Dec. 16, 1952 J. BOYKO ET AL 2,621,610

FLOOR DRIVE LINE CONVEYER

Filed June 14, 1949

FIG. 1

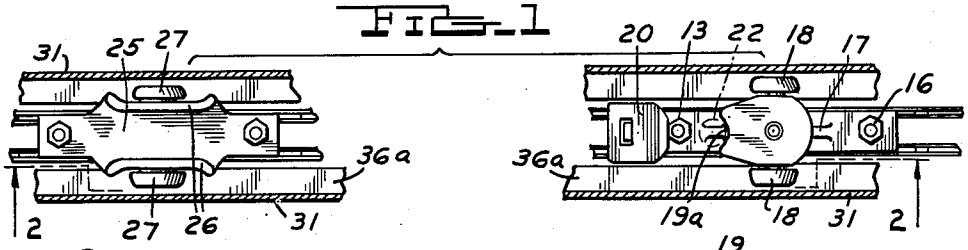


FIG. 2

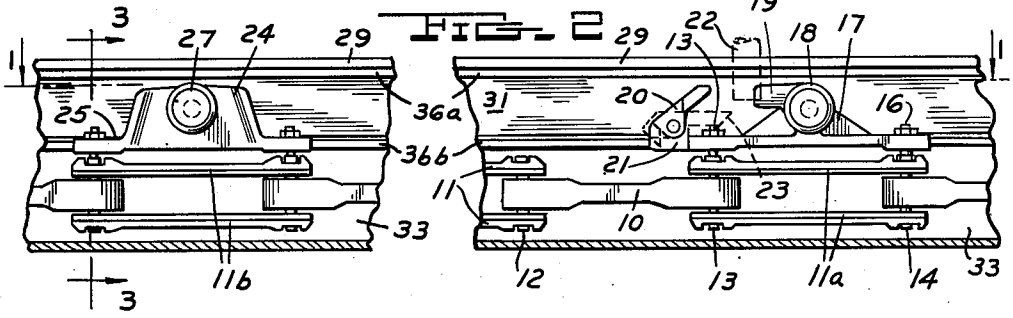


FIG. 4

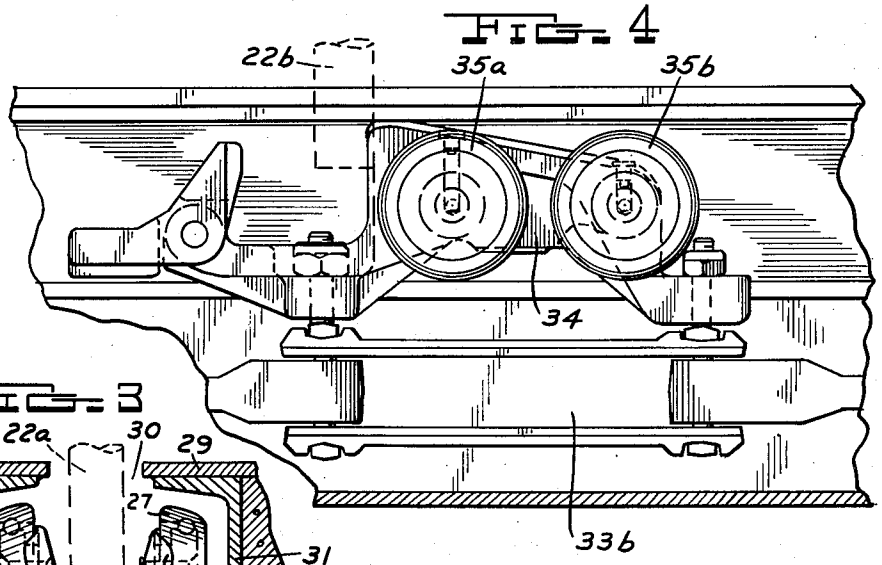
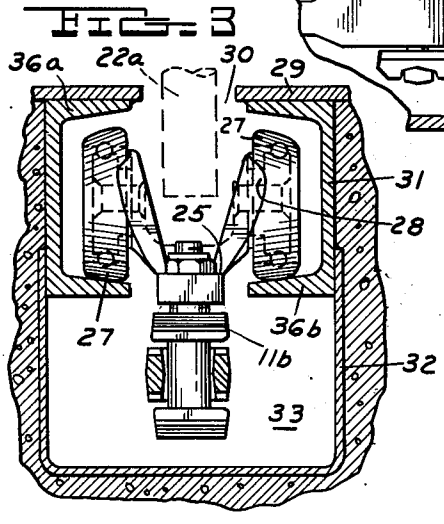


FIG. 3



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FLOOR DRIVE LINE CONVEYER

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11 Claims. (Cl. 104—172)

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This invention relates to floor-type drive lines adapted to propel floor trucks along a given path defined by a guide slot at floor level.

Drive lines installed below 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 conveyor drive line whereupon a drive pin on the floor truck is dropped in the slot between guide rails at the floor level where it may be engaged by a drive dog carried by a submerged trolley which is in turn driven by a submerged drive chain.

The present invention is directed to improvements in this general type of conveyor system whereby installations may be accommodated within the depth of conventional concrete factory floors. Whereas prior constructions, for example such as disclosed in United States patent application Serial No. 44,314, filed on August 14, 1948, have employed conventional overhead "power and free" trolley conveyor brackets wherein a depending member of the bracket was adapted to pass through the link of a conveyor chain and wherein the drive engaging dogs of such trolley brackets extended substantially above the level of the trolley wheels, such arrangement did not conserve the vertical space required for installation of the drive, and as a result, the depth of floor required to accommodate the installation frequently exceeded the depth of existing floor structures in which installations were desired.

Accordingly, it is the principal object of the present invention to provide a floor conveyor drive line minimizing the vertical depth of floor necessary for installation of combined trolley and drive chain structures.

More specifically, it is an object of the present invention to minimize the vertical distance between the center line of the drive chain and the center line of the trolley wheels carrying such chain.

Another object is to minimize the overall height of the trolley bracket.

Another object is to raise the level of the axis of the trolley wheels relative to the engagement level of the floor truck drive pin.

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

Fig. 1 is a plan view of the conveyor drive line 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 an end elevation showing the construction of the idler trolleys to permit passage of the drive pin of the floor trucks; and

Fig. 4 is a side elevation similar to that of Fig. 2, showing a modified trolley construction incorporating forward and aft pairs of wheels.

Referring to Fig. 2, it will be seen that an endless flexible propelling member in the form of 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 and 16 are employed to mount a trolley bracket 17 immediately above 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 identified by the reference 23 in Fig. 2, to permit a drive pin in the path of the conveyor to move into the engaged position shown in Fig. 2.

Depending on the spacing of the drive trolleys, one or more intermediate idler trolleys 24 may be employed, the brackets of which are mounted above the side bar 11b of the drive chain in the same manner as the drive bracket 17. The idler brackets comprise 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 conveyor 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.

In Fig. 4, a modified construction is shown wherein the trolley bracket 34 provides journals for forward and aft pairs of trolley wheels 35a and 35b which may engage respectively the up-

per and lower flanges 36a and 36b of the channel track 31 in order to limit the inclination of the drive chain 33b as a result of drive engaging pressures with a floor truck pin 22b.

It will be seen from the above description, with particular regard to the constructional features which reduce the vertical dimensions of the trolley to those of the trolley wheels themselves, which permit the drive chain to be mounted immediately beneath the trolley bracket and which permit idler brackets to be used accommodating the passage of drive pins at axle level, that the objects of the invention with regard to the reduction of floor depth required for installation have been effected.

While two particular embodiments have been described in some detail, it will be understood that modifications might be resorted to without departing from the scope of our invention as defined in the following claims.

We claim:

1. A floor truck drive line comprising a subsurface wheel track, a drive chain adapted to travel below said track, wheeled trolleys mounted at intervals on and positively connected to the top side of individual chain links with wheels adapted to travel on said track and suspend said drive chain, and a pusher-dog carried by said trolleys.

2. A floor truck drive line comprising a subsurface wheel track, a drive chain having links joined by vertical connecting pins adapted to travel below said track, wheeled trolleys mounted at intervals on the upper side of said chain with wheels adapted to travel on said track, extensions on said connecting pins being provided to mount said trolleys.

3. A floor truck drive line comprising a subsurface wheel track, a drive chain having side bars and center links joined by vertical connecting pins and adapted to travel below said track, wheeled trolleys mounted at intervals on the upper side of said side bars, extensions on said connecting pins being provided to mount said trolleys, and a pusher-dog carried by said trolleys.

4. A floor truck drive line comprising a subsurface wheel track, a drive chain adapted to travel below said track, wheeled trolleys mounted at intervals on top of said chain with wheels adapted to travel on said track, a drive dog carried by certain of said trolleys, other of said trolleys being constructed with a central clearance depression adapted to by-pass any drive transmitting members projecting into the path of said drive dogs.

5. A floor truck drive line comprising a subsurface wheel track, a drive chain adapted to travel below said track, wheeled trolleys mounted at intervals along the upper side of said chain with wheels adapted to travel on said track, a pusher-dog associated with certain of said trolleys, other of said trolleys being adapted to by-pass any drive transmitting members projecting into the path of said pusher-dogs, said latter trolleys being provided with independent stub axles, said axles being spaced apart from each other a substantial distance in order to provide clearance therebetween for by-passing said drive members.

6. A floor truck drive line comprising a subsurface wheel track, a drive chain adapted to travel below said track, wheeled trolleys mounted at intervals on and positively connected to the upper side of said chain with opposing wheels adapted to travel on said track and suspend said drive chain, and pusher-dogs associated with said trolleys, the vertical extremities of said pusher-dogs being substantially confined within horizontal planes tangential to the perimeter of said trolley wheels.

7. A floor truck drive line comprising a subsurface wheel track, a drive chain adapted to travel below said track, wheeled trolleys mounted at intervals on and positively connected to the upper side of said chain with opposing wheels adapted to travel on said track and suspend said drive chain, a pusher dog carried by said trolleys and a concave face on said pusher dog in the direction of travel adapted to engage and center a drive pin associated with the floor truck.

8. A floor truck drive line having a subsurface track including a pair of laterally spaced rail surfaces, a drive chain having links joined by vertically extending connecting pins, and a plurality of trolleys each having laterally spaced wheels supported by said rail surfaces; characterized by means connecting said chain to each of said trolleys intermediate the wheels thereof, said connecting means including an upwardly projecting extension provided on each of an adjacent pair of said connecting pins, said extensions engaging the underside of a trolley, fastening means engaging said extensions, and a pusher dog carried by at least certain of said trolleys intermediate the wheels thereof and substantially below the level defined by a horizontal plane tangential to the upper perimeter of such wheels.

9. A floor truck drive line wherein a plurality of trolleys are supported by a subsurface track and connected to an endless flexible propelling member; characterized by said trolleys including spaced driving trolleys and idler trolleys, said driving trolleys each including a pusher dog carried intermediate the wheels thereof and substantially below the level defined by a horizontal plane tangential to the upper perimeter of such wheels, and said idler trolleys each including a clearance trough intermediate the wheels thereof, said pusher dog projecting above the level of the bottom portion of said clearance trough.

10. A floor truck drive line having a pair of laterally spaced subsurface trolley rails, a drive chain having links joined by vertical connecting pins, and a plurality of trolleys each having spaced wheels supported by said trolley rails; characterized by means connecting said drive chain to each of said trolleys, said connecting means comprising upwardly projecting extensions provided on each of an adjacent pair of said connecting pins, said extensions engaging a pair of longitudinaly spaced apertures provided in each of said trolleys intermediate the wheels thereof, and fastening means engaging each of said extensions and the trolley structure adjacent thereto.

11. A floor truck drive line having a pair of laterally spaced subsurface trolley rails, a drive chain having links joined by vertical connecting pins, and a plurality of trolleys each having spaced wheels supported by said trolley rails; characterized by means connecting said drive chain to each of said trolleys, said connecting means comprising upwardly projecting extensions provided on each of an adjacent pair of said connecting pins, said extensions engaging a pair of longitudinally spaced apertures provided in each of said trolleys intermediate the wheels thereof, fastening means engaging each of said extensions and the trolley structure adjacent

thereto, said trolleys including spaced driving trolleys and idler trolleys, said driving trolleys each including a pair of oppositely arranged one-way driving members located intermediate the wheels thereof, said idler trolleys each including a clearance trough between the wheels thereof, said driving members projecting above the level of the bottom portion of said clearance trough.

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