

P. NEFF, D. COLE & E. L. EBERSOLE.  
 PISTON FOR AMMONIA COMPRESSORS.  
 APPLICATION FILED SEPT. 25, 1908.

924,098.

Patented June 8, 1909.  
 2 SHEETS—SHEET 1.

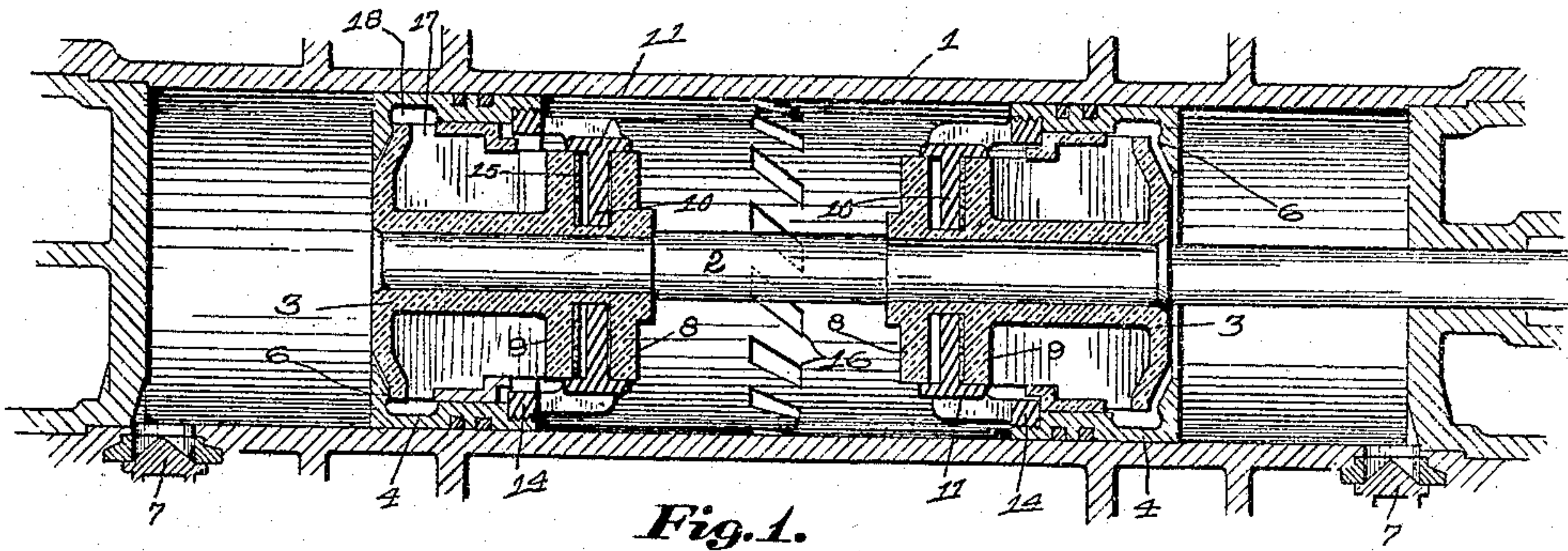


Fig. 1.

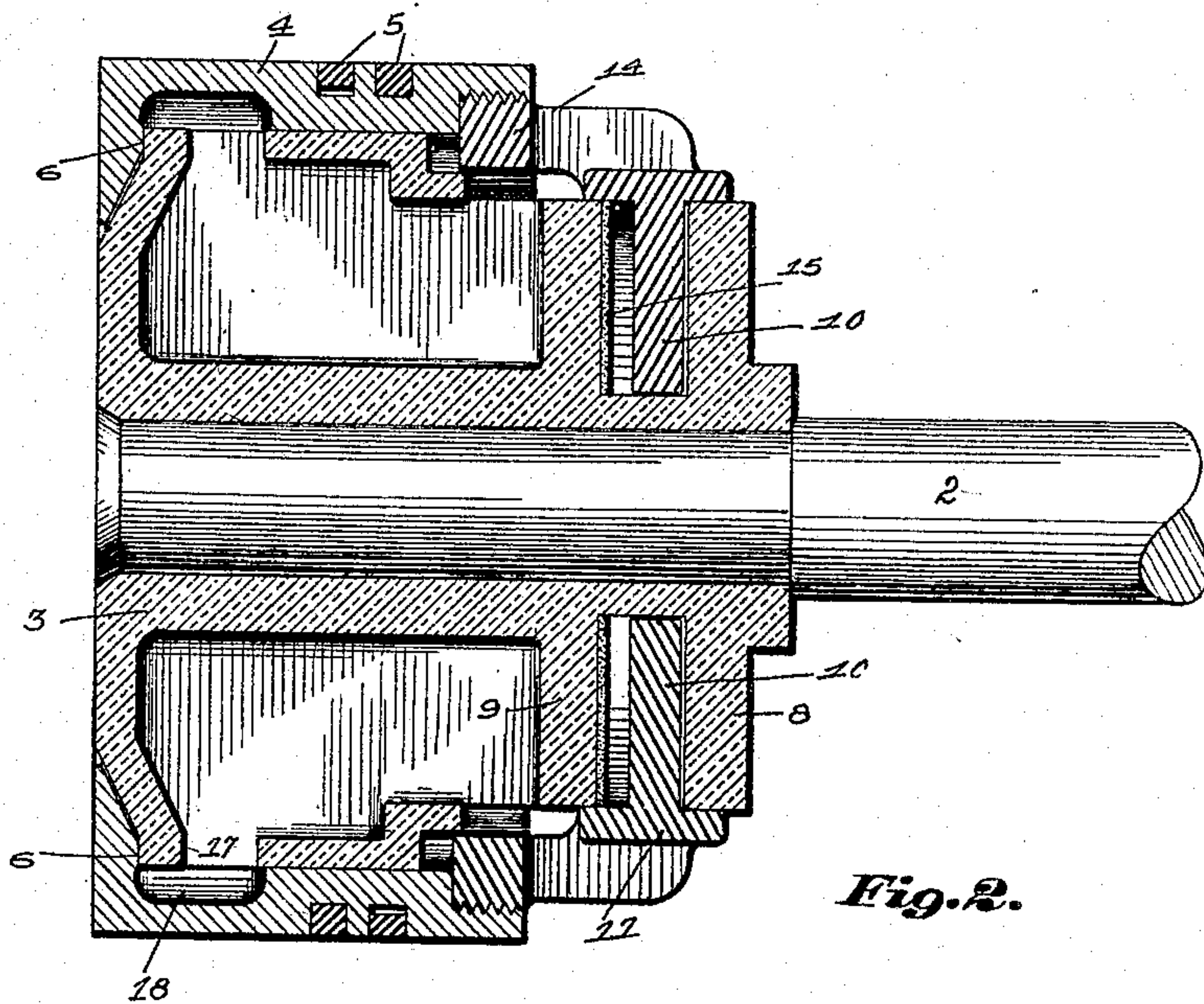


Fig. 2.

Witnesses

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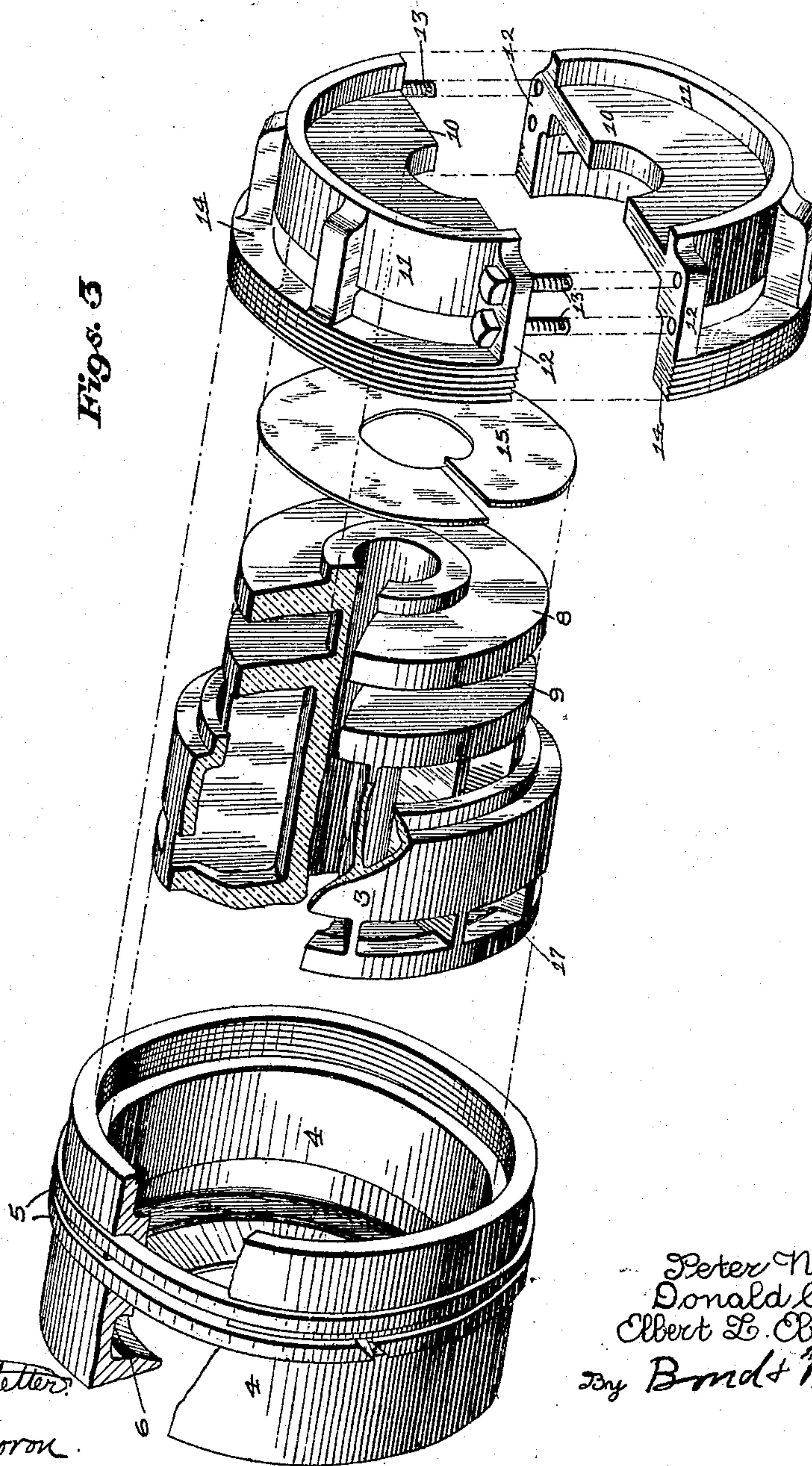
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*Figs. 3*



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# UNITED STATES PATENT OFFICE.

PETER NEFF, DONALD COLE, AND ELBERT L. EBERSOLE, OF CANTON, OHIO, ASSIGNORS  
TO THE ARCTIC ICE MACHINE COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

## PISTON FOR AMMONIA-COMPRESSORS.

No. 924,098.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed September 25, 1908. Serial No. 454,740.

*To all whom it may concern:*

Be it known that we, PETER NEFF, DONALD COLE, and ELBERT L. EBERSOLE, citizens of the United States, and residents of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Pistons for Ammonia-Compressors; and we do hereby declare the following to be a full, clear, and exact description of the invention.

Our invention relates to an improved piston designed especially for use in ammonia-compressors, the object of which is to provide means whereby the piston can be opened and closed as it is moved back and forth and at the same time to remove the clicking sound when the piston changes its direction of motion.

With these objects in view the invention consists in the novel features of construction and arrangements of the parts which will be more fully described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a longitudinal vertical section of the cylinder and two pistons, showing the same properly mounted upon the piston rod. Fig. 2 is a vertical section of the piston, showing the same closed. Fig. 3 is detached perspective views showing the different parts of the piston illustrating the piston ring and the valve-head broken.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawing, 1 represents the cylinder, which within itself forms no specific part of the present invention except that a cylinder must necessarily be employed.

The piston rod 2 is reciprocated in the usual manner, and is of the ordinary construction. In the drawings we have illustrated two pistons, so that compression will take place continuously or substantially so, but we desire it to be distinctly understood that the use of a single piston will carry out the purposes and objects of the present invention. In the further description of the invention a single piston will be described and the duplicate parts numbered alike in each instance.

Upon the piston rod 2 is securely mounted in any convenient and well known manner the valve-head 3, which valve-head consti-

tutes the body of the piston proper. Upon this valve-head 3 is located the piston ring 4, which piston ring is preferably provided with the usual packing rings 5. The piston ring 4 is provided with the valve seat 6, upon which valve seat the face of the valve-head 3 comes into contact when the piston is closed or moved in the direction to compress gas. When the piston is moved in the direction to carry the piston ring 4 by reason of the contact of the valve faces of the valve-head and piston ring the piston proper is closed and the gas will be compressed and forced out of the cylinder 1 through the proper check valves 7, but when a reverse or backward movement is given the piston proper, which should be opened so that it is free to move through the gas contained in the cylinder 1 without compressing the same. In order to allow a slight relative reciprocating movement as between the valve head 3 and the piston ring 4, the valve-head is provided with the spaced annular flanges 8 and 9, which flanges are preferably formed integral with the valve-head 4. Between the flanges 8 and 9 are located webs 10, which are preferably formed integral with the segmental members 11, which segmental members are connected together by means of the flanges 12 and the clamping bolts 13, and when said members 11 are so clamped together they will constitute an annular head to be properly connected to the piston ring 4, said head may be connected by suitable screw threads formed upon the outer surfaces of the flanges 14 and the screw threads formed upon the inner periphery of the piston ring 4. The object and purpose of forming the members 11 in sections or segments and coupling them together as above described is to provide means whereby the webs 10 can be placed in position between the integral flanges 8 and 9 located upon the valve-head 3.

Heretofore in pistons that open and close by the alternating movement of the pistons a clicking sound is produced, but for the purpose of deadening or eliminating the clicking sound we locate between the striking faces of the webs 10 and the flanges 9 a disk of rawhide or other suitable material 15, which disk cushions the stroke. If desired a similar disk may be placed upon the opposite side of the webs 10, but this is not absolutely necessary, owing to the fact that the valve



seats come in contact with each other in advance and move the piston ring with the valve-head so that the integral flange 8 upon the valve head does not come in direct contact with the faces of the webs 10.

It will be understood that by our peculiar arrangement we are enabled to provide a cushioned disk of considerable size thereby providing a large contact cushioned surface.

10 It will be understood that the cylinder 1 must be provided with suitable intake ports 16, which intake ports should be located between the pistons as shown in Fig. 1 if in the event two spaced pistons are employed.

15 For the purpose of allowing the free passage of gas through the piston proper during its backward or idle stroke the valve or piston head 3 is provided with the passages 17 and the annular recess 18 formed in the piston ring 4, said annular recess being located around the valve seat portion of the valve-head.

Having fully described our invention what we claim as new and desire to secure by Letters Patent, is—

25 1. In a piston for compressors, the combination of a cylinder, a piston rod, a valve-head carried by said piston rod, said valve head provided with integral spaced flanges  
30 and a valve seat, a piston ring provided with a valve seat adapted for contact with the valve seat upon the valve head, segmental members provided with webs, means for connecting said segmental members together  
35 and the members connected to and moved

with the piston ring and a cushioned disk located between the webs of the segmental members and one of the flanges, substantially as and for the purpose specified.

2. In a piston for compressors, the combination of a cylinder, a piston rod, a valve-head secured to said piston rod, said valve-head provided with integral spaced flanges, a piston ring slidably mounted upon the valve-head, a head secured to said piston ring, 45 said head provided with webs located between the spaced integral flanges of the valve head and means for cushioning the stroke between the integral flanges and webs of the head, substantially as and for the purpose specified. 50

3. In a piston for compressors, a cylinder, a piston rod and a valve head connected to said piston rod, said valve head provided with spaced flanges, a webbed head and a piston ring carried by the valve-head, said piston ring slidably mounted upon the valve-head and means for cushioning the stroke of the head carried by the piston ring, substantially as and for the purpose specified. 60

In testimony that we claim the above, we have hereunto subscribed our names in the presence of two witnesses.

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DONALD COLE.  
ELBERT L. EBERSOLE.

Witnesses:

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