

No. 756,529.

PATENTED APR. 5, 1904.

S. S. ROSE.  
GAS COMPRESSOR FOR ICE MACHINES.

APPLICATION FILED MAR. 12, 1902.

NO MODEL.

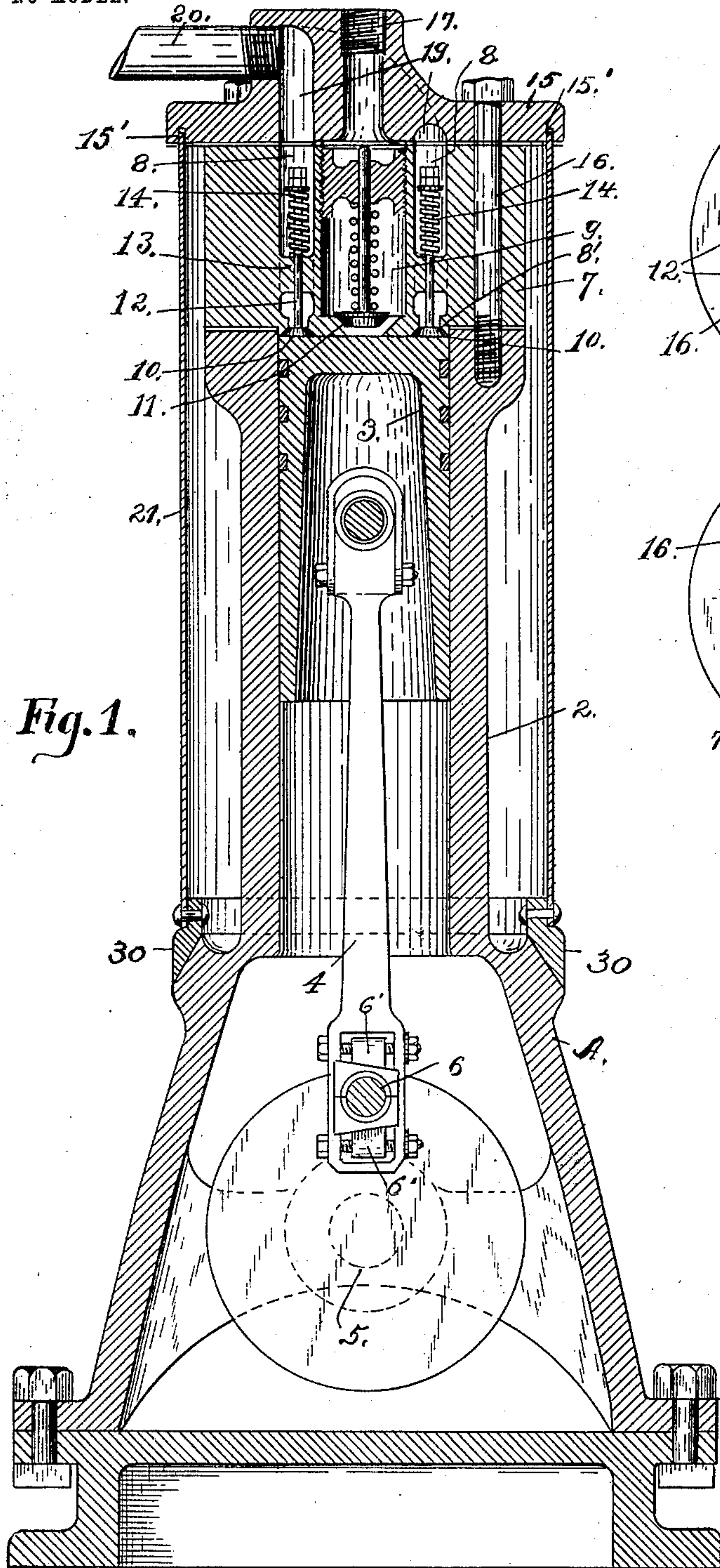


Fig. 1.

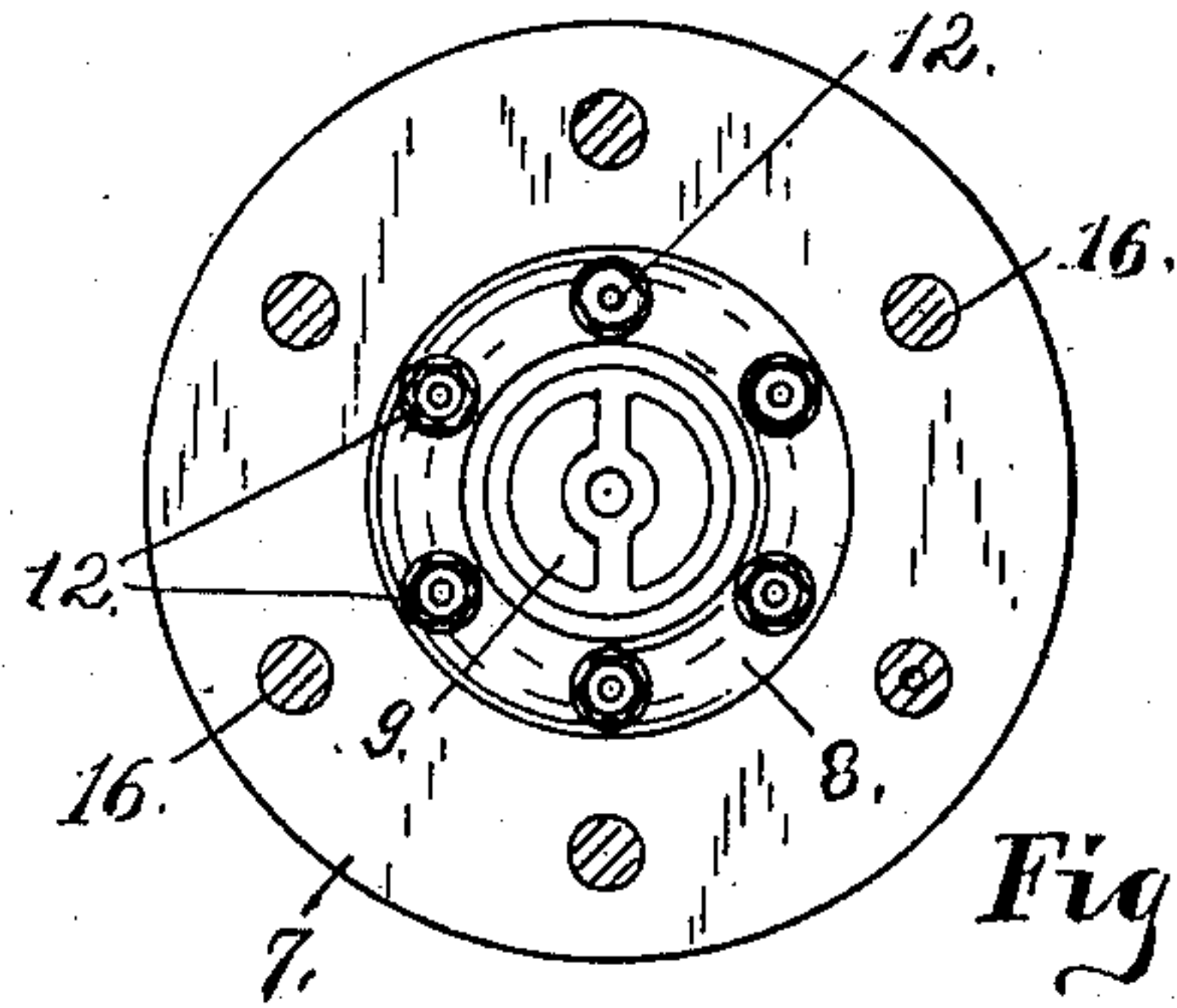


Fig. 2.

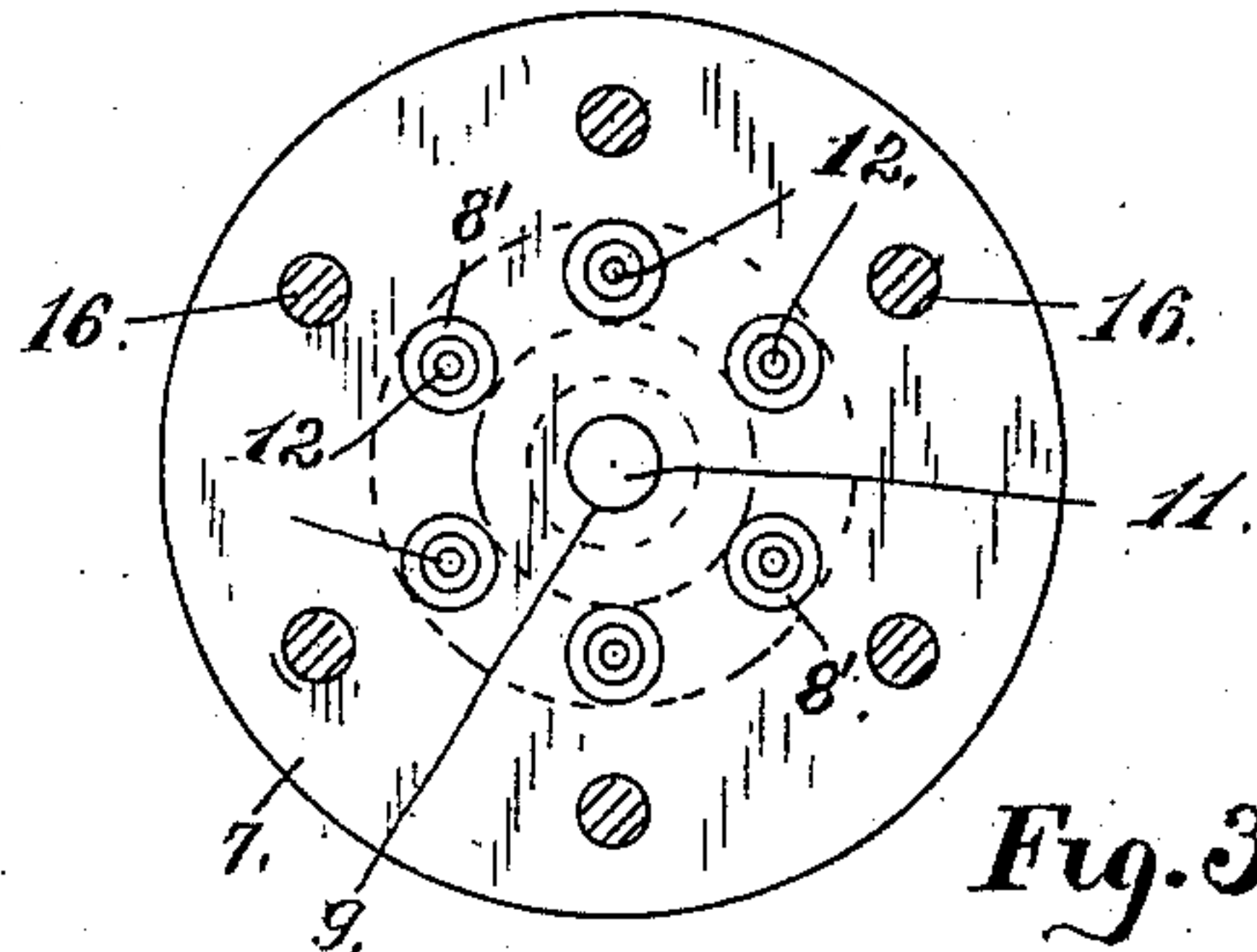


Fig. 3.

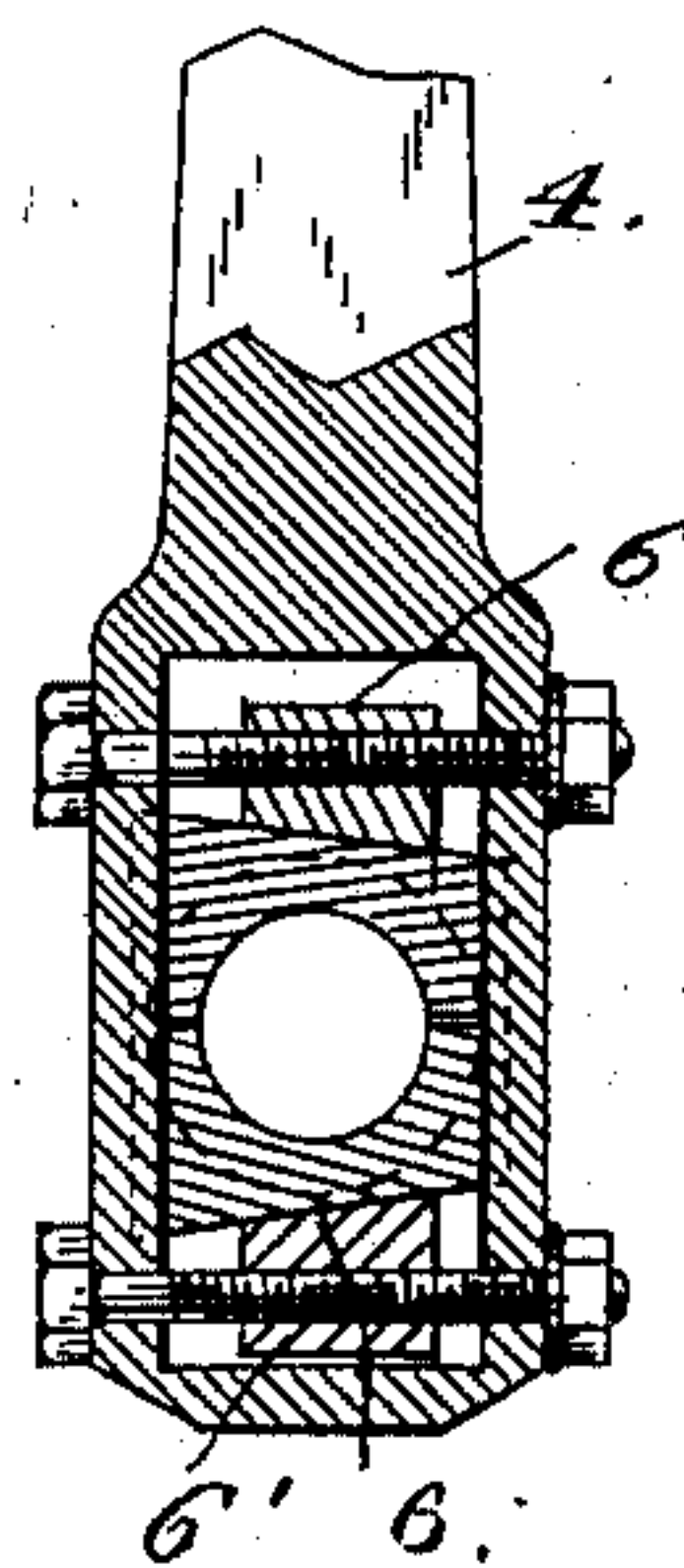


Fig. 4.

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# UNITED STATES PATENT OFFICE.

SAMUEL S. ROSE, OF AMADOR CITY, CALIFORNIA.

## GAS-COMPRESSOR FOR ICE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 756,529, dated April 5, 1904.

Application filed March 12, 1902. Serial No. 97,839. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL S. ROSE, a citizen of the United States, residing at Amador City, county of Amador, State of California, have invented an Improvement in Gas-Compressors for Ice-Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates particularly to improvements in that class of compressors forming part of a refrigerating plant. Its object is to provide a compressor acting upon a freezing medium, as ammonia-gas, which will be simple of construction, whose parts are easily accessible, in which the cooler gas is delivered directly into the cylinder from the coils without coming in contact with or being heated by the running-gear of the compressor and in which the chances are obviated of any admixture of gas with the oil in which the gear in such machines usually runs.

My invention consists of the parts and the constructions and combinations of parts which I will hereinafter describe and claim.

Figure 1 is a vertical central section of my invention. Fig. 2 is a top view of valve-chamber casing. Fig. 3 is a bottom view of the same. Fig. 4 is a sectional view of piston-rod connection.

A represents a suitable framework carrying the cylinder 2. The lower end of the cylinder is open, and an open-ended piston 3 is reciprocable therein. A piston-rod 4 is pivoted to the piston and is connected with the crank-shaft 5. The connections of the rod and shaft are adjustable, as shown at 6, as by means of sliding blocks 6' operated by screws, and having inclined faces to engage like faces on the journal-box of the crank, so that the stroke of the piston in the cylinder may be regulated in such manner that the space between the head of the cylinder and the end of the piston may be reduced to a minimum, for the expansive qualities of ammonia-gas are such that if a piston does not practically expel all the gas from the cylinder the efficiency of the compressor is greatly reduced thereby. A valve-chamber casing 7 closes the outer end of the cylinder. An annular valve-chamber 8 is formed in and concentric with this casing.

The chamber is open at its outer end. Inlet-ports 8' communicate with the compression-chamber, and valves 10, opening outwardly into the latter, control these ports. The outlet-port 9 is disposed centrally of the casing and is provided with a valve 11, which opens inwardly. The stems 12 of these several valves are slidable in webs 13 and are kept properly seated by means of springs 14. An annular cap or head 15 fits on over the end of the casing, and the head, casing, and cylinder are rigidly united by means of bolts 16. Any suitable packing material may be interposed between the casing and cylinder. The head 15 has a central perforation 17 coincident with the outlet-port 9, and the exhaust takes place therethrough into the discharge-pipe connecting with a suitable reservoir. The head or ring 15 has an annular groove 19 on its face adjacent to the casing whereby an equable distribution of gas received through pipe 20 is made to all the ports 8'. A water-jacket 21 completely encircles the valve-casing and cylinder. The upper edge of the cylindrical water-jacket casing fits in a groove 15' in the under side of the head or cap, while the lower edge of the said casing 21 is bolted or otherwise fixed to a removable ring 30, which surrounds and is supported on the base of the cylinder and whereby the casing is held out of contact with the cylinder and valve-casing. The gas coming in from the coils is ordinarily at a low temperature, and if it can be delivered into the compressor-cylinder without unduly heating by bringing it into contact with the heated machinery it is obviously advantageous to do so, since gases (particularly ammonia-gas) expand greatly as their temperature rises. Hence it is that I introduce and expel the gas and dispose the water-jacket as shown.

The lower part or base of the frame A is open, so that ready access may be always had to the piston, piston-rod, and connections and adjustments and repairs easily made when necessary.

By making the cylinder, valve-casing, and head in three separate parts the interior of the cylinder and the valves may be easily and quickly reached for purposes of inspection, &c.

Having thus described my invention, what



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

1. The combination in a gas-compressor for refrigerating-machines, of a vertically-disposed cylinder, a piston, a valve-casing containing intake and outlet valves seating on the upper end of said cylinder, a removable ring surrounding and supported on the base of said cylinder, a cylindrical casing 21 secured to said ring and inclosing and out of contact with the cylinder and valve-casing, a head or cap having inlet and outlet ports resting on said valve-casing and provided with an annular groove on its under side to receive the upper end of said casing 21, and means for locking the said several parts rigidly together.

2. The combination in a gas-compressor, of a cylinder open at each end, a piston, a valve-casing comprising a cylindrical longitudinally-perforated block with integrally-formed valve-seats and intake or outlet valves located

in the perforations, said valve-casing block seating over one end of said cylinder, a removable cylindrical casing concentric with and separated from and inclosing said cylinder and valve-casing block and of a length substantially that of the combined length of said cylinder and block, a cap seating over said valve-casing block and cylindrical casing and closing the annular space inclosed by said cylindrical casing, said cap having ports registering with the perforations in the valve-casing block, and bolts passing through said cap and valve-casing block into the cylinder-walls to unite said parts substantially as described.

In witness whereof I have hereunto set my hand.

SAMUEL S. ROSE.

Witnesses:

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