

C. B. GREEN.

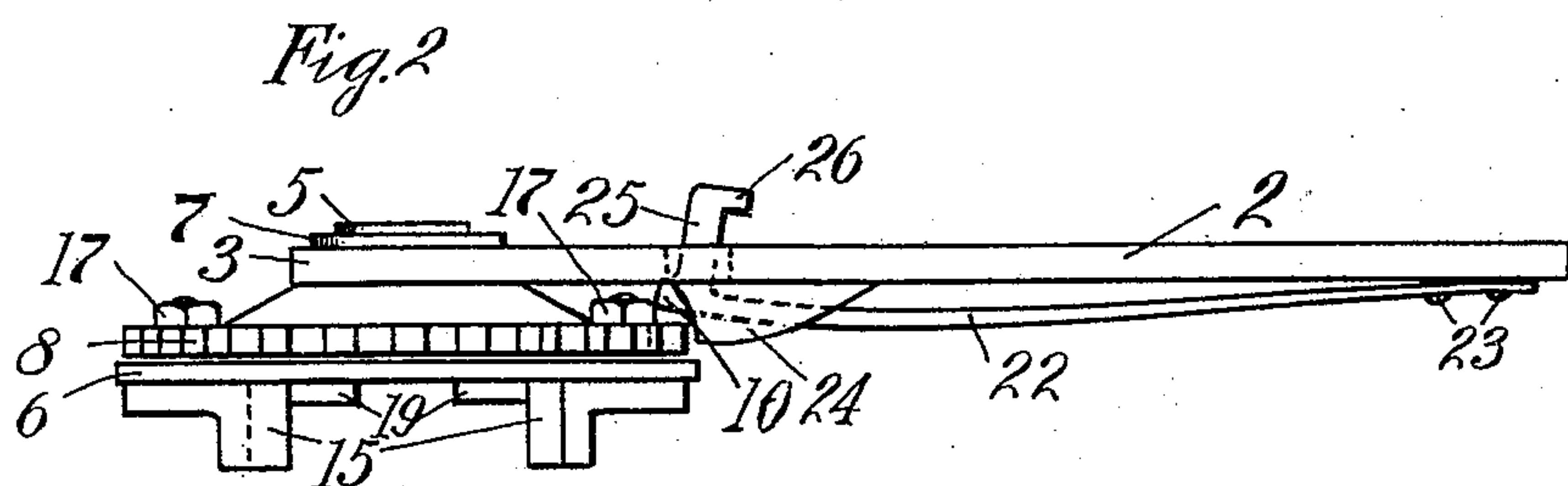
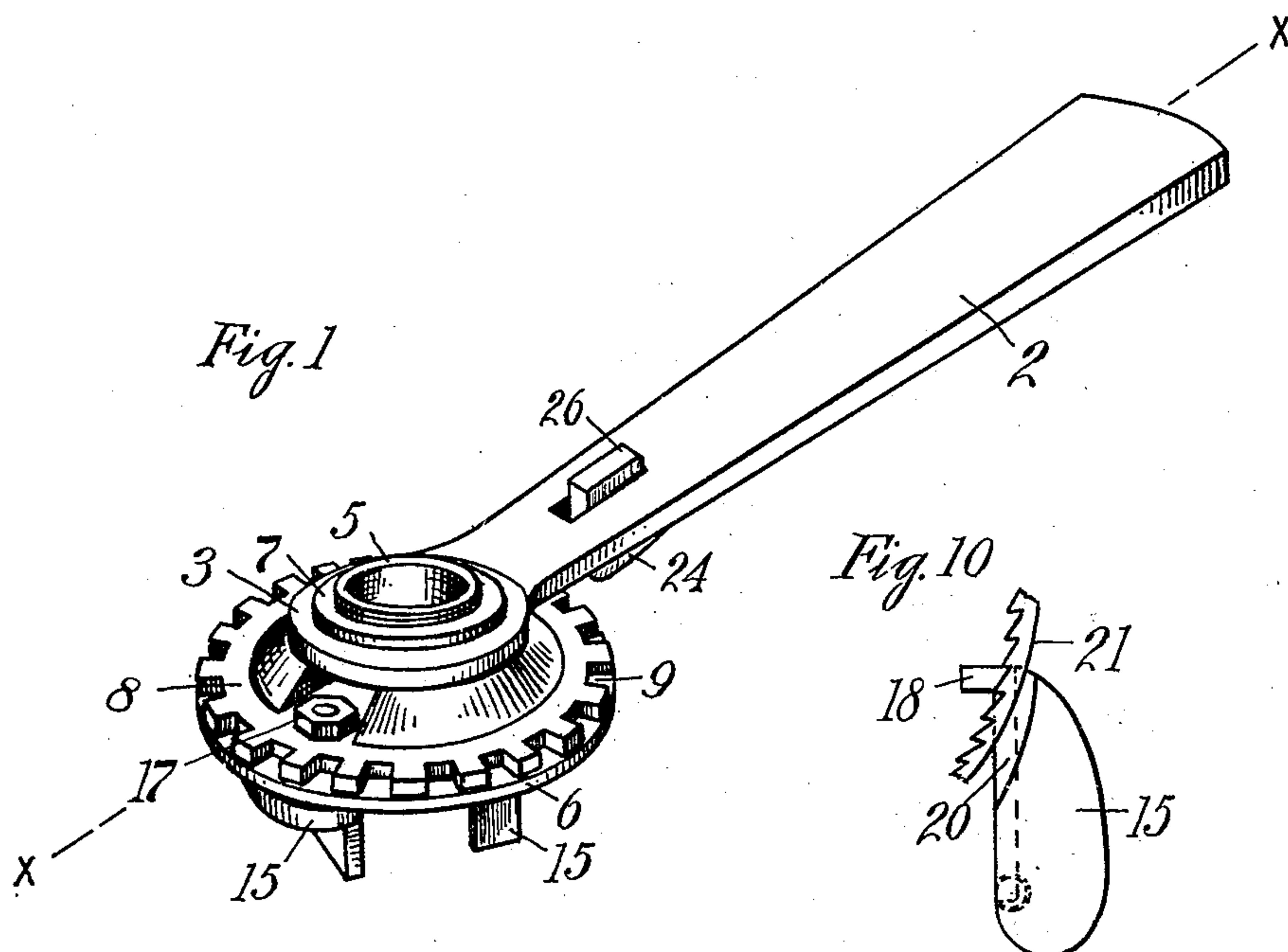
WRENCH.

APPLICATION FILED FEB. 24, 1908.

912,117.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.



Witnesses,

George Voelker
Hattie Smith

Inventor,

Charles B. Green
by Lothrop & Johnson
his Attorneys.

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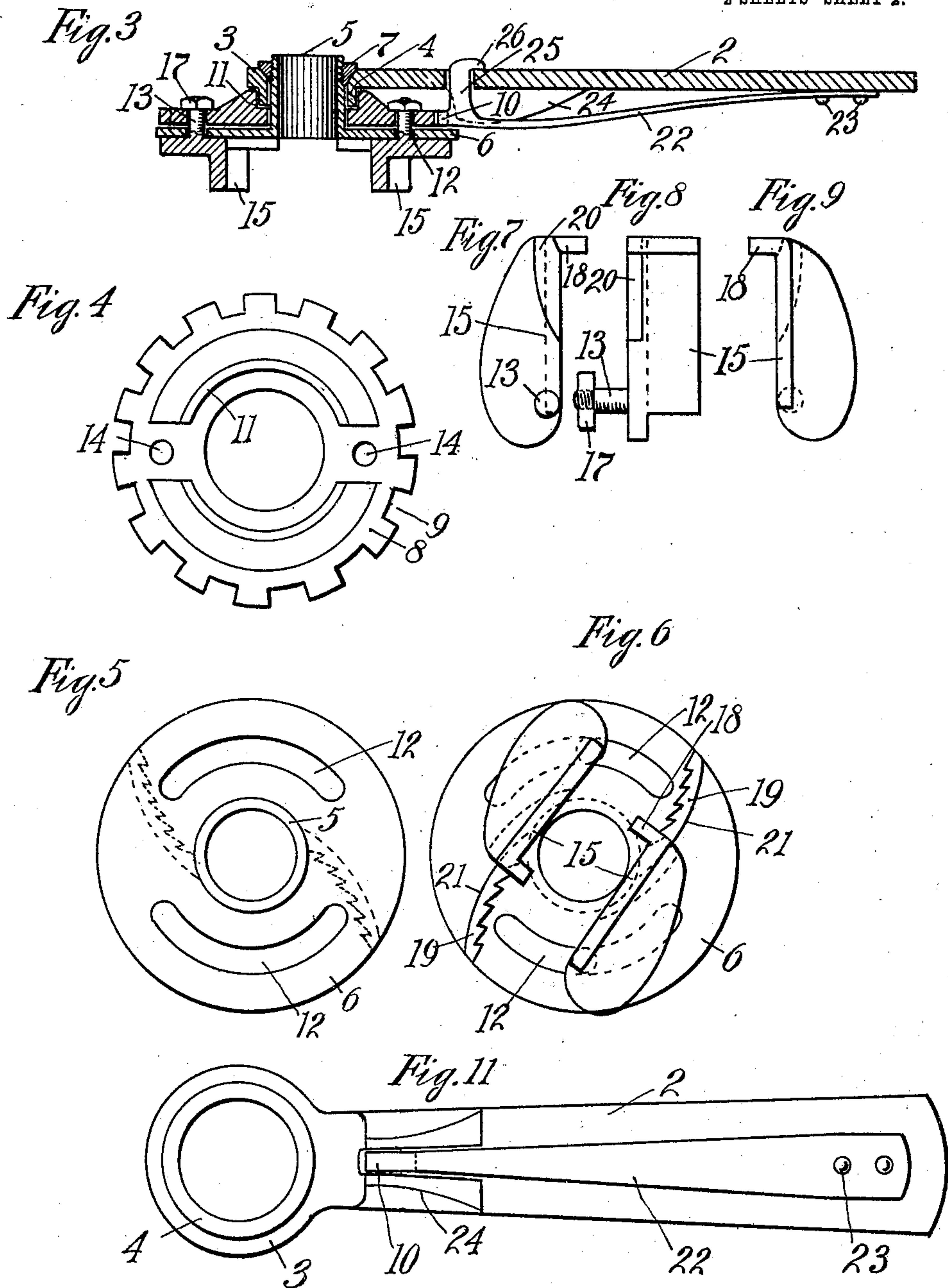
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UNITED STATES PATENT OFFICE.

CHARLES B. GREEN, OF ST. PAUL, MINNESOTA.

WRENCH.

No. 912,117.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed February 24, 1903. Serial No. 417,323.

To all whom it may concern:

Be it known that I, CHARLES B. GREEN, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention relates to improvements in wrenches and has for its object to provide a wrench having improved means for tightening and holding the jaws upon the nut or other object to be turned or held and for releasing the jaws therefrom; also to provide an improved form of jaw and improved means for manipulating the wrench head, and in general to provide a wrench which shall be simple of construction, positive in operation and easy to manipulate.

More particularly the invention consists in the construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a perspective view of the improved wrench looking towards the back or top thereof; Fig. 2 is a side elevation of the wrench, showing the spring finger forced up out of engagement with the toothed disk; Fig. 3 is a longitudinal section through the middle of the wrench on line $x-x$ of Fig. 1; Fig. 4 is a plan view of the toothed disk alone; Fig. 5 is a plan view of the slotted plate which carries the guide racks for the jaws; Fig. 6 is a bottom view of the slotted plate and jaws; Figs. 7, 8 and 9 are top, side and bottom views, respectively, of one of the sliding jaws; Fig. 10 is a bottom view of one of the jaws and a fragment of the guide rack upon which it works, and Fig. 11 is a bottom view of the handle and the annular head carried by it.

In the drawings 2 represents the wrench handle. This terminates in an annular head 3 having a downwardly extending annular lug or flange 4. The head fits over, and is journaled upon, the hub 5 which is carried by the slotted plate 6. It is held upon the hub by means of a bearing nut 7 threaded upon the upper or outer end of the hub and downwardly beveled to form a bearing surface for the correspondingly beveled top of the head. Also rotatable upon the hub 5 and retained by the annular head is a toothed disk 8 having notches 9 to receive the spring finger 10 carried by the handle. The toothed disk is formed on its upper face with

annular shoulders 11 which overlap, and bear upon the annular flange 4 of the head 3. The slotted plate 6 is integral with, or secured to, the hub 5 and is formed with oppositely disposed curved slots 12 concentric with the hub. Thus when the spring finger 10 is engaged with the teeth of the disk 8, and the handle is turned, the disk will rotate with the handle and the hub and slotted plate 6 will remain stationary.

Carried by the toothed disk 8, and secured thereto by means of studs 13, which pass through the slots 12 in the plate 6, and through holes 14 in the toothed disk are oppositely disposed jaws 15. As shown in the drawings the studs 13 are integral with, or secured to, the jaws at one end thereof, and are secured to the toothed disk by means of nuts 17 upon their upper ends. Thus, when the toothed disk is turned by means of the handle, the studs will travel in the slots 12 and bring the jaws together, as illustrated in Fig. 6. Each jaw is formed with an angular or inturned flange 18, so as to engage two sides of the nut or other object to be held or turned.

As the toothed disk operates only on the studs or posts 13 at one end of the jaws, any object gripped will tend to swing the other ends thereof away from each other as the handle is turned. To overcome this two oppositely curved radially disposed toothed racks 19 are secured upon the under face of the plate 6, as shown in Fig. 6, and the under face of each of the jaws is formed at its free end, that is the end opposite the stud or post 13, with a curved groove or channel 20 to receive within it the curved rack 19. Now, when the handle is turned, the rack, arranged within the groove or channel in the jaw will hold the jaw from being swung out, and will cause the two jaws to travel in parallelism toward each other, while the teeth of the rack will prevent the free end of the jaws from being crowded back or from turning the plate. When it is desired to separate the jaws the direction of rotation of the disk is reversed. This will throw the jaws out of engagement with the teeth of the rack and will force the curved sides of the groove 20 against the curved outer side 21 of the rack thus causing the jaws to travel in parallelism away from each other. It will be observed that the jaws are moved, not only toward and away from each other, but also endwise, so that the angular flanges at their ends are

brought together and tightened upon the object to be gripped.

The spring finger 10, as shown in the drawings is carried by a spring strip 22 secured upon the underside of the handle by fastenings 23, and worked between guide-lugs 24 upon the under side of the handle. At its forward or free end it has an upwardly projecting arm 25 extending through a hole in the handle. The finger 10 is held by the resiliency of its spring 22 normally sprung down into engagement with the toothed disk, as shown in Fig. 3. To prevent the finger from pressing against the plate 6 the arm is provided at the top with a lip or flange 26 which serves as a stop to engage the upper side of the handle and limit the spring actuated movement of the finger.

The operation of the wrench, which has already been explained in connection with the description of the construction, may be summarized as follows: The spring finger 10 upon the underside of the handle is held by the resilience of its spring 22 normally pressed down into one of the notches of the toothed disk 8, whereby the handle is operatively connected with the disk, so that the disk will be turned with the handle. To adjust the jaws to the nut or other object to be operated upon, the handle is turned in one or the other direction, according as separation or contraction of the jaws is desired. When the handle is turned to contract the jaws, the studs carried by the disk will travel towards each other in the slots 12 and bring the jaws together, as above explained, the toothed racks arranged upon the underside of the plate 6, and working within the grooves 20 in the jaws, serving to hold the jaws in parallelism, as heretofore explained. When the handle is turned in the opposite direction the studs will travel away from each other in the slots 12, thus separating the jaws at the stud ends and at the same time throwing the free ends of the jaws out of engagement with the teeth of the rack, while the pressure of the curved sides of the grooves 20 against the curved outer sides 21 of the racks will keep the jaws in parallelism. After the wrench has been adjusted to the nut or other object, it is operated in the ordinary way. It will be observed, however, that the curved racks, the teeth of which are set against the free ends of the jaws, as illustrated in Fig. 10, will hold the jaws from being forced back under the pressure exerted in turning the wrench. When it is desired to turn the handle to take a fresh grip upon the disk without releasing the jaws, it is only necessary to press the spring strip 22 up towards the underside of the handle. The strip will carry the finger 10 up out of engagement with the toothed disk and permit the handle to be turned

without also turning the disk and the jaws carried thereby. Being arranged upon the underside of the handle, the spring can be operated by the fingers with perfect ease and sureness without releasing their hold upon the jaws or requiring any unusual movement.

Various changes may be made in the details of the structure without departing from the principle of the invention the scope of which is defined in the claims.

I claim as my invention:

1. In a wrench of the class described, in combination, a wrench head and a handle carried thereby, a notched jaw-carrying disk rotatable upon the wrench head, a spring strip arranged lengthwise of the handle and secured at one end upon the underside thereof, a finger carried by the strip at its free end and having an upwardly extending arm passing freely through the handle, the finger being held by the strip normally drawn down into the notches of the disk and operatively connecting the handle and disk, but being raised out of said notches when the strip is pressed up, and a stop carried by said arm upon the upper side of the handle to engage the handle and limit the spring actuated movement of the finger.

2. In a wrench of the class described, in combination, a wrench head and a handle carried thereby, a toothed disk rotatable in the wrench head, a plate also rotatable in the wrench head upon the under face of the disk, and formed with oppositely disposed curved slots, said plate also having oppositely curved radial racks upon its under face, a pair of oppositely arranged jaws slidable upon said racks, and a stud passing through each of the slots in said plate and connecting the jaws with the toothed disk, for the purpose set forth.

3. In a wrench of the class described, in combination, a wrench head and a handle therefor, a toothed disk rotatable on the wrench head and operated from the handle, a plate arranged on the underside of the disk and rotatably supported in the wrench head, said plate being formed with oppositely curved slots and having oppositely curved radial racks upon its under side, a pair of oppositely disposed jaws, each formed at its free end with a curved groove in its underside to receive and slide upon the rack, and connections passing through the slots and operatively connecting the jaws with the toothed disk.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES B. GREEN.

Witnesses:

ARTHUR P. LOTHROP,
HATTIE SMITH.