

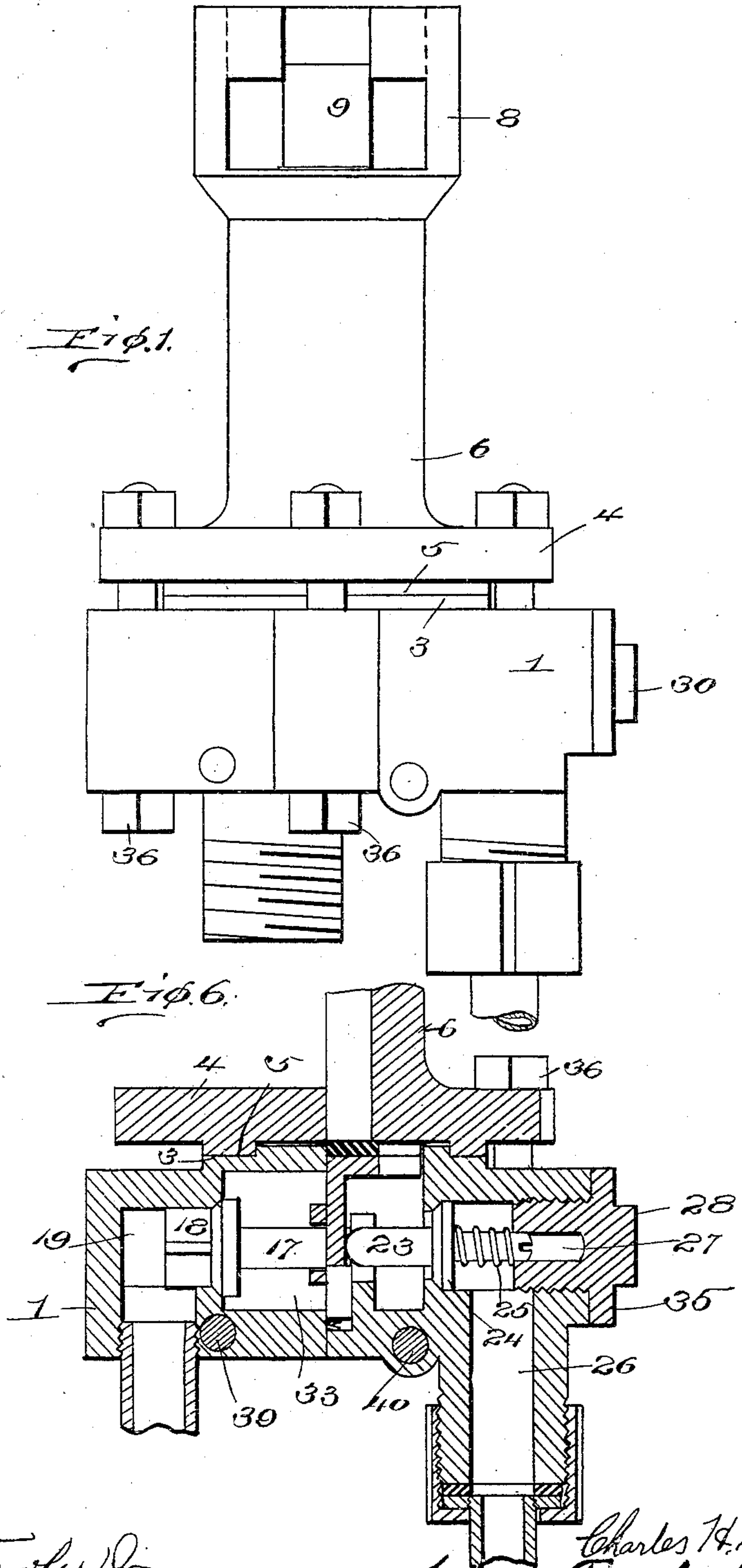
C. H. SMITH.  
VALVE.

APPLICATION FILED APR. 27, 1909.

940,621.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.



Inventor

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2 SHEETS—SHEET 2.

Fig. 2.

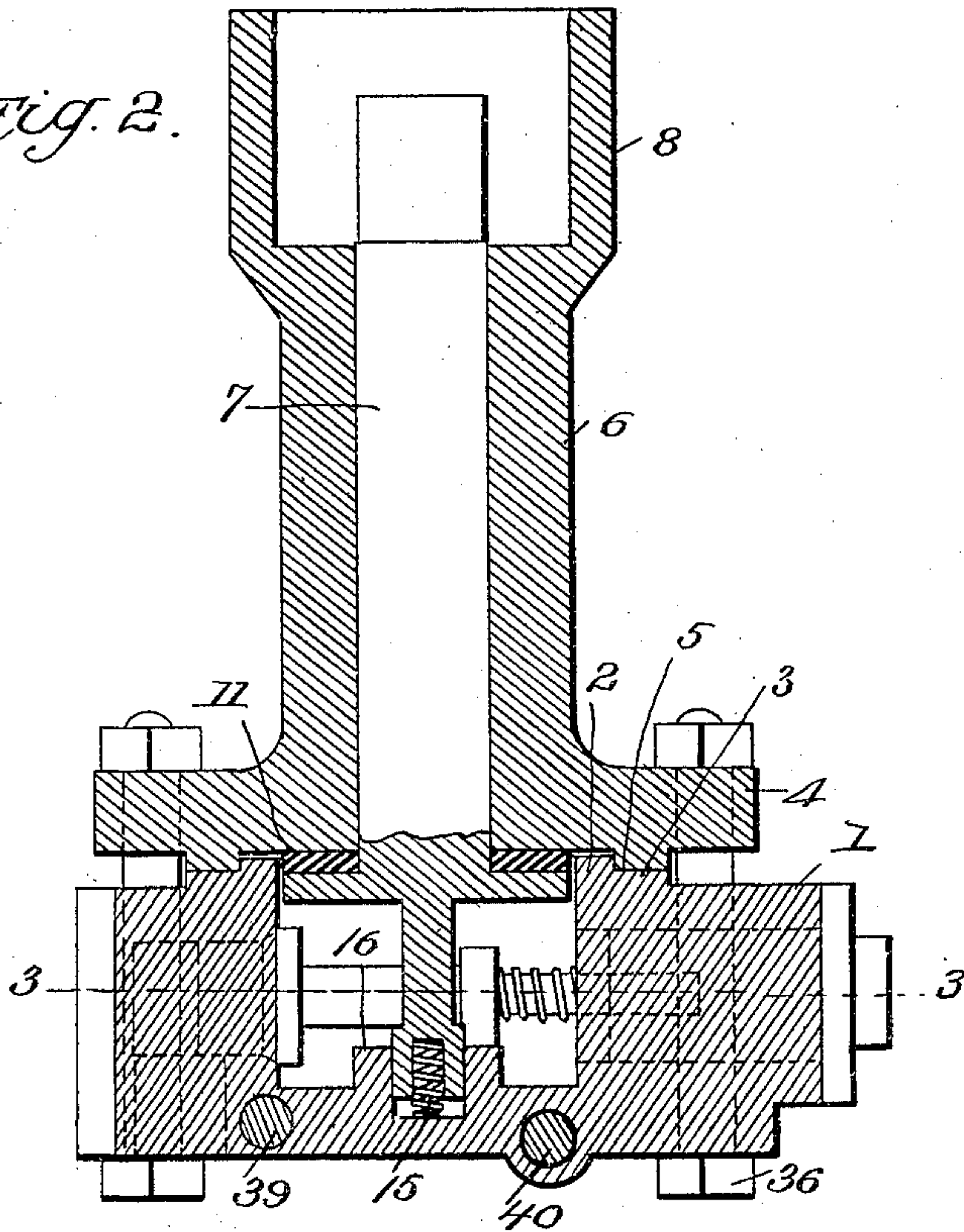


Fig. 4.

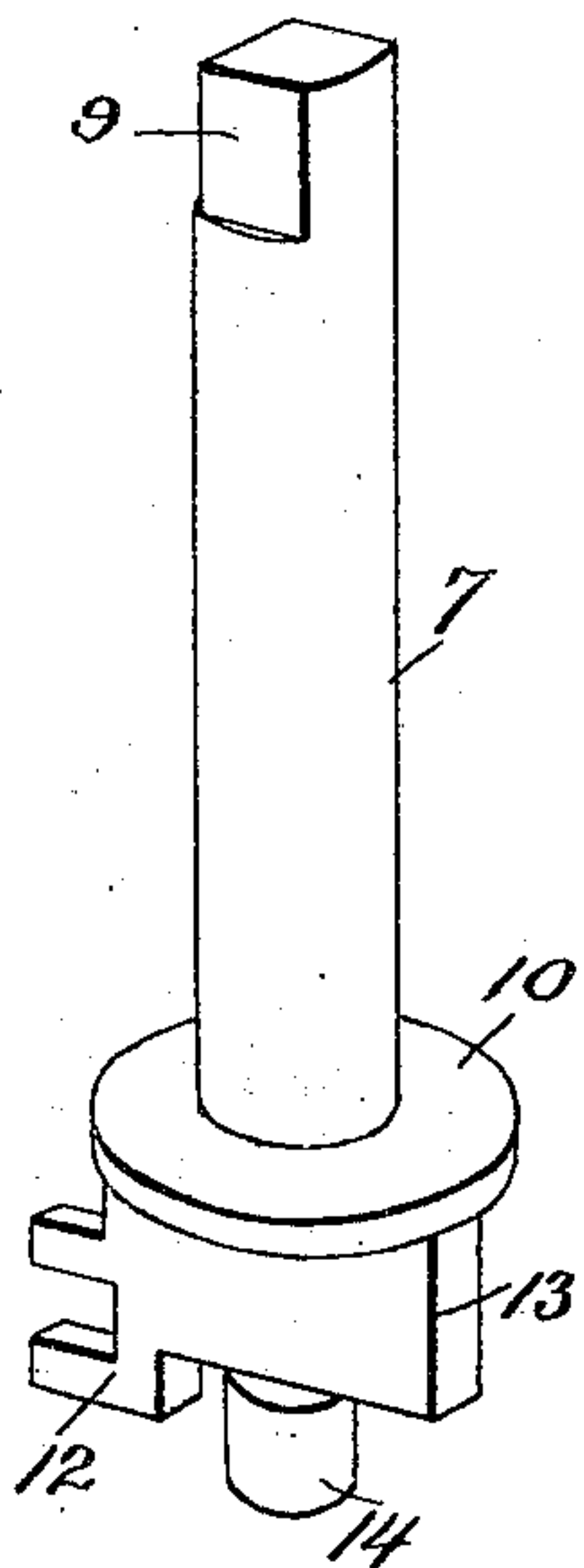


Fig. 3.

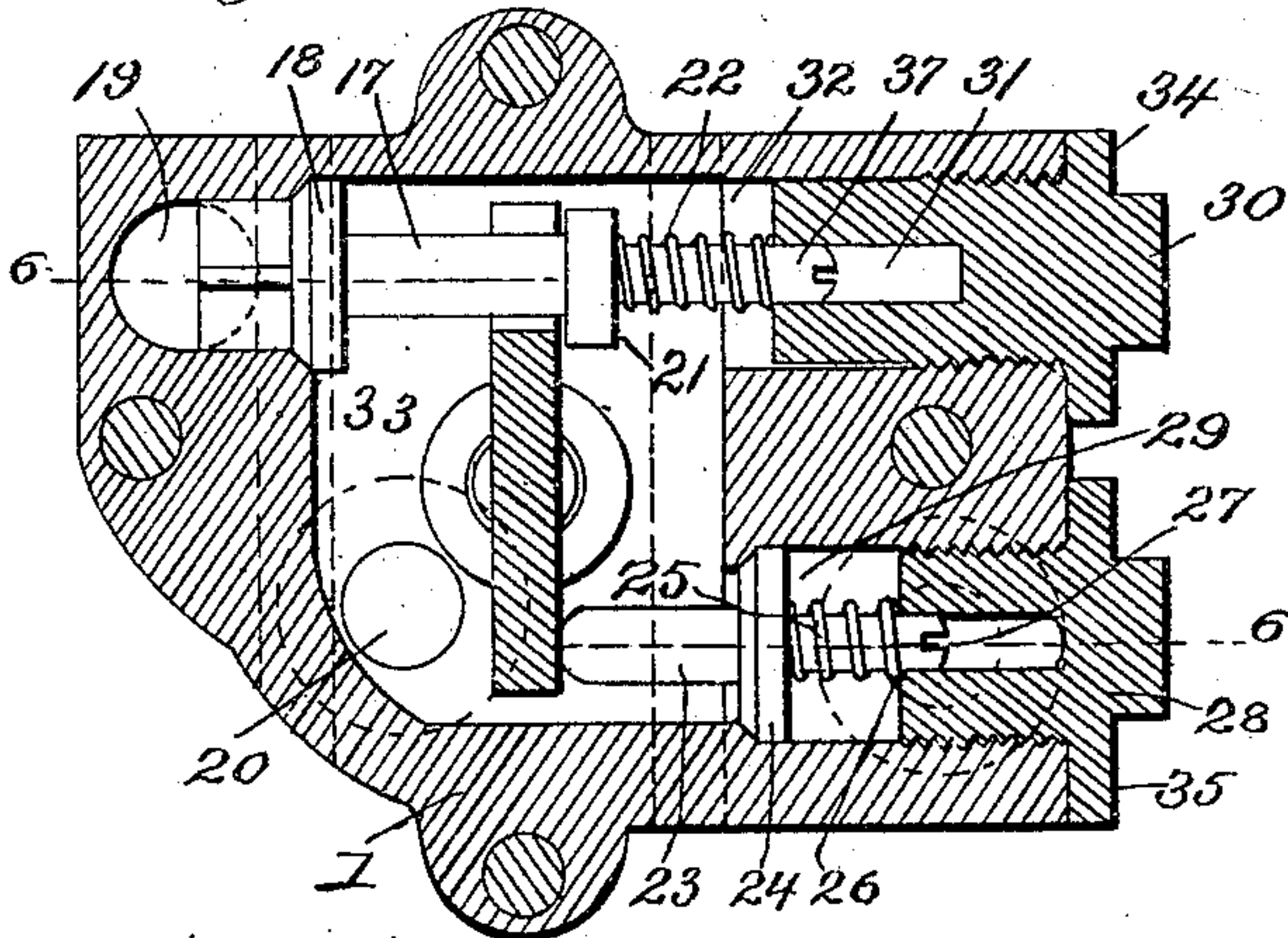
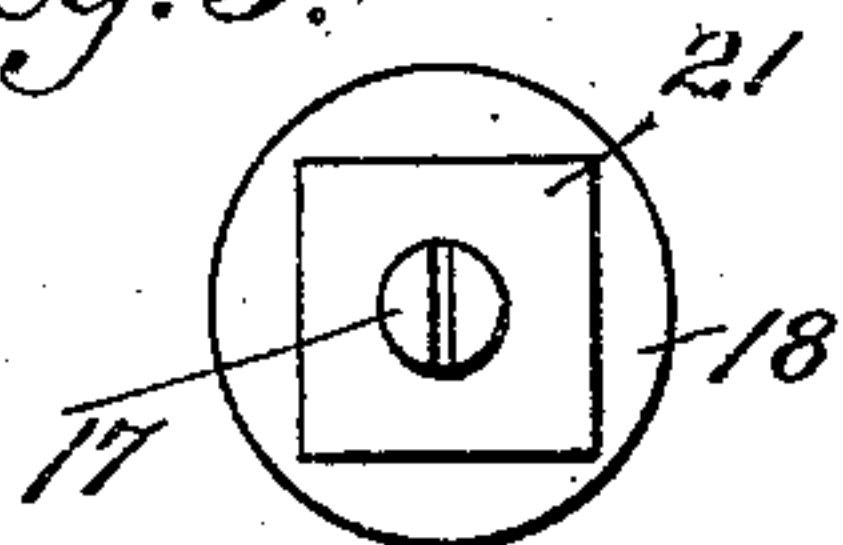


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## VALVE.

940,621.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed April 27, 1909. Serial No. 492,550.

*To all whom it may concern:*

Be it known that I, CHARLES H. SMITH, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in air valves, and particularly to what is known as engineer's or motorman's valves.

The object in view is the arrangement in a valve of means for turning on and off pressure to and from the brake system of the car without undue friction and wearing of parts.

Another object of the invention is the arrangement of a pair of oppositely opening ports and a centrally disposed member acting on said ports, whereby when said means are moved in one direction one of said ports will be opened and when moved in the opposite direction the other of said ports will be moved.

A still further object of the invention is the arrangement of a plurality of ports closed by reciprocating members, and a controlling member formed with projecting levers or ends for opening said ports when it is desired to either apply the brakes or relieve the pressure on the brakes.

Another object of the invention is the arrangement of an engineer's valve that is freely operable without material friction on the movable parts, and formed with a plurality of ports, and means for controlling the action thereof which are adapted to cause a minimum amount of friction when put into operation so that the life of the valve is lengthened.

With these and other objects in view the invention comprises certain novel constructions, combinations and arrangement of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings: Figure 1 is a side elevation of an embodiment of the invention. Fig. 2 is a longitudinal vertical section through Fig. 1. Fig. 3 is a section through Fig. 2 on line 3—3. Fig. 4 is a detail fragmentary perspective view of a

controlling stem. Fig. 5 is an end view of one of the reciprocating members. Fig. 6 is a section through Fig. 3, approximately on line 6—6.

Referring to the drawing by numerals, 1 indicates the body portion of a valve embodying the invention which is preferably constructed of cast material. The body portion 1 is cast hollow and is formed with a plurality of ports as hereinafter fully described. Body portion 1 is also formed with an extension 2 and a ground joint or surface 3. Secured to the housing or body portion 1 is a top piece 4 which has formed thereon an annular lug 5 that has the lower surface ground for meeting the ground surface 3 of body portion 1, whereby an air-tight joint is formed. The top or cover 4 has preferably formed therewith a neck 6 for carrying an operating pin or shaft 7. The upper end 8 of neck 6 is enlarged for accommodating a handle which is fitted over the upper squared portion 9 for turning the shaft or stem 7. The neck 6 may be made of any desired length and also stem 7 made of corresponding length. The lower end of stem 7 has formed integral therewith or has rigidly secured thereto a circular member or stop 10 which is adapted to engage the washer 11 preferably of leather which also engages the lower surface of cover 4 in order to prevent any leakage of air between stem 7 and neck 6. The stem 7 projects below the circular member 10 and is formed into a bar having a bifurcated portion 12 and a solid projection 13. Also a reduced stem 14 is provided for accommodating the spring 15 which normally supports stem 7 and prevents the same from dropping down to an undesirable degree. The projection 14 is made cylindrical and engages the inner walls of a hollow projection 16 and is guided thereby.

The bifurcated projection 12 is designed to be positioned astride stem 17 of a reciprocating valve member 18 arranged to close port 19. Port 19 is designed to be connected with the open air at any desired point for exhausting air from port 20 which is connected with the air brake system. The ends of the bifurcated member 12 are designed to engage the lug 21 which is preferably square and when stem 7 is turned in one direction stem 17 of valve member 18 will be moved against the action of spring 22 and valve



member 18 will be removed from its seat and port 19 opened. When the valve has thus been operated air from the brake system will pass from port 20 through body portion 1 and exhaust port 19.

The solid end 13 of the lower part of stem 7 is arranged to engage a stem 23 of a sliding valve member 24 which is normally held to its seat by a spring 25. Valve member 24 is designed to control the passage of air through port 26, which leads toward the pump or compressed air chamber. Stem 23 supports or holds in position spring 25 and is adapted to reciprocate in a bored portion 27 in plug 28 which is threaded into a passage way 29. Also plug 30 is formed with a bored out portion 31 for carrying the end of stem 17 of valve member 18. Plug 30 is threaded into a bored out portion 32 and acts as a plug therefor as well as a guide for stem 17.

In forming the valve the body portion 1 is preferably formed of cast material of some cheap quality and has cast therewith a central opening 33 into which projects stems 17 and 23 and also stem 7. The body portion 1 is then formed with bored out openings 32 and 29 which are threaded for receiving plugs 28 and 30. Before the plugs are placed in position the seat for valve member 18 is formed and also the seat for valve member 24 is formed. The valve members 18 and 24 are then placed in position, together with stem 7 and plugs 28 and 30 screwed down until their respective plungers 34 and 35 engage the side of body portion 1. In order to clamp or hold body portion 1 to cover 4 a plurality of bolts 36 are provided that pass through the body portion 1 and cover 4 and are provided with suitable nuts for tightening the same. The bolts are drawn sufficiently tight to cause the joint between ground surfaces 3 and 5 to be air-tight and as there is no friction therebetween during the operation of the valve no wearing will occur at this point. The only friction of any consequence is at the point where washer 11 is located, which washer may be renewed as occasion may require without any great expense. This washer is preferably made from some good quality of leather, as for instance, leather belting, though other material may be used if desired. In forming the valve stems 17 and 23 kerfs or slots 37 and 38 are provided by which the respective valves 18 and 24 may be ground against their seats for removing any unevenness thereof or any thing deposited at that point. In applying the valve bolts 39 and 40 passing through suitable apertures in body 1 are used, though other clamping means may be provided if desired.

What I claim is:

1. In an engineer's valve, a body portion, a cover secured thereon and provided with a neck portion, a joint seat formed on the cover portion, a stem positioned in the neck portion and provided with a stop member, a washer interposed between the stop member and the seat and adapted to provide an air tight joint, a lug projecting from the stop member, a resilient member carried by the body portion and engaging the projecting lug to hold the stop member in engagement with the washer member, a release port formed upon one side of the lug, a service port formed within the body portion on the opposite side of the lug, valves normally closing each of the ports, the lug being adapted to operate the valves, and means connected with the lug to open and close the valves.

2. In an engineer's valve, a body portion, a neck portion mounted on the body portion, a stem projecting into the neck portion, a stop member connected with the stem and arranged to engage the lower extremity of the neck portion, a lug projecting from the stop member and provided with a bifurcated end, a release valve positioned upon one side of the lug, a service valve positioned on the opposite side of the lug, a stem carried by each of the valves, the bifurcated end of the lug being in engagement with the stem of the release valve and the other end of the lug being in engagement with the stem of the service valve, and means for operating the stem to open and close the release valve and the service valve.

3. In an engineer's valve, a body portion, a neck portion mounted upon the body portion, a stem projecting into the neck portion, a lug carried by the stem and formed at one end with a bifurcation, a release valve carried by the body portion upon one side of the lug, a service valve carried by the body portion on the other side of the lug, a stem carried by each of the valves, a stem connected with the release valve having formed thereon a lug, the bifurcated end of the lug engaging the stem of the release valve and the end of the lug being carried thereby in engagement with the stem carried by the service valve, resilient means connected with each of the stems for holding the service valves in closed position and means for operating the stem to operate the lug to open and close each of the valves separately.

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

CHARLES H. SMITH.

Witnesses:

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G. J. SCOTT.