

UNITED STATES PATENT OFFICE.

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GAGE-COCK.

SPECIFICATION forming part of Letters Patent No. 619,216, dated February 7, 1899.

Application filed February 10, 1898. Serial No. 669,790. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. PHILLIPS, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Gage-Cocks, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention relates to gage-cocks; and it has for its object the production of a simple and effective gage-cock wherein the use of packing is entirely obviated and in which the action is instantaneous and readily controlled.

15 Figure 1 in front elevation represents a gage-cock embodying my invention in operative position. Fig. 2 is a longitudinal sectional view thereof on the line xx , Fig. 1; and Fig. 3 is a like view showing a modified form of actuator.

20 I have herein shown the gage-cock as comprising a two-part casing C C' , flanged at 2 3 and held together in suitable manner, as by screws 4, Fig. 1, the part C having a threaded nipple c by which it is screwed into the boiler. One of the flanges, as 3, Figs. 2 and 3, is slightly recessed on its inner face, as at c^x , to receive the edge of a circular flexible diaphragm D of thin sheet metal, which is clamped between the flanged edges of the two parts of the casing, dividing the latter into two steam-tight chambers.

25 The member C of the casing has therein an exteriorly-threaded boss c' , provided with a longitudinal bore c^2 , communicating by the nipple c with the interior of the boiler, and on the inner end of the boss a shouldered seat c^3 , of preferably non-metallic material, is held in place by a flanged collar c^4 , screwed upon the boss. A hole c^5 in the seat in continuation of the bore of the boss c' forms an inlet-port for the water or steam from the boiler, and normally the diaphragm D rests upon the seat, closing the port.

30 The member C' of the casing has a hollow extension c^6 in alinement with the nipple c to receive a plunger d , having a block of preferably non-metallic material d^x held in its end to bear against the outer side of the diaphragm opposite the seat c^3 . A sleeve e is

screwed into the extension and forms a bearing e' for the shank d' of the plunger, a spring S surrounding the shank between the plunger and the bearing e' to normally force the plunger against the diaphragm.

35 In Figs. 1 and 2 the sleeve e has an arm e^2 , on which is pivoted at e^3 a handle h , having a hole h' , through which the shank d' is extended, a nut 10 on the outer end of the latter preventing disengagement of the handle and shank, while a spring S' is interposed between the handle and sleeve e . The spring-controlled plunger normally acts upon the diaphragm to press it upon the seat c^3 and close the inlet-port c^5 against fluid-pressure from the boiler; but by swinging the handle h to the left, Fig. 2, the actuator or plunger is drawn away from the diaphragm, which is unseated by fluid-pressure opening the inlet-port. Water or steam can then pass into the casing and out of the outlet port or nozzle c^8 , and as the diaphragm is steam-tight no packing whatever is required for the actuator or plunger, which is entirely on the opposite side of the diaphragm. This is a great convenience, for the packing of the actuator or valve-controller has been a great source of trouble and inconvenience heretofore in gage-cocks.

40 In order to limit the outward movement of the actuator, a ring 15 is interposed between the head d of the actuator and the inner end of the sleeve e , the width of the ring determining the extent to which the actuator may be withdrawn in operating the gage-cock.

45 The construction shown in Fig. 3 is adapted more particularly for gage-cocks which cannot be readily reached by the attendant's hand, and therein the sleeve e is shown as provided with an arm e^5 , on which is pivoted at e^6 a lever f , having a toe f' to engage a nut 20 on the threaded end of the shank, the lever having an eye f^x at its outer end for the attachment of a chain or cord of suitable length. The toe f' has an extension f^2 , which is adapted to bring up against an abutment e^7 on the arm e^5 to thereby limit the movement of the lever f , and consequently the outward movement of the spring-controlled actuator d .

50 In the construction shown in Fig. 2 the stop is internal and in Fig. 3 it is external.

By screwing the sleeve *e* in or out the tension of the controlling-spring *S* is varied in accordance with the pressure in the boiler.

By adjusting the nut 20, Fig. 3, on the threaded end of the actuator or plunger the stroke of the latter can be adjusted, as it will be obvious that the nearer the nut to the outer end of the actuator the shorter will be its outward stroke, and vice versa.

By making the ring 15 wider (see Fig. 2) the outward stroke of the actuator is shortened, so that the two devices act in different ways to accomplish the same result.

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

1. In a gage-cock, a casing having inlet and outlet ports, a closure for one of said ports and mounted within the casing, a spring-controlled actuator to normally maintain said closure seated against fluid-pressure, means to vary the spring-pressure of the actuator, independent means to positively move said actuator against its spring to release the closure, and a stop device to vary and limit such movement of the actuator.

2. A gage-cock comprising a casing divided into two non-communicating chambers by a flexible diaphragm, one of said chambers having an outlet-port and a tubular boss constituting an inlet-port, a removable perforated seat mounted on the end of the boss

adjacent the diaphragm, a sliding plunger on the opposite side of the diaphragm in alignment with the boss, a spring to normally press the plunger against the diaphragm and hold it upon the perforated seat, and means to positively move the plunger away from the diaphragm.

3. A gage-cock comprising a casing having inlet and outlet ports and a tubular extension, a flexible diaphragm in the casing interposed between said extension and the ports; a spring-controlled, headed actuator movable in the extension and adapted to normally engage and force the diaphragm upon the inlet-port, to close it, an adjustable sleeve in the outer end of the extension, to vary the spring-pressure, an annular stop between the head of the actuator and the inner end of the sleeve, to limit movement of the actuator in opposition to its spring, and means to positively effect such movement of the actuator to release the diaphragm.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM P. PHILLIPS.

Witnesses:

JOHN C. EDWARDS,
AUGUSTA E. DEAN.