

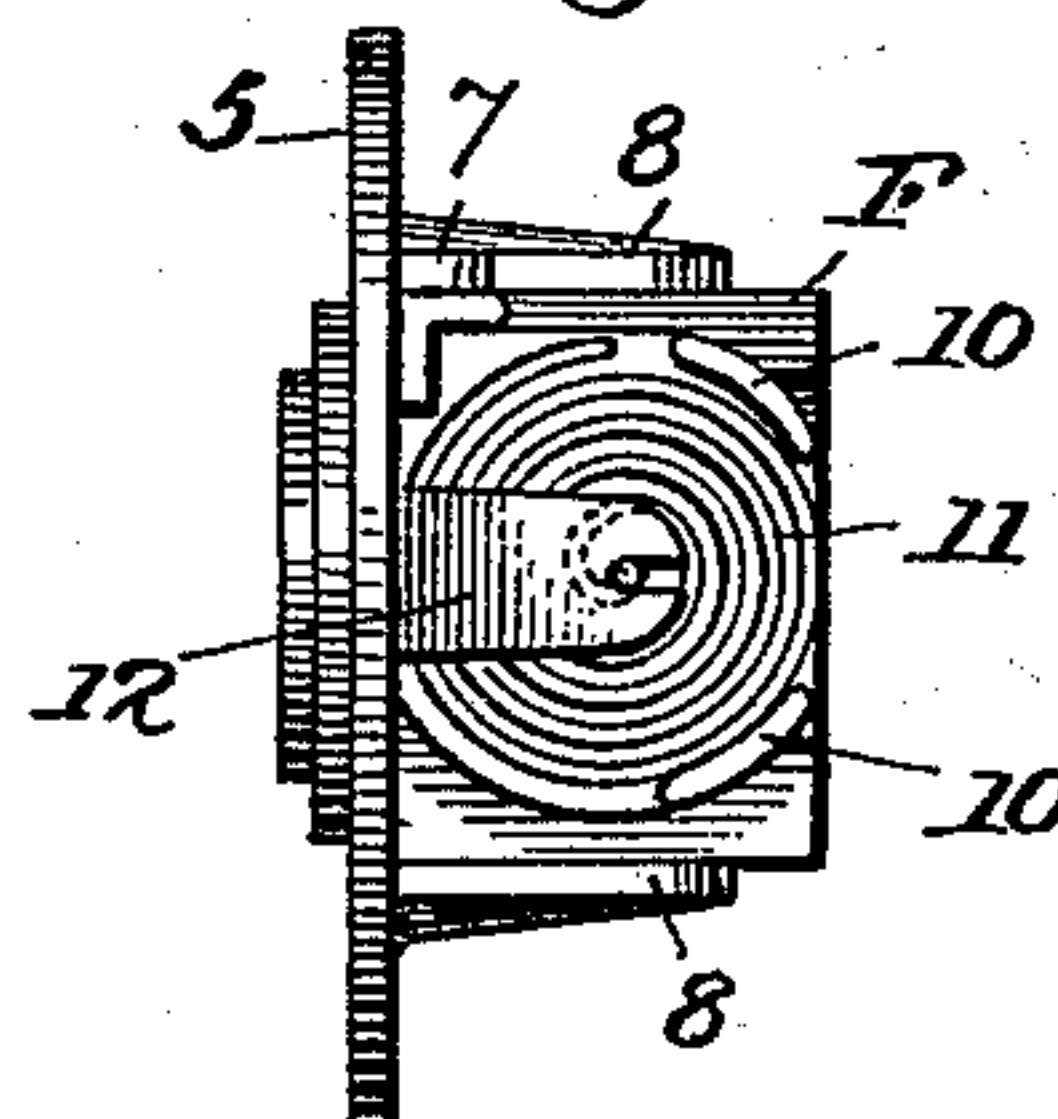
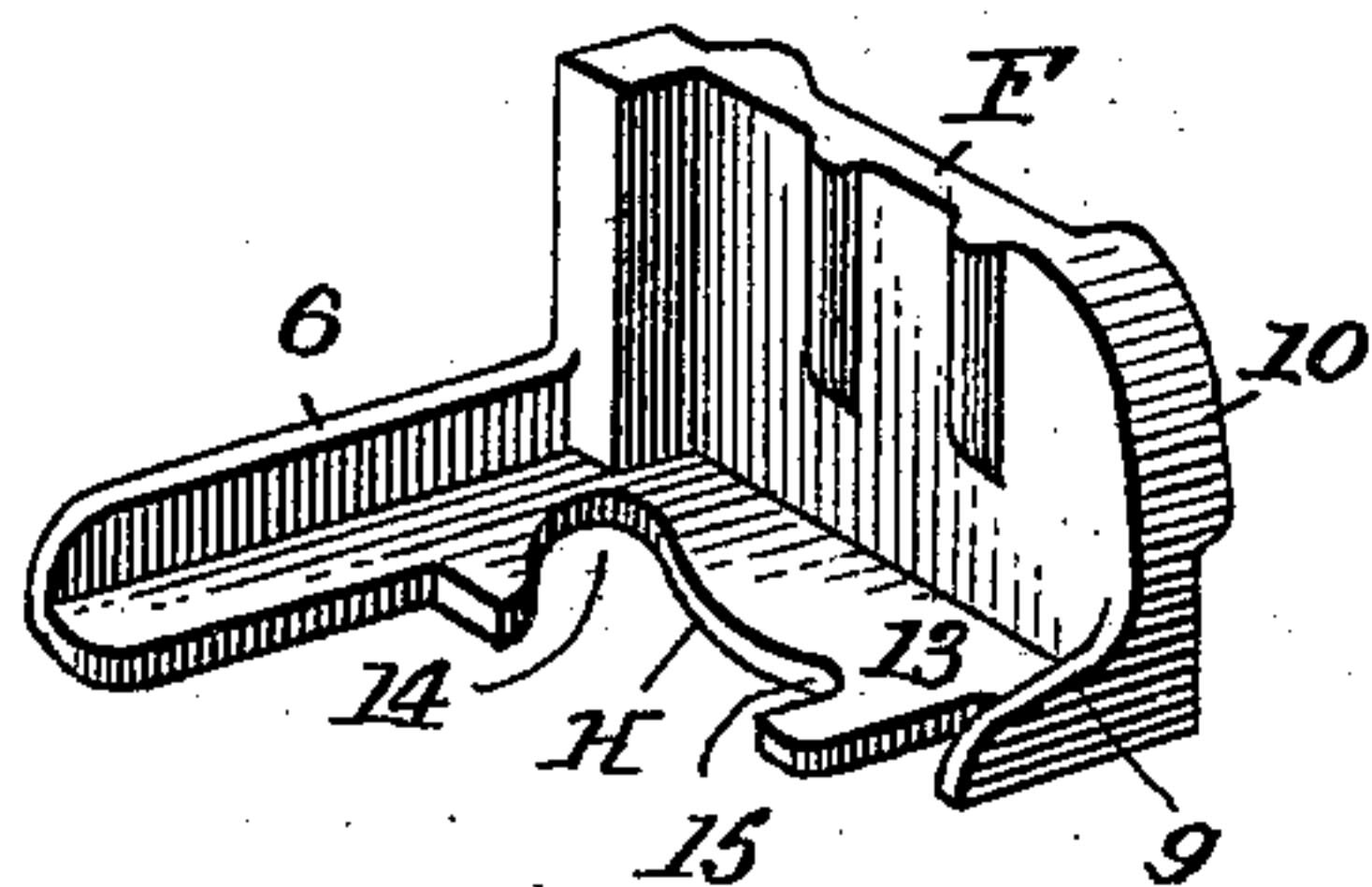
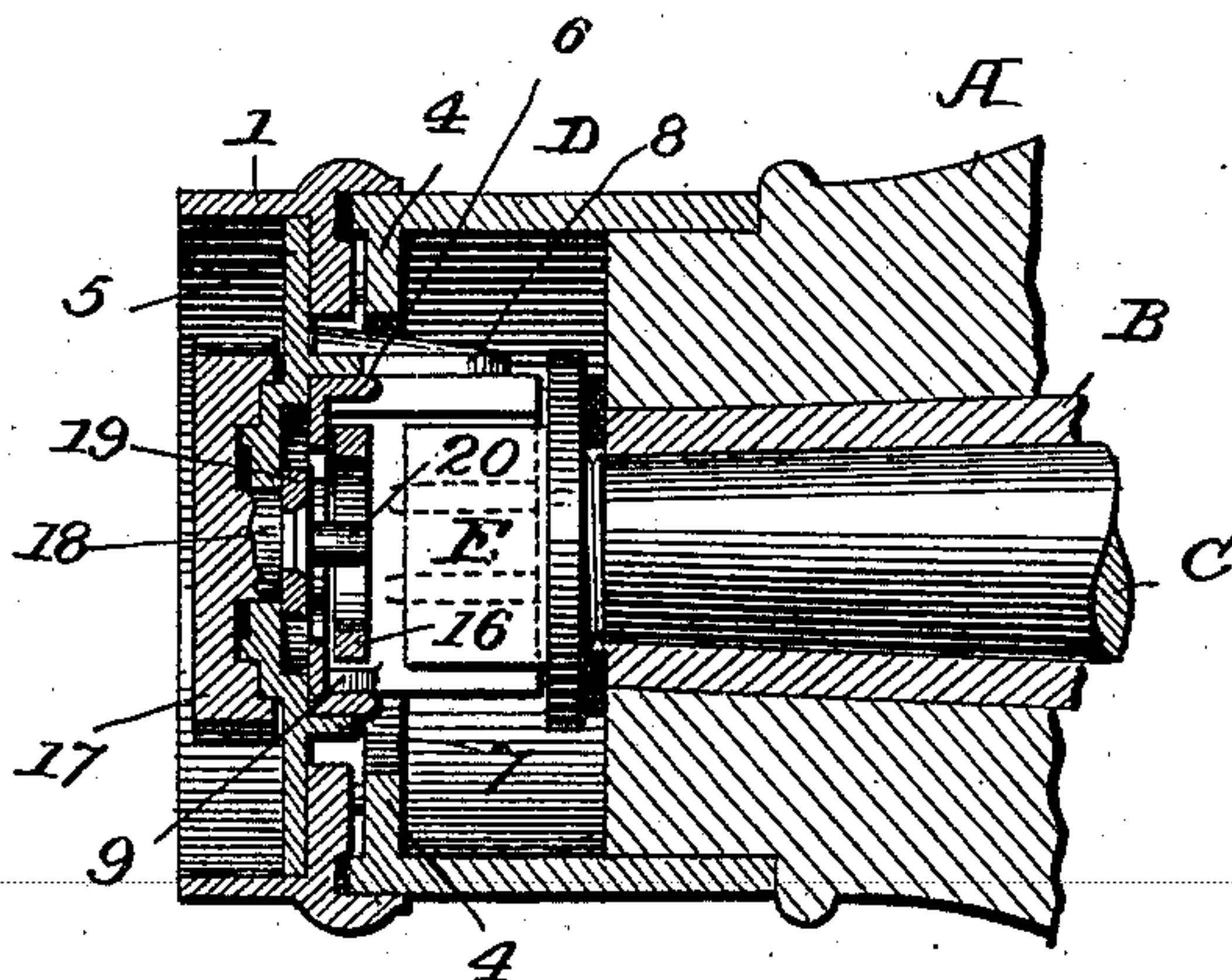
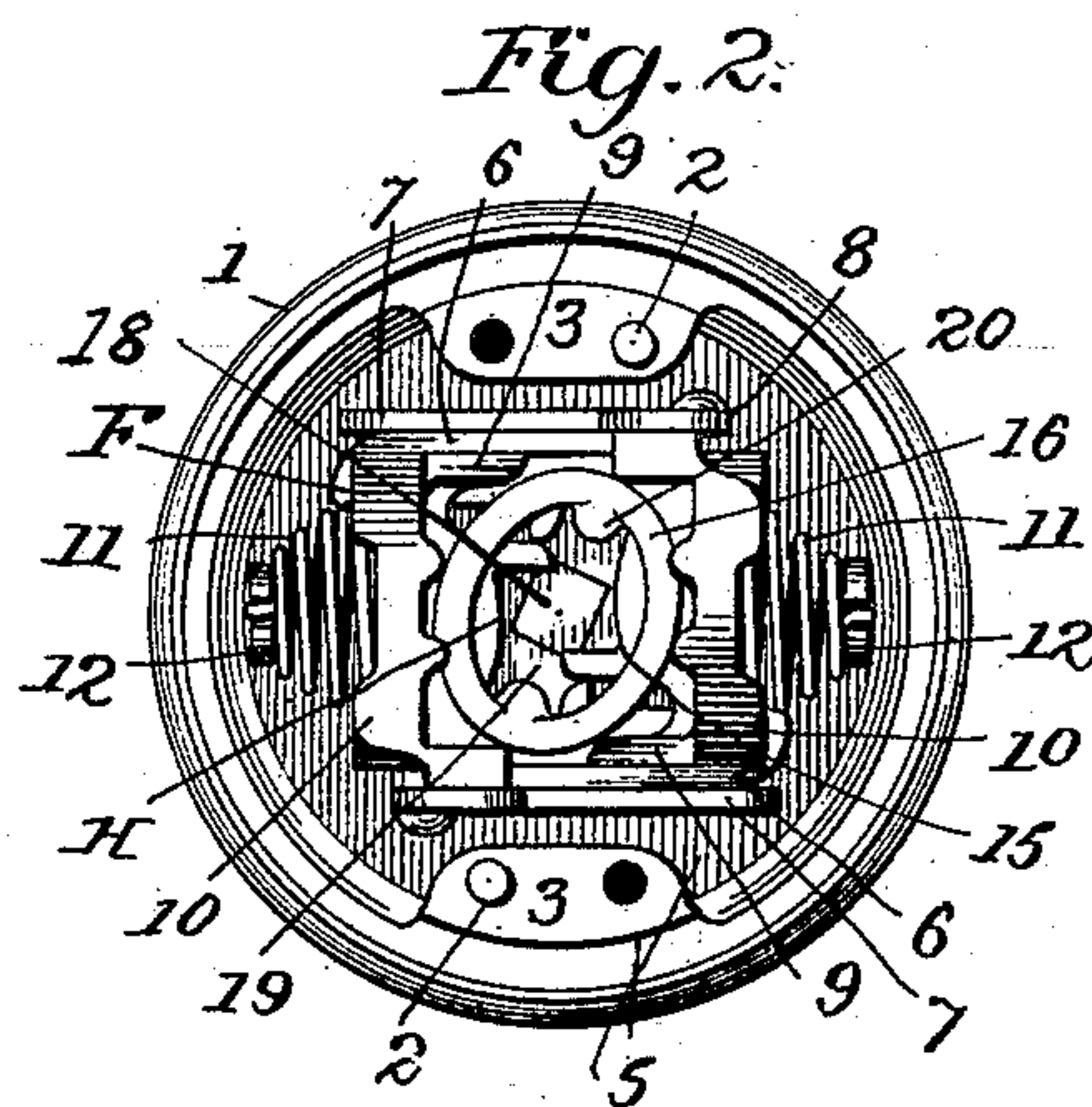
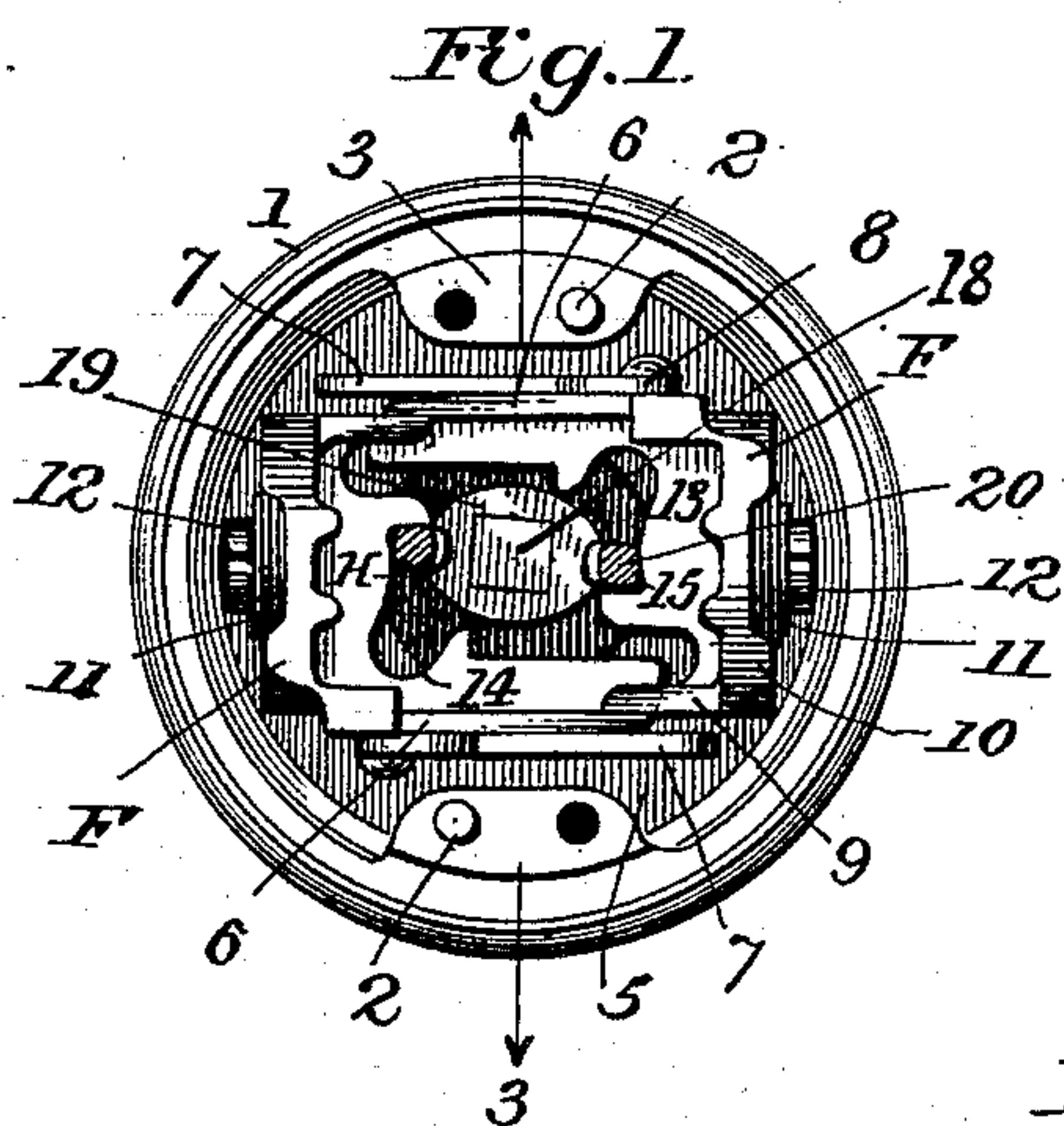
No. 622,878.

Patented Apr. 11, 1899.

A. W. ANTHOINE.
HUB ATTACHING DEVICE.

(Application filed June 18, 1898.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED W. ANTHOINE, OF LEWISTON, MAINE, ASSIGNOR OF ONE-HALF TO
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HUB-ATTACHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 622,878, dated April 11, 1899.

Application filed June 18, 1898. Serial No. 683,789. (No model.)

To all whom it may concern:

Be it known that I, ALFRED W. ANTHOINE, a citizen of the United States, residing at Lewiston, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Vehicle-Hub Wrenches, of which the following is a specification.

The object of the present invention is to produce a simple and effective hub-wrench for vehicle-wheels.

The invention consists in various details of construction and arrangement, which will be pointed out in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is an inner face view of a device embodying the invention, partly in cross-section, a part being removed and the wrench being shown open. Fig. 2 is an inner face view showing the wrench closed. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of one of the jaws; and Fig. 5 is a side view of a jaw, showing the cooperating guides and spring.

Referring to the drawings, A indicates a hub; B, the box within the hub; C, the spindle on which the wheel turns; D, the outer band of the hub, and E the usual nut for retaining the hub on the spindle.

My invention consists in a device whereby the hub may be connected with the nut E and the nut removed and replaced by simply turning the wheel, the device being made a permanent attachment of the hub, so that no wrench need be carried in the vehicle.

The hub-wrench comprises a ring 1, which is attached to the band D and forms to all appearances a continuation of the band. As shown, the ring 1 is attached to the band by screws 2, which connect inwardly-projecting flanges 3 upon the ring with an inwardly-projecting flange 4 upon the band. Any other suitable means of connecting the ring and band may be used. Upon the ring 1 is a plate 5, which carries the working parts of the invention. A pair of jaws F are supported upon the plate 5 and movable toward and from each other to grip and release the nut E, as will be presently explained. As shown in the drawings, each jaw F has a right-angled side por-

tion 6, which slides in contact with a guide 7 upon the plate 5. The guide 7 is L-shaped, having an upward extension 8, which serves to support the jaw F when it is closed upon a nut. Upon the opposite side of each jaw is a short straight side 9, which slides within the right-angled side 6 of the opposing jaw, as shown in Figs. 1 and 2. Each jaw therefore is guided between the guides 7 8 on one side and the right-angled portion of the opposing jaw on the other, the two jaws, taken as a whole, being guided between the pair of guides 7 8, which are rigidly supported on the plate 5.

The outer faces of the jaws have flanges 10, which confine the ends of spiral springs 11, said springs being interposed between the jaws and fixed abutments 12 and having a tendency to close the jaws. The abutments 12 are supported on the plate 5 and are forked at their ends to receive the ends of the springs, as shown in Figs. 2 and 5. The abutments and guides are preferably formed integral with the plate 5. Within each jaw, between the guide portions 6 and 7, is a web 13, having a cam H, which has a larger recess 14, a smaller recess 15, and an intermediate curved surface, the function of which cam will be presently described. The jaws are held in contact with the plate 5 by an oval ring 16, which lies within the jaws and is connected to a hand-operated nut 17 on the outside of the plate 5. The nut 17 has a shank 18, which extends through the plate 5 and is rigidly connected to a socket 19, and the socket 19 is connected with the ring 16 at opposite ends by short rods or pins 20. (Best shown in Figs. 1 and 3.) The rods 20 operate on the cams H, as will be presently explained.

For convenience of construction the ring 16, the socket 18, and the rods 20 are cast in one piece. In assembling the parts the shank of the nut 17 is inserted in an opening in the socket 19 and permanently secured therein by swaging the end of the shank or in any other suitable manner. For convenience also the guides 7 8 and the abutments 12 are cast in one piece with the plate 5. The joint between the ring 1 and the band D and also the joints between the nut 17 and the plate 5 and between the plate 5 and the ring 1 are

suitably packed to keep out dust and prevent the evaporation of the oil from the spindle.

The operation of the invention is as follows: Normally the jaws of the clamp are pressed apart, as shown in Fig. 1, the rods 20 being located in the recesses 15 of the cams. The jaws are locked in this position because of the tendency of the rods 15 to stay in the recesses on account of the nature of the curve between the recesses 14 and 15. In this position the jaws are so far apart that they are free from the nut E, and as the wheel revolves the jaws revolve about the nut E, which remains stationary. When it is desired to remove the nut E, the hand-nut 17 is turned so as to bring the rods 20 into the larger recesses 14 of the cams. These recesses permit the rods 20 to turn into the position shown in Fig. 2. Simultaneously the jaws are closed upon the nut E by the springs 11. Upon turning the wheel backward the nut E can now be unscrewed and the wheel removed from the spindle. The twisting strain imposed upon the jaws of the clamp in unscrewing the nut is sustained by the stationary guides 7 and 8, the jaws being L-shaped and having their side portions resting upon said guides. The jaws are securely held in place by the springs 11 and the elliptical ring 16. When the wheel is removed, the nut remains clamped within the jaws of the wrench, and upon replacing the wheel and turning it forward the nut is again screwed onto the spindle. After the nut is screwed into place the hand-nut 17 is turned to spread the jaws into position shown in Fig. 1, thus leaving the wheel free to turn in either direction without affecting the nut E.

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

1. The combination with the hub of a vehicle, of a hub-wrench permanently connected thereto and comprising a transverse plate, a pair of guides fixed upon the plate, opposing jaws sliding in said guides, springs tending to press the jaws inward, cams upon said jaws and means operated by a hand-nut for spreading the jaws, substantially as described.

2. In a hub-wrench, the combination with a spindle and spindle-nut, of a hub turning on the spindle, a transverse plate secured to the hub, L-shaped guides on said plate, clamping-jaws sliding in said guides and adapted to grip the spindle-nut when closed and revolve freely about the spindle-nut when open, springs tending to press said jaws inward, cams and a pair of cooperating pins for spreading the jaws and locking them in the spread position, and means for turning said pins to open and close the jaws, substantially as described.

3. In a hub-wrench, the combination with the fixed L-shaped guides of the opposing wrench-jaws, each jaw having a longer side adjacent to one of the fixed guides and a shorter side which is guided in the longer side of the opposing jaw, a web at the base of each jaw provided with a cam-surface, means for operating upon the cams to separate the jaws, and springs pressing on the backs of the jaws, substantially as described.

4. In a hub-wrench, the combination with the opposing jaws having the webs at their bases and the cam-openings in the webs of the rings 16 overlying the webs, the pins 20 connected with the ring and cooperating with the cams, and means for turning the ring and pins to separate the jaws, substantially as described.

5. In a hub-wrench, the combination with the plate 5, of the fixed guides, the opposing jaws sliding in the guides, the webs at the bases of the jaws and provided with cam-surfaces, the ring overlying said webs, the pins connected with the ring and cooperating with the cams, the socket to which said pins are connected and the hand-nut 17 upon the outside of the plate, said hand-nut being securely connected with said socket, substantially as described.

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

ALFRED W. ANTHOINE.

Witnesses:

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