

March 12, 1929.

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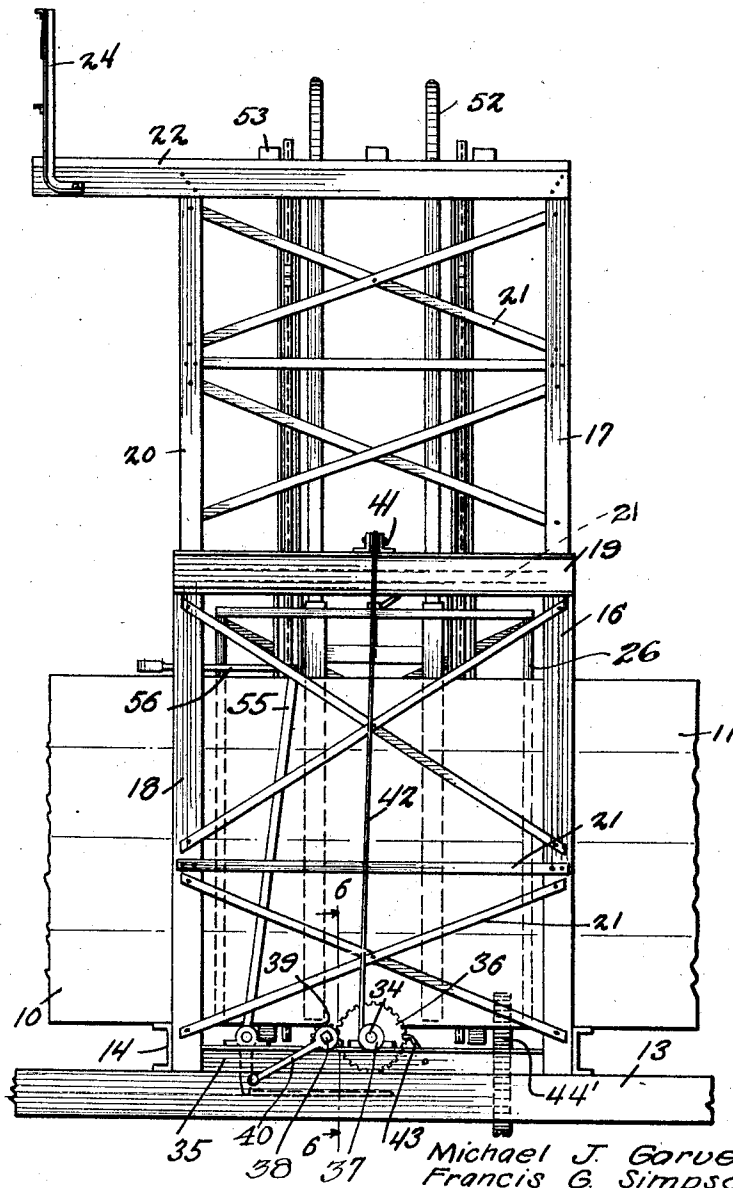
1,705,010

ICE LOADING APPARATUS

Filed Jan. 31, 1927

4 Sheets-Sheet 1

Fig. 1.



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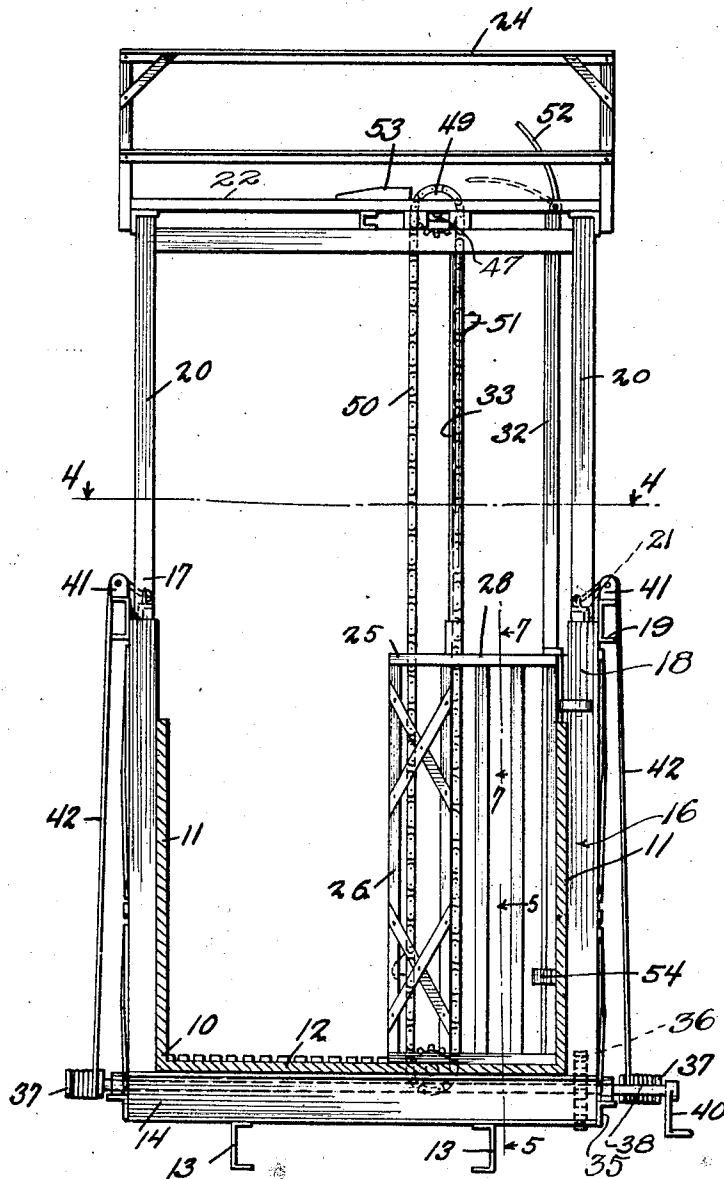
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4 Sheets-Sheet 2

Fig. 2.



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4 Sheets-Sheet 3

Fig. 3.

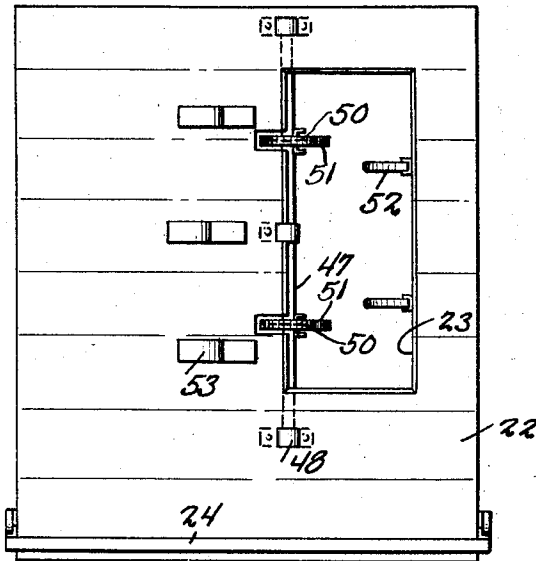
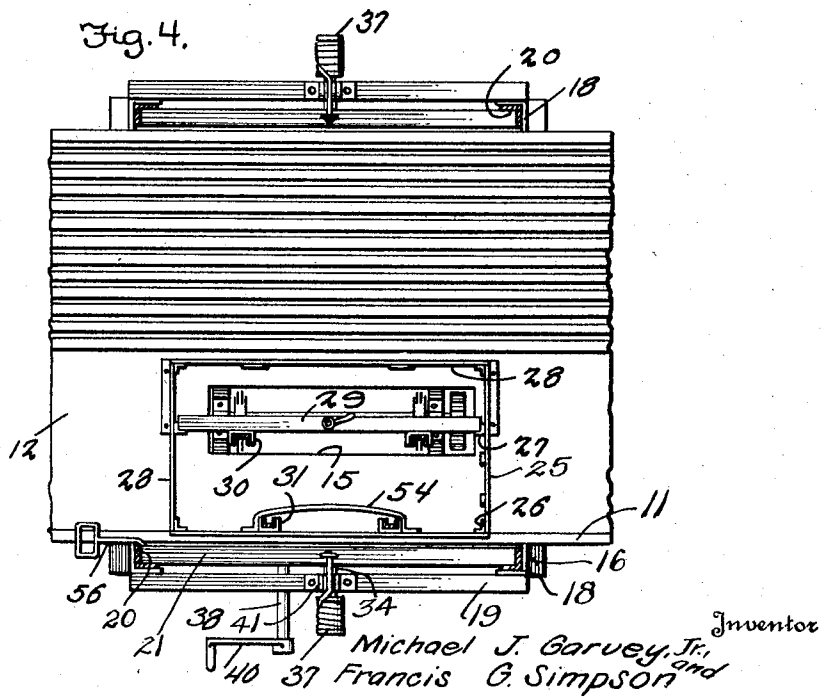


Fig. 4.



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4 Sheets-Sheet 4

Fig. 5.

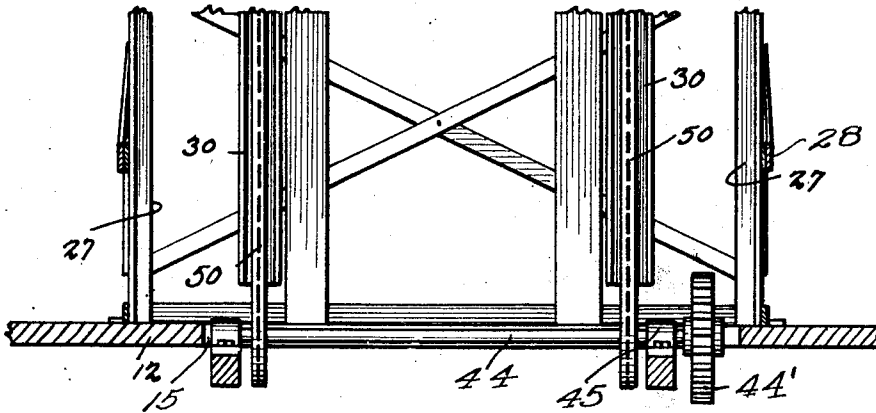


Fig. 6.

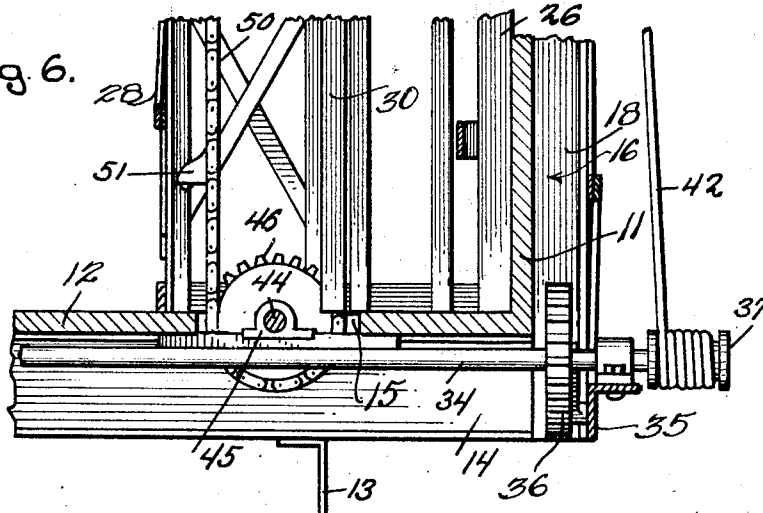
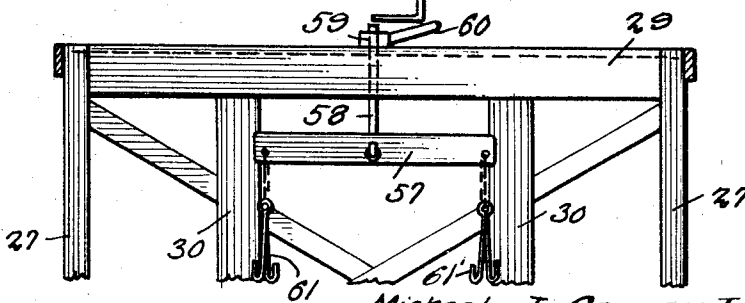


Fig. 7.



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UNITED STATES PATENT OFFICE.

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ICE-LOADING APPARATUS.

Application filed January 31, 1927. Serial No. 164,960.

The present invention relates to improvements in ice handling apparatus and more particularly to an apparatus for loading ice from a carrier truck to an elevated position for icing refrigerator cars.

One of the objects of the invention is the provision of an apparatus adapted to facilitate the elevation of ice blocks from the conventional type of carrier truck to a platform arranged immediately above the ice compartments of refrigerator cars.

A further object of the invention is the provision of a collapsible frame structure adapted for installation upon the standard types of ice carrying trucks and arranged to facilitate the conveyance of ice blocks to elevated positions.

Another object of the invention is the provision of an ice loading apparatus of an extensible character and arranged to be lowered when the ice carrying truck is employed in the transportation of ice and extensible vertically when it is desired to elevate the ice for convenient filling of refrigerator car bunkers.

Still another object of the invention is the provision of an ice loading apparatus of the above character embodying an extensible frame and an endless elevating structure which is durable and relatively simple in construction and which can be operated through the medium of the truck motor.

Other objects and advantages of the invention will become apparent as the description progresses.

In the accompanying drawings forming a part of this specification and in which like reference characters are employed to designate corresponding parts throughout the same:

Figure 1 is a side elevational view of the assembled apparatus constructed in accordance with our invention operatively associated with a truck body,

Figure 2 is a rear elevational view of the same,

Figure 3 is a top plan view,

Figure 4 is a horizontal sectional view taken on the line 4-4 of Figure 2,

Figure 5 is an enlarged vertical sectional view taken on the line 5-5 of Figure 2,

Figure 6 is a similar view taken on the line 6-6 of Figure 1, and

Figure 7 is a similar view taken on the line 7-7 of Figure 2.

Referring to the drawings wherein for the

purpose of illustration is shown the preferred embodiment of our invention, the numeral 10 designates a conventional type of motor truck body such as is commonly employed for carrying ice for filling refrigerator cars and the like. This body embodies a pair of vertical side members 11 and a bottom 12 supported in elevated position upon the chassis beams 13 by transversely extending channel beams 14. The bottom 12 is formed with a longitudinally extending opening 15 arranged adjacent the forward portion of the body and adjacent one side thereof.

Our invention resides primarily in the provision of a vertically extending frame adapted for detachable connection with the truck body 10. This frame embodies a lower stationary frame section 16 and an upper vertically extensible section 17 adjustable with respect to the lower stationary section. The lower stationary section embodies four supporting uprights 18 preferably formed of angle iron having their ends rigidly connected to the transverse channel beams 14. A transverse channel beam 19 is secured to the upper ends of the supporting uprights 18 at the opposite sides of the section, as clearly shown in Figures 1 and 2.

The upper adjustable frame section 17 also embodies four corner uprights 20 of angle iron fitting in the supporting uprights 18 and arranged for telescopic sliding movement therein. Both the lower stationary section and the upper extensible frame section have their uprights braced by a plurality of horizontally and diagonally extending brace bars 21. Arranged upon the upper end of the extensible frame section and firmly secured thereon is a rectangular platform 22 provided with an elongated rectangular opening 23 arranged longitudinally adjacent one outer edge. Pivotally mounted upon the platform adjacent its rear edge is a rectangular frame 24 adapted to be arranged in a vertical position when the apparatus is in use as shown in Figures 1 and 2, and movable to a horizontal position on the platform when the apparatus is not in use.

Arranged within the truck body 10 against one side thereof and in vertical alignment with the opening 23 in the platform 22 is an auxiliary guide frame 25 embodying four corner uprights 26 and intermediate uprights 27 positioned between the uprights 26. The upper and lower ends of the uprights 26 and 27 are connected by means of

longitudinal and transversely extending bars 28 to provide a durable and rigid frame. Extending vertically in the intermediate portion of the auxiliary frame 25 and attached to horizontal angle irons 29 are vertical channeled guides 30 adapted to guide the vertical movement of the stretches of conveyor chains.

A pair of channel irons 31 are secured to the outer portion of the auxiliary frame and extend vertically beside the inner side of the truck body, these channel irons registering with a second pair of channel irons 32 rigidly secured to the platform 22 and arranged vertically, so as to be telescopically slidable within the lower channel irons 31. In a similar manner, a pair of channel irons 33 are arranged in opposed positions to the channel irons 32 and also secured to the platform, these latter channel irons slidably engaging the channel irons 30 arranged in the lower auxiliary frame.

From this construction, it is apparent that the upper movable section of the main frame is vertically adjustable, the vertical extension thereof being effected by a means including a horizontal shaft 34 journaled in bearings on angle iron beams 35 extending longitudinally of the truck body and secured to the channel beams 14. The shaft 34 carries a gear 36 and fixed upon the outer projecting ends of the shaft 34 are drums 37. Arranged parallel with the shaft 34 and adjacent the gear 36 thereon is a second shaft 38, a pinion 39 being fixed on the intermediate portion of the shaft and in mesh with the toothed gear 36. The outer end of the stub shaft 38 carries a detachable crank handle 40 by means of which the shafts and gears are manually rotated. Secured upon the upper edges of the channel beams 19 of the lower frame section in a central position are brackets 41 rotatably supporting rollers over which are trained cables 42. One end of each cable 42 is secured to the horizontal brace bar 21 at the lower portion of the respective extensible frame section 17 while the opposite end is attached to the respective drum 37. Thus, by rotatably operating the gears 36 and 39, the drums 37 are rotated so as to wind or unwind the cables 42 thereby elevating or lowering the upper movable frame section. In order that the upper movable frame section may be locked in the desired position of vertical adjustment, we provide pivoted pawls 43 upon the angle beams 35 which are engageable with the respective gears 36. As clearly shown in Figures 2 and 6, the shaft 34 extends transversely of the body and carries a drum 37 on each end so that the elevating mechanism is duplicated and arranged at each side so as to uniformly raise and lower the upper movable section of the frame.

Arranged in a longitudinal position in

the bottom of the truck body 10 and disposed centrally in the opening 15 in the bottom thereof is a conveyor operating shaft 44 journaled in bearing brackets 45 and having sprocket gears 46 fixed adjacent its outer ends. The shaft 44 is connected by means of a gear train 44' in any suitable manner with the transmission mechanism of the vehicle so that the conveyor shaft 44 may be operated by the vehicle motor, a suitable clutch mechanism being interposed in the drive mechanism between the transmission and the shaft to control the operation of the shaft, this transmitting mechanism not being illustrated as it forms no part of the present invention. An upper conveyor shaft 47 is mounted on the under side of the platform 22, this shaft being journaled in brackets 48 and having sprocket gears 49 secured thereto in vertical alinement with the sprocket gears 46 secured to the lower shaft 44. It will be noted, that the upper shaft 47 is arranged adjacent the inner side of the opening 23, suitable notches being formed in the platform to accommodate the gears. Endless conveyor chains 50 are trained over the vertically alined gears and secured to each of the chains 50 in uniformly spaced positions and arranged laterally opposite each other are carrier lugs or cleats 51 provided with tapered spurs on their upper horizontal edges for anchoring blocks of ice in position. Thus, the inner stretches of the chains coinciding with the side of the opening in the platform and having vertical upward movement serve to elevate the ice blocks from a position in the truck body upwardly onto the platform 22. Pivotaly mounted on the platform 22 and arranged at the outer side of the opening 23 therein are a pair of inwardly curved block tilting arms 52 normally adapted to swing to a downward substantially horizontal position shown in dotted lines in Figure 2 and movable to an upwardly inclined position as shown in full lines in this figure to tilt the ice blocks from a vertical position to a horizontal position on the platform. As the ice block is thrown onto the platform, it will fall on blocks 53 which have inclined upper sides over which the block of ice may slide toward the outer edge of the platform. Secured to the inner side of the truck body in a position opposed to the conveyor chains 50 is a resilient bumper 54 preferably formed of a spring steel bar having its intermediate portion bowed outwardly to urge the ice blocks against the conveyor chains and effect their engagement with the carrier cleats.

As shown to advantage in Figure 1, a clutch lever 55 is pivotaly mounted on the outer side of the truck body arranged for convenient adjustment by the operator to control the movement of the conveyor, a

connecting link 56 being formed with a handle at its outer end and having its inner end pivotally connected with the lever to facilitate its operation. Another feature of the invention resides in the provision of means whereby the conveyor chains 50 will be maintained in proper position on the sprockets when the upper frame section 17 is in lowered position, this being effected by the provision of a horizontal bar 57 suspended upon a rod 58 formed with a hook at its lower end adapted to engage in an opening in the center of the bar 57 and threaded at its upper end. The upper extremity of the rod 58 projects through one of the horizontal angle irons 29 of the auxiliary frame and is supported by a nut 59 threaded on the upper end of the rod and provided with an operating handle 60. The ends of the horizontal bar 57 carry hook members 61 engageable with the chains when the extensible frame is in lowered position. The hooks 61 are suspended on relatively short chains, there being two hooks at each end of the bar adapted to engage the opposite sides of each conveyor chain so that when the extensible frame 17 is lowered the lower portions of the chains will be maintained in mesh with the lower sprocket gears 46.

In use, the collapsible frame structure comprising the essential feature of the present invention is securely attached upon the forward portion of an ice carrying motor truck and is collapsed when the vehicle is employed for transporting ice. When it is desirable to load the ice in the compartments or bunkers of refrigerating cars, the extensible section 17 of the frame is elevated, this being accomplished by the manual operation of the crank 40 causing the cables 42 arranged at each side of the frame to be wound upon the drums 37 and thus cause an upward sliding movement of the extensible section. The clutch lever 55 is then swung into operating position so that the conveyor drive mechanism is operatively connected with the motor truck transmission thereby causing operation of the conveyor structure.

To elevate the ice blocks upon the platform and eventually into car bunkers, the blocks are slidably moved or edged into the auxiliary frame structure and forced between the spring bumper 54 and the conveyor chains. The travel of the chains will cause the carrier lugs 51 to engage the lower edge of the block and elevate the same to a vertical position upon the platform, where the ice block is overturned onto the inclined surfaces of the blocks 53 and slides toward the outer edge of the platform. In this position, the blocks are conveniently arranged for introduction into the refrigerator car

bunkers beside which the truck and platform are positioned.

It is to be understood that the form of our invention herewith shown and described is to be taken as the preferred example of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. In apparatus for loading blocks of ice, an upright frame, a platform mounted horizontally at the upper end of the frame and having an opening through which the blocks of ice may be elevated, elevating mechanism within the frame operable to elevate the blocks vertically along one side of the frame and through the opening, and means upon the platform at the corresponding side of the opening and extending above the opening for overturning the blocks onto the platform at the other side of the opening as they are elevated through the opening.

2. In apparatus for loading blocks of ice, an upright frame, a platform mounted horizontally at the upper end of the frame and provided with an opening through which the blocks may be elevated, an endless elevating means arranged in upright position within the frame and at one side of the opening of the platform, and including lugs for engagement with the bottoms of blocks of ice at one side of said blocks, the frame including guide members opposing the elevating mechanism and constituting rests for the other sides of the blocks to guide the blocks elevated by the mechanism, and means upon the platform at the opposite side of the opening and extending above the same for overturning the blocks onto the platform as they are elevated through the opening.

3. In apparatus for loading blocks of ice, an upright frame, a platform mounted horizontally at the upper end of the frame and having an opening therein, an endless elevating means within the frame arranged in upright position at one side thereof with its delivery end presented at one side of said opening, and including lugs for engagement with the bottoms of blocks of ice at one side of said blocks, means at the other side of the opening constituting a rest for the other sides of the blocks to guide the blocks of ice to be elevated by the mechanism, a yieldable abutment for the blocks to be elevated mounted near the lower portion of the guiding means and opposite the elevating means whereby to effect positioning of the blocks in engagement with the elevating means, and means upon the platform at the other side of the opening for delivering, onto the platform, the blocks elevated through the opening.

4. In apparatus for loading blocks of ice, an upright frame, including an upright stationary lower section, a vertically extensible upright section mounted therein, means for
5 adjusting the extensible section, a platform at the upper end of the extensible section having an opening therein, means within the frame for elevating blocks of ice to and through said opening, and means upon the
10 platform at one side of the opening for overturning the blocks onto the platform upon elevation of the blocks through the opening.

5. In apparatus for loading blocks of ice, an upright frame, including an upright stationary lower section, a vertically extensible upright section mounted therein, means for
15 adjusting the extensible section, a platform at the upper end of the extensible section having an opening therein, means for elevating the ice within the frame to and through
20 said opening, the said means comprising endless chains arranged in parallelism and having one of their stretches located approxi-

mately in the vertical plane of one side of the opening, means upon the chains for en- 25 gaging the bottom of a block of ice at one side thereof and supporting the block at said side, guiding means for the other side of the block extending vertically within the frame substantially in the plane of the opposite 30 side of the opening, upper and lower pairs of sprockets over which the chains are trained, means for rotating the lower pair of sprockets to impart motion to the chains, and means for coactive engagement with the 35 stretches of the chains at a point intermediate the sprockets to support the chains with their lower portions in mesh with the lower sprockets during and subsequent to the lowering of the extensible section of the 40 frame.

In testimony whereof we affix our signatures.

MICHAEL J. GARVEY, JR.
FRANCIS G. SIMPSON.