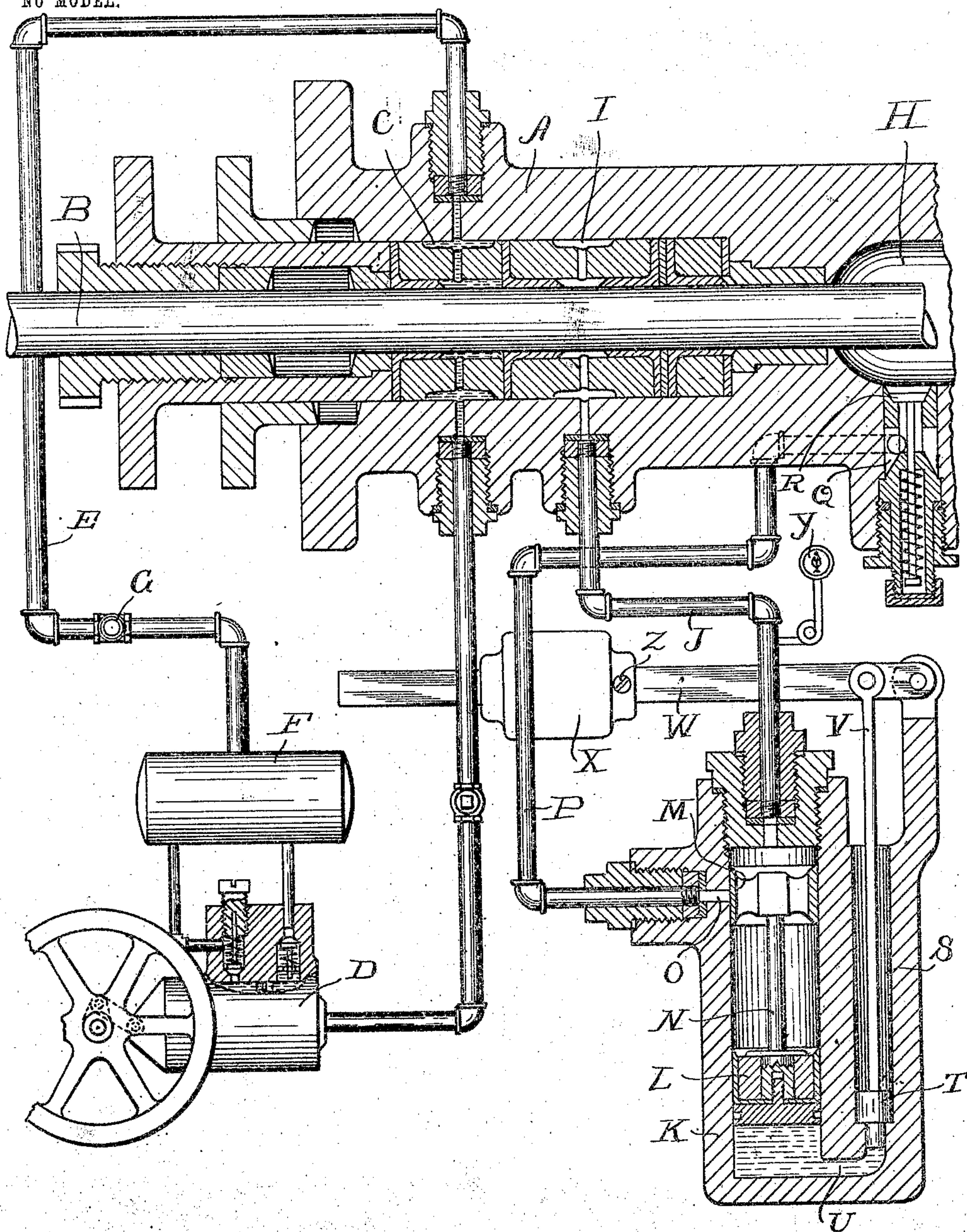


No. 757,297.

PATENTED APR. 12, 1904.

J. C. GOOSMANN.
REFRIGERATING MACHINE.
APPLICATION FILED OCT. 8, 1903.

NO MODEL.



Witnesses:

C. F. Wilson
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Inventor:

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UNITED STATES PATENT OFFICE.

JUSTUS C. GOOSMANN, OF CHICAGO, ILLINOIS.

REFRIGERATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 757,297, dated April 12, 1904.

Application filed October 3, 1903. Serial No. 176,316. (No model.)

To all whom it may concern:

Be it known that I, JUSTUS C. GOOSMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Refrigerating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in a refrigerating-machine, and more particularly to devices for saving escaping gas leaking through the stuffing-box and returning same into the system, the object being to provide simple and efficient devices of this character; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

The accompanying drawings, illustrating my invention, show the stuffing-box of a refrigerating or ice machine and my devices for saving the escape gas in central longitudinal section.

My present invention is an improvement upon the device forming subject of Letters Patent No. 719,460, granted to me on February 3, 1903, in which the escape-gas-controlling means are controlled by the pressure of the oil fed to the stuffing-box. In my present invention the escape-gas-controlling devices are entirely independent of the lubricating means, thus enabling me to regulate the pressure of each without effecting the other.

The stuffing-box A, through which the piston-rod B passes, is provided with the annular oil-chamber C, which is fed by a pump D, a constant circulation being maintained by means of a return-pipe E, leading from said chamber C to the oil-tank F, and the pressure of said oil controlled by a valve G, interposed in said pipe E in an obvious manner. Between said annular chamber C and the cylinder H is an annular gas-chamber I, receiving the gas escaping from the cylinder H, and said chamber I is connected by a pipe J with the upper end of a cylinder K. In said cylinder K is a piston L and hollow trunk-valve M, connected together by a piston-rod N. Said valve M controls the gas blow-off O, which is connect-

ed by a pipe P with a chamber Q in the wall of the cylinder H, said chamber Q being connected with said cylinder and such connection controlled by a spring-actuated check-valve R. Adjacent said cylinder K is a small cylinder S, in which a piston T is movable, said cylinder S being connected with the cylinder K by means of a passage U, which, together with the lower end of said cylinder K, is filled with a heavy liquid, such as oil. The piston-rod V of said piston T is connected at its upper end with a lever W, pivotally mounted at one end on an arm of the casing of said cylinders S and K and carrying a longitudinally-adjustable weight X at its free end, said weight exerting its pressure on said piston T to hold the latter at the lower limit of its movement, and through the medium of the passage U and the oil contained therein said weight also serves to hold said piston L at the upper limit of its movement, so that said valve M covers said blow-off O. The position of said weight X on said lever W obviously determines the pressure required to be exerted on the upper face of the piston L to depress same to cause the blow-off O to be uncovered. The escaping gas collects in said chamber I, pipe J, and cylinder K, and when the pressure of said gas has attained a certain point the blow-off O is obviously uncovered and such gas escapes into the chamber or pocket Q, whence said gas passes into the cylinder H as soon as the pressure in said end of said cylinder is less than the pressure in said chamber Q, as will be obvious. It is essential that the escaping gas should be maintained at a high pressure, for the reason that this serves in itself to prevent excessive escape and aids in maintaining a definite compression-pressure in the cylinder H, and, further, it prevents the excessive flow of oil which might otherwise find its way into said cylinder, so that the oil and escape gas serve as checks on each other, the oil seal formed by said annular chamber C serving to prevent escape of gas and the gas seal likewise serving to prevent an excess of oil entering the cylinder H.

To enable the escape-gas pressure to be properly controlled, I provide a pressure-

gage Y on the pipe J, which indicates the pressure and enables the weight X to be adjusted to the proper position, such weight being held at any desired point on the lever W by means of the set-screw Z.

I claim as my invention—

1. The combination with the compressor-cylinder and stuffing-box of a refrigerating-machine, an escape-gas chamber in said stuffing-box, an escape-gas chamber having valve-controlled connection with said cylinder, and connection between said escape-gas chambers, of two differential cylinders, one of which is interposed in said connection between said escape-gas chambers, a piston-valve in said cylinder controlling said connection, a piston in said cylinder controlling said piston-valve, a piston in said other cylinder, a fluid-pressure passage connecting said cylinders and serving to transmit motion from one piston to the other thereof, and a weight bearing on said last-named piston to hold same at the lower limit of its movement against the action of the escape-gas pressure and hold said piston-valve in position to cut off the connection between said escape-gas chambers, substantially as described.

2. In a refrigerating-machine, the combination with the compressor-cylinder and stuffing-box, of an escape-gas chamber in said stuffing-box, a pocket adapted to receive the escape gas from said stuffing-box chamber, and valve-controlled connection between said pocket and said compressor-cylinder, of a cylinder connected with said stuffing-box chamber, a piston therein, connection between said cylinder and said pocket, a piston-valve in said

cylinder connected with said piston and controlling the connection between said cylinder and said pocket, a fluid-pressure chamber on the other side of said piston, a second cylinder connected with said fluid-pressure chamber, a piston in said cylinder, a lever pivotally mounted at one end and carrying a weight at its free end, and connection between said last-named piston and said lever adjacent the pivot of the latter, said lever being adapted to bear upon said piston to control the pressure in said fluid-pressure chamber and thereby control the movements of said first-named piston by the action of the escape-gas pressure, substantially as described.

3. In a refrigerating-machine, the combination with the compressor-cylinder and stuffing-box, of an escape-gas chamber in said stuffing-box, an escape-gas-receiving chamber having valve-controlled connection with said cylinder and connected with said stuffing-box chamber, a valve-chamber interposed in said connection, a fluid-pressure-actuated piston-valve in said chamber controlling said connection and actuated in one direction by the escape-gas pressure, fluid-pressure devices actuating said piston-valve against the action of said escape-gas pressure, and means exerting a constant load on said last-named fluid-pressure devices for controlling the escape-gas release-pressure, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JUSTUS C. GOOSMANN.

Witnesses:

RUDOLPH WM. LOTZ,
E. F. WILSON.