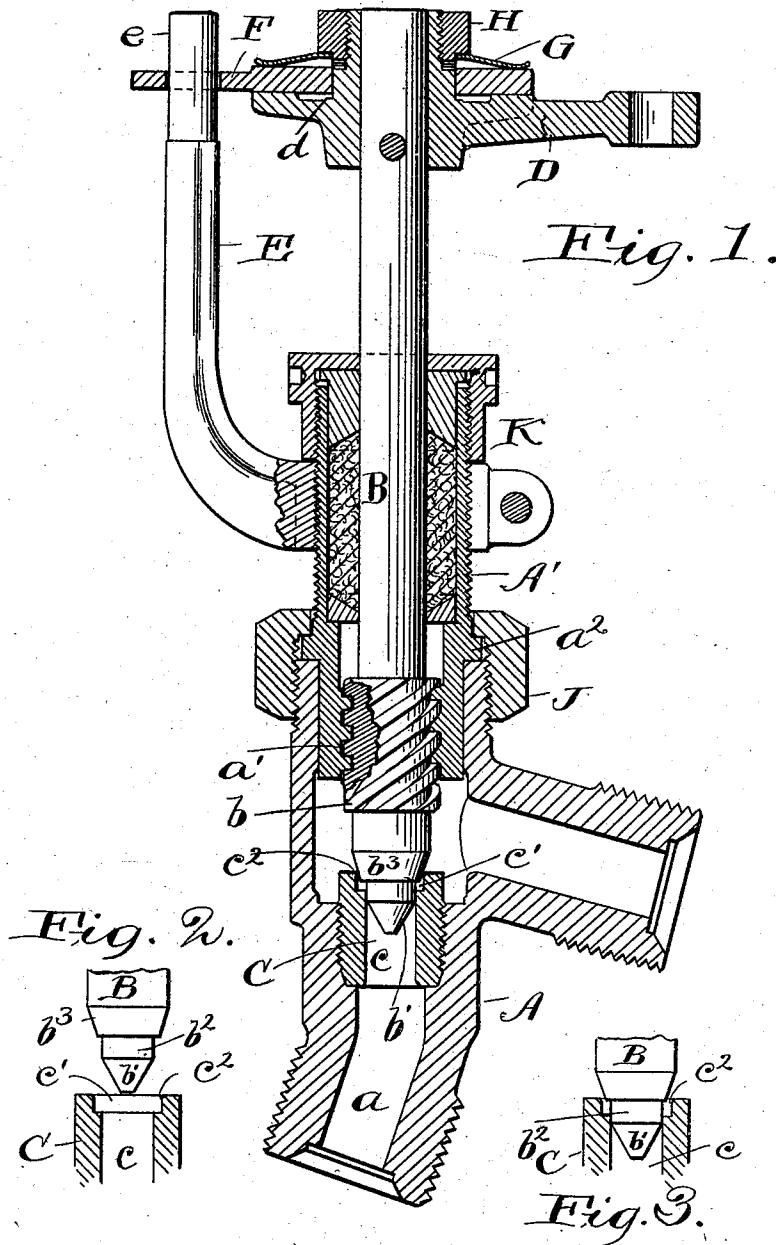


No. 806,309.

PATENTED DEC. 5, 1905.

R. H. WHITE.
THROTTLE VALVE.
APPLICATION FILED DEC. 5, 1904.



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UNITED STATES PATENT OFFICE.

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THROTTLE-VALVE.

No. 806,309.

Specification of Letters Patent.

Patented Dec. 5, 1905

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To all whom it may concern:

Be it known that I, ROLLIN H. WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Throttle-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

As steam throttle-valves are ordinarily constructed the surfaces of the valve and its seat soon become eroded and scratched to such an extent that leakage cannot be prevented until said surfaces are reground. This is thought to be due to the action of wire-drawn steam, and to the action of foreign particles carried by the steam between said valve and its seat when they are separated only slightly.

The primary object of this invention is to provide a throttle-valve construction by which the flow of steam may be nicely controlled, but in which those surfaces which by their engagement finally close the valve will not be subject to much or any wear or defacement from the causes specified, thereby rendering the necessity for regrinding said surfaces of infrequent occurrence.

The invention may be here summarized as the construction and combination of parts shown, described, and claimed.

In the drawings, Figure 1 is a central longitudinal sectional view of the throttle-valve contrivance embodying my invention, the valve being completely closed. Fig. 2 is a view, partly in section, of the cooperating ends of the valve-rod and steam passage-way and of the valve-seat sleeve when the valve is open very wide; and Fig. 3 is a similar view of the same parts when the valve is nearly, but not quite, closed.

Referring to the parts by letters, A represents the valve-casing, in which is the steam passage *a*. Preferably a hardened seat-sleeve C is secured in the inner end of said passage, so that it forms a continuation thereof. The hole *c*, which is the steam passage-way through this sleeve, is of cylindrical form and its inner end *c'* is countersunk to increase its diameter. The valve-seat *c''* is on the inner edge of this countersunk portion of said passage-way.

The valve-rod B passes through a stuffing-box K in alinement with said passage-way, and it has screw-threads *b*, which engage with screw-threads *a'* in the casing, whereby the

turning of the valve-rod will cause it to move endwise. A handle D, attached to the outer end of this rod, affords convenient means for turning it. The inner end of this valve-rod is of conical shape, as at *b'*. Just above that conical end the rod is cylindrical, as at *b''*, and of such diameter as to be a nice sliding fit to the passage-way *c*. Above this is the enlarged conical valve-surface *b'''*, which is fitted to the seat *c''*. The length of the cylindrical part *b''* is such that it may have a considerable movement into the passage-way before the conical surface *b'''* engages with the seat *c''*. When this cylindrical part *b''* has entered the passage-way *c*, any substantial flow of steam is prevented. Ordinarily the volume which can flow past the engaging cylindrical surfaces will be small—a mere leakage. This leakage may, however, be prevented by screwing the valve-rod B down until the conical surface *b'''* engages with the valve-seat *c''*. To open the valve effectively, the rod B must be moved up until the cylindrical part *b''* is entirely withdrawn from the hole *c*. The size of the opening for the steam to flow through is determined by the distance between the conical surface *b'* and the edge of the passage-way *c*, and this distance may be varied at will by turning the valve-rod B. At all times, however, when the valve is open, as stated, this distance will be less than the distance between the valve-seat *c''* and the conical valve-surface *b'''*. There may be some erosion and scratching of the conical end *b'* and the edge of the passage-way *c* and of the cylindrical surface of the part *b''* and of the wall of the passage-way *c*; but that is of no consequence, because it will be long before there is any substantial wear of the surfaces *c''* and *b'''*, which by their engagement are intended to shut off entirely the flow of steam.

The throttle-valve contrivance shown is designed with a view to securing certain minor advantages due to the features of construction now to be described. The valve-casing is made of two parts A and A', the latter telescoping into the former and having an external flange *a''*. A coupling-nut J screws onto the part A and, engaging with the flange *a''*, holds the two parts together, but in such a way as to permit their easy separation.

An arm E is clamped upon the casing member A', and a plate F has a hole which loosely embraces the end *e* of the arm E, which end

is parallel with the valve-rod. This plate also loosely embraces the valve-rod and bears upon the hub *d* of the handle D. A spring-washer G bears upon the plate F, and its pressure is regulated by a nut H, which screws onto a cylindrical prolongation of said hub *d*. By turning this nut the tension of the spring-washer may be varied. The purpose of this spring-washer and the described cooperating parts is to hold the valve against accidental movement from any position into which it may be moved.

Having described my invention, I claim—

1. The combination of a valve-casing having a cylindrical steam passage-way whose inner end is countersunk and has on the inner edge of said countersunk portion a valve-seat, with an endwise-movable valve-rod alined with said passage-way, and having, first, a conical end, second, a larger conical surface for engaging said valve-seat, and, third, a cylindrical portion which lies between said conical portions and is fitted to the cylindrical steam passage-way and is long enough to adapt it to enter said passage-way an appreciable distance before the larger conical surface engages with said valve-seat.

2. The combination of a valve-casing having a cylindrical steam passage-way whose inner end is countersunk and has on the inner edge of said countersunk portion a valve-seat, with an endwise-movable valve-rod alined with said passage-way, and having, first, a conical end, second, a larger conical surface for engaging said valve-seat, third, a cylindrical portion which lies between said conical portions and is fitted to the cylindrical steam passage-way and is long enough to adapt it to enter said passage-way an appreciable distance before the larger conical surface engages with said valve-seat, and, fourth, a screw-threaded portion which engages with a correspondingly-threaded part of the casing.

3. In a throttle-valve the combination of a valve-casing having an internally-threaded portion, a valve-rod having a threaded portion which engages with the said threaded part of the casing and having a stem which projects out of the casing, an operating-handle secured to the said stem, a non-rotatable plate resting upon the hub of said handle, a spring-washer bearing upon said plate, and means for regulating the tension of the washer.

4. In a throttle-valve the combination of a valve-casing having an internally-threaded portion, a valve-rod having a threaded portion which engages with the threaded portion of the casing and having a stem which projects out of the casing, an operating-handle secured to said stem, an arm E fixed to the casing and having its outer end lying parallel with the valve-rod, a plate loosely embracing the valve-rod and having a hole which also loosely embraces the end of said rod E, which plate bears upon the hub of said operating-handle, a spring-washer bearing upon said plate, and a nut which screws onto the hub of the operating-handle and bears against said spring-washer to regulate its tension.

5. The combination of a valve-casing composed of the part A containing a steam-passage and a telescoping part A' having an outwardly-extended flange which bears against the end of the part A, and having also an internally-threaded portion *a'*, a coupling-nut J engaging with said flange and screwing onto the casing part A, and a valve-rod B entering the casing and having a threaded portion *b* which engages with the internally-threaded part of the casing member A'.

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

ROLLIN H. WHITE.

Witnesses:

E. B. GILCHRIST,
E. L. THURSTON.