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ICE UPENDING MACHINE

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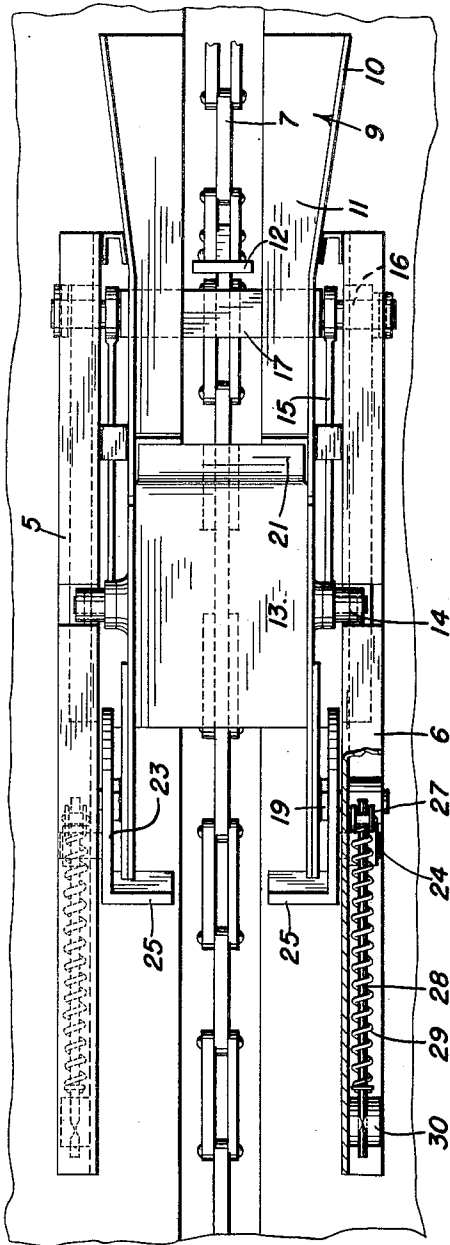
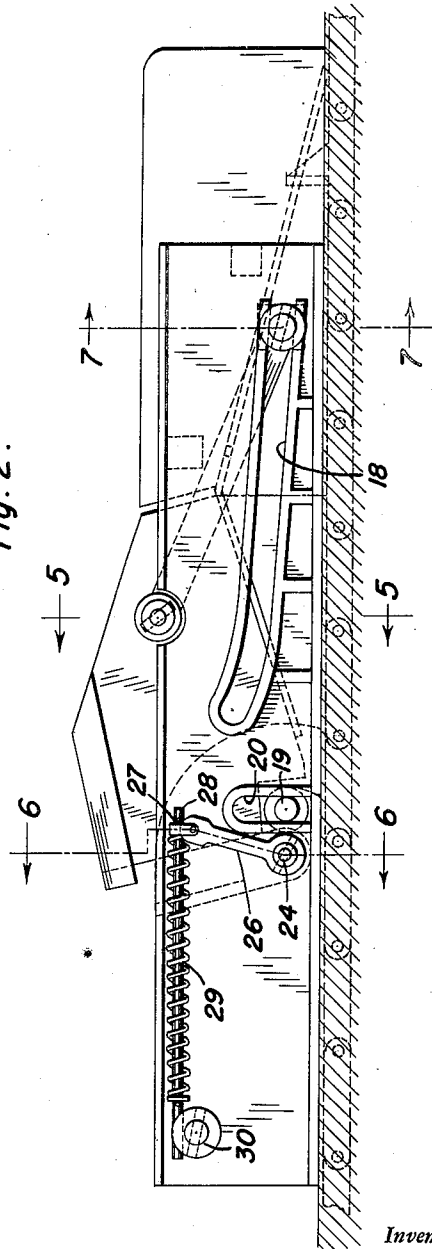


Fig. 1.

Fig. 2.



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ICE UPENDING MACHINE

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10 Claims. (Cl. 198—33)

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The present invention relates to new and useful improvements in ice handling equipment and more particularly to a device for changing the position of a block of ice that is being conveyed to a delivery point from a position resting on one edge to a position resting on one end of the block of ice.

An important object of the invention is to provide a device for upending a block of ice without requiring the aid of manual labor.

A further object of the invention is to provide a device of this character which will automatically upend a block of ice without interrupting its movement while being conveyed from a storage room to a place of delivery, and without resulting in chipping of the ice.

A still further object is to provide an apparatus of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view;

Figure 2 is a side elevational view;

Figure 3 is an enlarged longitudinal sectional view;

Figure 4 is a side elevational view showing the bucket in a raised position for upending the block of ice;

Figures 5, 6 and 7 are transverse sectional views taken respectively on the lines 5—5, 6—6 and 7—7 of Figure 2; and

Figure 8 is a fragmentary perspective view of one of the ice feeding lugs carried by the chain.

Referring now to the drawings in detail wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numerals 5 and 6 designate a pair of channel members supported in an edgewise position at the opposite sides of a conveyor chain 7 to provide a passageway through which blocks of ice 8 are fed by the chain. At the front end of the passageway is a ramp 9 which includes a pair of side walls 10 and an inwardly projecting flange 11 at their lower edges and on which the block of ice is adapted to travel by means of a pusher cleat 12 formed as a part of one of the links of the chain. The flanges 11 are inclined upwardly toward their rear ends to move the block of ice in an upwardly inclined position.

A bucket 13 of U-shaped construction in cross section is positioned in the passageway at the rear end of the ramp 9, the bucket being provided with trunnions 14 at its opposite side adjacent its front end and to which one end of a pair of arms 15 is pivotally attached. The arms 15 extend forwardly from the bucket in a down-

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wardly inclined position and are pivoted at their front ends on the rounded ends 16 of a cross bar 17 disposed in the path of movement of the cleat 12. The rounded ends 16 of the cross bar are slidably carried in longitudinally extending slots 18 in the channel members 5 and 6, the slots being inclined upwardly toward their rear ends.

At rear lower end thereof the bucket 13 is provided on its sides with trunnions 19 pivoted in vertical slots 20 in the lower sides of the channel members 5 and 6 to provide for an upward swinging or raising movement of the front end of the bucket.

The sides of the bucket 13 project rearwardly at their rear ends beyond the rear edge of the bottom thereof and the bottom of the bucket is held in a rearwardly and downwardly inclined position by the arms 15 and cross bar 17 when engaged in the front end of the slots 18. The front edge of the bottom of the bucket is formed with a downwardly inclined lip 21 disposed in the plane of the flanges 11 of the ramp at the upper ends of said flanges.

A pair of shoes constituting a check device designated generally at 22 include substantially triangular shaped plates 23 and are provided with trunnions 24 at their lower rear edges which are pivoted in the sides of the channel members 5 and 6. The front edges of the plates 23 overlap the sides of the bucket 13 at the rear edges of the latter. The rear upper edge of the plates 23 are formed with inwardly projecting flanges 25.

An arm 26 is secured to the outer end of each of the trunnions 24 and extend upwardly therefrom on the outside of the adjacent channel and to the upper end of which is pivoted a yoke 27 slidably mounted on a longitudinally extending rod 28 and held in a forward position by a coil spring 29 mounted on the rod. The rear end of the rod is pivoted to a pin 30 carried by one of the channel members of the passage.

In the operation of the device, as the block of ice 8 is moved forward by the conveyor chain 7 the block enters the ramp 9 at the front end of the passage formed by the channels 5 and 6, the ice being moved upwardly on the flanges 11 of the ramp by the pusher cleat 12 carried by the chain as shown by the full lines in Figure 3 of the drawings.

When the block of ice slides upwardly past its center the front end of the block will be tilted downwardly as shown by the dotted lines in Figure 3 whereupon the rear end of the block will be disengaged from the cleat 12 and a continued movement of the cleat will then engage the cross bar 17 which is then moved forwardly in the slots 18 to raise the arms 15 upwardly and thus tilt the front end of the bucket 13 upwardly with the block of ice 8 positioned therein as shown in Figure 4 of the drawings. The front end of the block of ice then moves against the flanges 25 of the shoes 22 which are likewise tilted downwardly by

the weight of the block so that the block will then rest in an upright position on its end.

After the block of ice has been upended into the position shown by the dotted lines in Figure 4, the block is again picked up by the cleat 12 of the chain to continue the forward movement of the block out of the passageway to its point of delivery.

The spring 29 returns the shoes 22 to their normal position and the flanges 25 engage the rear edges of bucket 13 to swing the bucket downwardly ready to receive the next block of ice.

When the cleat 12 enters the guide passage formed by the side plates 5 and 6 without feeding a block of ice thereto, the cleat will ride under the sloping bottom of bucket 13 to raise the rear end thereof sufficiently for the cleat to pass under the bucket, without interfering with the movement of the cleat, the slots 20 permitting the vertical movement of the trunnions 19 at the rear end of the bucket.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. An ice upending device comprising in combination a conveyor chain having a conveyor cleat for engaging and sliding a block of ice, and means in the path of movement of the block tilting the block into an upended position, said means including a pivoted member operated by said cleat.

2. An ice upending device comprising in combination a conveyor chain having a conveyor cleat for engaging and sliding a block of ice, and means in the path of movement of the block tilting the block into an upended position, said means including a pivoted channel-shaped bucket operated by said cleat.

3. An ice upending device comprising in combination a conveyor chain having a conveyor cleat for engaging and sliding a block of ice, and means in the path of movement of the block tilting the block into an upended position, said means including a ramp for elevating one end of the block into an off-balanced position and subsequently lowering the elevated end, a bucket receiving the lowered end of the block pivotally mounted for swinging to elevate the other end of the block, and means for swinging the bucket operated by said cleat.

4. An ice upending device comprising in combination a conveyor chain having a conveyor cleat for engaging and sliding a block of ice, and means in the path of movement of the block for upending the block by a rocking motion imparted thereto, said means including a stationary member for sliding of the block thereon into off-balanced position to lower the front end thereof, and a pivotally mounted member for receiving the block lowered end foremost and subsequently raising the rear end of the block.

5. An ice upending device comprising in combination a conveyor chain having a conveyor

cleat for engaging and sliding a block of ice, and means in the path of movement of the block for upending the block by a rocking motion imparted thereto, said means including a stationary member for sliding of the block thereon into off-balanced position to lower the front end thereof, and a member for receiving said block lowered end foremost and operative for subsequently raising the rear end of the block, said last named member being operated by said cleat.

6. An ice upending device comprising in combination a conveyor chain having a conveyor cleat for engaging and sliding a block of ice, and means in the path of movement of the block for upending the block by a rocking motion imparted thereto, said means including a stationary member for sliding of said block thereon into off-balanced position to lower the front end thereof, and a pivotally mounted member for receiving the block lowered end foremost and operative for subsequently raising the rear end of the block, said last named member being operated by said cleat.

7. An ice upending device comprising in combination a conveyor chain having a conveyor cleat, and means in the path of a block of ice in motion by the cleat for upending the block, said means comprising a pivotally actuated member onto which the block is moved and released by the cleat, and said pivotally actuated member being actuated by a continued movement of the cleat.

8. An ice upending device comprising in combination a conveyor chain having a conveyor cleat, and means in the path of a block of ice in motion by the cleat for upending the block, said means comprising a pivotally actuated member onto which the block is moved and released by the cleat, a lifting arm connected at one end to the member, and a cross bar at the other end of said arm and in the path of subsequent movement of the cleat for actuating the member.

9. An ice upending device comprising in combination, a conveyor for a block of ice and including a conveyor chain, a tiltable member receiving and tilting the block upwardly over said chain with one end lowermost, and a check device engageable by the lowermost end of the block to ease said block downwardly onto said chain, said check device comprising a pair of pivoted shoes upon opposite sides of said chain, and spring means retarding lowering movement of the shoes when engaged by said end of the block and acting on the shoes to return the shoes to their normal raised position.

10. In an ice upending device, a conveyor chain for a block of ice and having a cleat thereon, a member pivotally mounted over said chain for rocking upwardly to tilt the block of ice into upended position and operative by said cleat, said member being vertically movable bodily by said cleat to provide for passage of the cleat under the member.

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