H. D. STRATTON.

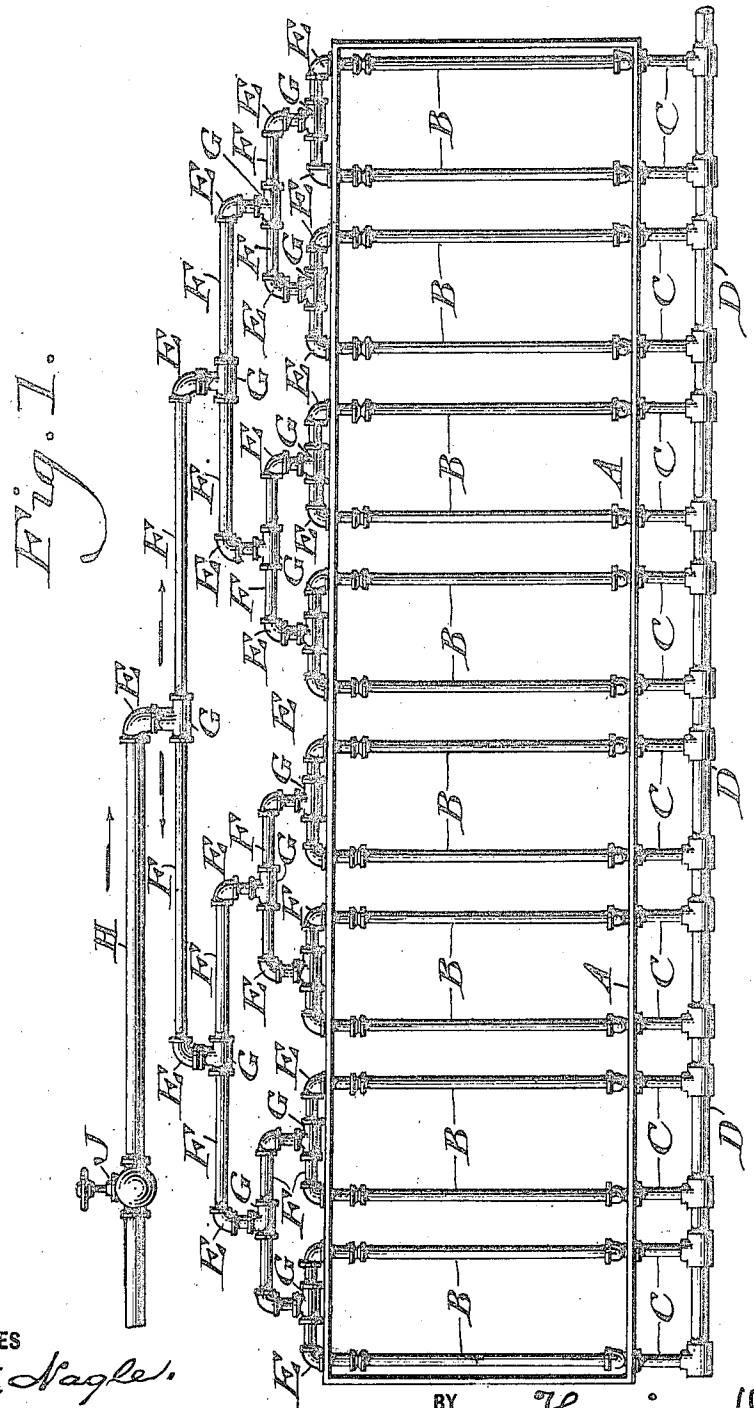
GAS EXPANSION HEADER FOR REFRIGERATING MACHINERY.

APPLICATION FILED MAR. 10, 1910.

1,031,885. Patented July 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

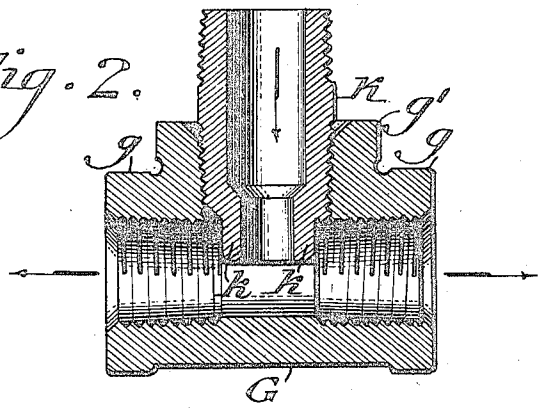


Fig. 3.

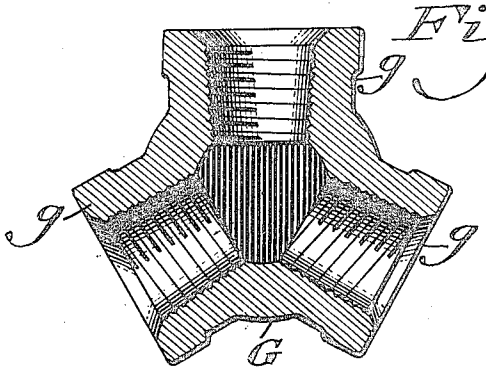
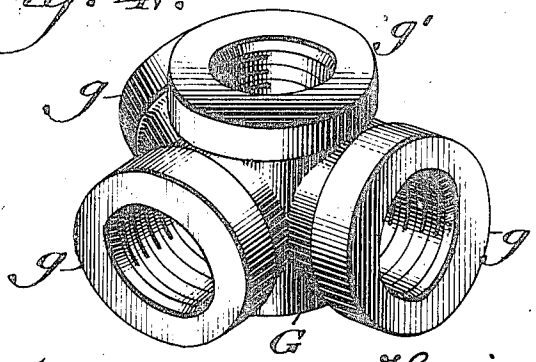


Fig. 4.



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GAS-EXPANSION HEADER FOR REFRIGERATING MACHINERY.

1,031,885. Specification of Letters Patent. Patented July 9, 1912.

Application filed March 10, 1910. Serial No. 548,484.

To all whom it may concern:

Be it known that I, HARRISON D. STRATTON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Gas-Expansion Header for Refrigerating Machinery, of which the following is a specification.

My invention relates to an improvement in a header or distributer for a refrigerating medium of a refrigerating machine.

The invention consists of the employment in such a header of a coupling which admits of the even distribution of the refrigerant to a plurality of ducts.

It also consists of the employment in such a coupling of improved means for insuring such even distribution.

For the purpose of explaining the invention, the accompanying drawings illustrate a satisfactory reduction of the same to practice, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific arrangement and organization shown and described.

Figure 1 represents a top plan view of a vat or tank of a refrigerating apparatus provided with my improved expansion header, the drawing being essentially diagrammatic and omitting details of the instrumentalities for containing the object of refrigeration, such as brine, if indirect refrigeration is desired to be obtained, or water or other fluid or solid object, if direct refrigeration from the expansion coils is desired. Fig. 2 represents an axial section of one of the T-couplings employed, also illustrating a detail improvement which I may employ. Fig. 3 represents a transverse section of a coupling with three branches. Fig. 4 represents a perspective view of such coupling.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings:—A indicates a tank which may be of any desired or suitable material and construction according to the character of refrigeration to be obtained, direct or indirect, and according to the arrangement and construction of the refrigerating coils. The refrigerating elements, such as refrigerating or, in the case of anhydrous ammonia or similar fluid, expansion coils B are suitably arranged within the tank or wherever required, and have their outlet ends C connected to an outlet header or manifold D which carries the spent fluid to a receptacle for its discharge. The inlet ends of the coils are connected to elbows E which are connected by pipes F to the branches of couplings G,—in Figs. 1 and 2, T-couplings,—the central necks of which are again connected by elbows E and pipes F to branches of other couplings G, and so forth, according to the number of coils, until the last coupling has its neck connected to a supply pipe H, preferably provided with a suitable cock or valve J, and through which the refrigerant is admitted under control of the valve.

In Figs. 1 and 2, the couplings are illustrated as T-couplings, having two branches g and a neck g', while in Figs. 3 and 4 the couplings are illustrated as having three branches. It is obvious that the couplings may have any convenient or suitable number of radiating branches, according to the number of coils in each group connected to one coupling. It is also obvious that as many sets of subdividing branches as are necessary to make the required subdivisions from each branch may be employed.

In Fig. 2, I have illustrated a nipple K, threaded into the neck of the coupling and having a reduced inner end k, which projects beyond the bore of the neck and into the chamber from which the branches radiate so as to partly intersect said chamber for a purpose to be hereinafter described.

In refrigerating apparatus employing the usual header or manifold, consisting of one longitudinal pipe and branch-pipes laterally connected to such pipes, similar to the outlet header D in Fig. 1, the refrigerant will not be evenly distributed to the several coils, inasmuch as the fluid will take whatever course offers the least resistance, so that one or more coils will receive an excessive quantity of the refrigerant, while other coils will receive a deficient supply or no supply at all. I avoid this in my improved apparatus wherein I divide the supply in a plurality (two or more) of radiating currents, each of which is similarly divided until each current enters its coil. This is accomplished by leading the fluid through the axial neck into the coupling, where it will strike the opposite wall of the chamber in the coupling, and following the natural law in such cases, will radially expand and flow equally through the plurality of chan-

nels provided for it by the radial necks, and each such current will again be subdivided in equal streams by the subsequent couplings. Each coil will thus receive an equal flow of the refrigerant.

The nipple illustrated in Fig. 2 will direct the flow of the refrigerant in a jet against the opposite wall of the chamber in the coupling and will thus insure perfect radial expansion of the flow of refrigerant to all of the branches of the coupling.

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

1. In an apparatus of the character stated, branch pipes extending in opposite directions but continuous of one another in one plane, a supply pipe for the refrigerant entering the junction of said branch pipes at a right angle to their plane, and a nipple forming a continuation of said supply pipe and entering and partly intersecting the chamber formed at the junction of the branch pipes to project the refrigerant in a jet against the opposed wall of such chamber to equally distribute the refrigerant to the branch pipes.

2. In an apparatus of the character stated, branch pipes extending in diametrically opposite directions and in axial alinement, a supply pipe for the refrigerant entering the junction of said branch pipes at right angles to the same, and a nipple forming a continuation of said supply pipe and entering and partly intersecting the chamber formed at the junction of the branch pipes to project the refrigerant in a jet against the opposed wall of such chamber to equally distribute the refrigerant to the two branch pipes.

3. In an apparatus of the character stated, a supply pipe for the refrigerant, a pair of pipes connected to extend diametrically opposite at right angles to said pipe and having elbows at their terminals, a plurality of pairs of branch pipes similarly connected to the elbows of the preceding pipes, individual refrigerating elements each directly connected to the terminal of a branch pipe of the ultimate pairs, and nipples forming continuations of the pipes entering the junctions of the branch pipes and projecting into and partly intersecting the chambers formed at such junctions to project the refrigerant in jets against the opposite walls of such chambers to equally distribute the refrigerant to the two branch pipes.

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Witnesses:
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