

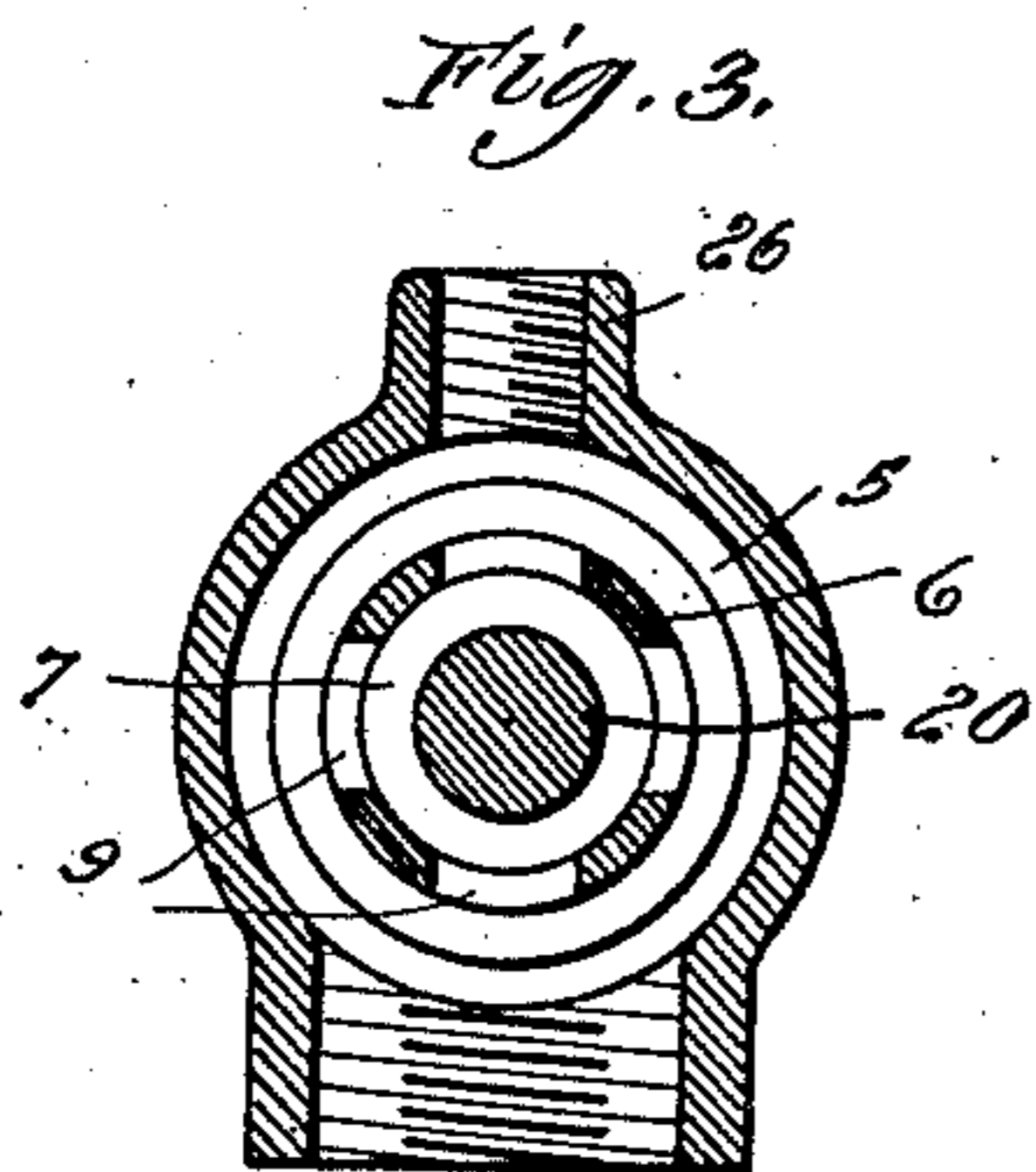
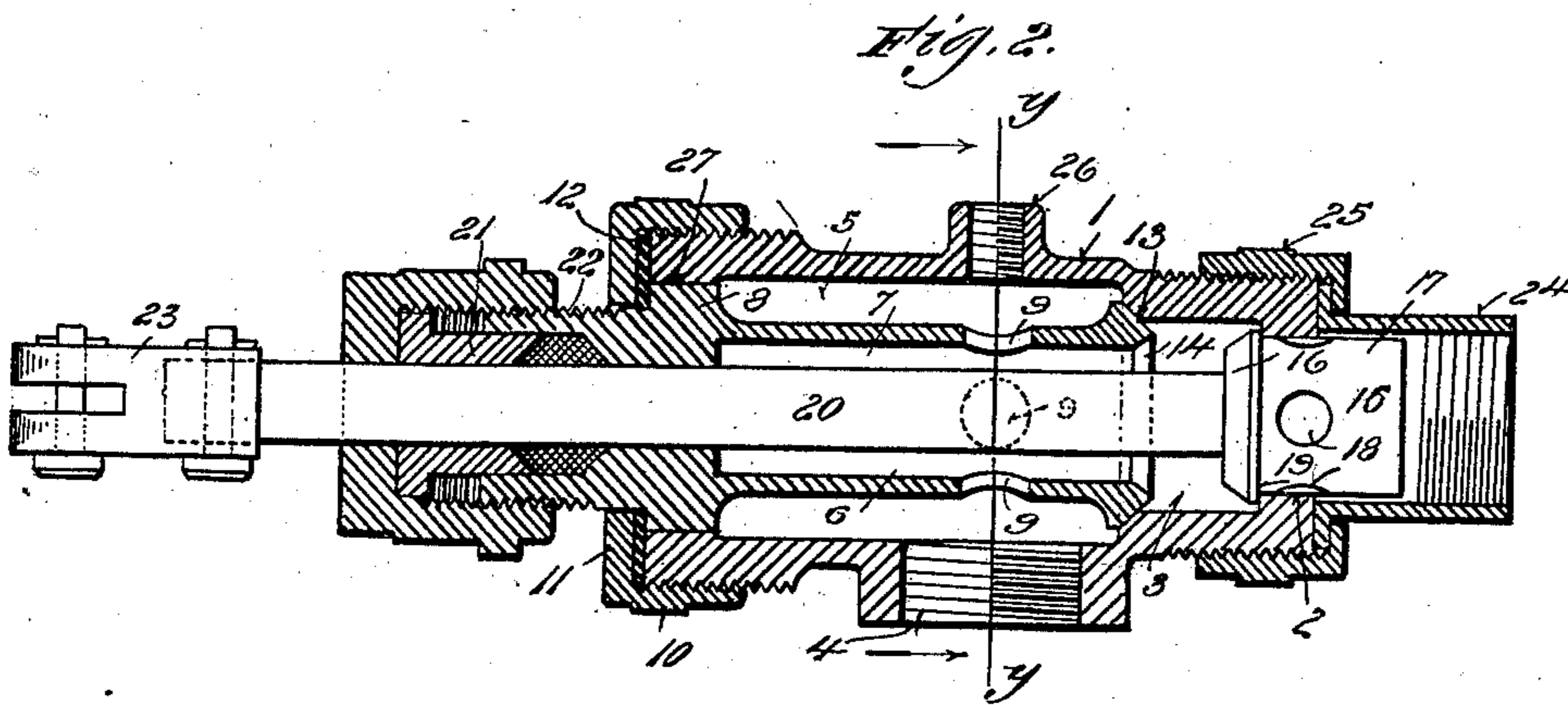
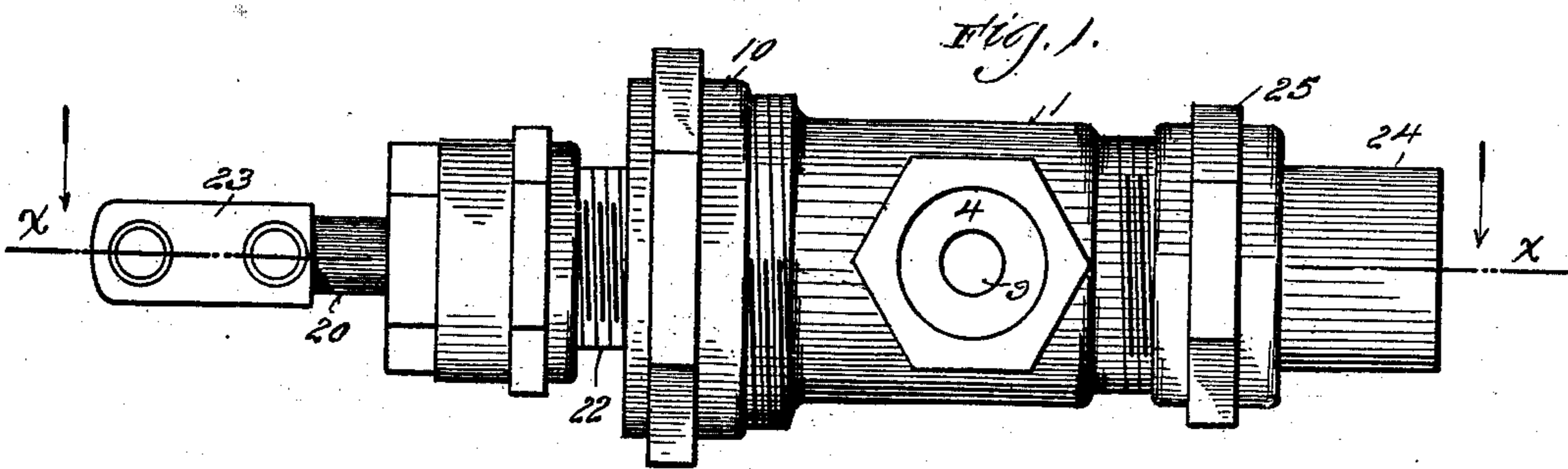
No. 717,292.

Patented Dec. 30, 1902.

C. I. SHAWVER.  
THROTTLE VALVE.

(Application filed July 14, 1902.)

(No Model.)



WITNESSES.

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# UNITED STATES PATENT OFFICE.

CHARLES I. SHAWVER, OF SPRINGFIELD, OHIO, ASSIGNOR TO AUGUSTUS B. NOLTE, OF SPRINGFIELD, OHIO.

## THROTTLE-VALVE.

SPECIFICATION forming part of Letters Patent No. 717,292, dated December 30, 1902.

Application filed July 14, 1902. Serial No. 115,397. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES I. SHAWVER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Throttle-Valves for Automobiles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to throttle-valves for automobiles, it being, however, capable of use in other connections, and has for its object to provide a construction whereby the disadvantages attendant upon such valves as usually constructed may be avoided.

To this end my invention consists in certain novel features which I will now proceed to describe and will then particularly point out in the claims.

20 In the accompanying drawings, Figure 1 is an elevation of a valve embodying my invention in one form. Fig. 2 is a sectional view of the same, taken on the line *x x* of Fig. 1 and looking in the direction of the arrows; and Fig. 3 is a transverse sectional view taken on the line *y y* of Fig. 2 and looking in the direction of the arrows.

In the said drawings, 1 indicates the body or casing of the valve, which is provided with an inlet-passage 2, a valve-chamber 3, and a steam-outlet opening 4, by means of which it is connected with the engine. Preferably the casing contains a steam-chamber 5, with which the opening 4 communicates directly, while the valve-chamber communicates with said steam-chamber by means of a sleeve 6, which lies within the casing 2 and has an internal bore or opening 7, closed at one end by a head 8 and opening at the other end into the valve-chamber. Apertures 9, formed through the wall of the sleeve 6, establish communication between its interior and the interior of the steam-chamber 5. The head 8 fits within the end of the casing 1 and is held in position by a cap-nut 10, which screws over the end of the casing 1 and has a top flange 11, between which and the end of the casing 1 a packing or gasket 12 is interposed, this packing or gasket also extending over the outer end of the head 8 of the sleeve 6. At its other end the sleeve abuts against the

margin of the end of the valve-chamber, as indicated at 13, the parts being tightly united, preferably by a ground joint, at this point. The sleeve is provided at its end adjacent to the valve-chamber with a valve-seat 14.

The valve as a whole is indicated by the reference-numeral 15 and is composed of a body or valve proper, 16, and an extension 17 in the form of a hollow cylinder or sleeve having apertures 18 therein through its wall. The valve-chamber 3 is of greater diameter than the inlet-passage 2, and the valve proper, 16, is of less diameter than the valve-chamber 3, while the valve extension 17 fits tightly within the inlet-passage 2. The shoulder 19, between the inlet-passage 2 and valve-chamber 3, forms a seat against which one face of the valve proper, 16, fits with a tight fit, the joint being preferably ground. The other face of the valve proper, 16, is adapted to fit tightly against the valve-seat 14 of the end of the sleeve 6, this fit being also preferably a ground fit. The valve-stem 20 passes through a suitable stuffing-box 21 on the projecting end of the sleeve 6 and is suitably connected with the throttle-lever by means of a detachable coupling 23 and any suitable connecting devices, such as are ordinarily used for this purpose. At its receiving end the casing is provided with a coupling 24, by means of which it may be connected with the steam-supply, said coupling being held to the casing by a clamping-nut 25, or the steam-supply may be suitably connected to the casing 1 at its receiving end in any other suitable manner. The casing may also be provided with a threaded nipple 26 to receive a lubricating device or connection by means of which a lubricant may be introduced into the steam-chamber 5 to lubricate the valve and cylinder.

It will be noted that the valve-chamber is of such length relatively to the valve and its extension that when the latter are drawn inward into the valve-chamber 3 to such an extent that the apertures 18 have passed clear of the shoulder 19 and are admitting the maximum amount of steam the body 16 of the valve is sufficiently far from the seat 14 to permit an unrestricted flow of the steam thus admitted out of the valve-chamber into the interior of the sleeve 6 and thence to the

engine-port 4, said steam passing freely around the body of the valve 16, between it and the wall of the valve-chamber 3, the difference in diameter between the valve body and chamber being sufficient for this purpose. It will also be noted that the opening 27 in the larger end of the casing 1, in which the head 8 of the sleeve 6 fits, is of greater diameter than any portion of the sleeve lying inward from said head and also of greater diameter than any part of the valve, so that by unscrewing the nut 11 the sleeve 6 and the entire valve 15 may be readily removed. The parts may obviously be as readily replaced when desired.

Heretofore in throttle-valves of this character it has been customary to employ a valve similar to the body portion 16 of my improved valve, and the steam has been shut off and regulated by the relative position of said valve and the seat 14. With this construction great difficulty has been found in regulating the passage of the steam, owing to the fact that when only slight space is left between the valve and seat the steam is "wire-drawn," and there is a constant tendency for the valve to either close entirely or to fly open to its full extent. The application of locking devices to the throttle-lever for remedying this difficulty is ineffective, because it interferes with nicety of regulation and is difficult to operate. Moreover, the valve and seat cut and wear very rapidly when the passage between them is restricted, as in close throttling. By reason of my construction these disadvantages are entirely obviated. While in running position the valve proper, 16, moves freely in the central part of the chamber without varying the flow of steam, and the regulation is entirely effected by the extent to which the apertures 18 are projected into the valve-chamber beyond the shoulder 19. The valve being practically balanced by the equalization of pressure on opposite sides thereof without bringing the valve into immediate proximity to its seat, the valve will remain in any position to which it is moved, and in practice any device capable of producing a slight friction or binding action on the throttle-lever will serve to hold it and the valve in any one of the running positions to which it may be adjusted. Moreover, since the valve does not approach its seat too closely when in running position the cutting of the valve and seat, hereinbefore referred to, is obviated. Furthermore, the valve extension fits snugly within the inlet-passage, so as to form a guide for the valve, thereby preventing buckling or bending of the stem and consequent displacement of the valve, since the valve and stem are thus guided and supported at each end of the valve-casing. A still further advantage of my construction is that the valve-chamber is provided at each end with a seat for the valve-body, so that at either extremity of the motion of the valve it is closed and the flow of

steam is cut off. This is of particular advantage in connection with automobiles, which are frequently operated by unskilled persons, who are apt to move the valve in the wrong direction in endeavoring to stop in case of emergency. With the ordinary valve this simply increases the speed to a maximum, while with my improved valve such an error would immediately shut off the steam, and thereby tend to prevent accidents. It is also obvious that a great nicety of regulation in the admission of steam may be obtained by means of the particular construction which I have devised for that purpose.

I do not wish to be understood as limiting myself strictly to the precise details hereinbefore described, and shown in the accompanying drawings, as it is obvious that these details may be modified without departing from the principle of my invention.

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

1. A throttle-valve comprising a casing having an inlet-passage, a valve-chamber of larger diameter communicating therewith at one end, and a valve-seat at the outlet end of the valve-chamber, in combination with a valve having an imperforate body portion of less diameter than the valve-chamber in which it is longitudinally movable, adapted to fit the seat at the outlet end thereof and having a hollow cylindrical extension on its opposite side fitting within the inlet-passage, the wall of said extension having apertures there-through, substantially as described.

2. A throttle-valve comprising a casing having an inlet-passage, a valve-chamber of larger diameter communicating therewith at one end, and a valve-seat at each end of the valve-chamber, in combination with a valve having a body portion of less diameter than the valve-chamber, adapted to fit the seats at the ends thereof, and having a hollow cylindrical extension on its inlet side fitting within the inlet-passage, the wall of said extension having apertures therethrough, substantially as described.

3. A throttle-valve comprising a casing having an inlet-passage, a valve-chamber of larger diameter communicating therewith at one end, and a valve-seat at the outlet end of the valve-chamber, in combination with a valve having a body portion of less diameter than the valve-chamber, adapted to fit the seat at the outlet end thereof, and having a hollow cylindrical extension on its opposite side fitting within the inlet-passage, the wall of said extension having apertures there-through, a valve-stem extending through the casing from the side of the valve opposite to that on which the extension is located, and means for supporting the end of said valve-stem farthest from the valve, substantially as described.

4. A throttle-valve comprising a casing having an inlet-passage, a valve-chamber of

larger diameter communicating therewith at one end, and a steam-chamber of still larger diameter adjacent to the valve-chamber and communicating therewith at one end, said casing being open at its end farthest from the inlet end, in combination with a sleeve having a head to fit said last-mentioned opening, and a hollow body extending through the steam-chamber to the valve-chamber, abutting against the end of the latter, and provided with a valve-seat, said sleeve being provided with lateral openings, and the steam-chamber being provided with an opening connected with the engine, a valve having a body portion of less diameter than the valve-chamber, adapted to fit the seat on the end of the sleeve, and having a hollow cylindrical ex-

tension on its opposite side fitting within the inlet-passage, the wall of said extension having apertures therethrough, and a valve-stem extending loosely through the sleeve, said sleeve being provided at its outer end with a stuffing-box for said stem, and means for detachably connecting the sleeve and casing at the outer end of the latter, those portions of the sleeve and valve within the casing being of less diameter than the opening at the end of the casing, substantially as described.

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

CHARLES I. SHAWVER.

Witnesses:

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IRVINE MILLER.