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2,983,392

ARRANGEMENT FOR STORING AND DISPENSING MERCHANDISE

Filed July 28, 1958

2 Sheets-Sheet 1

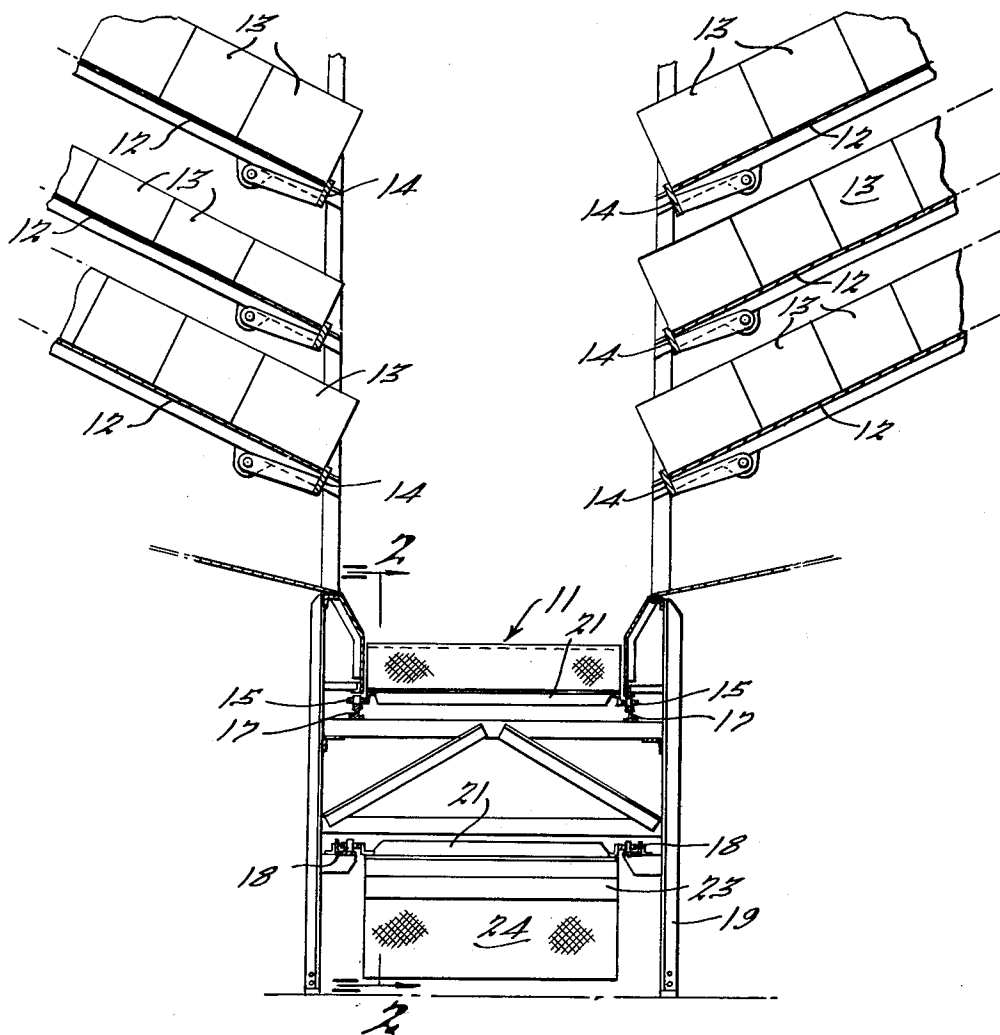


FIG. 1.

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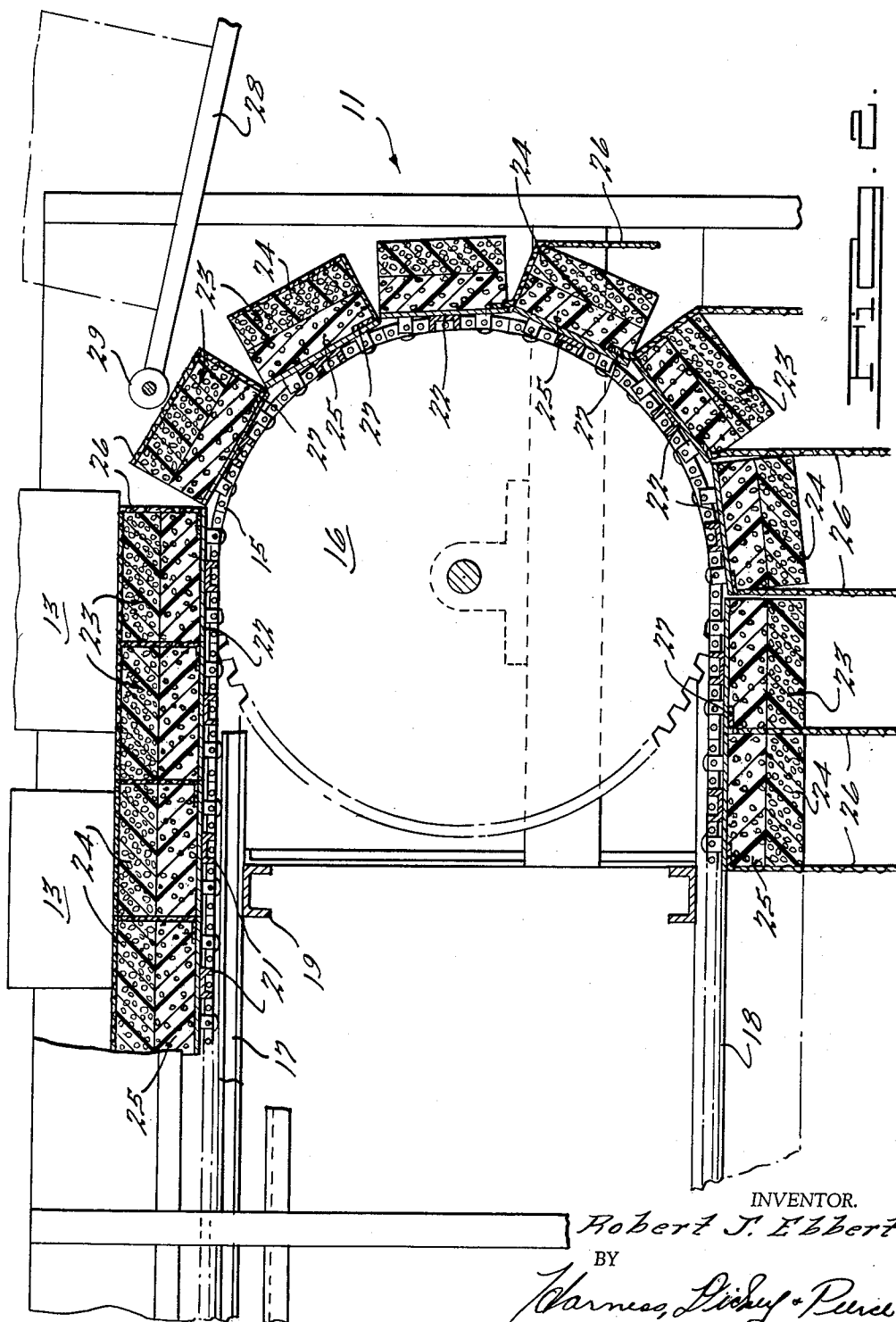
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2 Sheets-Sheet 2



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ARRANGEMENT FOR STORING AND DISPENSING MERCHANDISE

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5 Claims. (Cl. 214-16)

This invention relates to arrangements for storing and dispensing merchandise, and more particularly to systems for removing articles such as merchandise cartons in a selective manner from a plurality of inclined gravity conveyors on which they are stored.

In the handling of merchandise in establishments such as food warehouses, a large variety of items must be stored so as to be readily available to fill specific orders. One of the major problems in such warehouses is the conservation of space, which is complicated by the fact that many of the items being stored and dispensed are of a breakable or easily damaged nature, so that with conventional methods of storage and dispensing, severe impacts on the cartons must be avoided.

It is an object of the invention to provide an improved system for storing and dispensing merchandise which will greatly multiply the available amount of storage space in a warehouse from which cartons may be selectively dispensed and transported directly to a loading or shipping area.

It is another object to provide an improved system of this nature which avoids the possibility of breakage or damage to the cartons or their contents due to severe impacts thereon.

It is also an object to provide an improved storage and dispensing system of the above character which is versatile in nature and may be adapted for use in a large variety of ways.

It is a further object to provide an improved system of this nature which is relatively simple and inexpensive to fabricate and is of durable and trouble-free construction.

Other objects, features and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is an end elevational view in cross section showing the improved storage and dispensing system; and

Figure 2 is a fragmentary, side elevation view of the cross conveyor showing the construction thereof.

In general terms, the invention comprises an endless conveyor on which is mounted a plurality of bars fabricated of an energy-absorbent and resilient material, these bars being placed in contiguous relation extending transversely across the conveyor. A canvas cover is preferably associated with each bar, the arrangement being such that these covers will hang down on the lower flight of the conveyor and will cover the exposed bar surfaces on its upper flight. A plurality of vertically arranged inclined gravity chutes may be disposed above the conveyor, these chutes being provided with releasing means so that merchandise stored thereon may be selectively dropped onto the conveyor which moves transversely past the discharge ends of the chutes. Because of the energy-absorbent characteristics of the conveyor, merchandise dropped from even the uppermost chutes

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in the vertically arranged banks will not be damaged or broken when they come to rest on the conveyor.

Referring more particularly to the drawings, the cross conveyor is generally indicated at 11 and is located beneath a plurality of inclined gravity chutes 12 in vertically arranged banks, two such banks being visible in Figure 1. Chutes 12 may be of any desired type and are adapted to support cartons 13 which are selectively dischargeable from the lower ends of the chutes by gates 14, these gates being controlled manually or automatically.

Conveyor 11 runs transversely below the exits of chutes 12 and comprises a pair of chains 15 on two pairs of sprockets, one of which is shown at 16 in Figure 2. Upper rails 17 and lower rails 18 are provided for the upper and lower flights of the conveyor respectively, these rails being supported by a frame 19. Channel-shaped members 21 extend between chains 15 at regular intervals, these members supporting slats 22 which extend across the conveyor. Bars generally indicated at 23 of energy-absorbent and resilient material are secured to slats 22. These bars are of rectangular cross-sectional shape and are in contiguous relation on the upper and lower flights of the conveyor, being slightly separated from each other as the conveyor goes around the sprockets, as seen in Figure 2. Although the bars may be fabricated of various materials having energy-absorbent and resilient properties, a suitable material has been found to be a foamed plastic bearing the trademark "Polyfoam" and manufactured by the General Tire and Rubber Company, Marion, Indiana. Instead of each bar being composed of a single material, upper and lower layers are preferably combined so as to achieve optimum energy absorption. In particular, each bar 23 comprises an upper layer 24 of one form of Polyfoam having relatively low hysteresis, and a lower layer 25 of another form of Polyfoam having a higher hysteresis. With this arrangement, layers 24 of the bars will serve to initially decelerate the bars, whereas layers 25 will have the primary energy-absorbing function.

In order to increase the energy-absorbing properties of the conveyor as well as to protect the surfaces of bars 23, canvas sheets 26 are provided, each sheet being associated with a bar and being secured to the lower forward edge of the bar as indicated at 27. Each sheet of canvas extends upwardly on the forward side of the bar and across the top thereof. A receiving platform or chute 28 is located at the forward end of conveyor 11 in order to receive packages discharged therefrom. A roller 29 may be provided on the end of platform 28 to prevent wear on canvas sheets 26.

In operation, cross conveyor 11 will be driven by any appropriate power source (not shown) and cartons 13 will be discharged from chutes 12 onto conveyor 11 by operation of gates 14. As each carton is released, it will drop until it strikes one or more bars 23 covered by canvas sheets 26, and will then come to rest on conveyor 11. It has been found in practice that cartons 13 may be dropped from a considerable height which would ordinarily result in damage or breakage if a conventional cross conveyor, such as a belt, were used. Because of the novel construction of cross conveyor 11, such damage or breakage will be avoided and the packages will be discharged in an orderly fashion onto platform 28.

It will be noted that as the conveyor moves, canvas sheets 26 will hang down between bars 23 along the lower flight of the conveyor, and will automatically be returned to their normal position as the bars return to their upper flight.

While it will be apparent that the embodiment of the invention herein disclosed is well calculated to fulfill the objects of the invention, it will be appreciated that the

invention is susceptible to modification, variations and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. In a conveyor, an endless looped member having upper and lower flights, a plurality of bars of energy-absorbent resilient material secured in closely adjacent relation to the outside of said member and extending transversely to the direction of movement thereof, and a plurality of canvas sheets associated with said bars, each of said sheets being secured adjacent the lower forward edge of its associated bar and extending upwardly and across the outer surface of said bar.

2. In a system for storing and dispensing merchandise, a plurality of merchandise storage chutes in vertically spaced relation, means associated with each chute for selectively dispensing merchandise therefrom, a conveyor below the discharge ends of said chutes, said conveyor comprising a pair of endless looped chains in spaced parallel relation and having upper and lower flights, upper and lower rails for supporting said chains, a plurality of slats secured to and extending between said chains, a plurality of bars of energy-absorbent resilient material secured to the outsides of said slats and in closely adjacent relation, and a plurality of canvas sheets associated with said bars, each of said sheets being secured adjacent the lower forward edge of its associated bar and extending over the outer surface of said bar.

3. In a conveyor for use in an establishment having a plurality of chutes for storing and dispensing merchandise cartons from a substantial height above said conveyor, an endless looped flat member disposed below the discharge ends of said chutes, and a plurality of energy-absorbent resilient bars secured to the outside surfaces of said member in closely adjacent relation and extending transversely to the extent thereof, each of said

bars comprising a first layer adjacent said member having relatively high hysteresis properties, and a second layer outwardly of said first layer having relatively low hysteresis properties.

4. In a conveyor for use in an establishment having a plurality of chutes for storing and dispensing heavy merchandise cartons such as grocery cartons a substantial height above the conveyor, an endless looped flat horizontal member having upper and lower flights and disposed below the discharge ends of said chutes, and a plurality of bars of energy-absorbent resilient material secured to and extending transversely in closely adjacent relation on said looped member, said bars having outer surfaces presenting a flat substantially continuous surface on each flight and being separated while traveling between flights, the bars thus providing a substantially and lower flights, the thickness and energy-absorbent resilient material on the outer surfaces of said upper and lower flights the thickness and energy-absorbent properties of said layers being such that damage to grocery cartons dropped from said height will be substantially prevented.

5. The combination according to claim 4, further provided with a plurality of canvas sheets associated with said bars, each of said sheets being secured adjacent the lower forward edge of its associated bar and extending upwardly and across the outer surface of said bar.

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UNITED STATES PATENT OFFICE
CERTIFICATION OF CORRECTION

Patent No. 2,983,392

May 9, 1961

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It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 16, after "substantially" insert -- continuous relatively thick layer of energy-absorbent resilient material on the outer surfaces of said upper --; lines 18 and 19, strike out "resilient material on the outer surfaces of said upper and lower flights the thickness and energy-absorbent".

Signed and sealed this 22nd day of August 1961.

(SEAL)

Attest:

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Commissioner of Patents