No. 835,056. PATENTED NOV. 6, 1906.

A. C. CALDER.

COMBINED GAGE COCK AND SAFETY VALVE.

APPLICATION FILED APR. 30, 1906.

FIG. 1

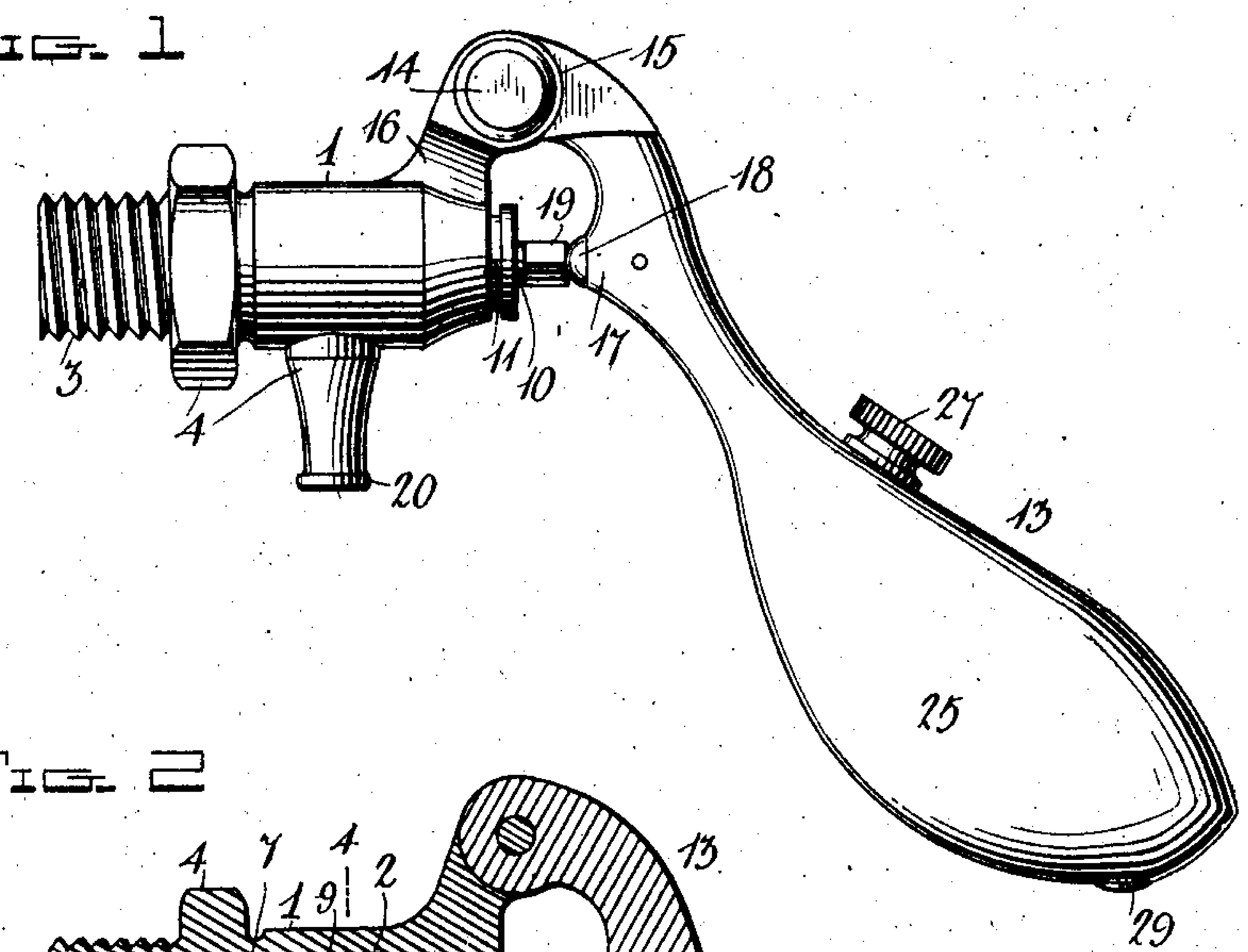


FIG. 2

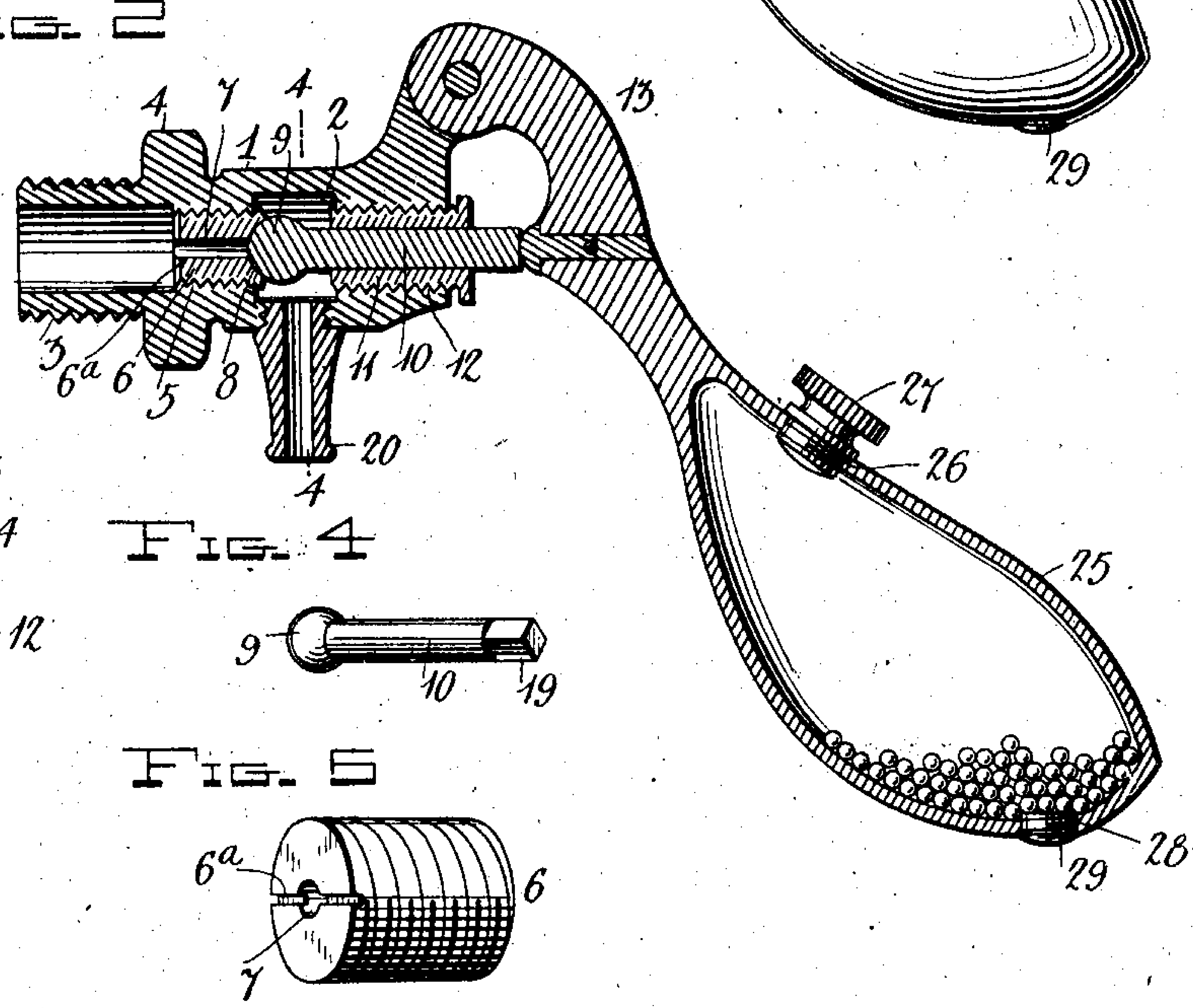


FIG. 3

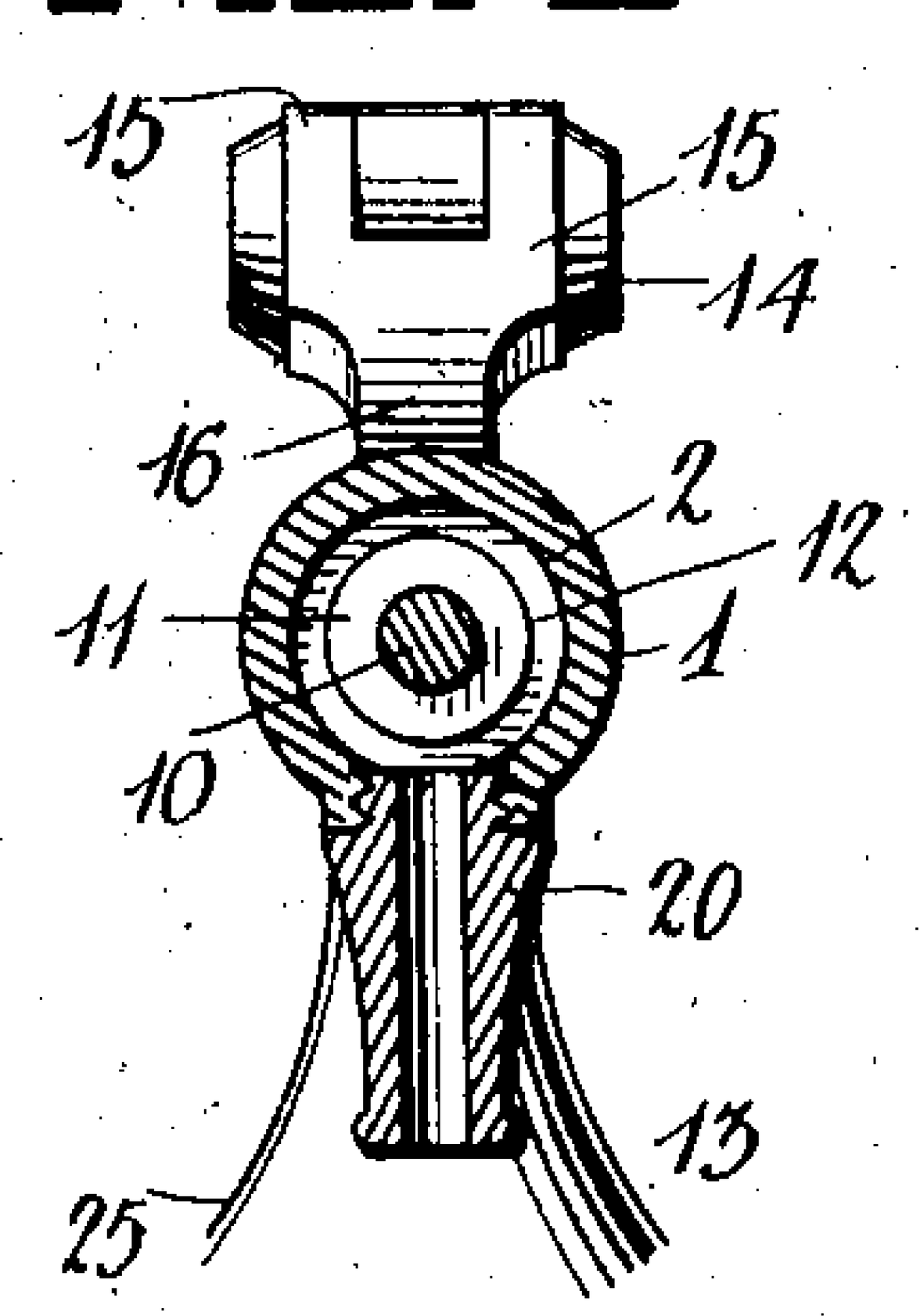
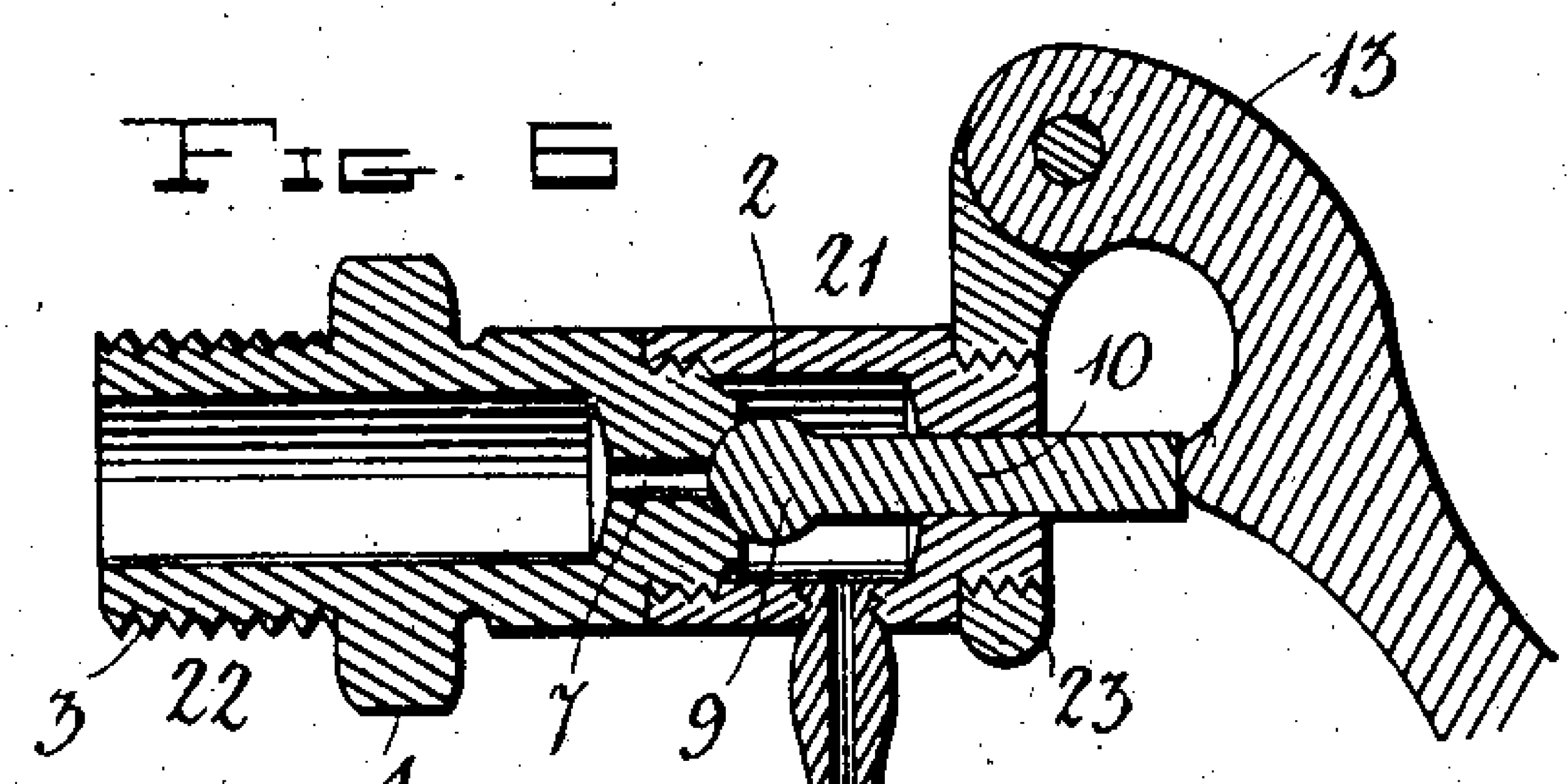


FIG. 4

FIG. 5

FIG. 6



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER C. CALDER, OF RICHMOND, VIRGINIA.

COMBINED GAGE-COCK AND SAFETY-VALVE.

No. 835,056. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed April 30, 1906. Serial No. 314,552.

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.

My invention relates to improvements in combined gage-cocks and safety-valves, and more particularly to the one set forth in Patent No. 708,527, granted to me September 9, 1902.

One object of the present invention is to so construct a combined gage-cock and safety-valve of this character that the water and steam discharged from it will not be deflected against the boiler, as is the case in the patented device above referred to.

Another object of the invention is to improve and simplify the construction and operation of devices of this character, and thereby render the same more efficient and durable and less expensive.

A further object of the invention is to provide a device of this character with a valve-holding gravity-lever provided with means whereby its weight may be varied to adapt the lever to balance any desired pressure within the boiler.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved gage-cock. Fig. 2 is a vertical longitudinal sectional view through the same. Fig. 3 is a detail vertical transverse sectional view taken on the plane indicated by the line 4 4 in Fig. 2. Fig. 4 is a detail view of the valve. Fig. 5 is a detail view of the ported plug, on which is formed the concave valve-seat; and Fig. 6 is a detail sectional view showing a slightly-modified form of the invention.

Referring to the drawings by numeral, 1 denotes the body or casing of the combined gage-cock and safety-valve. This body is hollow, being formed with a cavity 2, arranged between the ends of a bore or passage, which extends longitudinally through the same. The inner end of the body 1 is externally screw-threaded, as at 3, to adapt it to enter a similarly-threaded opening in a boiler or the like, and adjacent to said screw-threads is formed a polygonal-shaped head 4 for the reception of a wrench in applying or removing the device. The bore or opening in this inner end of the body 1 has an internally-screw-threaded portion 5 to receive a screw-plug 6, which is formed with a longitudinally-extending port 7, a ground concave valve-seat 8 at its inner end, and a transverse notch 6^a in its outer end, the notch 6^a being provided for the reception of a screw-driver in applying, removing, and adjusting the plug. The valve-seat 8 is thus interiorly disposed in the cavity 2 and is adapted to receive a spherical valve 9, formed upon one end of a cylindrical stem 10, which slides in a guide nut or bushing 11, which latter is screwed into a threaded opening 12, formed in the outer end of the body or casing 1. The valve is retained upon its seat by the engagement of a gravity-lever 13 with the outer end of its stem 10. This lever has its upper reduced end pivoted by a bolt or the like 14 between a pair of spaced ears 15, formed by bifurcating the upper end of an integral lug 16, which projects from the top of the front end of the body 1.

Upon the inner side of the lever 13, adjacent to its upper end, is a projection 17, adapted to engage the outer end of the valve-stem 10, and I preferably provide in said projection a removable cap 18, which may be replaced when worn. This outer end of the valve-stem 10 is squared or formed with a polygonal-shaped portion 19, adapted to be engaged by a suitable tool, so that the spherical valve 9 may be rotated and ground upon its seat 8 to cause it to closely fit the same. A discharge-nipple 20 depends from the central portion of the body and is screwed or otherwise secured therein, so as to carry off the water and steam discharged beneath the valve 9 into the cavity 2 and to deflect it downwardly and not against the side of the boiler.

In the form of the invention shown in Fig. 2 it will be noted that the body or casing is formed in two sections 21 and 22, the former corresponding to the body 1 and the latter corresponding to the ported plug 6, which carries the valve-seat 8. It will be noted that the section 21 is screwed upon the reduced threaded forward end of the section 22, which end of the latter is formed with a port

and a concave valve-seat, the rear or outer end of said section 22 being similar in shape to the corresponding portion of the body 1. The front end of the section 21 is apertured to receive the stem of the valve, and it is reduced and screw-threaded to receive a collar 23, on which are formed the spaced ears between which the gravity-lever is pivoted.

While the gravity-lever 13 may be solid and of any desired size, shape, and construction, I preferably form it with a hollow handle 25 of bulb-like form. This handle is formed hollow for the reception of a weighting material, such as shot, so that the weight of the lever may be varied according to the pressure it is desired to maintain in the boiler. In the upper side of the handle is formed a screw-threaded opening 26, through which the shot or other weighting material may be inserted into the hollow handle and which is adapted to be closed by a screw plug or cap 27. In the under side or bottom of said handle is formed a similar but smaller screw-threaded opening 28, through which the shot may be removed to reduce the weight of the lever, said opening 28 being normally closed by a screw-plug 29. By means of this construction it will be seen that the weight of the lever may be varied as desired to cause the valve to be held upon its seat against any desired pressure within the boiler.

The construction, operation, and advantages of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings.

It will be seen that by arranging the valve-seat and valve within the body or casing and providing the downwardly-projecting discharge-nipple, as shown, the water and steam discharged from the same will be prevented from splashing upon the side of the boiler and disfiguring the same, and at the same time there will be no danger of a person raising the lever to test the height of the water in the boiler burning or scalding himself.

It will be noted that no packing of any description will be necessary in this device and that it is entirely steam and water tight.

While I have shown and described the preferred embodiments of my invention, it will be understood that I do not wish to be limited to the precise showing herein set forth, since various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined by the appended claim.

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

The herein-described combined gage-cock and safety-valve, comprising the body formed with a chamber, longitudinal passages extending from said chamber to opposite ends of the body, and a discharge-nozzle extending from one side of said chamber; a ported plug fitted and longitudinally adjustable in the inner passage and having a valve-seat in the end presented to said chamber; a plug fitted and longitudinally adjustable in the outer passage and having a longitudinal bore; a valve in the chamber, coacting with its valve-seat and having a stem extending outwardly through the bore of the outer plug, said valve being of greater diameter than its stem and said outer plug coacting therewith to limit the outward movement thereof, and a gravity-lever connected to the body and bearing against the outer end of the valve-stem.

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

ALEXANDER C. CALDER.

Witnesses:
T. R. A. BURKE,
J. D. CRAIG, Jr.