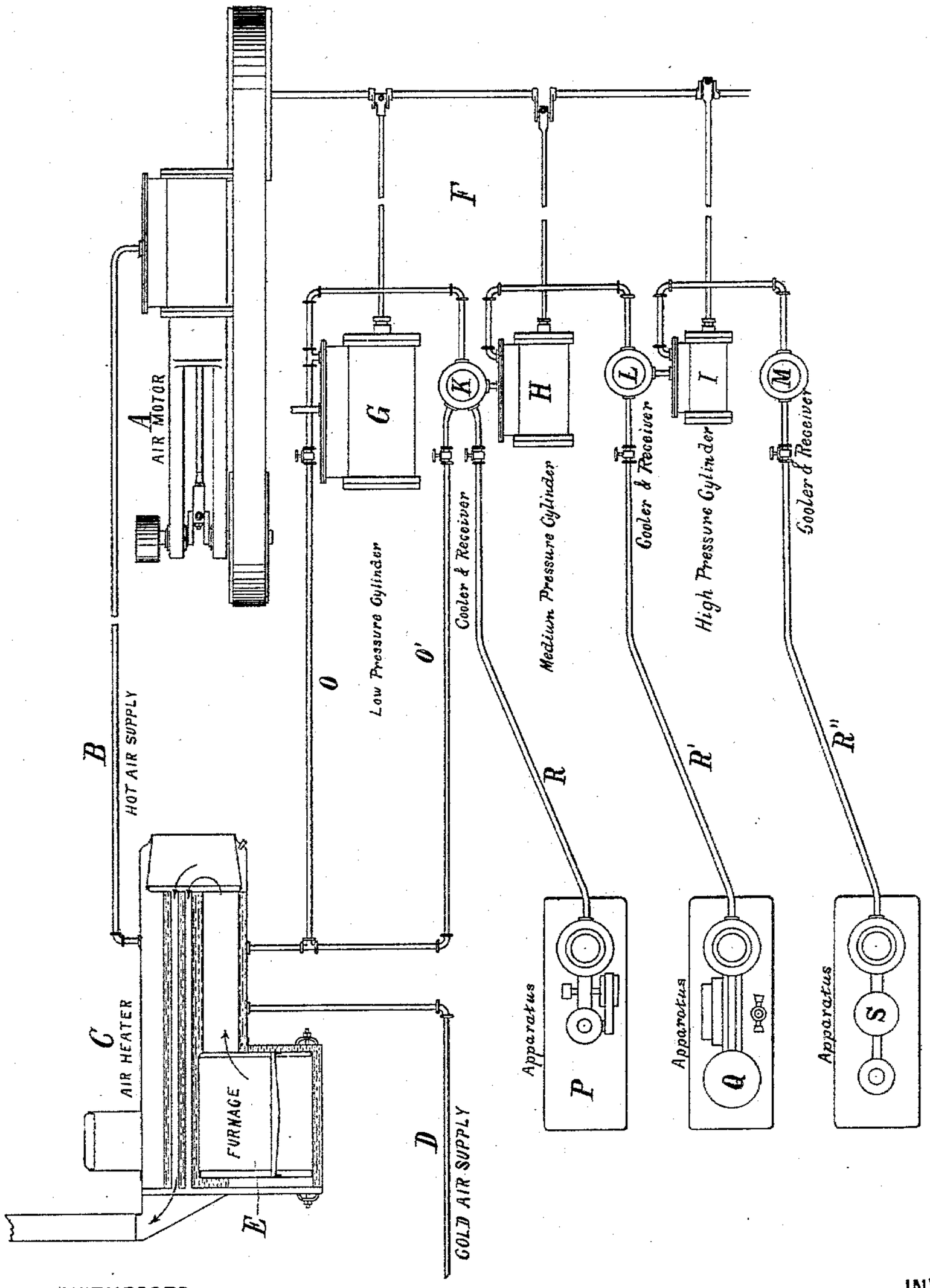
(No Model.)

J. H. HOADLEY.

AIR COMPRESSOR.

No. 598,149. Patented Feb. 1, 1898.



WITNESSES:

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JOSEPH H. HOADLEY, OF NEW YORK, N. Y., ASSIGNOR TO THE COMPRESSED AIR POWER COMPANY, OF SAME PLACE.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 598,149, dated February 1, 1898.

Application filed January 8, 1896. Serial No. 574,679. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. HOADLEY, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Improvement in Air-Compressors, of which the following is a specification.

My invention relates to compound or multiple stage compressors in which the air is compressed in succession by a number of cylinders, the first cylinder taking in atmospheric air and after compressing it to a certain degree passing it to an intermediate receiver, which may also have means for cooling the air heated by compression, the air passing from thence to a second cylinder, where it is again compressed to a still higher degree and then passed to a second receiver or cooler, and so on.

My invention consists in combining such a compressor with apparatus adapted to use air compressed to different degrees, and in constructing the compound compressor so that the desired different degrees of pressure required by the consuming apparatus will correspond with the different degrees of pressure produced by the different cylinders of the compressor.

My invention more specifically consists in combining such a compressor with an air-motor for driving the same and an air-heater taking air under one of the lesser degrees of pressure, the cylinders producing such lesser degree of pressure being made large enough to supply this extra draft of low-pressure air and yet supply its proportion of air to the next cylinder in the series.

The accompanying drawing represents a combination of apparatus embodying my improvement.

A is an air-motor taking air under pressure of, say, five (5) atmospheres through the pipe B from an air-heater C. The air-heater is similar to an ordinary steam-boiler. The cold air under pressure of, say, five and one-half ($5\frac{1}{2}$) atmospheres is forced in through pipe D under the water and allowed to percolate up through the water, which is kept hot by means of furnace E. Any desired amount of water-vapor may be allowed to pass over with the air by having the proper ratio between the air-pressure and the temperature of the water.

F is a compound air-pressure pump driven by the air-motor A, G, H, and I being the successive low-pressure, medium-pressure, and high-pressure cylinders of the same, and K, L, and M the successive coolers and receivers. The air from the first compression-cylinder G is taken by pipe O before it enters cooler and receiver K or by pipe O′ after it leaves the latter and led to air-heater C, as shown. The first cylinder G of the compressor is made not only large enough to supply its proper proportion of air to the cylinder H, but also to supply an additional amount to be used in the air-heater to furnish by absorption of energy in said heater the power to do the work required.

P is a piece of apparatus drawing air-pressure of the first degree through pipe R.

Q is a piece of apparatus requiring pressure of the second degree and supplied by pipe R′ from the secondary receiver, and S is a piece of apparatus adapted to be worked by pressure of the third degree supplied through pipe R″.

The operation will be clear from the following: The low-pressure cylinder G is large enough to supply more compressed air than can be utilized by intermediate cylinder H, and the cylinder H supplies more compressed air than can be utilized for high-pressure cylinder I. The surplus compressed air from cylinder G is led to heater C and serves to operate air-motor A. For starting motor A or to make up any deficiency in supply from cylinder G air may be forced into heater through pipe D. A pipe R, leading from cooler K, supplies air to apparatus K, a pipe R′ from cooler L supplies the apparatus Q, and a pipe R″ supplies the apparatus S from the high-pressure cooler and receiver M.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a compound air-compressor having a low-pressure cylinder large enough to supply more compressed air than is required by the high-pressure cylinder, of an apparatus driven by compressed air, and a passage leading from the compound air-

compressor between the high and low pressure cylinders and communicating with said apparatus, substantially as set forth.

2. The combination with a compound air-compressor having a low-pressure cylinder large enough to supply more compressed air than is required by the high-pressure cylinder, of a passage leading from said low-pressure cylinder to an air-heater, and an air-motor in communication with the heater and driven by said heated air, said motor in turn driving the air-compressor, substantially as set forth.

JOSEPH H. HOADLEY.

Witnesses:
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M. V. BIDGOOD.