

(No Model.)

2 Sheets—Sheet 1.

T. R. PICKERING.

THROTTLE VALVE.

No. 341,346.

Patented May 4, 1886.

Fig 1.

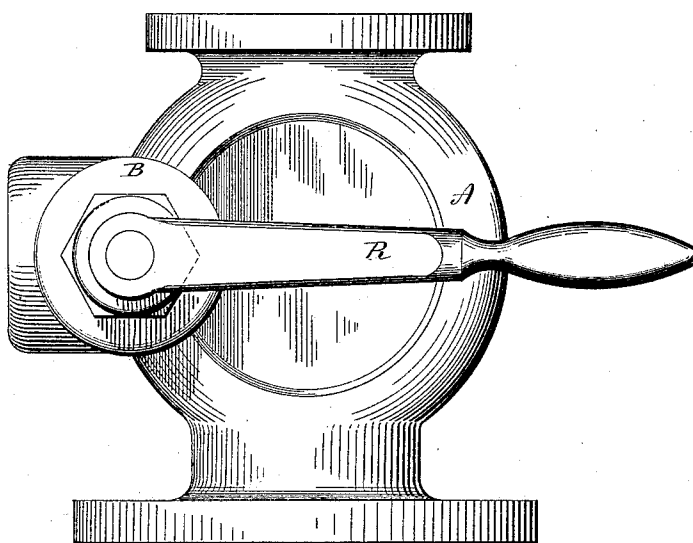
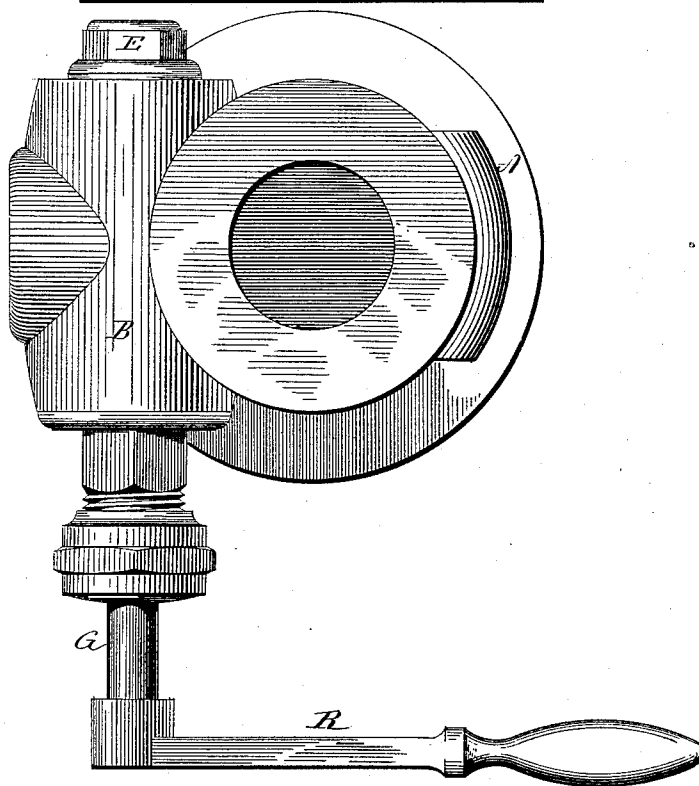


Fig 2.



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(No Model.)

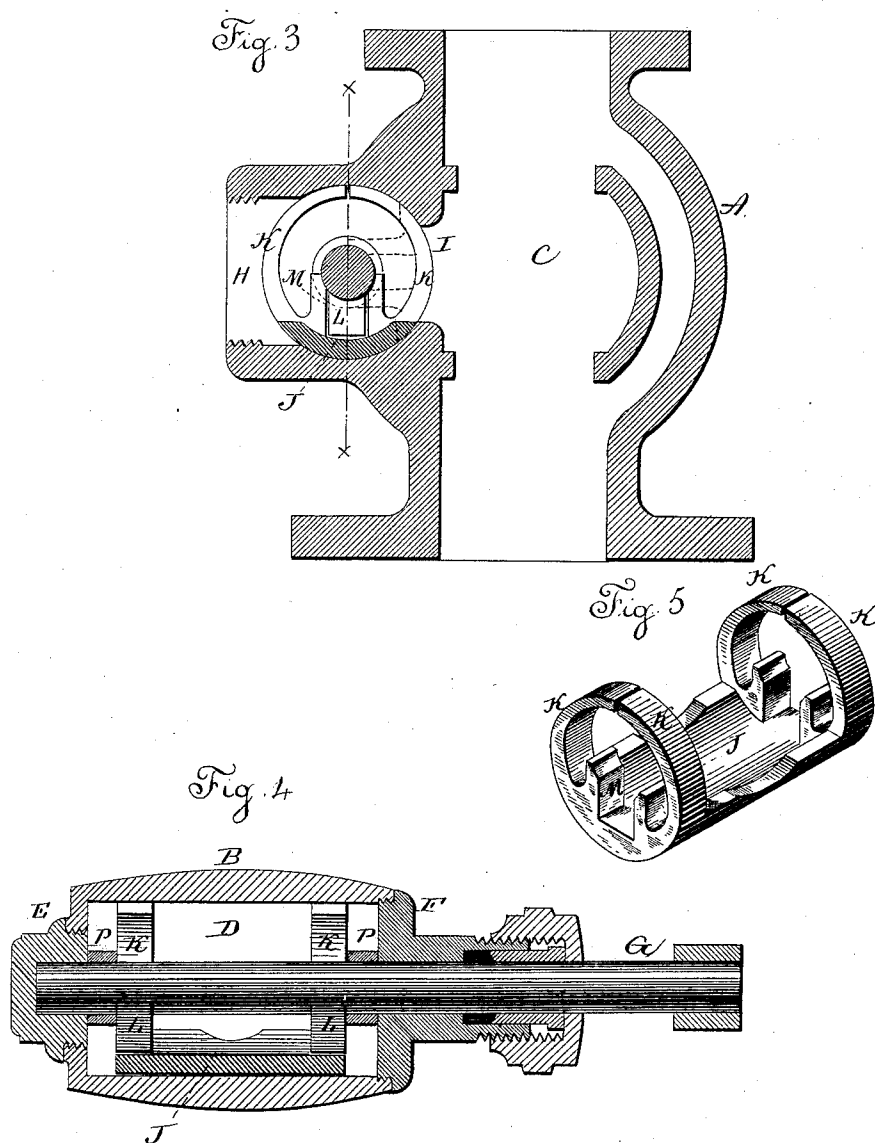
2 Sheets—Sheet 2.

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THROTTLE VALVE.

No. 341,346.

Patented May 4, 1886.



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UNITED STATES PATENT OFFICE.

THOMAS R. PICKERING, OF PORTLAND, CONNECTICUT.

THROTTLE-VALVE.

SPECIFICATION forming part of Letters Patent No. 341,346, dated May 4, 1886.

Application filed January 2, 1886. Serial No. 187,366. (No model.)

To all whom it may concern:

Be it known that I, THOMAS R. PICKERING, of Portland, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Throttle-Valves for Steam-Engines; and I do hereby declare the following, when taken in connection with accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view looking toward the end of the throttle-valve case; Fig. 2, a top view of the same; Fig. 3, a vertical central section cutting through the throttle-valve chamber at right angles to its axis; Fig. 4, a vertical central section through the throttle-valve chamber on line *xx* of Fig. 3; Fig. 5, a perspective view of the valve detached.

This invention relates to an improvement in that class of throttle-valves in which the valve-chamber is cylindrical with an opening from one side and the valve segment shape concentric with the cylindrical valve-chamber, and adapted to be turned therein to open or close the opening for the passage of steam. In the usual construction of this class of valves a spindle extends longitudinally and concentrically through the chamber, by means of which the valve is turned, and the valve is adapted to engage the spindle, so that the turning of the spindle will turn the valve to hold the valve against the surface of the cylinder when the steam-pressure is not sufficient for that purpose, or, when the valve is turned away from the opening, a spring is introduced between the spindle and valve, creating necessarily a very considerable pressure between the valve and spindle and a corresponding friction upon the spindle in its bearings.

The object of my invention is to make the support of the valve entirely independent of the spindle; and it consists in a cylindrical valve-chamber, into which steam is admitted, with an opening therefrom through which the steam may pass to the cylinder, combined with a valve consisting of a segment of a cylinder, corresponding to the interior of the valve-chamber, with circumferential extensions therefrom, forming one or more divided rings to extend around the interior of the cylinder,

with a valve-spindle arranged in bearings and concentrically through the chamber and valve, with free connections between the said spindle and valve, whereby the rotation of the spindle will be imparted to the valve, and as more fully hereinafter described.

I show the shell of the throttle-valve made as an integral part of the shell of the governor-valve, A representing the governor-valve shell, and B the throttle-valve shell. This peculiar construction of shell constitutes no part of the present invention. The throttle-valve chamber D is cylindrical throughout, provided with a head, E, at one end, and a similar head, F, at the opposite end.

G is the valve-spindle, which extends through a stuffing-box arrangement and the head F into the opposite head longitudinally through and concentric with the valve-chamber. Into the valve-chamber is an inlet, H, and also an opening, I, from the chamber, which leads to the governor valve chamber or to the cylinder, as the case may be.

J is a valve, which is a segment of a cylinder, the diameter of which corresponds substantially to the internal diameter of the valve-chamber, and is of a length and width sufficient to cover the opening I, as indicated in broken lines, Fig. 3. From the edges of the valve circumferential extensions K K are formed, preferably two on each side, and these extensions come nearly together, forming divided ring-like connections between the two edges of the valve, these extensions substantially completing the circle, and corresponding to the interior of the valve-chamber. The division permits a considerable degree of elasticity to the extensions K K, and so that as the valve is introduced into the cylinder, the extensions will be somewhat compressed, their elasticity tending to force the valve upon the surface of the cylinder, and they also serve as guides and supports for the movement of the valve independent of the spindle—that is to say, the valve is located in the cylinder so independent of the spindle that it will maintain its position in the chamber whether or not the spindle be present. The spindle is provided with one or more radially-projecting arms, L L, corresponding to the recesses M M on the valve, so that they may set therein, as seen in Fig. 3, and so that as the spindle is turned

the arms will engage the valve and impart corresponding rotation to it. Suitable collars, P P, are introduced onto the spindle at each end of the valve to hold it in its proper position 5 longitudinally. By this construction the valve may be introduced and fitted to its place in the chamber independent of the spindle—a very great convenience in fitting the valve or assembling the parts. The spring-extensions 10 readily take up any wear which may occur upon the face of the valve, so that it is sure to always maintain its proper position in the chamber, and being thus supported entirely independent of the spindle there is no friction 15 upon the spindle independent of its own bearings, and that friction is not affected by the steam-pressure in the valve-chamber.

The valve-spindle is provided with a suitable handle, R, or other device, by which it 20 may be rotated to open, close, or adjust the valve.

I am aware that a tubular valve has been used, and the said tube divided so as to be expandible under the pressure within it; but 25 make no claim to such a valve, the essential feature of my invention being the segment-shaped valve provided with divided ring-like projections, which are somewhat larger in diameter

than the diameter of the cylindrical chamber in which the valve is to work, and so that the 30 ring-like projections will be somewhat contracted when in the chamber, and so as to serve to hold the segment-shaped valve upon its seat independent of the spindle, which extends through the chamber. 35

I claim—

The herein described improvement in throttle-valves, consisting of the cylindrical valve-chamber D, having an inlet-passage thereto 40 for the admission of steam, and an opening for its exit, combined with a spindle, G, longitudinally and concentrically through said chamber, and supported in suitable bearings, with the valve J of the segment of a cylinder 45 shape, corresponding to the cylindrical shape of the chamber, and constructed with circumferential extensions from its edge, forming one or more divided rings, corresponding to the internal circumference of the cylinder, the said 50 spindle provided with one or more radial arms, L, and the valve with one or more corresponding recesses, M, substantially as described.

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Witnesses:

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