To all whom it may concern:

Be it known that I, EDGAR A. WRIGHT, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Apparatus for Elevating or Conveying and Transferring Ice and for other Purposes, of which the following is a specifica-
tion, reference being had therein to the ac-
companying drawings.

My present invention has for its objects to improve the construction and simplify the opera-
tion of ice elevating and transmitting or trans-
ferring machinery, to the end that the same may be operated with great rapidity and to a large extent automatically, dispensing with much expensive labor.

A further object of my invention is to pro-
vide a mechanism suitable for storing the ice into or through the top or upper portion of the storage-chamber of the ice-house, so as to prevent the escape of cold air therefrom or the entrance of warm air.

Another object is to provide an improved means for driving two cooperating receiving and discharging elevators.

My invention consists in the features of con-
struction and combinations of parts herein-
described and pointed out.

In order to make the invention more clearly understood, I have shown in the accompany-
ing drawings means for carrying the same into practical effect without limiting my improve-
ments in their useful applications to the par-
ticular constructions which for the sake of illustration I have delineated.

In said drawings, Figure 1 is an elevation, partly in section, of so much of an ice con-
veying or elevating and transferring appar-
tus embodying my invention as is necessary for an understanding of the latter. Fig. 2 is a plan view of the same. Fig. 3 is a plan view showing a somewhat different relative arrangement of the elevators or conveyers also embodying my invention. Fig. 3v is a transverse sectional view of one of the carriers. Fig. 4 is an end elevation showing another form of elevating and transferring apparatus also embodying my invention. Fig. 5 is a plan view of the same.

Referring to the drawings and to the par-
ticular forms of my invention therein shown, it will be understood that the conveying or elevating means may be of any desired or con-
venient length vertically or in a direction in-
clined to the vertical, as may be rendered neces-
sary by the height of the storage-chamber and the mode of depositing the ice therein.

S indicates the storage-chamber, and con-
tiguous to the same is the so-called "freezing-
room" F. The room F may be considered as typical of any room or space outside of the storage-chamber where the ice is produced or deposited preliminary to the storing opera-
tion. The said rooms are shown as separated by the wall or partition W. Referring to Fig. 1, it will be understood that I have shown only the upper portions of the receiving eleva-
or conveyer R in the chamber F and the cor-
responding portion of the discharging ele-
vor or conveyer D within the storage-cham-
ber S. While these devices may be of any suitable character, I have illustrated a simple and convenient form of elevator comprising endless chains 1, running upon pulleys 2 at their upper ends, which pulleys are mounted upon a horizontal shaft 3. This shaft may be car-
ried by any suitable frame, a portion of which is shown at 4, and the elevator may be actua-
ted through the shaft 3 or by a similar power-
shaft and pulleys (not shown) at the lower ends of the elevators. The elevators are pro-
vided with carriers c, preferably comprising hooks 5, secured to a transverse bar 6, suit-
ably journaled at the ends in or on the chains 85 1. It will be understood that as the carriers c ascend the hooks 5 will hang in a vertical or inclined position and so remain as the carrier passes over the shaft 3 at the upper end of the elevator. The two elevators R and D 90 are or may be of similar construction and are so illustrated. The arrows indicate the di-
rections of movement of the parts.

At the lower end of the receiving-elevator R the ice is loaded in blocks by hand or auto-
matically into the carriers c. In Figs. 4 and 5 there is shown at 7 a suitable platform for this purpose, along which the ice may be slid until it comes in line with the hooks 5 of the ascending carriers. From this point the ice 100 blocks or cakes are elevated successively by the carriers and pass around the upper end
of the elevator R, as shown at I in Fig. 1. At or near the upper end of the elevator or at any desired heights the partition W is provided with one or more openings s, s', leading from the freezing to the storage room, which openings may be normally closed by swinging doors s, adapted to be opened by the endwise pressure of the ice cakes. 9 is a movable or adjustable platform or discharging device adapted to be arranged in line with the opening s or s', through which the ice is to be delivered, and to permit the passage of the hooks s, but to arrest and sustain the cake of ice carried by said hooks.

15 Said discharging device 9 is inclined on its upper surface sufficiently to cause the cake of ice to slide toward the opening s' when deposited by the carriers and to open the door 8 and pass into the storage-chamber, as shown at I, where it is arrested in position to be taken up by a carrier of the discharging-elevator D. In Fig. 1 the discharging device 9 is shown as arranged in line with the opening s', while in dotted lines at s' is indicated the position of such device when it is desired to store the ice through the opening s.

20 Within the storage-chamber in line with the opening s' is arranged a guide or receiver 10, adapted to conduct the ice cake from the opening into line with the ascending carriers of the discharging-elevator and there arrest and hold it until taken up by one of said carriers. The receiver 10 is constructed so as, while holding the ice, to permit the free passage of the hooks 5 of the carriers, and to this end consists, preferably, (as do also the various loading or discharging devices or platforms herein described,) of fingers 11 on a suitable bar or support 12. The receiver 10 may be placed in line with that opening through which the ice is to be stored. In Fig. 1 it is shown as adjusted in line with the opening s'; but it may be placed opposite the opening s, as indicated in dotted lines and as shown in Fig. 4. The platforms or receivers 9 and 10 may be supported upon strips or brackets (indicated at 50) suitably supported by semistationary part of the structure. The platforms may merely rest upon these supports and may be removed therefrom and placed in different positions, as occasion may require. The receiver 10 comprises a suitable stop 13, by which the movement of the ice cake is arrested when it comes in line with the ascending carriers of the elevator D. From said receiver the cakes of ice are successively taken and carried around the upper end of the discharging-elevator D, as indicated at 13 in Fig. 1, from which point they are carried down to a second discharging device 14, Fig. 2, situated at any desired point within the storage-chamber. The discharging device 14 may be of the same general construction as that shown at 9 and is preferably inclined to cause the ice cakes to slide away by gravity as soon as they are deposited by the carriers. An adjustable or shiftable chute or slideway C may lead from the discharging device 14 to any desired part of the storage-chamber where the ice is to be deposited.

It will be observed that the ascending and descending legs of the elevator are arranged to move in a plane which is substantially parallel with the wall W, which makes it possible to arrange the elevator very close to the wall and the openings therein through which the material carried by the elevators is to be passed, and also that the load-transferring means or devices are adapted and arranged to move the load in a direction transverse to the said plane in which the elevator moves and to the direction in which the load is carried when supported by the elevator, and because of this construction it is possible to deliver the load at different points between the ends of the elevator—that is, between the turning pulleys or wheels of the elevator—and also to transfer the load from the elevator at points very close to the openings in the wall.

In Fig. 3 I have shown an arrangement of the receiving and discharging elevators in line with each other. The shaft 3 of each elevator is provided with a bevel gear-wheel 15, which wheels engage an intermediate bevel-wheel 16. It will be observed from this arrangement and gearing that the shafts 3 of the two elevators are caused to turn in opposite directions and that power may be applied at either end of either elevator or to the wheel 16 to properly drive both elevators. In this construction the loading-platform 7 of the elevator R will be located at the inner sides of the chains 1 and the discharging device 9 at the outer sides of said chains. The various receiving or discharging platforms may be provided wherever necessary with guide-rails 17 to keep the ice cakes in proper line and prevent their lateral movement on said platform.

It will be understood that in practice the loaded carrier will swing inward between the chains 1, and I employ suitable guides wherever necessary to insure that the carrier shall be held in proper position to deposit and leave the ice cake on the discharging device clear of the elevator-chains, so that it may slide away longitudinally past said chains, as already described. I also employ such guides to hold the carriers in proper position parallel with the chains as they receive their loads.

I have shown the preferred arrangement of such guides on a larger scale in Fig. 4. 18 is the guide at the lower end of the receiving-elevator R, extending past the loading-platform 7 and near and parallel, or substantially so, to the chains 1. This guide serves to bring the carriers out from their normally hanging positions between the chains and into line with the loading device. 19 is an incline at the lower part of the guide to facilitate the engaging and straightening of the carriers. This guide is suitably supported, as from the elevator-frame 20, and may extend for the whole height of the ele-
vator, so as to continuously guide the carriers, except when they are passing around the wheels. 21 is an incline, and 22 a guard to make gradual and to limit the inward swinging of the carriers as they leave the guide 18. A similar guiding device is or may be used with the ascending leg of the discharging-elevator D, as seen in Fig. 4. The descending carriers are also similarly controlled by guides 23.

24 indicates a guard to keep the carrier-hooks clear of the shaft 25 at the lower end of the elevator, on which shaft are mounted the wheels 26 of the elevator-chains 1.

In this form of my invention I have shown a new and in some respects superior means for driving the elevators, whereby the connecting-shaft 3 at the upper ends of the elevator is dispensed with to allow the carriers to swing freely across the space between the wheels 3. In this construction the inner wheels 2 are fixed on the ends of shafts 27, and the latter extend, preferably, from the frame 20 of one elevator through the wall W to the frame of the other elevator and are supported on and connect said frames. Each shaft 27 carries a driving gear-wheel 28. The outer wheel 2 of each elevator is mounted on a shaft 29 in line with its corresponding shaft 27, and on the shaft 29 is fixed a driving gear 30 of the same pitch as the gears 28. 31 is a counter-shaft extending through the wall W past the wheels 28 29 30 31 and provided with four pinions 32, engaging said wheels, respectively. By this means the two separate chain-wheels 2 of each elevator are driven at the same speed and the two elevators so connected that both may be driven together from a suitable source of power—for instance, from either of the shafts 29.

What I claim is—

1. The herein-described elevating or conveying and transferring apparatus comprising a receiving-elevator, a delivering-elevator, and means in a position intermediate between the ends of the receiving-elevator for transferring the load from the former to the latter.

2. The herein-described elevating or conveying and transferring apparatus comprising a receiving-elevator, a delivering-elevator, and means for transferring the load from the former elevator to the latter, such means being adjustable relative to both said elevators, substantially as set forth.

3. The combination of an endless elevator or carrier, a second endless elevator or carrier, and means for transferring the load from the descending leg of the first elevator to the ascending leg of the second elevator, said transferring means being adjustable relative to both said elevators.

4. The combination with the storage-chamber S having a wall provided with a contracted opening, an endless elevator or carrier without said wall, a second elevator or carrier on the inside of said wall, and means for transferring the load from the first elevator through said opening to the second elevator, in a direction substantially transverse to that which is imparted to the load by the first elevator.

5. The combination with the storage-chamber S having a wall provided with a contracted opening, an endless elevator or carrier without said wall, a second endless elevator or carrier on the inside of the said wall, and means for transferring the load from the first elevator through said opening to the second elevator, in a direction substantially transverse to that imparted to the load by the first elevator.

6. The combination of the receiving elevator or carrier, an automatic discharging device by which the load is taken from said elevator, a second elevator or carrier, a receiver adapted to support the load and arranged between the ends of the second elevator or carrier and from which the latter is adapted to take the load, and means for transferring the load from said discharging device to said receiver.

7. The combination of an endless receiving-elevator, an automatic discharging device arranged between the ends of said elevator by which the load is taken from said elevator, a second endless elevator, a receiver from which the latter is adapted to take the load, and means for transferring the load from said discharging device to said receiver.

8. The combination with the storage-chamber S having a wall provided with an opening, of an endless elevator without said wall, an automatic discharging device situated adjacent to the said opening by which the load is taken from said elevator, a second endless elevator within said chamber, a receiver from which the latter is adapted to take the load, and means for transferring the load from said discharging device through said opening to the receiver.

9. The combination with a storage-chamber having a wall provided with an opening through which the material elevated is adapted to be passed, of an endless elevator having its ascending and its descending legs arranged in a plane substantially parallel with the wall, and means for transferring the load from the elevator situated between the ends of the elevator and arranged to move the load in a direction transverse to the plane in which the elevator moves, a portion of said transferring means extending within the path of parts of the elevator.

10. The combination of a receiving-elevator provided with swinging carriers having hooks, a discharging-elevator having substantially similar carriers, and means for transferring the load from said hooks of the receiving-elevator to said hooks of the discharging-elevator.

11. The combination of a plurality of elevators each comprising two elevating-chains, suitable carriers thereon, and two independent chain-wheels, a gear-wheel connected with each of said chain-wheels, a connecting-shaft extending past both elevators and pinions on
said shaft engaging the gear-wheels of all of said chain-wheels.

12. The combination with an elevator having endless chains, swinging carriers thereon, and separate chain-wheels at the upper turns of said chains, gear-wheels connected respectively with the chain-wheels, and a connecting-shaft having a pinion for each of said gear-wheels.

13. The combination, in an elevator, of the endless chains or connections, swinging carriers thereon arranged to swing between the chains or connections, and the guides 18 for the carriers arranged to hold them out of their normal position and in proper position to receive a load, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

Witnesses:
PRIDIUS PHILIPPI,
W. R. BAXTER.

EDGAR A. WRIGHT.