Feb. 19, 1952 A. G. ROSE 2,586,264

SINGLE- AND DOUBLE-TRACK CONVEYER SYSTEM

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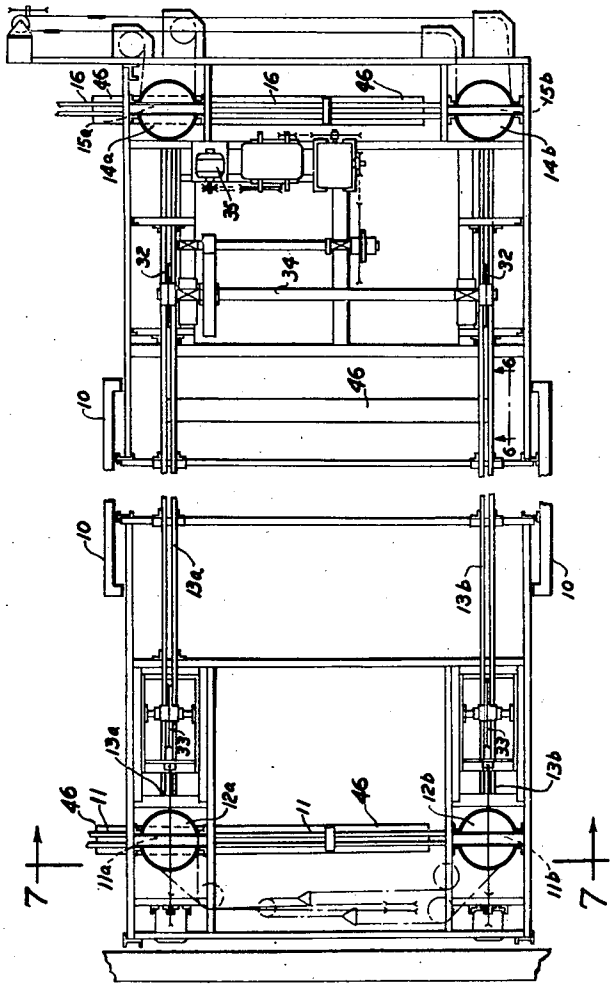


Fig. 1

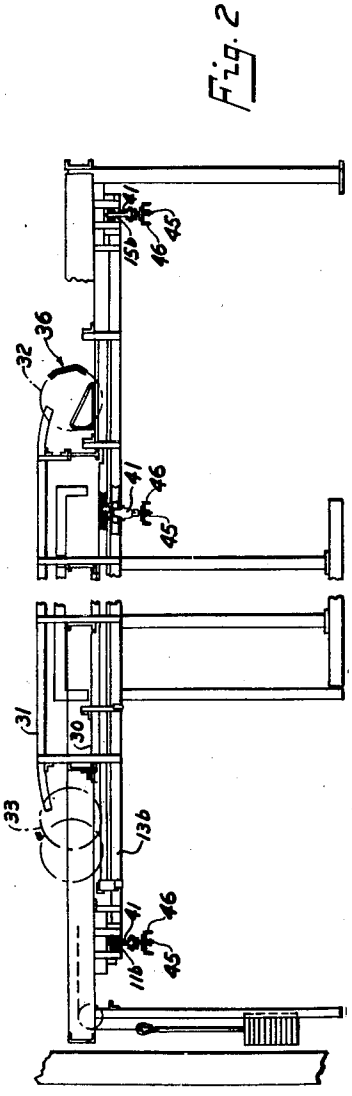


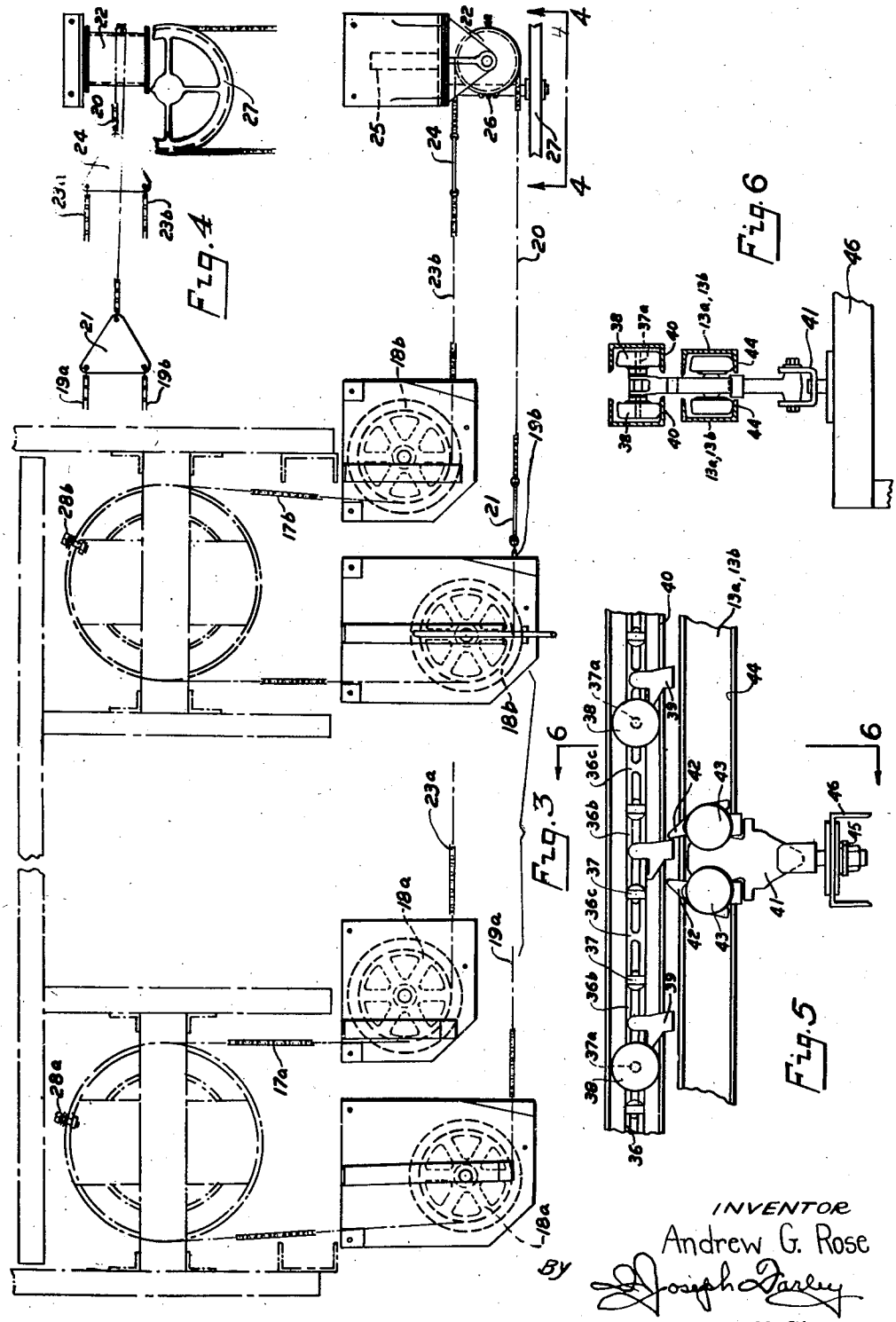
Fig. 2

INVENTOR
Andrew G. Rose
By Joseph Darley
ATTORNEY.

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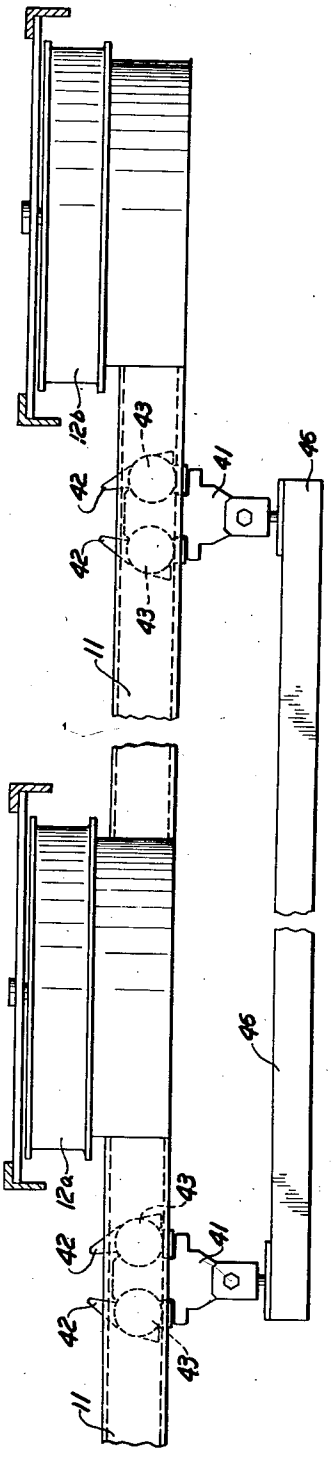


Fig. 7

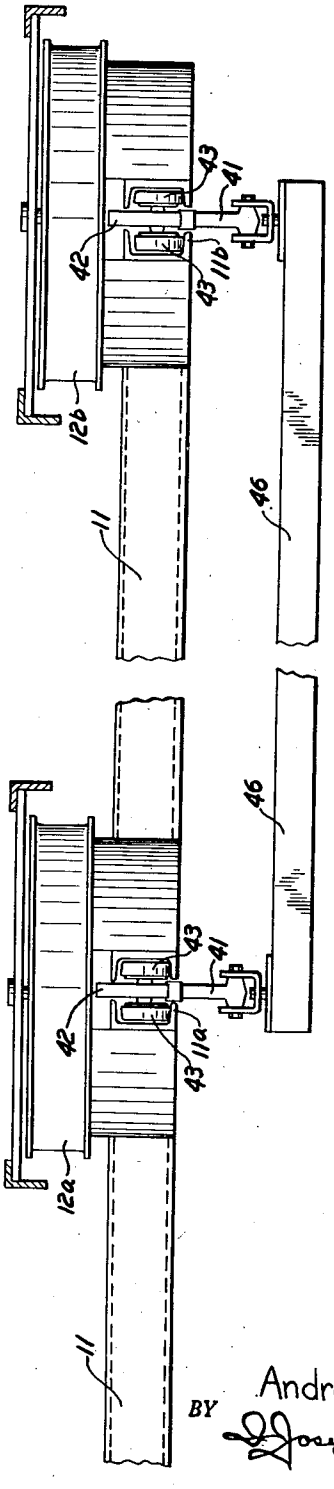


Fig. 8

INVENTOR.
Andrew G. Rose
BY Joseph Farley
ATTORNEY.

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SINGLE- AND DOUBLE-TRACK CONVEYER SYSTEM

Andrew G. Rose, Detroit, Mich., assignor to Jervis B. Webb Company, Detroit, Mich., a corporation of Michigan

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3 Claims. (Cl. 104—91)

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This invention relates to overhead trolley conveyor systems and has for its principal object to provide a conveyor system that will permit relatively long and narrow loads to be carried lengthwise on a single track throughout a portion of the conveyor system and to be carried widthwise on a double track throughout other parts of the system.

In a conveyor system developed to handle long and relatively narrow loads, such loads are frequently supported at each end by a separate trolley adapted to run along a single track. This permits such loads to be carried lengthwise through relatively narrow passageways which may be advantageous where they are being transported from one area of the plant to another at a relatively high speed. However, in order to provide for the most efficient utilization of plant space, it is often desirable to carry such loads throughout other portions of the conveyor system in a widthwise rather than lengthwise manner. Examples of cases where a change from lengthwise to widthwise travel might be desirable are very numerous, and the oven conveyor chosen for the purpose of illustrating the present invention is merely representative of a large number of such uses.

The principal object of the present invention, as noted above, is to provide a means for transferring a load carried lengthwise on a single track by two longitudinally spaced trolleys to a double track whereon the load may extend transversely across and be carried widthwise along such double track.

Another object of the invention is to provide a turntable at the juncture of the single track with each side of the double track.

A further object of the invention is to provide means for simultaneously rotating such turntables from single track to double track position after the load carrying trolleys have passed onto such turntables.

Another object of the invention is to provide power driven means for moving the trolleys after they have passed onto the double track.

These and other objects of the invention will appear more clearly from the detailed description of a particular embodiment of the invention and from an examination of the drawings forming a part hereof and wherein,

Fig. 1 is a plan view of a double track oven conveyor showing turntables joining such double track to a single track at either end, means for rotating such turntables and power driven means for moving load carrying trolleys along the double track.

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Fig. 2 is a side elevation of the oven conveyor shown in Fig. 1.

Fig. 3 is an enlarged plan view of the turntable layout shown at the right-hand end of Fig. 1, but with the center portion omitted and the view compressed in the area of omitted structure;

Fig. 4 is an end elevation of the pulley and winch means used in rotating the turntables, taken along the line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary side elevation of a section of one side of the double conveyor track and the lower chain track showing a conveyor trolley and driving chain in running position thereon taken along the line 5—5 of Fig. 1, the outer channel members of each track being omitted from the view.

Fig. 6 is an end elevation taken along the line 6—6 of Fig. 5, but including the outer channel members omitted in Fig. 5.

Fig. 7 is an enlarged end elevation taken along the line 7—7 of Fig. 1 showing a pair of load supporting trolleys approaching the turntables which are in receiving position.

Fig. 8 is a view similar to that shown in Fig. 7 with the load supporting trolleys on the turntables which are rotated 90° to a position for transferring the trolleys to the double track.

Referring to Figs. 1 and 2, the particular example chosen to illustrate the use of my invention is an oven conveyor for handling relatively long and narrow loads as noted above. The side walls 10 of the oven may be of any desired length and are shown with their central portion omitted. The single track portion 11 of the conveyor line leading in from a main single line track comprises two opposed channel members. Two turntables 12a and 12b are interposed in such single track on which are attached sections of track 11a and 11b which may be brought into alignment with the track 11. As most clearly shown in Figs. 1, 7 and 8, by revolving the turntables 12a and 12b 90°, the track sections 11a and 11b attached thereto are respectively brought into alignment with each side 13a and 13b of a double track which passes through the oven 10 and on the opposite side thereof leads into turntables 14a and 14b which are likewise provided on their lower surface with track sections 15a and 15b which may be brought into alignment with the double track members 13a and 13b as well as with an exit track 16.

The turntables in the position shown in Figs. 1 and 7 permit a load suspended from two trolleys, which are longitudinally spaced a distance substantially equal to the distance between the centers of turntables 12a and 12b, to pass onto

such turntables whereupon each of the turntables may be revolved 90°, as shown in Fig. 8, in order to joint the track sections 11a and 11b with the double track members 13a and 13b. With the turntables in this position the trolleys may be manually moved onto such double track with the loading extending transversely between the double track members.

Rotation of the turntables at the end of the double track, as most clearly shown in Figs. 3 and 4, is accomplished by means of flexible pulley lines 17a and 17b passing around the circumference of the turntables, the ends of which pass over pulleys 18a and 18b. The corresponding ends 19a and 19b of the pulley lines 17a and 17b are attached to one end of a single pulley line 20 by means of a triangular spacer 21. The flexible pulley line 20 passes around a winch 22 and at its other end is attached to the other corresponding ends 23a and 23b of the pulley lines 17a and 17b by means of a similar spacer 24. The winch 22 is rotatably journaled in a bracket 25 and is provided with a worm wheel which is engaged by the worm 26 and actuated by a chain fall 27.

Any slippage of the lines 17a and 17b is prevented by attaching such lines to the turntable at one point with bolts 28a and 28b. It may be seen from the above description that operation of the chain fall 27 will cause a simultaneous equal rotation of both turntables at once and that the turntables may be rotated 90° in either direction depending on the direction in which the chain fall is actuated.

After the load carrying trolleys have been manually moved onto the double track, power driven means are provided for moving the trolleys and their loads into and through the oven. Such power driven means comprise a driving chain 36 mounted above each side 13a and 13b of the double conveyor track. As shown in Figs. 1 and 2, driving chain tracks including a lower track 30 and upper track 31 extend between a driving sprocket 32 and an idler sprocket 33 above each side 13a and 13b of the double conveyor track. A driving shaft 34 is connected at either end to the driving sprockets 32 and the driving shaft 34 is driven through a series of suitable reduction gears by a motor 35. By this means each of the driving sprockets 32 is simultaneously driven at the same speed.

The endless power chain 36 travels around the driving and idler sprockets 32 and 33. The power chain 36, of the type variously called "Keystone," "rivetless" or "Weston" chain and originally disclosed in the Weston Patent No. 870,704, comprises a plurality of alternately arranged "center links" 36b and "side bars" 36c, as most clearly shown in Fig. 6. Each center link 36b consists of a member having an elongated slot at each end. A pair of side bars 36c, each having an elongated slot at each end, is pivotally connected to each end of the center links by headed locking pins 37, the heads seating in a transversely extending recess on the outer face of each end of said side bars 36c. At spaced intervals special locking pins 37a are provided with cylindrical extensions to serve as journals for rotatable chain wheels 38. The lower chain track 30 and upper chain track 31, each constructed of opposed structural channel members similar to those used for the conveyor track members 13a and 13b, serve to guide the power chain 36, the upper and lower flanges of such channel members providing a track for the wheels 38 to ride on. Pusher dogs 39 are suitably carried by the chain 36 at longitudinally spaced intervals and extend downwardly between the lower flanges 40 of the lower chain track 30.

The load carrying trolleys 41 are each provided with a pair of pivotally mounted dogs 42 weighted at their lower ends in a manner causing their uppers ends to normally extend between the upper flanges of the conveyor tracks 13a, 13b in which position a driving dog 39 entering between them from either side will rotate one of the dogs 42 inwardly while outward rotation of either of the dogs 42 is prevented by a positive stop contacted by the lower weighted ends. The lower chain track 30 is positioned parallel to each of the conveyor tracks 13a, 13b and is relatively spaced with respect to such conveyor tracks so as to provide for an overlapping driving engagement between the pusher dog 39 and one of the dogs 42 whereby movement of the chain 36 is imparted to the trolleys 41 and loads suspended therefrom. Each trolley 41 is provided with two pairs of rotatably mounted wheels 43 to run along the lower flanges 44 of the conveyor track.

The driving dogs 39 in each of the driving chains 36 are positioned exactly opposite each other. Thus, when a transversely extending load supported by a pair of trolleys 41 is manually moved onto the double track 13a, 13b to a position beneath the idler sprocket 33, a driving dog 39 in each of the driving chains 36 above the double conveyor track will simultaneously engage dogs 42 provided on the respective trolleys 41 and thereby move the trolleys with their common load into the oven in a widthwise manner.

It is to be noted that each of the trolleys 41 is provided with a swivel connection 45 for connecting them to the load supporting members 46 whereby the trolleys may be rotated on the turntables relative to the load carried by a pair of such trolleys.

Thus, it is seen that by the conveyor system described above, the advantages incident to conveying relatively long and narrow loads in a lengthwise manner at relatively high speeds throughout certain portions of a plant may be preserved while providing for widthwise conveyance in performing certain operations where such conveyance will result in conservation and maximum utilization of plant space as well as economy in the construction of facilities for performing such operations.

While a particular application and embodiment of my invention has been described above, it will be understood that numerous changes in the detailed construction might be made without departing from the spirit of the invention as set forth in the following claims.

I claim:

1. In an overhead trolley conveyor system wherein elongated loads supported by two spaced trolleys are moved between single tracks for longitudinal movement and double tracks for lateral movement through the use of turntables at the juncture of single and double tracks, means for effecting a synchronized and simultaneous movement of a pair of said turntables from one track position to another comprising equal sheaves on each of said turntables having coincident axes of rotation with said turntables, a flexible line passing around each of said sheaves actuable from a single drive to effect simultaneous rotation of said turntables.

2. In an overhead trolley conveyor system

wherein elongated loads supported by two spaced trolleys are moved between single tracks for longitudinal movement and double tracks for lateral movement through the use of turntables at the juncture of single and double tracks, means for effecting a synchronized and simultaneous movement of a pair of said turntables from one track position to another comprising equal sheaves on each of said turntables having coincident axes of rotation with said turntables, a separate flexible line passing around each of said sheaves, a third line having its ends connected respectively to corresponding ends of said first mentioned lines, and a single drive adapted to actuate said third line and thereby effect simultaneous rotation of said turntables.

3. A turntable drive as set forth in claim 1 wherein the line passing around each sheave is adapted to contact an arc of such sheave in excess of its arc of travel and wherein said line is positively connected to said sheave at at least one point in a manner preventing any possible slippage therebetween, said point of connection lying within the arc of said sheave which is in continuous contact with said line throughout the travel of said turntable between its alternate positions.

ANDREW G. ROSE.

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