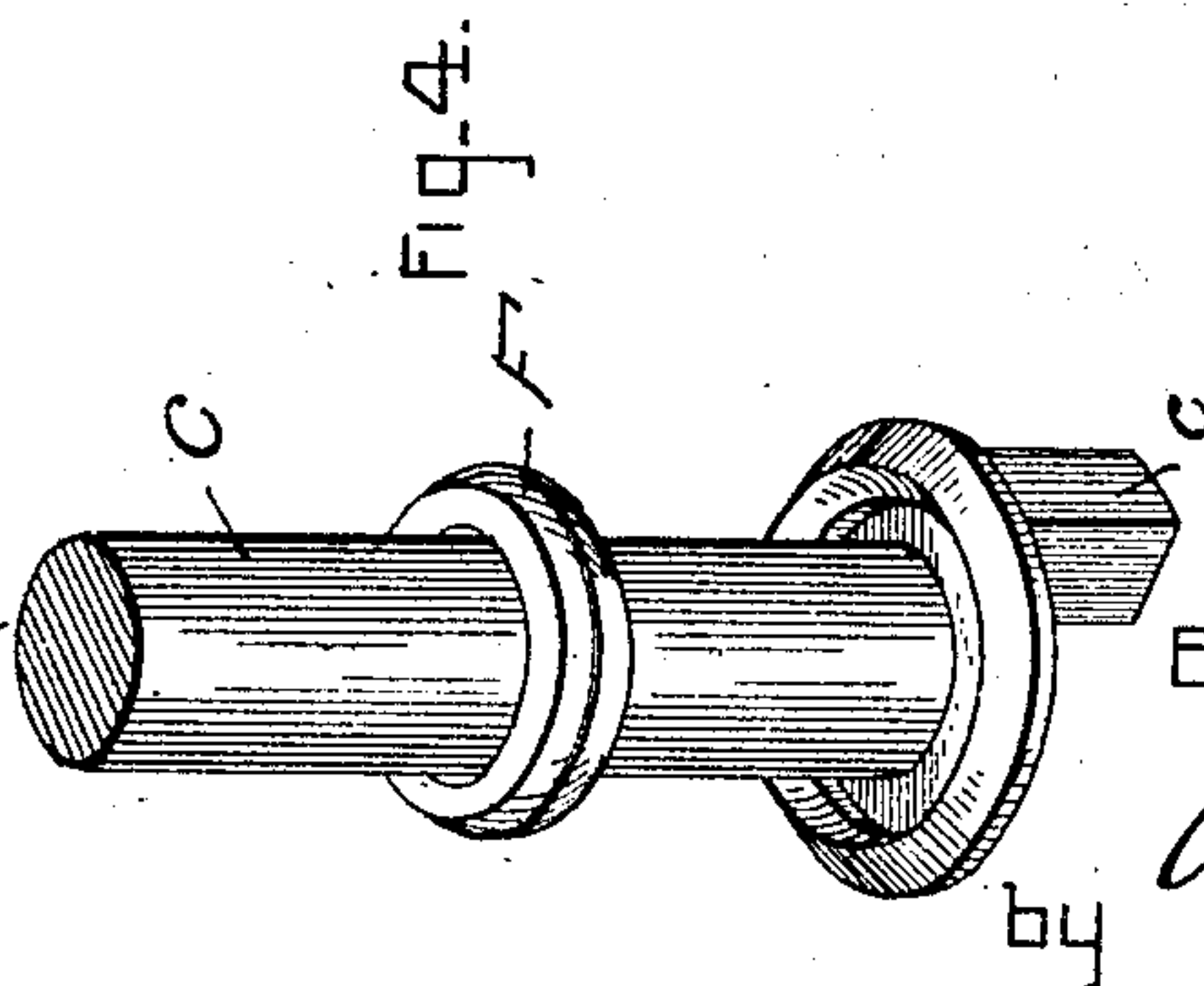
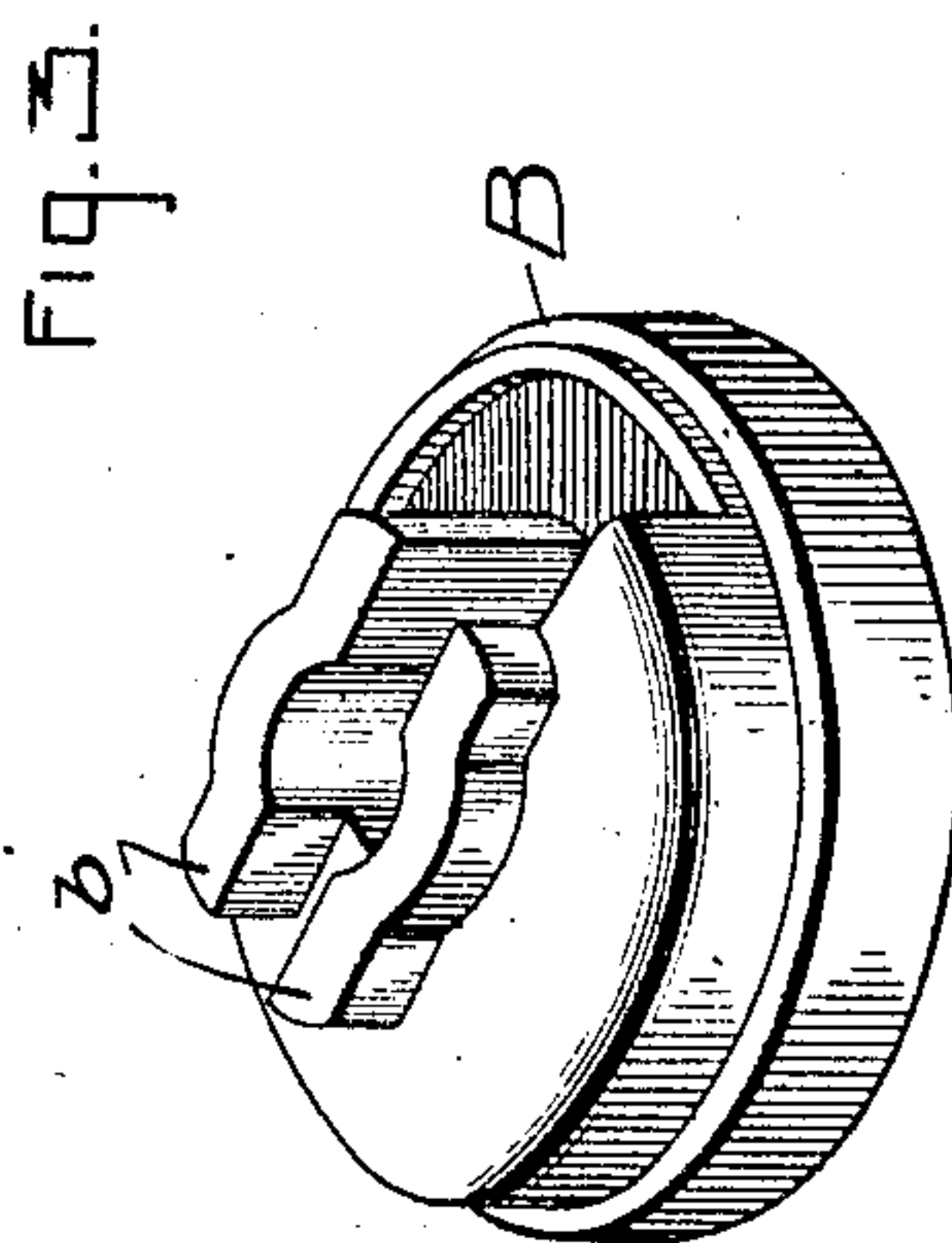
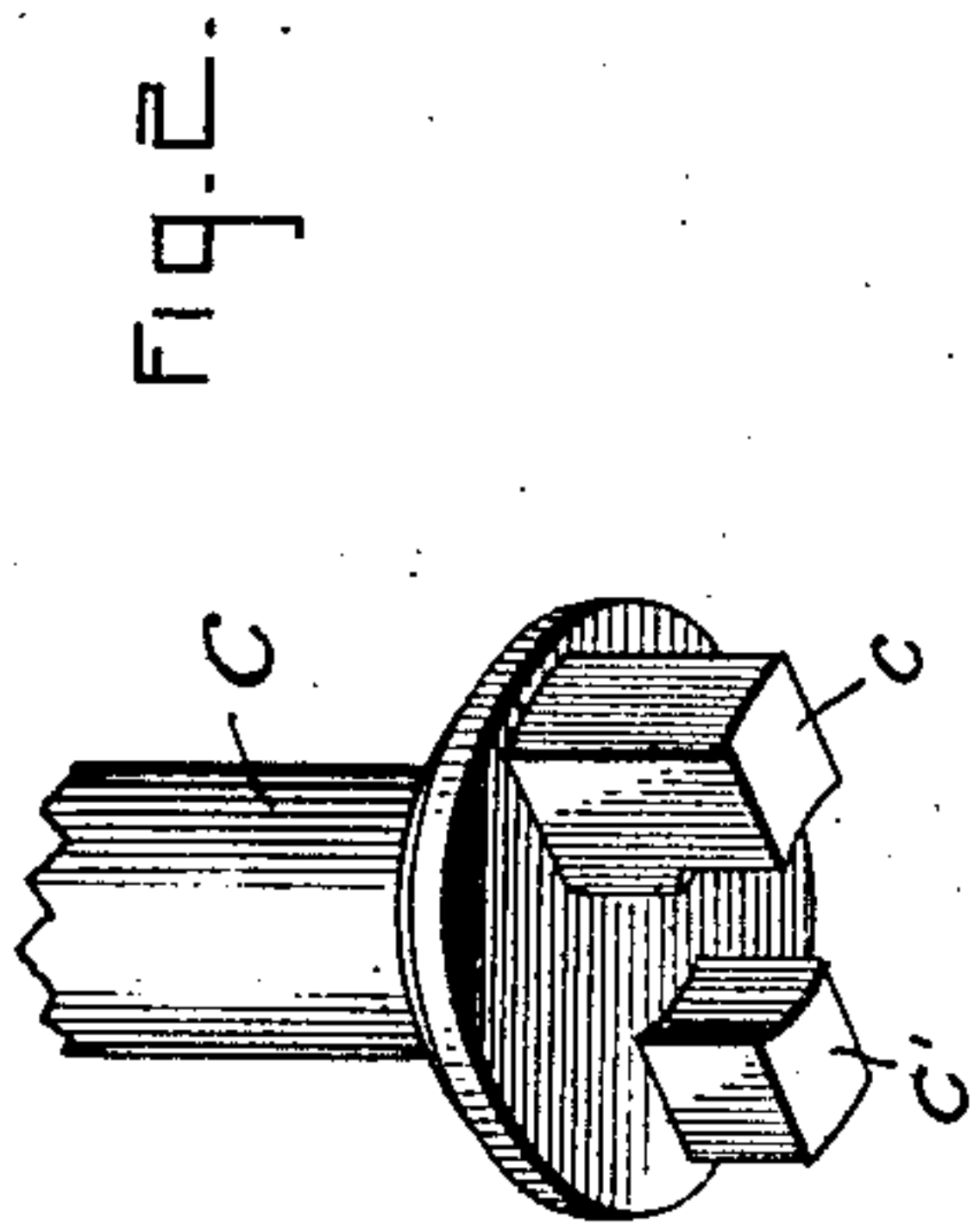
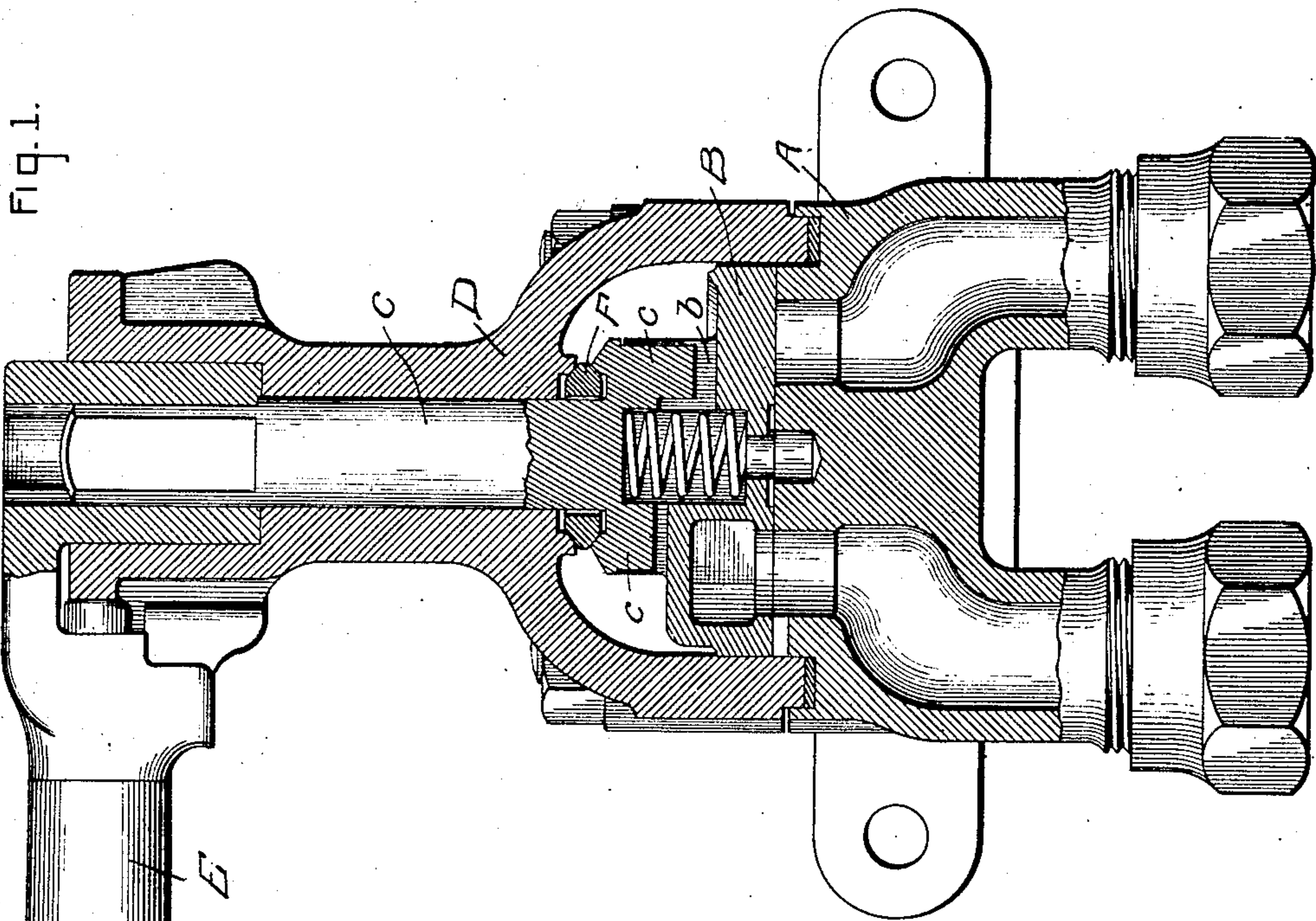


B. LEWIS.  
MOTORMAN'S VALVE.  
APPLICATION FILED JAN. 2, 1908.

919,443.

Patented Apr. 27, 1909.



WITNESSES

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ATTY.



# UNITED STATES PATENT OFFICE.

BENJAMIN LEWIS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## MOTORMAN'S VALVE.

No. 919,443.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed January 2, 1908. Serial No. 408,912.

*To all whom it may concern:*

Be it known that I, BENJAMIN LEWIS, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Motormen's Valves, of which the following is a specification.

My invention relates to motormen's valves, and its object is to produce a valve of novel design, which is cheaper in construction and more serviceable in operation than the valves now generally in use.

My invention relates to the connection between the valve and its operating spindle. The spindle should be readily detachable from the valve, but the connection between them should be such that they can be locked together in one relative position only.

One form of connection, which has been used commonly heretofore, consists of a transverse groove on the valve having its sides at an angle to each other, and a projection on the spindle tapering in a transverse direction, so that it can fit in the groove on the valve in one position only relative to the valve. Such a construction serves its purpose, but is expensive to make, since each side of the groove and each side of the projection must be machined separately.

My invention consists in forming the groove with parallel sides, but deeper at one end than at the other, and making the projection which enters the groove of a length greater than the depth of the groove at its shallower end, so that the projection can fit into the groove in one position only of the spindle relative to the valve.

My invention will best be understood by reference to the accompanying drawing, in which—

Figure 1 shows a cross-sectional elevation of a motorman's valve constructed in accordance with my invention; Fig. 2 is a detail perspective view of the lower end of the spindle; Fig. 3 is a perspective view of the valve; and Fig. 4 is another perspective view of the lower end of the spindle and of its washer.

In the drawings, A represents the valve body, the upper portion of which forms a valve seat provided with ports; B represents a valve rotatable on the seat; C is the spindle for operating the valve; D is the bonnet in-

closing the valve and spindle; and E is the operating handle detachably engaging the upper end of the spindle C. The connection between the valve and spindle is formed by means of the walls *b* on the valve and the projections *c c'* on the enlarged lower end of the spindle. The walls *b* are parallel to each other, so as to form a transverse groove with parallel sides on the upper side of the valve; but the depths of the groove at its opposite ends are different. The two projections *c* and *c'*, which enter the groove are of different lengths; the longer projection *c* having a length greater than the depth at the shallower end of the groove. It will be seen that with this construction, the projections on the spindle can fit into the groove in one position only of the spindle relative to the valve. It will further be seen that both sides of the groove can be machined at a single operation.

Between the bonnet D and the enlarged lower end of the spindle C is placed a washer F, which fits loosely around the spindle and has convex bearing surfaces on both its upper and lower sides, while both the bonnet and the lower end of the spindle have concave bearing surfaces. With this construction a slight tipping of the spindle C, such as might be produced if the motorman should press down upon the operating handle, will not produce a separation between the washer F and either the bonnet or the spindle; but since the washer F fits loosely around the spindle, a slight movement of the spindle will be taken up by the slight sliding movement between the washer F and the spindle or bonnet, or both.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In a motorman's valve, a valve seat having ports, a valve movable thereon, and a spindle for operating said valve, said valve and spindle being provided the one with a transverse groove with parallel sides and the other with a projection adapted to fit into said groove in one position only of the spindle relative to said valve and to lock said valve and spindle together in said relative position.

2. In a motorman's valve, a valve seat having ports, a valve movable thereon, and a spindle for operating said valve, said valve and spindle being provided the one with a transverse groove with parallel sides but of

different depths at its opposite ends, and the other with a projection adapted to enter said groove but of a length greater than the depth of the groove at its shallower end, 5 whereby said projection fits into said groove in one position only of the valve relative to the spindle.

3. In a motorman's valve, a valve seat having ports, a valve movable thereon, and 10 a spindle for operating said valve, said valve and spindle being provided the one with a transverse groove with parallel sides and the

other with projections adapted to enter said groove and to lock the valve and spindle together, said groove being deeper at one end 15 than at the other and one projection being longer than the other.

In witness whereof, I have hereunto set my hand this 30th day of December, 1907.

BENJAMIN LEWIS.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.