to present its opposite end into engagement with the teeth 24.

By having dies 30 made to fit the openings 4 and formed with similar teeth 24, this tool can be used as a die-stock, such die being illustrated as in use in Fig. 1.

What I claim as my invention and for which I desire Letters Patent is as follows, to wit;—

1. The combination with the wrench-body having a circular opening therein, a lid hinged to said body and having a corresponding opening, a cylindrical member loosely fitting said openings and having teeth about its periphery, and a pawl pivotally carried by one of the two first-named members.

2. A wrench comprising a body having a circular opening therein, a pawl pivoted to said body and resiliently pressed toward said opening, a lid hinged to said body and having an opening corresponding to that in said body, a cylindrical member rotatable in said



openings and having peripheral teeth engaged by said pawl, and a spring for normally holding said lid in place.

3. A wrench comprising a body having a  
5 circular opening therein, a pawl pivoted to said body and resiliently pressed toward said opening, a lid hinged to said body and having an opening corresponding to that in said body, a cylindrical member rotatable in said  
10 openings and having peripheral teeth engaged by said pawl, and means holding said lid in place on said body; said pivot being formed with a tapered head and the lid with a hole penetrated by said head.

15 4. A wrench comprising a body having two circular openings at longitudinally separated points therein, a transverse pin held by said body, two lids hinged on said pin and each having an opening corresponding to one  
20 in said body, a spring held by said pin and pressing said lids into place upon said body, cylindrical members rotatable in said openings, and having peripheral teeth, and pawls engaging said teeth.

25 5. A wrench comprising a flat elongated

body having its lateral edges flanged, and a circular opening in said body, a hinged lid normally seated on said flange and having an opening corresponding to that in said body, a cylindrical member fitting said open- 30 ings and having peripheral teeth, and a pawl engaging said teeth.

6. A wrench comprising an elongated body having flanged edges and a circular opening near its mid-length, a removable lid having 35 an opening corresponding to that in said body, a cylindrical body fitted to said openings and having peripheral teeth, a double-ended pawl or dog having a central finger projecting both horizontally and vertically, 40 and a spring adapted to yieldingly press either end of said pawl into engagement with said teeth.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 45 22nd day of April, 1908.

FREDERICK E. WALDEN.

Witnesses:

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C. H. WALDEN.