S. H. LEWIS.

VALVE STRUCTURE.

APPLICATION FILED MAY 7, 1918.

1,291,566.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 1.

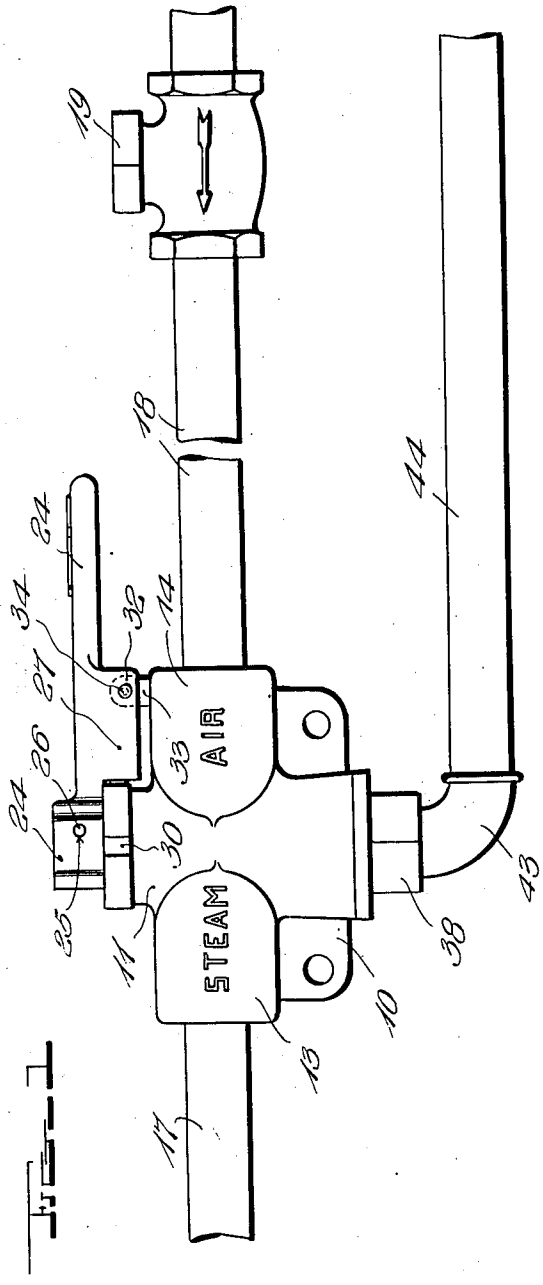


Fig. 1

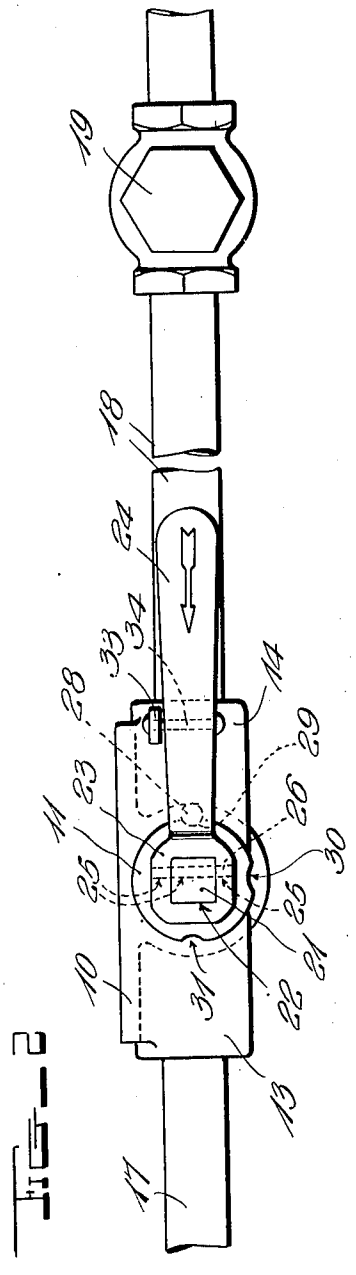


Fig. 2

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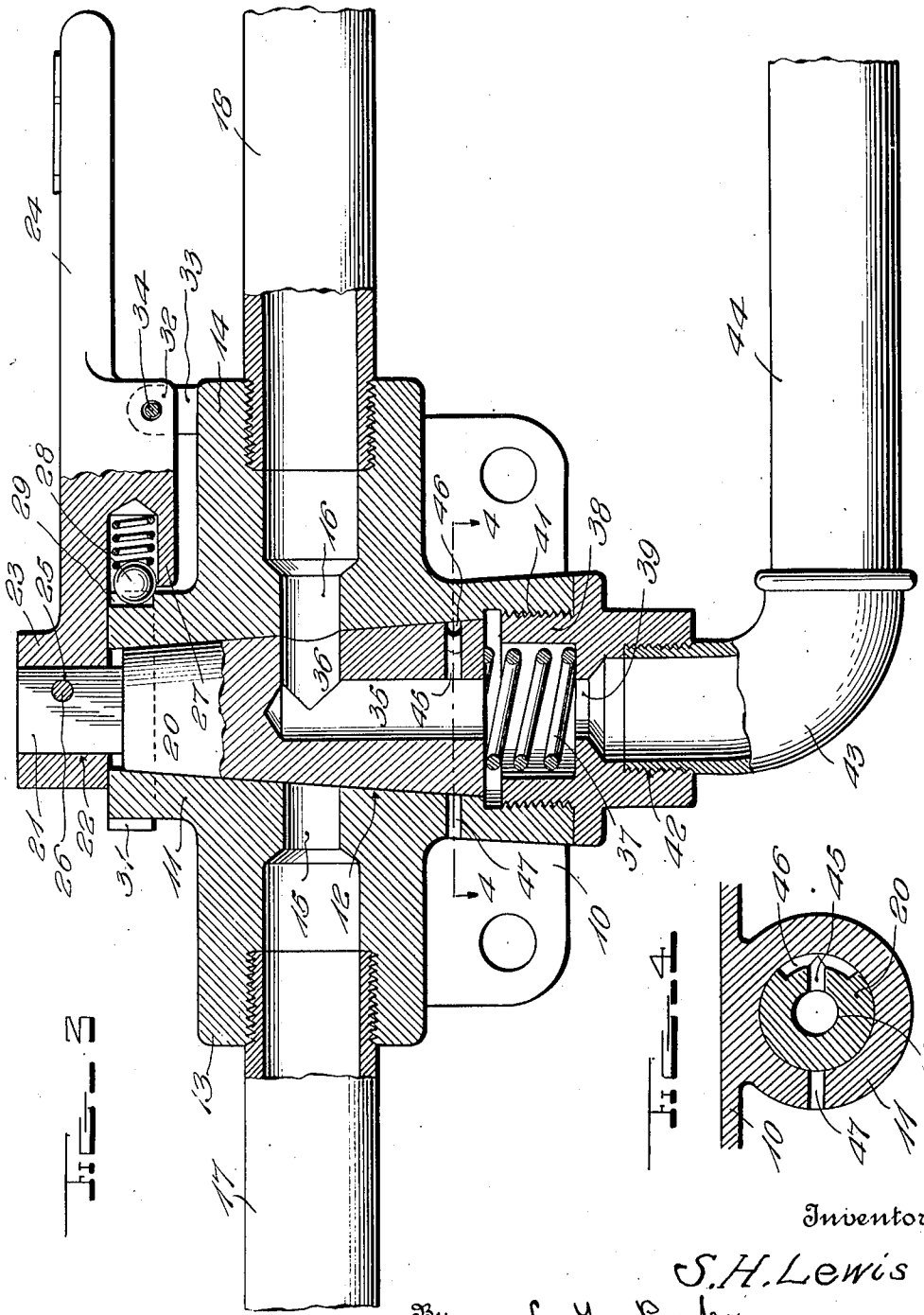


Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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VALVE STRUCTURE.

1,291,566. Specification of Letters Patent. Patented Jan. 14, 1919.

Application filed May 7, 1918. Serial No, 233,067.

To all whom it may concern:

Be it known that I, SAMUEL H. LEWIS, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Valve Structures, of which the following is a specification.

My invention relates to a valve structure, for controlling the supply of a plurality of different fluid pressures to the power cylinder of a pressure operated apparatus, for shifting the valve gears of a railway locomotive, while not necessarily restricted to this use.

An important object of the invention is to provide a device of the above mentioned character, having a warning port permanently set into action when one fluid pressure is being used.

A further object of the invention is to provide a device of the above mentioned character, having a breakable lock or seal, holding the lever of the valve in one position.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of a valve structure embodying my invention,

Fig. 2 is a plan view of the same,

Fig. 3 is a central vertical longitudinal sectional view through the same,

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 3.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a casting constituting the body portion of the device and including a valve casing 11, which is preferably vertically arranged. This vertical valve casing is provided with a vertical main bore or opening 12, which is preferably tapered, increasing in diameter downwardly. The valve casing 11 is provided with diametrically oppositely arranged tubular couplings or nipples 13 and 14, having contracted inner bores 15 and 16, leading into the main bore 12.

A steam supply pipe 17 has one end thereof screw-threaded into the tubular coupling 13 and this pipe 17 is connected to the blower pipe between the turret valve and operating valve. The numeral 18 designates a compressed air supply pipe, one end of which is screw-threaded within the coupling or nipple 14, as shown. The pipe 18 has connection with the main reservoir. A check valve 19 is connected in the pipe 18 and opens in the direction of the arrow, as shown.

Mounted to turn within the tapered main bore 12 is a tapered valve 20, provided at its upper end with a reduced stem 21, which is preferably square in cross-section. This reduced stem projects upwardly beyond the valve casing 11 and extends into an opening or socket 22, formed in a head 23, carried by a handle 24. The stem 21, and head 23, are provided with openings 25, which are disposed upon one side of the central axis of the stem, and are adapted to receive a pin 26. The function of arranging the openings 25 in this eccentric manner is to prevent the pin 26 being inserted in the openings, when the lever 24 is in the improper position and the stem inserted within the opening 22.

The lever 24 is provided with a depending socket 27 receiving a spring pressed ball 28, adapted for movement into a selected notch 29, 30 and 31, as shown.

The socket 27 is provided with an apertured extension 32, adapted to coact with an apertured lug 33, fixed to the casting 10. A breakable seal, such as a lead rivet 34, extends through these apertured extensions and thus serves to lock the lever 24 in the position shown in Fig. 1.

The valve 20 is provided with a longitudinal port or bore 35, the upper end of which is closed and the lower end of which extends through the lower end of the valve 20. At its upper end the port 35 communicates with a lateral extension 36, adapted to be alternately brought into communication with the contracted bores 15 and 16. However, it is impossible to place the port 35 in communication with both bores 15 and 16 at the same time. The lower end of the valve 20 is engaged by a compressible coil spring 37, which serves to retain the valve suitably seated. This coil spring fits within the upper portion of a tubular coupling 38 and surrounds a contracted port 39 therein. The upper portion 40 of this

coupling is screw-threaded within the lower portion of the casing 11, as shown at 41. The lower portion of the tubular coupling, beneath the port 39, is internally screw-threaded, as shown at 42, for screw-threaded engagement with an elbow 43, connected with a pipe 44. This pipe leads to the power operated cylinder of the pressure operated apparatus to shift the gears of the locomotive. A second valve (not shown) is connected in the pipe 44 for controlling the passage of fluid pressure therethrough.

The valve 20 is provided with a contracted transverse or radial port 45, the inner end of which leads into the bore 35 while its outer end leads into the segmental surface groove 46. This surface groove is adapted to have communication with a warning port 47, when the valve is turned so that the port 36 communicates with the contracted bore 15.

In operation, the handle 24 is normally locked in the position indicated in Fig. 1, whereby the port 36 is in communication with the contracted bore 16, while the contracted bore 15 is covered or closed. It is obvious that compressed air passes through the pipe 18, bore 16, port 35, and into the pipe 44. The valve connected in the pipe 44 is operated for controlling the admission of the compressed air to the cylinder of the apparatus. If the air pressure within the pipe 18 should fail, for any reason, the valve 24 is shifted to the left, thereby breaking the lead seal rivet 34, until the port 36 registers with port 15. The bore 16 will now be closed and the steam cannot pass therein but will pass through bore 15, port 35 and into pipe 44. When the steam is being used, a portion of the same escapes through the contracted transverse port 45 and through the surface groove 46, which is in registration with the warning port 47, while the steam is being used. The operator is thereby apprised that the steam is being supplied to the pipe 44, during the continuous use of the steam.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A valve structure of the character described, comprising a casing having a main bore and a plurality of laterally extending openings leading into the same, said casing also having a laterally extending warning port; a valve pivoted within the main bore and having a longitudinal bore provided with a lateral extension adapted to be alternately placed in communication with each of the laterally extending openings, said valve also having a transverse port leading into its longitudinal bore and into a surface groove formed upon said valve and adapted to be placed in communication with the contracted warning port; and means to turn the valve.

2. A valve structure of the character described, comprising a casing having a main bore and a plurality of laterally extending openings leading into the same, said casing also having a laterally extending warning port; a valve pivoted within the main bore and provided with a longitudinal bore having a lateral extension adapted to be alternately placed in communication with each of the laterally extending openings, said valve also having a transverse port adapted to be placed in communication with the warning port; and means to turn the valve.

3. A valve structure of the character described, comprising a casing having a steam warning port, a steam pipe connected with the casing, a compressed air pipe connected with the casing, an outlet pipe connected with the casing, a movable valve arranged within the casing and adapted to alternately place the steam and compressed air pipes in communication with the outlet pipe and being incapable of simultaneously placing both the steam and compressed air pipes in communication with the outlet pipe, said valve having a steam port adapted to be placed in communication with the steam warning port only when the valve is moved to the position to place the steam pipe in communication with the outlet pipe, and means to move the valve.

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

SAMUEL H. LEWIS.

Witnesses:
MARY T. WAGNER,
THOS. B. AMAR.