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W. O. BENNING

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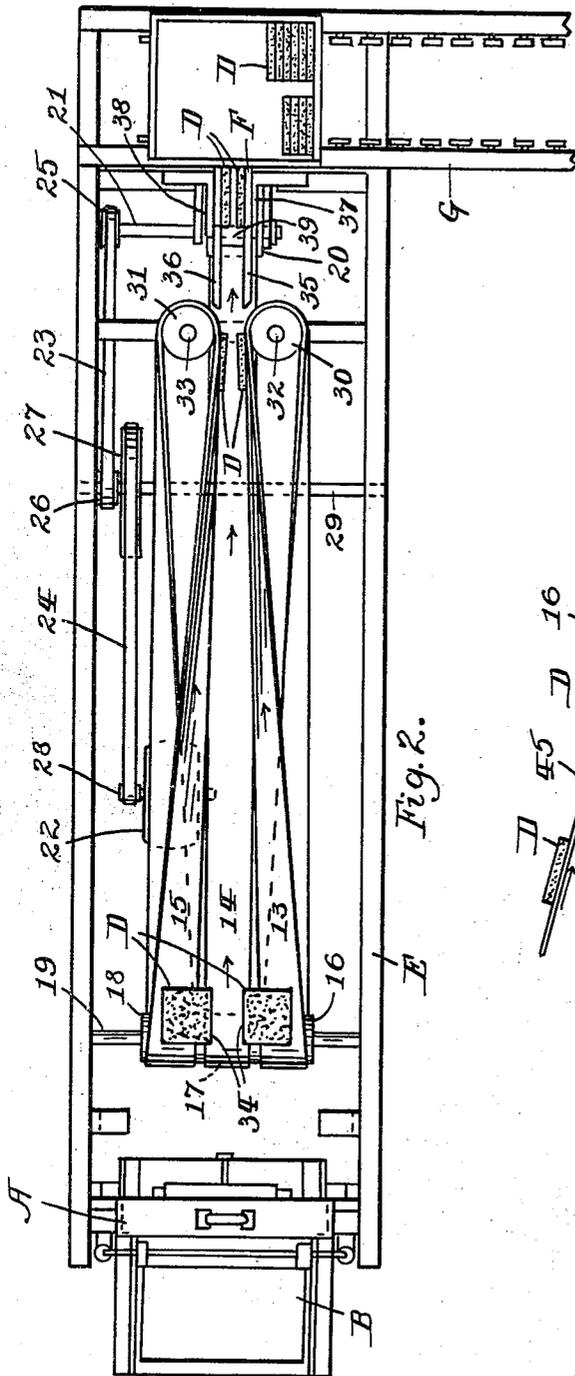


Fig. 2.

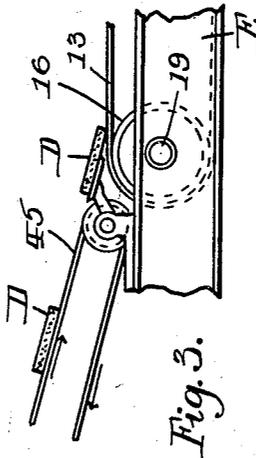


Fig. 3.

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FEEDER

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2 Claims. (Cl. 198—33)

My invention relates to feeders and more particularly to feeding mechanism for transferring tiles and other articles from a delivery device to a receiver or packaging contrivance. This application is a continuation in part of my application for Letters Patent filed July 15, 1940, bearing Serial Number 345,511, for tile sagger unloading and packaging apparatus, said application having matured into Letters Patent No. 2,307,194.

In my companion application I have described apparatus for unloading tiles from saggars onto a feeder, the claims of the application being directed to the novel features pertaining principally to the unloading mechanism. In the present application the claims are directed to the feeding mechanism independently of the novelty contained in the unloading means.

The primary object of the present invention is to provide a feeder which will receive pairs of tiles or other articles in horizontal position and gradually fold the members of each pair inwardly with their finished flat faces together and deliver them while in this condition so that an attendant can easily remove and stack them on receiving trays or in boxes.

A further object is to provide a feeder which can be used in the manner stated for feeding articles of various kinds.

In the handling of articles such as tiles in a factory it is desirable to prevent breaking, scratching or marring their surfaces and it is a further object to accomplish this result in an effective manner.

A still further object is to reduce hand labor to a minimum and produce an apparatus which will perform the functions above stated and which is simple, inexpensive and easily operated by an attendant.

In the accompanying drawings, forming part of this specification, Fig. 1 is a side elevation of my improved apparatus, part of the structure being illustrated in longitudinal central section, showing a portion of the sagger unloader, disclosed in my companion application, from which tiles are adapted to be delivered onto my improved feeder; Fig. 2 is a plan of the apparatus shown in Fig. 1, when the sagger unloader is tilted up into raised position, and Fig. 3 is a side elevation of a detail showing a modified form of delivering device with which my improved feeder is adapted to cooperate.

The particular apparatus illustrated is adapted to feed tiles as they are received from a sagger unloader in pairs while in horizontal position in

the manner illustrated in my companion application above identified but it will be understood that the invention is equally applicable for feeding other articles from other sources and to deliver them by a receiver other than herein disclosed, within the spirit of my invention.

In the drawings I have illustrated a portion of an elevator frame A in forwardly reclining position (Fig. 1) in which the holder B slides upwardly to lift a sagger C and permit the tiles D to discharge therefrom in transverse pairs by a gate 10 and down a chute 11 into horizontal position, all as set forth in my companion application. E represents a suitable main frame of my improved apparatus on the forward end of which the elevator frame is tiltingly mounted by the transverse shaft 12. The particular mechanism for raising the elevator frame to release the tiles in pairs does not enter into the present novelty claimed but for particularity reference is made to said copending application. Arranged immediately below the delivery chute 11 are the receiving ends of a plurality of endless conveyor belts 13—14—15, the receiving ends of which engage over corresponding pulleys 16—17—18, of even diameter. These pulleys are rigidly secured on the transverse shaft 19 which is journaled in the main frame. Thus the conveyor runs of these belts 13—14—15, at the receiving ends thereof lie in substantially a horizontal plane suitable to receive the tiles in horizontal position. In this position the members of each pair of tiles are supported mainly by the outside belts while the median belt lies between in suitable position to receive and support the inner edges of the tiles as the latter are folded upwardly and inwardly together. The forward end of the median belt 14 engages over a drive pulley 20 with its upper work run extending longitudinally in a horizontal plane. The drive pulley is mounted upon a transverse drive shaft 21 which is journaled in the main frame, said drive shaft being revolved at suitable speed by the prime mover such as electric motor 22 and intervening transverse belts 23 and 24, suitable reduction pulleys 25—26—27—28, and counter shaft 29. In this manner the median belt 14 is driven with its upper work run at suitable surface speed in the direction of the arrows shown in Fig. 2, and also transmits suitable driving motion to the pair of outside companion belts 13 and 15 through shaft 19 and pulleys 16 and 18.

The delivery ends of the outside belts 13 and 15 are engaged over a pair of substantially upright idle pulleys 30 and 31 which are carried

by a pair of freely rotatable shafts 32 and 33, said shafts being suitably journaled in the main frame and the axes of which extend upwardly so that the upper runs of said belts twist or turn laterally and inwardly over the upper conveying surface of the median belt. The tiles are adapted to be delivered from the chute 11 as they are discharged from the sagger C in holder B in horizontal position, on the receiving surface of the two outside belts with their inward longitudinal side edges overlapping or adjacent to the median belt as shown in Fig. 1 and with the members of each pair resting mainly upon one of the outside conveyor belts. In this position the inner longitudinal side edges 34 (Fig. 2), of the tiles are parallel. As the three belts are driven forwardly at even surface speed in the direction of arrows shown in Fig. 2, the members of each pair of tiles are folded upwardly and inwardly with their inner edges resting upon and supported by the median belt and their upper surfaces facing inwardly together. This folding movement is gradual and preferably without sliding contact of the tiles which might otherwise scratch or mar the finished surfaces. The pairs of tiles in vertical position are delivered by the three cooperating belts into a stationary receiver F from which the tiles in pairs facing each other can be removed by hand.

The receiver F consists of a frame having a pair of vertical side guards 35 and 36 which are supported in longitudinal, parallel and spaced relation by the pair of brackets 37 and 38 on the main frame, and a stationary shelf 39 below and between the guards in extension of the work surface of the median belt 14 so that the pairs of tiles while on edge in vertical position slide and are supported thereon.

A transverse carrier G supported by the main frame facilitates the handling of crates when the tiles are removed from the receiver F and packed by an attendant.

For controlling the operation of the conveyor belts so that they will not be overcrowded with tiles and so that the tiles will be removed in accord with their release from the sagers, a switch 40 for controlling the motor 22 is provided with foot controls 41-42 which are conveniently located within reach of the operators at the opposite ends of the apparatus. While the disclosure employs means by which the speed of operation is controlled by hand it is contemplated that automatic means may be substituted. Also while tiles of rectangular shape and a specific delivery device are shown by which tiles are unloaded from sagers it is contemplated that other shapes of tiles may be fed by the folding conveyor and other types of delivery devices may be coordinated with the conveyor. For illustration a single delivery conveying belt 45 as shown in Fig. 3 may be used to deliver the tiles D or other articles in suitable position onto the folding feeder belts of my improved apparatus.

In accordance with the patent statutes, I have described the principles of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the construction shown is only illustrative and that the invention can be carried out by other means and applied to other uses within the scope of the following claims.

I claim:

1. Means for feeding articles in pairs and folding the members of each pair with their finished faces together, comprising, a median conveyor belt and a pair of substantially parallel outside conveyor belts between which the median belt is situated with upper conveyor runs of all of said belts in substantially a horizontal plane at their receiving ends, means for delivering pairs of articles in horizontal position upon the receiving ends of said outside belts with their finished faces upward and the inner edges resting upon said median conveyor belt, means for driving said belts with their upper adjacent runs moving forwardly, the upper runs of said outside belts being gradually twisted laterally from horizontal into upwardly extending position approaching the delivery ends of said belts whereby the members of each pair of articles placed horizontally on the receiving ends of said belts with their inward edges adjacent to the surface of said median belt are bodily tilted upwardly into upright position with their finished faces folded together and said inward edges supported upon the surface of said median belt, and a receiver to which the pairs of articles while in upright folded position and facing together are delivered by said belts.

2. Means for feeding tiles in pairs and folding the members of each pair with their finished faces together, comprising, a median flat conveyor belt and a pair of substantially parallel outside flat conveyor belts between which the median belt is situated with upper work runs of all of said belts in substantially a horizontal plane at their receiving ends, means for delivering pairs of tiles in horizontal position upon the receiving ends of said outside belts with their faces upward and their inward edges overlapping the upper run of the median belt, means for driving said belts with their upper work runs moving forwardly at substantially even surface speed, the upper work runs of said outside belts being gradually twisted laterally from horizontal into upwardly extending position approaching the delivery ends of said belts, whereby the members of each pair of tiles placed horizontally on the receiving ends of said belts are bodily tilted into upright position with their finished faces together and said inward edges supported upon the median belt, and a receiver to which the pairs of tiles while in upright position and facing together are delivered by said belts.

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