No. 851,358. PATENTED APR. 23, 1907.

C. KIESSELBACH.

VALVE.

APPLICATION FILED DEC. 8, 1905.

Fig. 1.

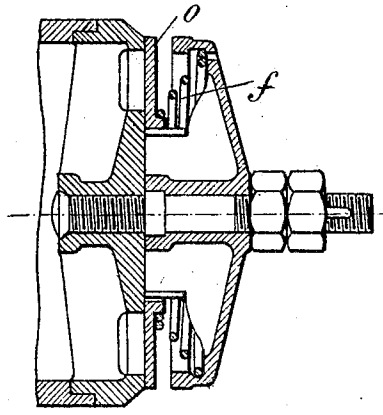


Fig. 2.

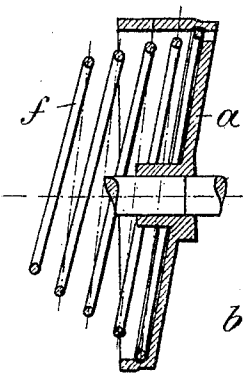


Fig. 3.

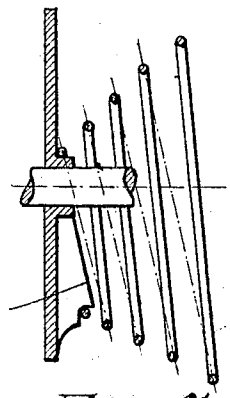


Fig. 4.

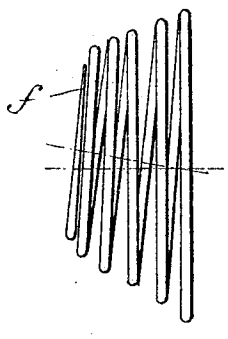


Fig. 5.

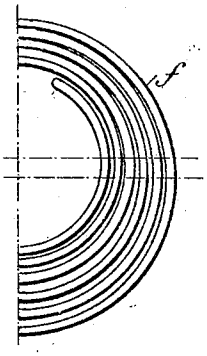


Fig. 6.

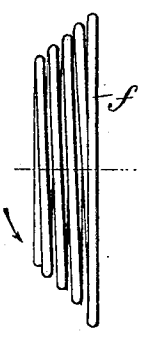


Fig. 7.

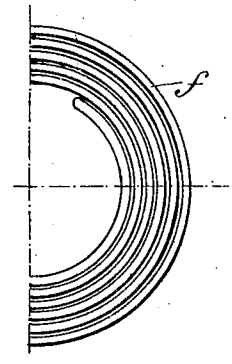
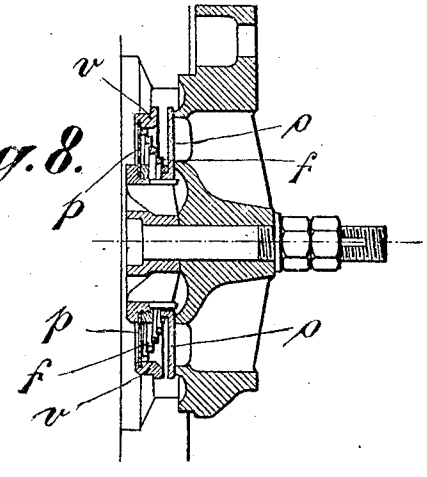


Fig. 8.



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UNITED STATES PATENT OFFICE.

CLEMENS KIESSELBACH, OF RATH, NEAR DÜSSELDORF, GERMANY.

VALVE.

No. 851,358. Specification of Letters Patent. Patented April 23, 1907.

Application filed December 8, 1905. Serial No. 290,890.

To all whom it may concern:

Be it known that I, CLEMENS KIESSELBACH, a citizen of Germany, residing at Rath, near Düsseldorf, Germany, have invented new and useful Improvements in Valves, of which the following is a specification.

In valves of the kind used in pumps, blasts and the like the spiral springs heretofore employed yield to the weight of the valve-body causing the latter to deposit with its full weight in the inner and outer valve passages and producing thereby a unilateral friction resulting in an early wear-out of both the valve and its seat. Moreover the unilateral friction causes an irregular opening of the valve and thereby a hammering and fluttering and when the valve closes the said friction causes a one-sided closure.

My invention relates to an automatic valve of the kind referred to where the disadvantages alluded to are avoided. The valve-body moves horizontally or inclined and is charged with a spiral spring capable of carrying the weight of the valve-body preventing thereby the latter from depositing in the passage and avoiding a friction pressure of the valve therein.

In describing my said invention I refer to the accompanying drawing, in which

Figure 1 is a section through a valve embodying my invention; Fig. 2 a section through part of a valve, showing a modification; Fig. 3 a similar section through a further modification; Figs. 4 and 5 are details of the spring; Figs. 6 and 7 are corresponding views of a modification of the spring, and Fig. 8 is a section through a further modification of the valve.

The main feature of my invention consists of mounting the spiral spring *f* in such way that its axis is inclined to the direction in which the valve *o* moves thereby relieving the passage of the valve. As shown by Figs. 1, 4, 5 this can be done by coiling the spring about an eccentric core or by mounting the spring-seat *a* inclined as shown in Fig. 2, or the face *b* where the spring touches the valve may be peripherally inclined as illustrated in Fig. 3.

When the valve is in its ordinary position it charges with the weight of its body the spring, the latter assuming the position shown in Figs. 4, 5, 6, 7. The axis coinciding with the line of the direction in which the valve-shell moves, where the valve and spring touch each other, the action of the spring becomes equal throughout notwithstanding the valve-shell is carried by the spring.

The spiral spring may be coiled cylindrically or it may be conical or of any other shape and there may as well be provided a plurality of springs for one valve each mounted as described. The said spring *f* may be supported by an elastic metal plate or elastic straps as shown in Fig. 8 where the seat of the spring *f* is formed of such an elastic plate *p* provided with a rim *v*. When the valve *o* is suddenly raised during the movement of the piston the spring *f* is thereby compressed such pressure actuating at the same time suddenly and with increased force upon the elastic plate which is thereby made to recede and while so receding the valve-shell deposits on the rim *v* which it does through the counter-action of the spring quietly and equally without requiring any other elastic means.

The pressure of the elastic seat of the spring causing an early closing movement of the valve at once with the reduction of the counter-pressure the valve-cone deposits quietly during the downward movement of the spring while in the constructions heretofore in use the said valve-cone was on the reduction of the pressure exerted against it raised and torn from its seat much later and then vehemently, the result being the hammering above alluded to. The employment of the elastic seat plate or other elastic support for the spiral spring *f* removes at the same time the fluttering of the valve-cone which had heretofore often occurred when the spring *f* had been provided stronger in the endeavor to avoid the aforesaid hammering. The said elastic support for the spring may be provided in any suitable place in the valve-chest and be made of any material suitable for the purpose.

What I claim as my invention and desire to protect by Letters Patent is:

1. In an automatic valve of the kind used in pumps and blasts the combination of the valve-mechanism as ordinarily used with a spiral spring the axis of which is inclined to the line in which the valve-body moves, substantially as described.

2. In an automatic valve of the kind used in pumps and blasts the combination of the ordinary valve-mechanism with a spiral spring suitable to support the weight of the

valve-body, the axis of the said spiral spring being excentric to the line of movement of the valve, substantially as described.

3. In an automatic valve of the kind used in pumps and blasts the combination of the ordinary valve-mechanism with a spiral spring suitable to support the weight of the valve body, the axis of the said spring being inclined to the line in which the valve-body moves, and an elastic support for the said spiral spring, substantially as described.

Signed by me at Düsseldorf, Germany, this twentieth day of November 1905.

CLEMENS KIESSELBACH.

Witnesses:
WILLIAM ESSENWEIN,
PETER LIEBER.