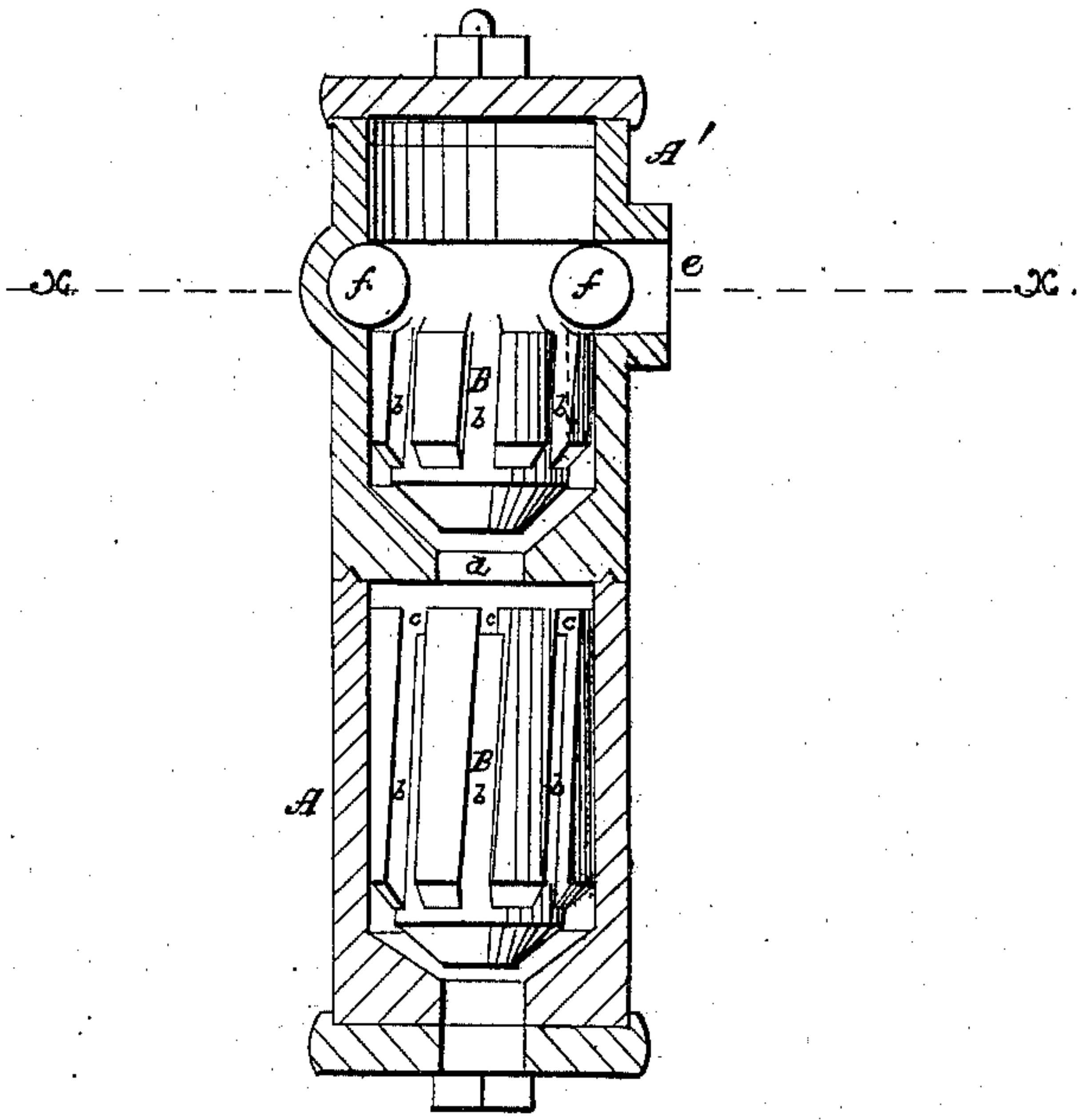
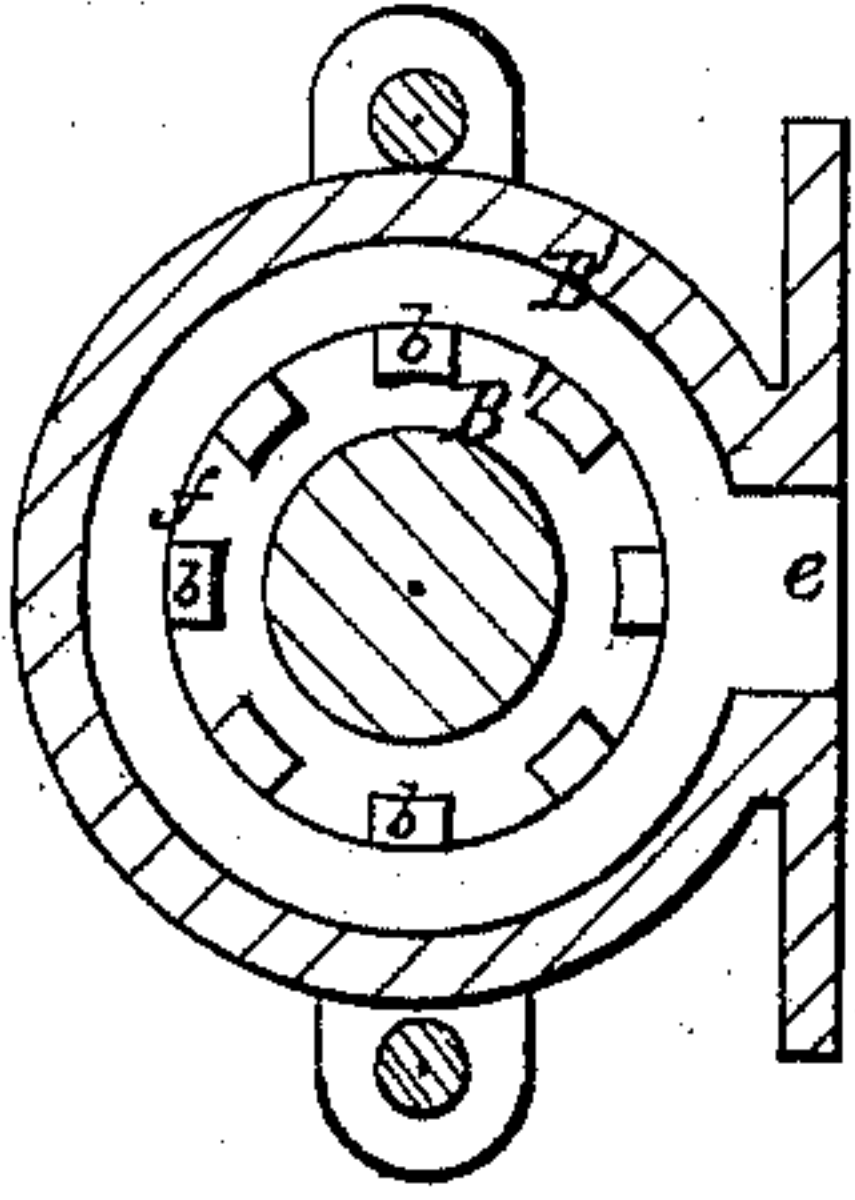


*R. P. Bradley,*  
*Steam Pynnet Valve.*

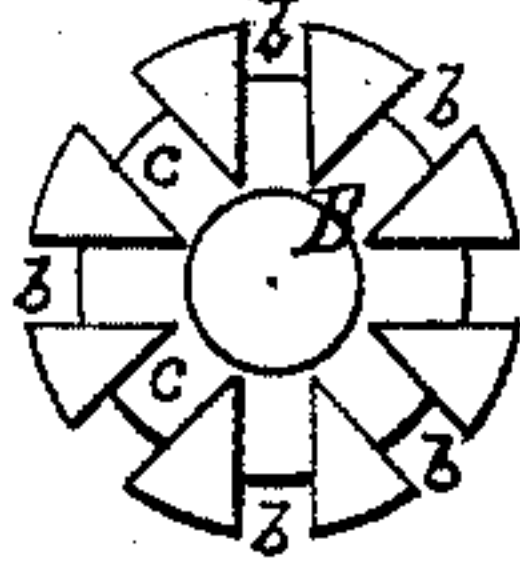
*Fig 1*



*Fig 2*



*Fig 3*





# UNITED STATES PATENT OFFICE.

R. P. BRADLEY, OF CUYAHOGA FALLS, OHIO.

## PUPPET-VALVE.

Specification of Letters Patent No. 15,960, dated October 28, 1856.

*To all whom it may concern:*

Be it known that I, ROBERT P. BRADLEY, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a new and useful Improvement in Puppet-Valves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 exhibits a vertical section of a double valve chamber, containing two valves constructed according to my invention. Fig. 2, is a horizontal section in the line  $x, x$ , of Fig. 1. Fig. 3, is a top view of the lower valve.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, firstly, to a certain construction of the valve, whereby it is prevented wearing loose in its guide, and secondly in a certain method of providing for the free escape from the valve chamber of the water or other fluid which passes the valve.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is the valve chamber containing the valve B, and A', is the chamber containing the valve B'. The reason for thus representing two chambers and valves is to show the application of the valve to two different kinds of chambers, the chamber A, having its outlet in the top and the chamber A, in one side.

The chamber A, is bored cylindrically from the seat  $a$ , to the top of the full size of or larger than the external diameter of the face of the valve and the valve consists of a cylinder with its face at the bottom, said cylinder being fitted by turning, to work easily but snugly in the chamber above its seat, and having grooves  $b, b$ , made all the way up its sides for the passage of water from the opening of the seat  $a$ , to the outlet  $d$ , in the center of the top of the chamber, said grooves uniting with radial grooves  $c, c$  in the top of the valve, the latter grooves being necessary to convey the fluid to the central outlet  $d$ , in the top of the chamber when the valve is lifted up against the top of the chamber. The grooves  $b, b$ , are made slightly spiral so that the upward pressure of the water may give the valve a slight movement on its axis as it lifts it, and thus

make the face of the valve wear truly in its seat.

The chamber A', is bored cylindrically like the chamber A, and the valve B', consists of a cylinder fitted to the said chamber. To provide for the free escape of the water or fluid through the side outlet  $e$ , a semi-circular groove is cast or turned in the interior of the chamber A', opposite the said outlet, and a similar semi-circular groove turned around the exterior of the valve, said grooves combining to form a passage  $f$ , between the valve and its seat, of an area equal to that of the outlet  $e$ . The valve B', has grooves  $b, b$ , in its sides like the valve B, but these grooves only extend as far up as the passage  $f$ , leaving the part of the valve above the said passage, completely cylindrical so as to fill the upper part of the chamber.

The valve B or B', if of small size, may be made solid, but for large valves it will be necessary, and for all sizes it is preferable, to make it hollow from the top nearly down to the bottom.

I have found by experiment with valves submitted to great pressure, as in the hydrostatic press, that the valve thus constructed wears longer than any known kind of puppet valve.

I do not confine myself to the spiral arrangement of the grooves  $b, b$ , up the sides of the valve. But

What I claim as my invention and desire to secure by Letters Patent, is,

1. The construction of a puppet valve of the form of a cylinder of the full size of or larger than the exterior of the face of the valve with its face at the bottom and with grooves in the sides, substantially as herein described.

2. When the outlet of the valve chamber is at the side thereof, I claim forming a passage around the valve by making a groove around the interior of the chamber and a similar groove around the exterior of the valve, to form a passage around the grooved cylindrical puppet valve to form a passage  $f$ , of an area sufficient for the free escape of water at the outlet of the chamber, substantially as herein described.

R. P. BRADLEY.

Witnesses:

J. F. BUCKLEY,  
W. TUSCH.