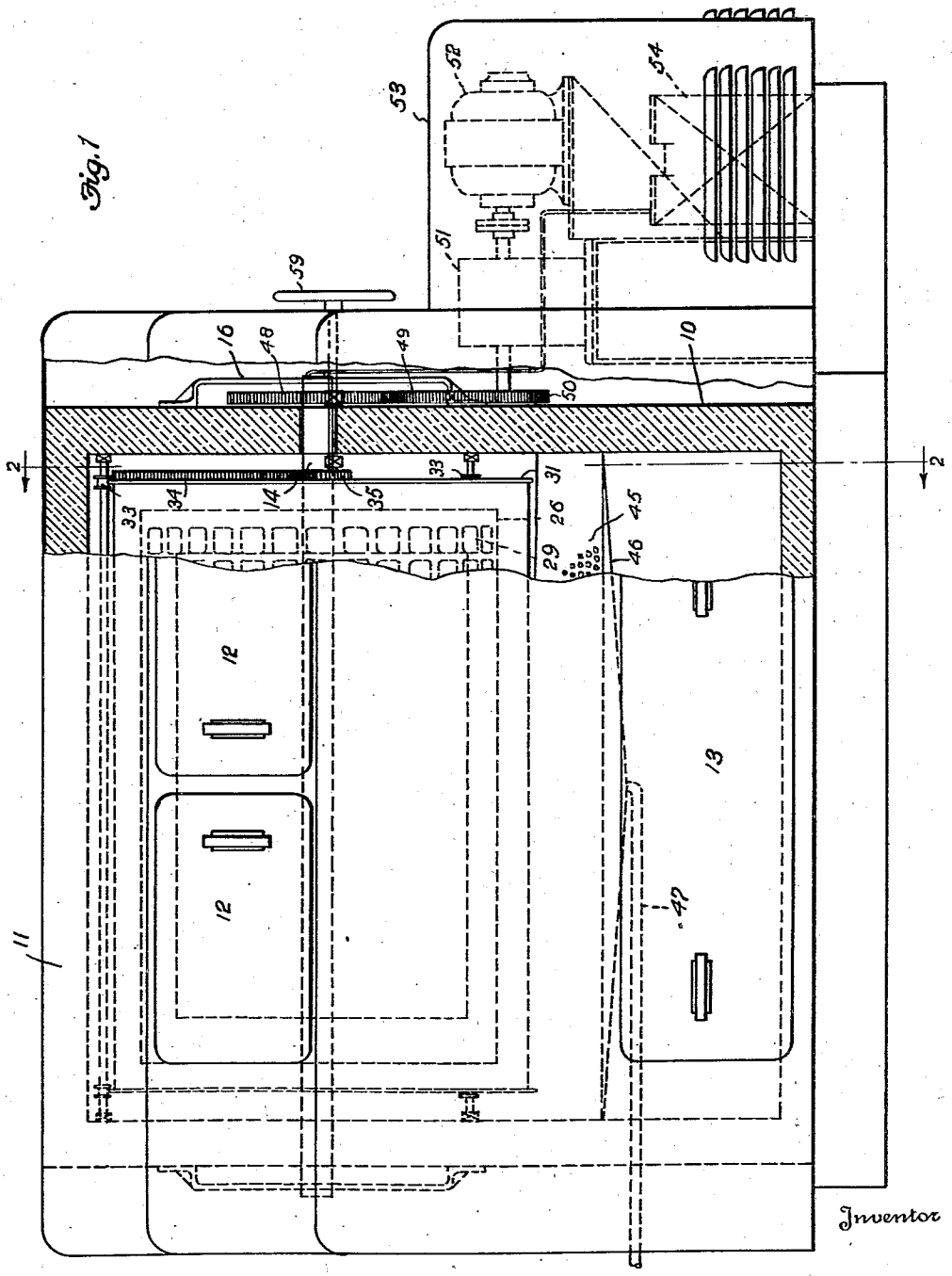
July 2, 1946. A. D. SMITH 2,403,406

ICE CUBE MANUFACTURING APPARATUS

Filed Sept. 12, 1944 4 Sheets-Sheet 1

Fig. 1



Inventor

Arthur D. Smith.

By Frease and Bishop

Attorneys

July 2, 1946. A. D. SMITH 2,403,406

ICE CUBE MANUFACTURING APPARATUS

Filed Sept. 12, 1944 4 Sheets-Sheet 2

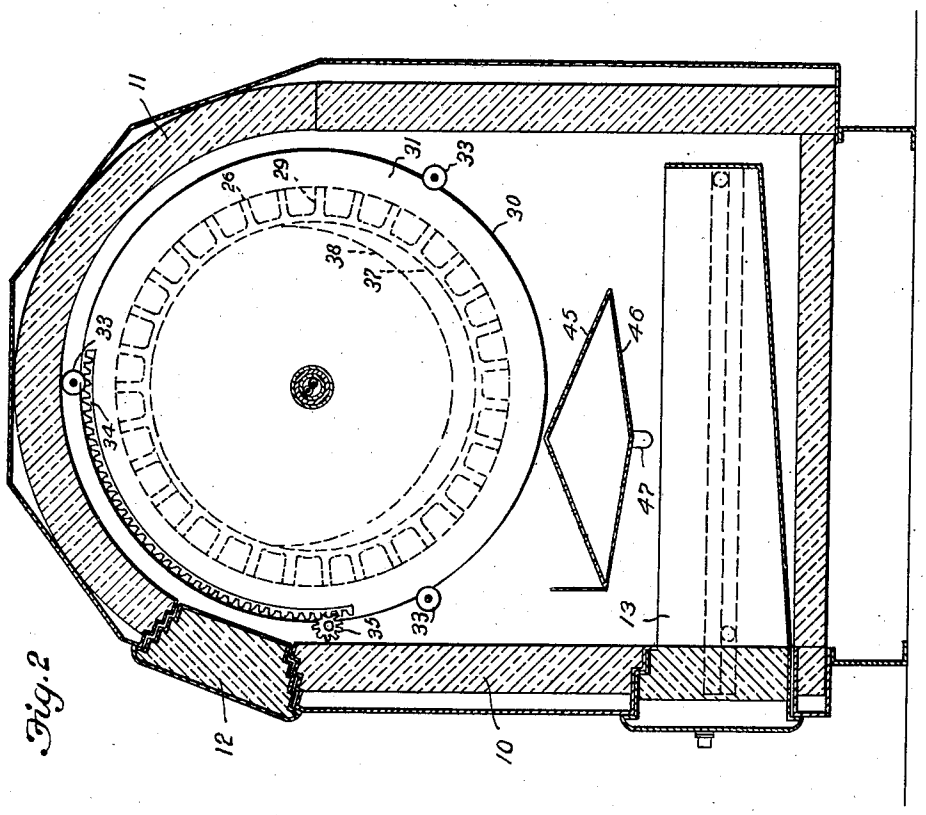


Fig. 2

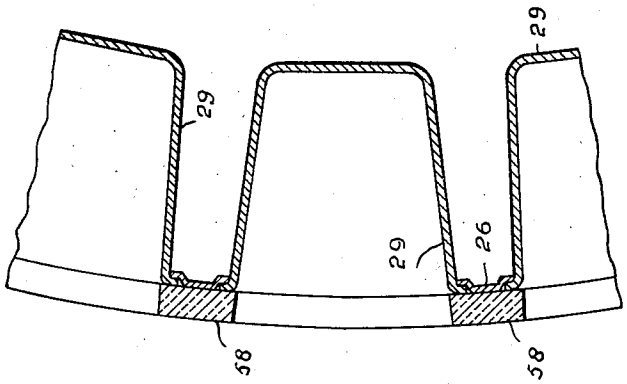


Fig. 5

Inventor

Arthur D. Smith.

By Frease and Bishop

Attorneys

July 2, 1946. A. D. SMITH 2,403,406

ICE CUBE MANUFACTURING APPARATUS

Filed Sept. 12, 1944 4 Sheets-Sheet 3

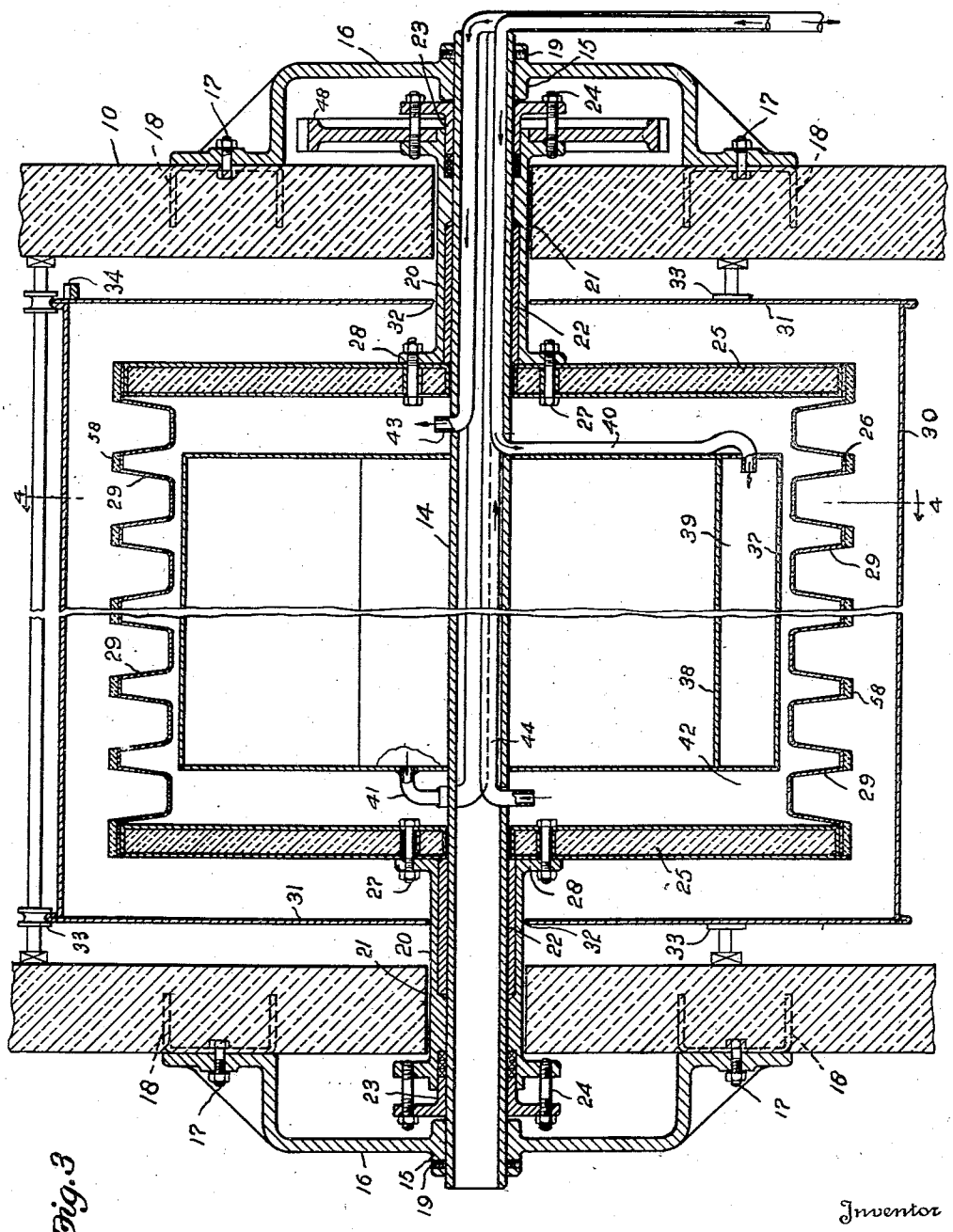


Fig. 3

Inventor

Arthur D. Smith.

By Frease and Bishop

Attorneys

July 2, 1946. A. D. SMITH 2,403,406

ICE CUBE MANUFACTURING APPARATUS

Filed Sept. 12, 1944 4 Sheets-Sheet 4

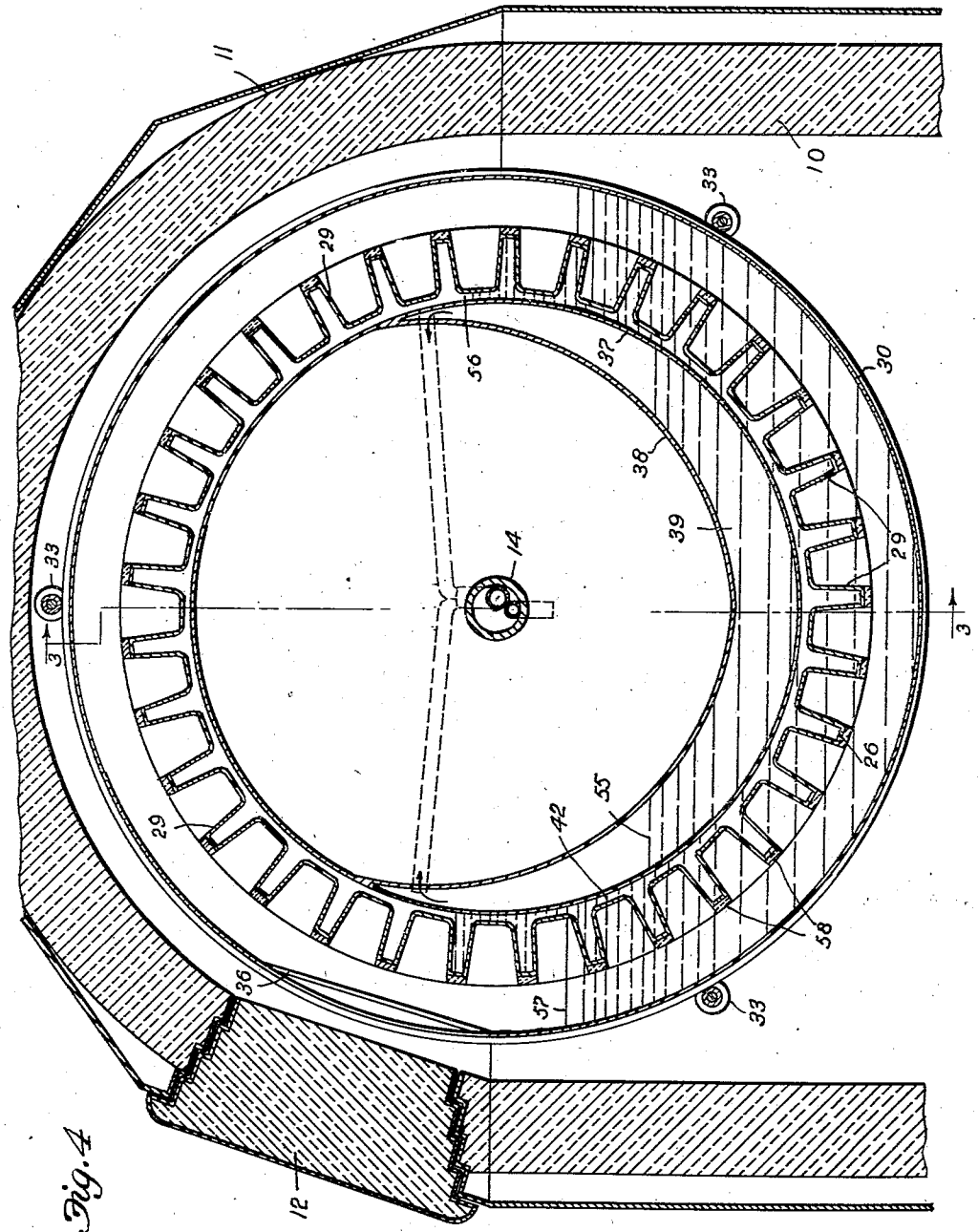


Fig. 4

Inventor

Arthur D. Smith.

By Frease and Bishop

Attorneys

Patented July 2, 1946 2,403,406

UNITED STATES PATENT OFFICE

2,403,406

ICE CUBE MANUFACTURING APPARATUS

Arthur D. Smith, Canton, Ohio, assignor to Barium Steel Corporation, Canton, Ohio, a corporation of Delaware

Application September 12, 1944, Serial No. 553,735

16 Claims. (Cl. 62—106)

1

The invention relates to improvements in refrigerating apparatus and more particularly to a machine for making ice cubes.

Although ice is commercially manufactured in large blocks the trend is toward small pieces of ice or ice cubes particularly for commercial use. Under present practice the ice is frozen in large blocks and then sawed or cut into cubes, adding considerably to the cost of the product by the labor and power required for this operation and also resulting in loss of about 33% of the ice during the sawing operation.

In spite of the premium price which this cube ice commands there is a rapidly growing demand for the same not only by commercial users but for domestic use as well, and it is believed that if cube ice could be produced economically it would eventually replace practically all block ice.

It is known that attempts have been made to produce machines for making cube ice, but there are certain objections and disadvantages in the construction and operation of such machines which make them commercially and economically impractical.

It is therefore an object of the present invention to produce an apparatus for economically freezing ice cubes in large quantities.

Another object is the provision of such an apparatus provided with means for automatically discharging the ice cubes from the machine.

Still another object is the provision of a machine which requires a minimum of refrigerant and brine for freezing ice cubes.

A further object is to produce an ice cube machine of relatively simple, inexpensive and durable construction which will produce a large number of ice cubes and at a minimum cost.

Another object is to provide a machine having means for preventing ice from forming between the individual cube molds.

Still another object is the provision of a machine including a drum having individual cube molds around its periphery, said drum being rotatable within a stationary cylinder containing water for freezing, a stationary cylinder being located within the rotatable drum, the space between said inner cylinder and the interior of the drum receiving brine for freezing the cubes within the cube molds, a substantially half circular chamber being formed within the lower side of the inner cylinder through which refrigerant is passed for cooling the brine.

The above objects together with others which will be apparent from the drawings and following description, or which may be later referred to

2

may be attained by constructing the improved ice cube manufacturing apparatus in the manner illustrated in the accompanying drawings in which;

Figure 1 is a side elevation of the complete machine with parts broken away;

Fig. 2 a transverse sectional view through the machine taken substantially on the line 2—2, Fig. 1, but showing certain driving gears on the outside of the housing;

Fig. 3 an enlarged longitudinal sectional view through the normally stationary cylindric water jacket, the rotatable drum therein and the evaporator within the drum, taken as on the line 3—3, Fig. 4;

Fig. 4 a transverse sectional view taken as on the line 4—4, Fig. 3 and

Fig. 5 an enlarged detail sectional view through some of the ice cube molds on the rotatable drum.

The machine may be housed within a cabinet 10 formed of heat and cold insulation material and preferably having the half round top portion 11 which may be detachable in order to provide access to the interior thereof for removing, repairing or replacing the mechanism therein.

One or more doors 12 may be formed in the top portion 11 of the cabinet in order to provide for observation of the cube freezing apparatus during operation of the machine. A sliding drawer 13, preferably of the roller suspension type as shown, is provided in the lower portion of the cabinet for removing the harvested ice cubes as will be later described.

Located longitudinally through the cabinet 10, preferably at the point of separation of the cabinet and the half round top 11 thereof, is a stationary hollow shaft 14, opposite ends of which are mounted within the cylindric flanges 15 of the supporting brackets 16 which are attached to the end walls of the cabinet as by bolts 17 located through the U-shape supports 18 embedded within the end walls of the cabinet. Set screws 19 may be provided in the cylindric flanges 15 of the supporting brackets, for attaching the hollow shaft 14 therein.

A bearing 20 is rotatably mounted upon each end portion of the hollow shaft 14, said bearing being located through suitable apertures 21 in the end walls of the cabinet. A bronze bushing 22 is located within the inner end portion of each of the bearings 21 and a stuffing box 23 is provided at the outer end portion of each bracket adjusted as by the bolts 24.

A hollow rotatable drum, comprising insulated heads 25 and a sheet metal cylinder 26 fixed at

opposite ends to said heads, is attached to the bearings 20 as by the bolts 27 located through the insulated heads 25 and through the flanges 28 formed at the inner ends of the bearings 20.

A multiplicity of individual ice cube molds 29, which may be square, round or of other cross sectional shape and preferably tapered as shown in the drawings, are formed entirely around the sheet metal cylinder 26 of the drum, each of said molds being of suitable size and shape to produce one ice cube.

A cylindric water jacket 30 surrounds the drum 26, and the end walls 31 of the water jacket are provided with openings 32 of slightly greater diameter than the bearings 20 which are received through said openings, rollers 33 being provided for supporting the water jacket within the cabinet.

A gear segment 34 is fixed upon the water jacket and meshes with a pinion 35 for rotating the water jacket upon its axis in a manner to be hereinafter described. An opening 36 is formed in the water jacket and arranged to register with the doors 12 in the upper portion of the cabinet when the water jacket is in the normal, stationary position it assumes during the freezing operation.

An evaporator is located within the rotating drum and is so constructed that it will require a minimum of refrigerant and brine. This evaporator is in the form of a stationary sheet metal cylinder 37 mounted upon the stationary hollow shaft 14 and being of a diameter slightly less than the inner diameter of the rotating drum 26, so that the periphery of the evaporator cylinder 37 is closely adjacent to the inner ends of the ice cube molds 29.

A substantially half cylindric sheet metal wall 38 is mounted within the lower half of the evaporator cylinder 37 forming a substantially crescent shaped evaporator chamber 39 in the lower portion of the evaporator cylinder.

Freon or other suitable refrigerant is supplied to the evaporator chamber 39 by means of a refrigerant supply pipe 40 leading from a compressor 54 and located through the stationary hollow shaft 14 and then extending downward to the lower portion of the evaporator chamber 39. A suction gas line communicates with the upper portion of the evaporator chamber 39 and is located through the stationary hollow shaft 14 and leads back to the compressor.

The space between the interior of the rotating drum 26 and the evaporator cylinder 37 forms a brine chamber 42 to which brine is supplied from a suitable source of supply by means of a brine supply pipe 43 located through the stationary hollow shaft 14 and then extending into the brine chamber 42 at a point above the stationary hollow shaft between one head 25 of the rotating drum and the adjacent head of the evaporator cylinder 37. A brine return line 44 leads from the other side of the brine chamber 42 at a point below the stationary hollow shaft 14 and is extended through said shaft back to the source of supply.

A perforate, oppositely inclined ice chute 45 is located beneath the water jacket cylinder 30 and above the water drain basin 46 which is located just above the sliding drawer 13, a drain pipe 47 leading from the lower portion of said basin to any suitable point outside the cabinet.

A gear wheel 48 is fixed upon one of the bearings 20 of the rotating drum and meshes with an idler gear 49 which in turn meshes with the pinion 50 upon the speed reducer 51 which is

driven by the motor 52 located within the housing 53 within which the compressor 54 may also be located.

In the operation of the machine to produce ice cubes the parts are positioned as shown in the drawings and Freon or other refrigerant may be admitted to the evaporator chamber 39 to substantially the level 55 and brine is admitted to the brine chamber 42 to the level 56.

Water is placed in the water jacket 30 to about the level 57 and the motor is operated to rotate the drum 26 continuously, the molds at the lower side of the drum being submerged in the water. The cold brine in the brine chamber 42, which is cooled by the Freon or other refrigerant in the evaporator chamber 39, surrounds the exteriors of all of the ice cube molds on the lower side of the drum and as the operation continues ice is built up upon the inner walls of each ice cube mold until each of the molds is filled with a cube of ice.

The heat and cold insulation 58 around the outer edges of each ice cube mold 29 at the open ends thereof prevents ice from forming at these points so that all of the frozen cubes of ice will separate from each other.

When the freezing operation has been completed the compressor may be stopped so that refrigerant in chamber 39 ceases to evaporate and a little warm brine or other warm liquid may be added to the brine chamber, and as the drum is again rotated this warm liquid contacting the exterior surfaces of all of the ice cube molds, will quickly release the cubes of ice therefrom.

The hand wheel 59, upon the shaft of the pinion 35, may then be operated so that the pinion, through the gear segment 34, will rotate the normally stationary water jacket 30 until the opening 36 in the water jacket will be located at the bottom of the water jacket permitting the water to drain therefrom through the perforate ice chute 45 and into the water drain basin 46 from which it is withdrawn by the drain pipe 47, while the cubes which have been loosened by the action of the warm liquid will pass through the opening 36 in the water jacket and onto the perforated chute 45 which will convey them to the sliding drawer 13.

From the above it will be evident that a simple, inexpensive and easily operated machine is provided for producing ice cubes in large quantities with the use of a minimum of refrigerant and brine and in such manner that the cubes are formed with no ice formed on the outer edges of the ice cube molds thus preventing waste in thawing and releasing the cubes.

An important feature of the invention is the insulation indicated at 58 around the open outer edges of the ice cube molds. This insulation is of desired thickness so that ice cubes or rolls, will be formed of uniform shape and that in forming the ice will not form over the edges of the molds in mushroom shape, as such condition makes the cubes hard to get out of the molds and materially affects the thawing or defrosting.

Attention is also called to the fact that agitation of the brine and the water by rotation of the drum carrying the molds facilitates the freezing action. The continuous movement of the molds upon the drum through the water acts to continuously agitate the water with the result that no minute air bubbles are contained within the thin films of water successively picked up by each mold. Accordingly, cloudy ice is avoided and clear ice is formed within the molds, eliminating the neces-

sity of using other equipment for removing the entrained air from the water being frozen, as is necessary in the common practice of making ice.

Moreover, as impurities disolved in water lower its freezing point, the thin film of ice formed in each mold during that part of its revolution when above the water is washed by the water on its immersion during the balance of the revolution and the impurities rejected to the surface of the film are washed off and concentrate in the water. When the impurities become so concentrated in the water as to exceed their solubilities the excess impurities precipitate to the bottom of the water chamber.

This is a distinct advantage over the old practice of agitating the water by a pump, as this does not produce agitation when the molds are upside down and moving slowly, at which time the water in the bottom portions of the molds is not sufficiently agitated to produce clear ice. In the present machine it is contemplated rotating the drum about 8 R. P. M. thus producing continuous agitation.

It is further pointed out that under present practice there are two general methods of ice making, the most common being to cool the brine at a point outside of the ice making machine and to continuously circulate the cooled brine around the molds. The other method is to circulate the refrigerant, such as Freon, continuously around the molds.

The first method takes up considerably more room, is an added expense because of running the pumps continuously, requires a larger volume of brine and is subject to heat losses.

The second method is practical for large ice machines making considerable quantities of ice in large blocks but would not be practical in an ice cube machine because of defrosting defects. To withdraw the refrigerant and admit hot gases to the evaporator chamber would not be practical as the hot gases coming into the cold chamber would condense and liquify so quickly that they would not have the desired effect in thawing the ice cubes, and in order to properly thaw it would be necessary to reverse the cycle of compression.

In the operation of the present machine only a relatively small, fixed amount of brine is used in the brine chamber between the evaporator chamber and the ice molds, and when it is desired to thaw the ice cubes it is only necessary to stop the operation of the compressor so that refrigerant in the evaporator chamber ceases to evaporate, and to add a small amount of warm brine to the brine chamber which will quickly raise the temperature of the molds sufficiently to thaw the ice cubes so that they will be released therefrom.

I claim:

1. An apparatus for freezing ice cubes, comprising a water jacket for containing water to be frozen, a hollow drum rotatable within said water jacket, ice cube molds arranged in the periphery of the drum, an evaporator comprising a cylinder located within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, an evaporator chamber formed in the lower portion of said cylinder, means for introducing a refrigerant fluid into the refrigerant chamber, means for introducing brine into the brine chamber and means for rotating the drum.

2. An apparatus for freezing ice cubes, comprising a water jacket for containing water to be

jacket, ice cube molds arranged in the periphery of the drum, an evaporator comprising a cylinder located within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, an evaporator chamber formed in the lower portion of said cylinder, means for introducing a refrigerant fluid into the refrigerant chamber, means for introducing brine into the brine chamber and means for rotating the drum, there being an opening in the upper portion of the water jacket and means for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket to discharge the ice cubes therefrom.

3. An apparatus for freezing ice cubes, comprising a water jacket for containing water to be frozen, a hollow drum rotatable within said water jacket, ice cube molds arranged in the periphery of the drum, an evaporator comprising a cylinder located within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, an evaporator chamber formed in the lower portion of said cylinder, means for introducing a refrigerant fluid into the refrigerant chamber, means for introducing brine into the brine chamber and means for rotating the drum, there being an opening in the upper portion of the water jacket and means for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket to discharge the ice cubes therefrom, a perforate chute below the water jacket and a water drain basin below said chute.

4. An apparatus for freezing ice cubes, comprising a water jacket for containing water to be frozen, a hollow drum rotatable within said water jacket, ice cube molds arranged in the periphery of the drum, an evaporator comprising a cylinder located within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a crescent shaped evaporator chamber formed in the lower portion of said cylinder, means for introducing a refrigerant fluid into the refrigerant chamber, means for introducing brine into the brine chamber and means for rotating the drum.

5. An apparatus for freezing ice cubes, comprising a stationary hollow shaft, a cylindric normally stationary water jacket surrounding said shaft, a drum rotatably mounted upon the shaft within said water jacket, ice cube molds arranged in the periphery of the drum, an evaporator cylinder fixed upon the shaft within the rotatable drum and forming a brine chamber between the exterior of the cylinder and the interior of the drum, a half cylindric wall located in the lower portion of the evaporator cylinder forming a crescent shaped evaporator chamber within the lower portion of the cylinder, a refrigerant supply pipe located through the hollow shaft and communicating with the lower portion of the refrigerant chamber, a refrigerant return pipe located through the hollow shaft and communicating with the upper portion of the refrigerant chamber, a brine supply pipe located through the hollow shaft and communicating with the upper portion of the brine chamber and a brine return pipe located through the hollow shaft and communicating with the lower portion of the brine chamber.

6. An apparatus for freezing ice cubes, comprising a stationary hollow shaft, a cylindric normally stationary water jacket surrounding said shaft, a drum rotatably mounted upon the shaft

drum, ice cube molds arranged in the periphery of the drum, an evaporator cylinder fixed upon the shaft within the rotatable drum and forming a brine chamber between the exterior of the cylinder and the interior of the drum, a half cylindric wall located in the lower portion of the evaporator cylinder forming a crescent shaped evaporator chamber within the lower portion of the cylinder, a refrigerant supply pipe located through the hollow shaft and communicating with the lower portion of the refrigerant chamber, a refrigerant return pipe located through the hollow shaft and communicating with the upper portion of the refrigerant chamber, a brine supply pipe located through the hollow shaft and communicating with the upper portion of the brine chamber and a brine return pipe located through the hollow shaft and communicating with the lower portion of the brine chamber.

7. An apparatus for freezing ice cubes, comprising a stationary hollow shaft, a cylindric normally stationary water jacket surrounding said shaft, a drum rotatably mounted upon the shaft within said water jacket, ice cube molds arranged in the periphery of the drum, insulation around the outer edges of said molds, an evaporator cylinder fixed upon the shaft within the rotatable drum and forming a brine chamber between the exterior of the cylinder and the interior of the drum, a half cylindric wall located in the lower portion of the evaporator cylinder forming a crescent shaped evaporator chamber within the lower portion of the cylinder, a refrigerant supply pipe located through the hollow shaft and communicating with the lower portion of the refrigerant chamber, a refrigerant return pipe located through the hollow shaft and communicating with the upper portion of the refrigerant chamber, a brine supply pipe located through the hollow shaft and communicating with the upper portion of the brine chamber and a brine return pipe located through the hollow shaft and communicating with the lower portion of the brine chamber.

8. An apparatus for freezing ice cubes, comprising a stationary hollow shaft, a cylindric normally stationary water jacket surrounding said shaft, a drum rotatably mounted upon the shaft within said water jacket, insulation heads in said drum, ice cube molds arranged in the periphery of the drum, insulation around the outer edges of said molds, an evaporator cylinder fixed upon the shaft within the rotatable drum and forming a brine chamber between the exterior of the cylinder and the interior of the drum, a half cylindric wall located in the lower portion of the evaporator cylinder forming a crescent shaped evaporator chamber within the lower portion of the cylinder, a refrigerant supply pipe located through the hollow shaft and communicating with the lower portion of the refrigerant chamber, a refrigerant return pipe located through the hollow shaft and communicating with the upper portion of the refrigerant chamber, a brine supply pipe located through the hollow shaft and communicating with the upper portion of the brine chamber and a brine return pipe located through the hollow shaft and communicating with the lower portion of the brine chamber.

9. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, and means exterior to the cabinet engaging one of said bearings for rotating the drum upon the shaft.

10. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, there being an opening in the upper portion of the water jacket, and means exterior of the cabinet for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket.

11. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, and means exterior to the cabinet engaging one of said bearings for rotating the drum upon the shaft, there being an opening in the upper portion of the water jacket and means exterior of the cabinet for rotating the water jacket to position said opening at the bottom of the water jacket.

12. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum

mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, there being an opening in the upper portion of the water jacket, and means exterior of the cabinet for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket, a perforate ice chute in the cabinet below said water jacket and a water drain basin below said ice chute.

13. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, there being an opening in the upper portion of the water jacket, and means exterior of the cabinet for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket, a perforate ice chute in the cabinet below said water jacket and a water drain basin below said ice chute, and an ice cube drawer slidably mounted in the cabinet below said water drain basin.

14. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the

cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, there being an opening in the upper portion of the water jacket, and a door in the upper portion of the cabinet arranged to register with the opening in the water jacket, and means exterior of the cabinet for rotating the water jacket upon its axis to position said opening at the bottom of the water jacket.

15. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum having insulated heads mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, and means exterior to the cabinet engaging one of said bearings for rotating the drum upon the shaft.

16. An apparatus for freezing ice cubes comprising an insulated cabinet, supporting brackets on opposite end walls of the cabinet, a stationary hollow shaft located through the cabinet and fixed to said brackets, bearings journaled upon the end portions of the shaft and located through the end walls of the cabinet, a rotatable drum mounted upon said bearings, ice cube molds arranged in the periphery of said drum, a normally stationary, cylindric water jacket within the cabinet and surrounding the drum, an evaporator cylinder fixed upon the shaft within the drum and forming a brine chamber between the exterior of said cylinder and the interior of the drum, a refrigerant chamber in the lower part of the cylinder, refrigerant supply and return pipes located through the hollow shaft and communicating with the refrigerant chamber, brine supply and return pipes located through the hollow shaft and communicating with the brine chamber, there being an opening in the upper portion of the water jacket, a gear segment upon said water jacket, a pinion meshing with the gear segment, and means exterior to the cabinet for operating said pinion to rotate the water jacket upon its axis and position said opening at the bottom of the water jacket.

ARTHUR D. SMITH.