

No. 704,557.

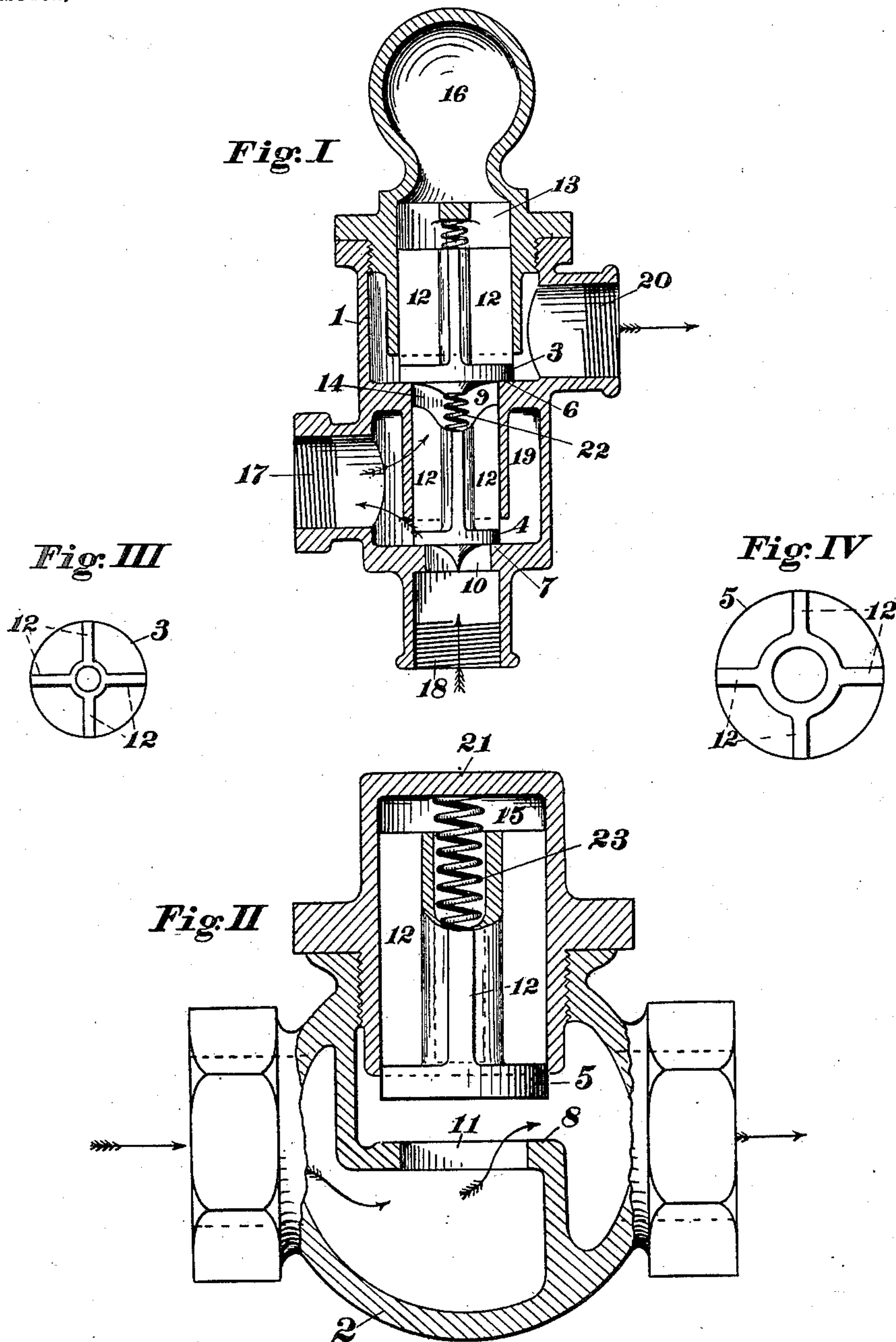
Patented July 15, 1902.

W. R. MICHENER.

CHECK VALVE.

(Application filed Jan. 17, 1902.)

(No Model.)



WITNESSES:
W. J. Lander,
George Manuel

INVENTOR:
William R. Michener,
By J. Richards & Co.
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM R. MICHENER, OF OAKLAND, CALIFORNIA.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 704,557, dated July 15, 1902.

Application filed January 17, 1902. Serial No. 90,153. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. MICHENER, a citizen of the United States, residing at Oakland, county of Alameda, and State of California, have invented certain new and useful Improvements in Check-Valves; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to check-valves for fluids and to certain improvements therein that render their opening movement elastic and noiseless.

My improvement consists in providing above the valves a circular chamber that acts as a guide for the valves and also by air or vapor entrapped therein acts as an elastic cushion, against which the valve impinges on its upward or opening movement, also consists in a combination of such valves to check or close both the induction and eduction passages to a pump or other fluid-impelling apparatus.

The object of my invention is to provide a check valve or valves of a simple and inexpensive construction having free movement without concussion or noise and to avoid the wear incident to violent action. To these ends I construct such valves as shown in the drawings herewith, forming a part of this specification.

Figure I is a central vertical section through an induction and check valve, the latter provided with my improvement. Fig. II is a similar section, to a larger scale, through a common service check-valve having my improvement. Fig. III is a top view of upper or check valve in Fig. I, and Fig. IV a top view of the valve in Fig. II.

The main members or shells 1 and 2 are of the ordinary construction, having movable disk valves 3, 4, and 5, that fit on the seats 6, 7, and 8 to close in one direction the water-passages 9, 10, and 11. The valves 3, 4, and 5 are provided with wings 12, that fit loosely within the bored cylindrical chambers 13, 14, and 15, forming guides to produce a true vertical movement of the valves normal to their seats 6, 7, and 8. The chambers 13 and 15 extend above the range of the valves 3 and 5, as shown in Figs. I and II, to pro-

vide space for air or vapor, and when required are provided with an enlarged chamber 16, as shown in Fig. I.

Referring to Fig. I and the manner of operating, the nipple 17 is connected to a pump or other intermittently-acting apparatus for impelling fluid, which is drawn in at 18 through the valve 4, then expelled into the chamber 19 through the valve 3 and out at the nipple 20, thus performing all the required valve functions for a pump. In Fig. II the action of the single valve is obvious, the course of the fluid being indicated by arrows and the valve 5 being shown in its open position and slightly within the cylinder 15, which is lengthened at the top by an extension 21, corresponding to the air vessel 16 in Fig. I.

In pumping, liquids of any kind when compressed give out air or other gases, which collect in the chambers 13 and 15, forming an elastic cushion above the valves, which by their momentum rise and enter these chambers for a short distance, as shown in Fig. II, cushioning noiselessly on the air or gas in the chambers 13 and 15, which also form stops for the range of the valves. In case the chambers 13, 14, and 15 are filled with water, as at starting, it is preferable to provide springs 22 23, that do not interfere with the action of the entrapped air or vapor in the chambers 13 and 15 after these latter are charged.

The inlet-valve 4 is similarly provided with a chamber 14; but as this chamber is opened at the top for each stroke air or vapor cannot be retained in the chamber 14 except when a separate body or shell 2 is employed, as in Fig. II. Fig. I is from a working example in which my invention is applied to the top or check valve 3, and it will be seen that it is equally applicable to disk valves of any kind that open normal to their seats.

Having thus described the nature and objects of my invention and the manner of its application in use, what I claim as new, and desire to secure by Letters Patent, is—

1. In a check-valve, a valve-disk, a chamber above the same, closed at top, and a valve-stem secured to the disk, moving within the chamber, with means for guiding the stem parallelly therein, said disk being adapted to

fit the mouth of the chamber and enter within it, and thus entrap and compress a portion of air at each rising, which by its resilience shall cushion the valve and obviate concussion and noise, substantially as specified.

5 2. In a check-valve, a chamber closed at top, a valve-seat below the chamber, a valve moving within the chamber, and means for guiding the valve parallelly therein, said valve
10 having a valve-disk seating upon the said seat, of a size to fit the mouth of the cham-

ber and enter the same at each upward movement, whereby a portion of air is entrapped and compressed at each rising, to cushion the valve, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM R. MICHENER.

Witnesses:

ALFRED A. ENQUIST,
P. W. J. LANDER.