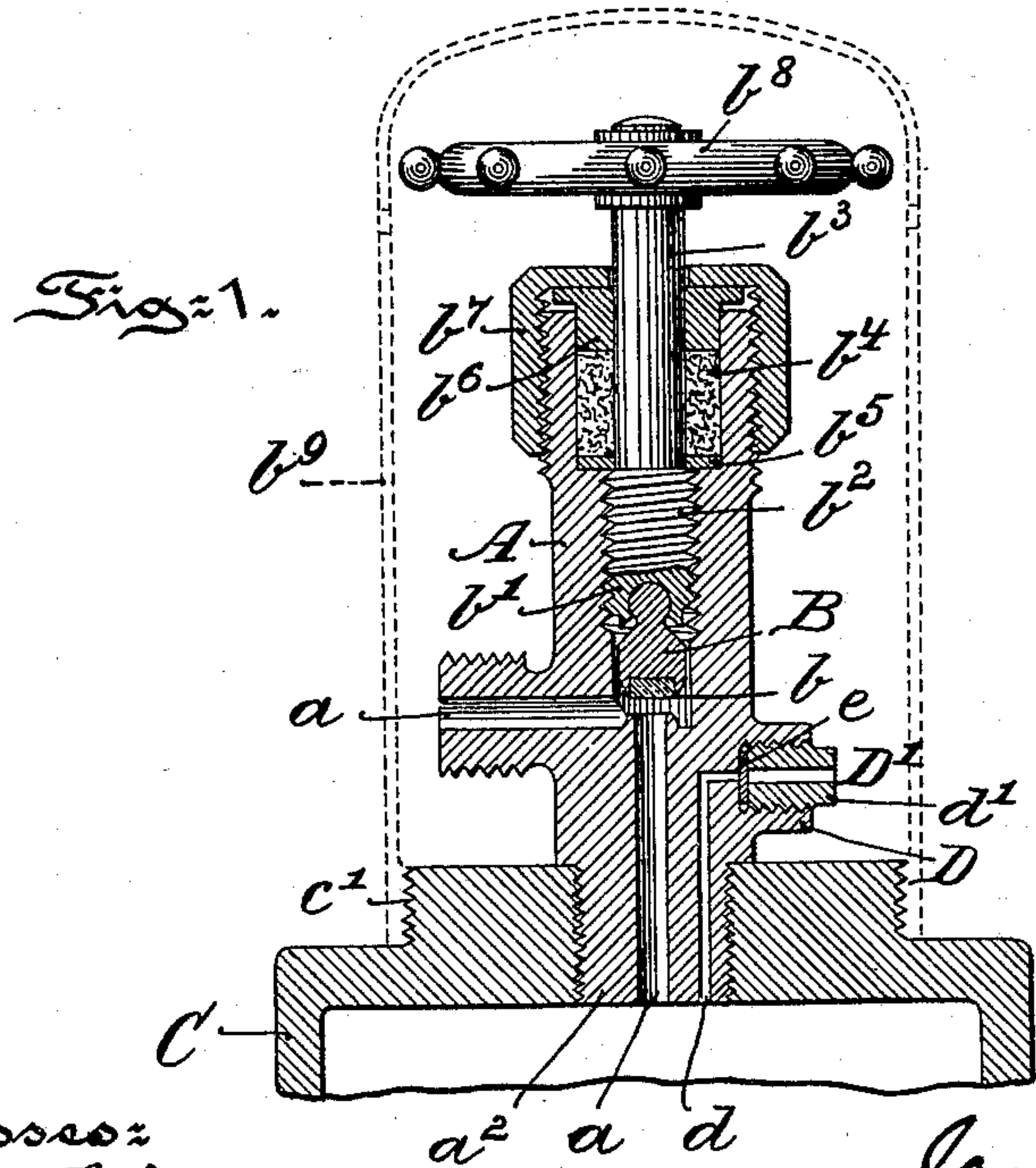
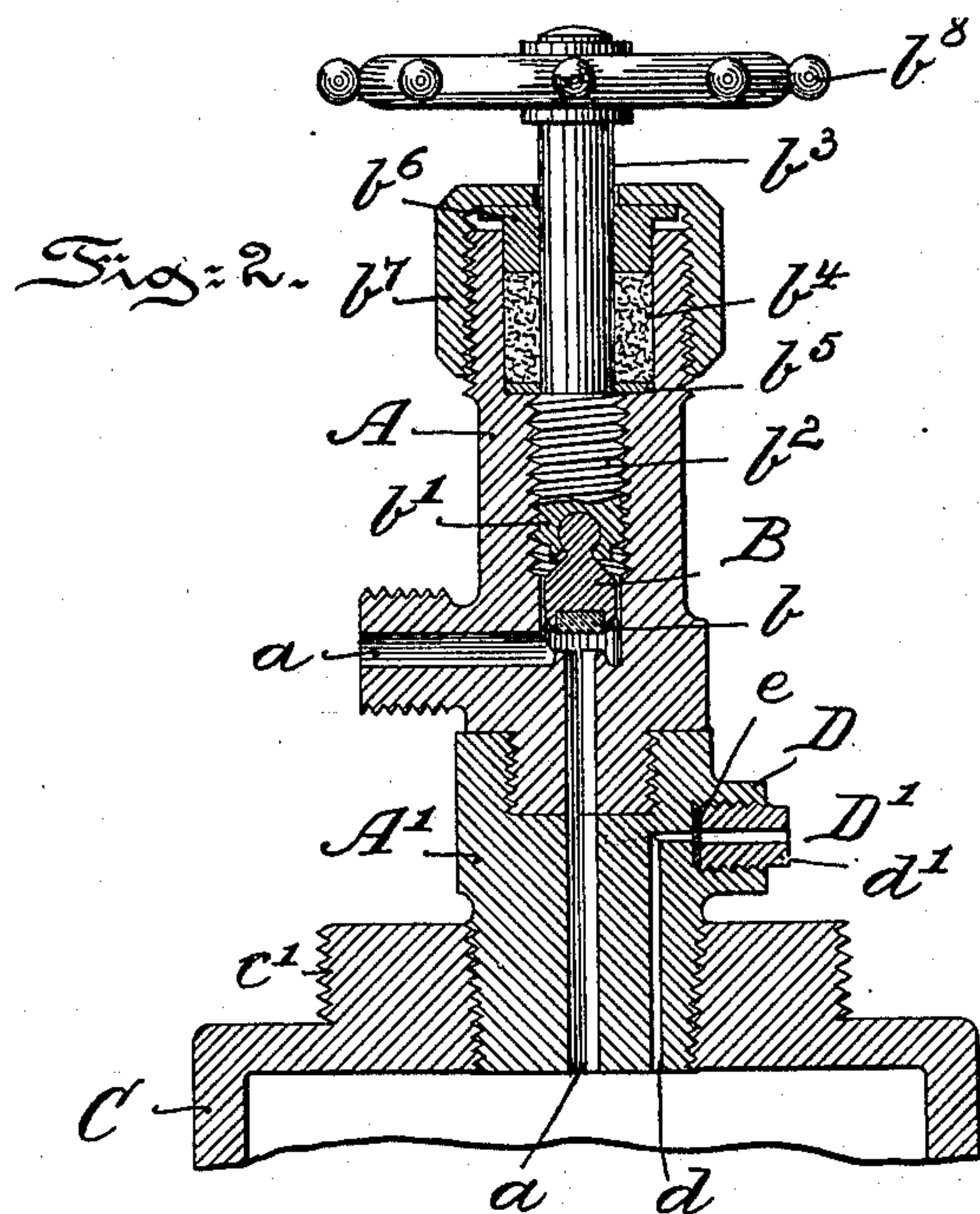


(No Model.)

J. A. GRIFFITHS.  
SAFETY ATTACHMENT FOR VALVES.

No. 596,497.

Patented Jan. 4, 1898.



Witnesses:  
Thomas M. Smith.  
Richard C. Maxwell.

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# UNITED STATES PATENT OFFICE.

JAMES A. GRIFFITHS, OF PHILADELPHIA, PENNSYLVANIA.

## SAFETY ATTACHMENT FOR VALVES.

SPECIFICATION forming part of Letters Patent No. 596,497, dated January 4, 1898.

Application filed March 23, 1897. Serial No. 628,831. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES A. GRIFFITHS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Safety Attachments for Valves, of which the following is a specification.

My invention has relation to an improvement upon the safety attachment for valves for carbonic-acid-gas or other reservoirs, described and claimed in the Letters Patent No. 583,467, granted to me under date of June 1, 1897, and it relates particularly to the construction and arrangement of such a safety attachment whereby a sudden closure of the main valve will force the gas under compression first to the reservoir, in which it expands prior to acting upon the safety attachment. The principal object of my invention is to provide a safety attachment for carbonic-acid-gas or other reservoir valves of simple construction and adapted to be acted upon directly from the reservoir and not from the passage-way leading to the main valve; and to this end my invention consists of the combination, with the reservoir, of a casting adapted to be secured to said reservoir, a wide passage or channel located in said casting and communicating with the reservoir, a main valve normally closing said passage or channel, a second passage or channel wholly disconnected from the first passage or channel and located in said casting adjacent to the first passage, but narrower than the same and communicating with the interior of the reservoir, said second passage terminating at a point below said main valve; a diaphragm normally closing the outlet of said second passage, and a removable perforated plug adapted to normally hold the diaphragm in the casting.

My invention further consists of a safety attachment for valves constructed and arranged in substantially the manner herein-after described and claimed.

The nature and general features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part thereof, in which—

Figure 1 is a vertical central sectional view

of a safety attachment for a valve of my invention in one form thereof, and Fig. 2 is a similar view of a modified form of the same.

Referring to the drawings, A is a casing provided internally of the same with a main valve B, having a ball-and-socket swinging or movable rubber plug-seat  $b$ , the socketed stem  $b'$  of which valve is partially threaded at  $b^2$  and smooth at  $b^3$ , being the upper portion which extends into a stuffing-box  $b^4$ , in which box are mounted a washer  $b^5$  and a gland  $b^6$ , and through which gland and a removable cap  $b^7$  the said stem extends, the stem  $b'$  being provided at the upper end with a hand-wheel  $b^8$  for operating said stem and thereby the threaded portion of the main valve B.

$a$  is the combined inlet and outlet passage of the casing. This passage  $a$  is an inlet for filling the vessel, cylinder, or reservoir C, which latter is removably secured to the lower end of the valve-casing, and also an outlet for the gas or other elastic fluid in the discharge of the same from said cylinder, vessel, or reservoir C.

The casing A is provided with an integral projection D, internally of which and extending at substantially a right angle through the same is a passage or channel  $d$ , open at one end when the threaded plug  $a^2$  of the casing A is removed from the cylinder, vessel, or reservoir C and closed at the other end by a removable membrane or diaphragm  $e$ , mounted within the projection D and held to position against a perforated plug  $d'$ , the said parts constituting the safety attachment D'. The perforation in the plug  $d'$  may be of any suitable size. The right-angular passage  $d$ , in direct communication with the diaphragm or membrane  $e$ , is located below the main valve and without direct communication with said valve; but its arrangement is such that in maximum pressure exerted upon the main valve B or upon the vessel, cylinder, or reservoir C, to which applied, it is expended upon the safety attachment D', when the same becomes abnormal, to burst the diaphragm or membrane  $e$  of said attachment and thereby to protect the main valve B, as well as the vessel, cylinder, or reservoir C, to which applied, the safety attachment of the main valve B being restored to proper condition



again for use by removing the perforated plug *d'* and inserting in said projection D a new diaphragm or membrane *e*. For shipping a suitable cap *b'* is applied to the threaded top *c'* of the vessel, cylinder, or reservoir C to protect the casing A, as well as the main valve and its accessories. This cap is indicated in dotted outline in Fig. 1 of the drawings.

10 In Fig. 2 the casing comprises two members A and A', preferably screw-threaded to each other, and in which member A' is provided the safety attachment D', while in the member A is provided the main valve B. In other respects the device of my invention is the same as hereinbefore explained and as illustrated in Fig. 1 of the drawings.

With the safety attachment for a main valve of my invention, as hereinbefore described, 20 being in the position illustrated in either Fig. 1 or Fig. 2, the pressure of the gas or other fluid when it reaches a maximum or abnormal degree is relieved from the main valve B, through the right-angular passage or channel *d*, to 25 cause the diaphragm or membrane *e* to be punctured and the gas or other fluid to escape through the perforations in the plug *d'*, thereby relieving the undue pressure on both the main valve and the vessel, cylinder, or reservoir C, to which the two-part valve-casting is applied, and hence to protect the same 30 against explosions or accidents in transportation of gas or other elastic fluids or in the use thereof, as described in my Letters Patent No. 583,467, above referred to. In addition 35 to this feature the present invention has the advantage, not found in said patented structure, that upon a sudden closure of the main valve the compressed gas or gas under pressure is forced through the channel *a* into the reservoir C, in which it expands before it enters the passage *d*, leading to the diaphragm, and this is so because the passage *d* is wholly 40 disconnected from the passage *a*, and is not, as shown in my Patent No. 583,467, a branch of said passage.

Having thus described the nature and ob-

jects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a carbonic-acid- 50 gas or similar reservoir, of a casting adapted to be secured to said reservoir, a wide passage or channel located in said casting and communicating with the interior of said reservoir, a main valve normally closing said passage or 55 channel, a second passage or channel wholly disconnected from said wide passage or channel and located in said casting adjacent to said first passage but narrower than the same and communicating with the interior of said 60 reservoir, said second passage terminating at a point below said main valve, a diaphragm normally closing the outlet of said second passage or channel and a removable perforated plug adapted to normally hold said diaphragm 65 or membrane in said casting, substantially as and for the purposes described.

2. The combination with a casting having a right-angular passage, a main valve normally closing said passage and provided with 70 a rubber seat having a ball-and-socket connection with a stem partially threaded and projecting through a stuffing-box having a washer mounted therein, a gland embracing said stem, a removable cap secured to said 75 casting, a projection provided with a channel closed at one end by a membrane or diaphragm held in position by a detachable centrally-perforated plug and a carbonic-acid-gas or similar reservoir applied to said casting and 80 connected directly with the passage leading to said main valve and also directly with the channel leading to said diaphragm or membrane and said passage and channel wholly disconnected from each other, substantially 85 as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JAMES A. GRIFFITHS.

Witnesses:

J. WALTER DOUGLASS,  
RICHARD C. MAXWELL.