No. 708,527. Patented Sept. 9, 1902.

A. C. CALDER.

COMBINED GAGE COCK AND SAFETY VALVE.

(Application filed Mar. 20, 1902.)

(No Model.)

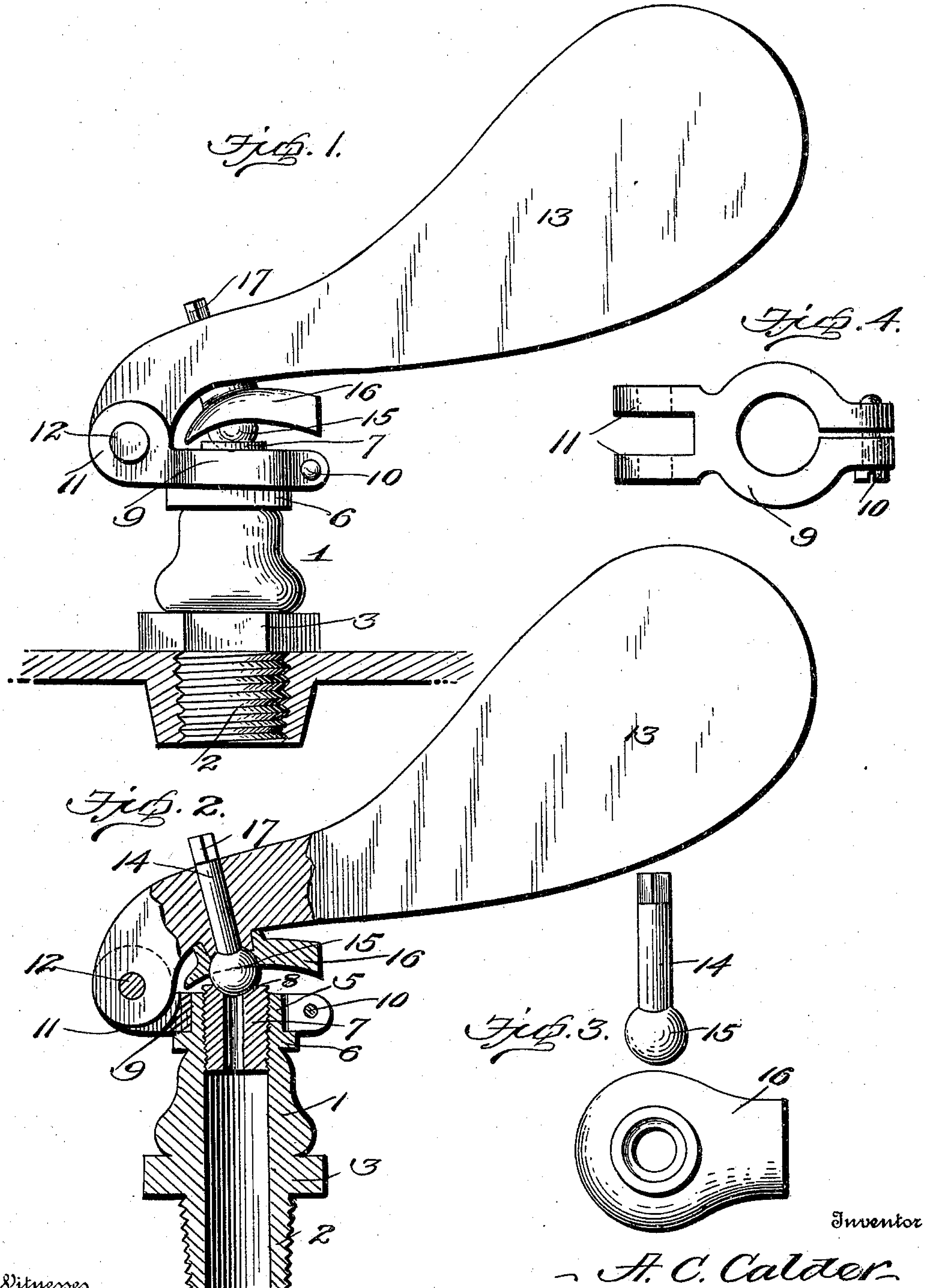

Fig. 1. Fig. 4. Fig. 2. Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

ALEXANDER C. CALDER, OF RICHMOND, VIRGINIA.

COMBINED GAGE-COCK AND SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 708,527, dated September 9, 1902.

Application filed March 20, 1902. Serial No. 99,088. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER C. CALDER, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in a Combined Gage-Cock and Safety-Valve; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to improvements in safety-valves, and has for its object to provide a valve of this character which shall be free from the disorders to which valves of ordinary constructions are subject—viz., clogged openings and valve-stems, leaky glands, and leaky stuffing-boxes—and which obviates the necessity of using packings of any kind to keep it tight and prevent the escape of steam under ordinary conditions of service.

A further object is to so construct the valve as to adapt it to serve in the capacity of an auxiliary safety-valve which comes into action upon the failure of the ordinary safety-valve to perform its function.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, which will be hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of a gage-cock embodying my invention, showing the application of the same to a boiler, a fragment of the latter being shown in section. Fig. 2 is a longitudinal section of the gage-cock. Fig. 3 is a detail view of the valve and shield, and Fig. 4 is a similar view of the ring or yoke.

Referring to the drawings, the numeral 1 represents the body of the cock, provided with a screw-threaded end 2 for application to a threaded aperture in a boiler, a rectangular head 3 to receive a wrench in applying and removing it, a straight port or passage 4, and a reduced outer end 5, formed adjacent to which is a flange or collar 6. The outer end of the body is also internally threaded to receive a ported screw-plug 7, ground out upon its outer end to form a concaved valve-seat 8. A split ring or yoke 9 encompasses the end 5 and fits against the flange 6 and is provided with a tightening-bolt 10 and upper spaced ears 11. Pivoted by a pin or bolt 12 to the ears 11 is a weighted lever 13, provided with an opening for passage of the stem 14 of a convex or ball valve 15, which closes against the seat 8. A concavo-convex shield 16 fits upon the stem 14 between the valve and lever and serves as a guard for the valve.

In operation the pressure of the steam is directly against the valve, which is held closed against its seat by the lever 13, which may be weighted to balance any required pressure, and the action or inaction of the lever and valve indicates the exact conditions of pressure within the boiler. If from any cause the safety-valve should fail to work, the valve would be unseated under pressure and the surplus steam allowed to escape. By opening the valve the passage 4 and port in the valve-seat may be blown out, and thus kept free from clogging.

All the parts of the valve except the valve-seat and valve may be made of malleable iron, so that the device may be cheaply constructed. The valve-seat will be made of some good steam metal or composition and the valve of brass. By employing a ball or convex valve and a concaved seat the valve will always seat steam-tight and will allow of the escape of steam when it is unseated. Grinding of the valve and its seat to a true surface may be easily accomplished while the valve is in use, and for this purpose the stem 14 is provided with a rectangular end 17 for engagement by a suitable tool whereby it may be turned. The valve as constructed is simple, durable, and efficient and avoids the use of packing, so that leakage through the body of the valve is not liable to occur.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of the invention will be readily understood without requiring an extended explanation.

Various changes in the form, proportion, and details of construction may be made

within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

1. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a convex valve, and a gravity-lever for closing the valve against its seat, substantially as set forth.

2. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a gravity-lever, a convex valve carried by the lever, and a shield about the valve-stem and guarding the valve, substantially as set forth.

3. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a gravity-lever, and a convex valve having a stem journaled in the lever and having a projecting end by which it may be turned, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALEX. C. CALDER.

Witnesses:

SPENCER CORNICK,

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