

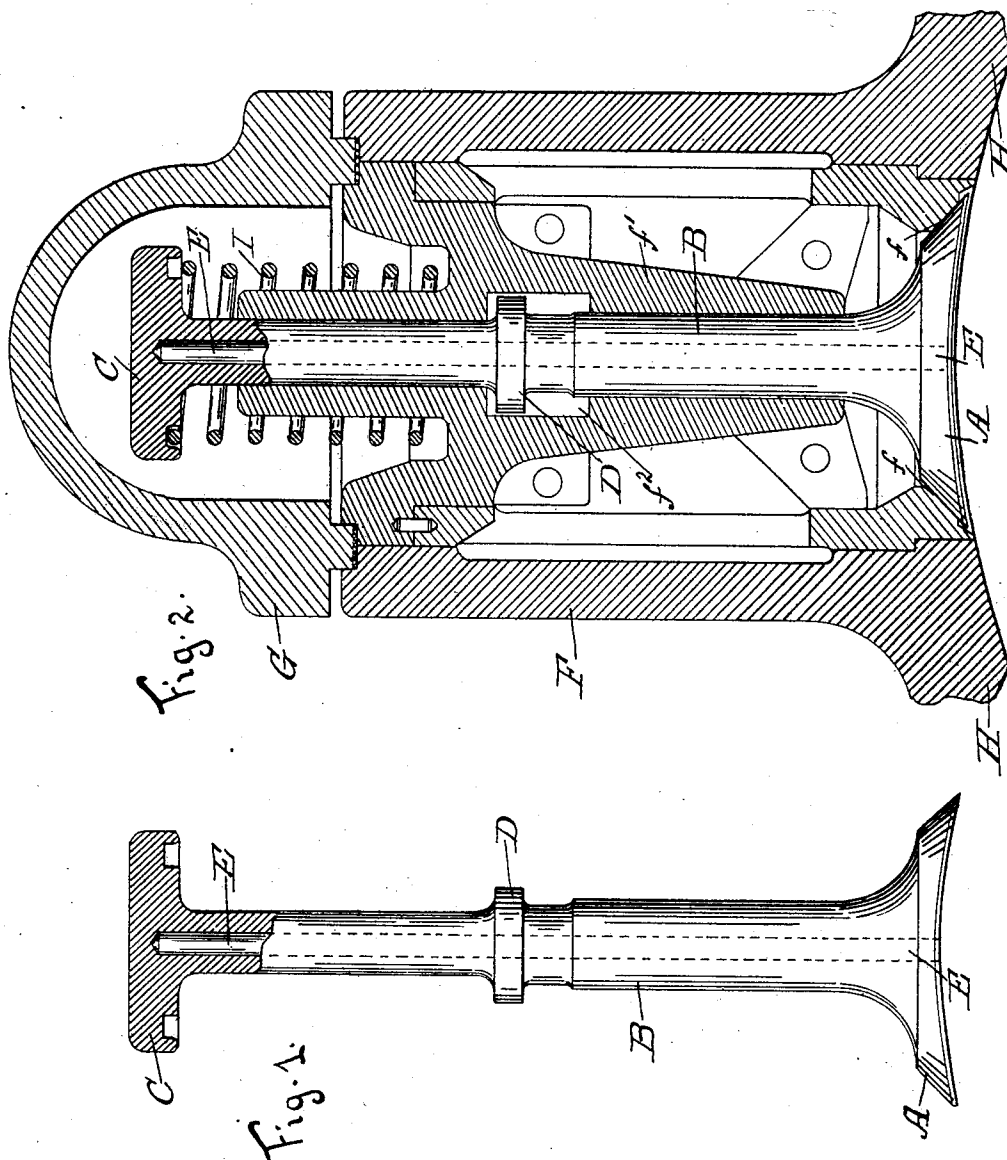
No. 762,406.

PATENTED JUNE 14, 1904.

S. S. HERRICK.
VALVE.

APPLICATION FILED FEB. 5, 1904.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

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VALVE.

SPECIFICATION forming part of Letters Patent No. 762,406, dated June 14, 1904.

Application file February 5, 1904. Serial No. 192,119. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN S. HERRICK, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of valves of the puppet type, and it is especially applicable to inverted suction-valves whose relation to the cylinder is such that in case of breakage of the valve or its stem the broken parts will drop into the cylinder.

Although my invention may be applied to a valve in any situation of this character with relation to a cylinder or other part of any machine which is likely to suffer injury by the dropping of the broken valve, it is particularly intended to be applied to the suction-valves of an ammonia-compressor, in which connection as illustrative of its utility I can best describe its object.

In ammonia-compressors the suction-valves are generally of the puppet type and are disposed or inverted in such manner that they seat from the inside, and consequently if the stem breaks the valve will drop into the cylinder and being caught in the return stroke of the piston will burst off the pump-head or do other injury. The liability of valve breakage in ammonia-compressors is particularly great, owing to the severe jar and jerking to which the valves, and especially the suction-valves, are subjected, which strain is due to the high pressure against which the pumping is done as compared with the lower pressure at which the gas is admitted. The suction-valves are therefore jarred and jerked so repeatedly and violently that under resulting crystallization their stems or any safety-collars with which they may be provided are liable to break, and any independent safety means, such as nuts or pins, are soon worked loose and become valueless to keep the broken valve from dropping into the cylinder.

The object of my invention is to obviate these difficulties; and to this end my invention consists in a valve so constructed with a

double safety-stop that immediately upon and by reason of the breaking of the primary stop the function of the valve is destroyed, thereby calling attention to the break and permitting renewal before the secondary stop called into action by the breakage of the primary stop can give way.

It also consists in the novel construction of the valve, which I shall now describe by reference to the accompanying drawings, in which—

Figure 1 is an elevation of my improved valve, the upper part of the stem and the top collar which forms the primary stop being in section. Fig. 2 is a similar view showing the valve in its casing.

The valve itself comprises a head A, a stem B, a top collar or stop C, and an intervening collar or stop D, all preferably integral, though this is not essential. Through the head and through the stem and well up into the top collar or stop, though terminating short of its upper surface, is made a bore or hole E.

F is the valve-casing having a cover G. The base of the casing is shown extended on each side to indicate at H H a part of the cylinder-wall.

In the base of the casing F is the seat f for the valve-head, and within said casing is the two-part guide f' for the valve-stem, which said stem extends above the top of the guide, as shown.

I is the spring controlling the valve. The guide f' is chambered out at f'' to receive the intervening collar or stop D of the valve-stem. Now it will readily be seen that the upper collar C of the valve-stem is the initial or primary stop and that the intervening collar D is the supplemental or secondary stop.

The first strain is on the upper stop and the liability of breakage is there; but as soon as the stop C breaks the hole or bore E is exposed, and while the valve is caught and prevented from dropping into the cylinder by the secondary stop D the valve loses its function by reason of the exposed hole and can be removed before the secondary stop can break. By thus destroying the function of the valve

- after the breakage of the primary stop it is immaterial what may be the special construction of the stops, as dependence is placed upon them only to the extent of interposing between
5 their successive functions a means which by destroying the function of the valve itself calls attention to and requires the necessity of renewal, so that under no probable circumstance can the valve drop into the cylinder.
10 From this it will be obvious that if the valve-stem itself breaks anywhere above the supplemental or secondary stop the same result will be had, and therefore said supplemental stop may be placed as low down as desirable in order
15 to give safety to much the greater portion of the stem. Finally, in the best construction, as shown, the stops being integral with the stem, no independent parts, liable to jar loose, are needed.
20 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—
1. A valve having a primary stop at the top of its stem, and a secondary stop on said stem
25 between the primary stop and the valve-head, said valve and its stem having a bore extending through the head and terminating within the stem above the plane of the base of the primary stop.
30 2. A valve comprising a head, a stem, a collar at the top of the stem and a collar on the stem between its top collar and head, said valve

having a bore extending through the head and terminating within the stem above the plane of the base of the top collar.

3. An inverted suction-valve comprising a head, a stem, a top collar on the stem and a collar on the stem intervening between the top collar and the head, said valve having a bore extending through the head and terminating
40 in the stem in a plane beyond the intervening collar, in combination with a casing having a seat for the valve-head, and a guide through which the stem projects, said guide having a chamber to form a stop for the intervening
45 collar, and a spring to control the valve.

4. An inverted suction-valve comprising a head, a stem, a top collar on the stem and a collar on the stem intervening between the top collar and the head, said valve having a bore
50 extending through the head and terminating in the stem above the plane of the base of the top collar, in combination with a casing having a seat for the valve-head, and a guide through which the stem projects, said guide
55 having a chamber to form a stop for the intervening collar, and a spring to control the valve.

In witness whereof I have hereunto set my hand.

STEPHEN S. HERRICK.

Witnesses:

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