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2,660,127

TRANSFER MECHANISM FOR FLOOR PROPELLERS

Filed June 14, 1949

2 Sheets-Sheet 1

FIG. 1

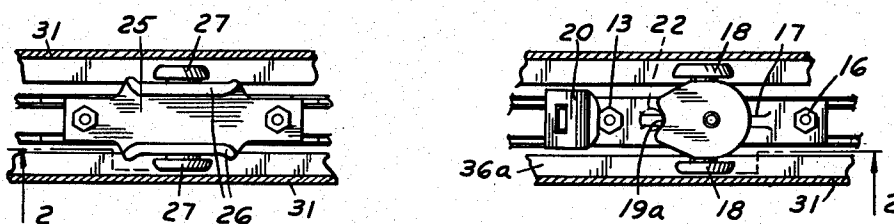


FIG. 2

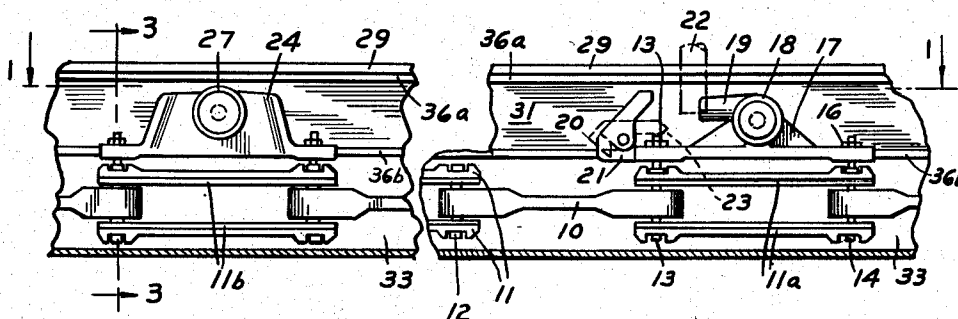
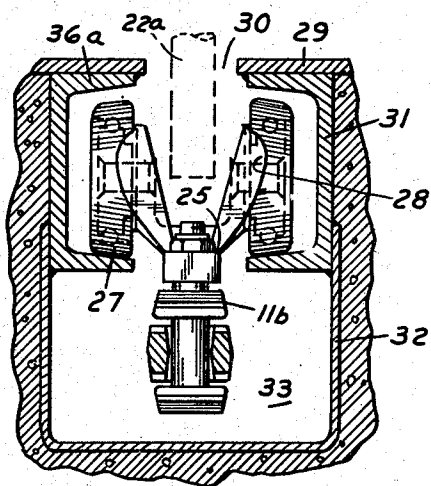


FIG. 3



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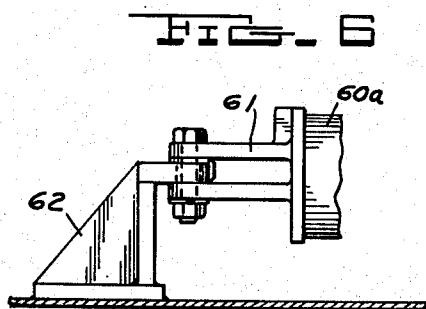
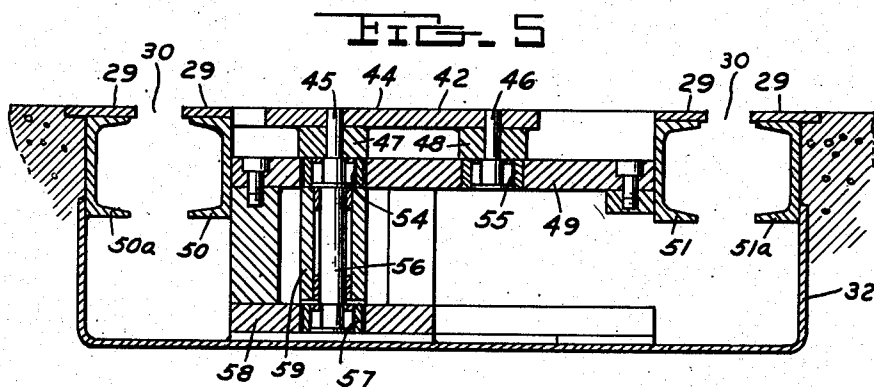
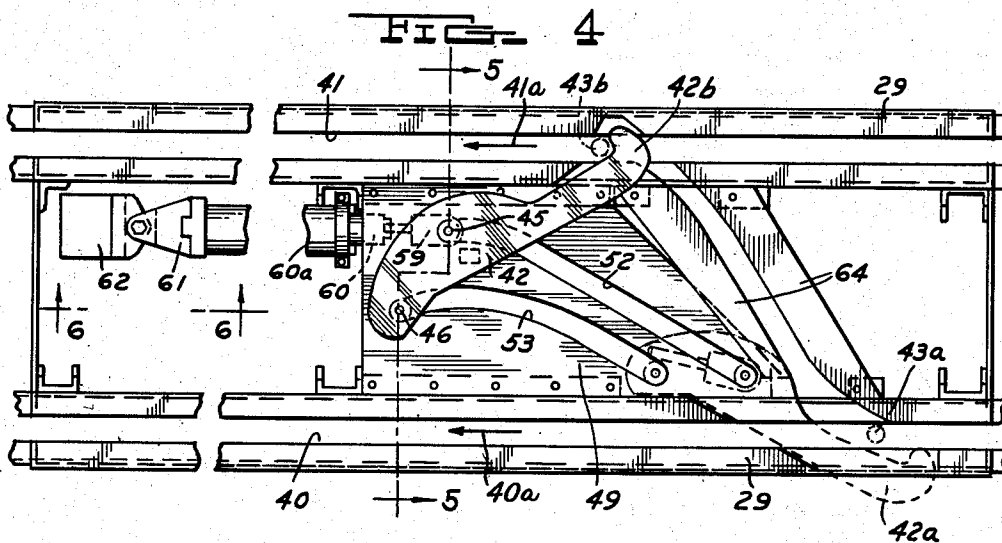
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TRANSFER MECHANISM FOR FLOOR PROPELLERS

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5 Claims. (Cl. 104—172)

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This invention relates to a transfer mechanism for use in a floor truck propeller drive.

Propeller drives installed at floor level have been successfully employed to meet the requirements of a "power and free" system. The general arrangement is such that floor trucks may be loaded or unloaded while "off the line," moved to a position over the propeller drive whereupon a drive pin on the floor truck is dropped between guide rails at the floor level to be engaged by a drive dog carried by a submerged propeller chain. In order to adapt a floor propeller drive of this type to a system wherein alternative paths may be followed by propelled floor trucks, the present transfer mechanism was developed and the power-operated mechanism which is used, in combination with a pair of floor drive propeller lines, permits a loaded or unloaded floor truck to be switched from one power line to another.

Accordingly, it is the principal object of the present invention to provide a power-operated device capable of transferring a floor truck from one power line to another.

Another object is to effect such transfer without resorting to switchable guide tracks but, on the contrary, by employing stationary guide tracks with power mechanism adapted to propel a truck drive pin along a stationary guide track leading to a new power line.

Another object is to provide a power-operated arm adapted to intercept the drive pin of a floor truck traveling along a given power line and to propel such drive pin into the path of a second propeller line.

Another object is to effect the travel of such transfer arm through the use of a conventional power or air cylinder.

Another object is to provide cam means for guiding the transfer arm along a path which involves no sudden change in the direction of the floor truck's drive pin.

Another object is to provide cam means which, in combination with a power cylinder, will give the transfer arm a forward and lateral motion comparable to that of a branch track leading between two parallel main tracks.

These and other objects will appear more clearly in the following detailed description of a particular embodiment of our invention and from an examination of the drawings illustrating such embodiment wherein

Fig. 1 is a plan view of the propeller drive taken just below floor level as indicated by line 1—1 of Fig. 2;

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Fig. 2 is a side elevation taken along the line 2—2 of Fig. 1;

Fig. 3 is a sectional view along the line 3—3 of Fig. 2;

Fig. 4 is a plan view of the transfer mechanism located between two parallel floor tracks;

Fig. 5 is a sectional view along the line 5—5 of Fig. 4; and

Fig. 6 is a fragmentary view of the anchor pivot for the power cylinder taken along the line 6—6 of Fig. 4.

Referring to Figs. 1, 2 and 3, it will be seen that a drive chain of the rivetless type has been employed consisting of center links 10, side bars 11 and headed locking pins 12. Special locking pins 13 and 14 having upward extensions 15 are employed to mount a trolley bracket 17 immediately above the side bar 11a. A pair of trolley wheels 18 are journaled in the bracket 17 and a drive dog 19 projects forwardly from the bracket with its uppermost level no higher than the top of the trolley wheels 18. A pivoted dog 20 is mounted on a forward extension 21 of the bracket 17 and serves to retain the drive pin 22 of any floor truck engaged by the drive, such pivoted dog being able to move to the dotted line position shown in Fig. 2 to permit a drive pin in the path of the propeller to move into the engaged position shown in Fig. 2.

One or more intermediate idler trolleys 24 may be employed, the brackets of which are mounted above the side bars 11b of the drive chain in the same manner as the drive bracket 17. The idler bracket is a forging having a longitudinal section 25 generally below the level of the drive pin 22 and upwardly extending side walls 26 are adapted to mount the trolley wheels 27. As best shown in Fig. 3, stub shaft axles 28 are employed in order to provide necessary clearance for the passage of the drive pin 22a.

It will also be seen in Fig. 3 that a pair of guide rails 29 are provided at floor level having a horizontal spacing 30 to accommodate the drive pins 22 and that the propeller track consists of a pair of opposed channel members 31 mounted immediately beneath the guide rails 29. A U member 32 is connected to the lower ends of the channels 31 extending to a sufficient depth to accommodate the drive chain indicated generally at 33.

Referring to Figs. 4, 5 and 6, it will be seen that the transfer mechanism is located below floor level between two propeller tracks 40 and 41. Track 40 supports trolleys and a drive chain, such as previously described, which have a nor-

mal direction of travel from right to left as indicated by the arrow 40a. The arrow 41a similarly indicates the normal direction of travel of the trolleys and drive chain supported by track 41. A transfer arm 42 is adapted to move from the dotted line position shown at 42a to the solid line position shown at 42b, and in doing so, to transfer a truck drive pin from the position 43a to the position 43b. The transfer arm 42 consists of a horizontal plate having its upper surface 44 coincident with floor level. A pair of pins 45 and 46 are seated in the transfer arm and extend through a pair of bushings 47, 48 which are adapted to ride on the surface of a cam plate 49, extending between track members 50 and 51 and rigidly associated therewith. The cam plate 49 is provided with a pair of cam slots 52 and 53, and rollers 54 and 55 journaled on pins 45 and 46 are adapted to travel in such cam slots.

The pin 45 is provided with an extension 56 which terminates in a journal for a second roller 57 adapted to travel in a lower cam plate 58 along a path parallel to that of path 52. A connecting member 59 pivotally journaled on the pin extension 56 is attached at its other end to a fluid pressure actuated piston 60 extending out of a cylinder 60a which is anchored by a clevis member 61 to a stationary bracket 62 as best shown in Fig. 6.

The guide rails 29 of the respective tracks 40 and 41, as well as the top portion of the track members 50, 50a, 51 51a are cut away to provide clearance for movement of the transfer arm 42 to its extreme positions indicated at 42a and 42b corresponding respectively to the extended and retracted positions of the piston rod 60.

While for purposes of clarity, the propeller chain and drive dogs illustrated in Figs. 1 and 2 have been omitted from Figs. 4 and 5, it will be understood by comparing such figures that such drive chains and dogs travel in each of the tracks 40 and 41 and that the transfer arm 42 is adapted to travel in a horizontal plane above the level of the drive and idler wheels 18, 28.

It will be seen from the above description that when a drive dog 18 carries a truck pin 22 to the position shown at 43a and the cylinder is actuated to retract the piston from its extended position, the hooked end of the transfer arm 42 will engage such pin, move it forwardly and laterally away from the curved face 19a of a drive dog 19 causing the pin to follow the path between auxiliary guide rail members 64 to the position 43b along the conveyor track 41 where it may become engaged by the next drive dog to come along the latter track.

Since the controls for actuating the cylinder and for synchronizing drive chains along the respective tracks 40 and 41 form no part of the present invention, they are omitted from this disclosure. However, it will be understood that the transfer mechanism disclosed herein is capable of being adapted to various automatic or semi-automatic propeller systems wherein alternative paths are required for individual floor trucks, and that the flexibility and usefulness of the submerged drive floor truck system may, as a result of such mechanism, be greatly extended to meet numerous new requirements.

It will also be understood that while a particular transfer mechanism has been described herein in detail, numerous constructional modifications might be incorporated without departing from the scope of our invention as defined by the following claims.

We claim:

1. A power actuated transfer mechanism for use in a submerged drive floor truck propeller system wherein floor trucks are provided with drive engaging pins projecting into the path of drive dogs carried by a plurality of drive chains traveling along alternative submerged tracks comprising a movable transfer arm, cam track means for defining the path of said movement, power mechanism adapted to move said transfer arm along said cam track means, said arm and path being adapted to intercept the drive pin of a floor truck being propelled by a submerged drive chain along one path and to move said pin along a path departing from said drive chain into the path of an adjacent drive chain, said chain tracks being relieved to accommodate the travel of said arm, stationary guide tracks being provided between said drive chains for guiding said pin along said path.

2. A power actuated transfer mechanism for use in a submerged drive floor truck propeller system wherein floor trucks are provided with drive engaging pins projecting into the path of drive dogs carried by a plurality of drive chains traveling along alternative submerged tracks comprising a movable transfer arm, cam track means for defining the path of said movement, a fluid pressure power cylinder adapted to move said transfer arm along said cam track means, said arm and path being adapted to intercept the drive pin of a floor truck being propelled by a submerged drive chain along one path and to move said pin along a path departing from said drive chain and into the path of an adjacent drive chain, said chain tracks being relieved to accommodate the travel of said arm.

3. A power actuated transfer mechanism for use in a submerged drive floor truck propeller system wherein floor trucks are provided with drive engaging pins projecting into the path of drive dogs carried by a plurality of drive chains traveling along alternative submerged tracks comprising a movable transfer arm, cam track means for defining the path of said movement, a fluid pressure power cylinder adapted to move said transfer arm along said cam track means, said arm and path being adapted to intercept the drive pin of a floor truck being propelled by a submerged drive chain along one path and to move said pin forwardly and laterally along a path comparable to that of a branch track leading between two parallel main tracks and thereby into the path of an adjacent drive chain, said chain tracks being relieved to accommodate the travel of said arm.

4. A power actuated transfer mechanism for use in a submerged drive floor truck propeller system wherein floor trucks are provided with drive engaging pins projecting into the path of drive dogs carried by a plurality of drive chains traveling along alternative submerged tracks each formed by opposed parallel channel members comprising a movable transfer arm, cam track means for defining the path of said movement, power mechanism adapted to move said transfer arm along said cam track means, said arm and path being adapted to intercept the drive pin of a floor truck being propelled by a submerged drive chain along one path and to move said pin along a path departing from said drive chain and into the path of an adjacent drive chain, said arm being on a level substantially coinciding with the upper level of said chain tracks and said chain tracks being relieved

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to accommodate the travel of said arm into intercepting and delivering positions.

5. A power actuated transfer mechanism for use in a submerged drive floor truck propeller system wherein floor trucks are provided with drive engaging pins projecting into the path of drive dogs carried by a plurality of drive chains traveling along alternative submerged tracks each formed by opposed parallel channel members comprising a movable transfer arm, a pair of cam tracks for defining the path of said movement, power mechanism adapted to move said transfer arm along said cam tracks, said arm and path being adapted to intercept the drive pin of a floor truck being propelled by a submerged drive chain along one path and to move said pin along a path departing from said drive chain and into the path of an adjacent drive chain, said arm being on a level substantially coinciding with the upper level of said chain tracks and said chain tracks being relieved to

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accommodate the travel of said arm into intercepting and delivering positions, and a guide track being provided intermediate said chain tracks for positively controlling the path of a floor truck pin during transfer from one chain track to another.

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