

W. H. TERWILLIGER.  
MOTORMAN'S VALVE.  
APPLICATION FILED SEPT. 13, 1907.

913,583.

Patented Feb. 23, 1909.

Fig. 1.

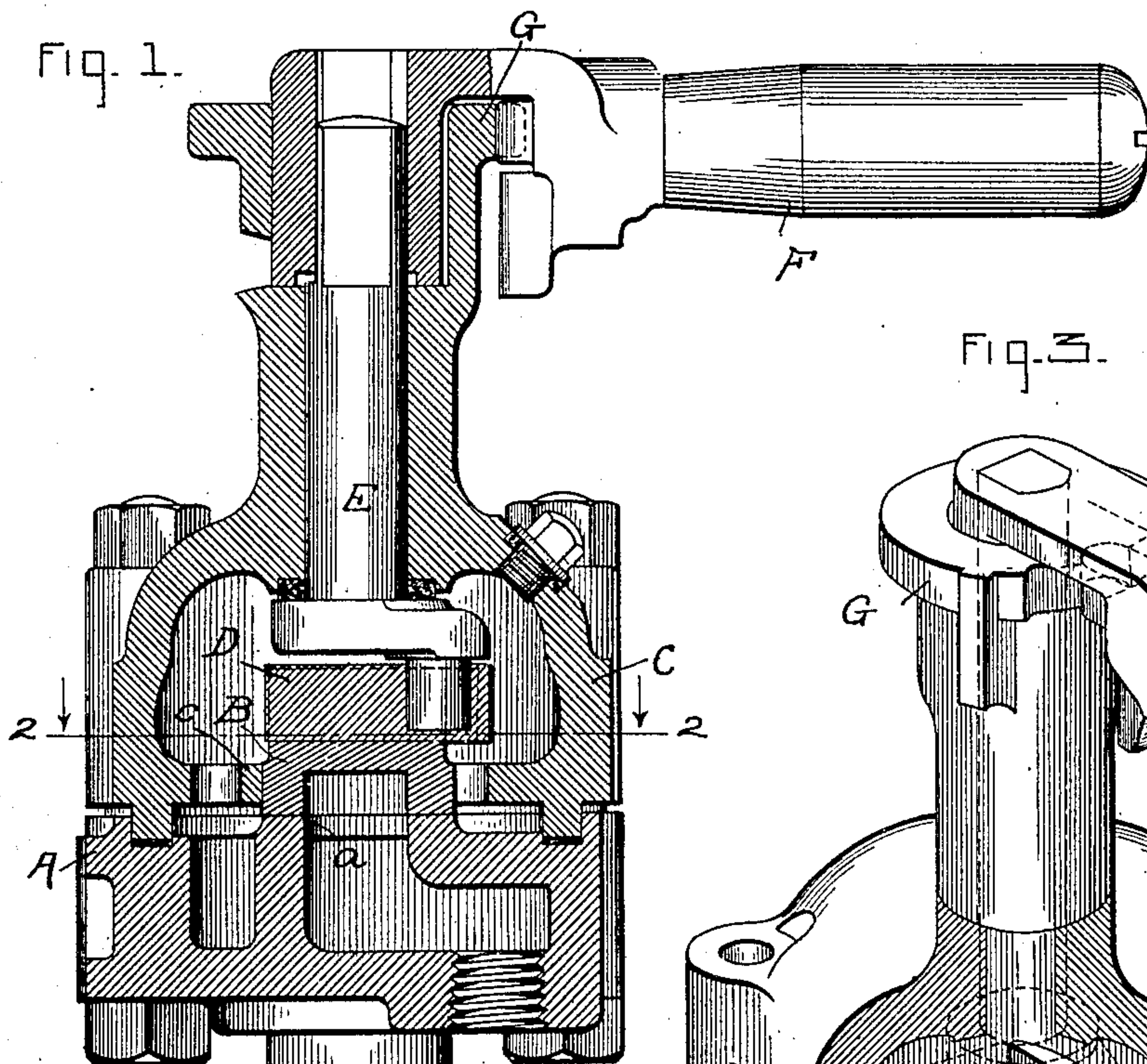
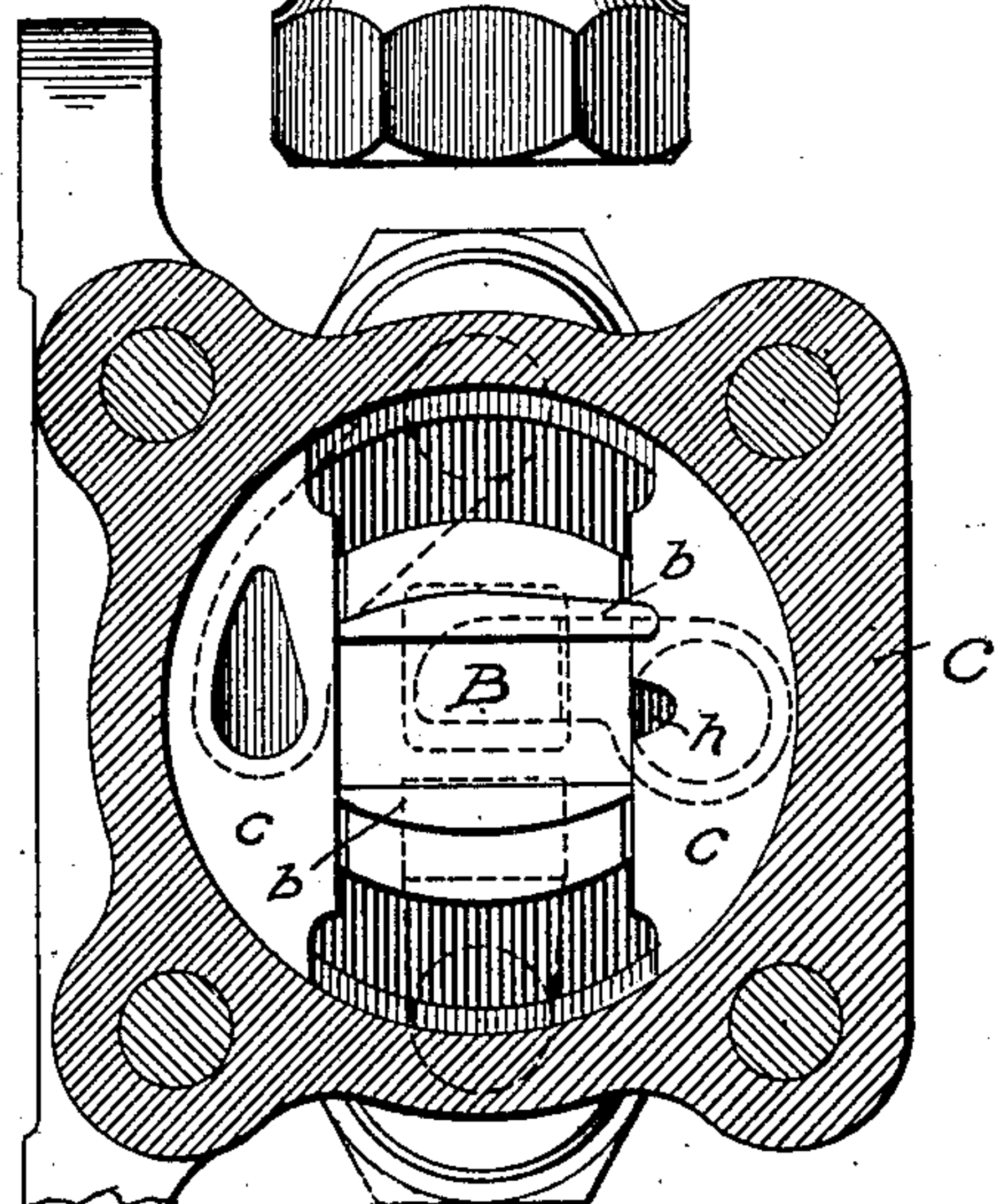
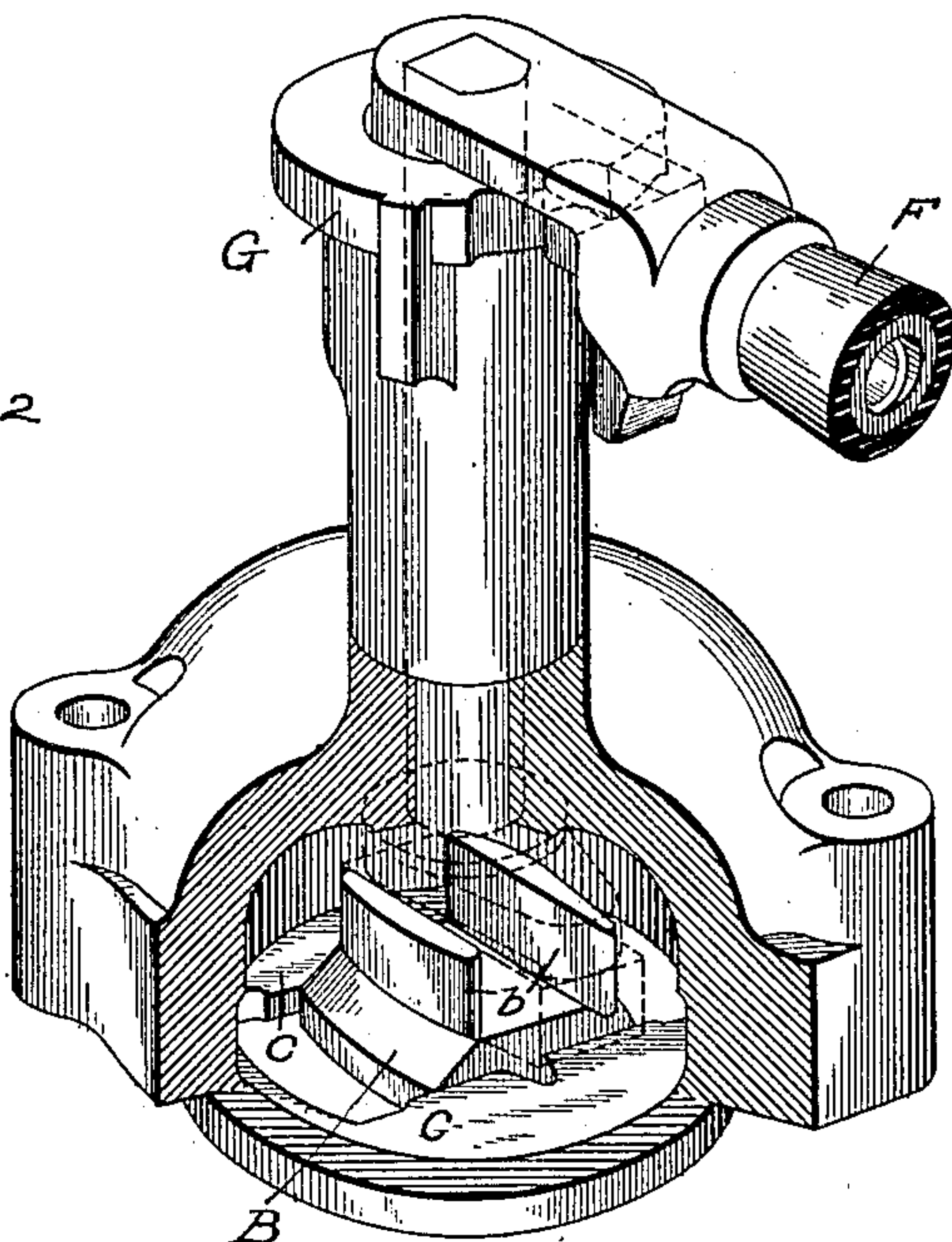


Fig. 2.



WITNESSES:  
W. Ray Taylor  
J. Ellis Allen.

Fig. 3.



INVENTOR:  
WILLIAM H. TERWILLIGER.

by *Albert S. Davis*  
ATTY.



# UNITED STATES PATENT OFFICE.

WILLIAM H. TERWILLIGER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## MOTORMAN'S VALVE.

No. 913,583.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed September 13, 1907. Serial N<sup>o</sup> 392,680.

*To all whom it may concern:*

Be it known that I, WILLIAM H. TERWILLIGER, a citizen of the United States, residing at Schenectady, 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 of the type described in Patent No. 845,335, issued to F. B. Corey, February 26, 1907, and its object is to cheapen the manufacture and improve the construction of the valve.

The valve described in the above-mentioned patent is of the type in which the valve reciprocates in a straight line on the valve-seat. In the construction shown, the slide for the valve is raised in order to simplify grinding the valve-seat, and lateral guides for the valve are provided by a loose member pressed on the valve seat by the bonnet or casing.

My invention consists in the elimination of this loose member by forming the lateral guides in the bonnet itself by providing the bonnet with internal webs extending parallel with and separated from the surface of the valve seat, and terminating in surfaces adapted to form lateral guides for the valve.

My invention further comprises so arranging these guides and the valve that the valve can be inserted in the bonnet and removed therefrom only in one position of the valve relative to the bonnet. This insures that the valve shall be properly inserted and not turned end-for-end, and also that the valve will not fall out when the bonnet is removed.

The handle of the motorman's valve is ordinarily arranged so that it can be removed only when the valve is in lap-position, and I so arrange the valve and bonnet that the valve cannot be removed from the bonnet when in that position. With this arrangement the valve is lifted from the seat with the bonnet when the bonnet is removed, but can be removed from the bonnet by shifting the valve within the bonnet.

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

Figure 1 shows an elevation in cross-section of a motorman's valve constructed in accordance with my invention; Fig. 2 shows a cross-sectional plan on the line 2—2 of

Fig. 1; and Fig. 3 shows a perspective view of the bonnet and valve, a portion of the bonnet being cut away.

In the drawings, A represents the valve-seat, which is provided with a raised slide *a*, in which are placed the usual ports.

B represents the valve adapted to reciprocate on the raised slide *a*.

C represents the bonnet or inclosing casing which has webs *c* extending parallel to the valve-seat and terminating in surfaces adapted to act as lateral guides for the valve B. The shape of these webs is best shown in Fig. 2.

The valve B is provided with transverse wings or guides *b* within which is placed a block D engaged by a crank on the operating spindle E. This block and the crank engaging it form a connection between the spindle and valve, whereby a rotary movement of the spindle reciprocates the valve on its slide.

F represents the operating handle, which is removable, but the upper end of the bonnet is formed with a projecting flange or ring G, which is arranged to prevent the removal of the handle, except when the valve is in lap-position, as shown in Fig. 2.

One web *c* in the bonnet is provided with a notch *h*, and one of the transverse wings *b* on the valve has a projection extending over web *c*, but adapted to pass through the notch *h* in one position of the valve. This arrangement of notch and projection prevents the valve B from being turned end-for-end when inserted in the bonnet, and further prevents the valve from falling out when the bonnet is removed.

The valve B must be in the position shown in Fig. 2, in order that the handle F, may be removed and in this position of the valve it cannot drop out from the bonnet when the bonnet is lifted from the valve-seat. The valve may readily be taken from the bonnet when the bonnet has been removed, by shifting the valve with the fingers to bring the projection on the valve opposite the notch in the web.

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

1. In combination, a valve-seat having a slide provided with ports, a valve adapted to be reciprocated on said slide, a removable inclosing bonnet or casing having internal surfaces adapted to form lateral guides for



said valve, and an operating spindle extending through said bonnet with its axis perpendicular to the surface of said slide, and connections whereby the rotary movement  
5 of the spindle reciprocates the valve on the slide.

2. In combination, a valve seat having a slide provided with ports, a valve adapted to be reciprocated on said slide, a removable  
10 inclosing bonnet or casing having internal webs extending parallel with but separated from the surface of said slide and terminating in surfaces adapted to form lateral guides for said valve, an operating spindle  
15 extending through said bonnet with its axis perpendicular to the surface of said slide, and connections whereby the rotary movement of the spindle reciprocates the valve on the slide.

20 3. In combination, a valve-seat having a slide provided with ports, a valve adapted to be reciprocated on said slide, and an inclosing bonnet or casing having internal webs extending parallel with but separated from  
25 the surface of said slide and terminating in surfaces adapted to form lateral guides for said valve.

4. In combination, a valve-seat having a slide provided with ports, a valve adapted to  
30 be reciprocated on said slide, a removable inclosing bonnet or casing having internal surfaces adapted to form lateral guides for said valve, and means for preventing the insertion of the valve in the bonnet except  
35 in a predetermined position of the valve relative thereto.

5. In combination, a valve-seat having a

slide provided with ports, a valve adapted to be reciprocated on said slide, a removable  
40 bonnet or casing having internal surfaces adapted to form lateral guides for said valve, and means for locking said valve within said bonnet except in a predetermined position of said valve relative to the bonnet.

45 6. In combination, a valve-seat having a slide provided with ports, a valve adapted to be reciprocated on said slide, and an inclosing bonnet or casing having internal webs extending parallel with the surface of said  
50 slide and terminating in surfaces adapted to form lateral guides for said valve, one of said webs and said valve being provided one with a notch and the other with a projection adapted to pass through said notch  
55 in a predetermined position of the valve relative to the bonnet.

7. In combination, a valve-seat having a slide provided with ports, a valve adapted to be reciprocated on said slide, a removable  
60 inclosing bonnet or casing having internal surfaces adapted to form lateral guides for said valve, a removable operating handle for said valve, means for preventing the removal of said handle except when said valve  
65 is in a predetermined position, and means for locking said valve within said bonnet when said valve is in said position.

In witness whereof, I have hereunto set my hand this 12th day of September 1907.

70 WILLIAM H. TERWILLIGER.

Witnesses:

BENJAMIN B. HULL,  
MARGARET E. WOOLLEY.