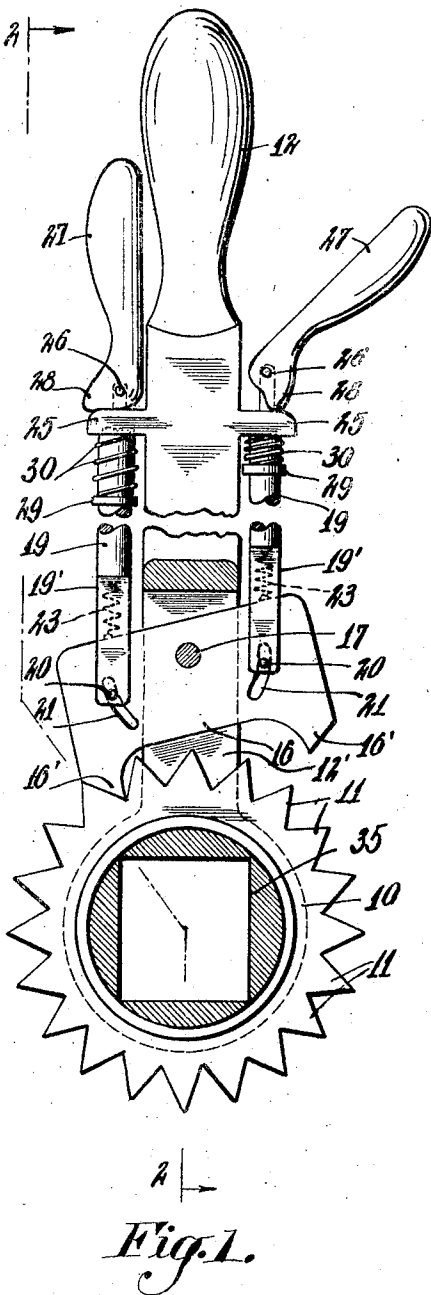
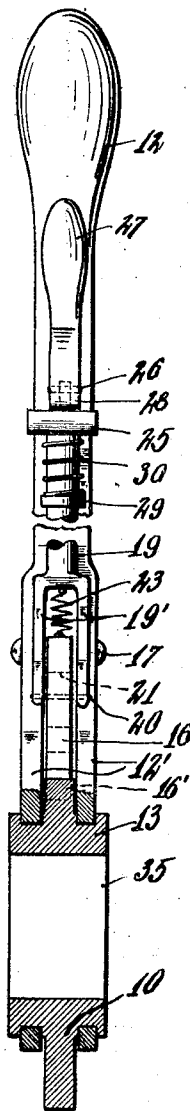


Sept. 23 , 1924.

G. BRACCI
WRENCH

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INVENTOR
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UNITED STATES PATENT OFFICE.

GIULIO BRACCI, OF DETROIT, MICHIGAN.

WRENCH.

Application filed November 15, 1923. Serial No. 674,864.

To all whom it may concern:

Be it known that I, GIULIO BRACCI, a subject of Italy, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to wrenches, having particular reference to a wrench having a ratchet arrangement which permits of the wrench handle being worked back and forth without removing the head from the nut or bolt to be turned, the invention having for an object the provision of a novel wrench of this type which can be readily adjusted to have the handle operate in either direction as may be desired.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

Fig. 1 of the drawing is a face view, with parts broken away, of my improved wrench.

Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1.

As here embodied my improved wrench comprises a head in the form of a disk 10 having teeth 11 formed on the periphery, these teeth being star teeth, that is sloping in the same direction on both sides so that either side may be engaged by a ratchet element carried by the handle 12 of the wrench to move the head in either direction. This head is formed with a central hub element 13 and the handle 12 is forked as at 12' to straddle the head and is provided at its forked end with suitable apertures through which the hub element 13 projects, thereby pivoting the handle on the head 10.

Pivoted to this handle 12, between the legs of the fork 12' thereof, is a double ended pawl 16 which is pivoted between its ends as at 17 and is provided on each end with a suitable nose 17' adapted to engage the teeth 11. To adjust this pawl I provide the following means. Extending upwardly on opposite sides of the handle 12 are the rods 19 which have forked lower ends 19' which straddle the ends of the pawl 16 and have pins 20 on their lower ends which extend through slots 21 in the ends of the pawl,

these slots being concentric to the pivot axis of the pawl, the purpose of these pins being to limit the movement of the pawl when the latter is riding backward over the teeth 11. Connected respectively at opposite ends to the rods 19 and to the ends of the pawl 16 are tension springs 23 which are here shown as located in the forks of the rods, above the ends of the pawl, although the position of the springs might be varied if desired.

At their upper ends the rods 19 pass through guide lugs 25 projecting from opposite sides of the handle, the holes in these lugs through which the rods pass being of sufficient size to permit of slight swinging movement of the rods. At their upper ends these rods are pivotally connected as at 26 to the lower ends of handle elements 27 having cam projections 28 whereby the rods may be raised by swinging these handles to a position extending an angle to the main handle 12. Surrounding the rods 19, below the lugs 25, and bearing between the latter and collars 29 fixed to the rods, are coiled expansion springs 30 which act to keep the cam members 28 in engagement with the said lugs in whatever position they may be adjusted to.

The manner in which my improved wrench operates is as follows: In Fig. 1 of the drawing I have shown the pawl 16 adjusted to have the wrench operate with a left hand motion, such as is used in loosening nuts or bolts. In this position the rod 19 at the right hand side of the handle is raised, both with respect to the handle and with respect to the pawl 16, so that the right hand spring 23 is under greater tension than the left hand one and in consequence acts to hold the left hand nose of the pawl engaged with the teeth of the head 10, causing the head to move with the handle 12 as the latter is swung toward the left. As the handle 12 is swung toward the right the pawl 16 rides freely over the teeth 11, while the parts are so proportioned that the pin 20 carried by the right hand rod 19 prevents the right hand nose of the pawl from accidentally swinging too far and engaging the teeth 11, the pin 20 limiting the outward movement of the pawl by engaging the upper end of the slot 21. As will be apparent, by reversing the positions of the rods and pawl the handle may be made to operate in the opposite direction.

While I have illustrated and described a preferred embodiment of my invention it is to be understood that I do not limit myself to the precise construction herein shown, and that various changes and modifications might be made therein without departing from the spirit and scope of the invention as defined in the appended claims. While I have only indicated a square opening 35 in the head 10 it will be understood that bushings to suit different nuts or bolt heads might readily be fitted in this opening.

Having thus described my invention what I claim as new and desire to protect by Letters Patent of the United States is as follows:

1. A wrench comprising a disk-like head having star teeth on its periphery, a handle pivoted to said head, a double ended pawl pivoted midway between its ends to said handle, a pair of slots formed in said pawl one near each end thereof, a pair of rods extending along opposite sides of said handle and carrying on one end elements adapted to engage in the said slots, springs connected to said rods and to the ends of said pawl and adapted to move the ends to which they are connected away from the said head, and means for setting said rods in longitudinally adjusted positions on the said handle.

2. A wrench comprising a disk-like head having star teeth on its periphery, a handle pivoted to said head, a double ended pawl pivoted midway between its ends to said handle, a pair of slots formed in said pawl one near each end thereof, a pair of rods extending along opposite sides of said handle and carrying on one end elements adapted to engage in the said slots, springs connected to said rods and to the ends of said pawl and adapted to move the ends to which they are connected away from the said head, and means for setting said rods in longitudinally adjusted positions on the said handle, said means comprising cam elements

to which the other ends of said rods are connected.

3. A wrench comprising a disk-like head having star teeth on its periphery, a handle pivoted to said head, a double ended pawl pivoted midway between its ends to said handle, a pair of slots formed in said pawl one near each end thereof, a pair of rods extending along opposite sides of said handle and carrying on one end elements adapted to engage in the said slots, springs connected to said rods and to the ends of said pawl and adapted to move the ends to which they are connected away from the said head, and means for setting said rods in longitudinally adjusted positions on the said handle, said means comprising cam elements to which the other ends of said rods are connected, and springs bearing on said rods and acting to hold said cam elements in adjusted positions.

4. A wrench comprising a disk-like head having star teeth on its periphery, a handle pivoted to said head, a double ended pawl pivoted midway between its ends to said handle, a pair of slots formed in said pawl one near each end thereof, said slots being curved concentric to the pivot point of said pawl, a pair of rods extending along opposite sides of said handle and carrying on one end elements adapted to engage in the said slots, springs connected to said rods and to the ends of said pawl and adapted to move the ends to which they are connected away from the said head, and means for setting said rods in longitudinally adjusted positions on the said handle, said means comprising cam elements to which the other ends of said rods are connected, and springs bearing on said rods and acting to hold said cam elements in adjusted positions.

In testimony whereof I have affixed my signature.

GIULIO BRACCI.