Oct. 30, 1945. F. J. McCULLOUGH 2,388,003

LIQUID TEMPERATURIZING VAT

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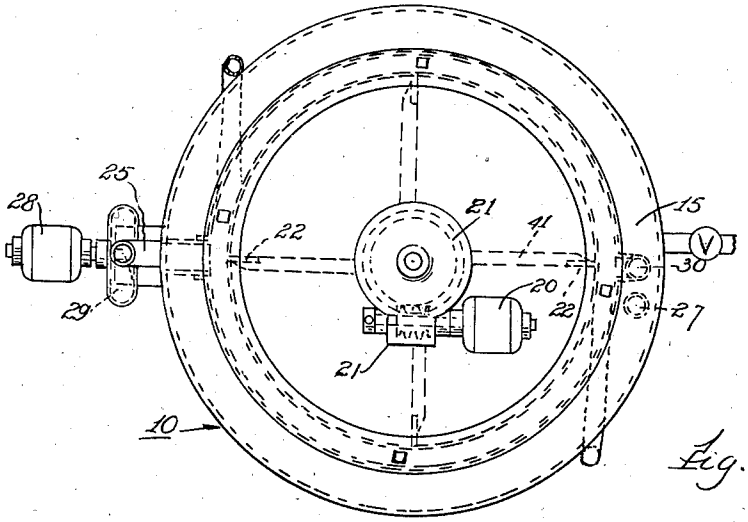


Fig. 1.

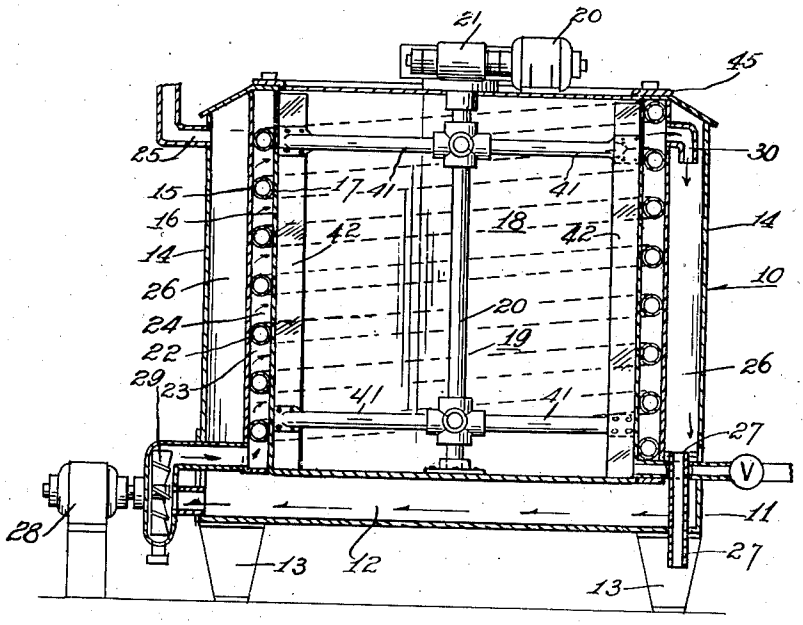


Fig. 2.

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LIQUID TEMPERATURIZING VAT

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2 Claims. (Cl. 257—77)

My invention relates to a vat for cooling or heating and agitating liquid such as milk, cream or the like.

Among the objects of this invention is to provide a vat having a cooling coil spiraling around a tank and adapted to cool the walls of the tank, said coil positioned between two walls and forming a spiral pathway therewith. The pathway communicates with a well below the bottom of the tank. Water is supplied to the well. The water cooled by contact with the coil provides the wall of the tank with a continuous cold surface without warm spots. Another object of my invention is to provide for the return of the cooled water to the well for cooling the bottom of the tank and for recirculation.

My invention also contemplates such other objects, advantages and capabilities which are inherently possessed by my invention and which will later more fully appear.

While I have shown in the accompanying drawing a preferred form of my invention, yet I wish it understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawing, Fig. 1 is a top plan view; Fig. 2, is a sectional view of the preferred form of my liquid temperaturizing vat.

The embodiment selected to illustrate my invention comprises a vat 10, having a closed bottom portion 11, with a hollow interior or well 12.

The bottom portion 11 has suitable legs 13, for supporting the vat on the floor or other support. The sides of the vat are closed by an outer shell 14 and the top by a removable cover 45.

Located inwardly from said outer shell 14 are a pair of laterally spaced and vertically extending walls, 15 and 16. The inner of the two walls 16, forms the lining 17, for the container or tank 18 into which is poured the milk or other liquid to be stored and treated therein.

An agitator 19 has a vertical rod 20 mounted on the top of bottom portion 11 and has a pair of spaced arms 41, to the outer ends of which are attached scraper blades 42 adapted to contact lining 17. Agitator 19, is operated by motor 20 through speed reduction member 21.

A hollow pipe coil 22, located in the space 23 between walls 15 and 16 winds its way spirally upwardly from the bottom of said space to the top thereof. The coil 22 is of such a diameter as to fill the space 23 laterally and contacts the inner portions of walls 15 and 16 leaving a spiral pathway 24.

In use, brine ammonia or other cooling liquid flows through coil 22. Water is poured into pipe 25 and drops through space 26 between outer shell 14 and wall 15 to well 12. Milk, cream or other desired liquid is poured into container 18 through open top 15. Motor 28 supported adjacent base 11 is operated and actuates pump 29 which forces the water upwardly from well 12 into spiral pathway 24, formed by the outside of coil 22 and walls 15 and 16. When the water reaches the top of pathway 24, it is directed by return member 30 into space 26 whence it drops to the well 12 for recirculation. Overflow 27 is provided to drain off excess water.

While the water is circulating, motor 20 is operated and through speed reduction means 21 rotates agitator 19.

The water continuously circulating in pathway 24 is in constant contact with cold coil 22 and because of its velocity provides an uninterrupted cold wall 16. There are no warm spots on wall 16 because it is cooled by direct contact with coil 22 and in all other places it is cooled by the cold water between the turns of the coil. This cold wall provides the blades 22 of agitator 19 with a cold contact for more efficiently and directly cooling the milk or other liquid in container 18. It is also to be noted that the bottom of the container 18, lies in and contacts refrigerated water in well 12 for increased cooling of the container contents.

It is, of course, within the contemplation of my invention that heating may be used instead of cooling for temperaturizing the contents of the container, without departing from the spirit of my invention. The pathway 24 would then be used for the circulation of hot instead of cold water.

Having thus described my invention, I claim:

1. A liquid temperaturizing vat comprising a bottom portion having a well adapted to receive water, an outer shell, an intermediate wall spaced inwardly from said outer shell and leaving an aisle therebetween, said aisle communicating with said well, a container having its bottom portion contacting said well, said container having a wall spaced from said intermediate wall and providing a space therebetween, a hollow pipe coil containing cold producing means positioned within said walls and extending spirally upwardly therein, said coil being of such a diameter as to fill said space laterally and contact said walls, said coil and said walls forming a spiral pathway, means placing said pathway in communication with said well, a return member communicating with the top of said pathway and

returning to said aisle, an agitator rotatable within said container and having members contacting the wall thereof, and a pumping means for forcing the water in the well upwardly along said spiral pathway for providing the wall of the container with a continuous cold coverage, said water dropping from said return member into said aisle and back to said well for recirculation and for imparting cold to the lower portion of said container.

2. A liquid temperaturizing vat comprising a bottom portion having a well therein, a tank for receiving liquid with the bottom portion thereof contacting said well, a hollow pipe coil beginning at said well and extending spirally upwardly around the outer wall of said tank, an intermediate wall contacting said coil and forming with said first wall and said coil a spiral pathway, a spaced jacket positioned around said tank, a return member extending from the top of said pathway to the space between said jacket and said intermediate wall, said coil adapted to contain a temperaturizing means, said well being adapted to receive liquid, means for pumping the liquid in said well upwardly along said pathway for imparting to the wall of said tank temperature change from said coil, said liquid adapted upon reaching the top of said pathway to pass into said return member and drop by gravity in the space between the jacket and the intermediate wall into said well, said liquid retaining some temperature change from contact with said coil for imparting the same to the bottom of the tank.

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