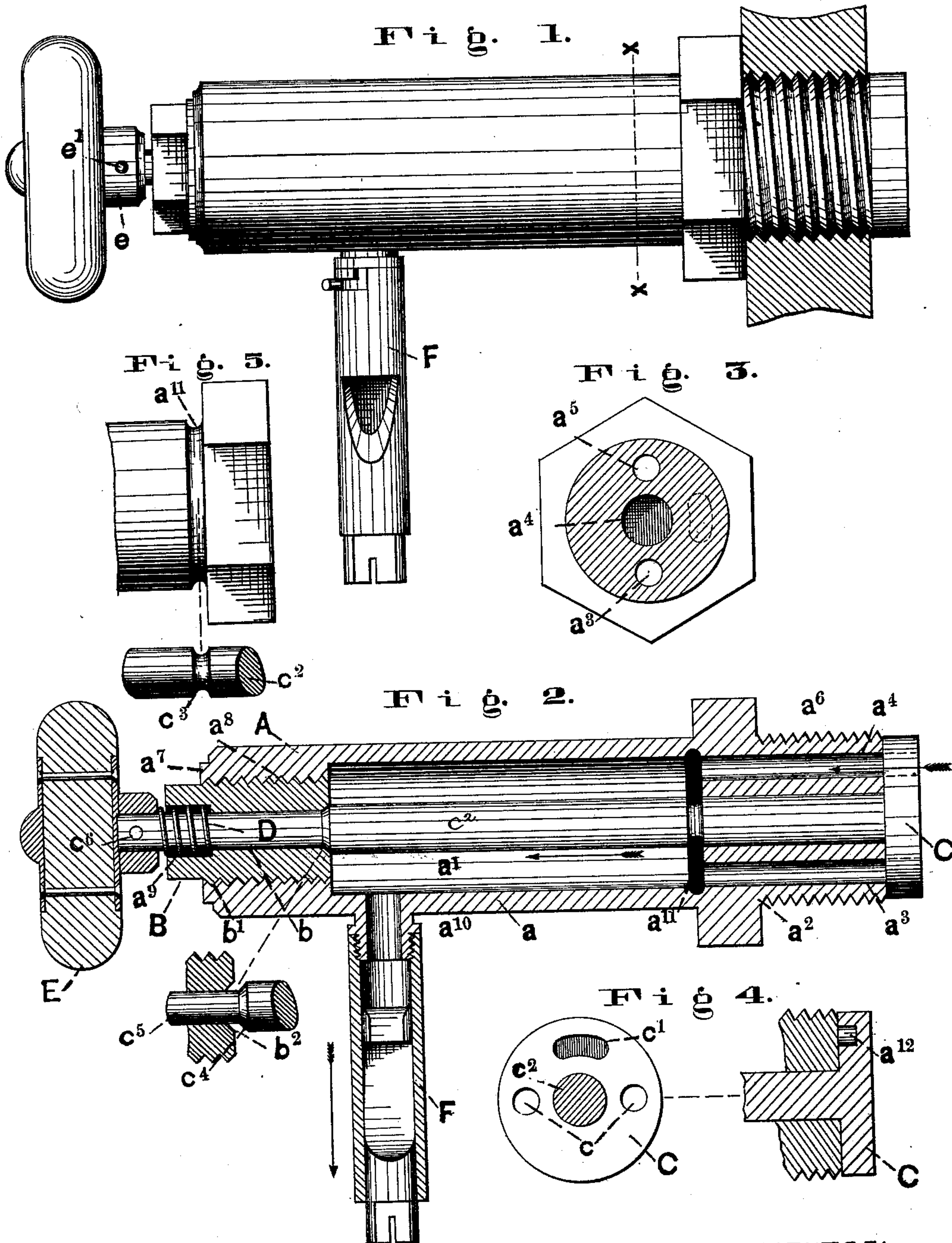


C. R. JOYCE.
Gage-Cock.

No. 218,125.

Patented Aug. 5, 1879.



WITNESSES:
J. S. West,
Cornelius Cox

INVENTOR:
C. R. JOYCE,
BY H. W. Beadle & Co.
ATTYS

UNITED STATES PATENT OFFICE.

CHARLES R. JOYCE, OF ALEXANDRIA, VIRGINIA.

IMPROVEMENT IN GAGE-COCKS.

Specification forming part of Letters Patent No. **218,125**, dated August 5, 1879; application filed June 23, 1879.

To all whom it may concern:

Be it known that I, CHAS. R. JOYCE, of Alexandria, in the county of Alexandria and State of Virginia, have invented new and useful Improvements in Gage-Cocks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to that class of gage-cocks which have a disk located upon the inner end of the same, capable of controlling by its rotation the admission of steam from the boiler into the cock; and it consists, mainly, in certain peculiar features of construction, hereinafter fully described.

In the drawings, Figure 1 represents a side elevation of my invention; Fig. 2, a sectional elevation of the same; Fig. 3, a transverse section through the line *x x*, Fig. 1; Fig. 4, views representing the stud and slot; Fig. 5, a partial side elevation, showing the breaking line of the cock.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully the construction and operation of the same.

A, Fig. 2, represents the main portion of the cock, consisting of, first, a central portion, *a*, having the internal chamber, *a*¹; second, a solid end portion, *a*², having the three longitudinal openings *a*³ *a*⁴ *a*⁵ and the threaded exterior, *a*⁶, by means of which the cock is attached to the boiler; and, third, an end portion, *a*⁷, having a threaded interior, *a*⁸, and internal recess, *a*⁹.

*a*¹⁰ represents a hollow stud or thimble cast upon the part A at the proper point, which forms the discharge-opening of the cock *a*.

*a*¹¹ represents a recess formed in the body of the cock at a point nearly in line with the face of the boiler-head when the cock is in place, which recess serves to so weaken the cock that it may break at this point, and not at any other, in case of serious accident. This recess, however, is preferably located on the outside of the cock.

*a*¹² represents a stud upon the inner end of the cock, the purpose of which will be hereinafter explained.

B represents a plug having a central opening, *b*, and a threaded exterior, *b*¹, by means of which latter the plug is united to the main body of the cock.

*b*² represents a beveled seat formed upon the lower face of the plug around its central opening.

C represents a disk having circular openings *c c*, extending entirely through the same, and a slot, *c*¹, extending partly through the same.

*c*² represents the shaft of the disk, which is provided, first, with a recess, *c*³, at the proper point, which recess serves to weaken the same at this point; second, with the beveled bearing-face *c*⁴; and, third, with the diminished portion *c*⁵, having the transverse opening *c*⁶.

D represents a coiled spring surrounding the upper end of the shaft *c*¹ when the latter is in place, the lower end of which rests in the recess *a*⁹.

E represents a handle-knob, the hub *e* of which incloses the upper end of the shaft, and is removably secured thereto by a pin, *e*¹.

The parts properly united together to form a complete cock are shown in Figs. 1 and 2.

The inner face of the disk C, it will be observed, bears upon the outer face of the end portion, *a*², and the shaft *c*¹ extends through the central opening, *a*⁴, Figs. 3, 2, of the part *a*² and the opening *b* of the plug B.

The stud *a*¹² of the end portion rests in the slot *c*¹ of the disk, and serves to limit properly the movement of the latter.

The openings *c c* in the disk are so located as to coincide exactly when the disk is at the end of its movement in one direction with the openings *a*³ *a*⁵ in the end portion, *a*².

The recess upon the shaft *c*¹, it will be observed, lies in the same horizontal plane as the recess *a*¹ of the cock, as indicated in Fig. 5.

The beveled face *c*⁴ of the shaft bears against the correspondingly-formed seat *b*² of the plug.

The spring D bears at one end against the base of the recess in the plug, and at the other against the hub of the handle-knob, as shown.

The operation is substantially as follows: The parts having been properly united together, and the cock thus formed having been properly applied to the boiler, steam may be

admitted to the cock, the same being in its closed position, by simply turning the handle-knob in the proper direction until the limit of the movement is reached.

In consequence of this the holes in the disk are caused to coincide with the openings into the chamber of the cock, and hence steam from the boiler is permitted to pass directly into this chamber, and from it out through the discharge-opening, as indicated in Fig. 2 by the arrows.

The movement of the disk is properly limited by the stud a^{12} , which projects into the slot of the disk.

By means of the recesses c^3 a^{11} a line of breakage is provided, by means of which in case of serious accident the projecting portion of the cock may be broken away without making an opening into the boiler.

F represents a whistle, constructed generally of any proper form, but essentially provided at its inner end with proper means for attachment to the stud a^{10} .

By the employment of the whistle in connection with the gage-cock, the difference between water and steam is determined with absolute certainty.

Some of the advantages of the described construction are as follows: By means of the

stud a^{12} and slot c^1 , the position of the disk is not only accurately determined, but its movement is limited to the least distance necessary to accomplish the desired result. By means of the breakage-line the danger of injury from the escape of steam when the cocks are broken off is avoided. By means of the beveled bearing of the shaft upon the plug-seat, a tight joint is made, so that the escape of steam into the cab is absolutely prevented. These bearing parts, and those also of the disk and its seat, are never separated, so that no foreign substance can ever come between them.

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

1. A gage-cock, substantially as described, provided with breakage-line a^{11} , as set forth.

2. A gage-cock, substantially as described, having a valve, C, adapted to be forced to its seat by the pressure of steam, and a shaft, c^2 , having a bearing, c^4 , resting upon a corresponding seat, as and for the purpose described.

C. R. JOYCE.

Witnesses:

H. W. BEADLE,
THEODORE S. WEST.