

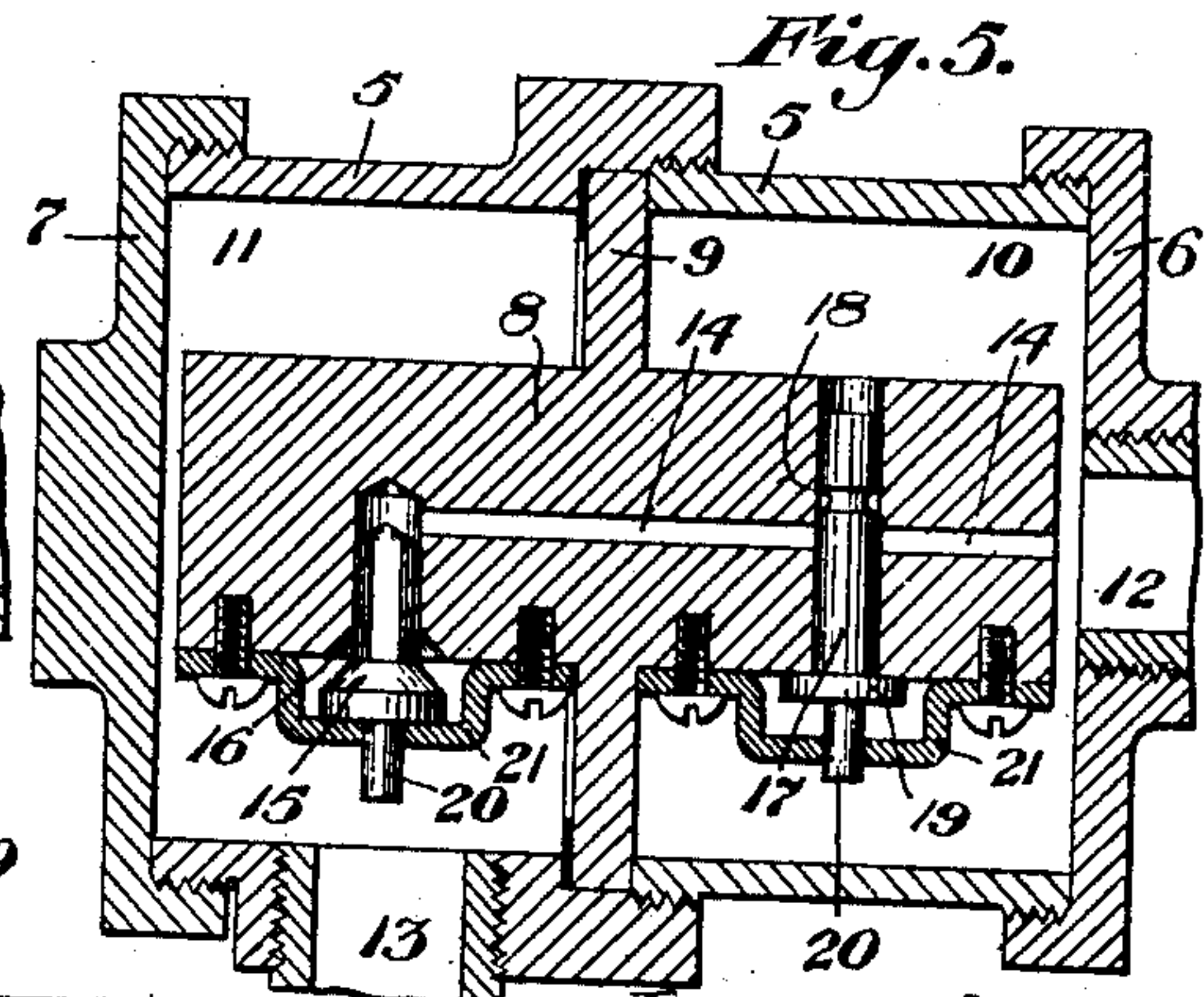
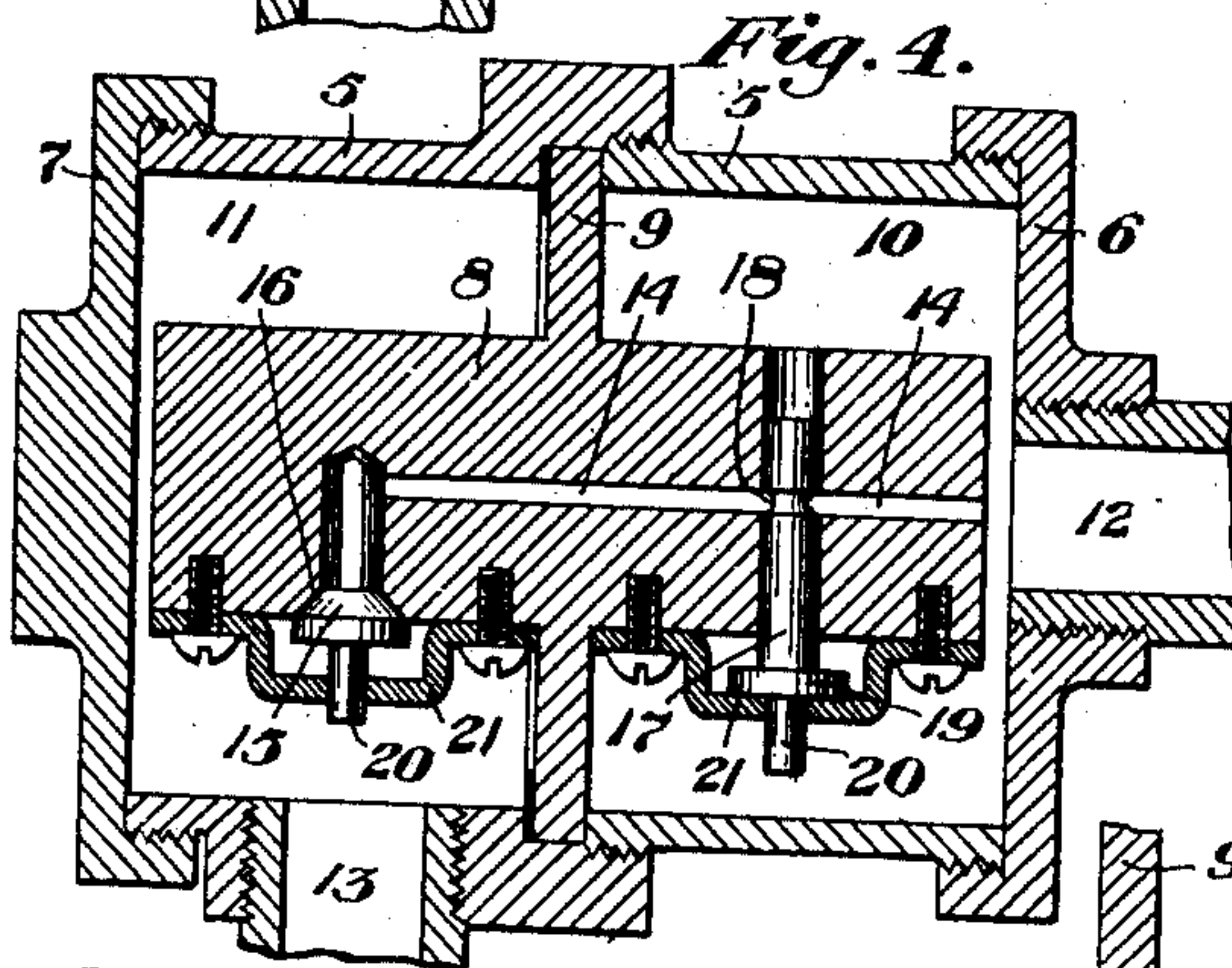
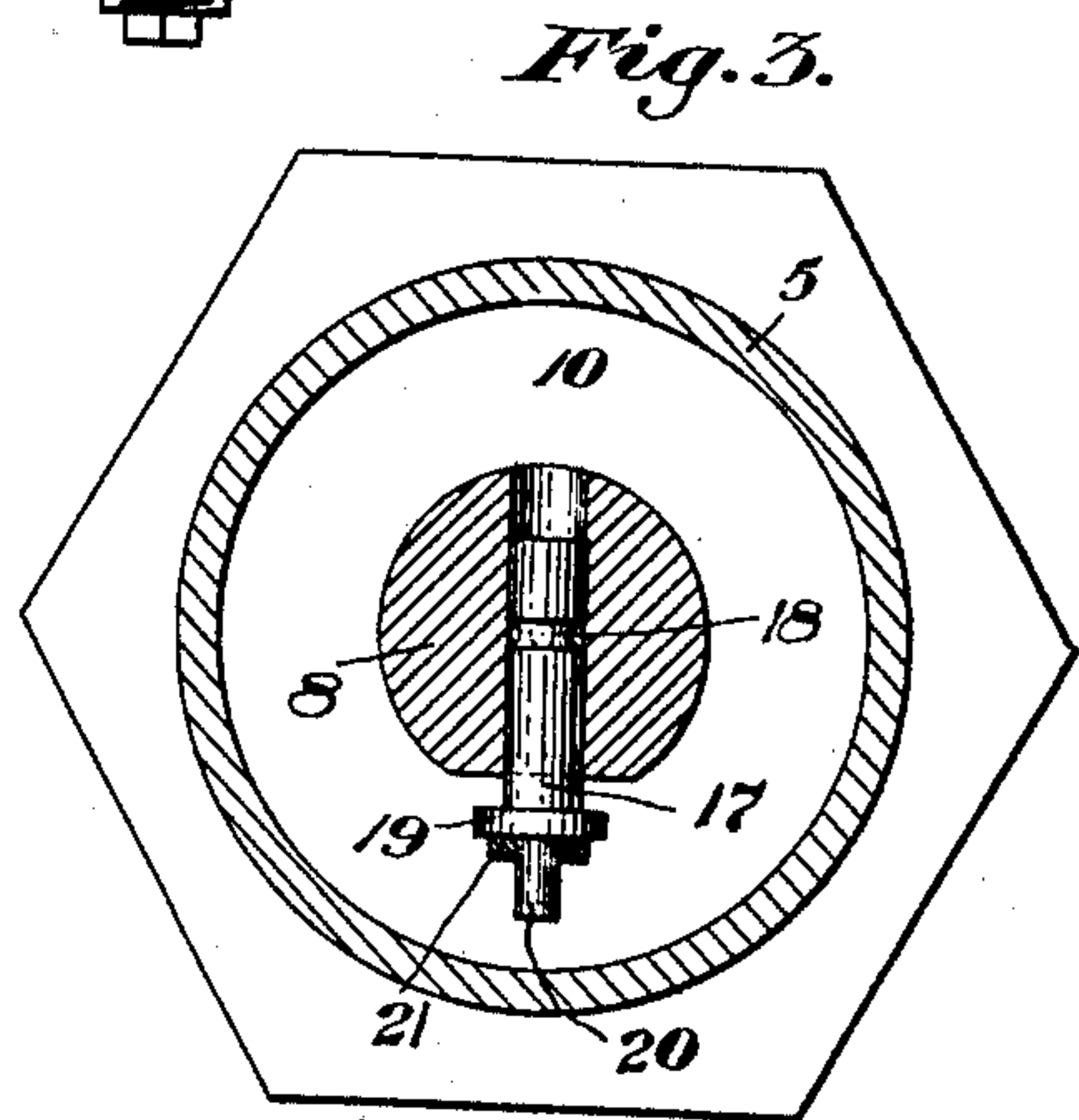
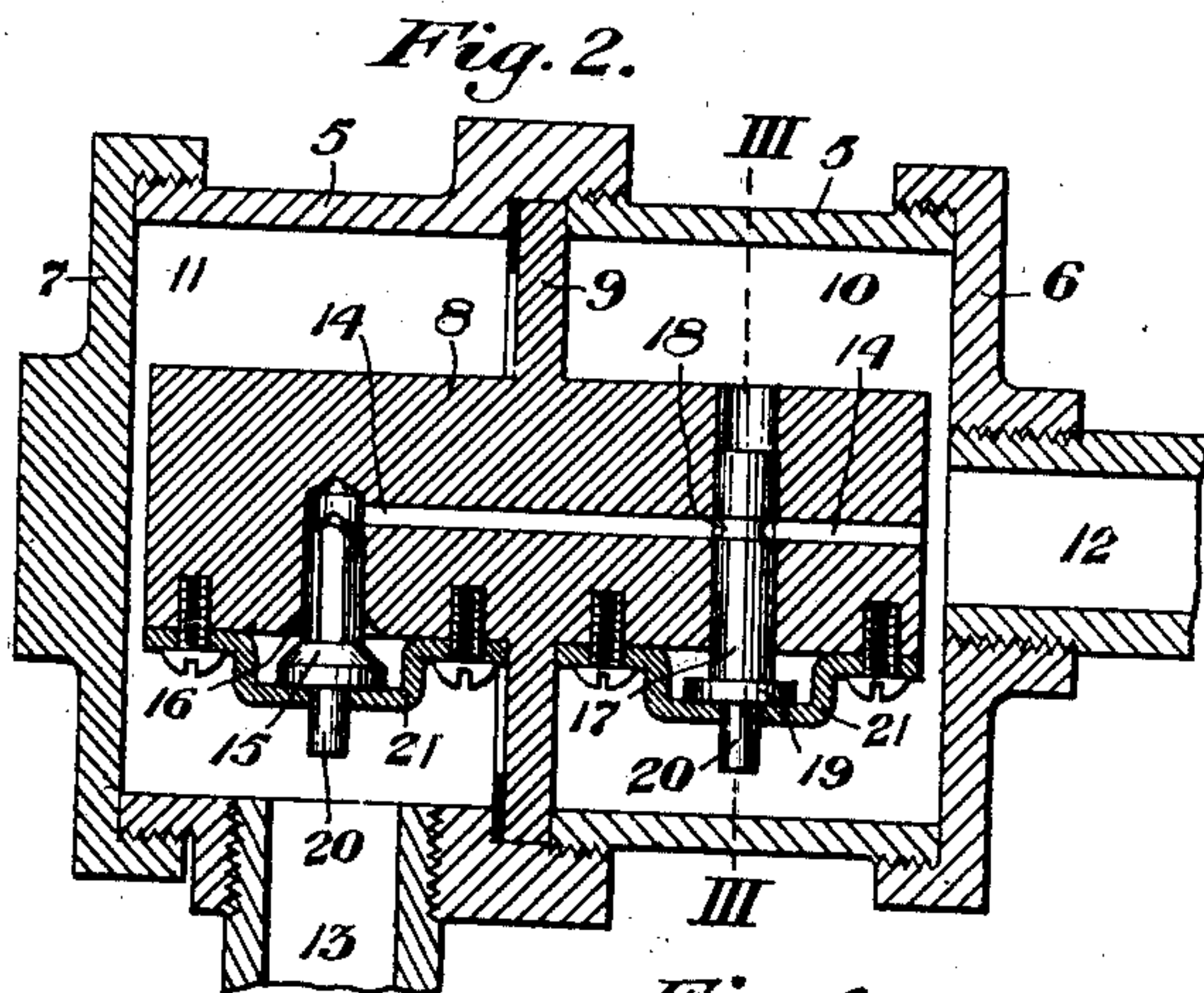
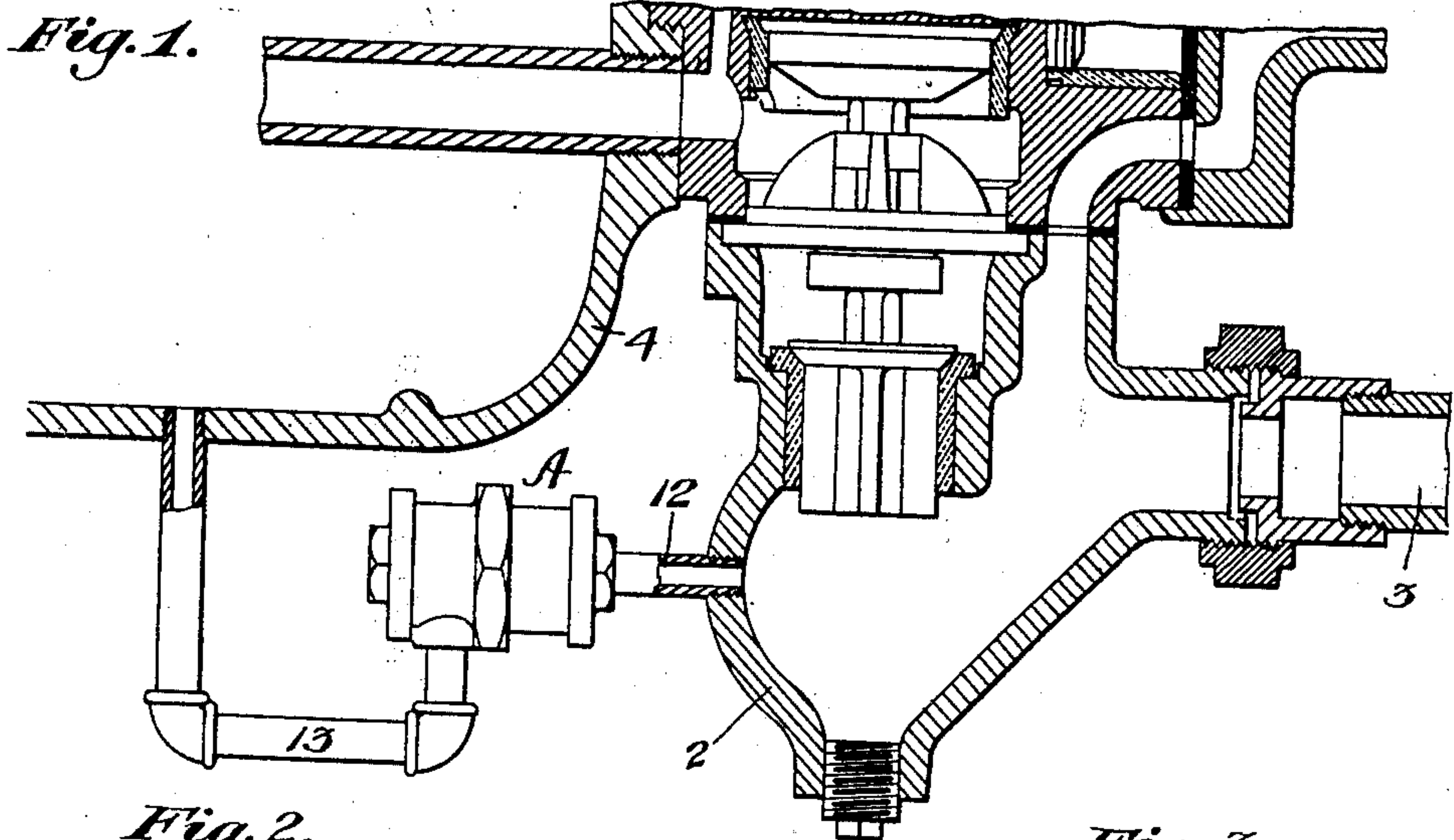
No. 827,063.

PATENTED JULY 24, 1906.

A. H. GELTZ & L. L. HOSACK.

AIR BRAKE APPARATUS.

APPLICATION FILED APR. 1, 1905.



Witnesses:

E. R. Rodd.  
Chas. S. Spley.

*Fig. 6.*

Inventors.  
A. H. Geltz  
Lee L. Hosack  
C. M. Clarke  
his attorney



# UNITED STATES PATENT OFFICE.

ALBERT H. GELTZ, OF ALLIANCE, AND LEE L. HOSACK, OF YOUNGSTOWN,  
OHIO, ASSIGNORS TO C. B. McLEAN, OF PITTSBURG, PENNSYLVANIA.

## AIR-BRAKE APPARATUS.

No. 827,063.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed April 1, 1905. Serial No. 253,342.

*To all whom it may concern:*

Be it known that we, ALBERT H. GELTZ, residing at Alliance, in the county of Stark, and LEE L. HOSACK, residing at Youngstown, in the county of Mahoning, State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Air-Brake Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings, forming part of the specification, in which—

Figure 1 is a sectional view of a portion of the auxiliary reservoir and triple valve, showing the incorporation therewith of our improved double-acting controlling-valve mounted in a line of pipe connecting the reservoir and the lower portion of the valve. Fig. 2 is an enlarged vertical longitudinal section of the valve in its normal position. Fig. 3 is a cross-sectional view on the line III III of Fig. 2. Fig. 4 is a view similar to Fig. 2, showing the valve closed on the auxiliary-reservoir side, preventing backflow therefrom. Fig. 5 is a similar view showing the valve closed on the triple-valve side, cutting off communication from the triple valve to the auxiliary reservoir due to excess pressure in the triple valve. Fig. 6 is a partial similar view showing a modification.

Our invention refers to improvements in air-brake apparatus and relates to an improved valve construction adapted to be combined with the triple valve and auxiliary reservoir, operating to prevent backflow from the reservoir and to check excess pressure thereinto from the triple valve, being capable of maintaining communication between these parts when the pressures are equal.

Referring now to the drawings, 2 represents the triple valve provided with the usual train-line pipe 3, the triple valve being mounted on the end of auxiliary reservoir 4 in the usual manner employed with the Westinghouse, New York, or other equipment.

A represents our improved valve comprising an outer shell preferably made in two parts 5 5, having heads 6 7 at either end, thus providing a hollow casing, in the interior of which is mounted the integral valve-head 8, secured between the sleeves 5 by an intermediate annular diaphragm 9, tightly clamped between these portions of the casing and dividing the interior into two separate cham-

bers 10 11. Chamber 10 is connected with the triple-valve case by a pipe-section 12 or in any other suitable manner, while chamber 11 is connected with the auxiliary reservoir by a similar pipe 13 or otherwise, whereby air from these elements communicates freely and independently with said chambers. At each side of the diaphragm 9, which forms a separating air-tight partition between the chambers, are oppositely-projecting abutments of head 8, in each of which is mounted a valve adapted to cut off communication through a central port 14, through which, in the normal position of the valve shown in Fig. 2, air may communicate from one side to the other. On the auxiliary-reservoir side the valve 15 is adapted to seat upwardly upon a valve-seat 16, cutting off the flow of air from the auxiliary reservoir to the train-line, while on the triple-valve side the valve 17 is provided with an annular recess 18, adapted in the lowered position of the valve to register with port 14, as shown, and an enlarged disk head 19.

Ordinarily the auxiliary reservoir may be recharged from the triple valve, the air passing backwardly through port 14 and between valve 15 and its seat 16 when said valve is lowered; but in the case of excess pressure in the triple valve the air in chamber 10 will act upon the enlarged disk head 19 of valve 17, raising it and shutting off the circulation until the pressure is reduced, the operation being facilitated by the inrush of air around stem 17. In Fig. 6 we show a modified construction of the valve 17 as used on the triple-valve side, wherein the stem 22 of the valve is tapered or otherwise diminished in diameter less than the diameter of the port 23, in which it is seated, the end of the plug being closed and allowing air to pass upwardly around the stem 22 to port 14 and through said port to the other side. It is obvious, also, that the valve construction may be either as shown at the auxiliary-reservoir side, in which case port 14 will merely communicate through the middle portion of plug 8 from one valve to the other or by making both valves as shown at the triple-valve side, in which case port 14 will extend through from one end to the other. In the case of reduction in the train-pipe line 3, as in setting the brakes, the valve 15 will become seated, due to the pressure in pipe 13,



thus cutting off escape from the auxiliary reservoir, and each valve will operate to perform its functions, only resuming their normal positions when equilibrium or equal pressure is established. These various operations are clearly shown in Figs. 4 and 5.

Each valve is provided with a reduced guiding-stem 20, mounted in a supporting-bracket 21, secured up underneath the side of the valve-abutments provided for a sufficient limited movement of the valves and also keeping them in alinement, although the cylindrical transverse openings into which the upper stem portions of the valve extend are sufficient for the latter purpose.

The operation of our invention will be readily understood from the foregoing description, and it will be appreciated by all those familiar with this class of apparatus. It is very simple and efficient and will accomplish the objects in view in a satisfactory manner. Different forms of valves may be employed or various changes or modifications may be made in the various details of construction by the skilled mechanic; but all such changes are to be considered as within the scope of the following claims.

What we claim is—

1. The combination with a triple valve and auxiliary reservoir, of an inclosing shell having a chamber at one end communicating with the triple valve and a chamber at the other end communicating with the auxiliary reservoir, a port arranged to establish communication between said chambers, and valves controlling said port subject to pressure from the auxiliary reservoir and triple valve respectively, substantially as set forth.

2. The combination with a train-line pipe and auxiliary reservoir, of a chambered body having a cavity at one end communicating with the train-line pipe and a cavity at the other end communicating with the auxiliary reservoir, a port arranged to establish communication between said cavities, a valve controlling said port at the train-line-pipe side and a separate valve controlling said port at the auxiliary-reservoir side respectively, said valves being independent of each

other and adapted to normally maintain open communication between the auxiliary reservoir and train-line pipe through said port, one of said valves being adapted to close upon a reduction and the other of said valves being adapted to close upon an excess of pressure in the train-line pipe, substantially as set forth.

3. The combination with a triple valve and auxiliary reservoir, of a double-chambered casing communicating with the triple valve and auxiliary reservoir respectively, a diaphragm dividing said chambers having central extensions at each side, a port extending through said diaphragm and extensions opening into the triple-valve side and auxiliary-reservoir side respectively, and a valve located at each side of the diaphragm controlling said port, adapted to maintain open communication therethrough when pressures are equal, but to close upon reduction or increase of pressure in the triple valve, substantially as set forth.

4. The combination with a train-line pipe and auxiliary reservoir, of a chambered body having a cavity at one end communicating with the train-line pipe and a cavity at the other end communicating with the auxiliary reservoir, a port arranged to establish communication between said cavities, a vertically-movable gravity-actuated valve controlling said port at the train-line-pipe side and a similar valve controlling said port at the auxiliary-reservoir side respectively, said valves being adapted to normally maintain open communication between the auxiliary reservoir and train-line pipe through said port, one of said valves being adapted to close upon a reduction and the other of said valves being adapted to close upon an excess of pressure in the train-line pipe, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ALBERT H. GELTZ.  
LEE L. HOSACK.

Witnesses:

C. M. CLARKE,  
J. M. CORBOY.