

J. E. AUSTIN.
GAGE COCK.

APPLICATION FILED NOV. 17, 1909.

1,006,520.

Patented Oct. 24, 1911.

Fig. 1.

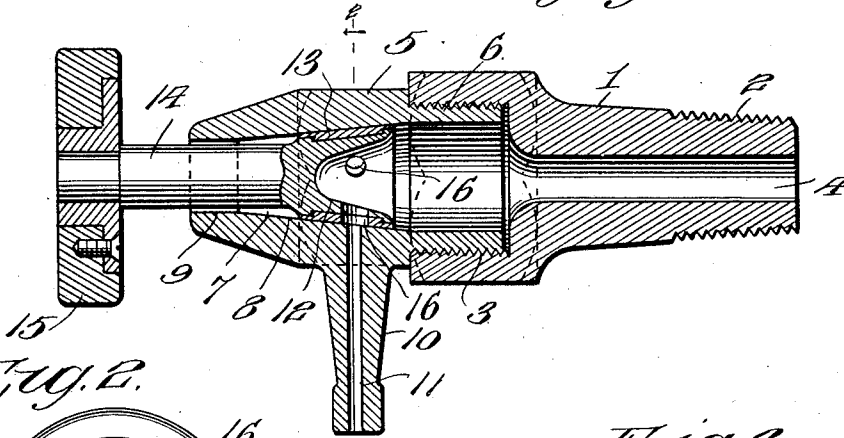


Fig. 2.

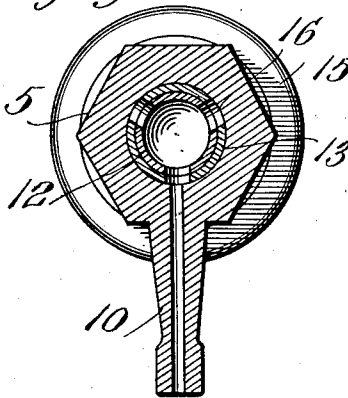


Fig. 3.

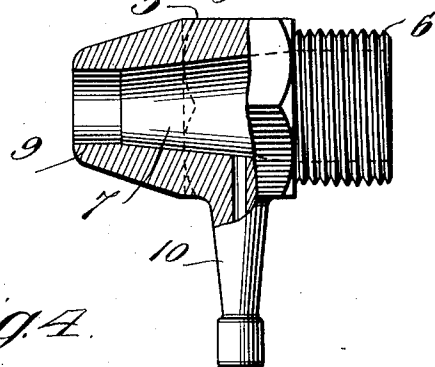
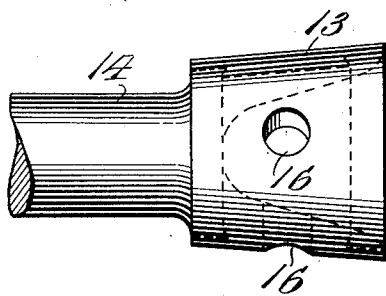


Fig. 4.



Witnesses

Frank Hough
D. W. Gould.

Inventor

Joseph E. Austin

By *Victor J. Evans*

Attorney

UNITED STATES PATENT OFFICE.

JOSEPH E. AUSTIN, OF RICHMOND, VIRGINIA, ASSIGNOR OF THREE-FOURTHS TO
LEROY M. LEE, OF RICHMOND, VIRGINIA.

GAGE-COCK.

1,006,520.

Specification of Letters Patent.

Patented Oct. 24, 1911.

Application filed November 17, 1909. Serial No. 528,520.

To all whom it may concern:

Be it known that I, JOSEPH E. AUSTIN, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented new and useful Improvements in Gage-Cocks, of which the following is a specification.

The invention relates to an improvement in gage cocks designed particularly for use in connection with any type of boiler, and is particularly directed to a gage cock constructed to dispense with the usual valve packing and in which the valve is practically self-grinding and becomes more perfectly seated with continued use.

The main object of the present invention is the provision of a gage cock in which the valve is operable from open to closed position without the usual longitudinal movement, and the valve and seat are so arranged that the former may be continuously ground during use to provide a more perfect co-operation, the valve operating to protect the seat against the steam or water and thereby prevent the usual wear or erosion of said seat incident to mineral or foreign substances in the water.

The invention in its preferred details of construction will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a view in longitudinal section, partly in elevation, of the improved valve. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a longitudinal section, partly in elevation, of the valve body. Fig. 4 is an enlarged broken side elevation of the valve.

Referring particularly to the accompanying drawings, the improved gage cock includes a connecting section 1 formed at one end with an external thread 2 for connection with the boiler, the section being enlarged at the opposite end and formed to provide a chamber for the reception of the valve body, said chamber being internally threaded at 3 and in open communication with the bore 4 of the section. The valve comprises a body 5 formed at one end with a threaded projection 6 to fit within the section 1, the body being formed with a longitudinal bore 7 alining with the bore in the section 1. The sectional contour of the bore 7 forms one of the particular features of the present invention in that from

the point of alinement with the end of the section 6 of the body said bore uniformly converges toward the opposing end of the body, providing an inclined inner surface 8 which forms the valve seat. At the extreme or outer end the bore is, for a short distance, of uniform diameter, as at 9, to rotatably support the stem of the valve. The body 1 is provided with a removable or integrally formed nipple 10 designed to direct the discharge from the valve, a bore 11 of which nipple communicates with the nipple of the body. Within the body is mounted a valve proper comprising a hollow member 12 having its peripheral surface inclined at the same angle of inclination with the surface of the bore. The bore 12 is exteriorly provided with an annular strip of white metal 13 providing an appropriate bearing surface between the valve proper and its seat. The stem or rod of the valve 14 is preferably integral with the member 12, extending beyond the valve body and provided with the usual operating disk or wheel 15. The diameter of the rod corresponds approximately with the diameter of the portion 9 of the bore in order to guard the valve in rotation. The wall of the member 12, which as previously stated is hollow or cup shaped, is formed with one or more openings 16 having a diameter exceeding that of the bore 11 of the nipple, so that when any one of said openings is alined with said bore an uninterrupted communication is established between the nipple and the boiler.

It is to be particularly noted that the valve seat 8 is of materially greater length than the contacting or engaging portion of the member 12, and that this surface converges in the direction or travel of the escaping steam or water. Furthermore, the valve proper is hollow or cup shaped so that all of the escaping fluid is compelled to pass into the valve in reaching the nipple. Furthermore, any of the usual packing is unnecessary with the present construction, thus obviating an undesirable condition incident to the renewal and wear of such packing. Therefore, it will be noted that the movement of the valve from closed to open position is simply a revoluble movement wholly independent of any lengthwise movement. Therefore, the threads usually employed in this type of valve for

moving the latter longitudinally of the body are dispensed with, and liability of sticking or freezing of the valve is reduced to a minimum.

5 The salient and most important feature of the present invention is the relative arrangement of the valve and valve seat. It will be noted from the construction described that each operation of the valve, 10 owing to the relatively connected arrangement of the engaging surfaces and the fact that the surface of the seat is of greater length than the similar path of the valve, will tend to the safeguarding of the engaging 15 surface of the valve, hence rendering said valve more perfectly seated during continued service. Furthermore, the contact between the seat and valve is such as to prevent steam or water reaching such plane 20 of contact, whereby to protect the seat against mineral or foreign substances in the fluid.

The valve structure is exceedingly simple, requiring in effect but two parts, and incident to the non-requirement of packing, the 25 safeguarding action of the valve, and the protection of the seat against foreign material in the fluid, insures a greatly extended life without refitting, as compared with the 30 usual gage cock. The gage cock, while primarily adapted for boiler use, is, of course, equally effective in other situations, and in such use is contemplated.

Having thus described the invention, what 35 I claim as new is:—

1. A valve body and a valve therein subjected to endwise pressure from the fluid, said body being formed with a valve seat of greater length than the valve and dis- 40 posed in the direction of movement of the inlet pressure of the fluid.

2. A valve body, and a valve therein, said valve being formed with a recess whereby the valve is subjected to endwise movement 45 under the inlet pressure of the fluid, the body being formed with a valve seat extending beyond the operative position of the valve in the direction of movement of the valve under such fluid pressure.

50 3. A valve body and an inclined valve therein, said valve being adapted for endwise movement under inlet pressure from the fluid, said body having an inclined seat extending beyond the valve in the direction 55 of movement of the latter under such fluid pressure.

4. A valve body formed with a conical valve seat, a conical valve mounted therein and open to endwise movement under the 60 pressure of the fluid, the said seat extending

beyond the valve in the direction of movement of the latter under such fluid pressure.

5. A valve body and a valve mounted for rotation therein, said valve being adapted for endwise movement in the body under inlet fluid pressure, the body being formed 65 with a seat for the valve extending beyond the valve in the direction of movement of the latter from such fluid pressure.

6. A gage cock including a valve body 70 having a conical valve seat formed therein, a valve cooperating with said seat and mounted for rotation therein, said valve being held to its seat by the pressure of the fluid, the seat extending beyond the valve 75 in the direction of movement of the latter under such pressure, whereby the valve seat will automatically accommodate itself to the valve as the latter becomes worn from use through the movement of the valve on the 80 seat incident to the fluid pressure.

7. In combination, a valve body having an inlet opening and a conical valve seat disposed in a direct line with said inlet opening and further provided with a nipple 85 extending transversely therefrom and having its bore extending through the valve seat, and a valve of conical form of less length than the valve seat and provided with a recess and disposed in the valve body op- 90 posite to the inlet thereof, whereby the pressure of fluid flowing through said inlet opening will hold said valve to its seat, said valve being provided with a lateral opening connecting with said recess and of 95 larger diameter than the diameter of the nipple bore and being adapted for endwise movement on its seat under the influence of the pressure of the inflowing fluid.

8. A gage cock including a valve body, 100 an outlet nipple communicating with the interior thereof, said body being formed with a converging valve seat having its maximum diameter toward the inlet end of the body, a valve mounted for rotation in the 105 seat and formed throughout to conform to the form of the seat, said valve being shaped with an opening at the larger end of the valve, whereby the pressure is directed into the valve with the effect to force the same 110 toward the smaller end of the valve seat, the wall of the valve being formed with an opening to register with the outlet opening when the valve is in operative position.

In testimony whereof I affix my signature 115 in presence of two witnesses.

JOSEPH E. AUSTIN.

Witnesses:

LEROY M. LEE,
ANDREW WELSH.