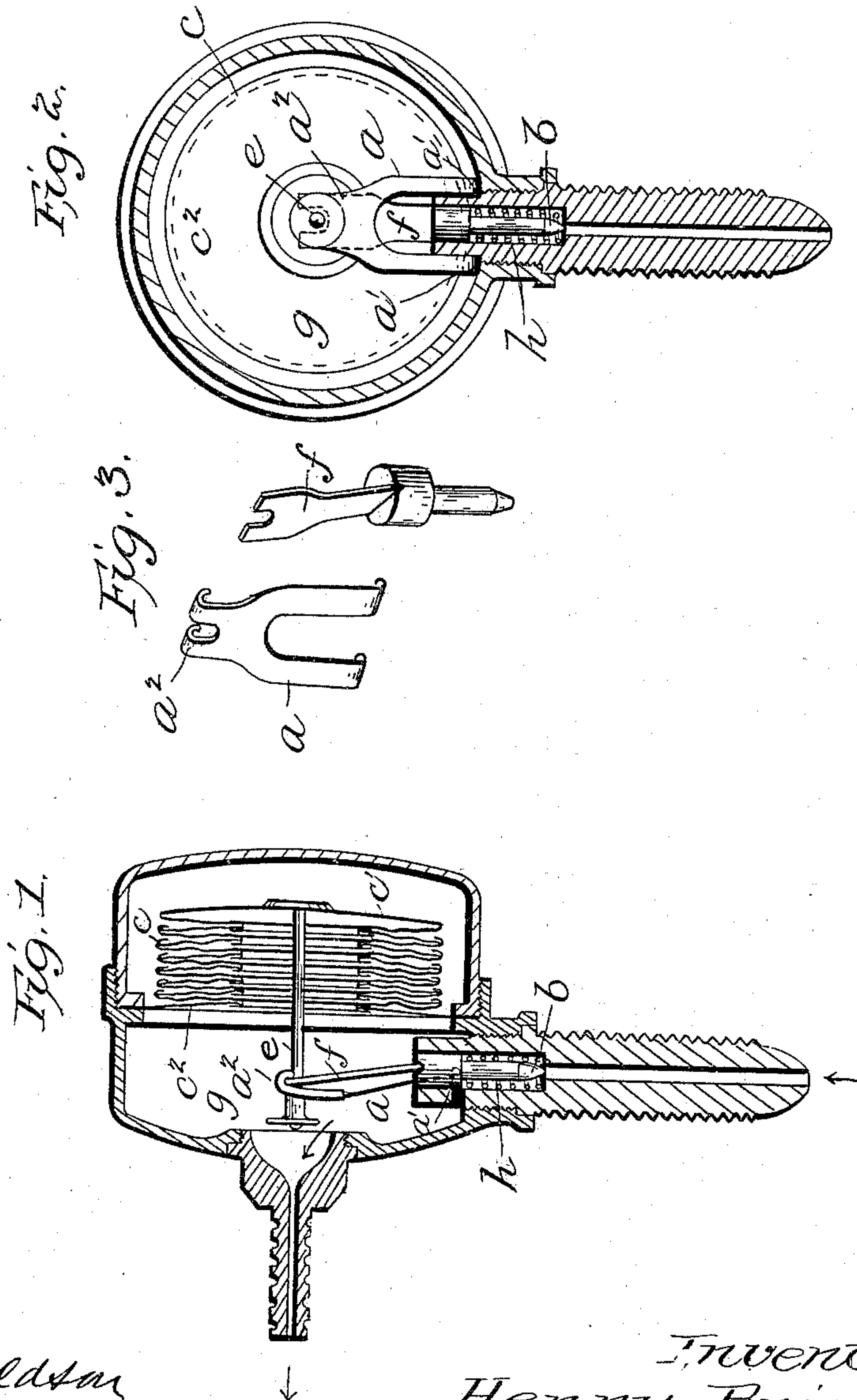


(No Model.)

H. BRIER.
FLUID PRESSURE REGULATOR.

No. 489,646.

Patented Jan. 10, 1893.



Attest
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Atty.

UNITED STATES PATENT OFFICE.

HENRY BRIER, OF CROSSHILL, SCOTLAND.

FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 489,646, dated January 10, 1893.

Application filed August 17, 1892. Serial No. 443,335. (No model.) Patented in England September 18, 1890, No. 14,725, and in France November 5, 1891, No. 209,319.

To all whom it may concern:

Be it known that I, HENRY BRIER, engineer, a citizen of the United Kingdom of Great Britain and Ireland, residing at 47 Dixon Avenue, Crosshill, in the county of Renfrew, Scotland, have invented new and useful Improvements in Automatic Regulators or Reducing-Valves, (which have not been patented in any country except Great Britain by Letters Patent, dated September 18, 1890, No. 14,725, and in France by Letters Patent, dated November 5, 1891, No. 209,319;) 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 or manufacture to which it relates to make and use the same.

This invention has for its object improvements in automatic regulators or reducing valves and it more particularly relates to the valves employed for what are known as "compressed gases" but may also be employed for liquid or mixed gas and liquid under pressure.

According to the invention a bellows is arranged to actuate in an improved manner a stop valve which is used to obstruct the passage of the high pressure gas or liquid, or mixture of gas and liquid. This is done by introducing such a system of links as is capable of bringing a gradually increasing pressure to bear upon the valve as it closes or comes home to its seat and the systems of links referred to are confined to such as when actuated by a constant force are capable of producing or gradually increasing pressure.

The invention is illustrated on the accompanying drawings of which

Figure 1 is a transverse vertical section and Fig. 2 a plan view partly in section of the improved regulator or reducing valve. Fig. 3, represents in perspective the swinging links, and the head of the valve.

A link *a* is as shown by these figures centered or pivoted at the lower end *a'* near the valve *b*, while the other end *a²* is attached to a bellows *c* by the connection *e*. To the end *a²* of the link *a* one end of a shorter link *f* is

attached the other end abutting against the head of the valve *b* or against a slide block in conjunction with the valve. The swing of the link *a* about its fixed center caused by the movement of the bellows *c* effects a lateral movement of the valve *b* causing it to open or close according to the pressure in the outlet or low pressure chamber *g*. The valve *b* is fitted with a spring *h* which is arranged to maintain it in constant contact with the system of links and the bellows may be of any suitable construction but preferably of metal. As shown on the drawings it is composed of a series of corrugated metallic rings or washers joined together by lapping or otherwise at the outer and inner circumference. To the outermost ring a plate or disk *c'* is attached to which one end of the connection *e* is secured while to the innermost ring a broader washer *c²* is connected the outermost circumference of which is secured to the casing of the regulator. The bellows which is open to the low pressure chamber *g* works accordion wise distending and returning on variation of pressure.

Having now described the invention what I desire to secure by Letters Patent is:—

In a fluid pressure regulator, an inlet and exit opening a valve in the exit opening and controlling means therefore, acted on by the pressure, consisting of a central rod connected to an expansion device, as a bellows, a link *a* having one end bifurcated and pivoted to the casing and connecting with the rod at the other end, said end being hooked, and a link *f* fitting the hooked end of the link *a*, and engaging a notch in the valve in the exit opening, substantially as described.

In witness whereof I have hereunto set my hand and seal this 2d day of August, 1892.

HENRY BRIER. [L. S.]

Witnesses:

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