(No Model.)

C. C. MASSEY.

BOILER CONNECTION FOR VALVES.

No. 543,773. Patented July 30, 1895.

Fig. 1.

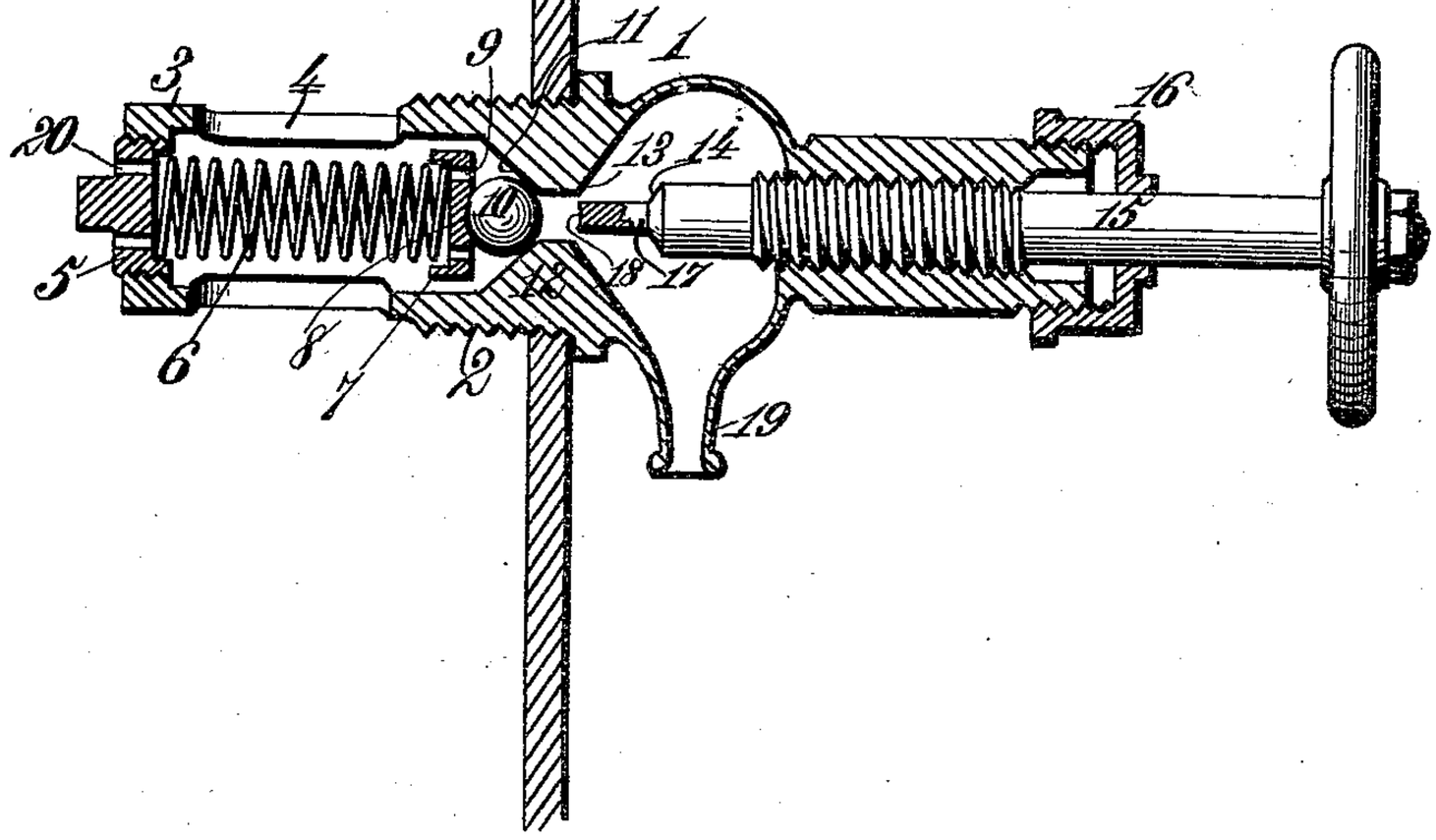
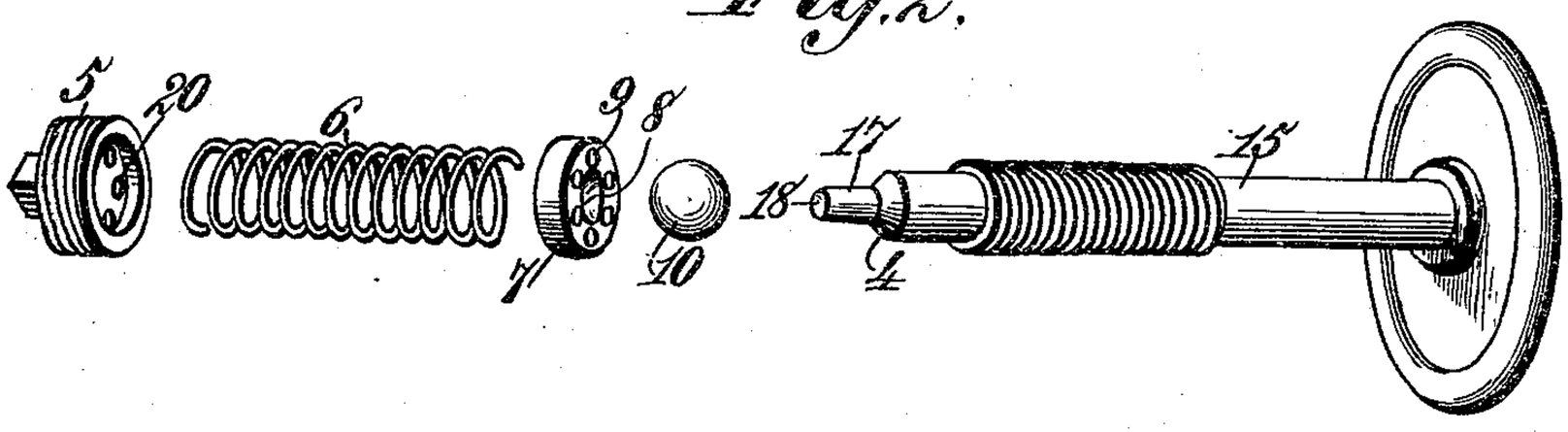


Fig. 2.



Witnesses
Robert Ewett.
G. W. Rea.

Inventor:
Charles C. Massey.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

CHARLES C. MASSEY, OF BIRMINGHAM, ALABAMA.

BOILER CONNECTION FOR VALVES.

SPECIFICATION forming part of Letters Patent No. 543,773, dated July 30, 1895.

Application filed November 6, 1894. Serial No. 528,075. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. MASSEY, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Boiler Connections for Valves, of which the following is a specification.

My invention relates to improvements in boiler connections for valves, and has for its object to prevent the escape of steam and water from boilers in the event of any of the boiler connections being broken off or otherwise injured through accident; and it consists in the features and the combination or arrangement of parts hereinafter fully described, and definitely pointed out in the claims following the description.

It is well known that the valves controlling the outlets of boilers are frequently broken off by accident, the engine operatives and others being seriously scalded by the escaping steam and water. This is especially true of the valves controlling the outlets of locomotive-boilers, and my improved connections are especially designed for use on such boilers; but it will be apparent that they may be used in connection with steam-boilers of every description.

In the accompanying drawings, forming a part of this specification, Figure 1 is a longitudinal section of a boiler-cock constructed in accordance with my invention, showing the same fitted to a boiler; and Fig. 2 a perspective view of the operative parts detached.

Referring to the drawings, the numeral 1 indicates the body or shell of the cock, which is of any desired or preferred configuration and is exteriorly screw-threaded, as at 2, by which means it is fitted in the boiler. The valve-shell 1 is provided with an inwardly-projecting tubular extension 3, having longitudinal slots 4 formed in its periphery, its inner end being interiorly screw-threaded and fitted with a screw-threaded plug 5. Within the tube 3 is arranged a coiled spring 6, which at one end abuts against the plug 5 and at its other end is secured to a disk 7. Said disk upon its outer side is concaved, as at 8, to furnish a seat for a ball-valve, to be hereinafter described, and is also provided with a series of apertures 9 to permit of the unobstructed passage of steam and water therethrough. Seated upon the concaved disk 7 is a ball-valve 10, consisting of a true sphere of metal, said valve being adapted to seat itself in a correspondingly-shaped seat 11, formed in the inner side of a centrally-apertured partition 12, formed integrally with the valve-shell 1. The opposite side of the partition 12 is provided with a conical valve-seat 13, in which is adapted to be seated a cone-shaped valve 14, carried by a screw-threaded valve-stem 15, that is tapped through a packing-gland 16 on the outer end of the valve-shell, in a manner well known. The inner end of the valve-stem 15 is provided with an extension 17, that at its extremity is ground so as to form a concave seat 18 of the shape of a segment of a sphere to correspond to the shape of the ball-valve 10, against which it is adapted to bear.

The valve-shell 1 may be provided with a union nipple at the point marked 19, by means of which suitable connection with a steam or water pipe may be made in the usual manner.

The operation of my improved valve will be readily understood. If the valve-shell should be broken off at any point outside the boiler the ball-valve 10 will be held to its seat 11 both by the pressure of the steam and by the spring 6, effectually closing the exit and preventing the escape of steam or water from the boiler. The function of the spring 6 is to cause the instant closing of the ball-valve 10 under all conditions whenever the valve-stem 15 is not screwed in so as to force the same away from its seat 11, the pressure of the steam contained in the boiler serving to hold the said valve closed. By screwing in the valve-stem 15 the ball-valve 10 will be forced from its seat 11 to establish communication with the interior of the boiler. The cone-shaped valve 14, carried by the stem 15, is never seated against its seat 13, except in the event of the ball-valve 10 getting out of repair, when said valve 14 may be employed for controlling the communication with the boiler until a convenient time or place be arrived at for repairing the ball-valve. By arranging the ball-valve in the manner described a free circulation of the water, mud, and foam with which it must come in contact

is permitted, preventing corrosion and avoiding all liability of mud, scale, or the like being deposited in such manner as to cause the valve to stick or work unsatisfactorily, and to increase the freedom of circulation about the coiled spring 6 I provide the screw-plug 5 with numerous perforations 20, which permit the unobstructed passage therethrough of steam, water, and the like and prevent the deposit of foreign substances in the end of the tube 3, which would tend to interfere with the prompt and proper operation of the spring. By seating the ball-valve 10 between the three segment-shaped seats 8, 11, and 18 said valve will be kept constantly ground and clear of sediment, for when the stem 16 is screwed in to force said valve 10 from its seat 11 the concaved seats 8 and 18 act with a grinding motion on the valve, which motion in the seat 8 is continued as long as the valve is held away from its seat 11, owing to the elasticity and vibration of the spring 11 and the movement of the water in the boiler, and the same effect is produced when the spring forces the valve in the seat 11. The valve will thus always be maintained in the proper condition to effect a perfectly-tight closure against the escape of steam or water.

The connection above described is intended to be used in connection with gage-cocks, connecting valves for fitting glass water-gages and outlets of every description, it being my purpose to prevent the escape of steam and water from any one of the outlets in case of accident.

Having described my invention, what I claim is—

1. In a boiler connection, the combination with the valve shell provided with an outlet and having a tubular extension adapted to communicate with the interior of a boiler, of a concave valve seat formed in the outer end of said extension, a ball-valve seated in said seat, a disk having a central seat for said ball-valve, a spring for pressing disk against the ball-valve and forcing said valve to its seat, and a stem for forcing said valve from its seat and provided with a valve for closing the outlet, substantially as described.

2. In a boiler connection, the combination with the valve shell provided with an outlet and having a slotted tubular extension adapted to communicate with the interior of a boiler, of a concave valve seat formed in the outer end of said extension, an apertured disk having a concave seat formed therein, a ball-valve arranged between said seats, a spring for forcing said disk against said ball-valve, and a stem for forcing said valve away from its seat and provided with a valve for closing the outlet, substantially as described.

3. In a boiler connection, the combination with the valve shell provided with an outlet and having a slotted tubular extension adapted to communicate with the interior of a boiler, of a concave valve seat formed in the outer end of said extension, an apertured disk having a concave seat formed therein, a ball valve arranged between said seats, a coiled spring for forcing said disk against the ball-valve, a perforated screw plug for confining said spring in place, and a stem for forcing said valve away from its seat and provided with a valve for closing the outlet, substantially as described.

4. In a boiler connection, the combination with the valve shell provided with an outlet and having a slotted tubular extension adapted to communicate with the interior of a boiler, of a concave valve seat formed in the outer end of said extension, a ball valve seated in said seat, a spring for forcing said valve to its seat, and a stem for forcing said valve from its seat, said stem having formed in its end a concave seat for engaging said ball valve and provided with a valve for closing the outlet, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

CHARLES C. MASSEY. [L. S.]

Witnesses:

GEO. A. BLUM, Jr.,

J. J. CURRAN.