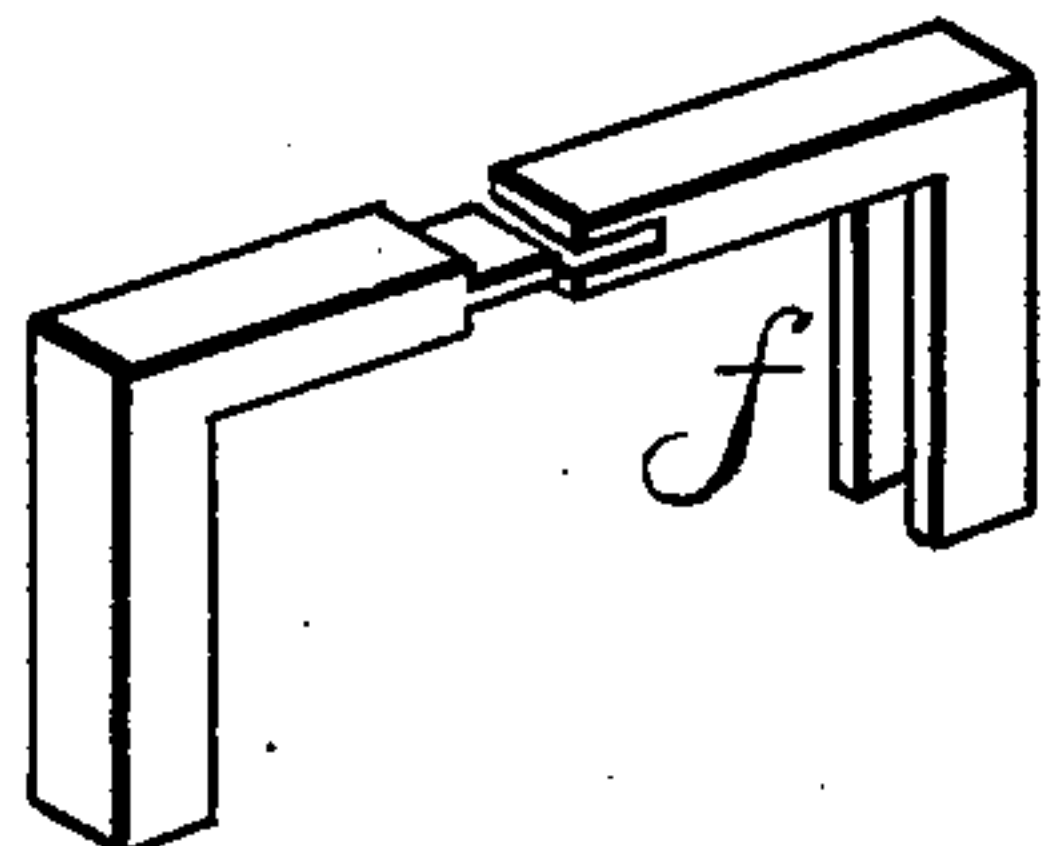


(No Model.)

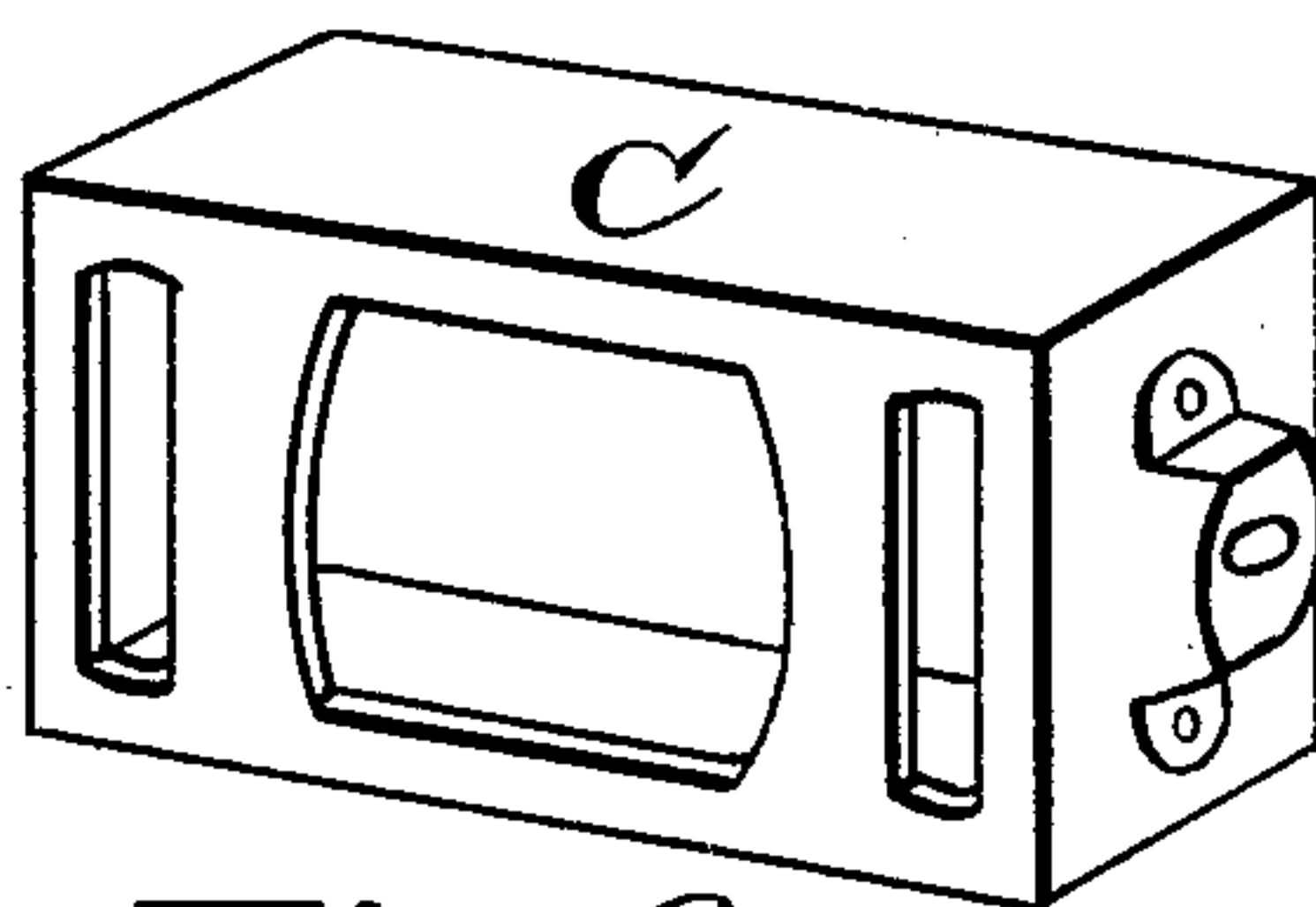
G. S. WOLF.  
BALANCED VALVE.

No. 599,922.

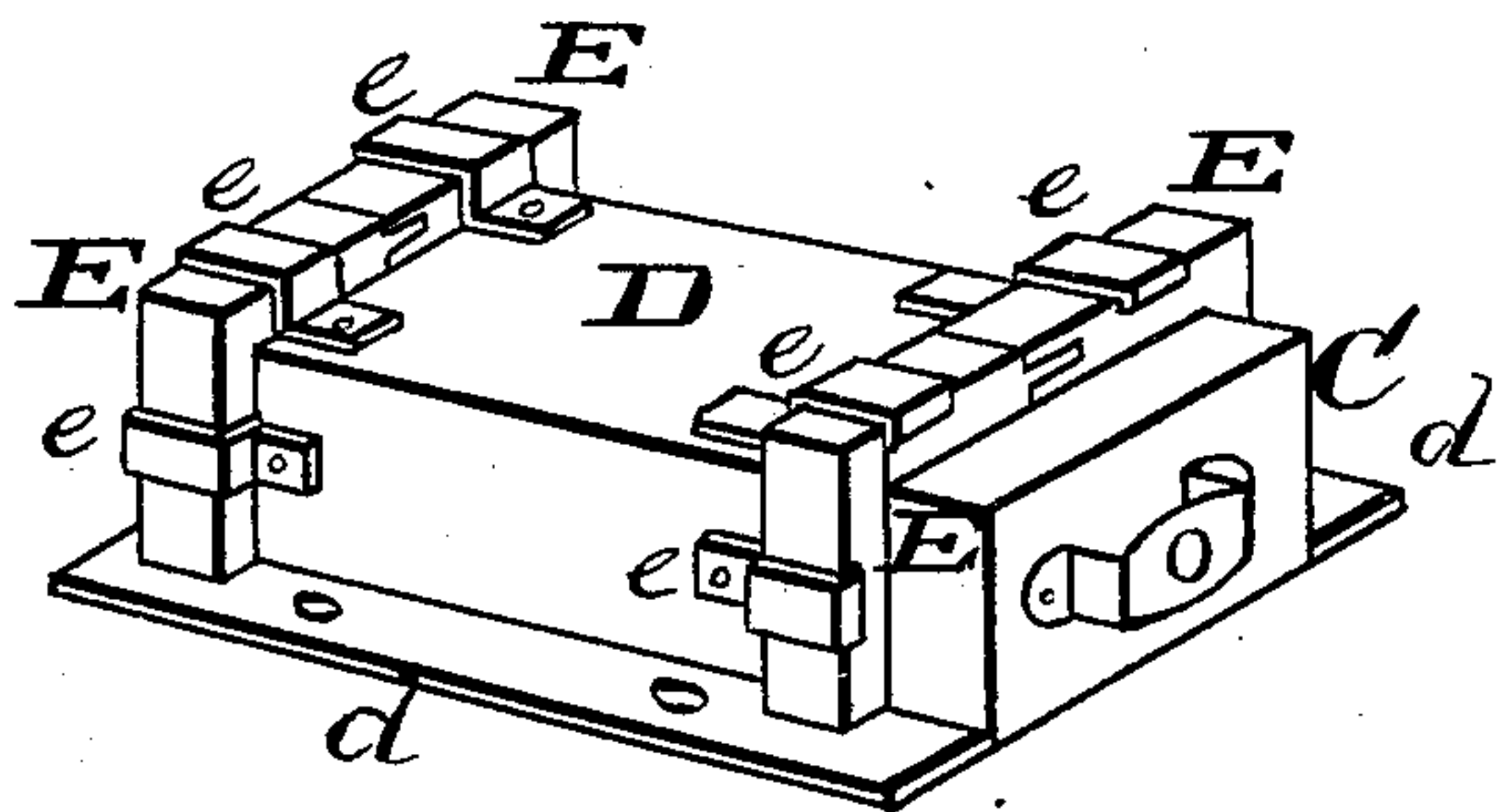
Patented Mar. 1, 1898.



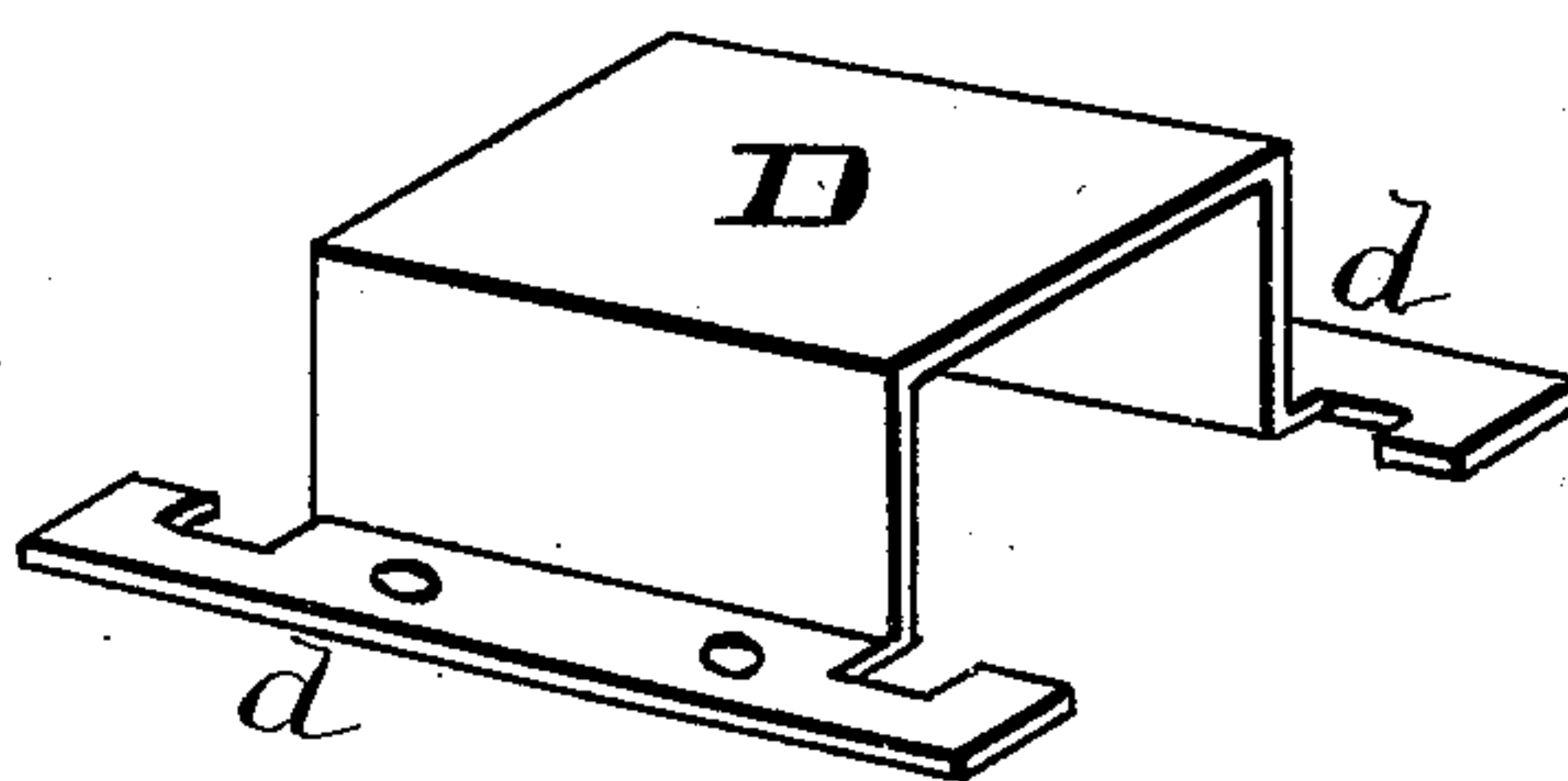
*Fig. 5.*



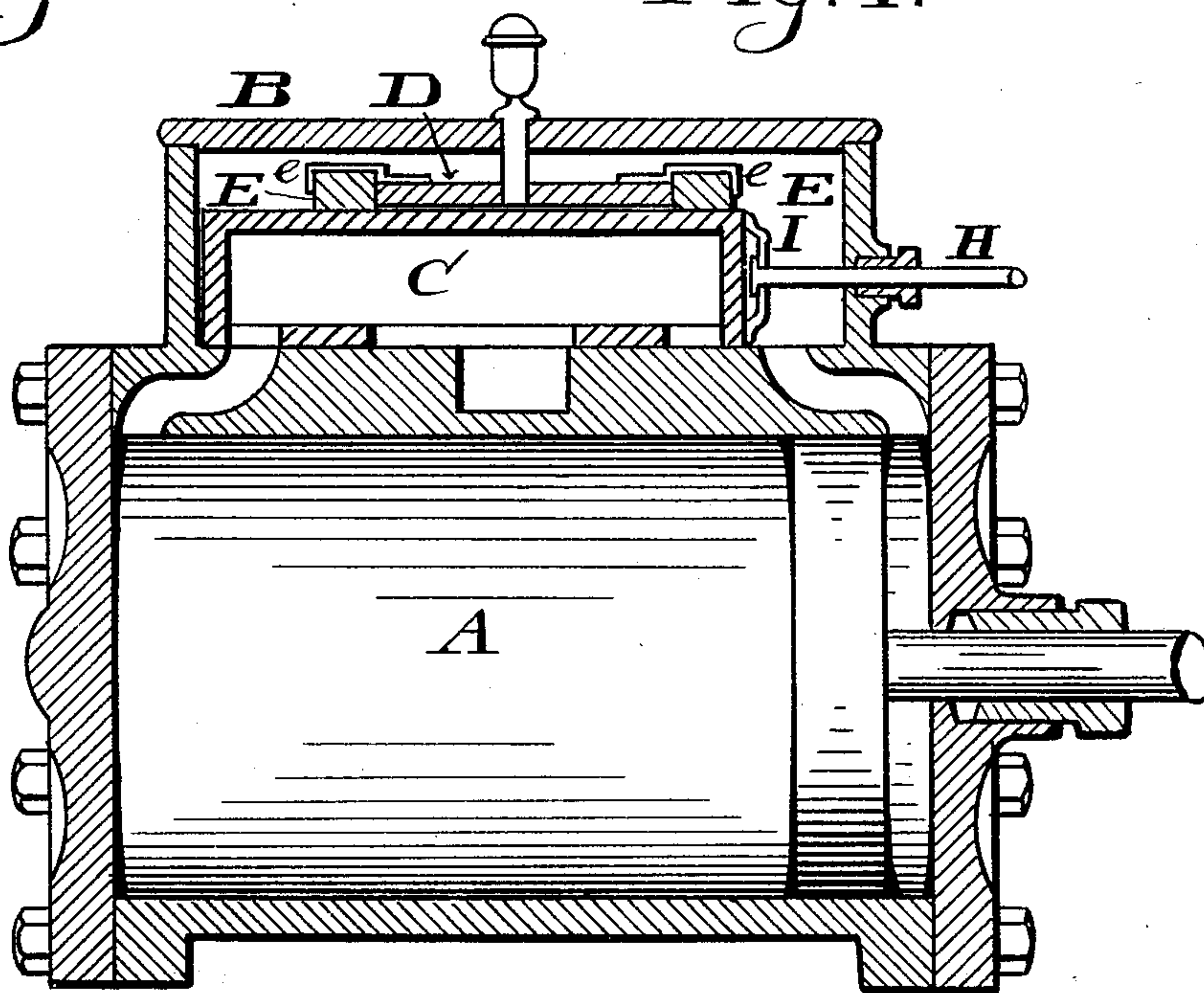
*Fig. 3.*



*Fig. 2.*



*Fig. 4.*



*Fig. 1.*

Inventor,

Witnesses,  
Max T. Goodman  
Lewis W. Ford.

George S. Wolf.  
By Geo. W. Tibbitts Attorney.

# UNITED STATES PATENT OFFICE.

GEORGE SAAL WOLF, OF CLEVELAND, OHIO.

## BALANCED VALVE.

SPECIFICATION forming part of Letters Patent No. 599,922, dated March 1, 1898.

Application filed August 12, 1897. Serial No. 647,978. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE SAAL WOLF, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Balanced Valves for Steam-Engines, of which the following is a specification.

This invention relates to balanced valves for steam-engines; and it consists in the new construction and combinations, substantially as hereinafter described, and pointed out in the claim.

In the accompanying drawings, Figure 1 is a longitudinal section of a cylinder having my new balance-valve attached. Fig. 2 is a detached view of the new valve mechanism. Fig. 3 is a detached view of the valve. Fig. 4 is a detached view of the valve-cover. Fig. 5 is a detached view of one of the packing-strips.

A is a cylinder, and B is a steam-chest, which are of the common construction.

C is the new valve, which consists of a box, as seen in Fig. 3, having the exhaust-ports made in the bottom. The object of this is to provide for as much bearing-surface as possible for the bottom of the valve.

D is a cover placed over the valve as a pressure-cover to take the pressure of steam off from the valve.

*dd* are flanges on each side of the cover, having holes for bolting it fast to the face of the steam-chest. The cover is somewhat shorter than the valve.

E E are packing-strips attached to the ends of the cover by clips *e e*. These packing-strips are made of two angle-pieces joined at the center over the cover. On one piece is made a tongue, and on the other is made a

slot, into which the said tongue fits. This is to provide for expansion and for take-up when worn. The inside surfaces of the strips have grooves, in which are placed strips of Babbitt or other frictionless metal *ff*.

To apply this valve to old cylinders, I proceed as follows: In old cylinders the ports are close together at the center, as seen in dotted lines in Fig. 1, thus making long inlets, which make a waste of steam, and as the new valve is longer than the old the old inlets are closed or plugged up and new ones opened near the ends of the steam-chest. The advantage of this is that the steam-pressure in the chest is upon the cover, the packing-strips preventing steam getting in under the cover. The valve is therefore relieved of the pressure except at the ends, and this pressure is an aid to the movements of the valve and renders its movements practically frictionless.

G is an oil-cup on the top of the steam-chest, having a tube *g* reaching down through the cover D for supplying lubricant to the valve.

The valve-rod H is attached to the valve by means of a bracket I on the end of the valve, having an elongated hole in which the end of the rod is placed. This is for a like purpose to that of the telescopic tube *g*.

Having described my invention, I claim—

In a steam-valve, the combination of a box-valve C, a cover D shorter than the valve, packing-strips E E attached to the ends of said cover by clips *e e*, and bearing on the valve, substantially as described.

GEORGE SAAL WOLF.

Witnesses:

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MAX P. GOODMAN.