

No. 665,448.

J. G. LAPHAM.
COMPRESSOR.

(Application filed Mar. 3, 1900.)

Patented Jan. 8, 1901.

(No Model.)

2 Sheets—Sheet 1.

Fig. I.

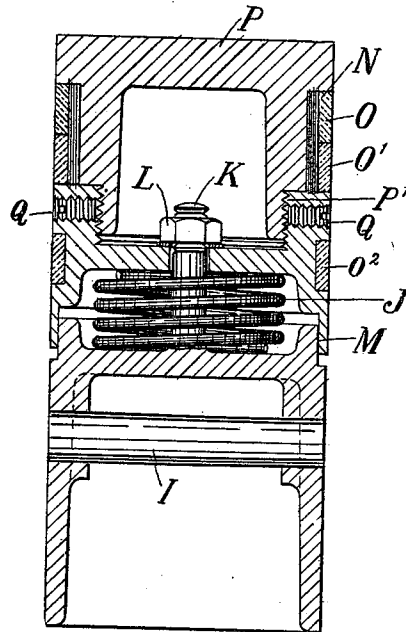
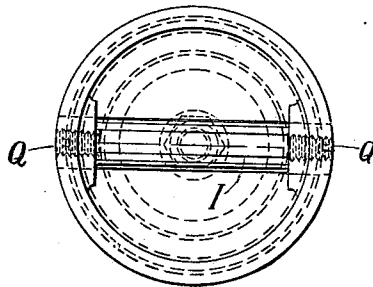


Fig. II.



Witnesses
John A. Schroeder
Henry B. Lister

Inventor
John G. Lapham
By his Attorney J. Albert Stone

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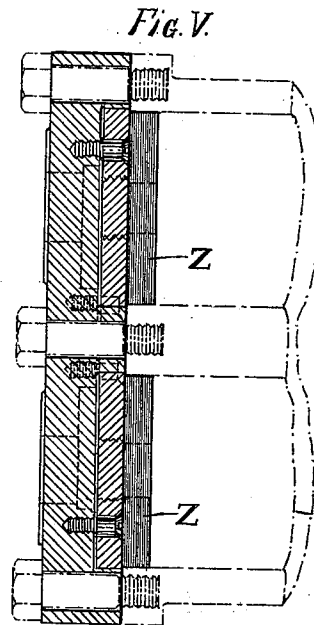
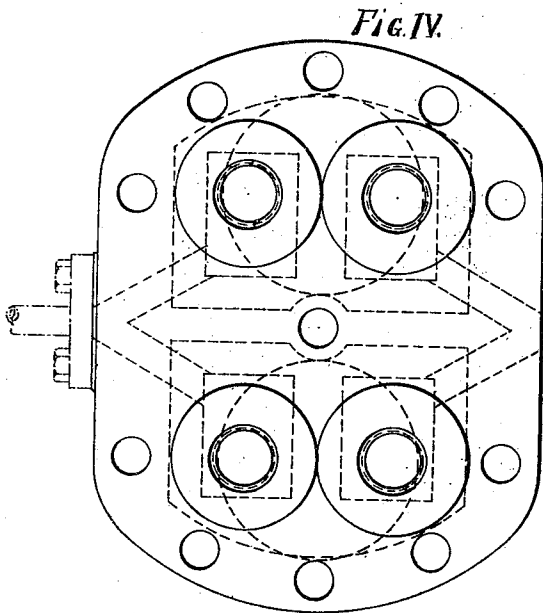
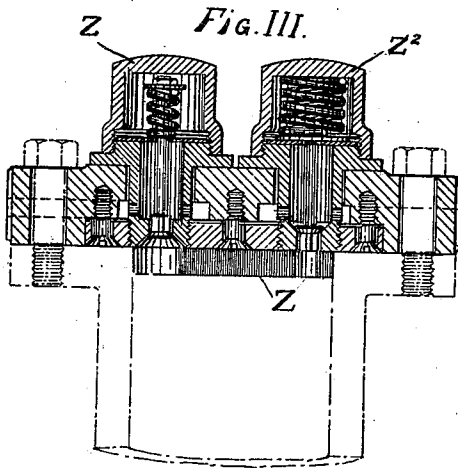
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Witnesses
John A. Schroeder
Henry B. Butler

Inventor
John G. Lapham
By his Attorney *J. Albert Stone*

UNITED STATES PATENT OFFICE.

JOHN G. LAPHAM, OF NEW YORK, N. Y., ASSIGNOR TO THE LAPHAM & SCHROEDER MANUFACTURING COMPANY, OF NEW JERSEY.

COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 665,448, dated January 8, 1901.

Application filed March 3, 1900. Serial No. 7,159. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. LAPHAM, a citizen of the United States, residing at No. 229 Fifty-second street, in the city of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Compressors, of which the following is a specification.

My invention relates to an improvement in compressors for refrigerating or ice machines wherein a gas liquefiable under mechanical compression—such as ammonia, ether, &c.—is utilized to absorb by expansion the heat from contiguous bodies to refrigerate or congeal the latter.

In refrigerating-machines the expulsion of the refrigerant from the cylinder of the compressor has heretofore been accomplished by having oil in the cylinder sufficient to form a cushion, filling the clearance at the end of the stroke. It has been found that oil absorbs the refrigerant and works into the expansion-coils and into the condenser, greatly lessening the efficiency of the machine. The use of oil in my compressor and the necessity for clearance are obviated by using a piston so constructed that it may strike against a cushion at the end of the cylinder, and thus completely expel the refrigerant. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure I is a sectional view of the compound adjustable cushioning piston; Fig. II, a bottom view of the piston; Fig. III, a sectional view of the cylinder-head; Fig. IV, a top view of the cylinder-head; Fig. V, a sectional view of the cylinder-head, showing the cushion.

Similar letters refer to similar parts throughout the several views.

The compressor-piston, Figs. I and II, is provided with a top perfectly true, that it may strike against the cushion in the cylinder-head without injuring it. In order to accomplish this and to avoid the use of socket-bolts and follower, as in the piston commonly in use, I have constructed a compound piston of three sections. The upper section or cap P terminates in a screw-thread P', which screws into the middle section or body of the piston, securing the bull-ring N and the pack-

ing-rings O and O'. The set-screws Q prevent these two sections from turning after adjustment. The lower section of the piston, which acts as a guiding portion, is attached by the bolt K and nut L to the middle section or body of the piston. The spiral spring J holds the middle section firmly against the nut L, by means of which the length of the piston may be adjusted, the projection M of the lower section sliding into the middle section.

I is a cross-head pin let into the lower section of the piston.

The cylinder-head, Figs. III, IV, and V, contains an elastic cushion Z, that relieves the shock of the piston-head as it strikes against it. The ordinary suction and discharge valves Z' and Z², through which the refrigerant is admitted to and expelled from the cylinder, are let into the cylinder-head.

In operation when the piston-head strikes against the elastic cushion Z in the cylinder-head the spiral spring J is slightly compressed, lessening the force of the impact, and the projection M of the lower section of the piston slides slightly into its body.

As the length of the piston may be easily regulated by means of the bolt K and nut L, as hereinbefore described, it can be so adjusted as to strike very lightly against the cushion Z, accomplishing the complete expulsion of the gas from the cylinder, while the force of the impact is reduced to a minimum.

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

1. In a compressor, a compound, adjustable, cushioning piston, having an upper section or cap screwing into a middle section or body, securing a bull-ring and packing-rings, a lower section or guide secured by a bolt and nut to said middle section or body, and a spiral spring interposed between said lower and middle sections, substantially as described.

2. In a compressor, a compound, adjustable, cushioning piston having a cap with a flush top P and a screw-thread P', screwing into a middle section or body, securing a bull-ring N and the packing-rings O and O', a lower section or guide bearing a projection M and cross-head pin I, a spiral spring J, in-

terposed between said lower and middle sections, a regulating-bolt K, and a nut L, substantially as described.

3. In a compressor, the combination of a compound, adjustable, cushioning piston having a cap with a flush top P and a screw-thread P', screwing into a middle section or body, securing a bull-ring N and the packing-rings O and O', a lower section or guide

bearing a projection M and a cross-head pin I, a spiral spring J, interposed between said lower and middle sections, a regulating-bolt K, a nut L, and a cylinder-head containing a cushion Z, substantially as described.

JOHN G. LAPHAM.

Witnesses:

WILLIAM H. BLYMYER,

WARREN HIGLEY.