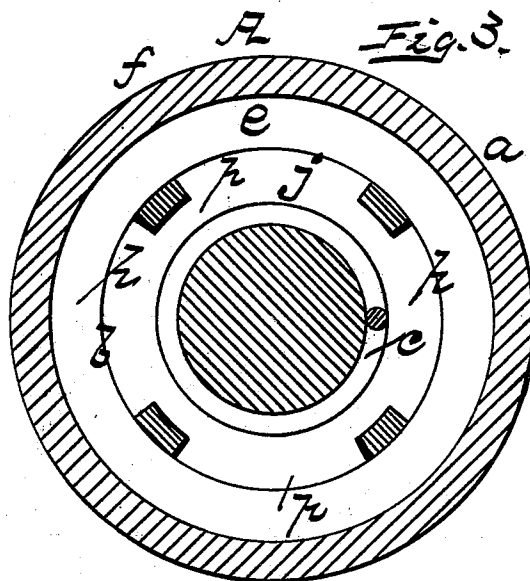
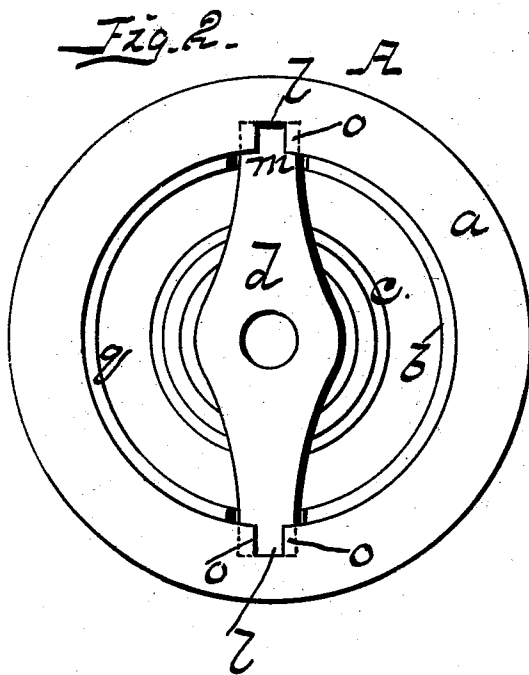
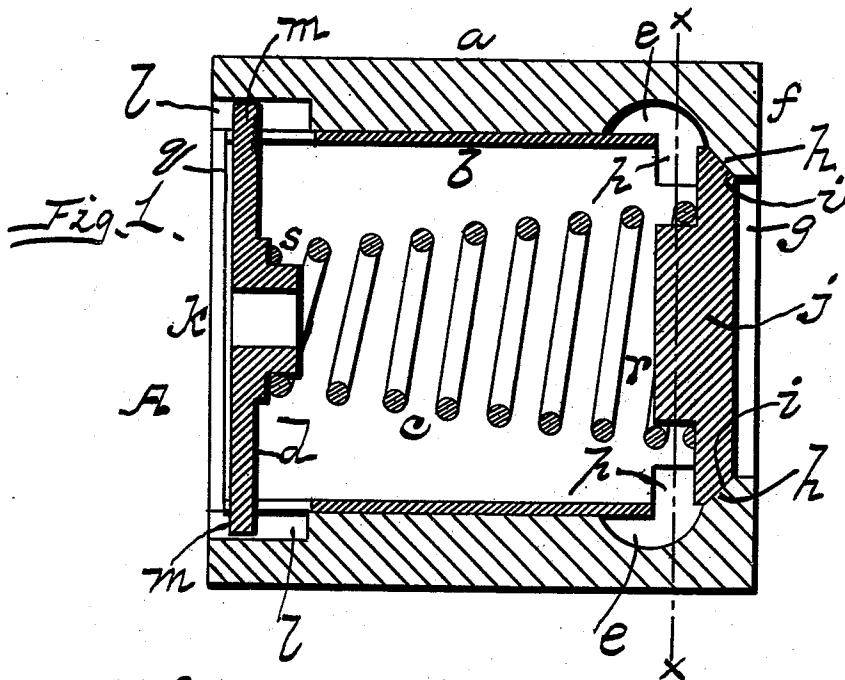


(No Model.)

J. E. GARIS & H. J. WELCH.
VALVE FOR COMPRESSOR AND BLOWING ENGINES.

No. 512,369.

Patented Jan. 9, 1894.



WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN EDWARD GARIS AND HARRY JOHN WELCH, OF PORT CARBON,
PENNSYLVANIA.

VALVE FOR COMPRESSOR AND BLOWING ENGINES.

SPECIFICATION forming part of Letters Patent No. 512,369, dated January 9, 1894.

Application filed July 11, 1893. Serial No. 480,172. (No model.)

To all whom it may concern:

Be it known that we, JOHN EDWARD GARIS and HARRY JOHN WELCH, citizens of the United States, residing at Port Carbon, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Valves for Compressor and Blowing Engines; and we do hereby 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 relates to improvements in valves and more particularly to that class of valves used in compressor and blowing engines and it consists in the novel construction, arrangement, and combination of parts of which it is composed, all as will be hereinafter fully described and particularly pointed out in the appended claim.

The annexed drawings, to which reference is made, fully illustrate our invention, in which—

Figure 1, represents a vertical sectional view of our improved valve. Fig. 2, is an end view of the same, and Fig. 3, is a transverse sectional view, taken on the dotted line *x, x*, Fig. 1.

Referring by letter to the accompanying drawings, A, is the valve, consisting of the outer cylinder *a*, and an inner cylinder *b*, a pressure spring *c* and a cross head or bar *d*. The outer cylinder *a* is constructed with an annular groove or depression *e* near its end *f*, which latter is provided with the opening *g* having inner beveled portions or seats *h*, corresponding with the beveled edge *i* of the head *j* of the inner cylinder. The end *k* of the outer cylinder is open as shown and adjacent thereto on the inner wall of the outer cylinder, are provided slots or grooves *l*, in which the opposite ends *m, m*, of the cross bar rest and having its bearing against the portion *o*, of the slots. The inner cylinder *b* is provided with openings *p*, which communicate with the annular groove in the outer cylinder and providing a free communication between said groove and the interior of the

inner cylinder, which latter is open as at *q*. The spring *c* is arranged within the inner cylinder; the end *r*, of which has its bearing against the head *j*, while its opposite end *s* bears against the cross-bar *d*, as shown in Fig. 1, of the drawings. Thus it will be seen that the pressure of the spring forces the head of the inner cylinder against the beveled seat of the outer cylinder and closes all communication between the opening *g*, and the inner cylinder, but through high pressure against the head of the inner cylinder, the latter will yield thereto; separating the beveled end of the head from the beveled portion of the outer cylinder, thus letting off pressure by providing communication between the outer opening *g* and the inner cylinder by way of the annular groove and when pressure is relieved the coiled spring *c* forces the head of the inner cylinder to its normal position and closing the opening *g*, and by this construction it will be observed that we provide an automatic valve whereby high pressure may readily escape by forcing the head inwardly and passing through the openings in the inner cylinder by way of the depressions or grooves and out through the open opposite end and when the valve is relieved from pressure the spring forces the head against its seat, closing the opening at this portion of the valve, and a valve as herein described is simple in construction, automatic in operation and at the same time cheap to manufacture.

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

In a valve for compressor and blowing-engines, the combination with the outer cylinder *a* constructed with an annular groove or depression *e* in its interior near its end *f*, the latter provided with an opening *g* having inner beveled portions or seats *h*, the said outer cylinder *a* having the open end *k* and adjacent thereto on the inner wall the slots or grooves *l, l*, the cross-bar *d* having its ends resting in said slots or grooves *l, l* and the portions *o, o*, of said slots or grooves, of the inner cylinder *b*, provided with the openings *p* and *q*, communicating with the annular

groove *e* in the outer cylinder and providing
free communication between said groove and
the interior of the inner cylinder, the spring
c arranged within the inner cylinder, the
5 larger end *r* of said spring bearing against
the inner face of the head *j* and its smaller
end bearing against the cross-bar *d*, substan-
tially as and for the purposes specified.

In testimony whereof we affix our signatures
in presence of two witnesses.

JNO. EDWARD GARIS.
HARRY JOHN WELCH.

Witnesses:

M. J. RYAN,
PATRICK R. TOOLE.