

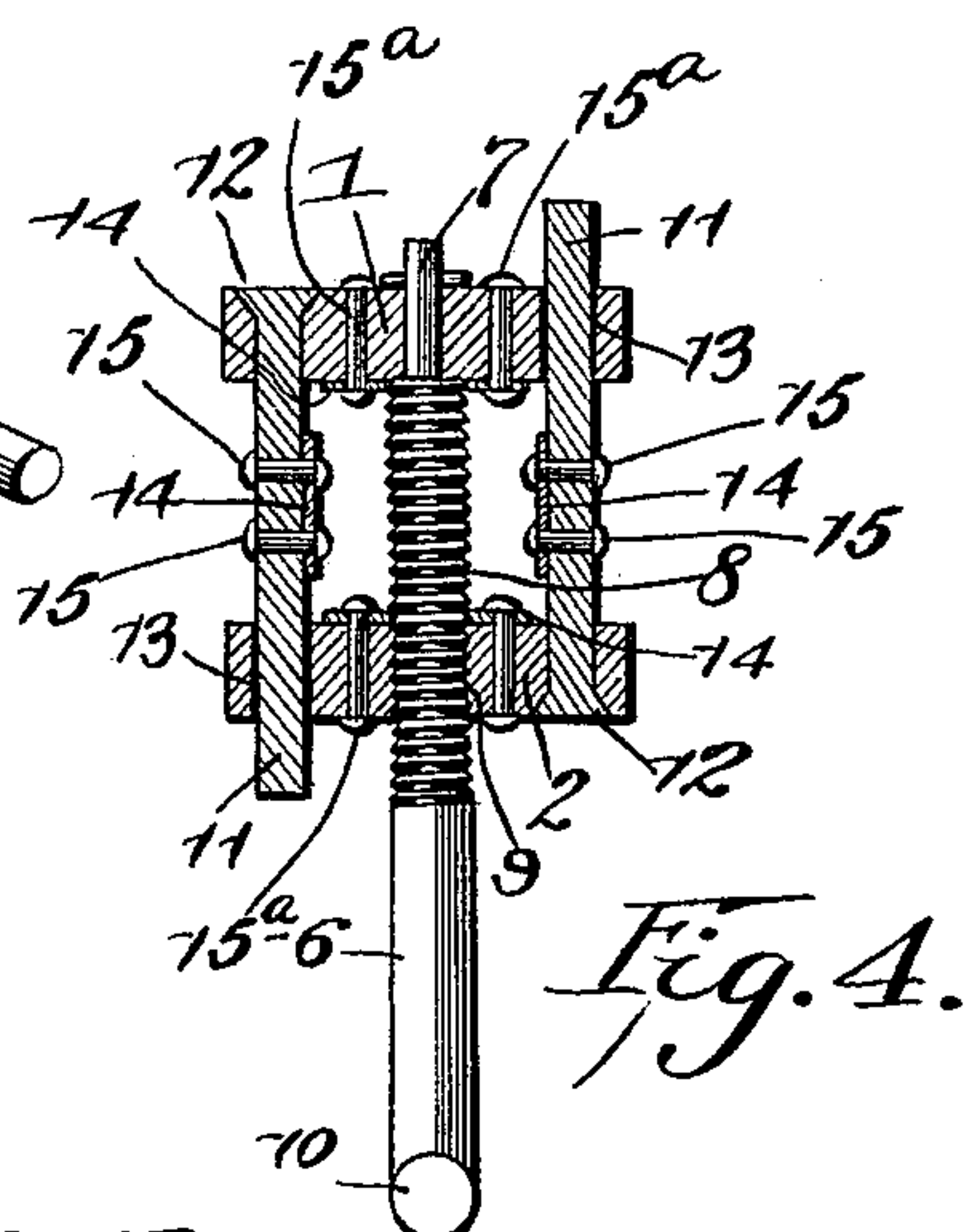
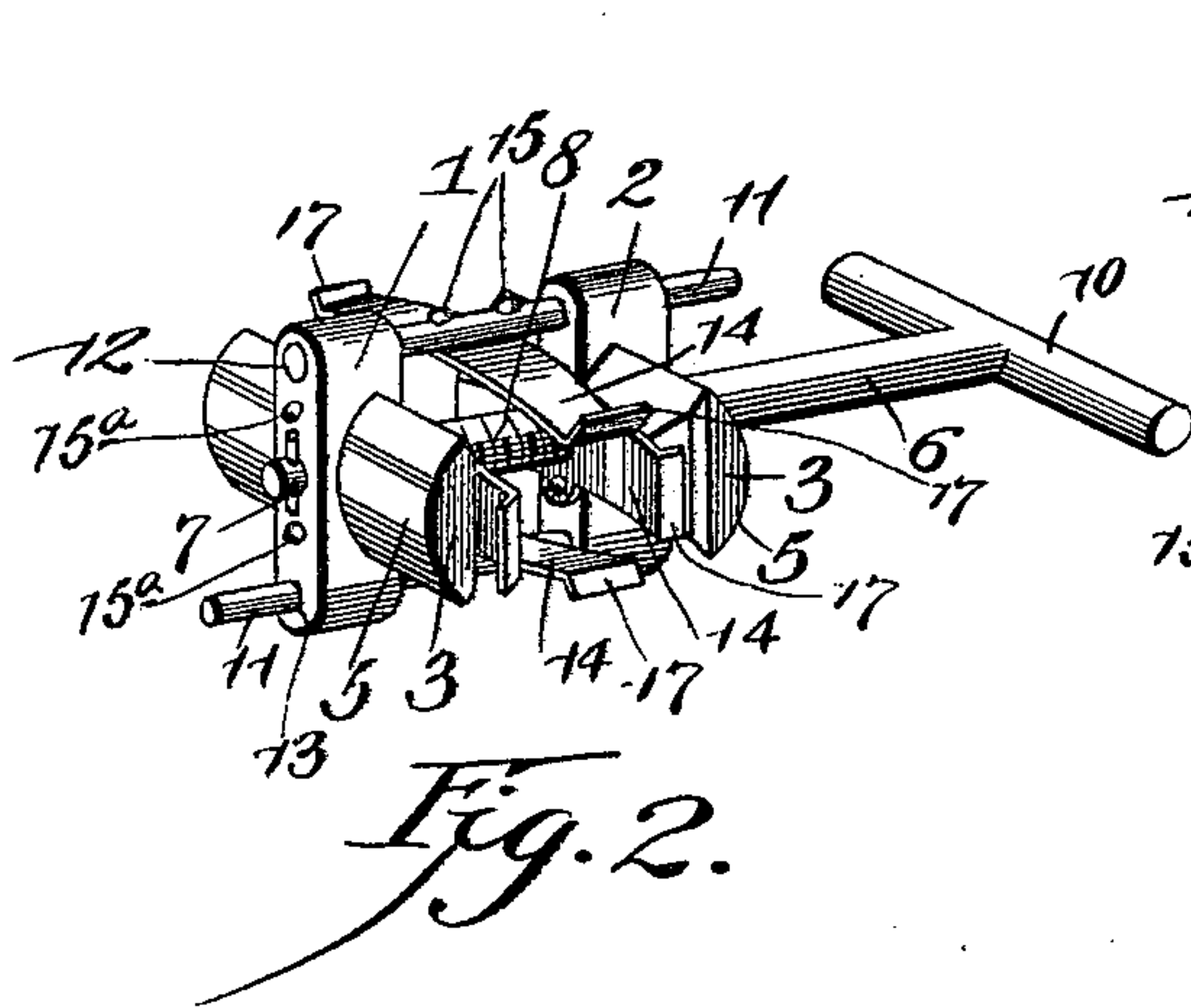
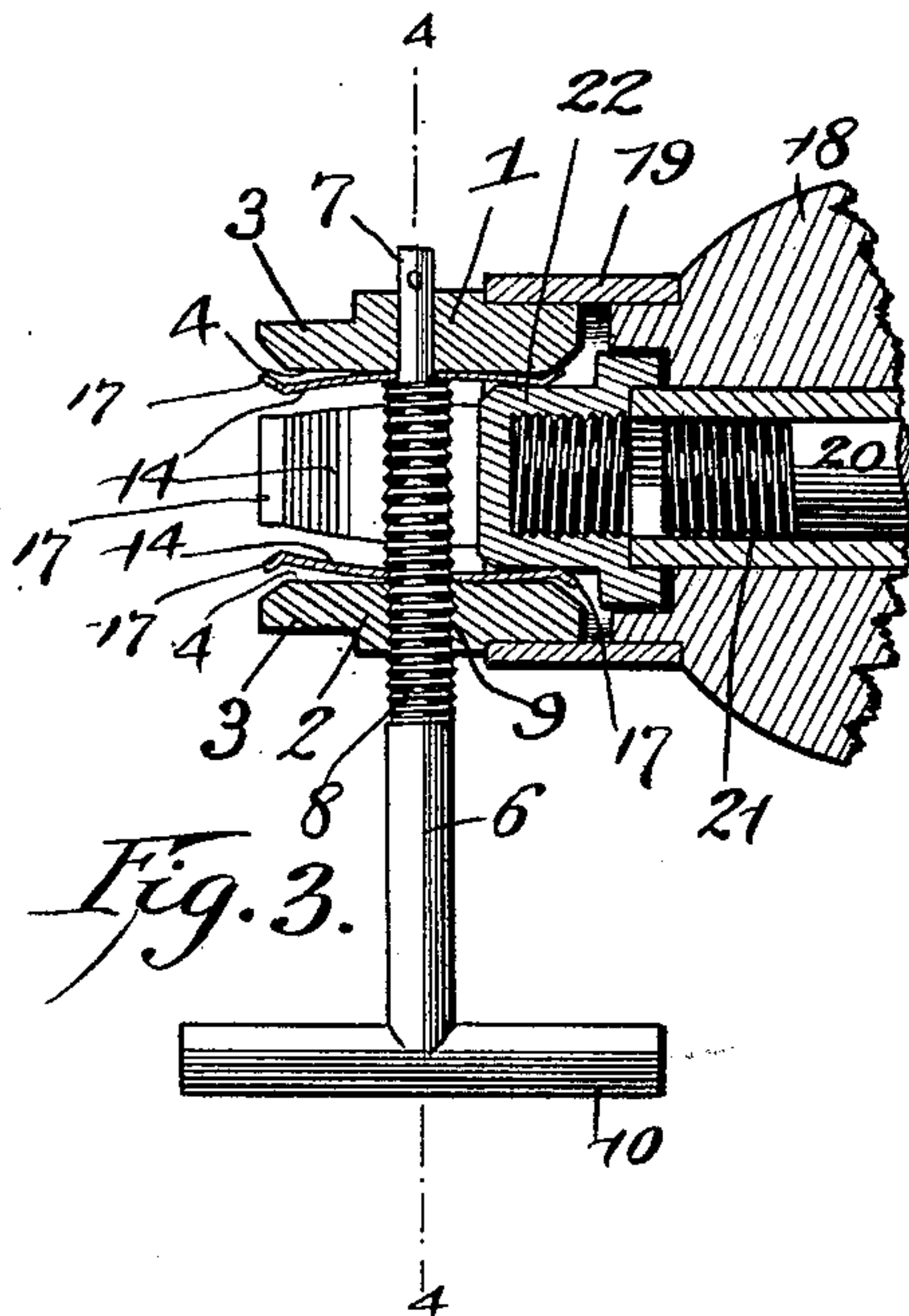
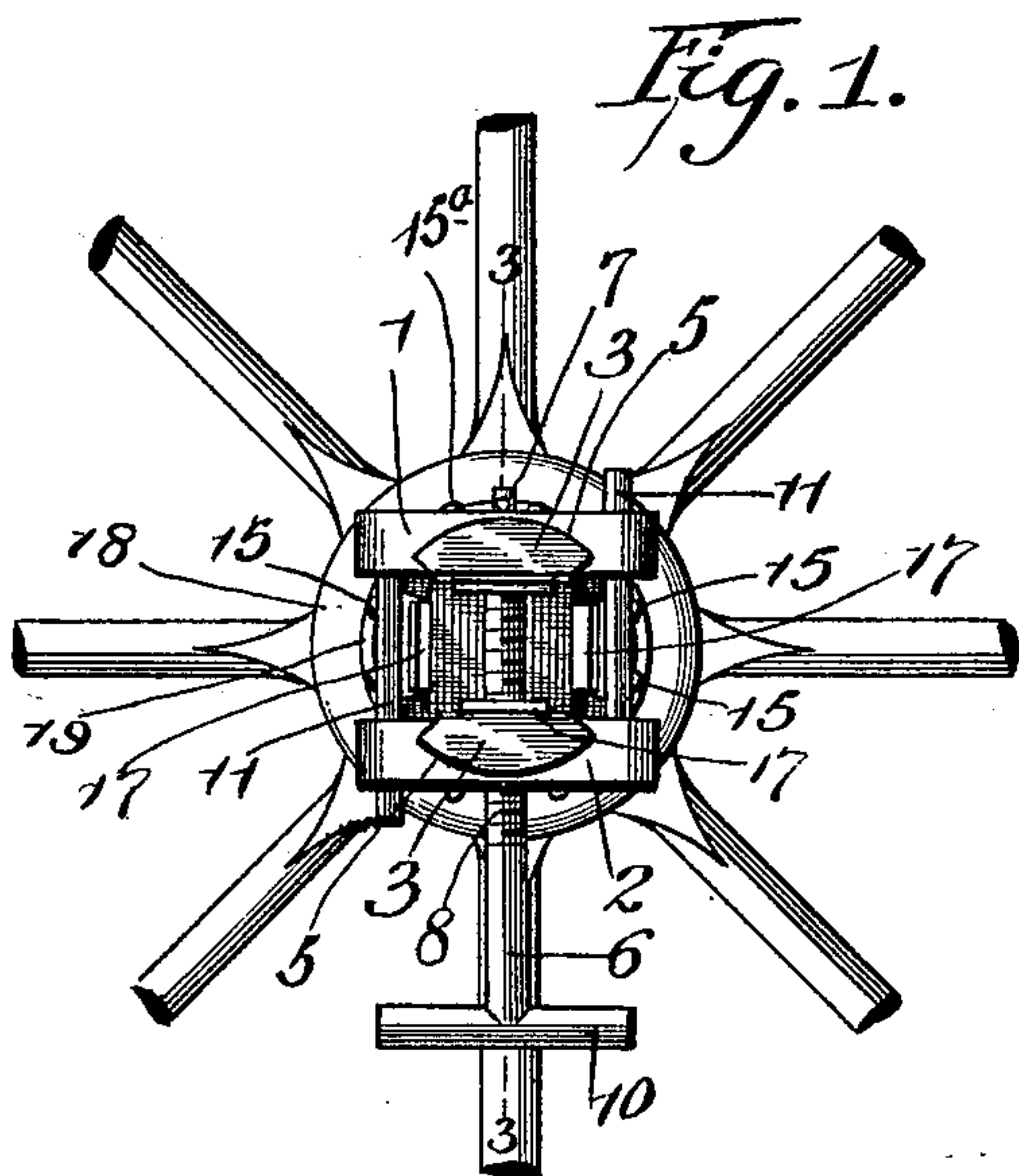
No. 636,649.

Patented Nov. 7, 1899.

W. J. FAY.
WHEEL WRENCH.

(Application filed June 3, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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FOURTH TO VICTOR A. PERNOT, OF SAME PLACE.

WHEEL-WRENCH.

SPECIFICATION forming part of Letters Patent No. 636,649, dated November 7, 1899.

Application filed June 3, 1899. Serial No. 719,213. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM JOHN FAY, a citizen of the United States, residing at Colegrove, in the county of Los Angeles and State of California, have invented a new and useful Wheel-Wrench, of which the following is a specification.

This invention relates to an improved wheel-wrench; and it has for its object to effect certain new and useful improvements in wrenches of this character whereby the same may be more readily manipulated in applying the same to the hub-band and axle-nut of a vehicle-wheel, so that by revolving the wheel the nut may be removed and replaced.

To this end the invention contemplates a novel construction of a wheel-wrench that is designed to be firmly clamped within and to the hub-band of a vehicle-wheel and having simple and efficient means for causing nuts of all sizes to be removed and replaced when the wheel is revolved in the proper direction.

A further object of the invention is to construct the wrench so that the same will be reversible and capable of being used from either side thereof, and also to provide the wrench with means for holding the nut firmly centered within the hub-band in its natural position for being screwed back upon the threaded extremity of the spindle.

In the accomplishment of these objects the invention is intended to displace the different-sized wrenches which are usually required in the stables where a number of vehicles are kept with various sizes of axle-nuts, as the wrench forming the subject-matter of the present application is capable of removing and replacing axle-nuts of all sizes.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter fully described, illustrated, and claimed.

While the essential features of the invention are necessarily susceptible to modification without departing from the spirit or scope thereof, still the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a front view of a portion of a

vehicle-wheel, showing a wrench constructed in accordance with this invention applied thereto. Fig. 2 is a detail in perspective of the wrench. Fig. 3 is a sectional view on the line 3 3 of Fig. 1, showing the engagement of the wrench with the inner periphery of the hub-band and the polygonal surface of the axle-nut. Fig. 4 is a sectional view of the wrench on the line 4 4 of Fig. 3.

Referring to the accompanying drawings, the numerals 1 and 2 designate a pair of duplicate oppositely-arranged heads, which are relatively fixed and movable and are disposed in parallelism. Each of the said relatively fixed and movable heads 1 and 2 has projected from opposite sides thereof the oppositely-extending clamp-jaws 3, which by reason of projecting from opposite sides of said heads make the wrench reversible, so that it can be used from either side of the heads, as will be readily seen from Fig. 3 of the drawings. It will be further observed that the clamp-jaws 3, projecting from one side of the heads 1 and 2, are thicker than those projecting from the opposite side of said heads. By reason of this construction the wrench is not only made reversible, so that it can be used from either side of the heads, but the different thicknesses of the opposite pairs of clamp-jaws also adapt the wrench to the varying distances between axle-nuts and hub-bands, as the space or distance between the axle-nut and hub-band is not uniform in different wheels.

The clamp-jaws 3, carried by the opposite heads 1 and 2, are preferably formed integral with such heads and bear a parallel relation to each other, said clamp-jaws being provided with flat inner faces 4, which provide for properly gripping or engaging the polygonal surface of the axle-nut, and with rounded or convexed outer sides 5, which conform in curvature to the inner periphery of the hub-band, thereby enabling the clamp-jaws to be firmly clamped within the said band.

To provide for the relative adjustment of the clamp-jaws carried, respectively, by the heads 1 and 2, there is employed a screw-stem 6. One extremity of the screw-stem 6 is reduced at 7 and is swiveled centrally in the relatively-fixed head 1, while the intermediate

portion of the stem is provided with exterior threads 8, engaging the threaded opening 9, formed centrally in the movable jaw-carrying head 2. The end of the screw-stem opposite the swiveled connection with the jaw-carrying head 1 is provided with a handle 10, which is grasped by the operator to provide for rotating the stem to cause a consequent relative adjustment of the two jaw-carrying heads.

The jaw-carrying heads and the clamp-jaws carried thereby are maintained in proper working relation by a pair of oppositely-arranged parallel guide-rods 11, disposed, respectively, at opposite sides of the plane of the screw-stem 6 and parallel therewith. Each of the jaw-carrying heads has one of the guide rods or bars 11 rigidly fitted in one end thereof, as at 12, thereby leaving said guide rod or bar free to slide or work through the guide-opening 13, formed in the opposite end portion of the other or opposing jaw-carrying head. It will thus be seen that the guide rods or bars 11 are reversely arranged and respectively fitted to the opposite jaw-carrying heads, so as to firmly hold the said jaw-carrying heads and the jaws carried thereby always in a correct position for application to the hub-band and axle-nut of a vehicle-wheel.

The axle-nut is properly centered within the hub-band between the jaws of the wrench by means of a plurality of flat centering-springs 14, which are grouped in the space confined within the jaws and the guide rods or bars, which slidably connect the same together. A pair of the said centering-springs 14 are secured intermediate their ends by the rivets or equivalent fastenings 15, respectively, to the inner sides of the opposite guide rods or bars 11 between the jaw-carrying heads 1 and 2, while a second pair of said springs 14 are arranged at right angles to the plane of the other pair of springs and are fastened intermediate their ends by the rivets or equivalent fastenings 15^a to the inner sides of the jaw-carrying heads. The springs which are fitted to the inner sides of the jaw-carrying heads lie substantially parallel to the clamp-jaws 3, and all of said springs extend beyond both sides of the plane of the screw-stem 6, so as to cooperate with the projecting clamp-jaws at each side of the jaw-carrying heads, which arrangement is necessary to make the wrench reversible.

The several centering-springs 14 are bowed slightly inward, so as to maintain a pressure on the axle-nut held between the jaws, and to facilitate the insertion of the axle-nut between the springs the latter are provided at their extremities with the outwardly-deflected guide-lips 17. The guide-lips 17 of the several springs 14 provide a flaring mouth at both ends of the spring, which permits of the ready application thereof to the axle-nut.

In order to show the application of the invention, a portion of an ordinary vehicle-wheel is illustrated in the drawings, and this wheel is provided with the usual hub 18 and

hub-band 19, said hub rotating upon the axle-spindle 20, which is provided with the threaded tip 21 for receiving the usual axle-nut 22, which is located inside of the hub-band. In applying the wrench the clamp-jaws 3 at either side of the jaw-carrying heads are inserted within the hub-band 19, thereby carrying the centering-springs over the polygonal surface of the axle-nut 22, after which the screw-stem 6 is turned to provide for separating the jaw-carrying heads and tightly binding the outer convexed sides of the jaws against the inner periphery of the hub-band. By now revolving the wheel in the proper direction the axle-nut will be screwed off the spindle extremity and held centered by the springs 14 within the hub-band ready for being replaced in a similar manner. The manner in which the axle-nut is held centered within the hub-band is plainly shown in Fig. 3 of the drawings, and at this point it will be observed that by reason of holding the axle-nut in this position the same is protected from dirt or from being mislaid during the lubrication of the axle-spindle.

From the foregoing it is thought that the construction, operation, and the many advantages of the herein-described wheel-wrench will be readily apparent to those skilled in the art without further description, and it will be understood changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

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

1. In a wheel-wrench, the combination with two opposite relatively fixed and movable heads, of oppositely-extending clamp-jaws projecting from the sides of each head, and a single spring attached to the inner side of each head and extending across and cooperating with both jaws of the same head, whereby the wrench is made reversible, substantially as set forth.

2. In a wheel-wrench, the combination with a pair of opposite relatively fixed and movable heads, of oppositely-extending clamp-jaws of varying thickness projecting from the sides of each head, a single flat-bowed spring attached intermediate its ends to the inner side of each head and extending across and cooperating with both jaws of the same head, the free ends of the springs having outwardly-deflected guide-lips, and an operating-screw for moving the heads toward and away from each other, substantially as described.

3. In a wheel-wrench, the combination with a pair of opposite relatively fixed and movable heads having oppositely-disposed clamping-jaws, of guide-rods slidably connecting the heads, means for adjusting the heads, and a pair of springs fastened respectively to the guide-rods and adapted to grasp the sides of

a nut, said springs being simultaneously adjustable with the heads, substantially as described.

4. In a wheel-wrench, the combination with
5 a pair of opposite relatively fixed and movable heads having oppositely-disposed clamping-jaws, of a pair of springs fastened intermediate their ends to the respective heads and extending along the said jaws respectively,
10 guide-rods slidably connecting the heads, springs fastened to the guide-rods intermediate their ends and cooperating with the springs of the jaws, and means for adjusting the heads, substantially as described.

15 5. In a wheel-wrench, a pair of opposite relatively fixed and movable heads having projected from the sides thereof oppositely-extending clamp-jaws, an operating-screw ad-

justably connecting said heads, a pair of guide-rods arranged respectively at opposite sides 20 of the screw and slidably connecting the heads, and a plurality of centering-springs grouped in the space between the jaw-carrying heads and guide-rods, a pair of said springs being secured intermediate their ends respectively 25 to the opposite guide rods or bars, and a second pair of said springs being secured intermediate their ends to the inner sides of the jaw-carrying heads, substantially as set forth.

In testimony that I claim the foregoing as 30 my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM JOHN FAY.

Witnesses:

G. G. JOHNSON,
A. DIXON.