

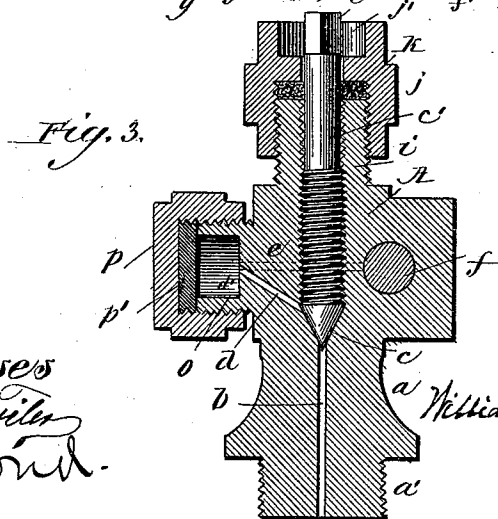
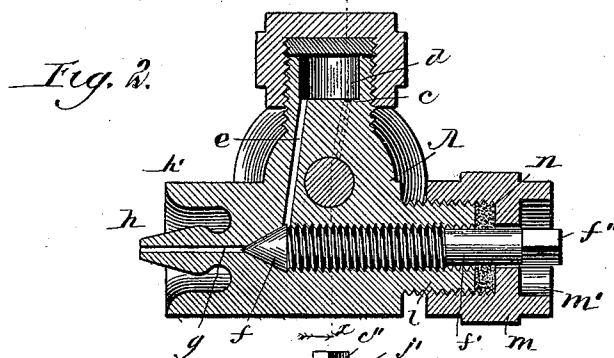
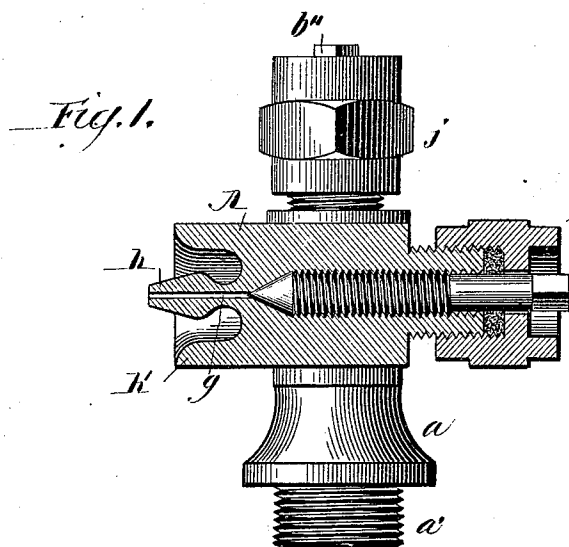
(No Model.)

W. F. MACLACHLAN.

SHUT-OFF AND REGULATING COCK FOR COMPRESSED GASES.

No. 553,861.

Patented Feb. 4, 1896.



Witnesses
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SHUT-OFF AND REGULATING COCK FOR COMPRESSED GASES.

SPECIFICATION forming part of Letters Patent No. 553,861, dated February 4, 1896.

Application filed June 6, 1891. Serial No. 395,298. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. MACLACHLAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shut-Off and Regulating Cocks for Compressed Gases; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is a sectional elevation showing the valve controlling the outflow-passage. Fig. 2 is a sectional elevation transversely to that shown in Fig. 1, showing the valve controlling the outflow-passage and the passages for conveying the gas to the outflow-passage. Fig. 3 is a sectional elevation on the line *xx* of Fig. 2, showing the valve controlling the inflow-passage.

This invention relates to cut-off and regulating cocks for compressed gases, and is primarily designed for use on the cylinders used for gas in connection with a calcium light, more especially for stereopticon or magic-lantern use. It is desirable and necessary that the gas should be at an equilibrium at all times and under all circumstances, and when such equilibrium is once established it should be maintained until the gas has been entirely used.

The object of this invention is to construct a cock by means of which the equilibrium, after it has once been obtained, can be maintained continuously, and at the same time the gas can be turned off or on as required, without disturbing the equilibrium which has been established; and to this end the nature of the invention consists in providing a cock having two needle-valves with communicating passages, by means of which gas can escape from the cylinder for use at the light, and have the valves so arranged that one of them can be set when the equilibrium is obtained and remain in that position, while the other can be used for turning off and on the gas; and the invention further consists in the several parts and combinations of parts hereinafter described, and pointed out in the claim as new.

In the drawings, A represents the body of the cock, made of any suitable material. This body, on one side, has a neck *a* terminating in a screw-threaded plug *a'* for attaching the cock to the gas-cylinder, and through this plug and neck is a passage *b* for gas to escape from the cylinder, which passage is closed by a needle-valve *c*, as shown in Fig. 3, and this valve *c* also closes a passage *d* leading to a chamber *d'*, from which chamber a passage *e* leads through the body A to a needle-valve *f*, which valve closes a passage *g* through the nipple *h*, which nipple receives the hose connecting with the stereopticon or lantern, in the usual manner.

The stem *c'* of the valve *c* is screw-threaded for a portion of its length on the exterior and passes through a screw-threaded hole therefor in a neck *i*, extending out from the body A on the side opposite to the neck *a* in the arrangement shown, and this neck *i* is screw-threaded on its exterior and receives a cap or stuffing-box *j*, on the interior of which is a packing *k*, as shown in Fig. 3. The upper end of the stem *c'* is squared to form a head *c''*, which receives a key or other instrument, by means of which the valve can be opened and closed by turning the stem *c'*, and this head *c''* is located in a chamber *j'* formed in the cap or box *j* by an encircling wall of such cap or box, by which means access to the head *c''* can only be had by the key or instrument designed therefor, thereby preventing tampering with the valve.

The valve *f* has its stem *f'* screw-threaded on the exterior for a portion of its length and enters into a screw-threaded hole in the body A and a neck *l*, as shown in Figs. 1 and 2, and this neck *l* is screw-threaded on its exterior and receives a cap or stuffing-box *m*, enclosing a stuffing *n*, as shown in Figs. 1 and 2, and the outer end of the stem *f'* is squared to form a head *f''* to receive a key or other instrument, and such head is located in a chamber *m'* formed by an encircling wall of the cap or box *m*, so that access cannot be had to the stem except by the proper key or instrument, thereby preventing tampering with the valve. The nipple *h* is protected by an encircling wall *h'* extending out from the body A, as shown in Figs. 1 and 2, and the chamber *d'* is formed in a neck *o* having a

screw-threaded exterior, which receives a cap *p* having an interior gasket *p'* to abut against the end of the neck and tightly close the chamber *d'*.

5 The valve *c* is at one side of the valve *f*, as shown in the figures, and the stem *c'* of the valve *c* is made tight by the packing *k*, while the stem *f'* is made tight by the packing *n*, so that no leakage or escape of the gas can occur
10 around the stems *c'* and *f'*. The passage *d* runs from the chamber *d'* in a diagonal direction to the valve *c*, so that when the valve *c* is opened communication is established between the passage *b* and the passage *d*, and
15 the passage *e* runs in a diagonal direction from the chamber *d'* to the valve *f*, as shown in Fig. 2, so that when the valve *f* is open communication is established between the passage *e* and the passage *g*, and when both
20 valves are open communication is established between the passage *b*, passage *d*, passage *e* and passage *g*, allowing the gas to escape from the cylinder through these passages into the hose on the nipple *h*.

25 The cylinder is charged by closing down the valve *f*, which closes the passage *e* and the passage *g* and opening the valve *c*, which opens the passage *b* and the passage *d*, when by removing the cap *p* connection can be had
30 to the neck *o* and the gas-generator, so that gas from the generator will flow through the passages *d* and *b* into the cylinder, and when the cylinder is fully charged the valve *c* is closed down, closing the passage *b* and holding
35 the gas in the cylinder, when the connection with the generator can be removed and the cap *p* screwed into place on the neck *o*, closing the chamber *d'*.

The escape of the gas from the cylinder is
40 controlled by opening the valve *f*, which opens the passage *e* and the passage *g*, and then setting the valve *c* as required for an equilibrium, and when the necessary adjustment of the valve *c* for the equilibrium is had the
45 valve *c* is left in that position, and the flow of the gas is wholly controlled by the operating-valve *f*, and to escape gas from the cylinder to the point of consumption the valve
50 *f* is opened, and with such opening communication is established through the passages *b*, *d*, *e*, and *g*, but the outflow is regulated by the valve *c*, which has been set for the equilibrium, so that the valve *f* can be fully
55 opened without affecting the equilibrium of the gas in the least, as such equilibrium is controlled wholly by the valve *c*.

Instead of setting the valve *c* to control the equilibrium of the gas, it is evident that the

valve *f* can be set to control such equilibrium, and when the valve *f* is used for the purpose
60 of controlling the equilibrium its position is unchanged, as the flow of the gas is then had by opening the valve *c*, and when the valve
65 *f* is the equilibrium-valve and the valve *c* the operating-valve the valve *c* is the one that is opened and closed. The closing of the operating-valve, whether *c* or *f*, shuts off the
70 flow of gas from the cylinder, but leaves the gas in the cock under pressure and controlled by the valve which establishes the equilibrium, so that in escaping the gas only one
75 valve need be operated.

The cock will be found effectual and reliable for the purpose of establishing the equilibrium of the gas and maintaining such equilibrium, and for the purpose of the lecture-
80 room, in connection with a stereopticon or magic lantern, the operator can, previous to the lecture, adjust the apparatus so as to have the gas at an equilibrium, and there held by
85 one of the needle-valves, so that by opening the other needle-valve the gas will flow, and this setting or adjusting of the apparatus will obviate the necessity of making such adjustment at the time of the lecture, as has heretofore been the practice.

The gas escaping from the cylinder enters into the chamber *d'*, where it has a chance to expand somewhat before entering the passages leading to the hose connection, and by
90 such expansion the gas is made lighter and better adapted for use.

The inclosing of the stems for the valves by a wall, so that but little, if any, of the end will project, prevents any contact of a stem
95 with a wall or other object, or any striking of the stem in moving the cylinders by which the stem will be bent at the end or broken off, which accident is liable to occur with the stem having the end fully protected.
100

What I claim as new, and desire to secure by Letters Patent, is—

The head *A*, having the passage *b*, passage *d*, chamber *d'*, passage *e*, and passage *g*, in combination with the valve *c*, with its stem
105 *c'*, the chamber *j'*, inclosing the outer end of the stem *c'*, valve *f*, with its stem *f'*, stuffing-box *m*, with its chamber *m'*, inclosing the end *f''* of the stem *f'* and cap *p*, closing the chamber *d'*, substantially as and for the purposes
110 specified.

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Witnesses:

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