(No Model.)

J. F. TINLEY.

CHECK VALVE.

No. 514,098. Patented Feb. 6, 1894.

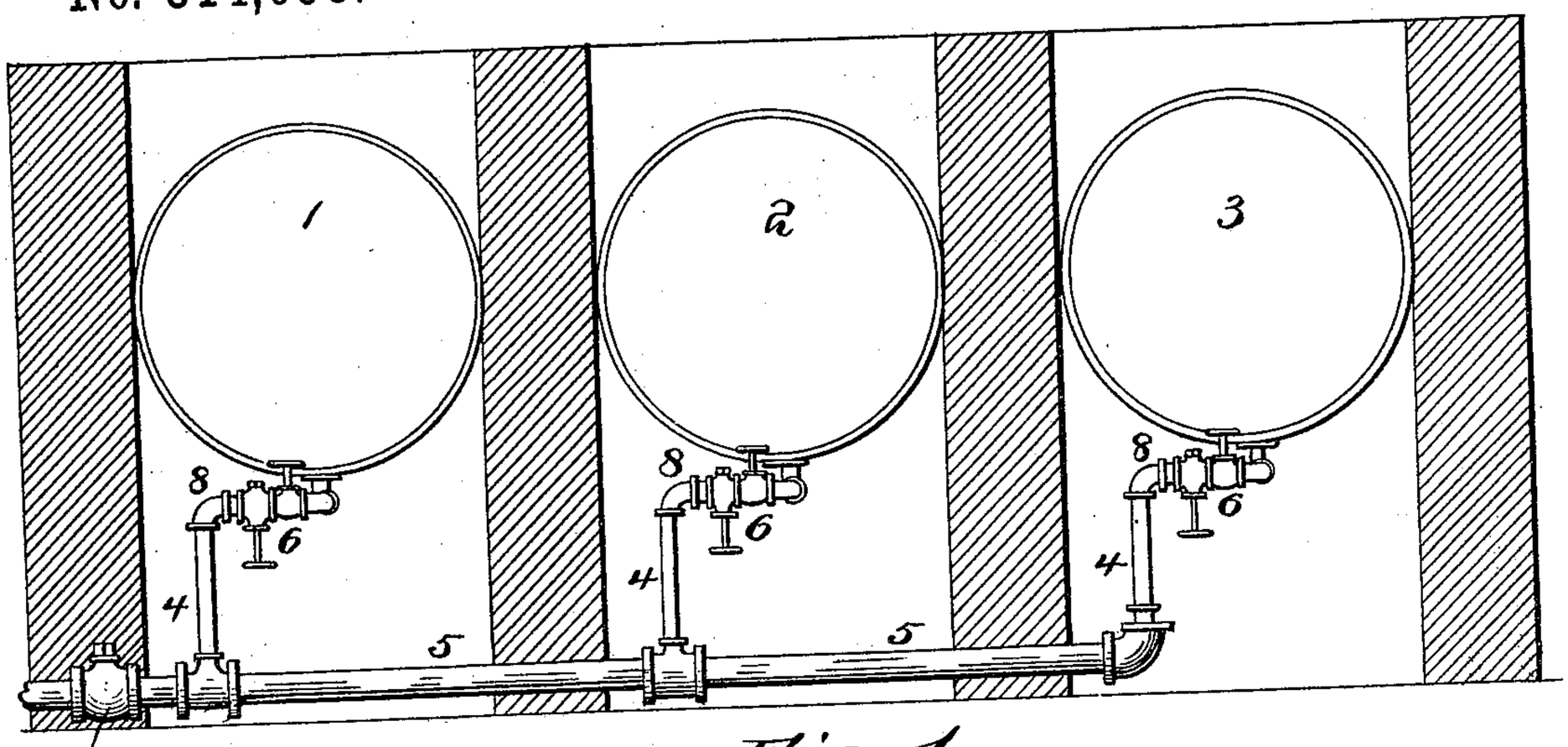

Fig. 1.

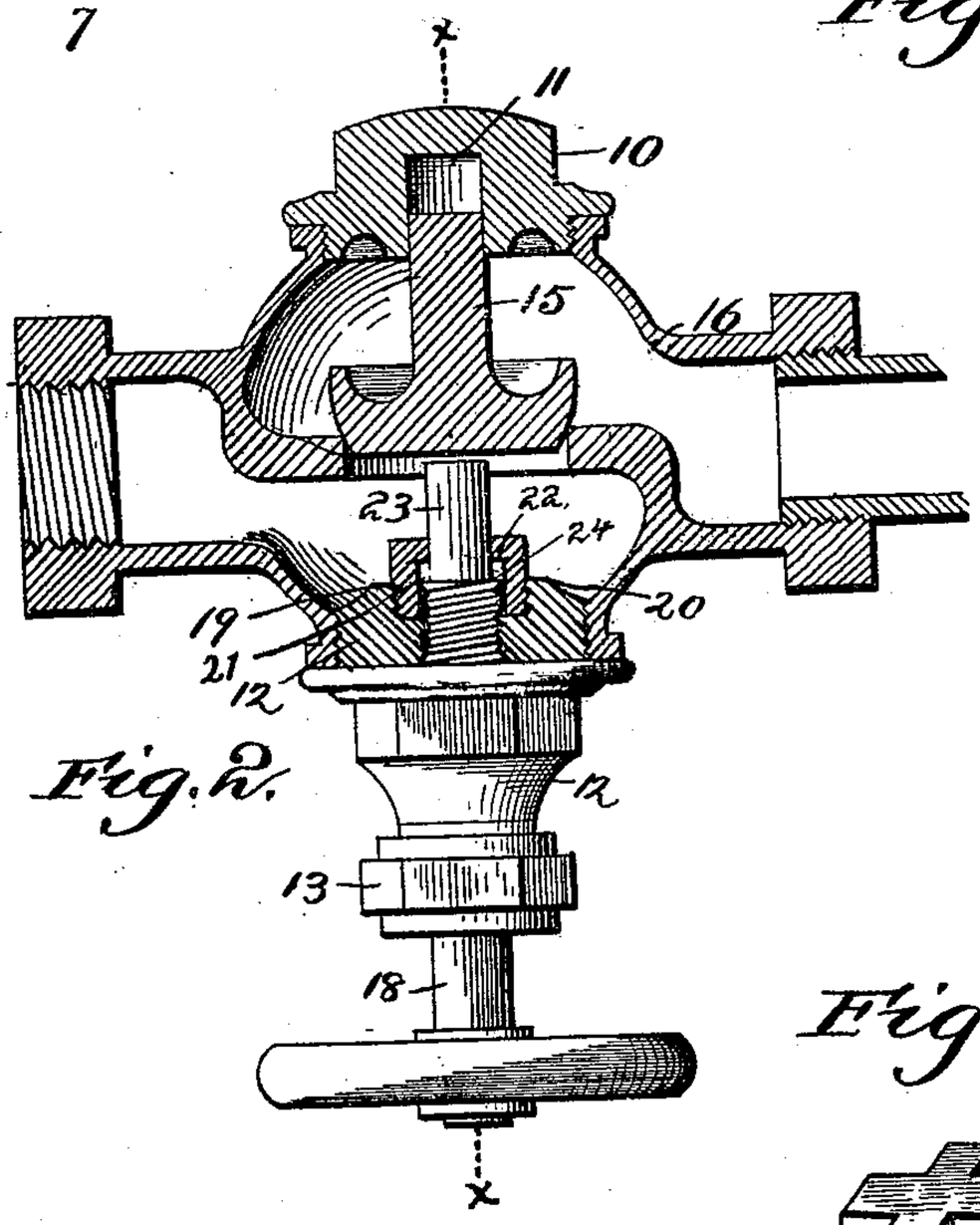

Fig. 2.

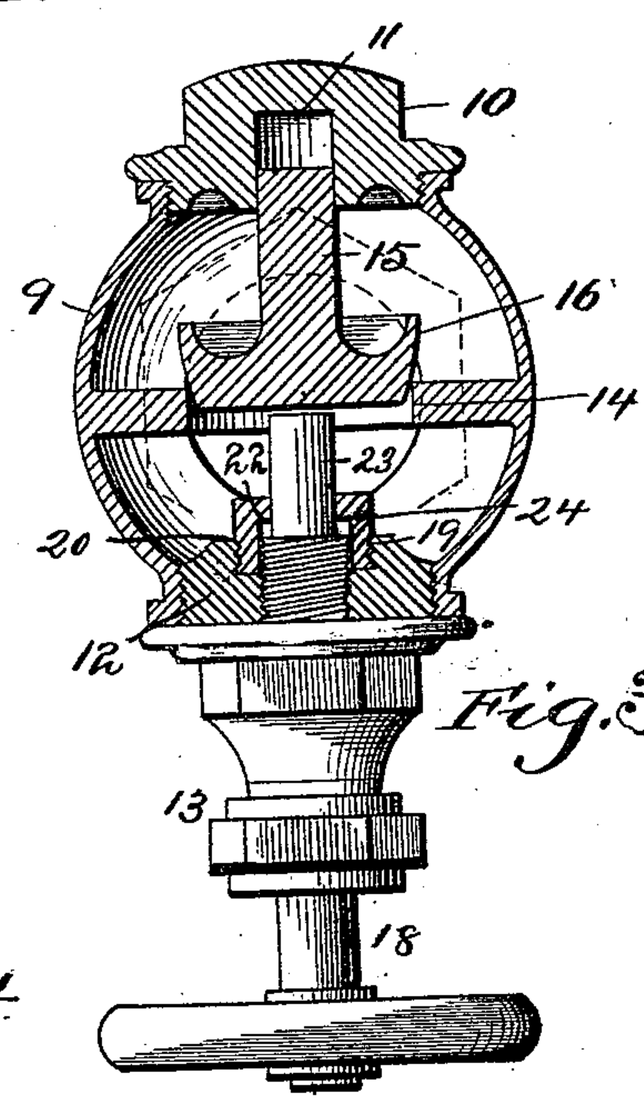

Fig. 3.

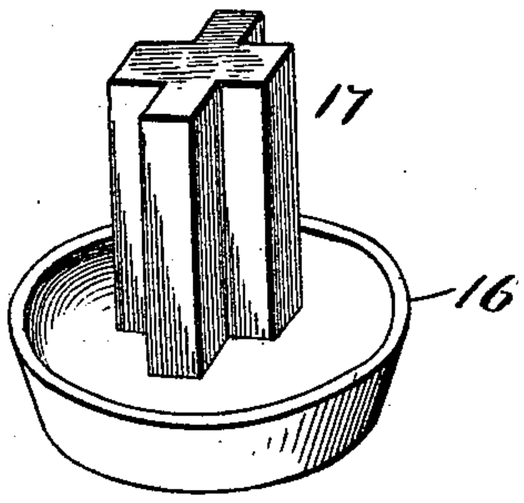

Fig. 4

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JAMES F. TINLEY, OF BURDEN, NEW YORK.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 514,098, dated February 6, 1894.

Application filed March 29, 1893. Serial No. 468,218. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. TINLEY, a citizen of the United States of America, residing at Burden, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Check-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to check-valves; and it has for its object to provide a valve for use in connection with feed-water pipes of boilers arranged in series and connected to a common supply pipe. It is the usual practice to employ check-valves in the branch pipes leading to the individual boilers of a battery, such pipes being connected to a main leading from a pump, in order that all of the boilers may be filled simultaneously, but owing to the facts that the disks of different valves cleave with unequal tenacity to their respective seats, by reason of becoming corroded, incrusted, or expanded by heat, one or more of the boilers will receive the water while the others remain empty, and to fill the latter it is necessary to cut off the supply from the former and to apply all the force of the pump to open the valves which refuse to act.

My invention consists in providing means for opening and controlling the valves whereby the water may be caused to rise gradually and equally in all of the boilers, and my invention consists further in certain details of construction, arrangement and combination of parts, all of which will be more fully described hereinafter.

The novel features of the invention are embraced in the appended claims.

In the accompanying drawings forming a part of this specification:—Figure 1 is a view of a battery of three boilers with the connected feed and branch pipes, the latter being fitted with check-valves constructed in accordance with my invention. Fig. 2 is a vertical central sectional view, enlarged, of the improved valve and casing, taken on the plane of the connected branch-pipe. Fig. 3 is a similar view at right-angles to Fig. 2, as indicated on line *x*—*x* of Fig. 2. Fig. 4 is a detail view in perspective of the valve detached.

In all the views of the drawings, like numerals of reference denote like or corresponding parts.

1, 2, and 3, represent the boilers, which are connected by means of the branch-pipes, 4, to the main feed-pipe, 5. The branch-pipes are provided, adjacent to the boilers, with ordinary globe valves or cut-offs, 6, of any approved or preferred construction, and the main feed pipe is furnished with a check-valve, 7, of the ordinary pattern. Obviously, the valve, 7, may be dispensed with, as will appear from the following description, but I preferably employ it as a supplemental means for preventing back-water from reaching the pump, and as the entire force of the pump is applied thereto during the operation, there can be no chance of its remaining closed or refusing to operate.

My improved check-valves are arranged in the branch pipes, adjacent to the boilers, as shown at 8 in Fig. 1, and their construction is as follows:—In the top of the spherical shell or casing, 9, is fitted a cap, 10, having a central guide-socket, 11, and in the bottom of the shell or casing is placed a bushing, 12, from which depends a stuffing-box, 13, of any desired construction. Said stuffing-box is not shown in section in the drawings as its construction forms no part of my invention. The valve seat, 14, is arranged horizontally at the center of the casing, and the valve, 15, comprises a disk, 16, which fits in the seat, and a winged stem, 17, which fits slidably in the guide, 11. The spaces between the wings of the stem allow the water to flow down into the body of the casing as the stem rises in the guide.

The spindle, 18, is mounted rotatably in the stuffing-box and is threaded in the bushing, 12. The bushing is provided in its upper side with a recess, 19, into which is threaded the reduced cheek of the check-nut, 20. This check-nut is provided with an enlarged bore, 21, at the upper end of which is a shoulder, 22, forming a stop for the spindle, which is reduced at its upper end, as shown at 23, thereby forming a shoulder, 24, to engage the stop and limit the vertical movement of the spindle. The reduced end, 23, of the spindle

terminates close to the under surface of the valve-disk, and the difference between the length of the reduced portion of the spindle and the distance from the stop, 22, to the under surface of the valve disk in its normal closed position, is about one sixteenth of an inch, or less, whereby the maximum distance which the valve can be elevated by means of the spindle is the said fraction of an inch.

In operation, when the pump is started, the check-valves should be elevated by means of the spindles, thus liberating them from their seats and enabling the water to be fed equally to all of the boilers. When the latter are filled, the valves should be allowed to return to their seats to perform their functions as check-valves.

The construction as above set forth is susceptible of various minor changes in matters of form, proportion, and details of arrangement, and I reserve the right to make any alterations which may be resorted to without departing from the spirit and scope of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a shell or casing, a horizontal valve-seat, and a check-valve, of a bushing, a check-nut provided with a stop, and a spindle threaded in said bushing and provided with a shoulder to engage said stop, the free terminal of the spindle being adapted to engage the valve.

2. The combination, with a shell or casing, and a valve-seat, of a valve provided with a winged stem fitting in a guide in the shell, a shouldered spindle mounted in a bushing and having a reduced end to engage said valve, and a check-nut having a stop to engage the shoulder of the spindle.

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

JAMES F. TINLEY.

Witnesses:
ALEX. HUNTER,
SOLOMON LE FEVRE.