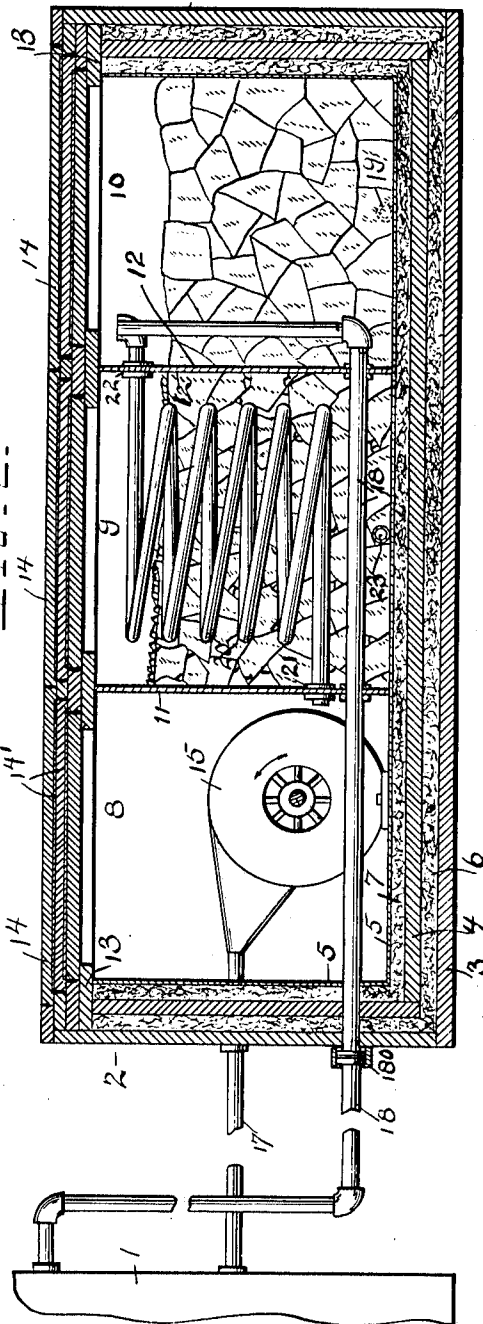
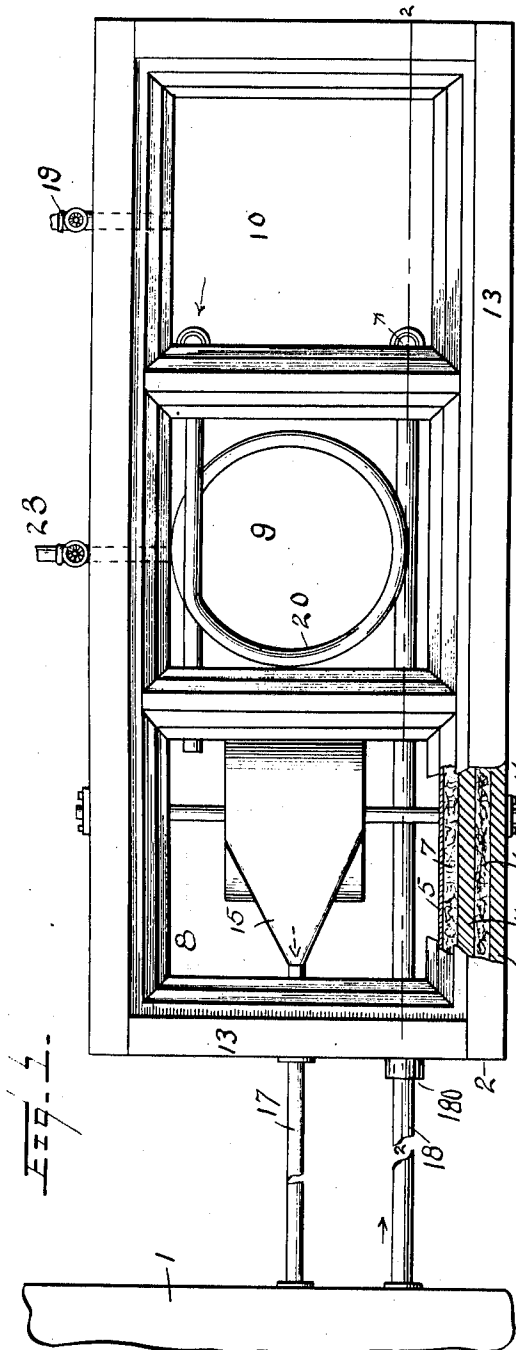


M. A. SIMMONS.
COOLER.
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978,339.

Patented Dec. 13, 1910.



WITNESSES:

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UNITED STATES PATENT OFFICE.

MARCUS A. SIMMONS, OF YEAGER, OKLAHOMA.

COOLER.

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To all whom it may concern:

Be it known that I, MARCUS A. SIMMONS, a resident of Yeager, in the county of Hughes and State of Oklahoma, have invented certain new and useful Improvements in Coolers; 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 pertains to make and use the same.

This invention relates to coolers for producing and maintaining low temperature in any desired inclosure, such as a food box, storage room, or the like.

The main object of the invention is to provide such a cooler of high efficiency, and simple and economical both in construction and operation.

The invention consists in the construction hereinafter described, and particularly pointed out in the claim.

In the accompanying drawing which illustrates the invention and forms part of the specification:—Figure 1 is a plan view of the cooler with covers omitted, and parts broken away; Fig. 2 is a longitudinal vertical section on line 2—2 of Fig. 1.

In the drawing numeral 1 denotes any suitable tight inclosure, box or room the temperature of which it is desired to reduce for the purpose of preserving perishable articles therein, or for any purpose.

Numerals 2, 3, 4 and 5 denote the cooler which comprises a body composed of walls of several thicknesses, as shown at 3, 4 and 5, (although there may be more than three thicknesses). In the special form illustrated walls 3 and 4 constitute the sides, ends and bottoms of wooden boxes, one within the other and separated to form an air space 6 which may contain either air only, or a suitable loose material such as mineral wool adapted to hold a large quantity of air. Or space 6 may be filled with other suitable insulator or poor conductor of heat. It is not essential that these walls be of wood, and it is proposed in some cases to make the outer thickness 3 of cement and of considerable thickness. The inner thickness 5 of the walls is formed by a comparatively thin sheet metal box, the interior of which is divided into three air and water tight compartments 8, 9 and 10 by two sheet metal partitions 11 and 12. Between the inner wall 5 and the next outside of it is an air space 7 of the same character as space 6.

The tops of these air spaces between the boxes are tightly closed by strips 13.

As shown, box 5 is provided with three hinged covers 14, one for each compartment, and each adapted to close its compartment air tight and also to be opened and closed separately. Said covers are preferably made of several layers of wood separated by layers of heavy paper 14'. The edges of the covers are of stepped form and closely fit corresponding stepped bearings in the top of the cooler, the joints being packed. The covers may be secured closed by friction only or by any usual fastener device.

Secured in compartment 8 is a rotary air pump or blower 15, the shaft of which extends to the outside where it has a driving pulley or device 16 operable by hand or by any suitable power. From the blower a pipe or passage 17 communicates with the inclosure 1 to be cooled, and from said inclosure a pipe 18 extends through the lower part of compartments 8 and 9 into compartment 10, where it is carried up toward but not quite to the top, but far enough to prevent water and ice from getting into it. In use compartment 10 is filled with blocks of ice in considerable quantities, and at the bottom thereof is a water draw-off pipe 19 normally closed.

In the central compartment 9 is supported a coiled iron or other suitable pipe 20 having more or less turns according to the size and character of the cooler. One end of the coil communicates with compartment 8, preferably passing through partition 11 near its bottom and packed air and water tight at 21. The opposite end of the coil communicates with compartment 10, preferably passing through partition 12 near its top and arranged so as not to be stopped by ice or water, and packed at 22. In use compartment 9 contains ice and salt or other suitable freezing mixture.

23 is a water draw-off pipe.

Operation: Compartment 10 having been charged with ice, and 9 with ice and salt in suitable proportions, as common in cooling mixtures, blower 15 is driven causing air to circulate as indicated by arrows in Fig. 1, that is from the blower to the inclosure to be cooled, and by pipe 18 through compartments 8, 9 to compartment 10 where it is discharged from the pipe and passes through or over and in direct contact with the ice, being made as dry cold and pure as ice can

make it before passing into and through coil 20 submerged in the freezing mixture. From the coil the extremely cold air is discharged into compartment 8 from which it is sent on to inclosure 1, and thus the circulation is kept up, continuously or as much of the time as required to maintain the desired low temperature. When first beginning the air taken from inclosure 1 will be warm, especially if warm meats or vegetables, for example, have been recently placed therein, and in such case it is desirable to discharge air from pipe 18 into the open air for a short time, not sending it through the cooler, and this can be done by leaving the pipe disconnected from the cooler at 180 and later closing such connection. But ordinarily this is not necessary since the air if sent directly to the cooler is deprived of the greater part of its warmth in passing through the cooler before it reaches the ice chamber. Owing to this preliminary cooling of the air the ice will melt but slowly in the ice chamber, and the air passing through coil 20 being as cold as ice alone will make it will not rapidly exhaust the freezing mixture, and ice and salt need only be added at long intervals.

In practice the metal partition 11 of chamber 8 is heavily coated with frost, and this forms a convenient indication that the device is working properly. When this coat of frost begins to disappear it shows that salt or ice or both are needed.

Evidently if desired space in the first

chamber not occupied by the blower may be used as a refrigerator for any articles at the same time that inclosure 1 is being cooled, or independently thereof. Also that water bottles or the like can be frozen in chamber 9, though these uses are merely incidental.

It is sometimes found desirable to close the pipe 18 where it issues from the cooler, the outside pipe being disconnected, and any suitable stopper or device is provided for the purpose.

Having thus described the invention what I claim is:—

A cooler comprising three compartments, a blower in one of said compartments, an outlet from the blower to the exterior of the cooler, an ice compartment in the cooler, a freezing-mixture-compartment in the cooler, an air-intake-pipe extending through the blower-compartment and the freezing-mixture-compartment and communicating with the ice-compartment only of the cooler, a pipe in the freezing-mixture-compartment in open communication with the blower-compartment and the ice-compartment, and distinct from said outlet and air-intake-pipe, as set forth.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

MARCUS A. SIMMONS.

Witnesses:

C. M. CATLIN,
ROBT. T. LANG.