

No. 830,106.

PATENTED SEPT. 4, 1906.

F. SCHREIDT.
VALVE.

APPLICATION FILED DEC. 6, 1905.

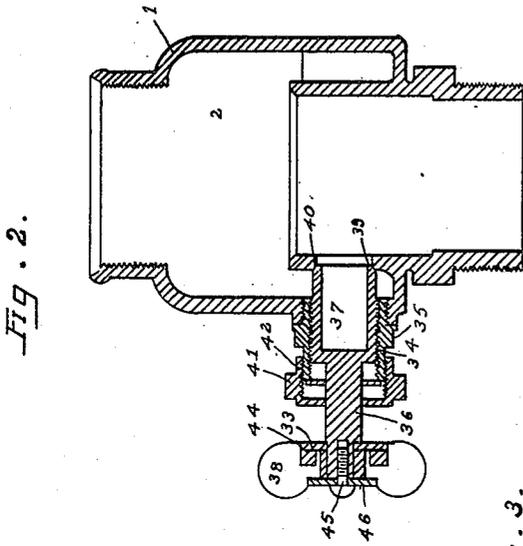


FIG. 2.

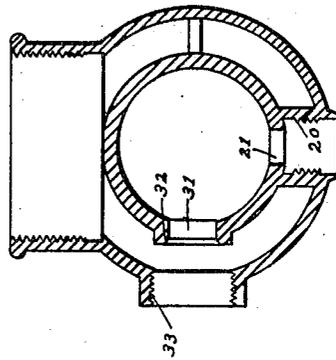


FIG. 3.

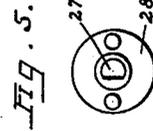


FIG. 5.

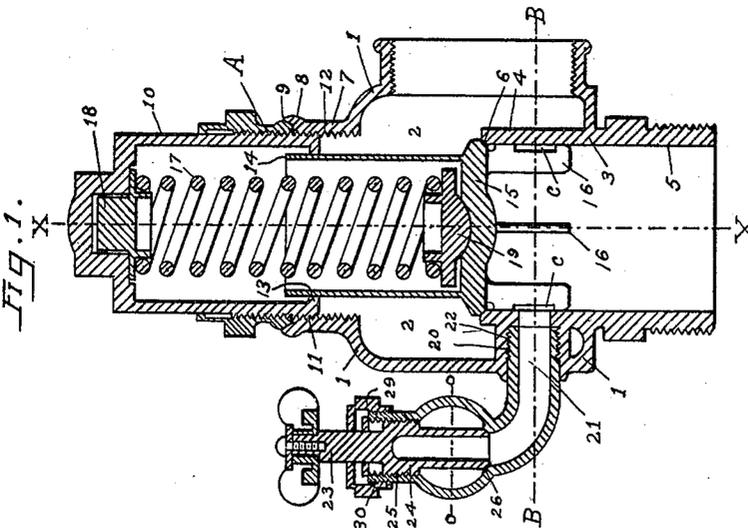


FIG. 1.

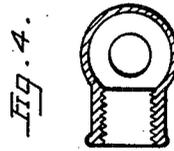


FIG. 4.

Witnesses
 Fred A. Schlosser
 Calvin Keith.

Inventor.
 Frank Schreidt
 By John H. Cross
 Attorney

UNITED STATES PATENT OFFICE.

FRANK SCHREIDT, OF MANSFIELD, OHIO.

VALVE.

No. 830,106.

Specification of Letters Patent.

Patented Sept. 4, 1906.

Application filed December 6, 1905. Serial No. 7290,643.

To all whom it may concern:

Be it known that I, FRANK SCHREIDT, a citizen of the United States of America, and a resident of Mansfield, Richland county, Ohio, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to an automatic and manually-operated relief-valve.

The objects of my invention are to afford facilities for automatically operating the valve when the pressure of the steam or other substance exceeds a predetermined amount and to provide ejection-ports for its escape.

A further object is to vary the power required to actuate and release the valve from its seat automatically through the medium of spring tension.

A further feature of my invention is the means provided for relieving the pressure from the inlet-orifice manually independent of the automatic mechanism.

Another object is to construct the body of the valve to admit of attaching an indicator-valve with the inlet-aperture underneath the main-valve disk and which can be operated independent of the valve mechanism.

Another feature is the novel construction of the spring-case and valve-disk holder.

I attain these and other objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a cross-sectional vertical elevation taken through the center, showing the details of the construction of the valve mechanism, and cross-sectional vertical elevation of the indicator-valve, showing construction of the body of the valve to admit of attaching the indicator-valve underneath the seat of the main valve. Fig. 2 is a cross-sectional vertical elevation of the valve, taken through the line X X of Fig. 1, showing manually operated relief and drain valve. Fig. 3 is a bottom view of Fig. 1 through the line B B. Fig. 4 is a bottom view of the indicator-valve, taken through the line o o. Fig. 5 is a bottom view of the wheel-disk and end and top view of the stem of the indicator-valve.

Similar characters refer to similar parts throughout the several views.

Referring to the drawings, reference-figure 1 designates the body of the valve, and figure 2 the main-valve chamber. A tubular portion 3 is preferably made integral with the

bottom of the valve, with one end 4 projecting upwardly into the valve-chamber and the opposite end 5 depending below the bottom of the valve-body. The end 4 adjacent to the inner periphery is inclined, forming a valve-seat 6. A projecting portion 7 extends upward from the body, with the end terminating in an annular rib 8, having an annular inwardly-extending incline formed thereon. A valve-case 10, having its lower end 11 exteriorly screw-threaded, is adapted to engage with the screw-threaded interior 12 of the projecting portion 7 for the purpose of adjustment of the valve-case.

An annular inwardly-extending flange 13 is made integral with the lower end of the valve-case and surrounds the tubular valve-stem 14, which is secured or made integral with the valve-disk 15. Depending wings 16 are fitted to the inner periphery of the tubular portion 3, which, in conjunction with the annular flange 13, serve to keep and guide the valve in perfect alinement with the valve-seat 6 when it is actuated by excess pressure counteracting the tension of a spiral spring, which will be described hereinafter. A spiral spring 17, having plugs 18 and 19, is fitted to the apertures of the spring and compressed and inclosed within the spring-case and tubular valve-stem.

The spring-case is connected to the projecting portion of the valve by my thread-concealing lock-nut A', which is the subject-matter of a pending application filed November 27, 1905, Serial No. 289,171. The spiral spring is compressed by means of adjusting the spring-case by the engagement of the screw-threads. A screw-threaded aperture 20 is formed integral with the body of the valve-chamber, with the aperture 21 located beneath the valve-disk 15 and in communication with the tubular portion 3. The aperture 21 permits the steam or other substance to communicate with the indicator-valve, which is preferably made angular in form, as shown in the drawings, (see Fig. 1,) and connected to the main valve by the threaded interior of the end 22 of the angular valve. The angular valve is constructed as follows.

A stem 23, having an enlarged portion 24 with a threaded exterior, is received within the threaded aperture 25, which provides a means of opening or closing the valve 26.

when the stem is turned in the ordinary manner. The end 27 is preferably formed to correspond with that shown in Fig. 5, and a disk 28 is fitted thereto. To prevent the escape
5 of steam, a stuffing-box 29 is fitted to the end 30 of the indicator-valve and packed in the usual manner.

It will be observed that the peculiar construction of the body-valve and other details admits of the steam being conducted
10 directly into the aperture 21 independent of the automatic mechanism and without communicating with the main-valve chamber 2. An aperture 31 is formed in the tubular portion 4 and positioned at right angles with the
15 aperture 20, which is adapted to receive the end of the indicator-valve, as described. The end 32 of the aperture is inclined to form a valve-seat. In direct alinement with the
20 valve-seat 32 an enlarged screw-threaded aperture 33 is provided to receive an exteriorly and interiorly screw-threaded bushing 34, which is provided with a jam-nut 35. A valve-stem 36, having an enlarged exteriorly-
25 threaded lower portion 37, is received within the threaded interior of the bushing 34, which when turned by the wheel 38 moves the valve-disk 39 in and out of contact with the seat 40, opening and closing the valve at
30 the will of the operator, providing a means of manually relieving the pressure independent of the automatic mechanism. A stuffing-box 41 is fitted to the end 42 of the valve to prevent the escape of steam or other substance and packed around the stem in the
35 usual manner. The wheel 38 is fitted to a disk 43 and held in place by the pins 44 and the screw 45 and washer 46. Notches C are cut in the wings, coinciding with the inlet-
40 apertures 21 and 31 to permit the passage of the steam without retarding it in case the wings should be turned in direct alinement with the apertures.

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

1. A relief-valve for steam-engine cylinders comprising a body having an upwardly-extending tubular portion made integral therewith communicating with the valve-chamber with outlets formed on said tubular
50 portion, a valve having a tubular upper portion, a valve-case, a lock-nut adapted to adjustably connect said valve-case to the body, a spring inclosed within tubular portion of
55 the valve and valve-case under a predetermined pressure to provide for automatic relief, means to close or open the outlet in the valve-chamber manually.

2. A relief-valve for steam-engine cylinders comprising a body having an upwardly-extending tubular portion made integral therewith, a valve-seat formed in said tubular
60 portion below the main valve, a valve-

case with the end terminating with an annular upwardly-extending rib surrounding the periphery of the tubular portion of the valve, means to adjustably secure the valve-case to the body, a helical spring inclosed between the top of the valve-case and the main valve
65 under a predetermined tension, means to automatically and manually relieve the pressure as set forth.

3. A relief-valve for steam-engine cylinders comprising a body having an enlarged valve-chamber with a tubular portion extending from the inlet into said chamber, an
75 intervening space surrounding said tubular portion, a valve with a tubular valve-stem, a valve-case secured to the body of the valve, a spiral spring compressed and inclosed within the valve-case under predetermined tension to provide automatic relief, a valve-seat
80 formed on the end of the tubular portion, a valve-outlet formed below said main-valve seat to provide for manual relief of steam and water independent of the automatic relief-valve.

4. A relief-valve for steam-engine cylinders comprising a body with a tubular portion made integral and extending into the valve-chamber leaving a space between the outer periphery of the tubular portion and the wall of the body, a valve having a tubular upper portion, a valve-case, a spring
90 compressed and inclosed between the valve-stem and valve-case under a predetermined tension, outlets formed in the tubular portion of the valve-body below the main valve, means to manually relieve the valve as described
95 and set forth.

5. A relief-valve for steam-engine cylinders comprising a body, a tubular portion extending into the valve-chamber forming a space between the outer periphery and the
100 wall, a valve-seat formed on the tubular portion, a valve provided with a tubular upper portion, a valve-case adjustably connected to the body, a spiral spring compressed and inclosed within the valve-stem and valve-
105 case for automatically relieving said valve under a predetermined pressure, an outlet for manual relief provided in the tubular portion below the main-valve seat.

6. A relief-valve comprising a body with a tubular portion with a valve-seat formed on the free end and outlet-apertures arranged on said tubular portion below the valve-seat, a valve having a tubular stem, a valve-case, a spring inclosed and compressed within said
110 case and stem, a lock-nut adapted to adjustably connect said case and body portion, means to vary the tension of the spring, a valve-outlet to manually relieve the pressure formed on the tubular extension below the
115 main-valve seat and operated independent of the automatic relief-valve.

7. A relief-valve for steam-engine cylin-

5 ders, comprising a body portion having an enlarged chamber with a tubular projecting portion extending into said valve-chamber with a main-valve seat formed on the free end and made integral therewith, a valve-seat for manual relief formed below said main-valve seat, an outlet provided in the tubular portion below said main-valve seat commu-

nicating with an indication-elbow as set forth.

Signed at Mansfield, Ohio, this November, 1905.

FRANK SCHREIDT.

Witnesses:

JOHN H. COSS,
NELLE CASEY.

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