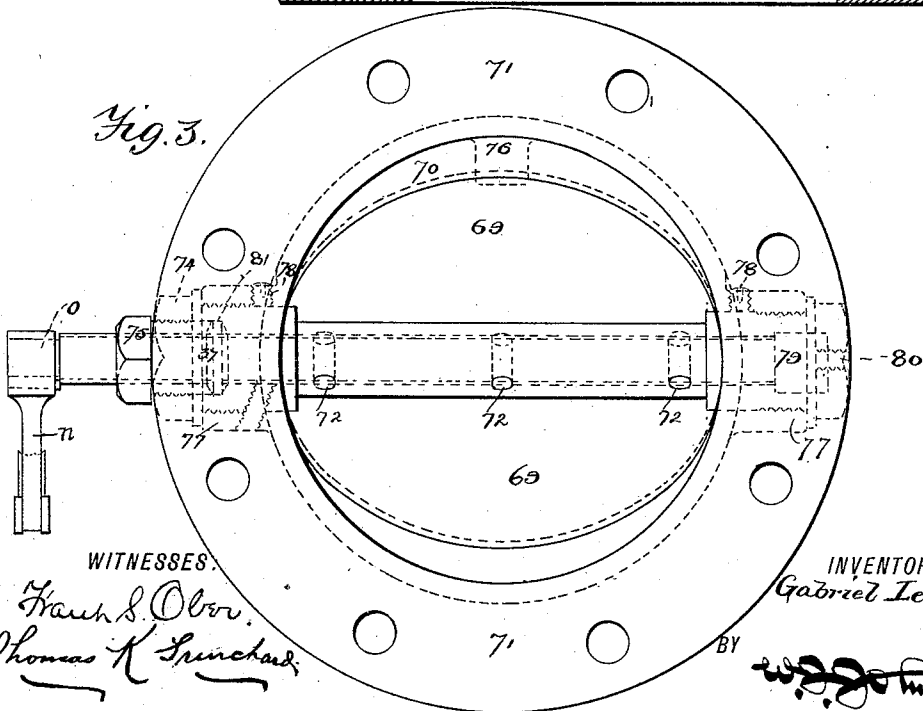
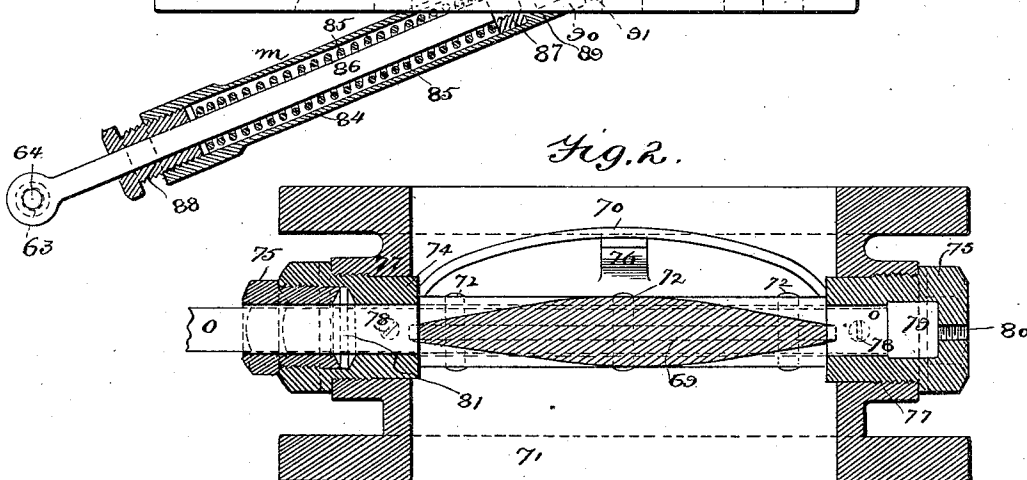
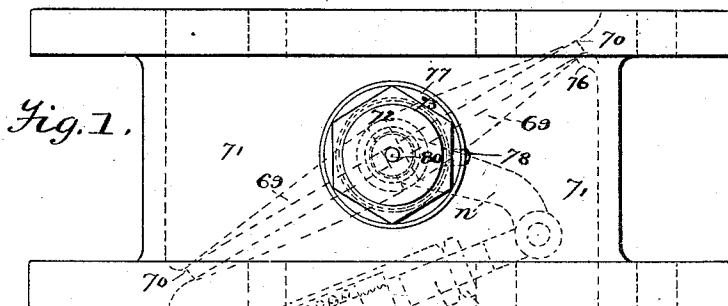


(No Model.)

G. LEVERICH.
THROTTLE VALVE.

No. 443,326.

Patented Dec. 23, 1890.



WITNESSES.

Frank S. Olver.
Thomas K. Shuchard.

INVENTOR

Gabriel Leverich.

BY

W. J. Johnston
ATTORNEY.

UNITED STATES PATENT OFFICE.

GABRIEL LEVERICH, OF MAPLEWOOD, NEW JERSEY.

THROTTLE-VALVE.

SPECIFICATION forming part of Letters Patent No. 443,326, dated December 23, 1890.

Application filed July 25, 1890. Serial No. 359,865. (No model.)

To all whom it may concern:

Be it known that I, GABRIEL LEVERICH, a citizen of the United States, residing in Maplewood, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Throttle-Valves, of which the following is a specification.

In the mechanism of power-plants of cable railways driven by two or more steam-engines connected to or disconnected from a main shaft by friction-clutches, and in which two or more cables are employed, I have devised means whereby a uniform speed of the winding-drum is maintained by throttling the exhaust-steam on its passage from the driving-engine, as set forth in my application, Serial No. 342,634, for Letters Patent on operating-gear for cable-driving machinery, of which this is a divisional application.

This present improvement relates to the construction of the valve which is placed in the exhaust-pipe, which leads vertically downward from the steam-cylinder, its net opening being somewhat greater than the sectional area of the pipe.

Referring to the accompanying drawings, Figure 1 is an elevation of the throttle-valve box, showing the valve in dotted lines, said figure being taken from the side opposite to that on which the valve-crank is secured to the spindle of the valve. Fig. 2 is a section of the box and valve on a vertical central line through Fig. 1, but with the valve-disk shown in a horizontal position for convenience of illustrating its sectional shape; and Fig. 3 is a view looking through the valve-box, showing the parts in plan.

The lens-shaped circular valve-disk 69 is loosely fitted to the circular steamway or valve-seat 70 in the cylindrical valve-case 71, flanged for bolting to the steam-cylinder at one end and to the exhaust-pipe at the other.

In a boss extending across the valve-disk on a chord a small distance from the diameter and fastened by the pins 72 is the valve-spindle *o*. This spindle extends on one side of the disk into the closed bush 73 and on the other side through the open bush 74 and the gland 75 outward to receive the crank *n*, secured to it. In these bushes, which are of brass or other suitable metal for bearings,

the disk and spindle are rotated, and to limit the range of movement to sixty degrees the valve-seat is inclined at that angle to the axis of the cylindrical case. When closed, the disk brings up along its upper edge against the stop 76. The two bushes, as shown, are shouldered and screwed steam-tight, each into and against its boss 77 and secured by a set-screw 78. These bosses extend outward from and are a part of the valve-case. To insure a close and easy fit of the disk to its seat, the ends of the valve-boss are, with a circular cutting-tool, squared somewhat within the curved outline of the disk, and against the flat surfaces thus formed the inner projecting ends of the bushes bear, filling, as above, the shallow cylindrical cavities along the opposite edges of the valve. At the end of the bearing in the closed bush is a chamber for oil supplied from a cup connecting with the hole 80. The bearing in the open bush is lubricated in a like manner. The gland 75 is shouldered. When screwed into place, it incloses between its inner end and the bearing the chamber 81, which contains the packing required to make the joint around the valve-spindle steam-tight. To prevent corrosion, the latter is covered its whole length with sheet-brass or other metal suitable therefor. When the pins 72 are driven out, the spindle may be withdrawn and the valve-disk removed from its case for inspection and repairs.

The valve-disk, when the valve is open, will be vertical, and ordinarily it will be in this position; but at times it is to be closed and will be so through mechanism which it is not necessary to show or describe herein.

The resisting pressure in the steam-cylinder on the exhaust side of the piston, caused by closing the exhaust throttle-valve, must not exceed a certain safe limit. When this is reached, the valve must automatically open far enough to prevent a further increase of pressure. Such is accomplished by placing the spindle *o* somewhat to the upper side of the valve-disk, as described, and opposing the fractional resulting pressure, tending to open the valve, by a spring in the rod *m*, adjusted to yield when the pressure is exceeded. Inclosed within the spring-case 84 is the coiled

spring 85. This spring surrounds the rod 86, and is confined between the nut 87 on and pinned to the rod and a washer resting against the shouldered bush 88, screwed into the end of the spring-case. It is inserted under compression, the amount of which is adjusted by revolving the bush within the spring-case. Under the action of the spring the nut 87 is kept against the solid abutment 89. As the spring yields, the rod 86 is withdrawn and the valve opens. The rod 90 is screwed into the end opposite the bush of the spring-case, and by revolving the latter and then securing it by the lock-nut 91 the working length of the spring-rod is adjusted.

It is to be understood that so far as the subject-matter of this application is concerned the opening 64 in the end of the spring-rod may represent the point at which the mechanism for opening or closing the valve is to be connected, the spring-rod at its other end being connected to the crank *n*, which is secured to the spindle *o* of the valve.

Having thus described my invention, I claim—

1. A valve consisting of a disk mounted to turn on an axial line extending from edge to edge, but out of the center, in combination with a spring adjusted to hold the valve in a fixed position against a limited pressure, substantially as described.

2. The combination, with a fluid-passage and a valve-disk fitting and controlling the same, of a pair of bushes fitted in the walls of the passage and extending a short distance into the opposite edges of the disk, the disk being cut out to admit the bushes, whereby a close and easy fit of the parts is maintained.

3. The combination, with a valve, disk, or plate whose axial line divides the surface of the valve into unequal parts, of a spring acting through the valve-spindle to prevent the turning of the valve, substantially as described.

4. The combination, with a valve-box, of a valve pivoted therein, the axis of the pivots being on one side of the center of the pressure area of the valve, and a spring for resisting the tendency of the valve to open under pressure.

5. The combination, with a valve-box and a valve pivoted therein, of a crank-arm secured to the spindle of the valve, and a spring-rod connected at one end to said arm, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GABRIEL LEVERICH.

Witnesses:

WM. A. ROSENBAUM,
LOUIS F. DOYLE.