

March 4, 1952

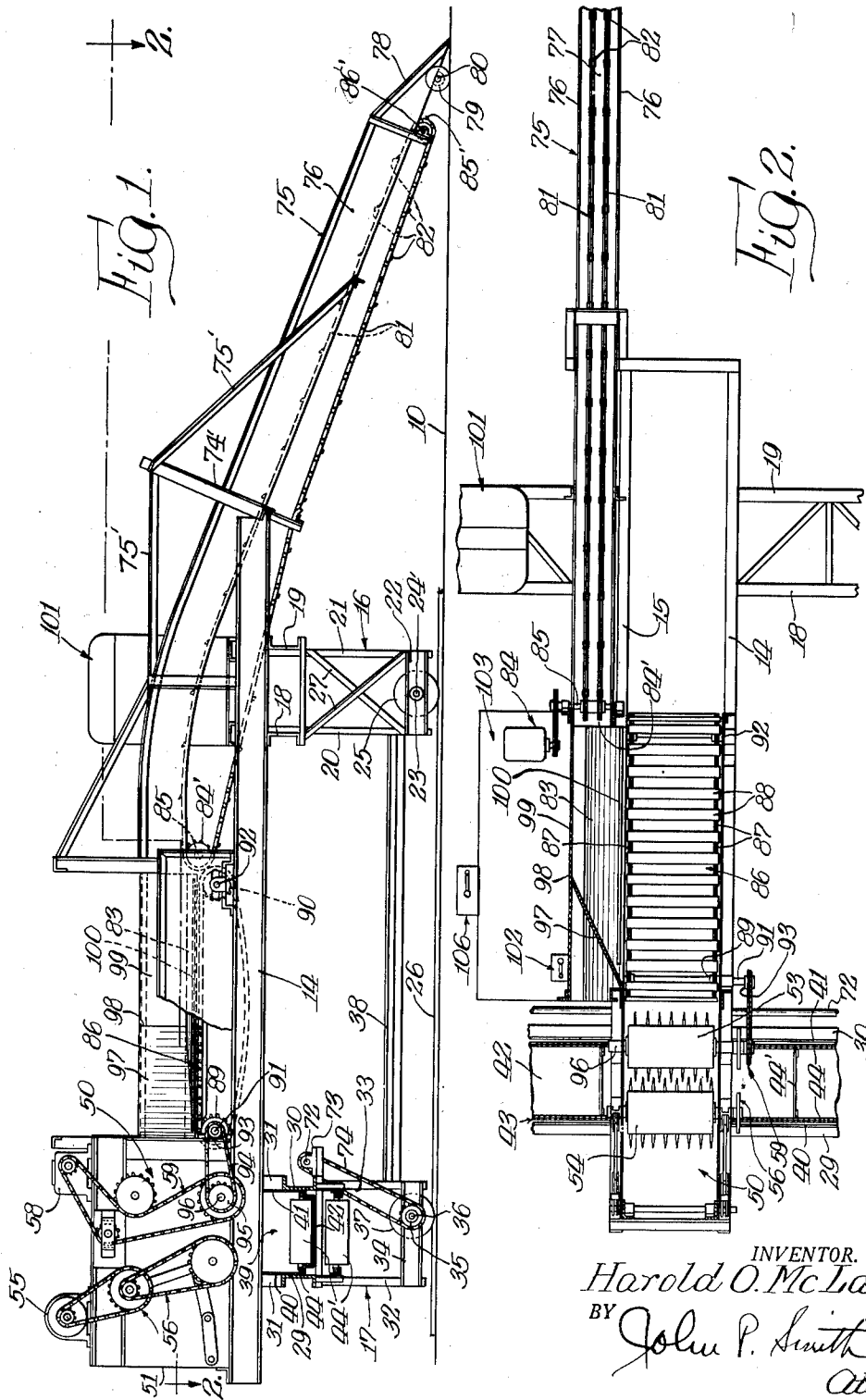
H. O. McLAIN

2,587,872

ICING MACHINE

Filed Oct. 6, 1948

3 Sheets-Sheet 1



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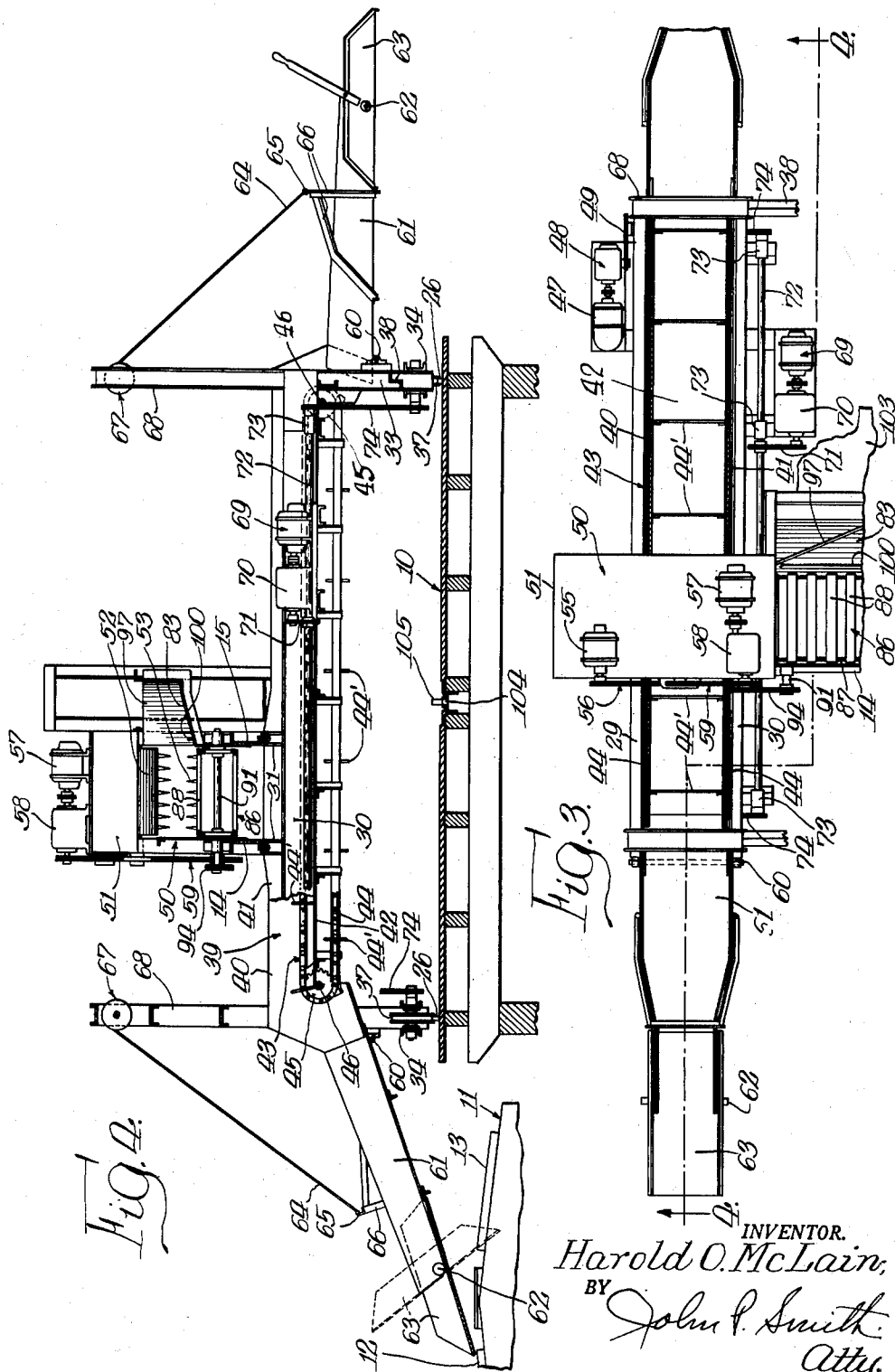
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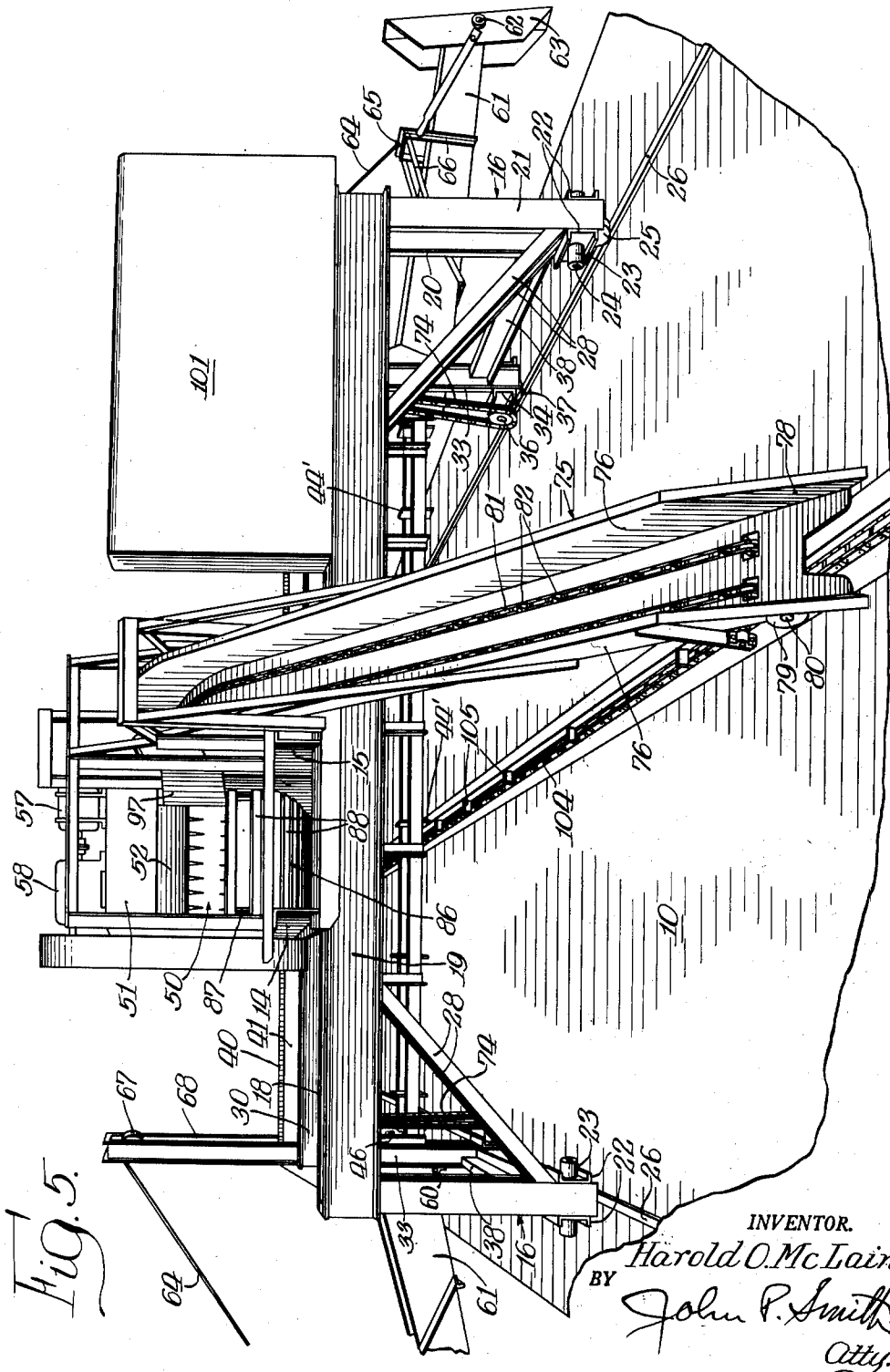
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

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ICING MACHINE

Harold O. McLain, Highland Park, Ill.

Application October 6, 1948, Serial No. 53,105

20 Claims. (Cl. 62—1)

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The present invention relates generally to improvements in self-propelled or mobile icing machines for the servicing or icing of refrigerator cars or similar vehicles, but more particularly to a device adapted for use in connection with the conventional elevated icing platform so that a variety of predetermined sized or crushed ice may be converted from the block ice conveyed on and elevated from the platform to the device and delivered directly to the bunkers or ice chambers of the refrigerator cars or vehicles.

Another object of the invention is to provide a novel and improved as well as self contained icing machine adapted to move under its own power along the conventional elevated icing platform from where it will receive and elevate ice blocks conveyed therealong, crush the ice blocks to suitable size chunks or crushed ice and have means associated therewith for forming a temporary storage and conveying means for the crushed ice so that it may be temporarily stored or readily conveyed by suitable chutes on the opposite sides of the device for discharging the crushed ice into the bunkers or ice chambers of the refrigerator cars.

A further object of the invention is to provide a novel and improved icing machine which has associated therewith an ice crusher and sizing unit and means for elevating the block ice from the conventional platform to the crushing unit and means for conveying laterally in either direction with respect thereto, and means for storing crushed or chunked ice therein temporarily or for discharging the ice from the conveyor into the hoppers of the refrigerator cars adjacent the ends thereof.

A still further object of the invention is to provide a novel, compact and simplified construction of icing machine for icing the bunkers of refrigerator cars which will increase the speed capacity over the machines heretofore used and with a considerable saving of time and a minimum number of men.

These and other objects are accomplished by providing a construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevational view of my improved icing machine with a portion of the same shown broken away;

Fig. 2 is a fragmentary cross sectional view taken on the lines 2—2 in Fig. 1;

Fig. 3 is a fragmentary top plan view of the

rear portion of the machine shown in Figs. 1 and 2 of the drawings;

Fig. 4 is a cross sectional view taken on the line 4—4 of Fig. 3; and

Fig. 5 is a perspective front view of the icing machine.

My improved icing machine is particularly adapted for use in connection with the conventional elevated platform or dock, generally indicated by the reference character 10, which usually extends longitudinally of and between the railway tracks for a distance of three or four hundred feet to several thousand feet and is positioned at an elevation slightly above the top of the refrigerator cars. A fragmentary portion, generally indicated by the reference character 11, of one of the cars is shown in Fig. 4 of the drawings, but it is intended to represent a train or portion of a train of refrigerator cars standing on the main track or on a siding adjacent to and parallel to the platform or dock 10. In the present instance, these trains of refrigerator cars to be iced are located on the opposite sides of the platform so that the crushed or chunked ice may be delivered into the opposite bunkers 12 and 13 provided adjacent the ends of each of the cars.

My improved icing machine comprises a main frame structure which includes two horizontally spaced apart and longitudinally extending main frame or channel members 14 and 15. The front and rear ends of these main frame members 14 and 15 are secured to and supported on arched front and rear carriage frames, generally indicated by the reference characters 16 and 17 respectively. The front truck frame 16 comprises two horizontally spaced apart transverse channel members 18 and 19 which are secured to the lower sides of and adjacent the front ends of the main frame members 14 and 15. Secured adjacent the outer opposite ends of the transverse members 18 and 19 are vertically extending horizontally spaced apart posts 20 and 21. The posts 20 and 21 are in the form of channel members and have secured to their opposite sides adjacent the lower ends thereof, horizontal channel members 22. Journaled in suitable bearings 23, carried by the members 22, are shafts 24. Secured to the shafts 24 are flanged wheels 25. The flanged wheels 25 are adapted to ride on opposite tracks 26 which are suitably secured to and adjacent the outer portions of the elevated platform 10. These tracks 26 extend throughout the length of the platform so that the mobile unit may move therealong for icing the bunkers of

the refrigerator cars in the manner hereinafter described. Suitable cross braces 27 and diagonal braces 28 reinforce the frame structure of the wheel trucks and brace the same with the main frame of the icing machine. The rear truck frame 17 comprises two horizontally spaced apart transversely extending channel frame members 29 and 30 which are secured to the lower side of and adjacent the rear ends of the main frame members 14 and 15 by spacer blocks 31. Secured to and depending from the transverse members 29 and 30 at points adjacent their opposite ends, are vertical posts or channel members 32 and 33. Secured to the opposite sides of the posts 33 and 32 are horizontal spaced apart channel brackets 34. Mounted in suitable bearings 35 in each of the brackets 34 are shafts 36. Secured to each of the shafts 36 are flanged wheels 37. The front and rear truck frames 16 and 17 on the opposite sides of the icing machine are braced together by longitudinal extending Z-bars 38 which have their opposite ends secured to the front and rear posts 20 and 33 respectively.

One of the essential features of the present invention includes a transversely extending hopper which may be employed to temporarily hold or contain the chunked or crushed ice delivered therein from the ice crusher and breaker mechanism so that it may be delivered at suitable intervals to the chutes on either side of the icing machine for delivery in the bunkers of the refrigerator cars. This hopper is provided with a conveyor located in the bottom thereof for directing the crushed or chunked ice to either side of the machine. The transversely extending crushed ice hopper and conveying mechanism, generally indicated by the reference character 39, includes opposite transverse vertical side walls 40 and 41 and a horizontal bottom 42. Mounted in the bottom of the hopper is the upper lap of an endless conveying mechanism, generally indicated by the reference character 43, which comprises two endless chains 44 which are trained about opposite pairs of sprocket wheels 45. The sprocket wheels 45 are secured to the opposite shafts 46 which, in turn, are journaled in suitable bearings in the side walls 40 and 41 of the hopper. Secured to the opposite chain 44 at suitable intervals are paddles or conveyor plates 44'. The conveyor 43 is driven by an electric motor 47 through the medium of a transmission mechanism, generally indicated by the reference character 48. A drive belt 49 from the transmission 48 operatively drives a sprocket wheel (not shown) secured to one of the shafts 46 in the manner well understood in the art.

Mounted on the main frame members 14 and 15 and located slightly to one side of the longitudinal center of the machine, is an improved ice breaker and crusher mechanism which embodies a novel construction and a novel arrangement of adjustment whereby the same is capable of breaking and crushing ice blocks into predetermined sizes from approximately forty pound chunks up to finely divided crushed ice at a maximum speed capacity. This novel ice breaker and crusher is generally indicated by the reference character 50 and is described and illustrated in detail in my co-pending application, Serial No. 768,966 filed August 16, 1947, now Patent No. 2,537,779, issued January 9, 1951. Briefly, this ice breaker and crusher 50 includes a housing 51 in which is journaled two oppositely positioned and vertically spaced apart pronged ice breaking cylinders 52 and 53. Cooperating with these two

pronged cylinders is a third bodily movable pronged cylinder 54. The adjustment of certain of these cylinders permits the blocks of ice to be broken or crushed in substantially any desired size necessary for icing different types of perishable goods in transit. The details of the specific construction and operation of the same may be had by reference to the aforementioned patent. A suitable electric motor 55 mounted on the housing 50, together with a transmission or chain drive, generally indicated by the reference character 56 drives the pronged cylinder 54. A suitable electric motor 57 mounted on the housing 50, together with a transmission 58 and a chain drive generally indicated by the reference character 59, drives the pronged cylinders 52 and 53.

From the above description it will be readily seen that the chunks or crushed ice, as the case may be, from this breaker and crusher 50 are dropped into the horizontal hopper 39 onto the conveyor 43 where the operator may convey the crushed ice in one direction and thence partially in another to accumulate a supply of crushed ice and temporarily store the crushed ice in the hopper 39 before the same is delivered into the chute and from there into the bunkers of the refrigerator cars. Under the circumstances, this transverse hopper and conveyor may serve as a temporary storage for the accumulation of crushed ice so as to expedite the filling of the bunkers of the refrigerator cars during the interval of moving the portable icing machine from one hopper to the next adjacent hopper at the opposite ends of the cars. Pivoted to the opposite ends of the hopper 39 adjacent the ends of the conveyor 43, as shown at 60, are chutes 61. Pivoted adjacent the outer ends of the chutes 61, as shown at 62, are manually adjustable channel-like extensions or supplemental chutes 63 of the conventional form. The chutes 61 on the opposite sides of the icing machine are raised and lowered by cables 64, one end of which is connected, as shown at 65, to angle brackets 66 attached to each of the chutes 61. The other ends of the cables 64 are connected to cable drums, which in turn, are driven by motors, generally indicated by the reference character 67. The motors 67 are supported in the upper ends of U-shaped frames 68 which, in turn, are secured to the outer ends of the transverse frame members 29 and 30.

The icing machine is self-propelled along the tracks 26 by an electric motor, generally indicated by the reference character 69 mounted on the main frame. This motor, through the medium of a transmission 70, a drive chain 71, operatively drives a transverse shaft 72. The transverse shaft 72 is journaled in suitable spaced apart bearings 73. Through the medium of suitable sprocket wheels and opposite drive chains 74 the rear wheels 37 are driven to propel the icing machine. Located in the longitudinal center of and rigidly secured to the main frame of the icing machine and inclined at an angle with respect to the horizontal platform 10 is an ice block gathering, elevating and conveying trough, generally indicated by the reference character 75. Suitable braces 74' and 75' support the trough 75 in position on the main frame. This elevating and conveying trough has substantially vertically extending sides 76 and an upwardly inclined bottom 77. The forward end of the side walls diverge outwardly into substantially pointed ends, as shown at 78, to direct and guide the ice blocks into the trough. The forward ends of the

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trough is supported in close proximity to the platform 10 by oppositely disposed rollers 79 which are journaled on studs 80 suitably secured at the forward end of the trough. Mounted in the bottom 77 of the trough 75 are two endless conveyor chains 81. The chains 81 are provided at uniform intervals with sharp prongs 82 for engaging and conveying, as well as elevating the ice blocks upwardly in the trough 75 to a laterally inclined and horizontally extending platform 83. The conveyor and elevator chain 81 are operatively driven by an electric motor and transmission unit, generally indicated by the reference character 84, which operatively drives a transverse shaft 85. Suitably spaced apart sprocket wheels 84' are secured to the shaft 85 about which the chains 81 are trained. The lower portions of the chains 81 are trained about spaced sprocket wheels 85' carried by a shaft 86'. Mounted horizontally and slightly below the inclined ice slide 83 is a horizontal and endless conveyor, generally indicated by the reference character 86, which is adapted to convey the ice blocks inwardly toward and in a flat position to the ice crushing cylinders 52 and 53. The conveyor 86 comprises two oppositely disposed endless chains 87 which are connected together by uniformly spaced apart steel slats or channels 88. The chains 87 are trained about oppositely disposed sprocket wheels 89 and 90 secured to suitable shafts 91 and 92 respectively which, in turn, are journaled in suitable bearings carried by the frame. Secured to one end of the shaft 89 is a sprocket wheel 93 which is geared by means of an endless chain 94 to a sprocket wheel 95 which, in turn, is secured to a shaft 96. The shaft 96 forms the shaft for the cylinder 53. From the above description it will be seen that the horizontal conveyor is driven from the cylinders 52 and 53 through the medium of an electric motor 56 and transmission 58 and chain drive 59.

The ice blocks are deflected laterally onto the horizontal endless conveyor 86 by vertical and angularly projecting wall 97 which extends from the delivery end of the conveyor 86 to a point 98 on the vertical wall 99 which forms the extension or continuation of the side walls 76 of the elevating trough 75. Positioned along the lower edge of the inclined ice block slide 83 is a rib or rod 100 which forms an obstruction to engage one edge of the block so that when the block strikes the inclined wall 97 it will be tipped over on its flat side when it strikes the conveyor belt 86 and thereby more efficiently feed the ice blocks into the ice breaking and crushing mechanism 50. In order to make my improved icing machine a completely contained unit, I have provided a conventional internal combustion generating unit, generally indicated by the reference character 101. This unit is mounted transversely of the machine proper and is suitably secured to the transverse beams 18 and 19 of the front frame 16 as clearly shown in Figs. 1 and 2 of the drawings. The generating unit 101 is of the conventional form and supplies the source of electrical energy necessary to operate all of the electric motors. These motors with suitable circuits are connected up by means of suitable switches to motor control boards diagrammatically and generally indicated by the reference character 102, where they are within easy access to the operator on the operator's station or platform, generally indicated by the reference character 103.

Located in the longitudinal center of the elevated platform 10 is the usual endless conveyor

chain 104 which is provided with suitable ice block engaging lugs 105 for conveying the ice blocks along the platform at intervals. The motor for driving this conveyor chain 104 is usually located in the position at one end of the platform, but it is within contemplation of my invention to provide a switch under the control of the operator on the platform 103 to control the actuation of this conveyor so that the complete control of all the operating parts of the icing machine, as well as the block conveyor on the platform is under complete control of the operator on the station 103 of the icing machine. The electric motor 69 which drives or propels the operation or travel of the unit over the tracks 26 is controlled through the medium of a conventional drum controller, generally indicated by the reference character 105 within easy access of the operator on the operator's platform 103.

In the operation of my improved icing machine, the ice blocks are conveyed along the platform 10 by the conveyor 104 with the long, narrow surface of the ice block engaging the conveyor. These ice blocks are elevated and conveyed up the inclined elevator 81 and delivered onto the laterally inclined slide 83 where the foremost end of the ice block engages the deflector wall 97 to deflect or guide the block onto the horizontal conveyor 86. In this connection it will be noted that the longitudinally extending rod 100 which lies in the path of the ice block, causes the same to be toppled over on its flat side onto the conveyor 86 so that the ice block will be fed into the ice breaker and crusher mechanism 50 in a more uniformly distributed manner. In the ice breaker and crusher mechanism the blocks are crushed into predetermined sizes of from large chunks to relatively fine crushed pieces and then dropped into the hopper 39 where it may be temporarily stored or immediately conveyed laterally in either direction by the conveyor 43 to either of the chutes 61. From these chutes 61 the crushed ice is discharged into the bunkers of the refrigerator cars located adjacent the platform 10. It will thus be seen that a train of refrigerator cars on either or both sides of the platform 10 may be completely iced without the necessity of "spotting" each car. It sometimes occurs that a train of cars includes some cars which require the use of crushed ice for refrigeration, while others require chunk ice, or a combination of crushed and chunk ice, in which case the immediate adjustment of the ice breaker and crusher mechanism within reach of the operator on the station 103 can be manipulated to instantly deliver the size of ice required.

Summarizing the advantages and functions of operation of my improved icing machine, it will readily be observed that by providing a self-propelled unit under the control of a single operator which will utilize the conventional installation of elevated icing platform or dock in connection with an ice block conveying mechanism commonly employed therewith so as to more efficiently and expeditiously elevate, convey and crush the blocks of ice into a wide variety of large chunks or finely crushed ice, the time heretofore required for icing of refrigerator cars has not only been reduced to a minimum, but the number of men heretofore required has also been considerably reduced.

It will also be noted that by providing a combination transverse hopper and conveyor for the crushed ice, a temporary storage is provided for the crushed ice during the interval in moving the unit from the hopper of one refrigerator car to that of the next, thereby expanding the efficiency

as well as the speed and capacity of the machine as a whole.

While in the above specification I have described one embodiment which my invention may assume in practice, it will, of course, be understood that the same is capable of modification and that modification may be made without departing from the spirit and scope of the invention as expressed in the following claims:

What I claim as my invention and desire to secure by Letters Patent is:

1. A refrigerator vehicle icing machine comprising a main frame, an ice block elevating and conveying mechanism carried by said frame, an ice crushing and breaking mechanism mounted on said frame, a crushed ice hopper carried by said frame and located below said ice crushing and breaking mechanism, and a conveyor mounted in said hopper for conveying the crushed ice laterally in said hopper.

2. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism mounted on said frame and located in the longitudinal center of said machine, an ice breaking and crushing unit carried by said frame and located to one side of the longitudinal center of said machine, a horizontal conveyor mounted on said frame in alignment with said unit for conveying ice blocks from said elevating conveyor to said ice crushing unit, and a transverse conveyor located below said ice crushing unit for conveying the crushed ice laterally with respect to said machine.

3. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism mounted on said frame and located in the longitudinal center of said machine, an ice breaking and crushing unit carried by said frame and located at one side of the longitudinal center of said machine, a horizontal conveyor mounted on said frame in alignment with said unit for conveying ice blocks from said elevating conveyor to said ice crushing unit, a horizontally positioned transverse hopper positioned below said ice crushing unit for receiving crushed ice from said unit, and a conveyor mounted in said hopper for conveying crushed ice laterally in either direction.

4. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism mounted on said frame and located in the longitudinal center of said machine, an ice breaking and crushing unit carried by said frame and located to one side of the longitudinal center of said machine, a horizontal conveyor mounted in alignment with said ice crushing unit, and inclined slide located between the delivery end of said elevator and said horizontal conveyor, and a transverse conveyor located below said ice crushing unit for delivering crushed ice laterally in either direction.

5. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism mounted on said frame and located in the longitudinal center of said machine, an ice breaking and crushing unit carried by said frame and located to one side of the longitudinal center of said machine, a horizontal conveyor mounted in alignment with said ice crushing unit, a laterally inclined slide located between the delivery end of said elevator and said horizontal conveyor, an angularly disposed guide wall positioned adjacent

one end of said slide for deflecting ice blocks onto said horizontal conveyor, and a transverse conveyor located below said ice crushing unit for delivering crushed ice laterally in either direction.

6. A refrigerator car icing machine comprising a longitudinally extending main frame, arched wheel frames supporting the front and rear ends of said main frame, an ice block elevating and conveying means mounted on said main frame and located in the longitudinal center of said machine, an ice breaking and crushing mechanism located to one side of the longitudinal center of said machine, a longitudinally extending horizontal conveyor located forwardly of and in alignment with said ice crushing mechanism, means for deflecting ice blocks from the delivery end of said elevating means to said horizontal conveyor, a transverse hopper located below said ice crushing mechanism, and a transverse conveyor mounted in said hopper for conveying the crushed ice laterally in either direction.

7. A refrigerator car icing machine comprising a longitudinally extending main frame, arched wheel frames supporting the front and rear ends of said main frame, an ice block elevating and conveying means mounted on said main frame and located in the longitudinal center of said machine, an ice breaking and crushing mechanism located to one side of the longitudinal center of said machine, a longitudinally extending horizontal conveyor located forwardly of and in alignment with said ice crushing mechanism, a laterally inclined slide positioned between said elevating means and said horizontal conveyor, and means extending longitudinally of said slide and adapted to engage the ice block and turn the same over on its flat side onto said horizontal conveyor.

8. A refrigerator car icing machine comprising a longitudinally extending main frame, arched wheel frames supporting the front and rear ends of said main frame, an ice block elevating and conveying means mounted on said main frame and located in the longitudinal center of said machine, an ice breaking and crushing mechanism located to one side of the longitudinal center of said machine, a longitudinally extending horizontal conveyor located forwardly of and in alignment with said ice crushing mechanism, a laterally inclined slide positioned adjacent the delivery end of said elevating means for receiving the ice blocks therefrom, a longitudinally extending member secured to said slide and located in the path of the ice blocks, and an angularly disposed vertical deflecting wall positioned at one end of said slide for guiding the ice blocks onto said horizontal conveyor.

9. A refrigerator car icing machine comprising a longitudinally extending main frame, arched wheel frames supporting the front and rear ends of said main frame, an ice block elevating and conveying means mounted on said main frame and located in the longitudinal center of said machine, an ice breaking and crushing mechanism located to one side of the longitudinal center of said machine, a longitudinally extending horizontal conveyor located forwardly of and in alignment with said ice crushing mechanism, means for deflecting ice blocks from the delivery end of said elevating means to said horizontal conveyor, a transverse hopper located below said ice crushing mechanism, a transverse conveyor mounted in said hopper for conveying the crushed ice laterally in either direction, and an operat-

ing station on said frame for controlling the operating elements of said machine.

10. A refrigerator car icing machine comprising a longitudinally extending main frame, arched wheel frames supporting the front and rear ends of said main frame, an ice block elevating and conveying means mounted on said main frame and located in the longitudinal center of said machine, an ice breaking and crushing mechanism located to one side of the longitudinal center of said machine, a longitudinally extending horizontal conveyor located forwardly of and in alignment with said ice crushing mechanism, a laterally inclined slide positioned between the delivery end of said elevating means and said horizontal conveyor, an ice block engaging member secured to one edge of said slide and located in the path of the ice blocks, an angularly disposed ice block deflecting wall located at the rear end of said slide for guiding the ice blocks onto said horizontal conveyor, and a transversely movable conveyor positioned below said ice crushing mechanism for conveying the crushed ice laterally with respect to said machine.

11. A self-propelled icing machine for icing refrigerator cars and the like comprising a longitudinally extending main frame, wheeled frames supporting the front and rear ends of said main frame, an upwardly and rearwardly inclined ice block elevating and conveying mechanism secured to and located in the longitudinal center of said main frame, a horizontal ice block conveyor carried by said main frame and located laterally to one side of said elevating and conveying mechanism, guiding and deflecting means located between the delivery end of said elevating mechanism and said horizontal conveyor, an ice crushing and breaking mechanism mounted on said main frame and located in longitudinal alignment with said horizontal conveyor, a hopper extending transversely of said machine and located below said ice crushing and breaking mechanism, a conveyor mounted in said hopper for conveying the crushed ice laterally in either direction, and chutes pivoted to the outer ends of said hopper for discharging the crushed ice into the bunkers of said refrigerator cars.

12. A self-propelled icing machine for icing refrigerator cars and the like comprising a longitudinally extending main frame, wheeled frames supporting the front and rear ends of said main frame, an upwardly and rearwardly inclined ice block elevating and conveying mechanism secured to and located in the longitudinal center of said main frame, a horizontal ice block conveyor carried by said main frame and located laterally to one side of said elevating and conveying mechanism, guiding and deflecting means located between the delivery end of said elevating mechanism and said horizontal conveyor, an ice crushing and breaking mechanism mounted on said main frame and located in longitudinal alignment with said horizontal conveyor, a hopper extending transversely of said machine and located below said ice crushing and breaking mechanism, a conveyor mounted in said hopper for conveying the crushed ice laterally in either direction, chutes pivoted to the outer ends of said hopper for discharging the crushed ice into the bunkers of said refrigerator cars, and an operator's station mounted on said main frame and located adjacent said ice crushing and breaking mechanism for controlling the operation of all of the operating units therefrom.

13. A refrigerator vehicle icing machine com-

prising a main frame, an ice block elevating and conveying mechanism secured to said frame, an ice breaking and crushing mechanism mounted on said frame, a crushed ice hopper to receive crushed ice from said ice breaking and crushing mechanism, and a conveyor mounted in said hopper for conveying the crushed ice through said hopper laterally of said machine.

14. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism secured to said frame, an ice breaking and crushing unit carried by said frame, a horizontal conveyor mounted on said frame in substantial horizontal alignment with said ice breaking and crushing unit for conveying ice blocks from said elevating and crushing unit, and a transverse conveyor operatively associated with said ice breaking and crushing unit for conveying the crushed ice laterally with respect to said machine.

15. A refrigerator car icing machine comprising a main frame, a longitudinally extending ice block elevating and conveying mechanism secured to said frame, an ice breaking and crushing unit carried by said frame, a horizontal conveyor mounted on said frame for conveying ice blocks from said elevating conveyor to said ice breaking and crushing unit, a horizontally positioned transverse hopper positioned below said ice breaking and crushing unit for receiving crushed ice from said unit, and a conveyor mounted in said hopper for conveying crushed ice laterally of said machine in either direction.

16. A self-propelled icing machine for icing refrigerator cars and the like comprising a longitudinally extending main frame, wheeled frames supporting the front and rear ends of said main frame, an upwardly and rearwardly inclined ice block elevating and conveying mechanism secured to and located in the longitudinal center of said main frame, a horizontal conveyor carried by said main frame, an ice breaking and crushing mechanism mounted on said main frame and located in longitudinal alignment with said horizontal conveyor, a hopper extending transversely of said machine and located below said ice breaking and crushing mechanism, a conveyor mounted in said hopper for conveying the crushed ice laterally of said machine in either direction, and chutes pivoted to the outer ends of said hopper for discharging the crushed ice into the bunkers of said refrigerator cars.

17. A self-propelled icing machine for icing refrigerator cars and the like comprising a longitudinally extending main frame, wheeled frames for supporting the front and rear ends of said main frame, and upwardly and rearwardly inclined block elevating and conveying mechanism secured to and located in the longitudinal center of said main frame, a horizontal ice block conveyor carried by said main frame, an ice breaking and crushing mechanism mounted on said frame and located in longitudinal alignment with said horizontal conveyor, a hopper extending transversely of said machine and located below said ice breaking and crushing mechanism, a conveyor mounted in said hopper for conveying crushed ice laterally of said machine in either direction, chutes pivoted to the outer ends of said hopper for discharging the crushed ice into the bunkers of refrigerator cars, and an operator's station mounted on said main frame and located adjacent said ice breaking and crushing mechanism for controlling the

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operation of all of the operating units therefrom.

18. A refrigerator car icing machine comprising a main frame, an ice block elevating and conveying mechanism carried by said frame, an ice breaking and crushing mechanism mounted on said frame, an ice chute carried by said frame for discharging the ice crushed by said ice breaking and crushing mechanism laterally to one side of said machine, and means carried by said frame and engageable with the ice blocks conveyed by said elevating and conveying mechanism for upsetting said ice blocks prior to passing the ice blocks into said ice breaking and crushing mechanism.

19. A refrigerator car icing machine comprising the main frame, an ice block elevating and conveying mechanism carried by said frame, an ice breaking and crushing mechanism mounted on said frame, an ice chute carried by said frame for discharging the ice crushed by said ice breaking and crushing mechanism laterally to one side of said machine, and means carried by said frame and located in the path of travel of said ice blocks for engaging said ice blocks and turning them through an arc of substantially ninety degrees prior to feeding them into said ice breaking and crushing mechanism.

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20. A refrigerator car icing machine comprising a main frame, an ice block elevating and conveying mechanism carried by said frame, an ice breaking and crushing mechanism carried by said frame, means carried by said frame including oppositely and laterally projecting chutes for discharging the crushed ice laterally in either direction from said machine, and means carried by said frame and located in the path of travel of said ice blocks for turning said ice blocks on one of their larger flat sides prior to feeding them into said ice breaking and crushing mechanism.

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