Feb. 10, 1931. G. A. HILLERY 1,791,814

COOLING APPARATUS

Filed May 15, 1928 3 Sheets-Sheet 1

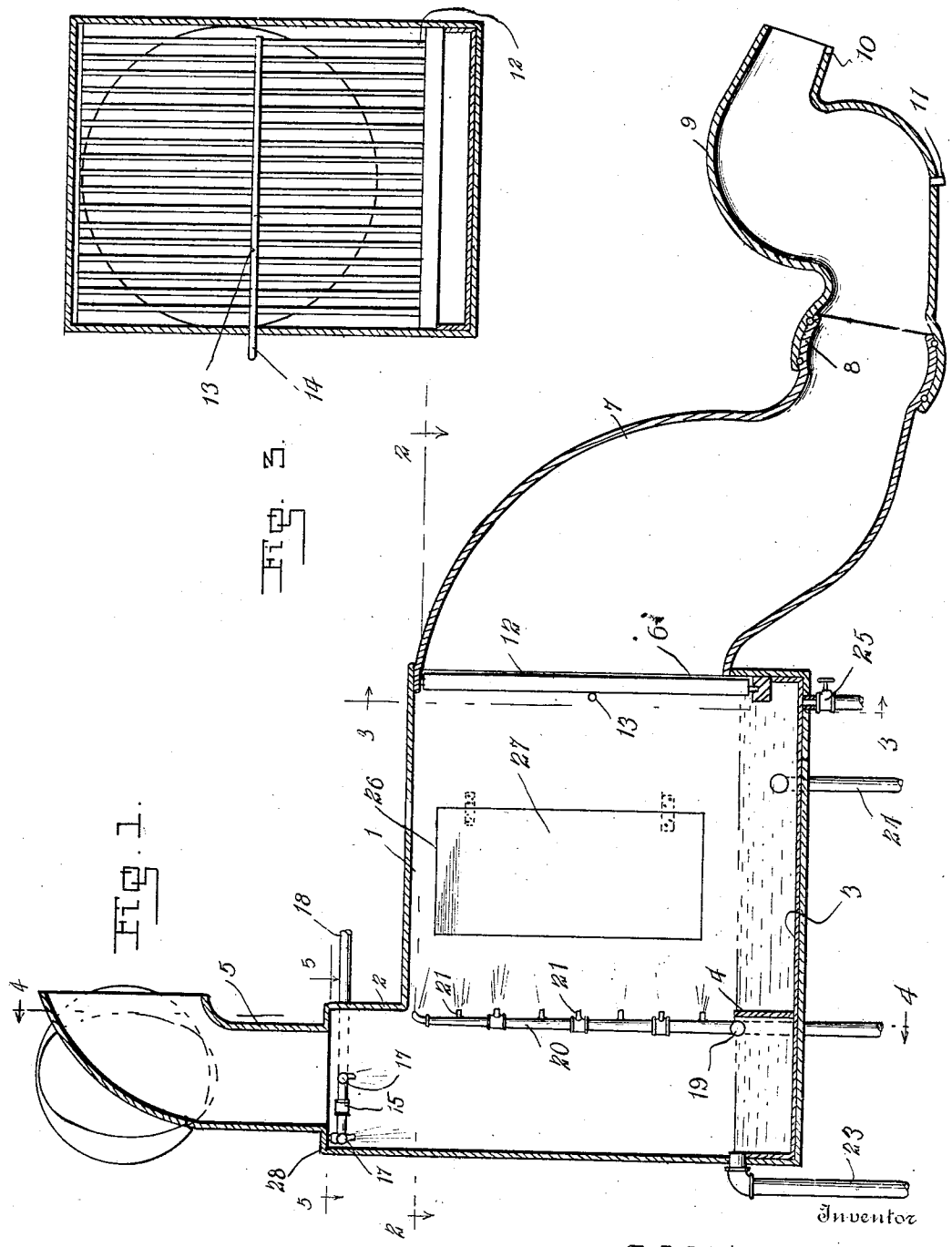


Fig. 2.

Fig. 1.

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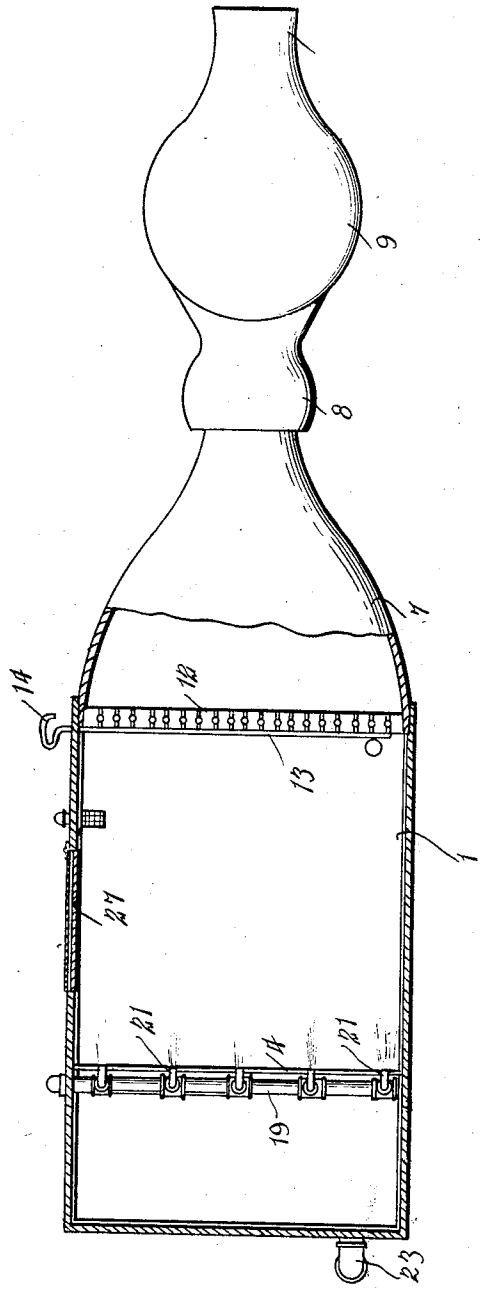
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Fig. 2.



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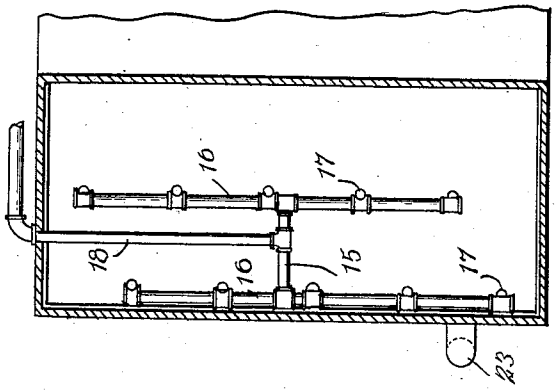


Fig. 5

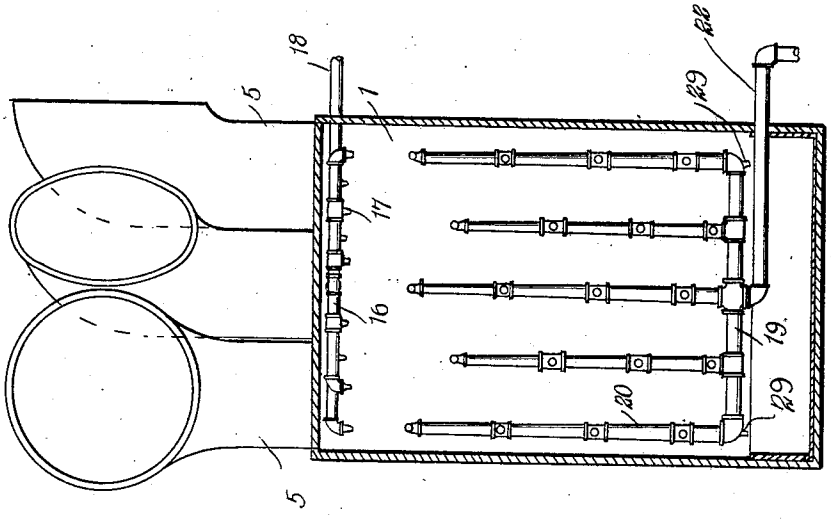


Fig. 4

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Patented Feb. 10, 1931 1,791,814

UNITED STATES PATENT OFFICE

GEORGE A. HILLERY, OF NEW ORLEANS, LOUISIANA

COOLING APPARATUS

Application filed May 15, 1928. Serial No. 277,922.

The present invention is directed to improvements in cooling apparatus.

The primary object of the invention is to provide a device of this character especially adapted for maintaining meat or other perishable commodities in a cool state by efficient circulation of chilled air.

Another object of the invention is to provide an apparatus of this kind so constructed that it can be placed in a cooling room and will occupy a minimum amount of space, or it may be located so that chilled air produced thereby will be directed into the cooling room or other enclosure.

Another object of the invention is to provide an apparatus of this character which is portable and capable of being readily installed, the construction being such that the circulation of air will be positive without the aid of fans.

Another object of the invention is to provide an apparatus of this kind, the construction of which is such that pipe coils are eliminated and consequently the objectionable frosting and rusting thereof is dispensed with.

With these and other objects in view, this invention resides in the novel features of construction, formation, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawings, in which,—

Figure 1 is a longitudinal sectional view through the apparatus.

Figure 2 is a top plan view, partly in section.

Figure 3 is a sectional view on line 3—3 of Figure 1.

Figure 4 is a sectional view on line 4—4 of Figure 1.

Figure 5 is a sectional view on line 5—5 of Figure 1.

Referring to the drawing, 1 designates the spray chamber, it being provided at its rear end with a dome 2, said chamber being rectangular in contour. Mounted in the bottom of the chamber is the brine pan 3 which has disposed transversely thereof a baffle plate 4.

The dome 2 has supported thereby a plurality of funnels 5 which open into the dome, and are so arranged that air passing through the funnels will be directed into the chamber 1. The forward end of the chamber 1 has an opening 6 in which is fitted the enlarged end of the outlet neck 7, said neck having a reduced end 8 to which is swivelly connected the head 9, said head having a nozzle 10. The head 9 is of globular formation in order that the outflowing air will be subjected to a whirling action so that the mist will be separated therefrom, the residue being drained from the nipple 11.

Mounted adjacent the open end 6 is a plurality of pivotally mounted shutters 12, which can be manipulated by a rod 13 which has a handle 14 located exteriorly of the chamber.

Located in the dome 2 is a manifold 15 which is in communication with the pipe assemblies 16, said assemblies being disposed in horizontal position within the dome and provided with spray nozzles 17, there being a pipe 18 leading to the manifold 15, said pipe being connected with a pump in order that brine can be conducted to the manifold and thence into the pipe assemblies to be sprayed from the nozzles 17 into the dome and chamber 1, it being preferable that the nozzles be inclined so that the spray therefrom will be directed toward the chamber 1 as well as downwardly.

A second manifold 19 is disposed transversely within the chamber 1 and adjacent the baffle 4, said manifold having associated therewith a plurality of vertically disposed pipe assemblies 20, preferably five in number, said pipe assemblies being provided each with a plurality of spray nozzles 21 which are directed towards the open end of the chamber 1.

Leading to the manifold 19 is a pipe 22 which is connected with a suitable pump for forcing the brine into the manifold and thence through the nozzle into the chamber 1. It will be of course obvious that the heavier particles of brine will gravitate into the pan 3 from which the surplus can drain through the pipe 23 back to the storage tank.

A pipe 24 enters the chamber 1 and extends into the brine tank 4, and it is through this pipe that the brine is drawn into the pump

which supplies the liquid to the manifold 15.

A drain valve 25 is connected with the tank in order that sediment can be drawn therefrom when necessary.

One side of the chamber 1 is provided with a door opening 26 which is normally closed by a glass paneled door 27, said door being for the purpose of permitting inspection of the chamber and owing to the glass panels thereof the condition of the spray can be readily observed, there being an incandescent bulb 28 located in the dome in order that the interior of the chamber will be illuminated when necessary.

It will be obvious that the incoming air will come in contact with the brine sprays, and since the brine is sprayed under pressure an efficient circulation or suction will be created in the chamber 1 in order that the air will be conducted to the neck 7 and will be discharged therefrom under considerable velocity when it is afterwards subjected to a whirling action in the head 9 before it is discharged into the cooling chamber.

It will be observed that the pipe assemblies 16 contain ten spray nozzles, whereas the pipe assemblies 20 include twenty spray nozzles, thus the pump for use in connection with the latter sprays will be one having a greater pressure rate than the one for pumping the brine to the nozzles 17.

By providing the shutters 12 it will be obvious that the passage of particles of brine in the air passing therethrough will be impeded so that as the air enters the neck 7 it will be in a comparatively dry state for efficient cooling purposes.

Upon reference to Figure 4 it will be observed that the ends of the manifold 19 are provided with discharge nipples 29 which will permit a continuous blowing off of scales, sediment etc. that may be in the brine entering the manifold.

The location of the baffle 4 is such that the warmer brine from the nozzles 17 will not enter the part of the pan containing the relatively colder brine from the nozzles 21.

Owing to the presence of the swivel connection 8 between the neck 7 and head 9 it will be obvious that the head 9 can be adjusted to direct the cold air to any part of the cooling chamber desired.

Having thus described the invention, I claim:

A cooling apparatus including a spraying chamber, a dome on said chamber at one end thereof, the opposite end of the chamber being open, an outlet neck connected with the open end of the spraying chamber, a plurality of funnels rising from and communicating with the dome to permit air to enter the dome and flow to the chamber, shutters adjustably mounted between the spraying chamber and the neck for regulating the flow of air from the chamber into the neck, a brine pan in the bottom of the spraying chamber, a partition in said pan, outlets from said pan, a plurality of pipe assemblies rising from the pan adjacent said partition and receiving brine under pressure, spraying nozzles on said pipe assemblies directed toward the open end of the spraying chamber, pipe assemblies in the top of the dome immediately at the bases of the funnels receiving brine under pressure, and spray nozzles on said pipe assemblies directed downwardly and toward the spraying chamber.

In testimony whereof I affix my signature.

GEORGE A. HILLERY. [L. S.]