

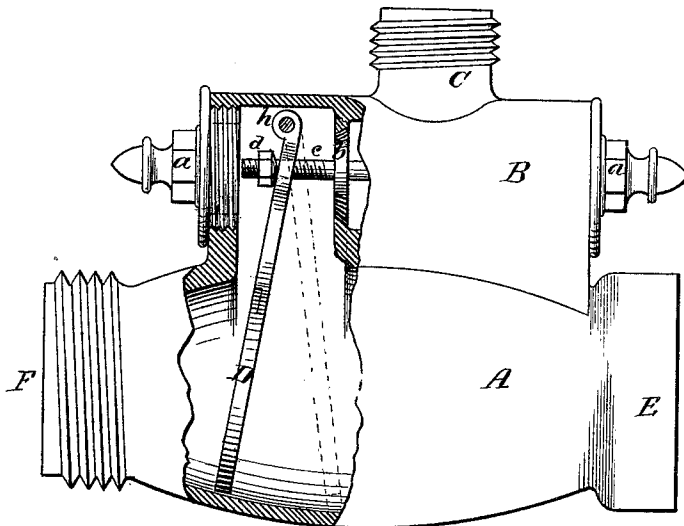
JOHN E. PRUNTY.

Improvement in Automatic Relief-Valves.

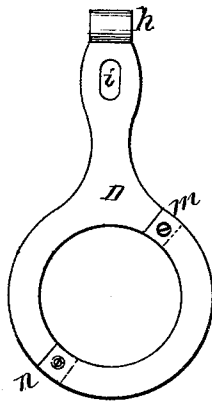
No. 126,330.

Patented April 30, 1872.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*

*O. E. Duff*  
*M. H. Doolittle*

*John E. Prunty*  
*Inventor.*

*by James H. Mandeville*  
*His Attorney*

# UNITED STATES PATENT OFFICE.

JOHN E. PRUNTY, OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN AUTOMATIC RELIEF-VALVES.

Specification forming part of Letters Patent No. 126,330, dated April 30, 1872.

Be it known that I, JOHN E. PRUNTY, of the city of Baltimore, in the State of Maryland, have invented a new and useful Improvement in Automatic Double Puppet-Valves, of which the following is a full, clear, and exact description.

The object of my invention is to provide a perfect relief from undue pressure, caused by stoppage of the main current in a steam fire-engine, steam-pump, water-elevator, or in any other place where water flows with great pressure. And it is an improvement upon Letters Patent, for the same kind of invention, which were granted to me December 19, 1871, and numbered 122,059; therefore, for a more complete understanding of this invention, reference is made to that patent. In that invention this end was effected by means of automatic double puppet-valves, so balanced that the action of the current flowing in either direction would open and shut the valves.

The present invention, however, consists in first, a concentric ring, which swings in the main chamber of a relief-valve in the direction of the current, in combination with automatic double puppet-valves, the said ring having an opening therein of about the same size as the ports of the main chamber, and the purpose of which is to prevent any fluctuation of the valves, but to steadily hold them in place when said valves are closed by the action of the current, the opening and closing of the valves in this invention being accomplished solely by the current, precisely as in the patent herein previously mentioned. Second, a main chamber of a relief-valve having a body of greater diameter than its induction and eduction ports, so that there will be no obstruction to the main current from any space occupied by the concentric ring, as the opening in the ring is about as large as the ports of the said chamber.

In the drawing, Figure I is a side elevation, partly in section. Fig. II is a front view of the concentric ring.

A represents the body of the main chamber; B, the auxiliary chambers, which contain the valves; C, the waste-pipe; and D, the concentric ring. The main and auxiliary chambers are cast in one piece or casting, the body of the main chamber being round and larger in the middle than at either end, so as to re-

ceive and give free play to the ring D. The induction-port E is secured to the discharge-screw of an air vessel or pump, while to the eduction-port F is attached the hose which conveys the water to any desired point. The valves employed are balanced automatic double puppet-valves, of the same construction and operation as those described in my former patent, and located within the auxiliary chamber. They are inserted therein through headings *a* that are screwed upon the chamber. Projecting beyond one of the valves, *b*, is a valve-stem, *c*, and an adjustable check-nut, *d*, so as to regulate the play of the ring backward and forward. The ring D is cast in two pieces so as to admit of its ready insertion into the main chamber, and joined together at *m n* after it is placed in position. It is secured at *h* to the auxiliary chamber, having first been slipped over the valve stem—the opening *i* for that purpose being sufficiently large—and of that elongated form as to freely allow of the vibratory movement of the ring. The check-nut is then adjusted on the valve-stem, the result accomplished by the concentric ring depending largely upon the particularity with which the check-nut is adjusted.

The operation of my invention is as follows: Water entering the induction-port will fill the auxiliary chamber and close the balanced valves simply by the momentum of the current as it flows through the main chamber. The opening in the ring being of about the same size as the ports of the main chamber it follows that the current will flow unobstructed through the chamber the same as if the ring was not employed. When the valves have been closed the concentric ring will have been swung by the current nearly into a vertical line. So long, therefore, as the current flows under pressure it is evident that the ring will impinge against the check-nut upon the valve-stem and thus prevent any fluctuation of the valves, but, on the contrary, will hold them steadily in a fixed position or closed to their seats. The employment of two valves, of course, will allow more perfect relief than if only one valve were used, and, being arranged horizontally, the flow of the current will be less impeded than if they were made in a vertical position, thereby producing less friction and throwing less labor upon the engine. If

at any time an obstruction should be placed upon a line of hose—such as, for instance, a piece of timber or a wagon—by means of my invention the sensitiveness of the valves and the reverse action of the water will cause them to open instantly, and thus at once relieve any undue pressure in the hose between the valves and the obstruction, as all water flowing through the valves by over pressure will be discharged through the waste-pipe.

This invention may be used for common connection, as well as an automatic relief-valve, being simple, easy of construction and operation, the whole frame being cast in one piece or casting, except the double puppet-valve, which is also cast separately, and the valves then being inserted in the auxiliary valve-chamber without any packing, and without those appliances which are usually common to other valves. Unnecessary chambers and appliances are often the cause of much delay by their frequent freezing and clogging, which render them difficult of operation, particularly in fire-engines, where time is so valuable.

I am aware that a solid partition has heretofore been used in the main chamber of a relief-valve, and which shuts one valve by the action of the current upon the partition; such,

however, is not my invention, for, among the functions of the concentric ring, it is principally designed to hold the automatic balanced valves firmly to their seats, when said valves have first been closed solely by the momentum of the current.

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

1. The concentric ring or rings D for an automatic relief-valve, and operating substantially as herein described.

2. The combination of the concentric ring D with the chamber A and the automatic double puppet-valve of a steam or water-engine, substantially as herein described.

3. The construction of the cylindrical or barrel-shaped chamber A of a relief-valve, its body being larger than either its induction or education ports, substantially as and for the purpose set forth.

In witness whereof I hereunto subscribe my name in the presence of two attesting witnesses this 11th day of April, 1872.

JOHN E. PRUNTY.

Witnesses:

O. E. DUFFY,

M. H. DOOLITTLE.