

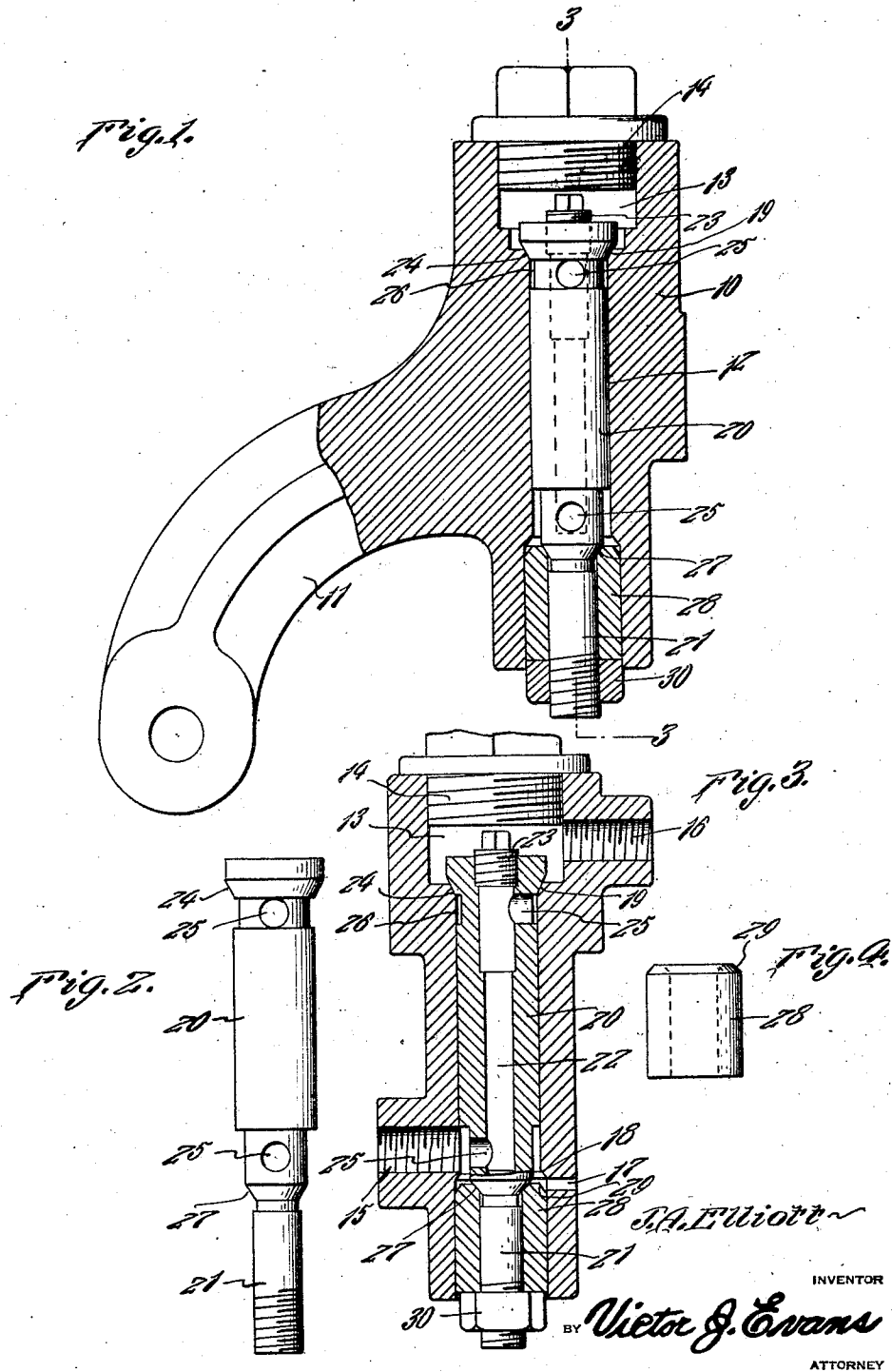
March 30, 1926.

J. A. ELLIOTT

1,579,096

VALVE

Filed July 24, 1925



Patented Mar. 30, 1926.

1,579,096

# UNITED STATES PATENT OFFICE.

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## VALVE.

Application filed July 24, 1925. Serial No. 45,890.

*To all whom it may concern:*

Be it known that I, JOHN A. ELLIOTT, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to improvements in valves especially designed for use as foot valves for operating locomotive fire doors, an object being to provide a valve which may be used in connection with a fire door cylinder for opening fuel box doors on locomotives.

Another object of the invention is the provision of a valve of this type which will prevent leakage of air past the stem of the valve when the latter is in open position and thus prevent waste of air; and in addition, provide a valve structure which will reduce cost of repairs and increase the life of the valve.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a view of an air valve for fire door openers constructed in accordance with the invention.

Figure 2 is a detail view of the valve member.

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1.

Figure 4 is a detail elevation of the removable sleeve.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the casing of the valve which is arranged at the outer end of an arm 11. This casing includes a longitudinal bore 12 which is enlarged at one end to provide a chamber 13, the top wall of which is closed by a removable plug 14. The opposite end of the bore is open and communicating with the bore is an outlet port 15 which is spaced inward a short distance from the open end of the bore and is adapted for communication with the cylinder of the bore opener. An inlet port 16 communicates with the chamber 13 and is adapted for communication with a source of air supply. The casing is further provided with an exhaust port 17

which is spaced longitudinally of the bore from the port 15.

The bore is provided with a valve seat 18 which is located between the outlet port 15 and the exhaust port 17, while the opposite end of the bore is provided with a valve seat 19 at its point of communication with the chamber 13.

Slidable within the bore 12 is a cylindrical valve member 20 which is reduced at one end as shown at 21 and which is provided with a longitudinally extending passage 22 which terminates short of the reduced portion 21 of the valve member. One end of the passage 22 is closed by a removable plug 23 and the valve member is provided adjacent this plug closed end with an inclined annular shoulder 24 which is adapted to engage the seat 19, the latter being similarly inclined. The passage 22 of the valve member 20 is provided at each end with a lateral passage 25 which opens outwardly into an annular groove 26 provided around the valve member near its opposite ends.

An inclined or tapered shoulder 27 is provided around the valve member at the inner end of the reduced portion 21 and removably mounted upon this reduced portion is a sleeve 28. The inner end of this sleeve is provided with a beveled edge 29 which is adapted to engage the beveled valve seat 18 which is located between the ports 15 and 17. A nut 30 threaded upon the outer end of the valve member 20 serves to removably hold the sleeve 28 in place. The valve is adapted to be operated in the usual manner.

It will be apparent from the foregoing description and accompanying drawings that the invention provides a valve which may be closed to prevent passage of air therethrough from the inlet to the outlet ports, but which will maintain communication between the outlet and exhaust ports when in this position. When the valve is opened to provide communication between the inlet and outlet ports, communication with the exhaust port will be shut off. The arrangement of the valve member and valve seats is such as to prevent leakage of air past the stem of the valve while the valve may be readily disassembled by removing the plug 14 and the sleeve 28 and readily assembled by replacing these parts.

The invention is susceptible of various changes in its form, proportions and minor

details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

5 Having described the invention what is claimed is:—

10 1. A valve comprising a casing having a bore open at one end of the casing and having an outlet opening and an exhaust opening spaced inward from said open end and having an inlet opening adjacent the opposite end of the casing, a beveled valve seat arranged within the bore and spaced inward from the inlet opening, a second beveled valve seat located within the bore between the outlet and exhaust openings, a valve member operating longitudinally within the bore and having a longitudinal passage therein and a lateral passage at each end of the longitudinal passage, said lateral passages opening outward into annular grooves which extend around the valve member and beveled shoulders extending around one edge of each of the annular grooves to engage the valve seats and regulate communication between the inlet and outlet openings and between the outlet opening and exhaust openings.

20 2. A valve comprising a casing having a bore open at one end of the casing and having an outlet opening and an exhaust opening spaced inward from said open end and having an inlet opening adjacent the opposite end of the casing, a beveled valve seat arranged within the bore and spaced inward from the inlet opening, a second beveled valve seat located within the bore between the outlet and exhaust openings, a valve member operating longitudinally within the bore and having a longitudinal passage therein and a lateral passage at each end of

the longitudinal passage, said lateral passages opening outward into annular grooves which extend around the valve member and beveled shoulders extending around one edge of each of the annular grooves to engage the valve seats and regulate communication between the inlet and outlet openings and between the outlet opening and exhaust opening, one of said shoulders being formed at one end of a sleeve removably mounted upon the valve member and said sleeve forming one wall of one of the annular grooves.

3. In a foot valve for locomotive fire doors, an arm having a bore open at one end and having an outlet opening and an exhaust opening spaced inward from said end and having an inlet opening adjacent the opposite end of the casing, a beveled valve seat arranged within the bore and spaced inward from the inlet opening, a second beveled valve seat located within the bore between the outlet and exhaust openings, a valve member operating longitudinally within the bore and having a longitudinal passage therein and a lateral passage at each end of the longitudinal passage, said lateral passages opening outward into annular grooves extending around the valve member, a reduced portion at one end of the valve member, a removable sleeve mounted upon the reduced portion of the valve member with the inner end of the sleeve forming one wall of the adjacent annular groove, a beveled shoulder at the inner end of the sleeve to engage the adjacent valve seat, a beveled shoulder at the opposite end of the valve member to engage the opposite valve seat and means to hold the sleeve in position.

In testimony whereof I affix my signature.

JOHN ARTHUR ELLIOTT.