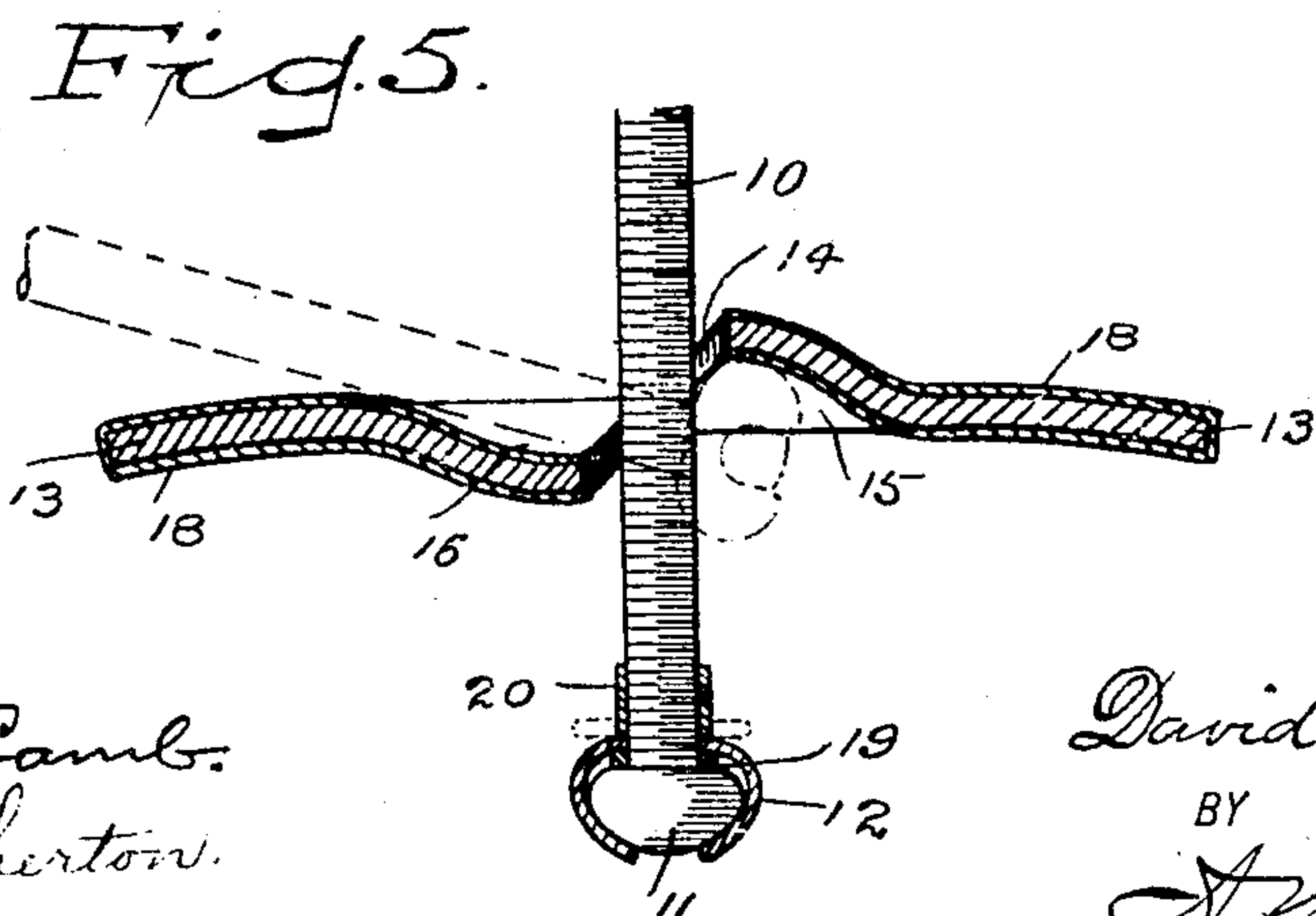
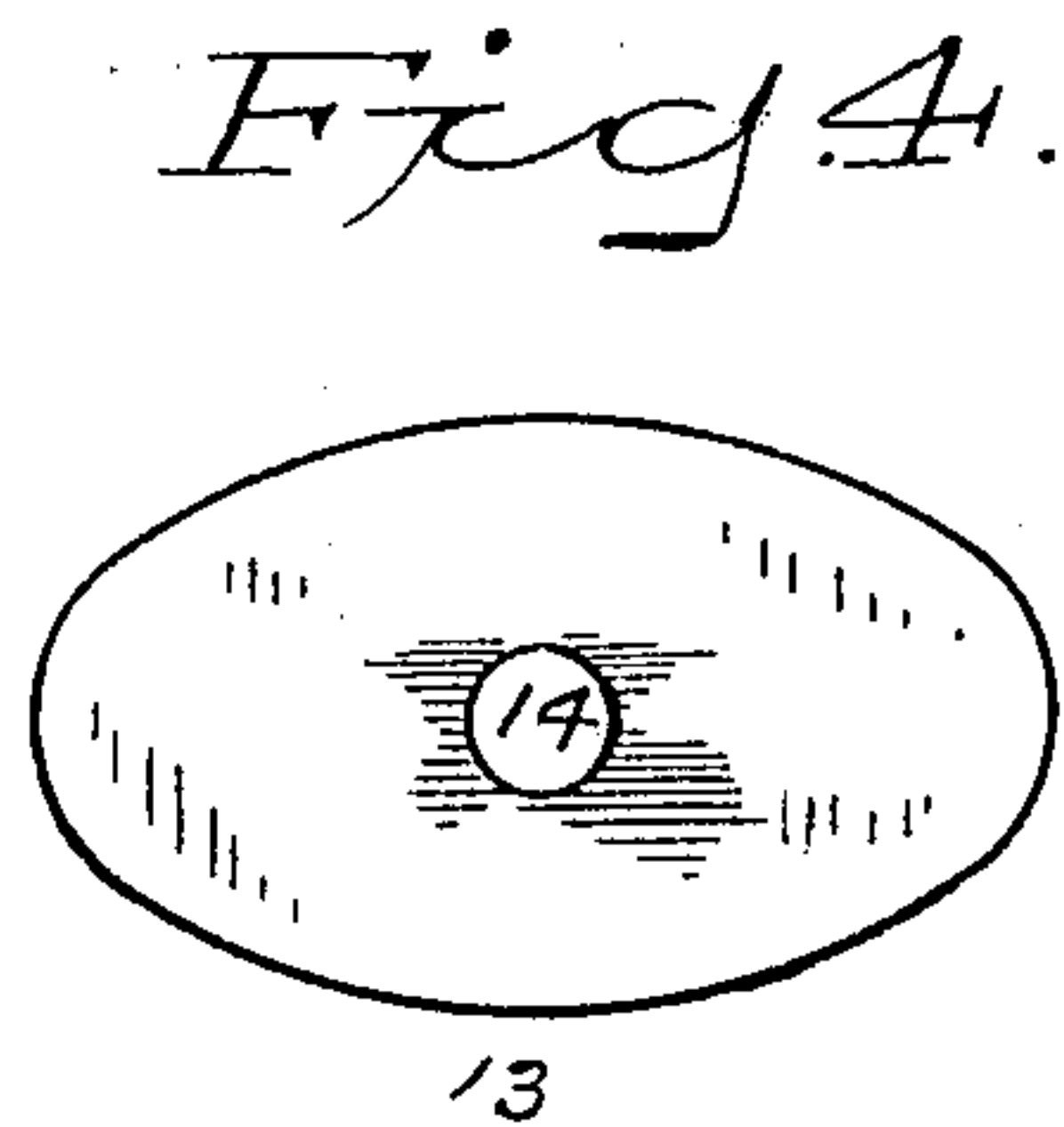
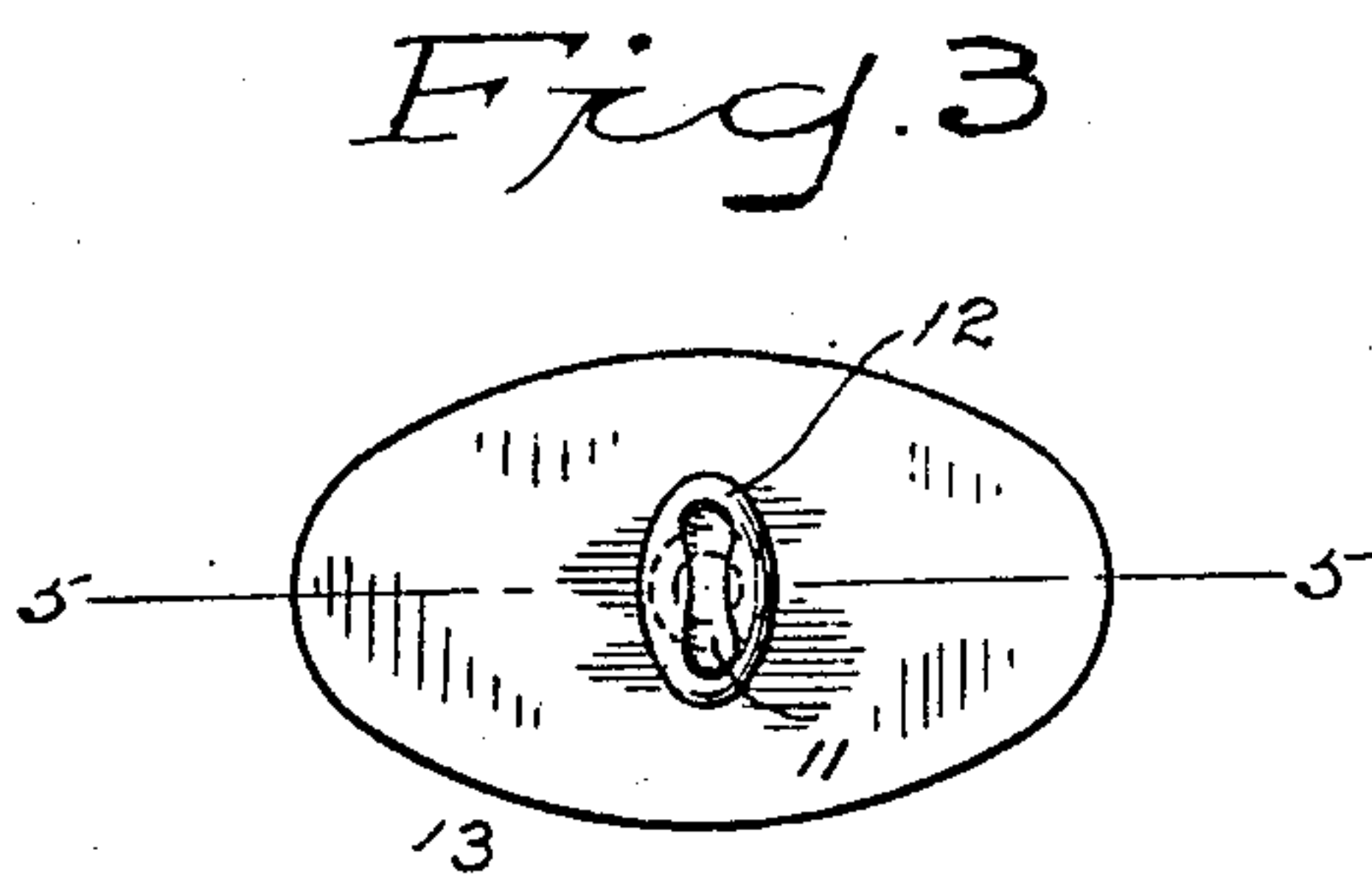
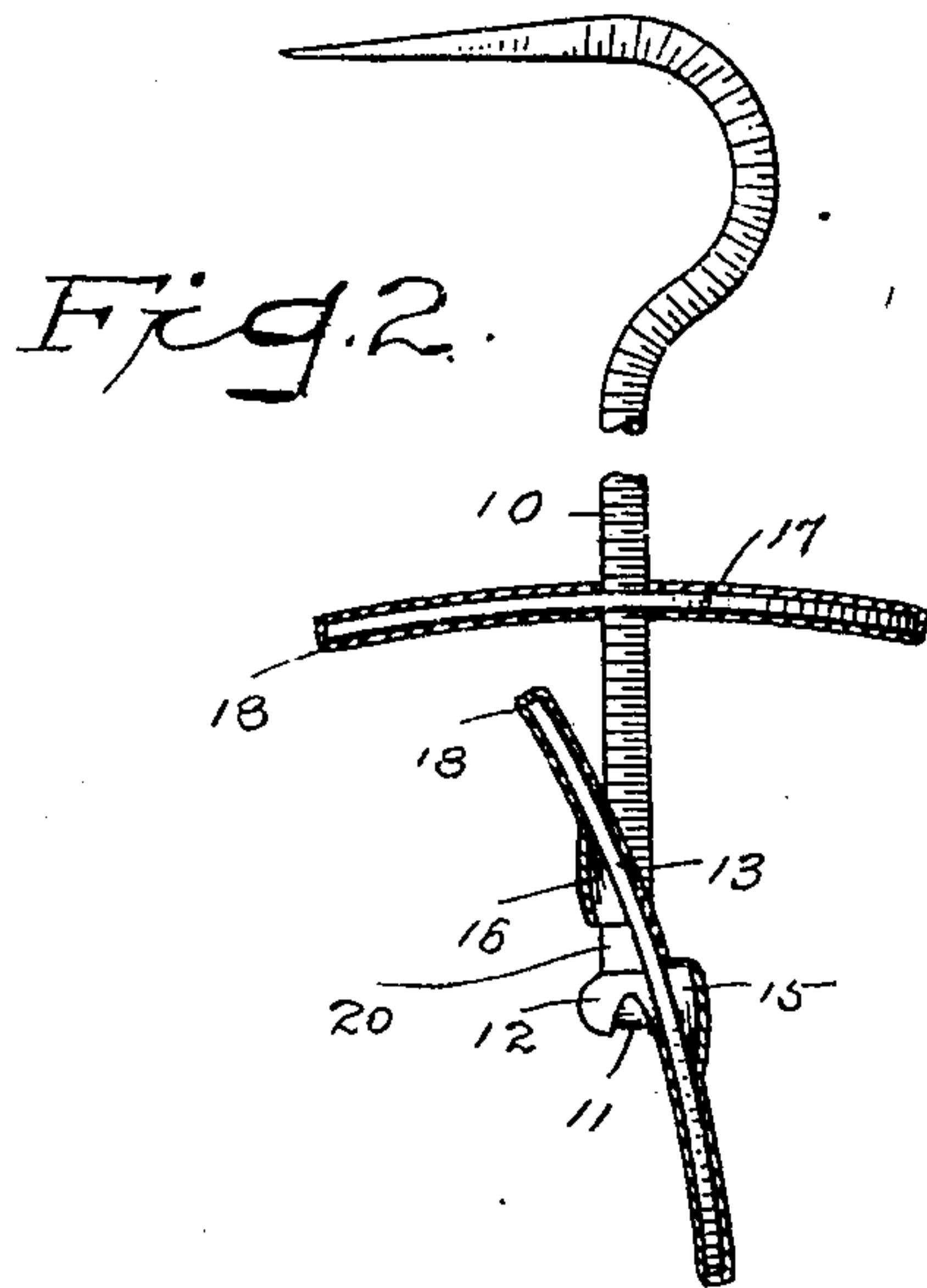
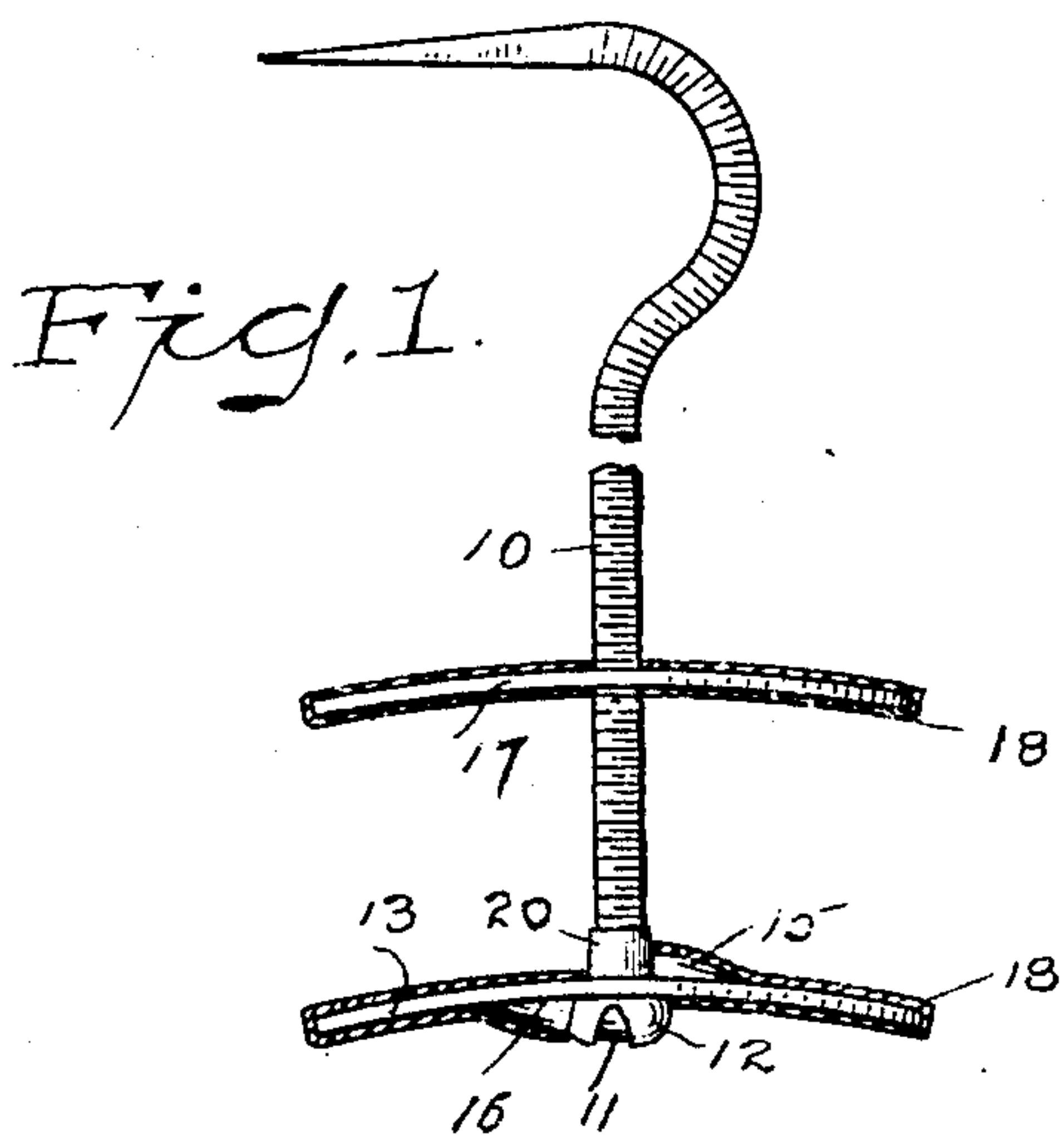


D. APSTEIN.
PUNCTURE CLOSER FOR PNEUMATIC TIRES.
APPLICATION FILED JULY 23, 1907.

906,601.

Patented Dec. 15, 1908.



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DAVID APSTEIN, OF BRIDGEPORT, CONNECTICUT.

PUNCTURE-CLOSER FOR PNEUMATIC TIRES.

No. 906,601.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed July 23, 1907. Serial No. 385,149.

To all whom it may concern:

Be it known that I, DAVID APSTEIN, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Puncture-Closer for Pneumatic Tires, of which the following is a specification.

This invention relates to puncture closers for pneumatic tires and has for its object to simplify and cheapen their construction and to greatly improve their operation in use.

With these ends in view I have devised the simple and novel puncture closer of which the following description in connection with the accompanying drawing is a specification, reference characters being used to indicate the several parts.

Figure 1 is an elevation on an enlarged scale, of my novel puncture closer, the inner and outer plates being in position as when gripping the inner and outer sides of a tire; Fig. 2 a similar view, the outer plate being turned backward on the shank and the inner plate being in the inserting position; Fig. 3 an inverted plan view corresponding with Fig. 1; Fig. 4 an inverted plan view of the inner plate removed; and Fig. 5 is a section on a still larger scale on the line 5—5 in Fig. 3.

My present invention comprises four essential elements, viz: a threaded shank, an elongated cap swiveled thereon, an inner plate adapted to be passed through a puncture and to lie upon the inner side of a tire and an outer plate engaging the shank and adapted to be turned down closely upon the outer side of the tire.

10 denotes the shank which is threaded and is provided with a head 11.

12 denotes an elongated cap which is swiveled on the head.

13 denotes the inner plate which is blanked out from sheet metal to the required approximately oval configuration. At the center of the inner plate is a hole 14 through which the shank passes freely. The under side of the inner plate is provided upon one side of the hole with a transverse depression 15 forming a socket which partly receives the elongated cap, and in its upper side on the opposite side of the hole with a longitudinal groove 16 which receives the shank when the inner plate is turned to the inserting position, as in Fig. 2. The hole, the depression and the groove may all be formed simultaneously with the blanking out of the inner plate.

17 denotes the outer plate which is also

blanked out from sheet metal and is provided with a central hole threaded to engage the shank. In practice, the inner and outer plates are preferably correspondingly shaped and are curved slightly to correspond respectively with the curvature of the inner and outer sides of a tire.

In order to insure a perfectly tight connection with the tire, I cover both the inner and outer plates with rubber, which is indicated by 18. This coating or covering of rubber may be applied in any suitable manner as by molding the parts in rubber or dipping them in a solution of rubber, the object being to pad or cushion the parts so as to cause them to make a close and perfectly air-tight engagement with the inner and outer sides of a tire.

19 denotes a washer which I preferably interpose between the head and the cap and a piece of rubber tubing which I preferably place on the shank outside the cap and which is compressed against the under side of the inner plate when the latter is set to place as indicated by dotted lines in Fig. 5. The washer and piece of tubing are of course not essential but their cost is trifling and they assist in effecting a perfectly air-tight closure of a puncture, the piece of tubing being forced into the inner end of the puncture and compressed when the outer plate is tightened down upon the outer side of the tire.

The device is applied in the usual way. The puncture to be closed is enlarged, if necessary, sufficiently to permit the inner plate to be forced through when swung to the inserting position on the cap, as in Fig. 2. Having inserted the inner plate, the shank is drawn outward causing the inner plate to assume the closing position, that is at right angles to the shank as in Fig. 1. The outer plate is then turned down on the shank until it engages the outer face of the tire, after which the outer plate is held and the shank is rotated, the head turning in the cap and the inner plate remaining stationary until the tire is tightly gripped between the inner and outer plates. The outer end of the shank may be curved and recurved as shown in the drawing to form a hand piece for convenience in manipulation. After the parts are set to place, the shank is broken or cut off flush with the outer surface of the outer plate.

Having thus described my invention I claim:

1. A device of the character described, comprising a threaded shank, a cap swiveled

thereon, an inner plate loose on the shank and provided with a depression in its under side to receive the cap and a groove in its upper side to receive the shank when in the inserting position and an outer plate engaging the shank.

2. A device of the character described, comprising a threaded shank, an elongated cap swiveled thereon, an inner plate loose on the shank and provided in its under side with a transverse recess to receive the cap and in its upper side with a longitudinal groove to receive the shank and means for retaining the device in place.

3. A device of the character described, comprising a threaded shank provided with a head, a cap swiveled thereon, a washer between the head and the cap, an inner plate loose on the shank and retained by the cap, a piece of rubber tubing on the shank outside the cap and an outer plate engaging the shank.

4. A device of the character described, comprising a threaded shank having a head, and an inner plate loose on the shank and retained by the head and adapted to be swung to the inserting position thereon and means for retaining the device in place.

5. A device of the character described, comprising a threaded shank having a head, and an inner plate loose on the shank and retained by the head and adapted to be swung to the inserting position thereon, said plate being provided with a depression in its under side and a groove in its upper side, substantially as described, for the purpose specified.

6. A device of the character described, comprising a shank, a cap swiveled thereon, an inner plate through which the shank passes loosely and which is adapted to be swung to the inserting position on the cap and means for securing the device in place.

7. A device of the character described, comprising a threaded shank, a cap swiveled thereon, a rubber-coated inner plate through which the shank passes freely and which is adapted to be swung to the inserting position on the cap and a rubber-coated outer plate threaded to engage the shank.

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

DAVID APSTEIN.

Witnesses:

A. M. WOOSTER,
S. W. ATHERTON.