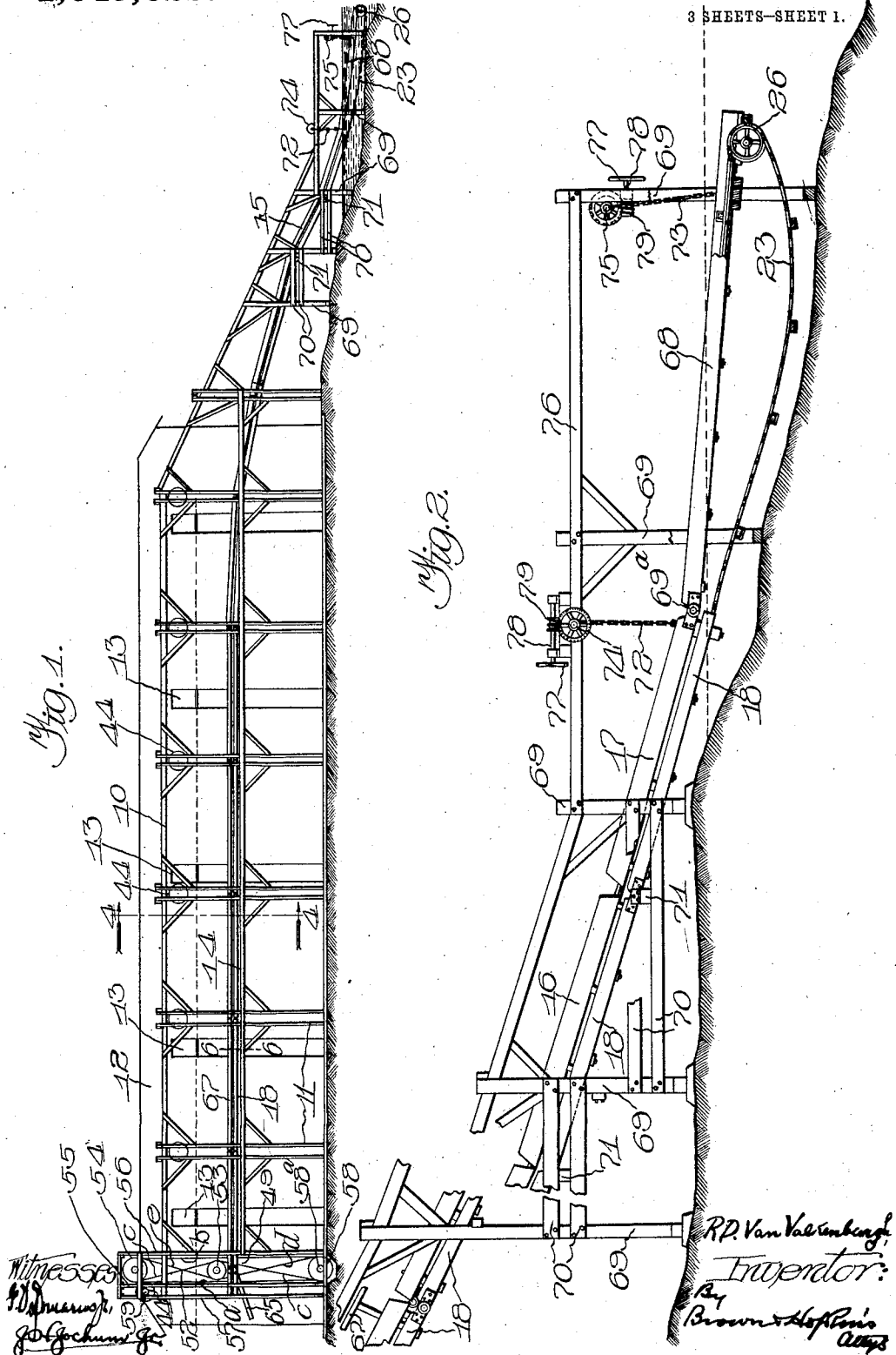


R. D. VAN VALKENBURGH.
ICE CONVEYER AND ELEVATOR.
APPLICATION FILED JAN. 18, 1909.

1,049,623.

Patented Jan. 7, 1913.

3 SHEETS-SHEET 1.

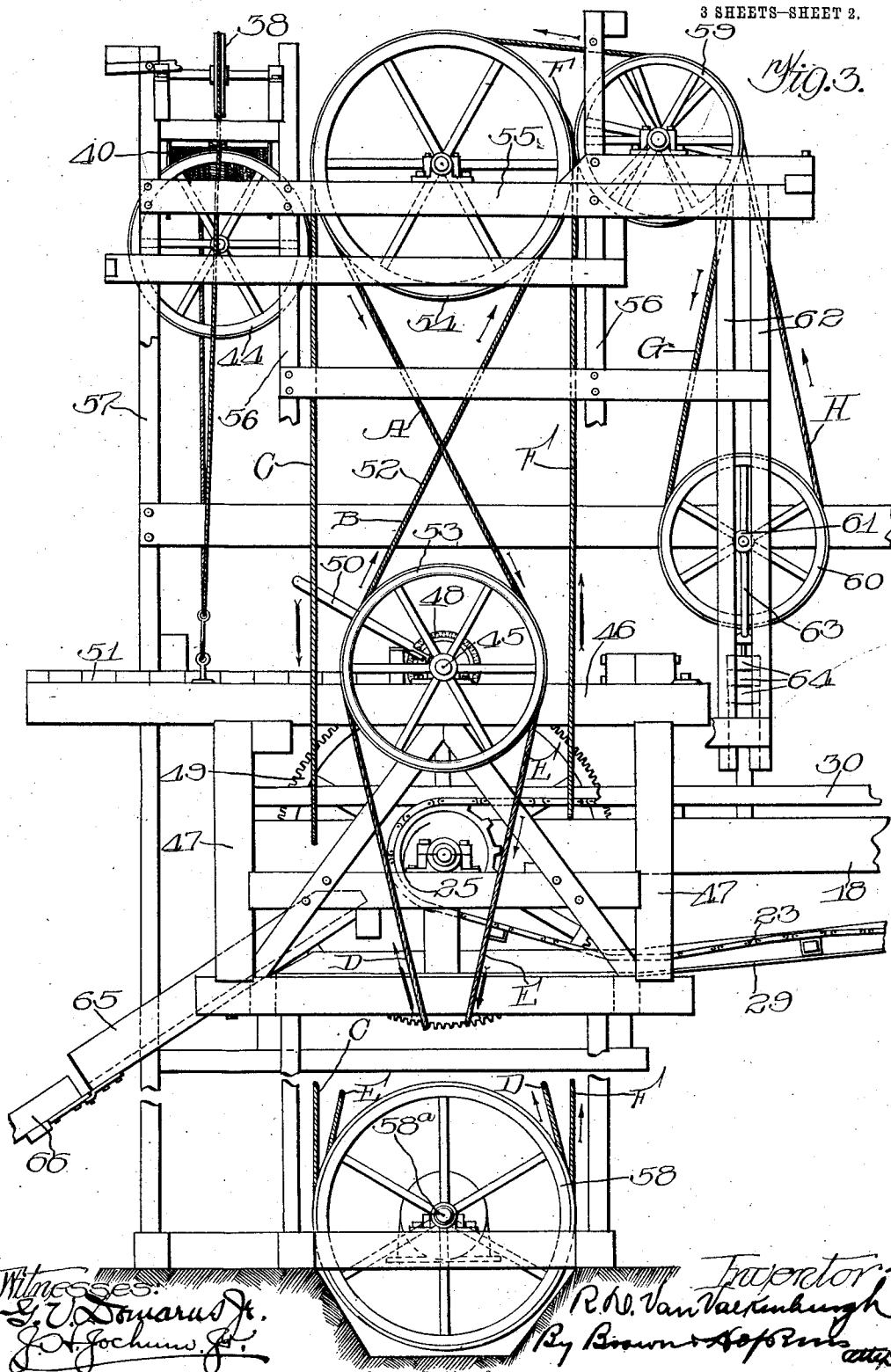


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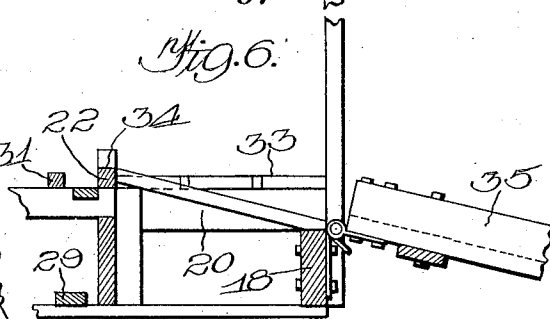
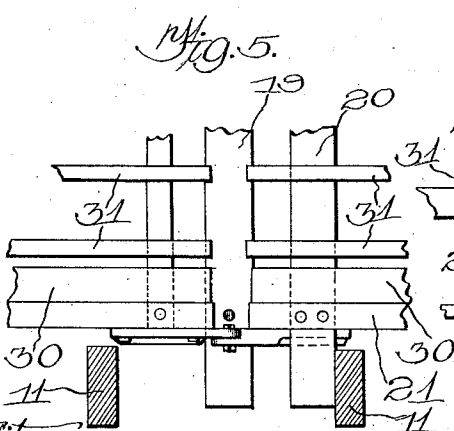
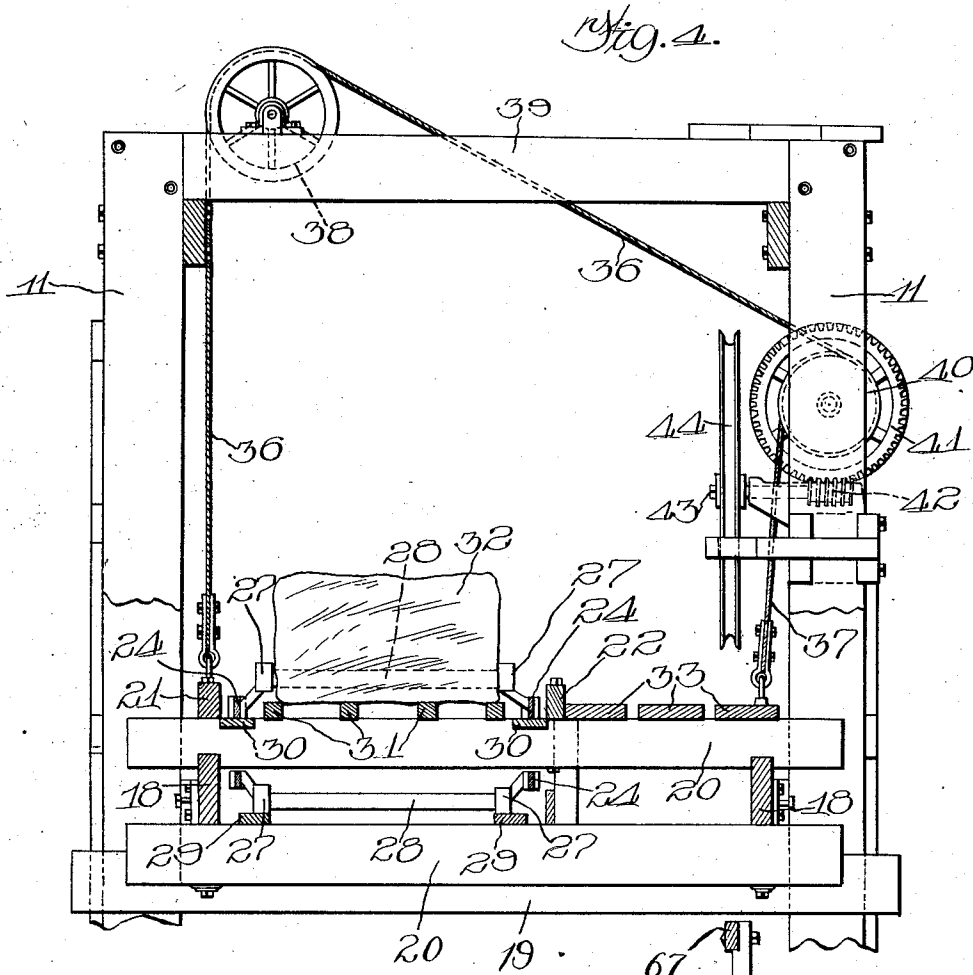


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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

RALPH D. VAN VALKENBURGH, OF CHICAGO, ILLINOIS.

ICE CONVEYER AND ELEVATOR.

1,049,623.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed January 18, 1909. Serial No. 472,810.

To all whom it may concern:

Be it known that I, RALPH D. VAN VALKENBURGH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ice Conveyers and Elevators, of which the following is a specification.

This invention relates to improvements in ice conveyers and elevators particularly adapted for transporting blocks of ice from a point of supply to an elevation and delivering them to an ice house or to a place to be packed or piled, and one of the objects of the invention is to provide an improved device of this character in which the delivery or rear end of the gallery may be adjusted to accommodate the same to varying conditions, such as the change in the height of the stack or pile of ice within the house, without interfering with the operation of or stopping the conveyer, and while the ice is being conveyed or transported thereby.

A further object is to provide improved means for driving the conveyer and for applying the motive power at the rear end of the conveyer throughout the entire range of the adjustment of the gallery.

A further object is to provide an improved conveyer of this character including a substantially horizontal portion and an inclined section, which latter projects into the water to receive the ice, and improved means for preventing the receiving end of the inclined portion from changing its angular relation to the water.

A further object is to provide an improved conveyer of this character including an adjustable hinged section which latter projects into the water, and improved means whereby said section may be withdrawn from or inserted into the water, as the remaining portion of the conveyer is raised or lowered, without necessitating the removal or the insertion of links from or into the conveyer.

A further object is to provide an improved device of this character which will be simple, durable and cheap in construction and efficient and effective in operation.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the

several parts hereinafter more fully described and claimed, and shown in the accompanying drawings illustrating an embodiment of the invention, and in which—

Figure 1 is a side elevation of an improved device of this character constructed in accordance with the principles of this invention. Fig. 2 is an enlarged detail section partly broken away of the forward or receiving end of the conveyer and elevator. Fig. 3 is an enlarged detail elevation partly broken away of the driving mechanism for the conveyer. Fig. 4 is an enlarged detail sectional view taken on line 4—4 of Fig. 1. Fig. 5 is an enlarged detail plan view of one of the joints of the gallery. Fig. 6 is an enlarged detail sectional view on line 6—6 of Fig. 1, showing the manner in which the blocks of ice may be moved from the conveyer into the ice or storage house.

Referring more particularly to the drawings and in the present exemplification of the invention, the numeral 10 designates generally a scaffold or supporting framework which may be of any desired or suitable construction, and comprises a plurality of 80 standards or uprights 11 arranged throughout the entire length of the conveyer and which are preferably of a height substantially equal to the height of the house or building 12 adjacent which the conveyer and 85 elevator is arranged, and into which the blocks of ice are adapted to be delivered through the usual doors or openings 13 in the side of the building. These standards or uprights are preferably arranged in pairs, 90 the members of each pair being spaced from each other longitudinally of the scaffold to form guideways therebetween.

Adjustably supported by the scaffold is a gallery comprising a substantially horizontal portion designated generally in Fig. 1 by the reference numeral 14, and an inclined hinged section arranged at one end thereof and designated generally in Fig. 1 by the reference numeral 15. The horizontal portion 14 of the gallery preferably 100 comprises a plurality of hinged sections similar in construction to the sections 16, 17, of the portion 15. Each of the sections of the gallery preferably comprise side members 18 which rest upon suitable spaced 105 cross-beams 19, and supported by the side members 18 above the cross-beams 19 so as

to form spaces therebetween are similar cross beams 20. These beams 20 are of such a length that the extremities thereof will project into the spaces or guideways between the standards or uprights 11 and cooperate with the uprights to prevent the horizontal portion 14 of the gallery from drawing forwardly. Arranged above one of the side members 18 and projecting above the cross-beam 20, is a beam or member 21, to form a guide, and a similar member 22 projects above the cross-beam 20 and is spaced from the member 21 to form a guide for the conveyer, designated generally by the reference numeral 23 in Fig. 3 of the drawings. This conveyer 23 is of the endless type, and preferably comprises spaced chains 24 (see Fig. 4) which are spaced from each other and extend longitudinally throughout the entire gallery and the inclined portion 15. Each of the chains 24 is adapted to pass over a suitable sprocket 25 at the rear end of the gallery (see Fig. 3) and spaced pulleys 26 at the forward end of the portion 17. Secured to each of the chains 24 and at points directly opposite to each other are arms 27 which project beyond the respective chains, and these arms 27 are preferably connected by cross-bars or members 28 which are spaced beyond the chains 24. Arranged within the spaces formed between the cross-beams 19 and 20 are brackets 29 for supporting one of the runs of the conveyer chains, and similar brackets 30 are supported by the cross-beam 20 within the guides 21, 22 for supporting the other run of the conveyer. Arranged longitudinally of the gallery and within the guides 21, 22 are bars or slats 31 upon which the blocks of ice 32 are adapted to rest and move. The cross-bars 28 which connect the arms or brackets 27 extend above the bars or slats 31, as shown more clearly in Fig. 4 of the drawings to engage the blocks of ice 32 to move the latter upon the bars or slats when the conveyer is operated.

A suitable platform 33 is provided which in the present exemplification of the invention is shown as being supported by the cross beams 20 on one side of the conveyer, preferably beyond the guide 22, upon which platform an operator is enabled to stand for directing the blocks of ice from the conveyer and into the house 12 at suitable points. The guide 22 at suitable points throughout its length, preferably at points adjacent the doors or openings in the side of the house, is preferably cut away as at 34 (see Fig. 6) to form openings through which the blocks of ice may be removed from the conveyer chains, and secured to the gallery at points adjacent these openings 34 are hinged chutes or inclines 35 which are adapted to project into the doors or openings 13 in the house for receiving the blocks

of ice from the conveyer, and for directing them into the house through the doors or openings.

The horizontal portion 14 of the gallery is adapted to be vertically adjusted with respect to the supporting scaffold or frame, so as to accommodate itself to the varying conditions, such as a change in the height of the stacks or piles of ice. Any suitable means may be provided for thus adjusting the gallery, a suitable and efficient means for accomplishing this purpose comprising a pair of cables 36, 37, one extremity of each of which is secured respectively to opposite sides of the gallery. One of the cables, preferably the cable 36, passes over a pulley or sheave 38 journaled upon a suitable support, preferably a beam 39 supported by the uprights or standards 11 of the scaffold, and the free extremity of the cable 36 is adapted to be wound upon a suitable drum 40. The free extremity of the other cable 37 is also adapted to be wound upon the drum 40. This drum 40 may, if desired, be a double drum, although the construction of the drum is immaterial, the purpose of the drum being to wind or unwind the cable to raise or lower the gallery. Any number of these drums 40 and cables 36, 37 may be provided throughout the length of the gallery, and as the construction and operation of each is the same, the specific description of one will apply equally as well to them all.

Any suitable means may be provided for rotating the drums, such as a worm gear 41, which is secured to the drum, and which is engaged by a suitable worm 42 secured to a shaft 43 which shaft may be rotated by means of a suitable shipper wheel 44 over which a suitable shipper rope is adapted to pass. Each of the drums 40 is preferably located adjacent the top of the scaffold, so that the gallery may be adjusted substantially throughout the entire height of the scaffold.

The power is applied to the endless conveyer at the rear end thereof in any desired or suitable manner, preferably through the medium of a power shaft 45, which is mounted upon a suitable support 46, which latter is preferably supported by suitable uprights or standards 47 secured to the rear end of the gallery. To this power shaft is secured a suitable gear 48 which meshes with a gear 49 secured for rotation with the sprocket wheel 25, and a suitable clutch operating device 50 may be provided for operating a clutch of the ordinary and well known construction, which is secured to the shaft 45 and the gear 48 to throw the conveyer into and out of operation in the usual manner. The support 46 is preferably provided with a platform 51 upon which the operator may stand. The power shaft 45 is adjustable with the gallery, and in order

that the power shaft may operate the conveyer uniformly throughout the entire length of adjustment of the gallery, a suitable flexible driving belt or cable 52 is provided.

5 Secured for rotation with the drive shaft 45 is a sheave or pulley 53 which is preferably in the form of the usual drum and having a plurality of grooves in its periphery. A similar drum or sheave 54 is journaled upon a suitable support 55 above the drum or sheave 53 and is located preferably adjacent the top of a supporting frame comprising uprights 56, 57, and this frame is preferably of a height somewhat greater than the height of the scaffold which supports the gallery of the conveyer, so that the drum 54 may be located above the scaffold to permit the gallery to be adjusted substantially to the top of the scaffold. A drum or sheave 58 is journaled in suitable bearings upon a support between the members 56, 56 of the frame and preferably adjacent the base thereof, and in close proximity to the ground. If desired, an excavation may be made in the ground to permit the pulley or sheave 58 to extend thereinto. The pulleys or sheaves 54, 58 are preferably of the same diameter, but somewhat larger than the diameter of the drum or sheave 53, and all three of these sheaves are located in line with each other. A pulley 59 is journaled in suitable bearings mounted preferably upon the support 55 adjacent the pulley or sheave 54 and a pulley 60 is mounted in suitable sliding bearings 61, which latter are movable between suitable guides 62 depending from the support 55.

The endless cable 52 passes over the pulleys or sheaves 53, 54, 58 and 60, preferably in the following manner: Starting from the pulley 59, one of the runs of the cable passes over the sheave 54, thence downwardly, as at A, and around the sheave 53; from the sheave 53 the cable passes upwardly as at B to and around the sheave 54; from the sheave 54 the cable extends downwardly as at C to the sheave 58. From the sheave 58 the cable passes upwardly as at D toward and around the sheave 53. From the sheave 53 the cable extends downwardly, as at E, to the sheave 58, and passes around the sheave 58 and from the sheave 58 the cable passes upwardly as at F, toward and over the sheave 59. From the sheave 59 the cable passes downwardly, as at G around the sheave 60 and from the sheave 60 the cable will extend upwardly as at H toward and over the sheave or pulley 59. Depending from the slidable bearings 61 of the sheave or pulley 60 is a yoke 63 to which may be engaged a series of counterweights 64. These counterweights 64, together with the sliding bearings 61, permit the pulley or sheave 60 to be adjusted in the guides 62 to

cause the pull upon the driven sheave to be balanced throughout the entire range of adjustment of the gallery. The endless belt 52 is operated or driven through the medium of the sheave 58 and the shaft 58^a, to which latter power may be applied in any suitable manner, such as by means of a motor which it is not necessary to illustrate. When the motor is operated to rotate the shaft 58^a, the rotation of the sheave 58 will drive the belt 52, which in turn will rotate the sheave 53, and the latter, through the medium of the power shaft 45, which is supported by and adjustable with the gallery, will drive the endless conveyer through the medium of the intermediate connections. With this construction it will be apparent that when the gallery is adjusted, it is not necessary to stop the revolution of the driven pulley 53, for the adjustment of the gallery will be permitted by the manner in which the cables pass around the driven sheave, and the fact that the gallery can be adjusted while the driven sheave 53 is revolving, is due to the peculiar property of the belts or ropes, known as creeping, which is dependent upon their elasticity.

All of the drums, sheaves and pulleys may be of ordinary and well known construction, and are preferably in the form of double drums similar to drum 44, as shown more clearly in Fig. 3 of the drawings.

Supported adjacent the rear of the endless conveyer is a chute or incline 65 which is adapted to receive the waste ice which the operator permits to pass the openings throughout the gallery which lead to the doors or openings in the house. As these blocks or pieces of ice pass from the endless conveyer, they will fall upon the chute, or incline 65, to be directed to any desired point. This chute or incline 65 preferably comprises a fixed section, and a section 66 hinged thereto. If desired, the gallery may be provided with a suitable hand or guard rail 67 extending along the side thereof.

The sections of the gallery are of the ordinary and well known construction, and being hinged together, it will be apparent that these sections may be adjusted to any desired extent within a certain range with respect to each other, and there is preferably provided adjusting mechanism shown more clearly in Fig. 4 of the drawings for each of the sections.

The forward extremity or portion 15 of the conveyer and gallery comprising the hinged sections 16, 17, which latter may be of any ordinary construction, is adapted to extend toward the water, and a section 68 is hinged, as at 69^a, to the free extremity of the forward section 17 of the portion 15. This section 68 projects into the water, and the pulleys 26 over which the endless chains 23 of the conveyer pass, are supported by

the free extremity of this section. This section 68 is preferably of a trough-like construction, similar to the construction of the remaining sections of the gallery, with the exception that the tracks or supports 29 for one of the runs of the conveyer chains are omitted, and this run of the chain is preferably unsupported.

The supporting scaffold for the sections 16, 17 of the gallery, preferably comprises a plurality of uprights 69 which are spaced from each other, and a plurality of spaced connecting members 70 extend across the space between the adjacent uprights 69. Supporting bars or members 71 are arranged to move within the space between the members 70, and these bars or members extend across the scaffold and beneath the sections 16, 17 of the gallery and serve as supports upon which these sections respectively rest. With this improved support it will be apparent that when the horizontal portion of the gallery is raised or lowered, the supporting bars or members 71 may be moved in their guides either forwardly or backwardly to permit the inclined sections 16, 17 to be adjusted to vary their angle or inclination, according to the degree of adjustment of the gallery to permit the section 68 to be drawn forward or backward according to the direction of adjustment of the gallery, and thereby permits the gallery to be adjusted without necessitating the insertion or removal of links into or from the conveyer chain to accommodate the chain according to the degree of adjustment of the gallery.

As the horizontal portion of the gallery is raised, the supporting bars or members 71 may be moved in their guides toward the rear end of the gallery, and when the horizontal portion of the gallery is lowered, the supporting bars or members 71 may be moved in their guides toward the forward end of the conveyer. The free extremity of the section 17 and the section 68 may be supported respectively by suitable members 72, 73, one extremity of each of which is secured to the respective sections and the free ends thereof are adapted to be wound upon suitable drums 74, 75, which may be supported by a suitable support 76 resting upon the uprights or standards 69, and suitable operating handles or wheels 77 secured to the shafts 78 may be provided for rotating the drums 74, 75, through the medium of worms 79 and cooperating worm-gears, which latter are secured for rotation with the drums 74, 75.

With this improved construction it will be apparent that as the ice or storage house is filled with ice, the gallery may be correspondingly raised by means of the gallery hoist and the rear or horizontal section may be hoisted while the machinery is in opera-

tion, and without stopping the same, and the ice may be transported by the conveyer at the same time the adjustment is taking place. When the house is full of ice, the gallery will be located adjacent the top thereof, in which position it may be allowed to remain during the summer season, thereby leaving the front of the house free for the use of the lowering machines which are employed to remove the ice from the house. Furthermore, the forward section which extends into the water may be lifted by means of the drums 74, 75, and allowed to remain in their lifted position and above the surface of the water during the season in which the mechanism is not in use.

In order that the invention might be fully understood, the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new is:

1. In a device of the character described, the combination of an adjustable gallery having an inclined flexible extremity supported for free movement and constituting the receiving end, an endless conveyer supported by and passing over said gallery and incline, both of the runs of the conveyer being disposed in close proximity to the gallery and incline, and means for preventing the said flexible receiving extremity from drawing the adjustable gallery forward or backward when the gallery is adjusted.

2. In a device of the character described, the combination of a gallery having a substantially horizontal portion and an inclined flexible extremity supported for free movement and constituting the receiving end, an endless conveyer supported by and passing over said gallery and incline, with both of its runs in close proximity to the gallery and incline, a supporting frame for the gallery and with respect to which frame the gallery is adjustable, said frame including spaced uprights, to form guide ways, and means on the gallery projecting into the guide ways for preventing the said horizontal portion from drawing forward or backward when the gallery is adjusted.

3. In a device of the character described, the combination of a gallery having a substantially horizontal portion and an inclined flexible extremity supported for free movement and constituting the receiving end, an endless conveyer supported by and passing over said gallery and incline, both of the runs of the conveyer being disposed in close proximity to the gallery and incline, a supporting frame for the gallery and with respect to which frame the gallery is adjustable, said frame including spaced uprights to form guide ways, means on the gallery projecting into the guide ways for preventing the said horizontal portion from draw-

ing forward or backward when the gallery is adjusted, and means for varying the angle of inclination of the inclined portion with respect to the horizontal portion and holding the said portion in its adjusted position.

4. In a device of the character described, the combination of a supporting structure, a gallery vertically adjustable with respect thereto, said gallery being provided with an inclined portion comprising flexibly connected sections and supported for free movement and constituting the receiving end, said inclined portion being adjustable with the gallery, an endless conveyer supported by and passing over the gallery and inclined portion and with both runs in close proximity to the gallery and incline, supports for the inclined extremity, and means whereby the last said support may be adjusted to vary the position of the inclined portion with respect to the rest of the gallery.

5. In a device of the character described, the combination of a supporting structure, a gallery vertically adjustable with respect thereto, said gallery being provided with an inclined portion comprising flexibly connected sections supported for free movement and adjustable with the gallery, an endless conveyer supported by and passing over the gallery and inclined portion with both runs in close proximity to the gallery and inclined portion, supports for the inclined extremity, and means whereby the last said supports may be adjusted longitudinally of the gallery for holding the inclined portion in its adjusted positions.

6. In a device of the character described, the combination of a vertically adjustable gallery, said gallery being provided with an inclined section flexibly connected to the gallery, an endless conveyer passing around the gallery and inclined section with both of its runs in proximity to both and bodily adjustable therewith, a support for the inclined section including a member disposed beneath the said section and upon which the latter rests, and means for adjustably supporting said member whereby the latter may

be adjusted in a direction extending lengthwise of the conveyer to vary the angle of inclination of said section when the gallery is adjusted.

7. In a device of the character described, the combination of a vertically adjustable gallery, said gallery being provided with an inclined section pivotally connected to the gallery and supported for free movement, an endless conveyer supported by the gallery and passing over the gallery and the inclined section with both runs in close proximity to both the gallery and inclined section and bodily adjustable therewith, and a support for the inclined section, said support including a member extending transversely of the conveyer beneath the said section and upon which the section rests, said member being adapted for adjustment in a direction extending lengthwise of the gallery and in a plane transverse to the plane of pivotal movement of said section to vary the angle of inclination of the section when the gallery is adjusted.

8. In a device of the class described, the combination of a supporting structure, a gallery vertically adjustable with respect thereto, said gallery being provided with an inclined portion comprising flexibly connected sections supported for free movement and adjustable with the gallery, an endless conveyer supported by and passing over the gallery and inclined portion with both runs in close proximity to the gallery and inclined portion, supports for the inclined extremity, means whereby the last said supports may be adjusted longitudinally of the gallery for holding the inclined portion in its adjusted positions, and means also supported by and adjustable with the gallery for driving the conveyer.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of January A. D. 1909.

RALPH D. VAN VALKENBURGH.

Witnesses:

J. H. JOCHUM, Jr.,

M. W. CANTWELL.