

No. 675,665.

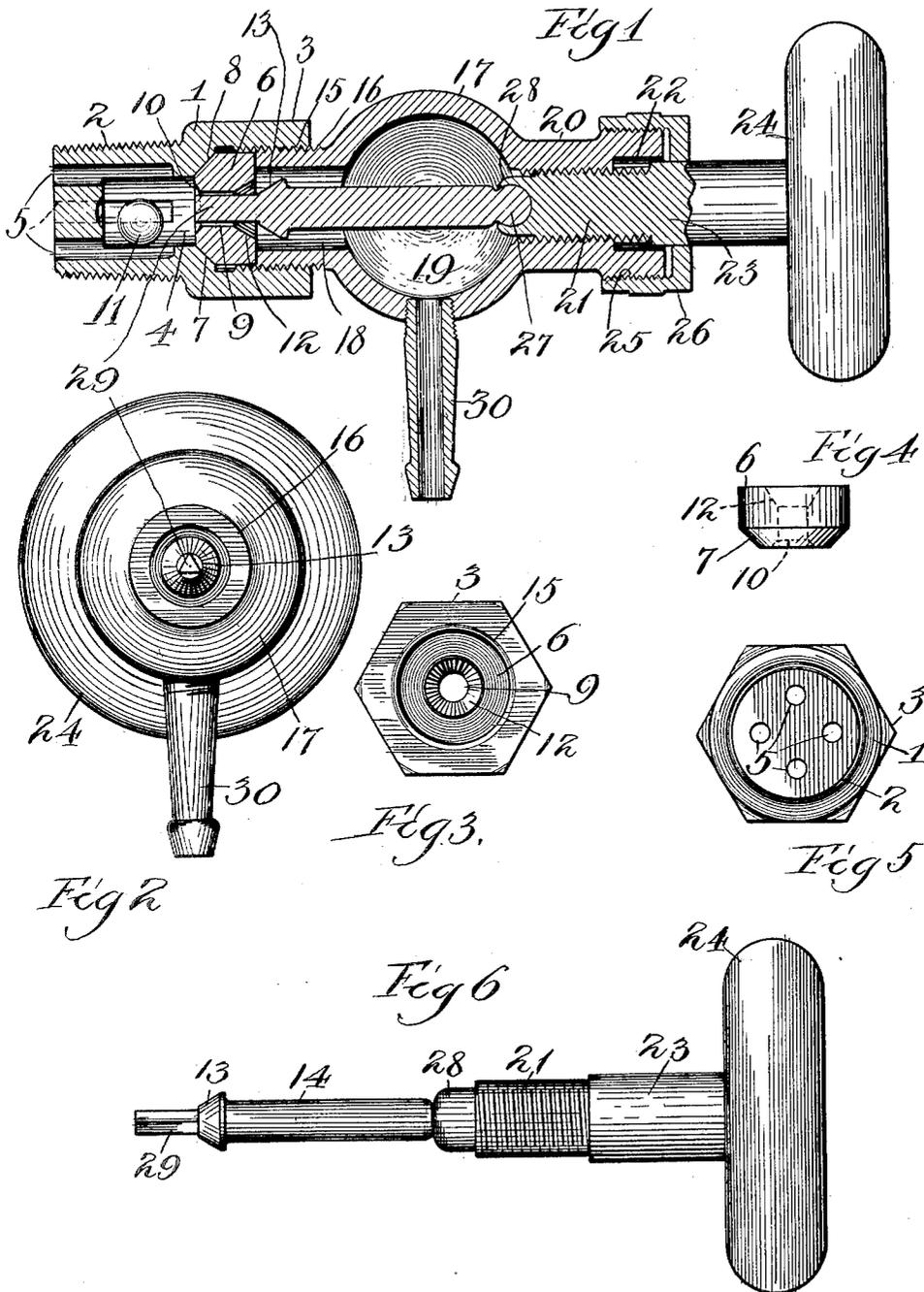
Patented June 4, 1901.

J. F. McCANNA.

GAGE COCK.

(Application filed May 26, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## GAGE-COCK.

SPECIFICATION forming part of Letters Patent No. 675,665, dated June 4, 1901.

Application filed May 26, 1900. Serial No. 13,055. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. McCANNA, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Compression Gage-Cocks, of which the following is a specification.

My invention relates to certain new and useful improvements in gage-cocks for use upon locomotive-engine boilers and elsewhere, and is designed to produce a cock in the use of which there shall be very little wear and which shall be so constructed that in case of any breakage the cock will be closed automatically to prevent any possible scalding of the engineer by said breakage. It is further designed to produce a cock in which the valve-stem can be removed under pressure and one in which the seat and valve shall be incapable of grinding. As these valves have been hitherto constructed the valve is rotated as it is screwed down upon its seat, and this causes an objectionable grinding, which tends to wear away the valve and its seat very rapidly.

Referring to the accompanying sheet of drawings, in which the same reference characters are used to designate identical parts in all the views, Figure 1 is a central longitudinal section through a cock embodying my improvements. Fig. 2 is an end elevation with some of the parts removed. Fig. 3 is a similar end elevation of the removed parts looking in the opposite direction. Fig. 4 is a side elevation of the removable valve-seat piece detached. Fig. 5 is a rear elevation of the parts shown in Fig. 3, and Fig. 6 is a side elevation of the valve-stem and handle removed from the cock.

The plug 1 has its reduced inner end threaded, as at 2, to screw into the boiler in the customary manner, and the enlarged outer end has the customary hexagonal shape, as shown at 3, in order to enable the same to be readily manipulated by a wrench. Centrally located in the plug near its inner end is the cylindrical pocket 4, which when the plug is in position is connected with the boiler by the small cylindrical holes 5, bored from the inner end of said plug nearly to the inner end of the cylindrical pocket 4. The pocket 4

has its outer end closed by the removable valve-seat piece 6, which is provided with the beveled portion 7, which takes against the correspondingly-beveled seat 8, formed on the inside of the plug 1. A channel 9 extends centrally through the piece 6 and is terminated at its inner end by the very slight interior bevel 10, with which the check-valve ball 11 in the pocket 4 coöperates, and at its outer end with the larger beveled portion 12, constituting the seat proper for the conical valve 13, carried by the cylindrical stem 14. The enlarged outer end of the plug 1 is interiorly screw-threaded, as seen at 15, and receives the screw-threaded end 16 of the spherical body portion 17 of the cock. The end 16 has the channel 18 therein leading into the spherical hollow portion 19, through both of which the valve-stem 14 passes, as clearly shown in Fig. 1. Opposite the screw-threaded end 16 is the cylindrical end 20, which has a screw-threaded channel therein to receive the screw-threaded portion 21 of the valve-stem. The outer end of the channel in the cylindrical end is enlarged, as shown at 22, to receive the larger plain cylindrical portion 23 of the valve-stem, which has the handle 24 secured thereto in the customary manner. The extreme outer end of this cylindrical portion 20 is screw-threaded, as at 25, to receive the customary nut 26, through which the portion 23 of the valve-stem passes. The valve-stem is divided into two parts, the connection being made by the ball-and-socket joint shown in cross-section in Fig. 1, which is conveniently formed by making the spherical end 27 of the inner portion 14 of the valve-stem and fitting it into the semispherical recess in the portion 28 of the stem and then spinning the edges thereof down over the ball so as to embrace it, so as to compel simultaneous longitudinal movement of the two parts, but to permit the outer part to turn independently of the inner part. Beyond the valve 13 is provided the projection 29, which is preferably triangular in cross-section and slightly smaller than the diameter of the channel 9. The removable valve-seat piece 6 and the inner portion 14 of the stem and the valve 13 are all case-hardened, chilled, or otherwise formed so as to resist wear to the

greatest possible degree. The discharge-pipe 30 is screwed into the bottom of the spherical body portion of the valve, as is clearly shown.

The operation of the complete device will now be readily apparent. When the plug 1 is screwed into the boiler and the valve 13 is fully seated, the passage of any steam or water from the boiler is prevented, as will be readily seen. When it is desired to open the cock, the valve may be unseated by screwing the handle to the position shown in Fig. 1, or even less, in which position the water and steam can escape from the boiler, the check-valve ball 11 being prevented from seating itself against the bevel 10 by reason of the lug 29 being in the way. If it is desired to withdraw the valve-stem completely, it can be turned out still farther, when the lug 29 will be out of the way of the ball 11, which then seats itself under pressure against the bevel 10, thus securely closing the cock. It will be apparent that this same action will take place if by any accident or otherwise the valve-stem should be broken or entirely removed from the cock.

As the inner portion 14 of the valve-stem is not rotated as the valve is seated, it will be apparent that there will not be the grinding action that takes place when an ordinary valve is seated by screwing it into place, and it will also be apparent that the ball-and-socket joint between the two parts permits the inner part to yield enough in any direction to permit the valve to seat itself firmly even if the parts should become relatively disarranged.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of some modifications and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination with the body having a passage leading therethrough, of a valve-seat in said passage, the controlling-valve adapted to be seated thereon, means for regulating the position of said valve, a pocket located in said passage beyond the controlling-valve, a ball check-valve in said pocket of a size to be retained therein but freely movable in said pocket, and means for preventing operation of said check-valve when the controlling-valve is open but in position, and for permitting its operation when the controlling-valve is withdrawn or entirely displaced.

2. In a device of the class described, the combination with the body having a passage leading therethrough, of a pair of oppositely-disposed valve-seats in said passage, a ball check-valve adapted to cooperate with the inner seat and located in a pocket formed in said passage of a size to retain the ball therein

but to permit it to move freely, a controlling-valve having means for adjusting its position cooperating with the other seat, and a lug extending from said controlling-valve beyond the check-valve seat so as to prevent the operation of said check-valve when the controlling-valve is opened.

3. In a device of the class described, the combination with a body having a passage leading therethrough and composed of the plug 1 having the pocket 4 therein and the body portion screwed into said plug, of a removable piece secured between said plug and body portion forming a portion of said passage and having oppositely-disposed valve-seats at both ends, a check-valve in the pocket 4 adapted to cooperate with the inner seat, a controlling-valve having means for adjusting its position cooperating with the other seat, a lug extending from said controlling-valve through said piece and beyond the check-valve seat so as to prevent the operation of said check-valve when the controlling-valve is opened.

4. In a device of the class described, the combination of the plug 1 having the pocket 4 therein and a passage leading from said pocket to the end thereof, the body portion 17 screwed into the outer end of the plug 1, the removable piece 6 secured in place by the end of the body portion 17 and having the channel 9 therein closing the outer end of said pocket and having the valve-seats 10 and 12 at the ends of the channel 9, the automatic check-valve 11 cooperating with said seat 10, and the valve 13 supported in said body portion and adapted to cooperate with the valve-seat 12 and having the lug 29 projecting therefrom through the channel 9, substantially as and for the purpose described.

5. In a device of the class described, the combination of the plug 1 having the shoulder therein, with a removable piece 6 resting against said shoulder and having the valve-seat therein, the body portion having a screw-threaded end adapted to cooperate with the interiorly-screw-threaded end of said plug and to secure the piece 6 in position, a valve cooperating with said valve-seat, and means for operating said valve.

6. In a device of the class described, the combination with the plug 1 having a shoulder therein, of a removable piece 6 resting against said shoulder and having the valve-seat 12 therein, the body portion having a screw-threaded end adapted to cooperate with the interiorly-screw-threaded end of said plug and to secure the piece 6 in position, the valve 13, and means for operating it, said removable piece 6 and valve 13 being hardened, substantially as and for the purpose described.

7. In a device of the class described, the combination of a body portion, with the hardened detachable valve-seat located therein, and the valve-stem consisting of two portions, the inner one carrying a hardened valve, substantially as and for the purpose described.

8. In a device of the class described, the combination of the body portion having the valve-seat therein, with the valve-stem mounted therein consisting of two parts, the inner one carrying the valve being pivotally secured to the outer one by a joint so as to be moved longitudinally thereby, substantially as and for the purpose described.

9. In a device of the class described, the combination of the body portion having the valve-seat therein, with the valve-stem mount-

ed therein consisting of two parts, the inner one carrying the valve being pivotally secured to the outer one by a ball-and-socket joint and the outer part being screw-threaded into said body portion to advance or retract the valve with reference to the seat, substantially as and for the purpose described.

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