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PORTABLE TRANSPORTABLE REFRIGERATOR

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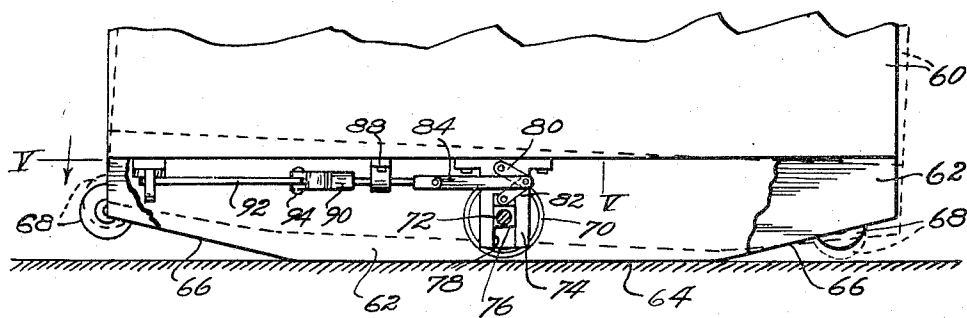
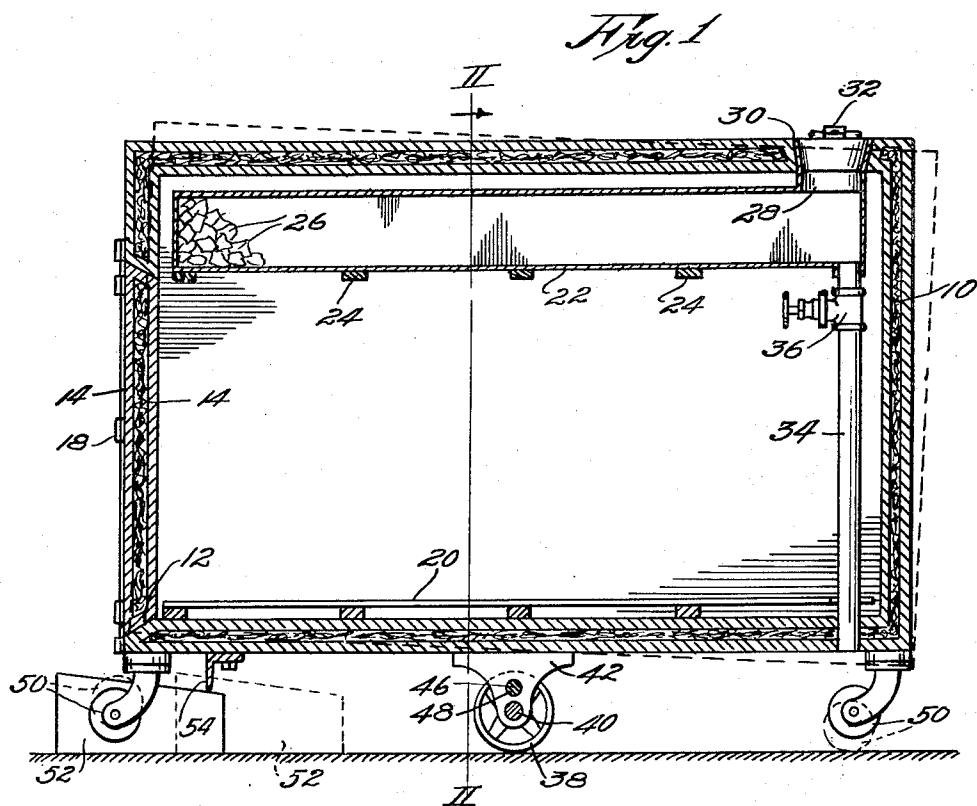


Fig. 4

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PORTABLE TRANSPORTABLE REFRIGERATOR

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4 Claims. (Cl. 280—44)

This invention relates to refrigerators and the primary object is the provision of such a device having as a part thereof means for rendering the same portable and as a result thereof, conveniently transportable so that perishable goods might be shipped by railroad or truck without the necessity of providing large and expensive refrigerator cars and trucks.

One of the important aims of this invention is the provision of a portable transportable refrigerator which is particularly designed for use in transporting relatively small quantities of perishable material and which has a salient feature thereof, means whereby the refrigerator case may be moved from dock to car and thereafter rendered immovable or solid to the extent that movement of the containing truck or car will not cause displacement of the refrigerator case and whereby other freight or the like may be packed with the refrigerator without damage to either.

Another important object of this invention is to provide a refrigerator of the aforementioned character and for the purpose specified which is constructed so that it has a case within which is formed a food compartment and wherein is disposed an ice tank that is completely sealed during the time the refrigerator case is being shipped.

Another important aim of this invention is to provide a refrigerator having as a part thereof a uniquely formed ice compartment about which is created a space for the free circulation of air within the food compartment of the refrigerator case and from which extends a relatively large valved drain pipe that may be closed during transportation of the refrigerator so that the melting ice within the tank will not cause damage, said drain pipe being in substantially axial alignment with a filler neck formed in communication with the tank and extending to a point outside of the refrigerator case.

An even further and very important object of this invention is the provision of means for portably supporting a refrigerator of the aforementioned character which means has structure associated therewith and with the case of the refrigerator for rendering the wheels of the portable means ineffective, and the invention contemplates structural details for the purpose of carrying out the last mentioned characteristic of the refrigerator, all of which will be set down during the course of the following specification referring to the accompanying drawings wherein,

Figure 1 is a vertical, longitudinal, sectional

view through a portable transportable refrigerator made in accordance with the present invention.

Fig. 2 is a vertical cross-section through the same taken along line II—II of Fig. 1.

Fig. 3 is a front end elevation of the refrigerator.

Fig. 4 is a fragmentary side elevation of a refrigerator embodying a slightly modified form of the invention.

Fig. 5 is a horizontal, sectional view taken along line V—V of Fig. 4, and

Fig. 6 is an enlarged, detailed, fragmentary, sectional view through a portion of the refrigerator illustrating the manner in which the wheels of the portable structure may be retracted for the purpose of allowing the refrigerator to rest upon depending members provided for that purpose.

It is well known in this art that the problem exists in the transportation of small quantities of perishable goods and that large amounts of money are expended for the purpose of icing complete cars and refrigerator trucks when it becomes necessary to transport these small quantities of perishable goods. Heretofore, there has been no provision of convenient means for transporting these small quantities of perishable goods and handling the same without leaving them entirely within the refrigerator or truck.

The refrigerator contemplated by this invention is specially formed and constructed so that the same may be moved to and from a place within a car or truck and even left on a dock for subsequent transportation to another point without affecting the perishable goods contained therein.

Many forms of refrigerators might be employed for the purpose specified and to fulfill the objects of this invention but some means must be provided for rendering the refrigerator portable and also for rendering the portable means ineffective after the refrigerator case has been loaded. It is obvious that the use of wheels or rollers on a refrigerator case will fulfill the object of providing means for moving the refrigerator from place to place, but structure for rendering these wheels ineffective at the will of the operator is not common and constitutes an advantageous step forward.

In the illustrated embodiment of the invention shown in the drawings, the refrigerator comprises a case formed of heavy heat insulating walls and having an opening at one end thereof which is closed by a pair of doors that are hinged in the customary fashion as at 16 and secured

in the closed position by a suitable lock mechanism 18 illustrated in Fig. 3. Within case 10, a false floor 20 is provided for the purpose of creating an air space along the bottom of the case 10 and below the material being transported, which in this instance, is not illustrated.

A tank 22 supported upon transverse cleats 24 or other suitable structure, is suspended within case 10 so that there is provided completely therearound an air space for the purpose of allowing circulation of air within case 10 and around the goods contained therein. This ice compartment is preferably formed of sheet metal or material which readily conducts heat units from within the food compartment formed by case 10 to the ice 26 which is packed in tank 22. Tank 22 should be suspended in the upper portion of the food compartment formed within case 10 and the differential in temperature between the upper and lower portions of the compartment will insure circulation of air therein.

In order to conveniently fill tank 22 without removing the same within case 10, there is provided a filler neck 28 that extends upwardly from one corner of tank 22 and through the upper wall of case 10. The upper portion of neck 28 is flared outwardly as the outer surface of case 10 is approached and a tapered cap 30 having a hinged handle 32 thereon is used to close neck 28 after ice 26 has been packed into tank 22. In actual practice, a salt and ice mixture is forced into tank 22 and after the tank has been filled, cap 30 is secured in place as shown in Fig. 1.

For the purpose of draining out water and other matter which collects in tank 22, there is provided a drain pipe 34 of relatively large diameter, that is to say, this drain pipe 34 should be at least two inches in diameter and further, should be disposed in substantially axial alignment with neck 28 so that during the cleaning out process, tank 22 may be flushed with water from a hose which is led thereinto through neck 28 and the entire collection of water and other matter from within tank 22 will quickly flow downwardly through drain pipe 34 which extends through the lower wall of case 10 and terminates at the outer surface thereof.

Tank 22 is preferably sealed during shipment of perishable goods and while this refrigerator is in use and to fulfill this requirement a gate valve 36 is interposed in drain pipe 34 which may be manually opened and closed as desired. When the valve 36 is closed, no drainage from tank 22 takes place and the cooling medium in the form of ice and salt within tank 22 is sealed therein.

In the embodiment of the refrigerator illustrated in Figs. 1, 2 and 3, the means for rendering the same portable or movable from place to place are in the form of a central series of wheels 38 which are arranged upon a shaft 40 that extends transversely across the bottom of case 10 at the center thereof. This shaft is journaled in a number of bearings 42 and spacer sleeves 44 may be employed to preclude lateral movement or displacement of wheels 38. All of wheels 38 are formed so that the locking bar 46 may be moved to position for the purpose of preventing their rotation. Each of the several bearings 42 is provided with a transverse opening 48 and when bar 46 is moved to position it may be secured in the operative location illustrated in Fig. 1 by any suitable means. Thus, when bar 46 is in place, wheels 38 cannot turn and movement of case 10 is to a large extent, definitely precluded.

Casters 50 at each end respectively of case 10 serve the well known purpose of permitting a rocking motion of case 10 about the axis of shaft 40 and after the refrigerator has been moved to place within a car or truck, locking bar 46 is projected into position and block 52 forced into the position shown by dotted lines of Fig. 1. This block is wedge shape to the extent illustrated and its upper inclined surface moves along and against a bearing bar 54 which is positioned along the bottom of case 10 transversely thereof and adjacent one of its ends. When block 52 is forced to place the entire assembly is tilted about shaft 40, one of the casters 50 moves to engagement with the surface which supports the refrigerator and thereby the refrigerator is rendered immovable and ready for safe transportation from point to point.

As evidence of the fact that a large number of ways of rendering the case of the refrigerator immovable when the same is loaded, reference may be had to Figs. 4, 5 and 6 which illustrate structure for retracting the series of central wheels which support the refrigerator case 10. In this instance however, a modification in the structure of the case of the refrigerator is followed and case 60 is provided with depending walls 62, one of which extends along each of the longitudinal edges of the case 60. These walls assume general characteristics of a runner and the central portion 64 thereof extends parallel to the bottom of case 60 and serves as the means for actually supporting the entire structure when the hereinafter described portable means is retracted. An inclined portion or face 66 is provided at each end of wall 62 and it is this cut-away or inclined portion which permits the casters 68 of this form of the device to move or roll along the surface of the supporting floor.

The central series of wheels 70 are mounted upon a transverse shaft 72 and bearings 74 slidably carry blocks 76 which in turn journal shaft 72. An opening 78 formed in each bearing 74 respectively slidably carries these blocks 76 and the tongue and groove structure between block 76 and the respective bearings 74 may be provided for the purpose of precluding lateral displacement of the blocks.

Wheels 70 are all projected below the edges 64 of walls 62 when the refrigerator is being moved but when the same is in the stationary position and wheels 70 are retracted, the relation between the parts is as shown in Fig. 4. Means for simultaneously retracting all of these wheels 70 is specifically shown in the drawings and consists of links 80 and 82 pivotally interconnected at their over-lapped ends and joined to a pull bar 84 which extends forwardly toward the front end of case 60. The other end of link 82 is pivotally connected to block 76 and the opposite end of link 80 is pivotally joined to bearing 74 so that when pull bar 84 is reciprocated, block 76 will raise and lower within opening 78 of bearing 74. Obviously this will move case 60 up and down so that the lower edges 64 of walls 62 will be raised and lowered with respect to the supporting surface. Each pull bar 84 is joined to a rod 86 that is slidably journaled in a bearing 88 carried by the bottom of case 60. All of rods 86 are joined to yoke 90 which, in turn, is connected to a link 92 as at 94. This connection at 94 is a pivotal one and the other end of link 92 is pivotally joined as at 96 to head 98 of operating lever 100. This head 98 is pivotally secured to the bottom of case 60 as at 102 and the eccentric

relation between connections 96 and 102 to links 92 and the bottom of case 60 respectively is such that upon movement of handle 100 from the position shown in solid lines of Fig. 5 to the position shown in dotted lines of that figure, will move all of links 80 and 82 for the purpose of lifting the refrigerator case 60 and all associated parts. Manifestly, this movement will render wheel 70 effective and after the refrigerator is moved to position, the parts may be returned to the position shown in Figs. 4, 5 and 6 so that case 60 is unlikely to be displaced during transportation.

Stops 104 may be secured to the lower surface of case 60 for the purpose of engaging handle 100 and the past center movement on the part of link 92 with respect to point 102 will insure that the parts of the elevating mechanism are maintained in rigid condition during the time wheels 70 are actually supporting case 60.

From the foregoing, it will be observed that a refrigerator embodying this invention may be readily adapted and used for the purpose in mind and while some forms of embodiment of the invention have been illustrated and described, it is to be understood that modifications of the character which will fall within the spirit of the invention and scope of the appended claims are contemplated.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent is:

1. In a truck of the character described and for the purpose specified having a case; a series of wheels arranged on a central transverse axis on the bottom of said case for portably supporting the same; a caster on the case at each end respectively thereof; depending members at the bottom of said case extending along two opposite sides thereof in planes perpendicular to the said axis; and means for retracting said central series of wheels to permit the case to rest upon the said depending members whereby to hold the case against movement, said casters being above the supporting surface of the truck when the central series of wheels are retracted and while the truck is resting on the depending members.

2. In a truck of the character described and

for the purpose specified having a case; a series of wheels arranged in a central transverse axis on the bottom of said case for portably supporting the same; a caster on the case at each end respectively thereof; depending members at the bottom of said case; and means for retracting said central series of wheels to permit the case to rest upon the said depending members, said depending members extending longitudinally along the bottom of said case at each side thereof, said depending members being inclined at each end to permit the casters to ride on the supporting surface when the truck is tilted and when the central series of wheels is extended.

3. In a truck of the character described and for the purpose specified having a case; a series of wheels arranged in a central transverse axis on the bottom of said case for portably supporting the same; depending members at the bottom of said case; means for retracting said central series of wheels to permit the case to rest upon the said depending members; and a caster at each end respectively of said case, said depending members being walls extending longitudinally along the bottom of the said case at each side thereof and each having an inclined portion adjacent each end thereof whereby when the case is being moved by resting upon the central wheels said casters may ride over the supporting surface as the case is rocked about the axis of said central wheels.

4. In a truck of the character described and for the purpose specified having a case, a transverse shaft mounted on the bottom of the case intermediate the ends thereof; a series of wheels on the shaft; means to move the shaft and wheels toward and from the bottom of the case; casters on the bottom of the case between the ends thereof and said shaft with the lowermost points on their peripheries always closer to the bottom of the case than the lowermost points on the peripheries of said wheels; and depending members rigid with the case for supporting the same against movement when the said transverse shaft and wheels thereon are at the end of their path of travel toward the bottom of the case.

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