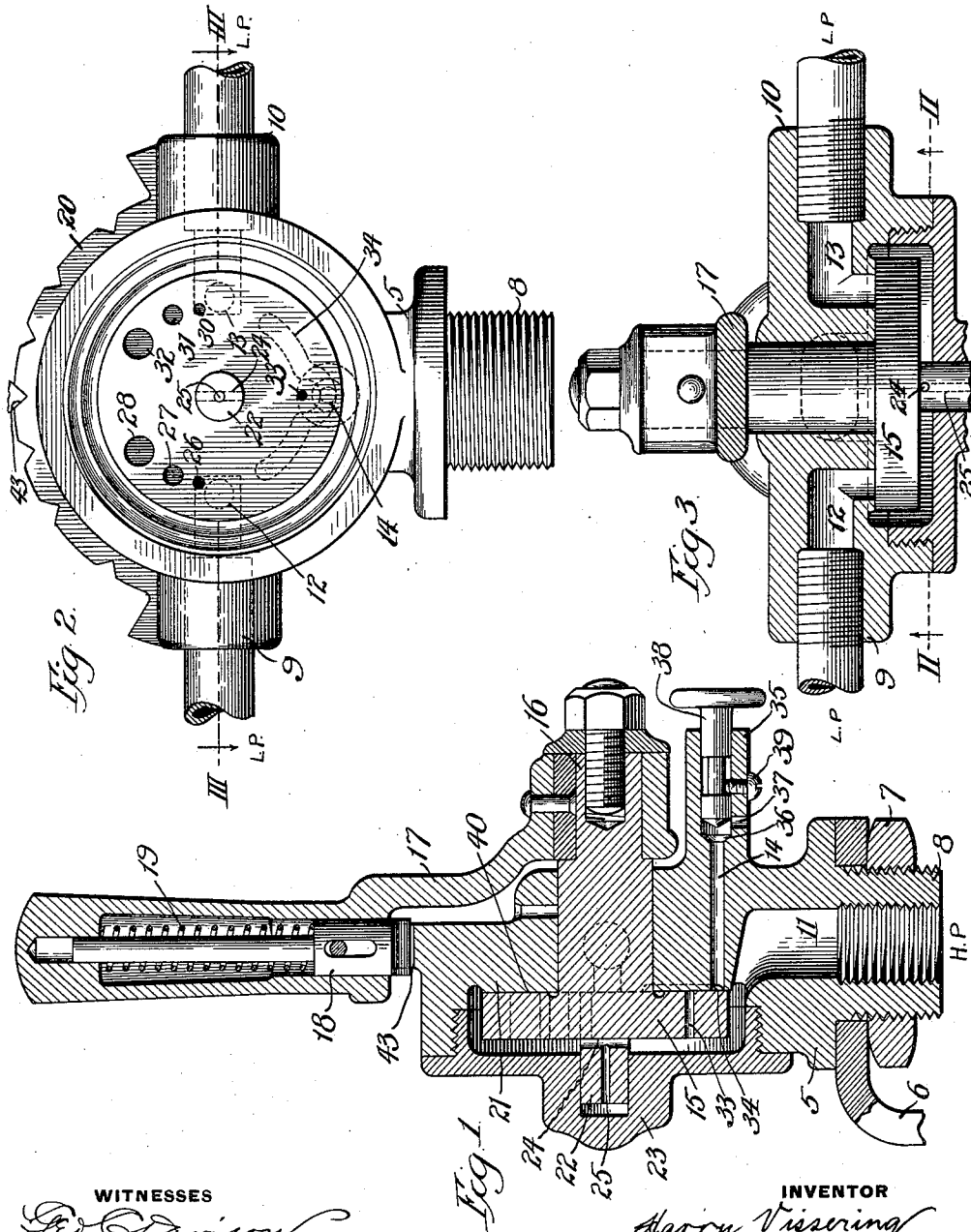


H. VISSERING.
ALARM VALVE.
APPLICATION FILED JUNE 17, 1909.

1,022,613.

Patented Apr. 9, 1912.

2 SHEETS—SHEET 1.



WITNESSES
Ed. Grignon.
Donald C. Williams.

INVENTOR
Harry Vissering
By Synnestvedt & Carpenter
Attorneys

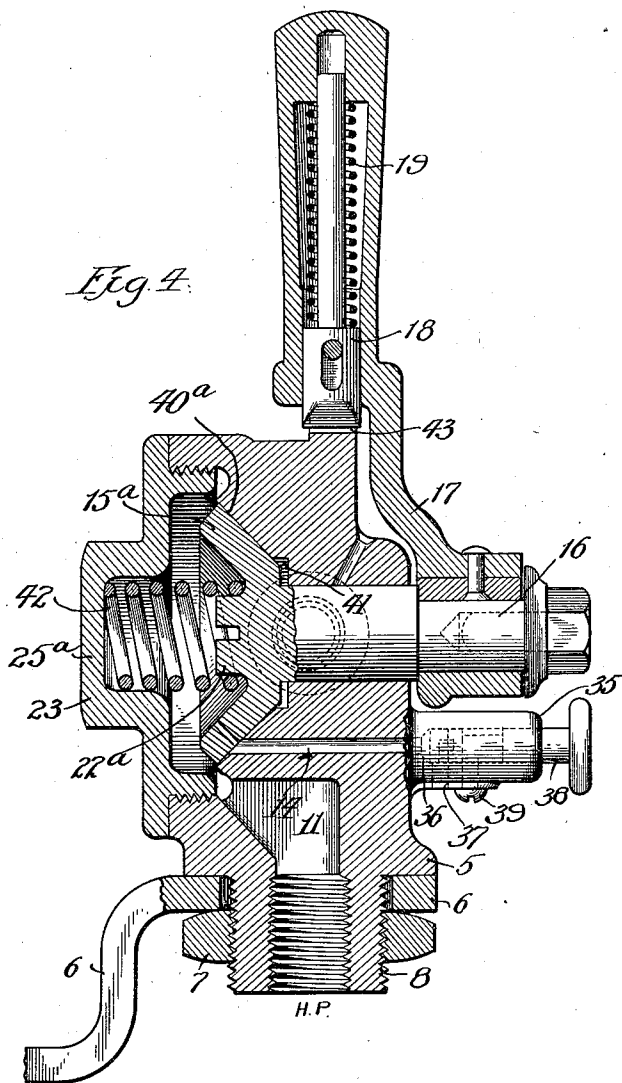
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WITNESSES

Geo. C. Davison
Donald C. Williams

INVENTOR

Harry Vissering
By Symes, Trevel & Carpenter
His Attorneys

UNITED STATES PATENT OFFICE.

HARRY VISSERING, OF CHICAGO, ILLINOIS, ASSIGNOR TO HARRY VISSERING AND COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ALARM-VALVE.

1,022,613.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed June 17, 1909. Serial No. 502,729.

To all whom it may concern:

Be it known that I, HARRY VISSERING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Alarm-Valves, of which the following is a specification.

My invention has reference to valves of the rotary type especially, and to valves for admitting fluid contained under pressure to an apparatus operable thereby, and proposes the provision of an improved form of valves having means for graduating the admission of the fluid and a warning or alarm port to call to the attention of the user the fact that the valve is open, to the end that pressure may not be unnecessarily expended, the operation of the device prolonged, or the material fed thereto or coming therefrom lost, tending to unnecessary wear and tear of the parts or destruction of material; valves of this class being found to be especially useful as part of track sanding apparatus, air brake systems and other devices governed from a locomotive cab and other places at a distance from the place of operation.

The principal objects of my present invention are the provisions of an improved construction of valves of the character specified, one wherein the warning port will be closed at all times when the main operating ports are closed, one wherein the closure of the main operating ports will simultaneously close the warning port, the provision of an improved form of alarm valve device wherein all of the ports are carried on oppositely disposed members, and wherein such members are held together against displacement in order to insure registry of the ports; the provision of a valve device of the character described wherein the operating ports are graduated in size to the end that fluid pressure may be gradually admitted to the actuated device and a waste of the initial pressure or material fed thereby, or too violent starting of the actuated device, may be avoided; the provision of such a valve wherein the warning port will be open during the entire time that any of the operating ports are open, and one which is constructed to admit of ready re-grinding or replacement of certain of the parts of the valve without disturbance of other parts thereof or of the connecting conduits, the provision

of a valve of the character described which is adaptable for admitting pressure to a plurality of devices, together with additional benefits and advantages which will hereinafter be disclosed.

In attaining the foregoing objects as well as others which will be manifest to those who are versed in the construction and operation of valves provided for the purposes contemplated by my present invention, I have provided the constructions which I have illustrated in the accompanying drawings wherein—

Figure 1 is a sectional elevation of a valve embodying my improvements. Fig. 2 is a view partly in section taken on the line II—II of Fig. 3. Fig. 3 is a sectional view taken on the line III—III of Fig. 2, and Fig. 4 is a sectional elevation of another exemplification of my improvements.

Referring now more particularly to Figs. 1 to 3 of the drawings it will be apparent that in carrying out the embodiment of my invention here illustrated I provide a valve casing 5 which may be mounted in suitable position for operation by means of the bracket 6 with which it is held in engagement by the lock nut 7, the said casing having at 8 (Fig. 1) an inlet connection to a high pressure conduit and at 9 and 10 (Figs. 2 and 3) outlet connections to low pressure conduits, the connection 8 communicating with the connections 9 and 10 by the passages, 11, 12 and 13. The casing 5 is also provided with a passage 14 for a purpose to be hereinafter more particularly described. Communication between the high pressure passage 11, and the low pressure passages 12, 13 and the passage 14, is normally interrupted by the valve 15 whose stem 16 extends through the casing and carries an operating handle 17 provided with a latch 18 adapted to be held in contact by a spring 19, for which a housing is provided in the handle, with notches in a segment 20 at the periphery of the casing. The valve 15 is designed to be held in contact with the seat 21 by means of the fluid pressure, and opposite the stem is provided with a hub 22 rotating in a bearing formed in the cap 23, passages 24 and 25 being formed in the hub to the end that the pressure on all parts of the valve may be equalized and a vacuum at the end of the hub 22 and ensuant leakage

avoided. On viewing Fig. 1 it will be observed that at the end of the passage 14 I have provided an alarm device which comprises a hollow casing 35 here shown as formed integral with the valve body 5 and having a passage 36 and a port 37 leading therefrom and venting to the atmosphere, the casing 35 being provided with a valve 38 slidably movable therein and adapted to close the port 37 when the operator presses thereupon, displacement of the valve 38 from the casing 35 being prevented by a screw 39. To permit the establishment of operative connection between the high pressure passage 11 and the outlet passages 12 and 13 and simultaneously the alarm device, it will be observed that I have provided in the valve 12 a series of passages 26, 27 and 28 adapted to register successively with the passage 9 as the handle is moved in one direction, and 30, 31, and 32 adapted to register successively with the passage 13, as the handle is moved in the other direction; likewise the passage 33 adapted to establish connection with the passage 14 when the handle is moved in either direction, by means of the irregularly shaped groove 34 formed in the seat of the valve 15 and communicating with the passage 14.

Referring now more particularly to Fig. 4 wherein I have illustrated an alternate form of valve embodying my invention, it will be apparent that the valve herein illustrated is in all substantial respects similar to that shown in Figs. 1 to 3, save that the valve 15^a instead of having a single plane face contacting with the seat 40^a, is wedge shape and the seat is not only made conformable thereto, but is also cut away at 41 in order to receive the said valve and permit of such grinding as may be required to make a very close fit, thereby insuring a greater degree of tightness than is feasible with the valve shown in Figs. 1 to 3, and furthermore that instead of the hub 22 projecting into the bearing 23, in this alternate form of construction I have formed the hub 22^a and the bearing 25^a to provide a housing for a spring 42 whose pressure against the cap 23 and valve 15^a will tend still further to keep the valve 15^a in tight contact with its seat 40^a.

In the operation of apparatus wherein a valve of my improved construction is utilized, when the user moves the handle 19, causing the port 26 and passage 12, or the port 30 and passage 13 to register, at the same time the port 14 will be caused to register with the groove 34 and air at high pressure will rush through the passages 11, 33, 34, 14, 36 and 37 making a hissing or whistling sound which will continually attract the operator's attention to the fact that the valve is open and the device controlled thereby is in operative connection, until the

handle be again moved onto the lap position indicated at 43 (see Figs. 1 and 2).

In cases where the device is in uninterrupted use as where track is being sanded on a long grade, the warning sound may be shut off temporarily by pressure of the finger upon the valve 38 which will close the port 37, but it will be noted that the device cannot be left in operative condition without the knowledge of the operator, since when the finger is lifted from the valve 38 the pressure will again force such valve outward and the alarm device will again become operative.

It is to be observed that when the handle 19 is moved to the first notch the smaller of the three ports 26, 27 and 28, or 30, 31 and 32, is brought into communication with the corresponding outlet passage, and but a comparatively small amount of pressure allowed to escape, that when a further turn is given to the next notch a larger port 27 or 31 will be opened, and that when the valve is pushed to the extreme limit of its movement the largest port will be uncovered, though by virtue of the fact that the groove 24 is continuous from end to end the warning sound will accompany any movement of the valve sufficient to uncover any one of either of the series of ports. By the operation here described it will be obvious that the user, as in cases where the valve is used in connection with track sanding apparatus, will be able to fully control the amount of material delivered and thereby greatly husband not only the supply thereof but also be much more economical in the use of air. It will be further observed that by means of the constructions here illustrated, I have been able to combine in one structure the requisite valve devices for ejecting sand at the point of contact of the locomotive with the rail only, whether such locomotive be running forward or backward, which construction is advantageous in this that in the use of two sets of valve devices, the waste of sand incidental to supplying it both in front of and behind the point of contact, is avoided.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:

1. A valve device comprising a casing, a valve member, connections from the casing to an inlet conduit, to an outlet conduit, and to an atmospheric alarm port, means in said valve member adapted to register with said connections and means for operating said valve whereby said connections and registering means may be brought into register and said atmospheric connection may be brought into operative relation to said inlet conduit when the valve is open.

2. A valve device comprising a casing, a

valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits and to an atmospheric alarm device, means in said valve member adapted to register with said connections and means for operating said valve whereby said connections and registering means may be brought into register, and communication may be established with an atmospheric alarm when the valve is open.

3. A valve device comprising a casing, a valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits, and to an atmospheric alarm device, means in said valve member adapted to register with said connections and means for operating said valve whereby said connections and registering means may be brought into register, and communication may be established with an atmospheric alarm when the valve is open.

4. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit, to a low pressure conduit, and to the atmosphere, means in said valve member adapted to register with said low pressure connections and means for operating said valve whereby said connections may successively be brought into register, and said atmospheric connection may be brought into operative relation to said inlet conduit when the valve is open.

5. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit, to a plurality of low pressure conduits and to an atmospheric alarm port, means in said valve member adapted to register with said low pressure connections and means for operating said valve whereby said connections may be brought into register.

6. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit and to a low pressure conduit, a plurality of passages in said valve member adapted to register with said low pressure connection, an alarm port, and means for operating said valve whereby said passages may successively be brought into register with said connections.

7. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit and to a plurality of low pressure conduits, a plurality of passages in said valve member adapted to register with said low pressure connections, an alarm port, and means for operating said valve whereby said connections may be brought into register.

8. A valve device comprising a casing, a rotating valve member, connections from the casing to a high pressure conduit on one side of the valve member, to a low pressure conduit on the other side of the valve mem-

ber, and to an atmospheric alarm port, the said valve member being apertured to bring the several connections into register when the valve is rotated.

9. A valve device comprising a casing, a rotating valve member, connections from the casing to a high pressure conduit on one side of the valve member, to a low pressure conduit on the other side of the valve member, and a connection to an atmospheric alarm port, a plurality of passages in the valve member, and means for rotating the valve whereby the several connections may be brought into register.

10. A valve device comprising a casing, a rotating valve member, connections from the casing to a high pressure conduit on one side of the valve member, to a low pressure conduit on the other side of the valve member and to an atmospheric alarm port, a plurality of passages in the valve member, and means for rotating the valve whereby the several passages may be successively brought into register.

11. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit, to a low pressure conduit and to the atmosphere, a plurality of passages in said valve member graduated in size and adapted to register with said low pressure connection and means for operating said valve whereby said passages may successively be brought into register.

12. A valve device comprising a casing, a valve member, connections from the casing to a high pressure conduit and to a plurality of low pressure conduits, a plurality of passages in said valve member graduated in size and adapted to register with said low pressure connections and means for operating said valve whereby said connections may be brought into register.

13. A valve device comprising a casing, a rotating valve member, connections from the casing to a high pressure conduit on one side of the valve member, and to a plurality of low pressure conduits on the other side of the valve member, two series of passages graduated in size in the valve member, and means for rotating the valve member whereby either of the members of the two series of graduated passages may be brought into register with the corresponding outlet connection.

14. A valve device comprising a casing, a rotating valve member, connections from the casing to a high pressure conduit on one side of the valve member, and to a plurality of low pressure conduits on the other side of the valve member, and to the atmosphere, two series of passages graduated in size in the valve member, and means for rotating the valve member whereby either of the two series of graduated passages may be brought into register with the corresponding outlet

connection, and simultaneously the atmospheric connection brought into communication with one of the conduits.

15. A valve device comprising a casing, a valve member, connections from the casing to an inlet, and to a plurality of outlets, a plurality of series of passages graduated in size in the valve member, and means for moving the valve member whereby one of the series of graduated passages may be brought into register with the corresponding outlet connection.

16. A valve device comprising a casing, a valve member, connections from the casing to an inlet, to a plurality of outlets and to the atmosphere, a plurality of series of passages graduated in size in the valve member, and means for moving the valve member whereby one of the series of graduated passages may be brought into register with the corresponding outlet connection, and simultaneously the atmospheric connection brought into communication with one of the conduits.

17. A valve device comprising a casing, a valve member, connections from the casing to a conduit on one side of the valve member, and to a plurality of conduits on the other side of the valve member, a plurality of series of passages graduated in size in the valve member, and means for moving the valve member whereby one of the series of passages may be brought into register with the corresponding conduit.

18. A valve device comprising a casing, a valve member, connections from the casing to a conduit on one side of the valve member, to a plurality of conduits on the other side of the valve member, and to the atmosphere, a plurality of series of passages graduated in size in the valve member, and means for moving the valve member whereby one of the series of passages may be brought into register with the corresponding conduit, and simultaneously the atmospheric connection brought into communication with one of the conduits.

19. A valve device comprising a casing, a valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits, and to an atmospheric alarm port, means in said valve member adapted to register with said connections and means for operating said valve whereby said connections and registering means may be brought into register, and said alarm port may be brought into operative relation to said inlet conduit when the valve is opened.

20. A valve device comprising a casing, a valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits, and to an atmospheric alarm device, means in said valve member adapted to register with said connections and means for operating said valve whereby said con-

nections and registering means may be brought into register, and said alarm port may be brought into operative relation to said inlet conduit when the valve is opened.

21. The combination in an alarm valve, of a casing provided with a tapered seat with an alarm passage leading from such seat to the atmosphere, and a tapered valve rotatable in the seat and adapted to cover the end of the alarm passage when the valve is in closed position.

22. The combination in an alarm valve, of a casing provided with a seat with a groove and with an alarm passage leading from such groove to the atmosphere, and a valve in the seat and adapted to cover the groove when in inoperative position.

23. The combination in an alarm valve, of a casing provided with a seat with a double ended passage leading from the seat to the atmosphere, and a valve movable relatively to the seat and adapted to close said passage when the valve is in closed position.

24. A valve device comprising a casing having a tapered seat, a tapered valve member, connections from the casing to an inlet conduit, to an outlet conduit, and to the atmosphere, means in said valve member for establishing communication between said connections, and means for operating said valve, whereby said atmospheric connection may be brought into operative relation to said inlet conduit when the valve is opened.

25. A valve device comprising a casing having a tapered seat, a tapered valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits and to an atmospheric alarm device, means in said valve member for establishing communication between said inlet connection and alarm port and said outlet connections in alternation, and means for operating said valve, whereby communication may be established with an atmospheric alarm when the valve is open.

26. A valve device comprising a casing having a tapered seat, a tapered valve member, connections from the casing to an inlet conduit, to a plurality of outlet conduits and to an atmospheric alarm device, means in said valve member for establishing communication between said connections, and means for operating said valve and alarm device whereby said inlet connection may be brought into communication with one of said outlet connections when moved in one direction and with another of said outlet connections when moved in another direction and the alarm device is operated when the valve is opened.

27. A valve device comprising a casing having a tapered seat, a tapered valve member, connections from the casing to a high pressure conduit, to a plurality of low pressure conduits and to an atmospheric alarm

port, a plurality of passages in said valve member adapted to establish communication between said high pressure connection and one of said low pressure connections when moved in one direction and with another of said low pressure connections when moved in another direction, and means for operating said valve whereby such communication may be established.

10 28. A valve device comprising a casing having a tapered seat, a tapered valve member, connections from the casing to a high pressure conduit, to a plurality of low pressure conduits and to the atmosphere, means 15 in said valve member adapted to establish communication between said high pressure connection and one of said low pressure connections when moved in one direction and with another of said low pressure connections when moved in another direction, and means for operating said valve whereby such communication may be established and simultaneously the atmospheric connection brought into communication with the inlet 25 conduit.

29. The combination in an alarm valve, of a casing provided with a tapered seat with an alarm passage leading from such seat to the atmosphere, a tapered valve rotatable in the seat, adapted when the valve 30 is in closed position to prevent access to the

alarm passage of fluid from the side of the valve opposite to such alarm passage.

30. The combination in an alarm valve, of a casing provided with a tapered seat 35 with a double ended passage leading from such seat to the atmosphere, a tapered valve rotatable in the seat, adapted when the valve is in closed position to prevent access to the double ended passage of fluid from the side 40 of the valve opposite to such double ended passage.

31. A valve device comprising a casing, a valve member, connections from the casing to a high pressure inlet conduit, to a plurality of low pressure outlet conduits and to an atmospheric alarm port, means in said valve member adapted to register with said connections, and means for operating said valve whereby said connections and registering means may be brought into register, and communication may be established with an atmospheric alarm when the valve is open. 50

In testimony whereof I have hereunto 55 signed my name in the presence of the two subscribed witnesses.

HARRY VISSERING.

Witnesses:

PAUL CARPENTER,
GEO. C. DAVISON.