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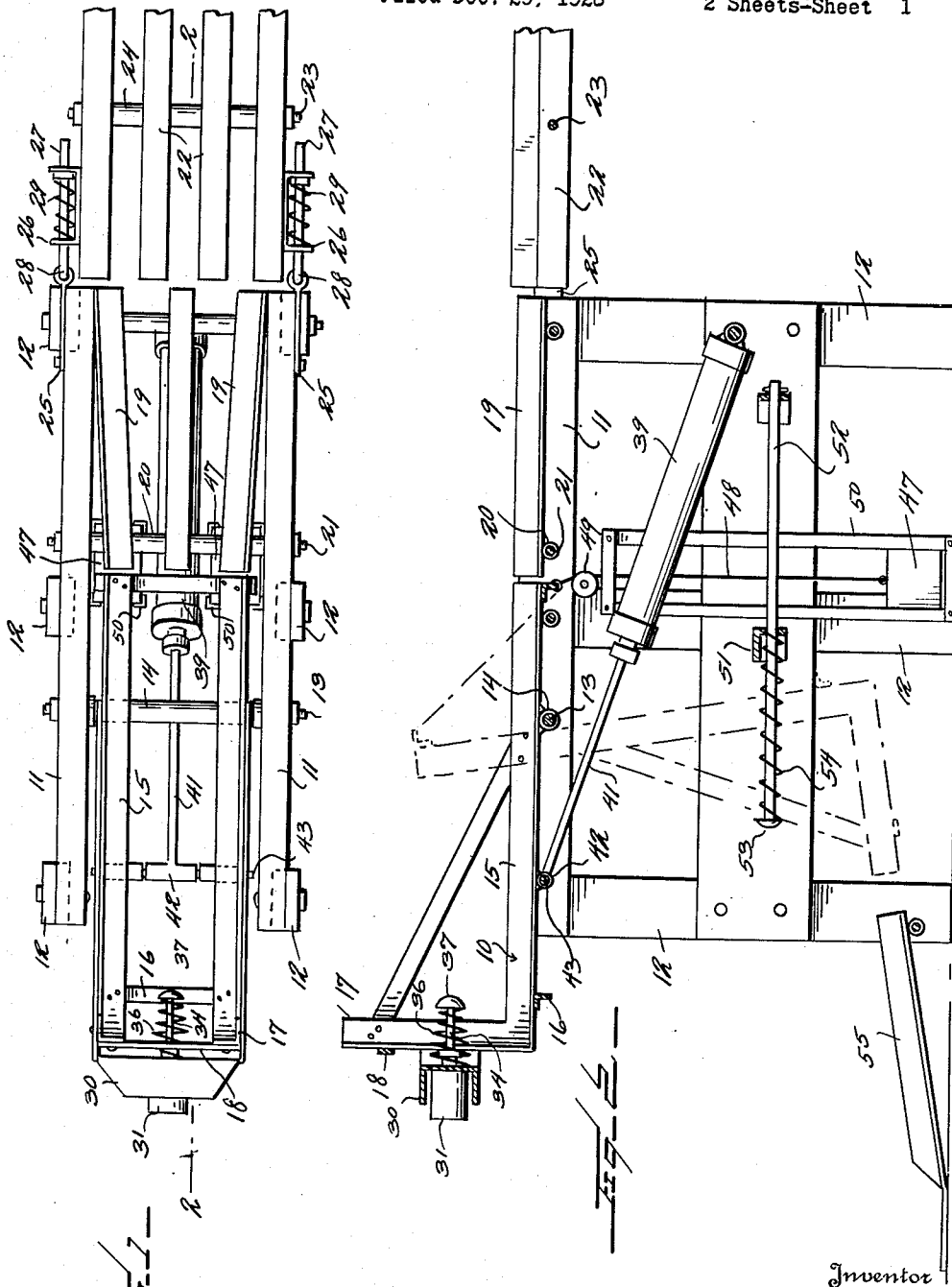
R. RAY

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BLOCK ICE HANDLING MECHANISM

Filed Dec. 29, 1928

2 Sheets-Sheet 1



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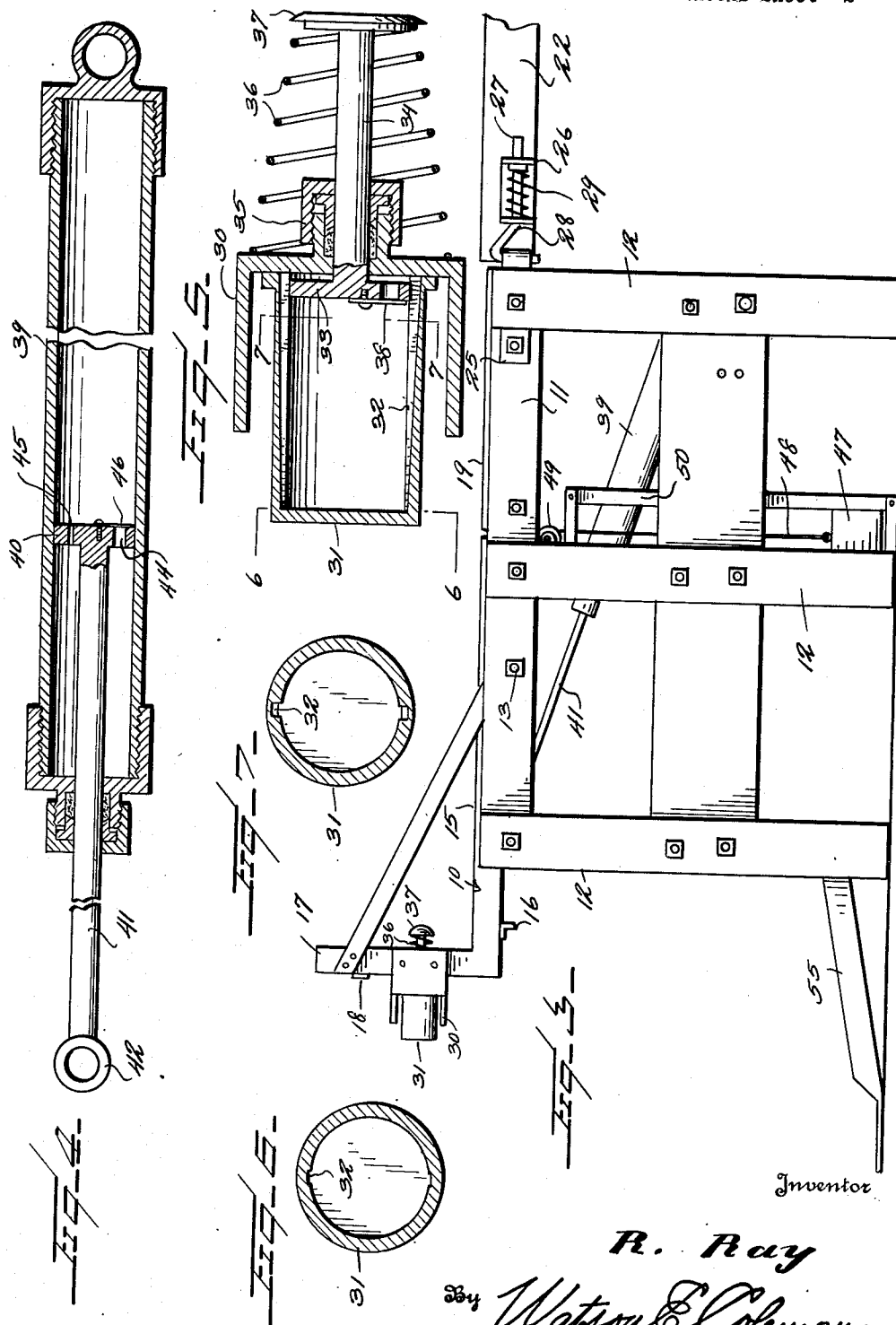
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BLOCK ICE HANDLING MECHANISM

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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BLOCK-ICE-HANDLING MECHANISM

Application filed December 29, 1928. Serial No. 329,250.

This invention relates to ice handling structures and particularly to means for tilting blocks of ice from a horizontal to a vertical position. In delivering ice from an ice house, the blocks pass down a slide-way or chute from the ice house on their sides and when they reach the floor or lower level, these blocks must be shifted by hand into an upright position. This involves considerable strength and labor and the general object of the present invention is to provide means for receiving the blocks as they are discharged from the slide-way of the ice house and automatically tilting these blocks into a vertical position and then discharging them to a second slide-way or on to the floor.

A further object is to provide a mechanism of this character involving a tiltable platform upon which the ice is discharged and provide means whereby the shock of the ice as it is received upon this platform will be cushioned.

Another object is to provide means whereby as the platform swings down to its vertical position, the ice will strike against an abutment and be discharged from the platform on to the delivery slide-way, the shock of the ice against said abutment being cushioned.

A further object is to provide a mechanism of this kind which will do this work of tilting the blocks of ice from a horizontal to a vertical position faster and safer than the work can be done by hand and which is economical and saves the labor of many workmen.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a top plan view of an ice block tipping or handling machine constructed in accordance with my invention;

Figure 2 is a longitudinal section on the line 2—2 of Figure 1 and showing in dotted lines the platform tipped;

Figure 3 is a side elevation of the structure shown in Figure 2;

Figure 4 is a longitudinal sectional view of the platform retarding dash pot;

Figure 5 is a longitudinal sectional view of the cushioning dash pot;

Figure 6 is a section on the line 6—6 of Figure 5;

Figure 7 is a section on the line 7—7 of Figure 5.

Referring to these drawings, it will be seen that there is a tiltable platform 10 which is pivotally mounted upon a supporting frame, the supporting frame consisting of the longitudinally extending beams 11 and the vertical supporting posts 12. The frame 10 is pivoted upon a transversely extending bolt 13 by means of a sleeve 14 which surrounds this bolt, the bolt passing through the beams 11 and the sleeves being mounted upon the frame 10.

The frame 10 may be constructed in any suitable manner but as illustrated consists of the longitudinally extending angle irons 15 with transverse braces or other transverse members 16. At their forward ends, the angle irons extend upward as at 17 and bolted to these upwardly extending ends are the transverse members 18. It will be noted that the platform 10 or cradle terminates at about the middle of the supporting frame and projects out beyond the supporting frame. Mounted upon the supporting frame, rearward of the tiltable platform, are the two guide rails 19 which are also of angle iron, these guide rails being divergently angled rearward with relation to each other. The guide rails are mounted in any suitable manner and are shown as being mounted upon sleeves 20 through which the bolts 21 pass, these bolts passing through the beams 11. These guide members 19 extend up close to the longitudinally extending members 22 of a delivery chute extending from an ice house or from any other overhead structure or level, these members 22 being shown as connected by a transverse bolt 23 with spacing sleeves 24.

The frame beams 11 are connected to the chute by means of irons 25 formed with eyes at their rear ends and attached to the chute are V-shaped clips 26 through which pass the shanks 27 of hooks 28, these shanks being urged rearward by springs 29 in an obvious manner so that thus the supporting struc-

ture of the tiltable platform is yieldingly held to the chute so that when the ice strikes against the platform, it will not force the frame thereof away from the supporting

5 frame of the chute.
In order to cushion the impact of the ice against the forwardly and upwardly turned end of the platform 10, I mount upon this upwardly turned end the transversely extending channel iron 30 and mount upon this
10 channel iron the dash pot 31. The walls of this dash pot are provided with two grooves 32, these grooves being relatively deep at the open end of the dash pot and decreasing
15 in depth toward the rear of the dash pot. Operating within the cylinder is the piston 33 whose rod 34 extends out through the channel iron 30 through a stuffing box 35. A compression spring 36 surrounds the rod 34
20 and bears against the head 37 thereof and against the channel iron, thus urging the cushioning piston outward.

The piston 33 is provided with an aperture closed by a valve 38. It will be seen
25 that when the ice rushing down the slide-way from the ice house is delivered on to the platform, it will strike against the head 37 of the piston and force the piston into the dash pot, the oil which fills the dash pot will pass
30 around the piston through the by-pass grooves 32 and as the piston moves inward, these by-pass passages will be less in depth and the forward movement of the piston will thus be gradually impeded so that the
35 piston will take up jar. As soon as the ice is delivered from the platform, the spring 36 will act to move the piston back to its normal position, this movement being varied by the valve 38 which will uncover a relatively large
40 aperture, permitting the movement of the piston. Thus I have provided means for cushioning the ice when it strikes the end of the platform.

The platform, as before stated, is pivoted
45 upon the bolt 13 to operate thereon from a horizontal position to a vertical position. This movement is cushioned by an elongated dash pot or cylinder 39 pivotally supported in any suitable manner upon the supporting
50 frame and preferably disposed at the middle of the frame. Within the cylinder is disposed the piston 40 on the piston rod 41 which extends upward and outward and is pivoted at 42 to the under side of the frame. As
55 shown this pivotal connection is formed by a sleeve surrounding the transverse bolt 43. The piston 40 is provided with two apertures 44 and 45. The aperture 45 is relatively small and the aperture 44 relatively larger
60 and upon the rear face of the piston is provided the valve 46. These apertures permit the free outward movement of the piston due to the platform being returned to its horizontal position but when the platform swings
65 downward to the discharge position, as shown

in dotted lines, the piston will be forced into the cylinder, the valve 46 will close and the oil within the cylinder will have to pass through the small aperture 45 so that the descent of the platform will be checked. The degree of this checking movement will depend upon the size of the aperture 45. 70

For the purpose of returning the platform to a horizontal position, I provide two counterweights 47, each having a cable 48 passing
75 over a pulley 49 and then extending to the rear end of the tiltable platform. When the platform tilts to its delivery position, the counterweights will be pulled up. As soon, however, as the ice is discharged from the platform, the counterweights will pull the rear end of the platform downward until the parts are in the horizontal position stated. 80

These weights 47 preferably move upon guides 50. 85

For the purpose of forcing the ice off of the platform, I mount upon a cross bar 51 attached to the intermediate pair of legs 12 a pusher or ejector comprising a horizontally extending rod 52. This rod slides through
90 the cross bar 51 and is provided at its forward end with a head 53 and is surrounded by a coiled compression spring 54 which normally holds the rod projected in a direction toward the receiving chute 55. When the
95 platform swings from the full line position to the dotted line position shown in Figure 2, the block of ice carried thereon will strike the ejector 52 and force it inward against the action of the spring 54. This tensions
100 the spring and as soon as the spring has been sufficiently tensioned, the rearward movement of the rod 52 will be checked and the rod 52 will thereupon act to eject the block of ice on to the chute 55 whereby it is carried
105 to the floor or other surface upon which it is to be supported.

The operation of this device has been so fully described in detail that it is unnecessary to recapitulate it but it will be seen that with
110 this mechanism blocks delivered on their sides from a store house or from any other overhead point will be received and automatically turned and delivered with their ends downward in a vertical position without
115 the necessity of any handling by an operator.

An important function of the spring connection between the chute 22 and the receiving platform is that this spring connection takes up jar to which the platform is subjected when a particularly large cake of ice slides down on to the platform or if the cake of ice slides with undue force on to the platform. Under these circumstances and were it not for the cushioning springs 29, the platform would move forward under the impact
120 of the cake and this would tend to pull the lower end of the chute 22 forward. With the connection which I have devised, however, the springs 29 will give, permitting the platform
125 130

to move forward under the impact and then when the ice has been discharged, the springs 29 will act to retract the platform to its normal position.

The dash pot mechanism 31 will absorb the shock of the ice coming into the machine at different speeds; but it will not absorb the shock coming on to the platform at a high or undesired speed.

While I have heretofore referred to this device as particularly designed for handling blocks of ice and setting these blocks up on end, I do not wish to be limited to its use as an ice block mechanism as it might be used for handling boxes or other articles which are received in one position from a chute and are to be discharged in a standing position.

I claim:—

1. A handling mechanism of the character described including a supporting frame, a platform pivotally mounted thereon, the platform having an upwardly extending portion at one end against which articles delivered on to the platform will abut, the weight of said articles causing the platform to swing from a horizontal to an approximately vertical position, means acting when the platform has reached a vertical position to force the article off the platform, means then acting to return the platform to its horizontal position, and means acting to retard the descent of the platform.

2. A handling mechanism of the character described including a supporting frame, a platform tiltably mounted thereon for movement from a horizontal position to a nearly vertical position, the free end of the platform being formed with upwardly extending portions, an impact cushion mounted upon the upwardly extending portion of the platform, means acting to yieldingly urge the platform to a horizontal position, and means mounted upon the supporting frame below the platform and with which the article engages when the platform is swung to a delivery position acting to urge the article from the platform.

3. A handling mechanism of the character described including a supporting frame, a platform tiltably mounted thereon for movement from a horizontal position to a nearly vertical position, the free end of the platform being formed with upwardly extending portions, an impact cushion mounted upon the upwardly extending portion of the platform, means acting to yieldingly urge the platform to a horizontal position, and means mounted upon the supporting frame below the platform and with which the article engages when the platform is swung to a delivery position acting to shift the article from the platform, said means comprising a longitudinally sliding rod and a spring urging the rod in the direction of the platform.

4. A handling mechanism of the character described, comprising a supporting frame, horizontal tracks mounted upon a portion of the frame, the tracks being divergent toward the rear of the frame, a tiltable platform mounted upon the remaining portion of the frame and including tracks in alignment with the forward ends of the first named tracks, the tiltable frame having an upwardly extending portion at its free end, and a cushion designed to receive the impact of articles discharged to the tiltable frame, means yieldingly retarding the downward movement of the tiltable frame under the weight of the article thereon, means yieldingly urging the tiltable frame to a horizontal position, but permitting the frame to tilt from a horizontal to an approximately vertical position under the weight of an article, means yieldingly impinging against the article when the frame is arriving at its vertical position and acting to force the article from the tiltable frame over the end thereof, and a receiving-way on to which the articles are discharged.

5. In an ice handling mechanism of the character described, a discharge chute, a platform at the lower end of the discharge chute and including tracks receiving ice from the discharge chute, a tilting platform upon which the article passing over said tracks is received, a cushioning impact receiving member at the forward end of the tilting platform, means yieldingly retarding the platform as it tilts from a vertical to a horizontal position under the weight of the article, means causing the platform to return to its receiving position when the article has been discharged therefrom, means for causing the discharge of the article when the platform has reached an approximately vertical position, and means for yieldingly locking the platform to the chute including eye members mounted upon the platform and hook members mounted upon the chute and longitudinally movable with relation thereto, and springs retracting said hook members.

6. An ice handling mechanism having a discharge chute, a platform at the lower end of the discharge chute, tracks receiving ice from the discharge chute, a tilting platform upon which the article passing over said tracks is received, a yielding impact receiving member at the forward end of the tilting platform, means causing the platform to turn to its receiving position when the article has been discharged therefrom by a tilting movement of the platform, and means for yieldingly locking the platform to the chute including connecting members connecting the chute and first named platform and including springs normally retracting said connecting members, but yielding upon impact of the ice with the impact receiving member.

7. In an ice handling mechanism of the character described, a supporting frame, horizontal tracks mounted upon a portion of the

frame, a tiltable platform mounted upon the remaining portion of the frame, and having an upwardly extending impact receiving member at its free end, means yieldingly retarding the downward movement of the tilting frame under the weight of an article thereon, means yieldingly urging the tiltable frame to a horizontal position, but permitting the frame to tilt to an approximately vertical position under the weight of an article, horizontally disposed guides mounted below the tiltable platform and rearward of the same, a rod carried by said guides, a spring urging the rod forward into a position where the forward end of the rod intersects the path of movement of the tiltable frame, and a receiving way on to which the articles are discharged from the tiltable frame, the rod acting to resiliently urge said articles from the tiltable frame when it is in its depending position.

In testimony whereof I hereunto affix my signature.

REMBERT RAY.

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