

Dec. 16, 1952

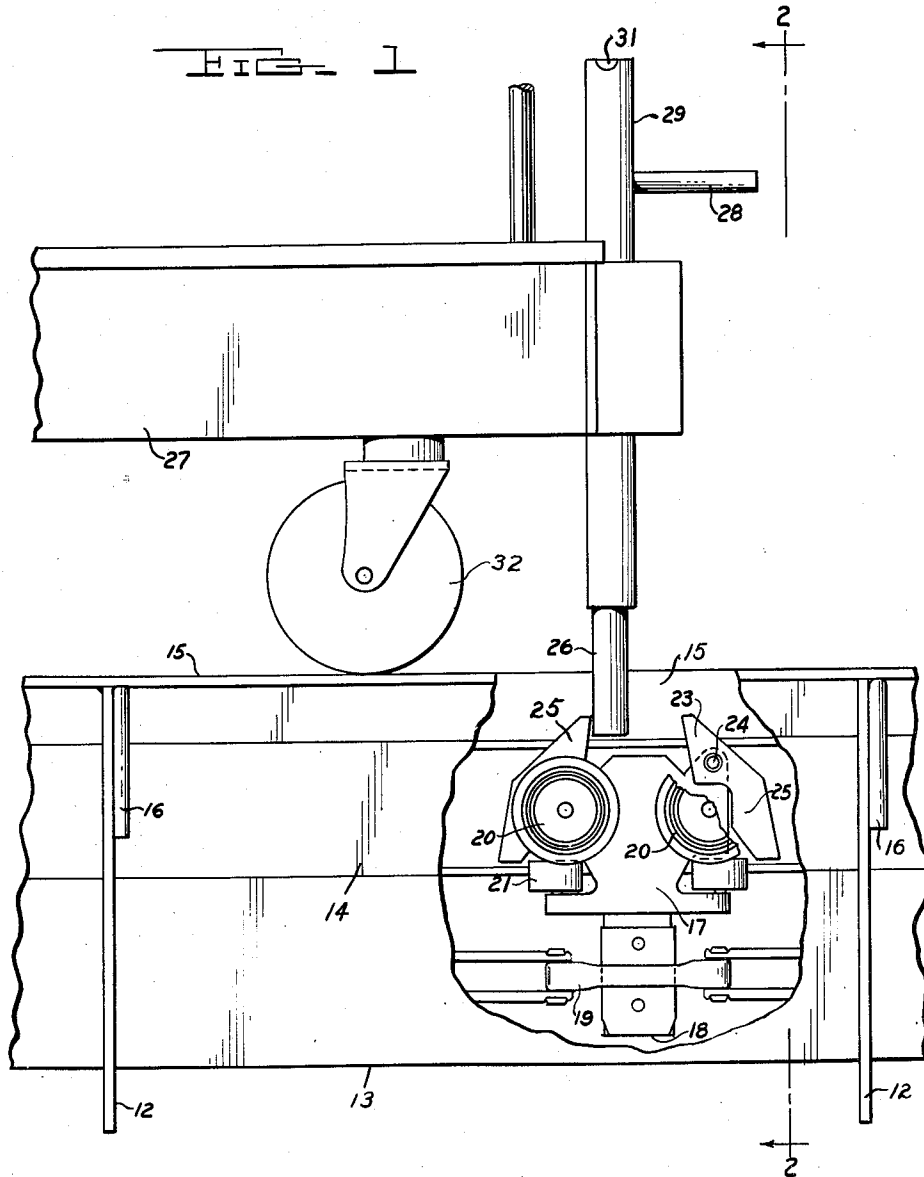
E. W. McCAUL ET AL

2,621,609

SUBMERGED DRIVE LINE CONVEYER FOR FLOOR TRUCKS

Filed Aug. 14, 1948

2 SHEETS—SHEET 1



INVENTORS
Edward W. McCaul
BY Steven W. Jessop
Joseph Harley
ATTORNEY.

Dec. 16, 1952

E. W. McCAUL ET AL

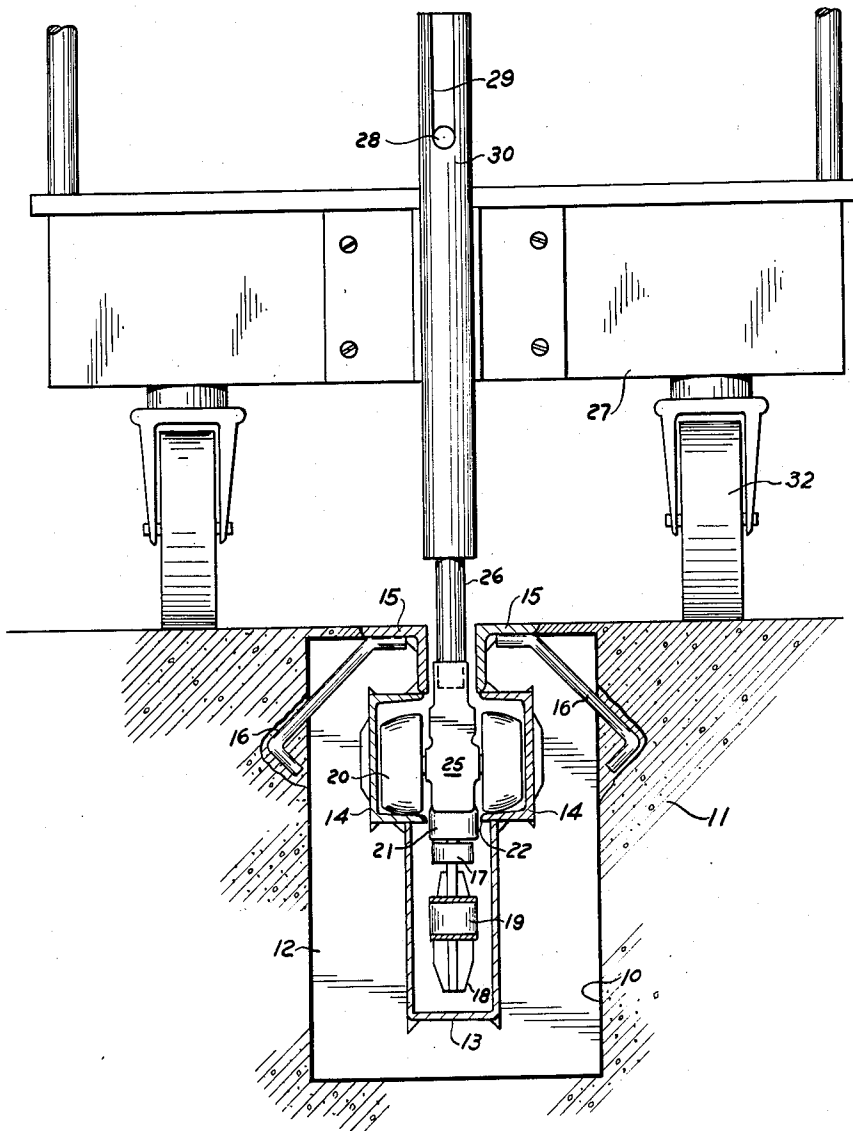
2,621,609

SUBMERGED DRIVE LINE CONVEYER FOR FLOOR TRUCKS

Filed Aug. 14, 1948

2 SHEETS—SHEET 2

FIG. 2



INVENTORS

Edward W. McCaul

BY Steven W. Jessop

Joseph P. Bailey

ATTORNEY.

UNITED STATES PATENT OFFICE

2,621,609

SUBMERGED DRIVE LINE CONVEYER FOR FLOOR TRUCKS

Edward W. McCaul, Birmingham, and Steven W. Jessop, Detroit, Mich., assignors to Jervis B. Webb Company, Detroit, Mich., a corporation of Michigan

Application August 14, 1948, Serial No. 44,314

6 Claims. (Cl. 104—172)

1

This invention relates to improvements in a drive line for propelling wheeled carriers or floor supported trucks equipped with a vertically movable drive pin along a supporting surface in a path defined by a guide slot formed in the supporting surface, or floor.

Objects of the present invention include the use of the conventional type of drive line, the use of conventional trolley assemblies for supporting the chain and imparting drive to the floor trucks, the provision for automatic engagement of floor trucks placed in the path of the drive line, the adaptation of convenient means for disengagement which will permit the floor trucks to be moved away from the drive line at will, the provision of a composite guide and drive track, as well as the incorporation of economical and dependable means for installation of the drive line track in the floor.

These and other objects will be apparent from the following detailed description of a particular embodiment of the invention, as well as an examination of the drawings forming a part hereof wherein:

Fig. 1 is a side elevation of the drive line installed in a floor showing in fragmentary break-away the trolley assembly and chain in driving position on the track, together with the mechanism for imparting drive between the trolley assembly and the floor truck.

Fig. 2 is an end elevation taken along the line 2—2 of Fig. 1.

Referring to these drawings, it will be seen that a rectangular trench 10 is provided in the conventional concrete floor 11 and that rectangular longitudinally spaced plates 12 seated within the trench 10 are cut out in the center to form the framework for the various segments of the drive line track which includes a lower U-shaped channel member 13 forming an opening for the suspended drive chain, opposed C channel members 14 forming the tracks for the trolley wheels, as well as angle members 15 forming a guide track for the trolley driving dogs and driven floor truck pins. Auxiliary bracing members 16 are embedded in the concrete floor and welded to the frame plates 12 and to the angle irons 15.

An endless flexible propelling member comprising a conventional rivetless or Keystone type of drive chain travels within the lower U-shaped channel member 13 suspended by a number of spaced four wheel driving trolleys such as the four wheel trolley 17, and in most installations the spacing of such driving trolleys will be such as to require the use of a number of intermediate chain-supporting trolleys of the conventional two-wheel type widely employed in overhead conveyor installations. The trolley assembly 17 is provided with a depending member 18 to engage the center link 19 of the drive chain and with

2

four main wheels 20 for traveling along the channel members 14 as well as with a pair of guide rollers 21 for bearing against the lower ends 22 of the channel members 14 during the rounding of curves in the drive line track. A pair of drive dogs 23 are pivotally mounted at 24 and normally held in their upright position extending within the guide track by the weighted tailpieces 25. It will be seen that a pin within the guide track moving relatively toward the center of the trolley assembly 17 from either end thereof will cause either drive dog 23 to tip toward the center causing the pin to become entrapped between such dogs. The load carrying member of this system is a floor truck on which a retractable drive pin 26 is mounted within a tubular housing 30 having a slot 29 which is engaged by a handle 28 connected to the pin 26 to define the lowered position of the pin. In the retracted position of the pin 26, the handle is moved upwardly out of the slot 29 and is rotated 90 degrees to engage the groove 31 in the housing. The front wheels 32 of the floor truck are of the caster type to allow the truck to freely follow the path of the guide track and to eliminate the necessity for accurate positioning of a truck for engagement with the drive line.

In the operation of the system when it is desired to engage a truck with the drive line the truck is wheeled to the guide track and its pin 26 lowered into the slot of the guide track. The truck may then be left to await pickup by the next driving trolley 17 or pushed in the direction of drive line travel to overtake the next preceding driving trolley 17. Either procedure will result in the pin 26 becoming automatically engaged between a pair of drive dogs 23.

When it is desired to stop the floor truck or to move the same away from the drive line, the handle 28 which is connected to the drive pin 26 is raised to its retracted position out of the slot 29 in the pin housing 30 and turned 90 degrees to engage the groove 31. With the pin in this position its lower end is above the floor level and the truck may be freely moved as desired.

Since the guide track is flush with the floor level and all moving parts of the drive line are below floor level, there is no danger to an operator in placing a truck in position to be engaged by the drive line or in disengaging a truck therefrom. The driving force is exerted below the load level of the truck, and therefore, there is very little tendency for the truck to be overturned at any time. This advantage is particularly noticeable in placing a truck in position to be picked up by a driving trolley and in actual practice it has been found that the truck can be placed with its longitudinal axis out of alignment with the path of drive line travel even to the extent of being perpendicular thereto without danger of the truck

3

being overturned when its pin is engaged by the drive dogs of the driving trolley. The track construction of the invention, in addition to being characterized by the use of conventional conveyor parts such as have been thoroughly tested and proven through years of service in numerous overhead installations, offers certain other advantages peculiar to this floor type system. Both the drive pin and driving dogs extend within the guide track thus positively insuring that the dog will be in driving relationship with the pin at all times. Side movement of the drive trolleys is also positively prevented by the guide rollers 21.

Many prior installations of this subfloor type have encountered the problem of foreign matter entering through the guide track and clogging or otherwise impairing the operation of the drive line. The present design of composite track is self-cleaning since any foreign matter falling into the guide track will either proceed directly to the bottom of the channel member 13 or will be brushed to that location by the trolley wheels should it become lodged on the drive line track. The depending member 18 which secures each trolley assembly to the drive chain acts as a sweep to distribute any foreign matter uniformly throughout the track, and, if desired, cleaning apertures may be provided at spaced intervals in the lower surface of the channel member 13.

It will be seen from the above description that a drive line construction has been provided which satisfies each of the desired objects stated above. However, it will be understood that modifications in the detailed construction are possible without departing from the scope of the invention as defined in the appended claims.

We claim:

1. In a drive line of the type having a guide slot and a subsurface track employed for propelling a wheeled carrier equipped with a vertically movable drive pin along a supporting surface, propelling means including a plurality of trolleys each having wheels supported by said track, an endless flexible propelling member, means connecting said propelling member to each of said trolleys in reversible driving relationship therewith and for vertical support thereby, and means carried by at least certain of said trolleys for drivingly engaging a carrier drive pin lowered within said guide slot.

2. In a drive line of the type having a guide slot and a subsurface track employed for propelling a wheeled carrier equipped with a vertically movable drive pin along a supporting surface, propelling means including a plurality of trolleys each having wheels supported by said track, an endless flexible propelling member, means connecting said propelling member in substantially fixed vertical and horizontal relationship to each of said trolleys, at least certain of said trolleys being provided with a pair of oppositely arranged upwardly projecting one-way drive members adapted to receive, trap and drivingly engage the drive pin of a carrier positioned with such drive pin projecting downwardly within said guide slot.

3. In a drive line of the type having a guide slot and a subsurface track employed for propelling a wheeled carrier equipped with a vertically movable drive pin along a supporting surface, propelling means including spaced upper and lower pairs of rails forming said track, a four wheeled driving trolley supported by said track, an endless flexible propelling member, means connecting said propelling member to said trolley in

4

reversible driving relationship therewith and for vertical support thereby, and a pair of oppositely arranged one-way drive members carried by said trolley adapted to engage and trap a drive pin of a floor truck lowered within said guide slot on either direction of relative movement between said driving trolley and said wheeled carrier.

4. Propelling means for a drive line as set forth in claim 3 wherein said propelling member comprises a drive chain having side bars and center links and wherein said means connecting said propelling member to said trolley comprises a depending member carried by said trolley, said depending member engaging one of said center links.

5. In a drive line of the type having a guide slot and a subsurface track employed for moving a floor truck along a supporting surface and wherein such floor truck is equipped with swivel mounted forward wheels and a drive pin carried on the forward portion of said truck intermediate said forward wheels and vertically movable into downwardly projecting engagement with said guide slot, propelling means including in combination a drive chain, a clearance area below said track for receiving said drive chain, a trolley assembly supported by said track, said assembly including a member depending below said track, means connecting said chain to said depending member in reversible driving relationship therewith and for vertical support thereby, said trolley assembly further including a pair of oppositely arranged pivotally mounted upwardly projecting drive dogs adapted to receive, trap and drivingly engage the drive pin of a floor truck positioned with such drive pin projecting downwardly within said guide slot.

6. A drive line of the type wherein a driving member traveling along a subfloor track is employed to propel a floor truck along a path defined by a guide slot at floor level by engagement between said driving member and a drive pin carried by said floor truck and projecting downwardly within said guide slot; characterized by said drive line including an endless flexible propelling member, a wheeled trolley supported by said track, a clearance area formed beneath said track for receiving said propelling member, means for connecting said propelling member to said trolley in reversible driving relationship therewith and for vertical support thereby, said means including a member depending from said trolley into said clearance area and projecting below said propelling member.

EDWARD W. McCAUL.
STEVEN W. JESSOP.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
512,066	Spitzer	Jan. 2, 1894
783,070	Patterson	Feb. 21, 1905
948,678	Bighouse	Feb. 8, 1910
1,000,106	Morris	Aug. 8, 1911
1,124,267	Bernheim	Jan. 12, 1915
1,420,115	Lange et al.	June 20, 1922
1,740,053	Wehr	Dec. 17, 1929
1,810,418	Francis	June 16, 1931
1,920,774	Webb	Aug. 1, 1933
2,101,353	Waalkes	Dec. 7, 1937
2,116,430	Gordon	May 3, 1938
2,485,215	Rose	Oct. 18, 1949