

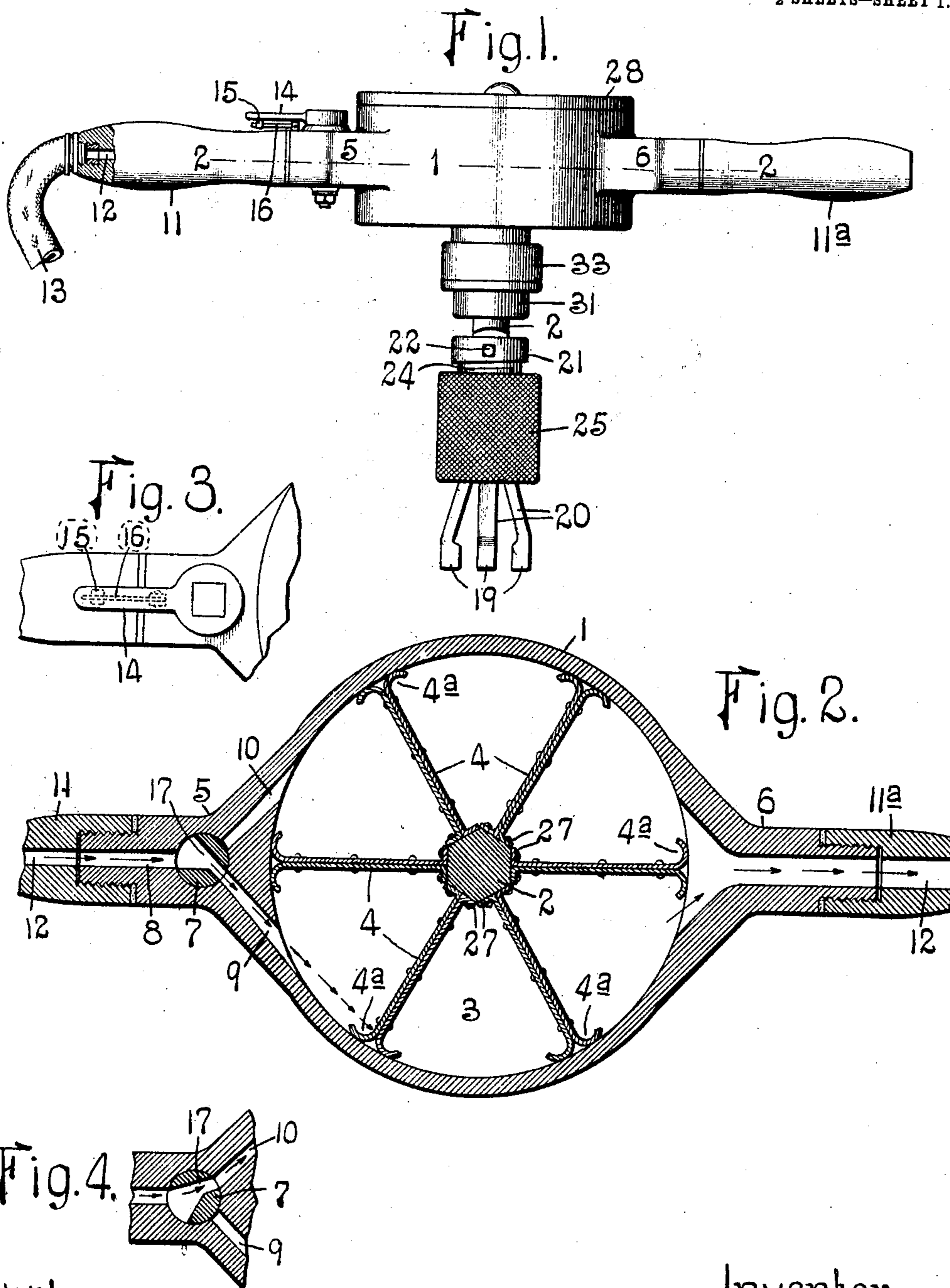
No. 841,047.

PATENTED JAN. 8, 1907.

C. R. RAWDON.
WRENCH.

APPLICATION FILED OCT. 15, 1906.

2 SHEETS—SHEET 1.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 5.

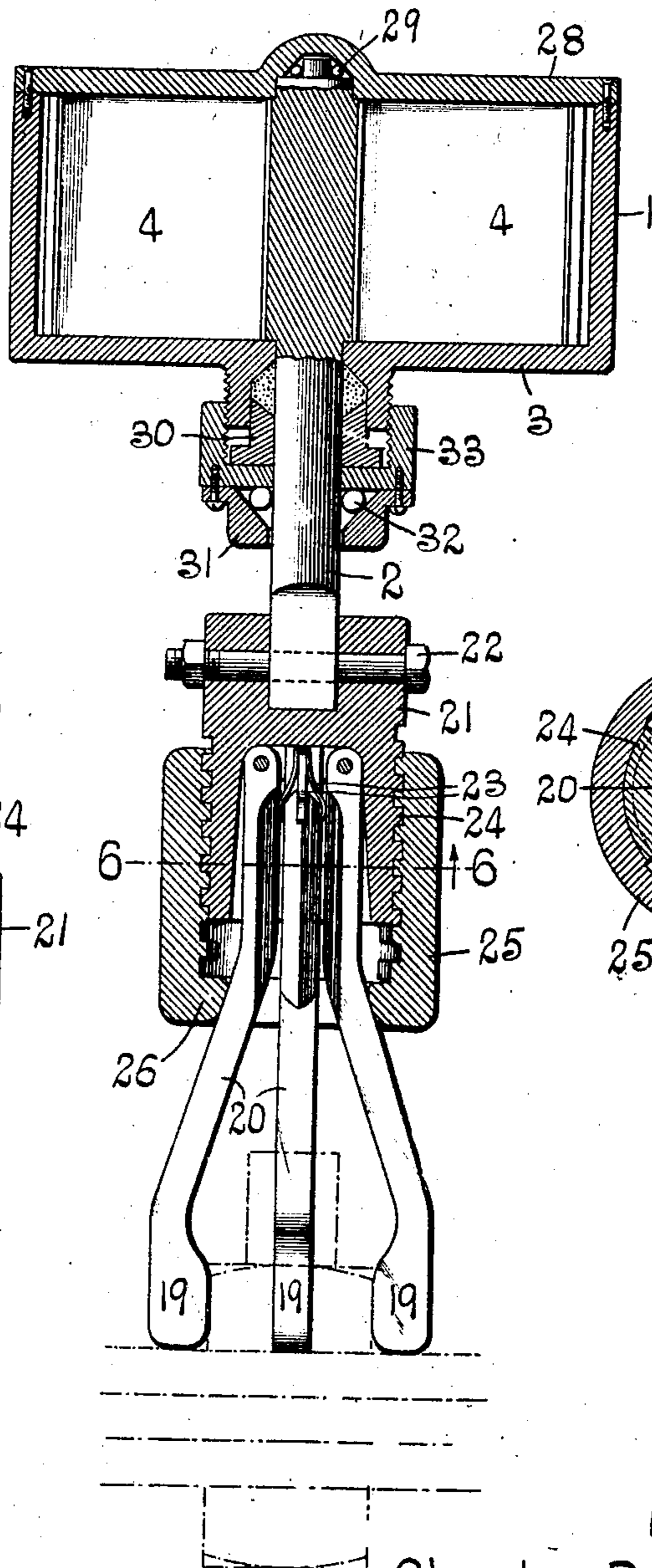


Fig. 6.

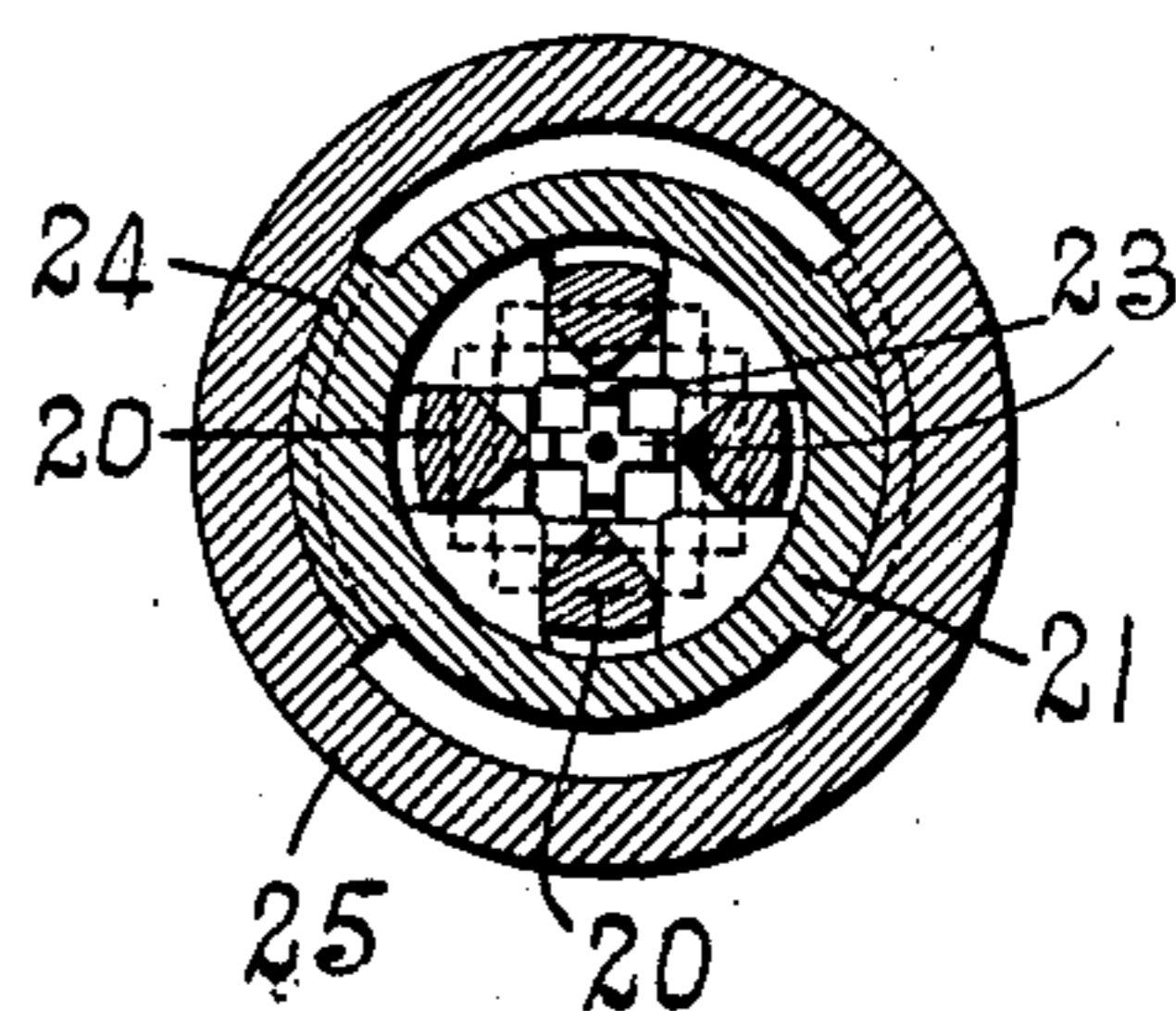
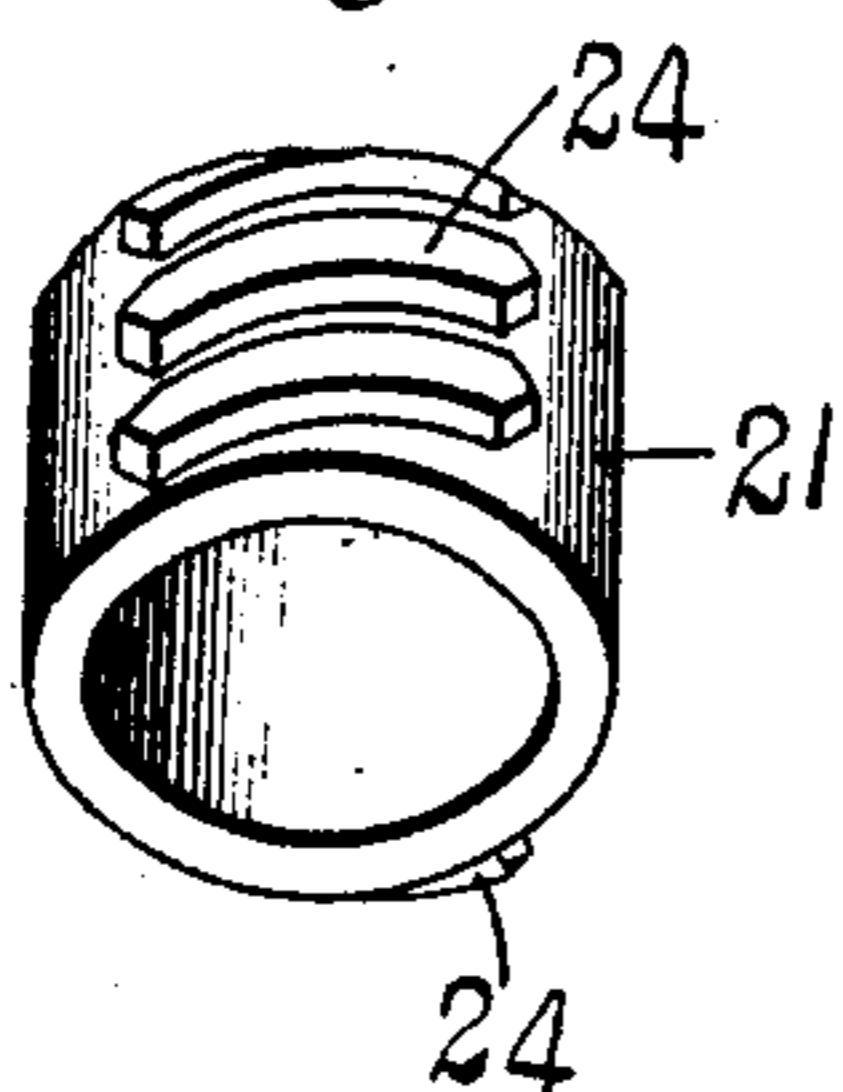


Fig. 7.



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UNITED STATES PATENT OFFICE.

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WRENCH.

No. 841,047.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed October 15, 1906. Serial No. 339,073.

To all whom it may concern:

Be it known that I, CHARLES R. RAWDON, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Wrenches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a wrench embodying the features of my invention. Fig. 2 is a horizontal sectional view taken on about the line 2 2 of Fig. 1. Fig. 3 is a detail top plan view showing the handle on the controlling-valve. Fig. 4 is a detail sectional view showing the valve adjusted in position for causing the motive fluid to rotate the shaft forwardly. Fig. 5 is an enlarged vertical sectional view. Fig. 6 is a cross-sectional view taken on the line 6 6 of Fig. 5, and Fig. 7 is a detail perspective view of a portion of the adjusting-sleeve for the gripping-jaws.

This invention relates to wrenches.

The object of my invention is to provide a wrench comprising a nut-engaging member and means actuated by compressed air or any suitable fluid under pressure for imparting rotary movement to the nut-engaging member.

Another object of my invention is to provide a wrench of the character described comprising means for causing the nut-engaging member to be rotated either forwardly or backwardly.

Other desirable features of my improved wrench will be hereinafter pointed out.

Referring to the drawings, which represent the preferred form of my invention, 1 designates a casing having a shaft or stock 2 journaled therein, said shaft projecting through the bottom wall 3 of the casing. Connected to the lower end of the shaft 2 is a nut-engaging member, which may be of any suitable construction, and secured to that portion of the shaft which is located inside of the casing 1 are a plurality of wings or blades 4, which are acted upon by a fluid under pressure for rotating the shaft. The casing is provided at one side with an inlet-opening through which the motive fluid enters for actuating the blades 4 and with an outlet-opening or exhaust through which the motive fluid escapes, said openings being formed, respectively, in laterally-extending projections 5

and 6 on the casing. A valve 7 is mounted in the projection 5 at the point where the inlet-opening 8 merges into two oppositely-inclined branches 9 and 10, so that when the valve is adjusted in one position the pressure of the motive fluid on the blades will cause the shaft to rotate in one direction and when the valve is adjusted in a different position the pressure of the fluid on the blades will cause the shaft to be rotated in the opposite direction. Handles 11 and 11^a, provided with central bores or passage-ways 12, are secured to the projections 5 and 6, and a flexible tube 13, for conducting the compressed air or other motive fluid to the casing, is connected to the outer end of handle 11. The valve which controls the passage of the motive fluid to the casing may be of any desired design; but I prefer to use one of the construction shown in Figs. 1 to 4, having a handle 14, provided with a downwardly-extending lug 15, to which a leaf-spring 16 is secured, the other end of said spring being fastened to the projection 5 on the casing. The operator can move the handle 14 to right or left to cause the port 17 in the valve to aline with either branch of the inlet-opening, and when he removes his finger from said handle the spring 16 returns the valve to normal position, so that its port is arranged midway the branches of the inlet-opening, and thus cuts off the supply of motive fluid.

When the valve is adjusted into the position shown in Fig. 4, the motive fluid will enter the casing through the branch 10 of the inlet-opening, and the pressure of said fluid upon the blades 4 will cause the shaft 2 to be rotated forwardly, thereby causing the nut-engaging member to rotate in the direction for screwing a nut onto a bolt.

When the valve is adjusted into the position shown in Fig. 2, the motive fluid will enter the casing through the branch 9 of the inlet-opening, which is inclined oppositely to the branch 10, and cause the shaft to be rotated rearwardly. The speed at which the shaft 2 is rotated can be varied by adjusting the valve so as to increase or diminish the quantity of motive fluid that enters the casing.

The nut-engaging member may be of any suitable form; but I prefer to use the construction shown in Fig. 5, which consists of a plurality of jaws 19, formed integral with shanks 20, that are pivotally connected at their inner ends to a block 21, which is fas-

tened by a bolt 22 to the lower end of the shaft 2. By using a nut-engaging member of this construction I am able to remove or apply a nut from a bolt that projects outwardly some distance beyond the top of the nut, as shown in dotted lines in Fig. 5.

Each jaw-shank consists of a straight portion and an outwardly-extending inclined portion, the straight portions of the jaw-shanks being located in a socket or opening formed in the block 21. The jaws are normally forced apart by a spring connected to the block 21 and consisting of four arms 23, which bear against the shanks of the jaws. As shown in Figs. 5 and 6, the inner faces of the straight portions of the shanks are formed V shape, thereby permitting the shanks to be nested closely together, and thus enable the jaws to be used on a nut of small diameter. The block 21 is provided on its exterior with a mutilated thread 24, and slidingly mounted on said block is a sleeve 25, having an interior mutilated thread which coöperates with the thread 24 on the block 21. By turning the sleeve 25 a certain distance the threads thereon will pass out of engagement with the threads on the block 21, and said sleeve can then be forced downwardly, so that the inwardly-projecting flange 26 at its lower end will engage the inclined portions of the shanks of the jaws and cause said jaws to be forced toward each other for engaging a nut or similar object. After the jaws have firmly grasped the nut the sleeve 25 is rotated slightly to cause its threads to mesh with the threads on the block 21, and thus lock the sleeve and jaws in position.

Preferably the wings or blades 4 consist of two plates connected together and provided at their inner ends with flanges 27, through which fastening devices extend to connect the wings or blades to the hexagonal portion of the shaft 2, that is located inside of the casing, the outer ends of the plates being bent in opposite directions to form cups 4^a, which aid in confining the motive fluid behind the

wings until they have passed the outlet opening or exhaust.

The top wall 28 of the casing, which is removable, is provided with a bearing for the upper end of the shaft 2, said bearing having tapered walls and the upper end of the shaft being reduced, as shown in Fig. 5, to form a track for ball-bearings 29. A stuffing-box provided with a gland 30 is secured to the bottom wall of the casing and surrounds the shaft 2, and a bearing 31, containing balls 32, is fastened to the gland-nut 33.

From the foregoing description it will be seen that I have provided a wrench by which a nut can be screwed onto or removed from a bolt in a fraction of the time it would take a workman to manually perform the operation.

While the device herein shown represents the preferred form of my invention, it will of course be understood that various changes could be made therein without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A wrench comprising a casing having a shaft projecting outwardly therefrom, means connected to the shaft inside of the casing for causing the shaft to turn when fluid under pressure is introduced into the casing, a block connected to the lower end of said shaft and provided with a central recess, jaws provided with shanks which extend into said recess and are pivotally connected to the block, an adjusting-sleeve slidingly mounted on said block and provided on its interior with a mutilated thread which coöperates with a mutilated thread on the exterior of the block, and yielding means for forcing said jaws apart; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 11th day of October, 1906.

CHARLES R. RAWDON.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL