

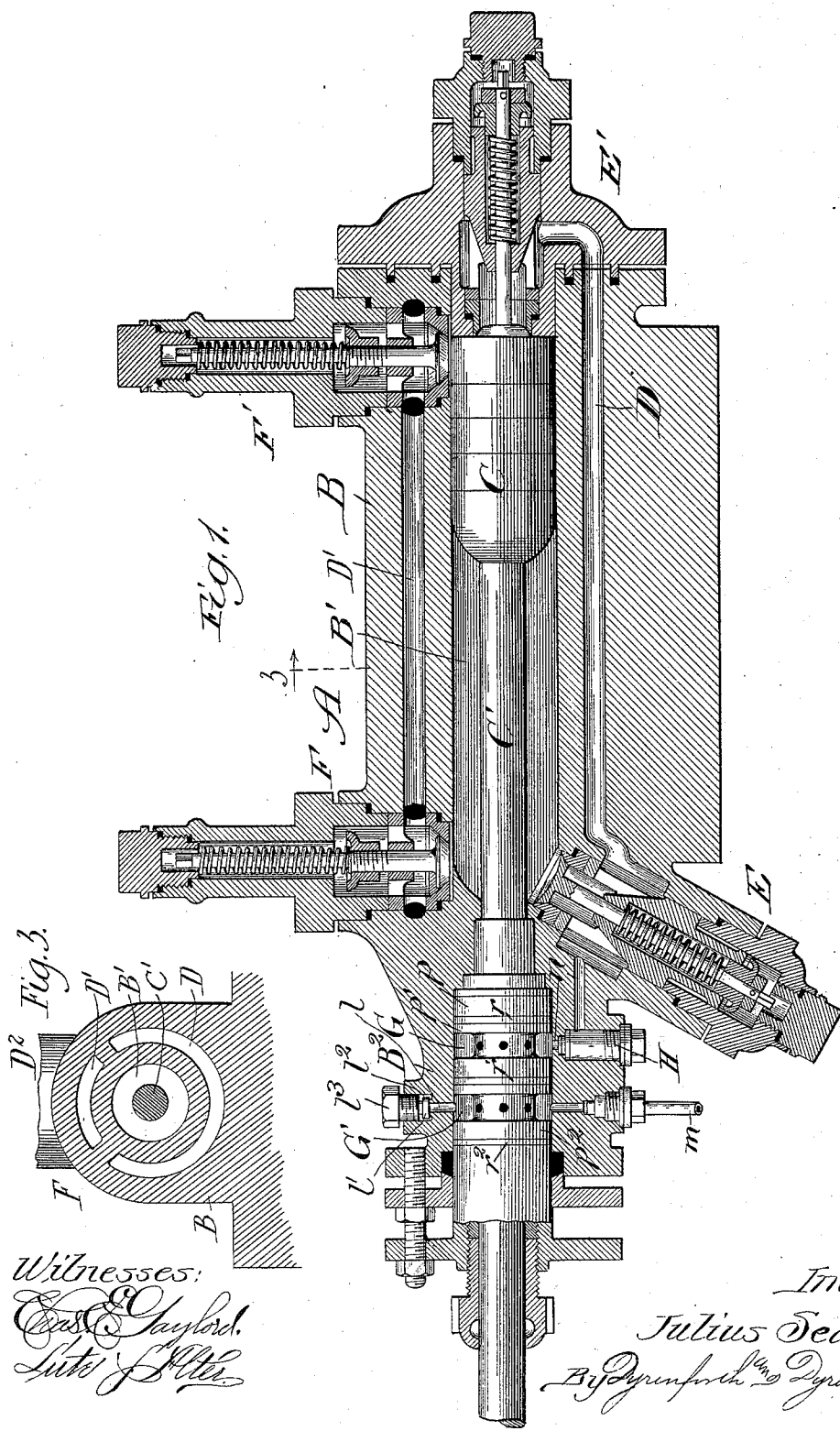
(No Model.)

2 Sheets—Sheet 1.

J. SEDLACEK.
GAS COMPRESSOR.

No. 606,430.

Patented June 28, 1898.



Witnesses:
Eas. Gaylord.
Lute J. Miller

Inventor:
Julius Sedlacek
By Dyrenforth & Dyrenforth,
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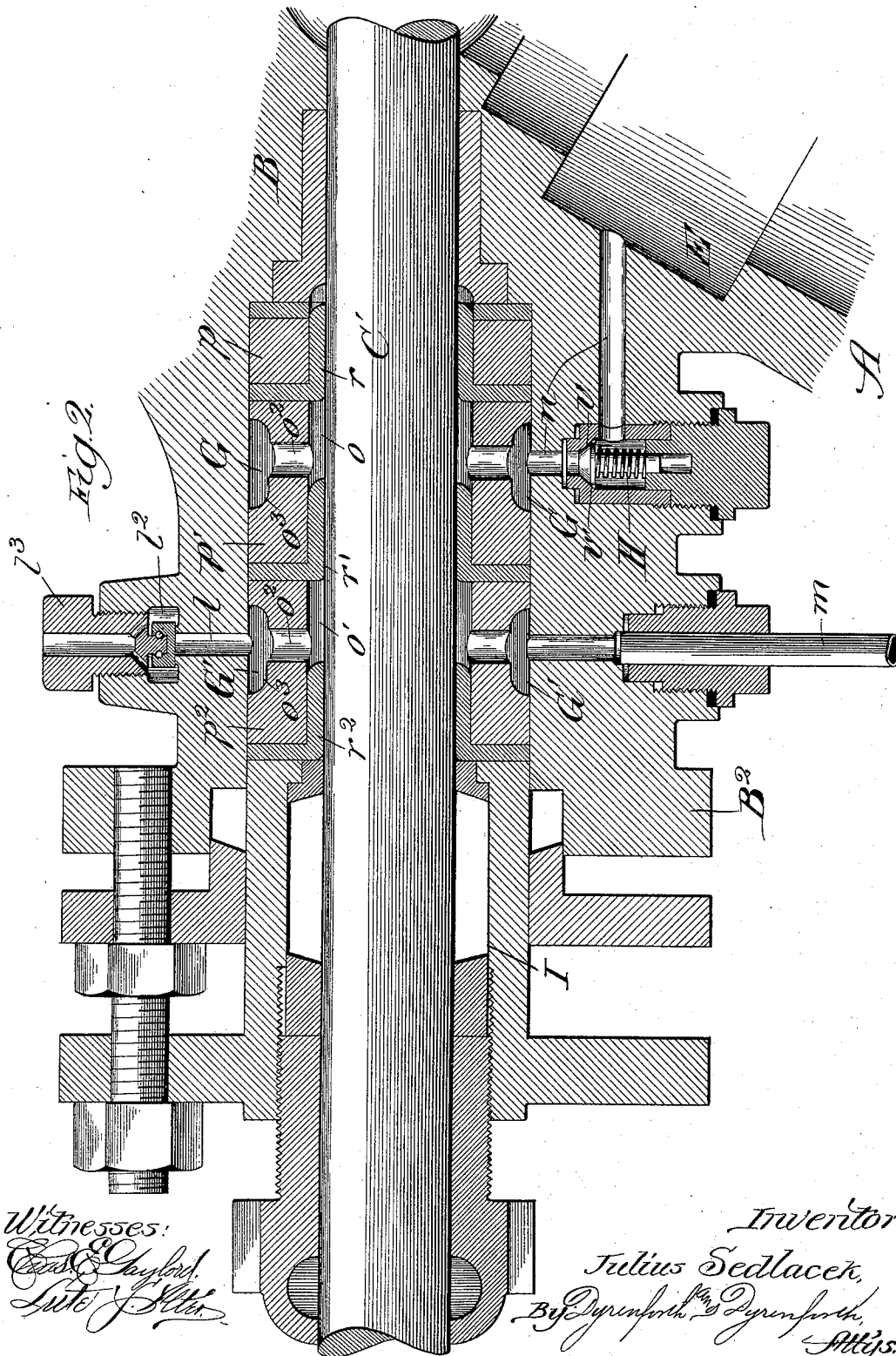
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J. SEDLACEK.
GAS COMPRESSOR.

No. 606,430.

Patented June 28, 1898.



Witnesses:
 Geo. E. Gaylord.
 Lute J. Allen.

Inventor:
Justus Sedlacek,
By *Dyrenforth* *for* *Dyrenforth,*
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UNITED STATES PATENT OFFICE.

JULIUS SEDLACEK, OF NUREMBERG, GERMANY.

GAS-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 606,430, dated June 28, 1898.

Application filed August 20, 1897. Serial No. 648,922. (No model.) Patented in France December 21, 1892, No. 226,556; in Germany January 13, 1893, No. 77,119; in Austria-Hungary March 18, 1893, No. 56,187 and No. 86,911, May 6, 1893, No. 1,089 and No. 5,637, and August 30, 1893, No. 10,239 and No. 19,809; in Italy March 28, 1893, No. 1,194; in Switzerland July 24, 1893, No. 7,363, and June 25, 1894, No. 8,798; in Belgium August 25, 1894, No. 85,843, and in England May 14, 1895, No. 9,530.

To all whom it may concern:

Be it known that I, JULIUS SEDLACEK, a subject of the Emperor of Austria-Hungary, residing at Nuremberg, Germany, have invented a new and useful Improvement in Gas-Compressors, of which the following is a specification, and for which the following foreign patents have been granted to me: in Great Britain, No. 9,530, dated May 14, 1895; in Germany, No. 77,119, dated January 13, 1893; in France, No. 226,556, dated December 21, 1892; in Switzerland, No. 7,363, dated July 24, 1893, and No. 8,798, dated June 25, 1894; in Italy, No. 1,194, dated March 28, 1893; in Belgium, No. 85,843, dated August 25, 1894, and in Austria-Hungary, No. 56,187 and No. 86,911, dated March 18, 1893, No. 1,089 and No. 5,637, dated May 6, 1893, and No. 10,239 and No. 19,809, dated August 30, 1893.

My invention relates to an improvement in the class of compressors for compressing gas (including air) to circulate it, as for the purpose of power or that of refrigeration, in which latter case the improvement would be applied to a refrigerating or ice machine in which is employed the cold-producing property of expanding gas liquefiable under mechanical compression.

My primary object is to prevent leakage of gas from the compressor-chamber about the piston-stem. This I accomplish, generally stated, by providing a chambered stuffing-box on the piston beyond the compressor-chamber automatically controlled by a regulating-valve to maintain in the stuffing-box chamber a constant or practically constant pressure of the gas which leaks into it from the compressor-chamber, and thereby present to the compressor-chamber to oppose leakage therefrom a gas-pressure adequately great for the purpose, an excess of which, when it occurs, is let out, as into the circulating system, by overcoming and thus opening the regulating-valve.

My invention consists in the general construction of the apparatus embodying it; and it also consists in details of construction and combinations of parts, all as hereinafter set forth, and pointed out in the appended claims.

For the sake of illustration I show my invention as applied to an ice or refrigerating machine and confine the description to that connection, this being the purpose for which I have more particularly devised my invention, though my intention is not to restrict it to that particular application.

Referring to the accompanying drawings, Figure 1 is a longitudinal sectional view of the compressor of an ice or refrigerating machine provided with my improvement. Figure 2 is a similar enlarged broken view of the same, clearly showing the preferred detailed construction of the stuffing-box; and Fig. 3, a section taken at the line 3 on Fig. 1 and viewed in the direction of the arrow.

A is a compressor, that shown comprising a cylinder B, containing the piston-chamber B' and piston C therein, having the rod C' extending out through one end of the cylinder, and in the wall of the cylinder to extend part way about the chamber B' is formed a suction-chamber D. On one side of the suction-chamber, (or, more accurately stated, on one side and at one end, respectively,) at opposite ends thereof and controlling communication between it and the compressor-chamber B', are provided the two spring-valves E and E', of any suitable construction, opening inward with relation to the compressor-chamber. In the wall of the compressor-chamber is also formed a discharge-passage D', at opposite ends of which and controlling communication with it of the compressor-chamber are the spring-valves F and F', like the valves E and E', but opening outward with relation to the chamber B'. A discharge-pipe D² is shown in Fig. 3 as leading from the passage D'.

About the piston-rod C', within the housing extension B² of the compressor-cylinder, I provide a stuffing-box chamber, or, and preferably, two such chambers, as shown, or more than two. As shown, these chambers are constructed as follows: At suitable intervals about the piston-rod C' are provided the cup-leathers r, r', and r², clamped in place about their horizontal portions by metal rings p, p', and p², the two latter of which are each considerably wider than the portion of the leather

it covers to leave the spaces o and o' , which communicate through passages o^2 , provided at intervals about each ring p' and p^2 , with circumferential recesses o^3 in these two rings, which form, with the passages in them and spaces underneath them, the stuffing-box chambers G and G' .

The chamber G communicates through a passage n with the suction-chamber D by way of the chamber of the valve E , and communication between the chamber G and passage n is controlled by a valve H , presenting to the higher pressure in the stuffing-box chamber a smaller surface area v and to the lower pressure from the suction-chamber D a larger surface area v' . The pressure in the chamber G is that of the gas which leaks into it about the piston and is much greater than that in the suction-chamber. When the pressure in the stuffing-box chamber against the smaller surface area v of the valve H equals that of the pressure from the suction-chamber against the greater surface area v' of that valve, the valve opens to let into the suction-chamber any excess of pressure in the chamber G above that to be retained constantly therein to resist the pressure from the compressor-chamber. Of course what that pressure is is predetermined, and the relative surface areas v and v' are provided accordingly to adapt the valve H to regulate the pressure in the stuffing-box chamber.

In the base of the chamber G' there leads a lubricant-supply pipe m from a pump, (not shown,) while from the opposite side of this chamber there leads a discharge-duct l , normally closed by a valve l' in a chamber l^2 and fastened down against its seat by a screw-plug l^3 , having passages leading through it to the outer air, whereby on unscrewing the plug to raise the valve the lubricant may discharge and carry off with it any gas that may have entered the chamber G' from the chamber G . The pressure in the chamber G' is also rendered, by the action of the pump in forcing into it the lubricant, more or less constant to resist leakage into it from the chamber G . Beyond the series of chambers G G' may be provided a stuffing-box I of ordinary or any suitable construction to pack the chamber G' against atmospheric pressure from without.

As will be seen, one stroke of the piston opens the valve E' to admit the refrigerant from the chamber D into the compressor-chamber, to be forced out past the valve F' by the return stroke of the piston into the condenser, (not shown,) and this one (back) stroke of the piston forces out of the compressor-chamber past the valve F into said condenser the refrigerating medium which has been introduced into the compressor-chamber from the suction-chamber D past the valve E by the forward stroke of the piston. However, the details of this construction relate only to one form of compressor for an ice or refrigerating machine provided with my improvement; but the latter may ob-

viously be adapted, without departure from my invention, to compressors of other constructions for different purposes, wherein the excess of gas in the chamber G is caused to discharge elsewhere than into a suction-chamber or into a suction-chamber differently located from that shown.

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

1. In combination with a gas-compressor, a stuffing-box chamber upon the piston-rod for receiving leakage-gas from the compressor, and a regulating-valve controlling the outlet from said chamber and presenting thereto one face having a surface area smaller than that on its opposite face, substantially as and for the purpose set forth.

2. In combination with a gas-compressor, a stuffing-box chamber upon the piston-rod for receiving leakage-gas from the compressor, a gas-chamber communicating with said stuffing-box chamber and having its gas contents at a lower pressure than the pressure in said stuffing-box chamber, and a regulating-valve interposed between the two said chambers and presenting a smaller surface area to the stuffing-box chamber and a larger surface area to said gas-chamber, substantially as and for the purpose set forth.

3. In combination with a gas-compressor, a plurality of stuffing-box chambers upon the piston-rod for receiving in succession leakage-gas from the compressor, a gas-chamber communicating with the stuffing-box chamber next adjacent to the compressor and having its gas contents at a lower pressure than the pressure in said stuffing-box chamber, and a regulating-valve interposed between the last-named stuffing-box chamber and said gas-chamber and presenting to the former a smaller surface area and to the latter a larger surface area, substantially as and for the purpose set forth.

4. In combination with a gas-compressor, a plurality of stuffing-box chambers upon the piston-rod for receiving in succession leakage-gas from the compressor, a gas-chamber communicating with the first stuffing-box chamber, or that next adjacent to the compressor, and having its gas contents at a lower pressure than the pressure in said stuffing-box chamber, a regulating-valve interposed between the last-named stuffing-box chamber and said gas-chamber and presenting to the former a smaller surface area and to the latter a larger surface area, and a lubricant-supply pipe leading into the second stuffing-box chamber, substantially as and for the purpose set forth.

5. In combination with the compressor and suction-chamber of an ice or refrigerating machine, a stuffing-box chamber on the piston-rod for receiving leakage-gas from the compressor and communicating with said suction-chamber, and a regulating-valve interposed in the communication between said stuffing-box chamber and said suction-chamber and

presenting a lesser surface area to the former and a greater surface area to the latter, substantially as and for the purpose set forth.

6. In an ice or refrigerating machine, the
5 combination with the compressor of a suction-chamber D part way surrounding the compressor-chamber B', valves E, E' and F, F',
a stuffing-box chamber G on the piston-rod, a passage *n* between said chamber G and the
10 chamber of the valve E, and a valve H interposed in said passage and presenting a smaller surface area to the stuffing-box chamber and a larger surface area to the pressure from said
15 suction-chamber, substantially as and for the purpose set forth.

7. In an ice or refrigerating machine, the

combination with the compressor of a suction-chamber D part way surrounding the compressor-chamber B', valves E, E' and F, F',
stuffing-box chambers G and G' on the piston-rod, a passage *n* between said chamber G and
20 the chamber of the valve E, a valve H interposed in said passage and presenting a smaller surface area to said stuffing-box chamber and
a larger surface area to the pressure from said
25 suction-chamber, and a lubricant-supply pipe leading into said chamber G', substantially as and for the purpose set forth.

JULIUS SEDLACEK.

In presence of—

DANIEL HEINECKE.

OSCAR BOCK.