J. H. BECKMAN.

ICE MACHINE.

APPLICATION FILED AUG. 7, 1912.

1,154,836.

Patented Sept. 28, 1915.

2 SHEETS—SHEET 1.

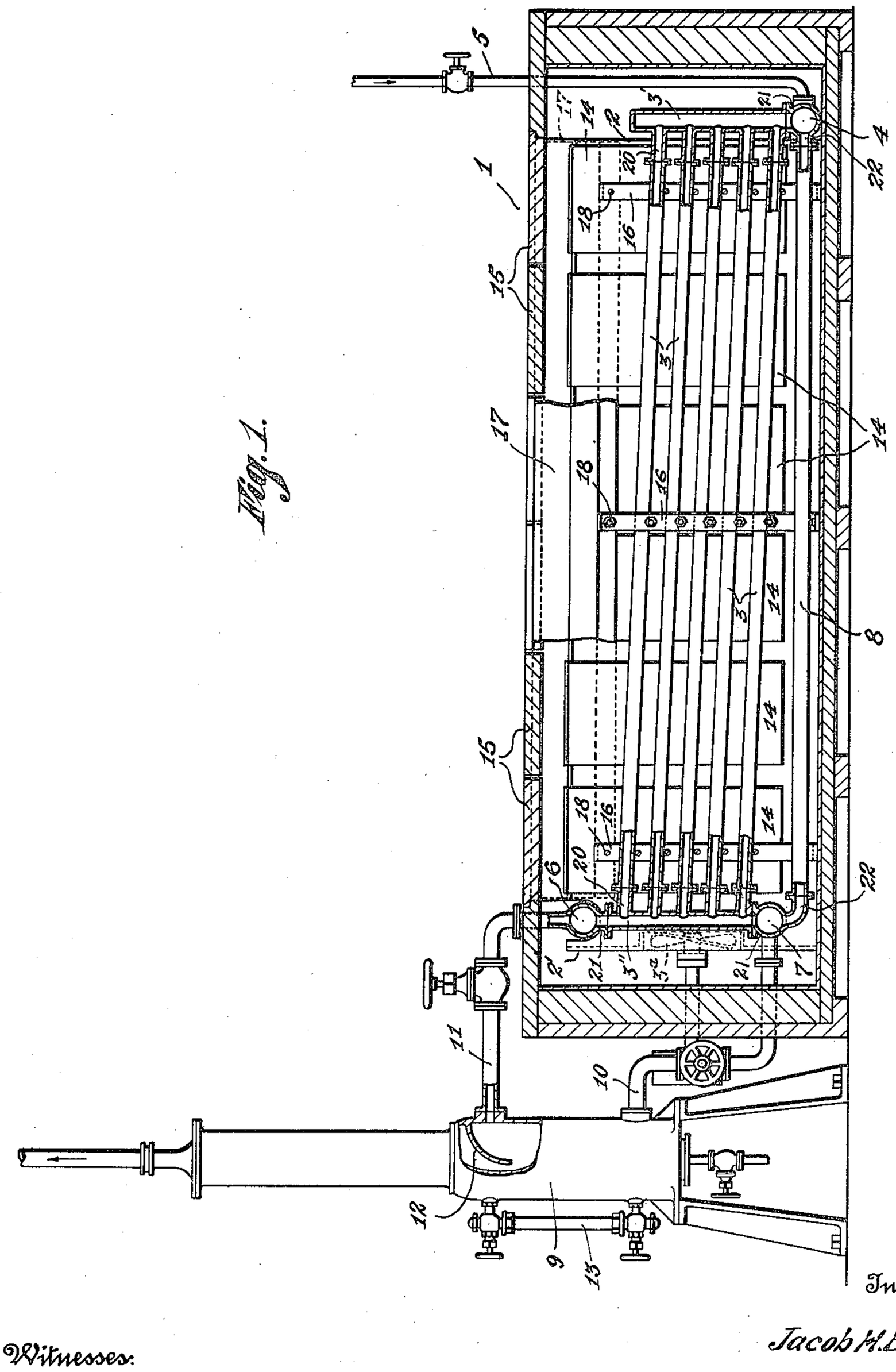

Fig. 1.

Witnesses:

James E. Sproll.

Arlita Adams

Inventor

Jacob H. Beckman.

By Adams & Brooks.

Attorneys.

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2 SHEETS—SHEET 2.

Fig. 2.

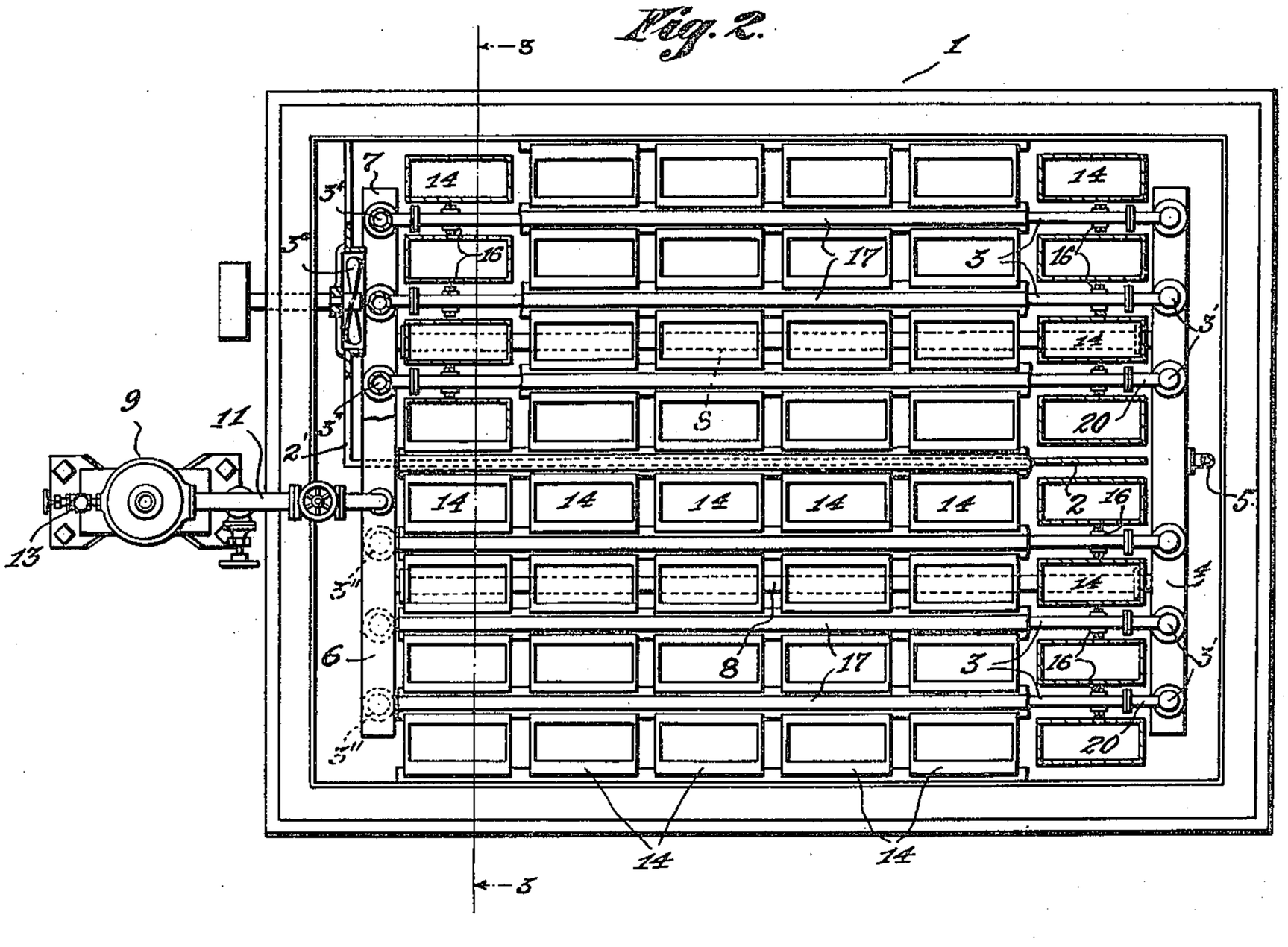
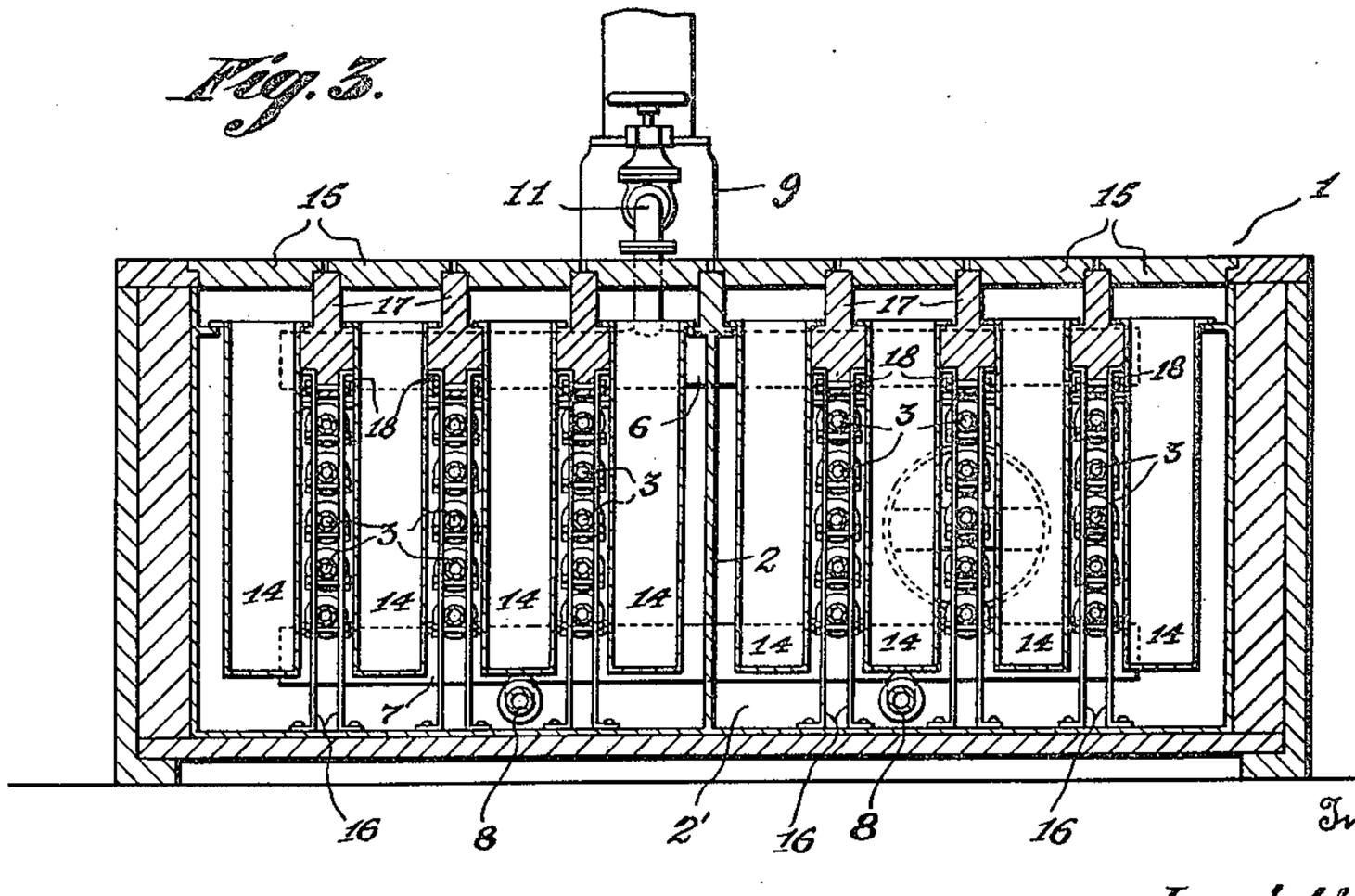


Fig. 3.



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Attorneys.

UNITED STATES PATENT OFFICE.

JACOB H. BECKMAN, OF SEATTLE, WASHINGTON.

ICE-MACHINE.

1,154,836. Specification of Letters Patent. Patented Sept. 28, 1915.

Application filed August 7, 1912. Serial No. 713,791.

To all whom it may concern:

Be it known that I, JACOB H. BECKMAN, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Ice-Machines, of which the following is a specification.

My invention relates to ice machines, having more particular reference to that type wherein a liquefiable gas in a liquid state is employed for lowering the temperature of the brine or other uncongealable fluid, and it has for its primary object to provide a simplified and improved construction permitting of the escape of the gas from the volatile fluid.

Further, the invention resides in a structure composed of units which can be readily assembled in suitable number to obtain the desired cooling surface.

The invention has for a further object to generally simplify the construction, to produce a more compact arrangement of parts, and to generally increase the efficiency of the so-called brine coolers.

With the above and other objects in view, to be referred to as my description progresses, the invention resides in the features of construction, arrangements and combinations of parts, hereinafter described and succinctly defined in my annexed claims.

Referring to the accompanying drawings, wherein like numerals of reference indicate like parts throughout: Figure 1 is a longitudinal section of an ice machine constructed in accordance with my invention, portions of some of the parts being broken away and the cover or top wall of the brine tank being removed. Fig. 2 is a top plan thereof, with parts broken, and with parts broken away. Fig. 3 is a section taken on line 3—3 of Fig. 2.

Referring to the drawings by numerals of reference, 1 indicates a brine tank which is divided by a partition 2, said partition having an angular end portion 2′ paralleling one end wall of tank 1, and formed with an opening through which the brine is circulated by a propeller 3^a, as is well understood. The main portion of partition 2 extends longitudinally of the tank and is spaced from the end walls of the latter, as clearly shown in Fig. 2.

The ammonia chamber comprises a plurality of units each of which is composed of vertical heads 3′, 3″, which are joined by a vertical series of pipes 3 which are inclined upwardly toward the header 3″. Headers 3′ are connected to a common horizontal header or manifold 4, this being connected with an ammonia feed pipe 5 and thereby forming what I term "the inlet or supply manifold or header."

Reference numeral 6 indicates a horizontally disposed separating chamber, extending across partition 2 and communicating with the upper end portions of headers 3″. These headers 3″ are connected at their lower end portions to a horizontal header 7 which, in turn is connected by return or equalizing pipes 8 with inlet header 4.

Reference numeral 9 indicates an accumulator having outlet and inlet pipes 10 and 11, the latter of which communicates with chamber 6 and the former with header 7.

Reference numeral 12 indicates a deflector, consisting of a curved plate extending across the path of discharge of pipe 11 so that, should any liquid pass with the gas into accumulator 9, the same would be deflected downwardly for passage through pipe 10 back into the brine cooler.

Reference numeral 13 indicates a glass gage on accumulator 9 for indicating the height of the liquid ammonia in the latter and in the brine cooler. In this connection, it will be understood that the level of the ammonia should be such that the upper portion, at least, of chamber 6 will be free of or not filled with the ammonia, to thereby permit of the ready release of the gas from such of the ammonia as may have been forced in advance thereof in its passage to the chamber.

Reference numeral 14 indicates the ice cans or molds, and 15 the removable top wall sections or covers for the brine tank 1, these covers being provided directly over the said ice cans or molds, as is well understood.

Reference numeral 16 indicates stands for pipes 3, which stands have longitudinally disposed bars 17 secured to their upper end portions, as by bolts 18, which bars constitute supports for the ice cans or molds 14 and for the covers 15, as shown. Pipes 3 are preferably flanged and bolted to flanged nipples 20 of the adjacent headers 3′, 3″, and the latter are likewise secured, as shown, to flanged extensions 21 of headers 4 and 7 and chamber 6. Pipes 8 are bolted to

flanged extensions 22 of headers 4 and 7. This construction can therefore be readily set up or dissembled, thereby permitting of the substitution of new units or parts thereof, and further facilitating transportation of the machine.

By my invention liquefied ammonia cannot rise or be drawn into the compressor. Further all of the units can be maintained practically full of the ammonia in liquid state, and further little, if any, of the ammonia in liquid condition, will be carried from the cooler with the gas to the condenser.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is:

1. In an ice machine, a brine cooler comprising spaced horizontally disposed headers, vertically disposed headers supported on and communicating with said first named headers, inclined pipes extending between and communicating with said vertical headers, an outlet chamber communicating with all of said vertical headers at one end of the brine cooler, and a return passage for the fluid between said horizontal headers.

2. In an ice machine, a brine cooler comprising a plurality of units arranged side by side, each unit comprising a pair of vertically disposed headers and a vertical series of inclined pipes connected to and communicating with said headers, a separating chamber arranged above said units and communicating with the headers at one end thereof, said separating chamber being adapted to be partially filled with a liquefied refrigerant, whereby the upper portion will be free to permit of the ready release of the gas from the liquid state, and a horizontally disposed header communicating with the lower end portions of the other headers of said units.

3. In an ice machine, a brine cooler comprising a plurality of units arranged side by side, each unit comprising end vertically disposed headers and a vertical series of pipes communicating with said headers and extending upwardly from one to the other thereof, a horizontal bar disposed above the series of pipes of each unit and coöperating with the adjacent bar to form a support for ice molds, and stands for the pipes mounted on a base support and secured to the respective horizontal bar.

Signed at Seattle, Washington this 29 day of July 1912.

JACOB H. BECKMAN.

Witnesses:

ARLITA ADAMS,

JAMES E. SPROLL.