No. 839,073. PATENTED DEC. 18, 1906.

R. J. MINER.

THROTTLE VALVE.

APPLICATION FILED JAN. 16, 1906.

Fig. 2.

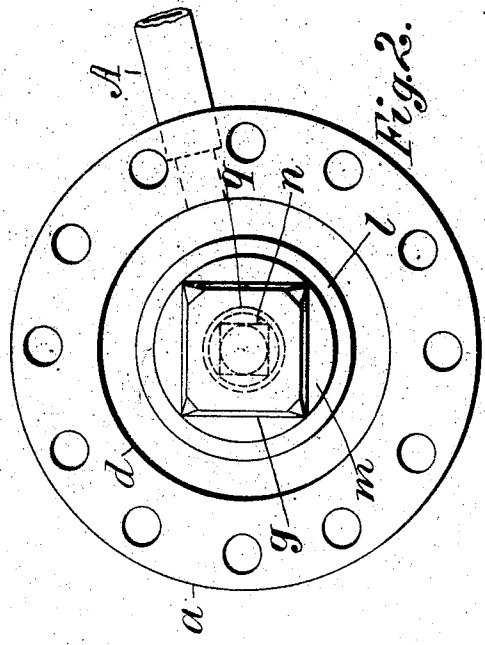


Fig. 3.

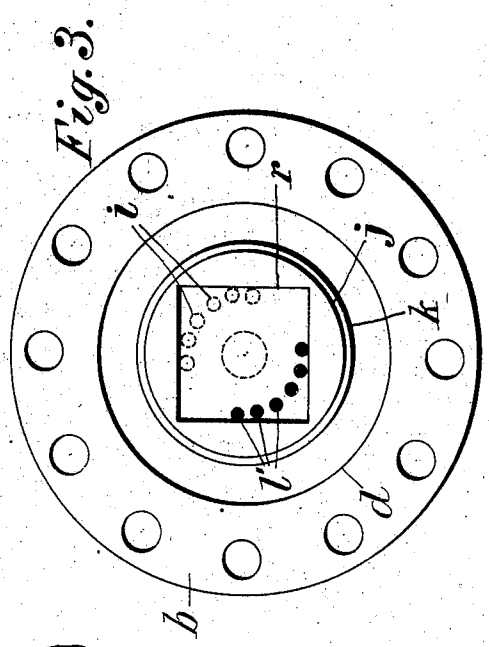
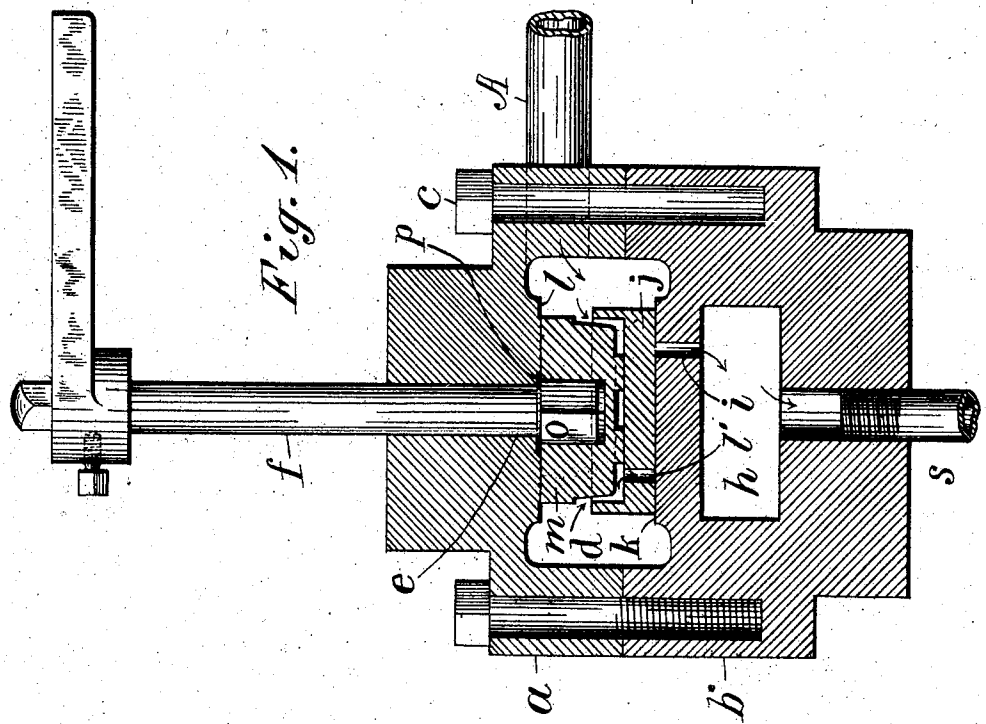


Fig. 1.



Witnesses:
L. Lee.
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Inventor.
Robert J. Miner, per
Thomas L. Crane, atty.

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UNITED STATES PATENT OFFICE.

ROBERT J. MINER, OF GREENWICH, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CARRIE A. WAITE, OF EAST ORANGE, NEW JERSEY.

THROTTLE-VALVE.

No. 839,073. Specification of Letters Patent. Patented Dec. 18, 1906.

Application filed January 16, 1906. Serial No. 296,435.

To all whom it may concern:

Be it known that I, ROBERT J. MINER, a citizen of the United States, residing at the town of Greenwich, county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Throttle-Valves, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention provides a valve for delivering highly-superheated steam to the high-power engines of automobiles, launches, &c., in which class of valves a stuffing-box to pack the valve-stem is very unsatisfactory, as the highly-heated steam under great pressure tends to cut out the packing in very short order.

The object of the present invention is to furnish a valve-chamber containing a valve and having a valve-stem entering the chamber, the end of the valve-stem being protected from the steam, so that no stuffing-box and no packing are required. The protector for the inner end of the valve-stem is a round disk having an annular face fitting steam-tight to a ground seat around the valve-stem bearing and having a recess in it which is engaged with the end of the stem, so that the disk may be rotated by the stem. The valve is circular in form and is fitted to rotate upon an opposed seat. It is actuated by the disk, with which it is rockingly engaged, so as to always permit proper seating. The valve and the disk are held steam-tight against their respective seats by the pressure within the chamber. The valve and the seat have ports which may be turned into or out of coincidence by a lever attached to the stem actuating the disk. The ports in the seat lead to an internal connecting-chamber, (cast in one of the half portions forming the valve-chamber,) and this chamber connects with the steam-delivery pipe *s*.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a cross-section of the valve with a hand-lever upon the valve-stem. Fig. 2 shows the inner side of the casing which contains the valve-stem bearing, and Fig. 3 shows the inner side of the casing containing the valve outlet-ports. The stem and disk are shown in Fig. 2 and the rotary valve in Fig. 3.

The casing is shown formed of two separable sections *a* and *b*, united by cap-screws *c* and forming the valve-chamber *d*. The section *a* has an inlet-pipe A for the steam and the bearing *e* for the valve-stem *f*. The section *b* has the outlet-pipe *s* for the delivery of steam from the pocket or internal chamber *h*, which is connected with the valve-chamber *d* by the port-holes *i*. The opposite faces of the sections are formed with parallel ground seats *k* and *l*, to which are fitted, respectively, the valve *j* and the disk *m*. The valve itself is perforated with ports *l*, which may be turned into correspondence with the ports *l'* opposite thereto, as shown in Fig. 3.

The disk is shown with a square socket *n* and the inner end of the valve-stem with a plug *o* fitted loosely to the socket *n*, and a collar *p* at the base of the plug is fitted to a recess *q* at the inner end of the stem-bearing *e*. The disk is shown with a square plug *g* fitted loosely to and rockingly engaged with a square socket *r* in the back of the valve *j*, and the rotation of the disk thus turns the valve. The joint thickness of the disk and valve is about equal to the space between the valve-seats, and projections and clearance-spaces are formed upon the adjacent surfaces of the disk and valve to permit the steam to flow from the chamber between the valve and the disk into the ports *l* and thence to the steam-pipe *s* when the valve is suitably turned. The valve-stem, the disk, and the valve are loosely engaged with one another, so that the two latter parts are pressed freely toward the opposed seats by the steam and yet are rotated with perfect freedom by the valve-stem *f*.

The disk forms a tight steam-joint with the seat *l*, and the pressure of the steam holds it against the seat in such manner that the steam is wholly prevented from entering the bearing *e* of the valve-stem, and no stuffing-box upon the stem is therefore required.

In practice it is found that the valve is positively steam-tight in any position, as the pressure within the chamber *d* constantly holds the disk and valve against their respective seats.

Having thus set forth the nature of the invention, what is claimed herein is—

1. In a throttle-valve, the combination, with a casing having a steam-chamber with steam-inlet and the chamber provided with

opposed seats with a steam-outlet extended from one seat and a valve-stem bearing extended from the other seat, of a valve-stem extended through the said bearing and having a disk rotated therewith and fitted to the seat around the said bearing, and a rotary valve loosely engaged with the said disk and fitted to the opposite seat, whereby the stem is made positively steam-tight.

2. In a throttle-valve, the combination, with the valve-chamber and a valve-stem entering the same, of a valve and a disk having loose engagements with the valve and with the valve-stem and wholly covering the inner end of the valve-stem and resting upon the wall of the chamber around the said stem to form a tight joint.

3. In a throttle-valve, the combination, with the valve-chamber and a valve-stem inserted through a bearing into the same, of a valve rotatable upon a seat in line with the valve-stem, a disk having plug-and-socket engagements with the valve and valve-stem, and wholly covering the inner end of the valve-stem and having an annular face bearing upon the wall of the steam-chamber around the stem-bearing.

4. In a throttle-valve, the combination, with a casing having a steam-chamber with steam-inlet, and the chamber provided with opposed seats with a steam-outlet extended from one side and a valve-stem extended from the other seat, of a valve-stem extended through the said bearing and a disk and rotary valve loosely engaged together and fitted to the said seats, and the disk engaged with the said valve-stem, whereby both are turned with the valve-stem and both are pressed upon their seats independently by the steam-pressure.

5. In a throttle-valve, the combination, with a casing having a steam-chamber with steam-inlet and the steam-chamber provided with opposed seats and the casing divided intermediate to the seats, and a steam-outlet extended from one seat and a valve-stem bearing extended from the other seat, of a valve-stem fitted to the bearing and having a collar inside the steam-chamber, with plug projected therefrom, a rotatable valve fitted to the seat opposite the bearing and a disk having a loose engagement with the valve, a loose engagement with the plug upon the valve-stem, and an annular face fitted to the seat around the said bearing, whereby the valve and disk are pressed toward the opposite seats by the steam-pressure.

6. A throttle-valve having a valve-chamber with rotatable outlet-valve, and with a valve-stem bearing having ground-seat around the bearing within the chamber, a valve-stem extending through the bearing into the chamber, and a disk having a loose connection with the valve and with the valve-stem, and rotated by the valve-stem, and fitted to the seat around the valve-stem bearing to prevent the escape of steam around the stem, and the necessity for a stuffing-box thereon.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT J. MINER. [L. S.]

Witnesses:

WINTHROP WAITE,

ROGER H. BUTTERWORTH.