(Model,)

R. A. McLANE.

SIGNAL VALVE FOR BOILERS.

No. 312,741. Patented Feb. 24, 1885.

Fig. 1.

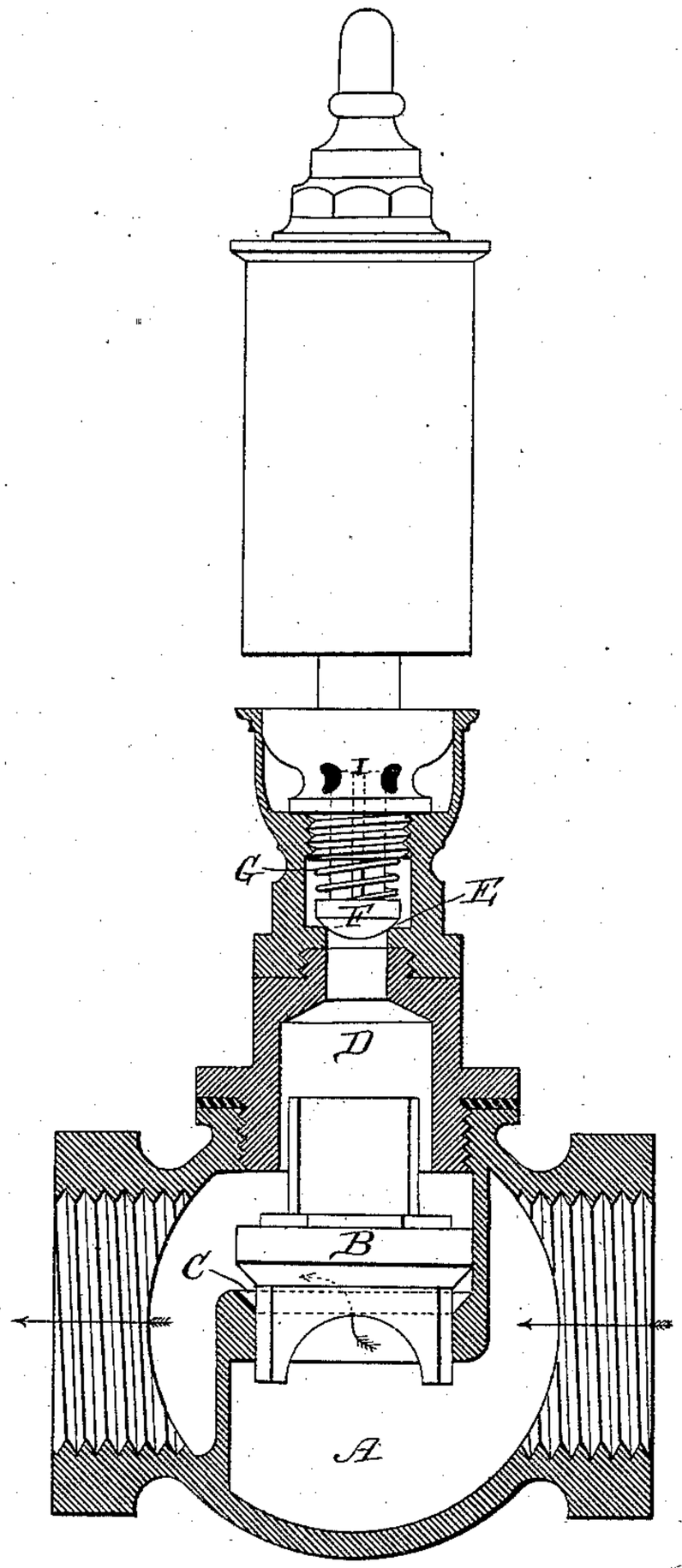
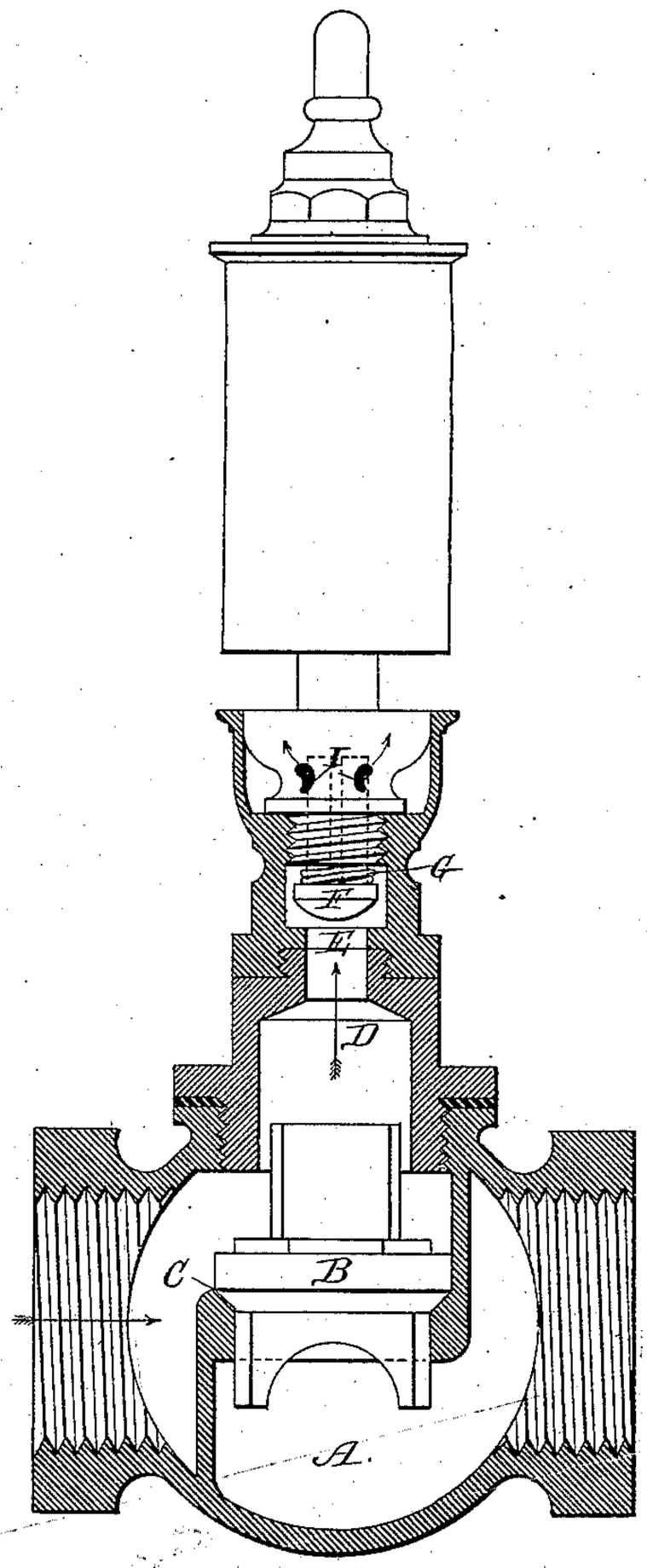


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SIGNAL-VALVE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 312,741, dated February 24, 1885.

Application filed September 11, 1884. (Model.)

To all whom it may concern:

Be it known that I, R. A. McLANE, of Queen City, in the county of Cass and State of Texas, have invented certain new and useful Improvements in Signal-Valves for Boiler-Feeders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in signal-valves for boiler-feeders; and it consists in the combination, with a check-valve of the ordinary construction, which is adapted to operate in connection with an inspirator, injector, or jet-pump, such as are commonly employed for feeding steam-boilers, of a signal-valve which is located above the check-valve, and which signal-valve, when the check-valve ceases to operate, is caused to open by the backward pressure of the steam from the boiler, permitting the escape of said steam, and thereby indicating that the feeder is not operating, as will be more fully set forth hereinafter.

A great difficulty has heretofore existed in working steam-boiler feeders—such as inspirators, injectors, or jet-pumps—in order to ascertain whether they are or are not at work, and in a great number of cases the use of said feeders has been discontinued, for the reason that no means have heretofore been devised by which this can be ascertained, except by feeling the pipes, noticing the discharge in the tank or well, or by the gages on the boilers, either of which means is very unsatisfactory in a factory or in a machine-shop, where there is considerable noise, and this defect it is the object of my invention to overcome.

In the accompanying drawings, Figure 1 is a vertical central section of a valve embodying my invention, showing the check-valve open and the signal-valve closed. Fig. 2 is a similar view showing the check-valve closed, when the feeder from any cause fails to work, and the signal-valve open.

A represents the chamber of the valve, such as is commonly employed in connection with inspirators, injectors, or jet-pumps, and B represents a check-valve, which is located in the seat C in the usual manner, and which is adapted to be raised and lowered, so as to open or close said seat, and thereby permit or cut off the flow of steam and water through the chamber. Above this valve B, I form an extension, D, to the chamber, in which extension is formed a small seat, E, which is open or closed by the plug or valve F, which is kept normally pressed in the position shown in Fig. 1 by the coil-spring G. Openings I are formed in the extension D, above the seat E, for the purpose of permitting the escape of steam when the valve F is raised. The pipe connected with the chamber A of the valve discharges into the boiler, either in the steam-space or below the water-line, as may be preferred. Where the discharge takes place in the steam-space, the feed-water keeps the pipe full and prevents any passage of the steam from the boiler toward the valve until the supply of feed-water fails from some cause. The continuous flow of water through the pipe into the boiler causes a partial vacuum in the chamber or extension D, thereby causing the valve F to retain its seat. If the pipe connects with the boiler below the water-line and the feed-water supply ceases, the pressure of the steam will or may force water back through the pipe to the valve, and the escape of water will alone attract attention.

The operation of my invention is as follows: When the feeder is in successful operation, the valve B is open and the steam and water pass freely into the boiler; but should the feeder fail to work from any cause the valve B will close in its seat C, as shown in Fig. 2, and the backward pressure from the boiler will force the valve F upward against the pressure of the spring G, and thereby open the seat E. The escape of the steam through the openings I will be an indication to the engineer or fireman that the feeder is not at work; or, if preferred, a steam-whistle of any suitable kind may be attached to the extension above the valve-seat E, and thus sound the alarm when the feeder is not in operation.

Having thus described my invention, I claim—

1. The combination, with a signal-valve having a chamber and a valve-seat, of a check-valve for opening and closing said seat, and a valve which is located above said check-valve, and which is adapted to be opened when the check-valve is closed by the backward pressure of the water or steam and permit the escape of the same, substantially as described.

2. The combination, with a chamber having a seat, C, an extension, D, and a seat, E, formed in said extension, and openings I, (one or more,) of the valve B, for opening and closing the seat C, and the valve F, for opening and closing the seat E, for the purpose set forth, substantially as described.

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

REED ATCHINSON McLANE.

Witnesses:
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