Nov. 22, 1955 F. SCHEUCHZER ET AL 2,724,515

LOADING OF OPEN RAILWAY TRUCKS

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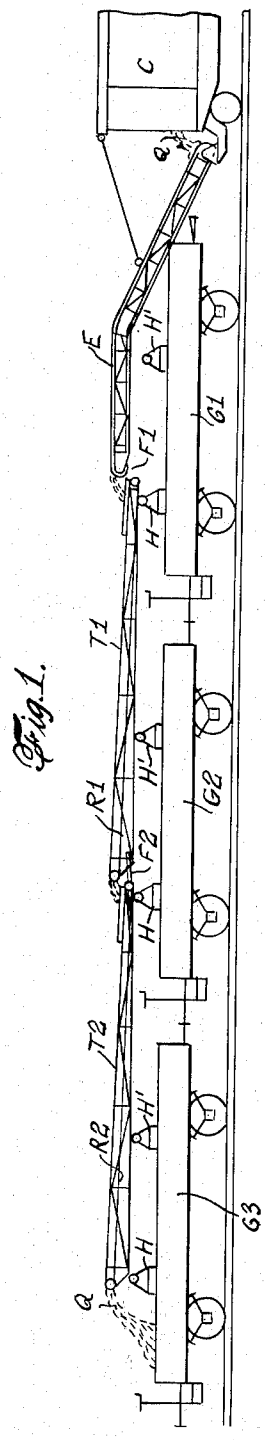


Fig. 1.

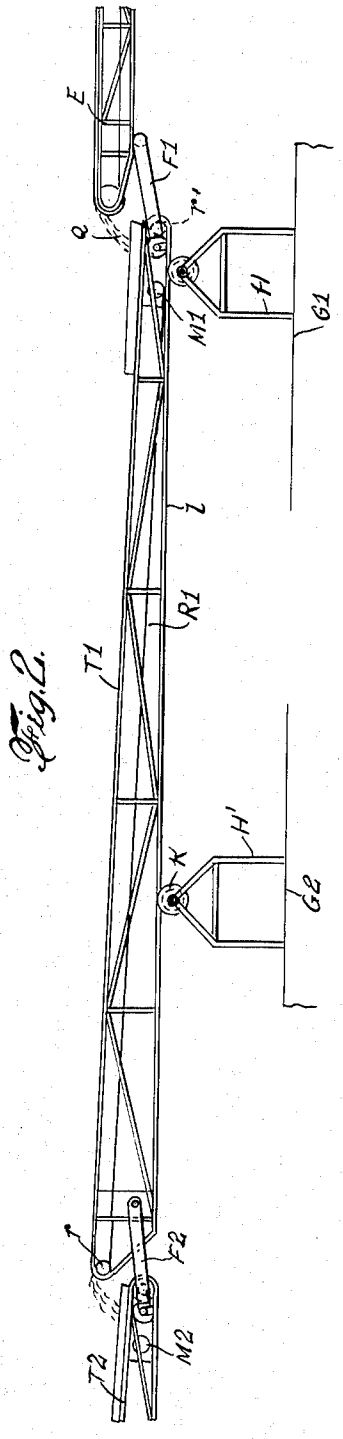


Fig. 2.

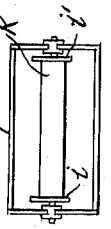


Fig. 4.

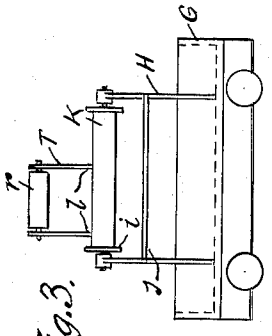


Fig. 3.

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LOADING OF OPEN RAILWAY TRUCKS

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5 Claims. (Cl. 214—42)

This invention relates to a method and an installation for loading a plurality of open trucks forming a single set, from an elevator which receives material to be discharged into these trucks and which is situated at one end of the said set.

The object of this invention is to achieve a saving of time and handling expenses in the loading of trucks.

One embodiment of the installation to which the invention relates, chosen by way of example, is illustrated in the accompanying drawings, in which:

Figure 1 is a view thereof in side elevation;

Figure 2 is a similar view, on a larger scale, of part of the installation;

Figure 3 is a diagrammatic end view from the left-hand end of Figure 1, on the same scale as Figure 2; and

Figure 4 is a partial plan view of the parts shown in Figure 3.

Figure 1 shows a set of three similar goods trucks G1, G2 and G3 of the open type, for transporting material Q delivered by a machine C by means of an elevator E attached to this machine. The latter may be more particularly a ballast screening machine combined with elements of a machine for stripping railway tracks of their ballast, similar to that described in Swiss Patent No. 126,750. The material Q may be material which falls from the screen, or non-screened ballast extracted from under the track.

On the bottom of each truck rest two supports H and H' consisting of frames having four vertical legs connected, at a level higher than that of the maximum normal load of the trucks, by a rigid framework J. The lateral surfaces of each frame are bounded, above this framework, by two inclined bars, meeting in the centre of the width thereof, for carrying bearings in which cylinders K rotate which are limited in length by discs *i* and *i'* of larger diameter.

These cylinders thus constitute rollers for guiding, in translation, belt conveyors T1 and T2 of which the belts are represented by R1 and R2 and which are supported on these cylinders by the lower longitudinal beams *l* of their frames.

It can be seen that the supports H and H' of all the wagons are of the same height in this example, so that all these longitudinal beams are in a plane parallel to the track. To enable the conveyors T1, T2 . . . to feed one another, their frames support the rollers *r* and *r'*, over which their belts pass, at different heights, the rollers *r* at the discharge end being higher than the rollers *r'* at the opposite ends receiving the material Q.

In the position shown in the drawing, hooks F1 couple the conveyor T1 to the jib of the elevator E and hooks F2 couple together the conveyors T1 and T2 which thus form a train superimposed on the set of trucks and capable of moving relatively thereto in the direction of the track; this train only may be displaced by being pulled along by the machine C, or the set of trucks may be displaced in either direction by being moved by a locomotive, not

shown, or again the conveyor train and the set of trucks may be displaced simultaneously.

The installation described actually renders it possible to employ a method of loading which can be carried into effect in various ways, and in the operations of which certain of the above-mentioned relative displacements are employed.

In a first application of this method, first of all the truck G3 furthest away from the elevator E is loaded, the various parts being in the position illustrated in which each comveyor forms a bridge between two trucks, resting on the support H of one truck and the support H' of the other.

It is assumed that the locomotive moving the set of trucks is coupled to the truck G3 and that the screening machine C is advancing slowly towards the right. The output of material Q separated from the ballast by a screen depends not only on the speed of advance of the tools stripping the track of its ballast, but also on the quality of this ballast, which may contain foreign matter (earth, vegetable matter and the like) in varying proportions.

It is possible, therefore, that the truck G3 may have to be displaced towards the left if these materials are abundant, or to the right if they only slowly fill this truck beginning at the left-hand end thereof. When the truck is full, the left-hand end of the conveyor T2 has withdrawn, relatively to the set of trucks, to a point as close as possible to the right-hand end of the truck G3. This conveyor is then unhooked and is pushed towards the left so that it will be supported by both supports of the loaded truck and disengaged from the support H of the truck G2.

After this, the set of trucks is moved back towards the right through the distance through which it had been displaced relatively to the machine C, in such a manner that the conveyor T1 can begin to fill the truck G2 beginning from the left. As the loading progresses, the truck is displaced by again pulling the set of trucks toward the left, and then the conveyor T1 is unhooked in order to centre it on the truck G2. Lastly, the set of trucks is moved towards the right in order to load the truck G1 directly by means of the elevator E, beginning at the left of this truck, and then the set of trucks is moved towards the left in the course of this loading, after which the set of trucks can be taken away to the place where it is to be unloaded.

This unloading is rendered possible by the fact that the number of conveyors is always one less than the number of trucks in the set. Thus, the truck which is not supporting a conveyor can be emptied and the supports H and H' replaced on this truck; this enables one of the conveyors to be pushed on to this truck in order to free another truck for unloading, and so on, by reason of the fact that the conveyors are of substantially the same length as a truck.

After the truck G3 has been loaded, it would be equally possible to refrain from pushing the set of trucks back towards the right, and to load the truck G2 in the opposite direction to that in which the truck G3 was loaded, and to do the same, or not, in the case of the truck G1.

From the above it is clear that a second application of the method may consist in beginning the loading of a set at the truck G1 situated under the elevator. For instance, when the set of trucks returns from its unloadings point, with conveyors T1 and T2 centred on the trucks G2 and G3, the truck G1 may be loaded beginning at its right-hand end, which is naturally adjacent since the set of trucks comes from the left.

After the operation of distributing the load in G1, the first conveyor T1 may be hooked to the elevator by being brought on to the support H of G1 and disengaged from the support H of G2. Then the set of trucks is displaced

towards the left, if the screening machine does not advance sufficiently rapidly relatively to its output, and then again towards the right, and the truck G3 can be loaded only after the conveyor T2 has been rolled along until it can be hooked on to T1.

It is clear, therefore, that in whatever order the trucks are loaded there is one phase in the operations in which all the conveyors, which may be more than two in number, form a train superimposed on the set of trucks which continues to be capable of moving relatively to this train which, like the elevator E on which its position depends, may be stationary or movable. This phase of the procedure is always that in which the truck furthest from the elevator is loaded. When the intermediate trucks are being loaded, the train of conveyors comprises only some and not all of the conveyors.

It is clearly possible to employ means other than the shape of the frames of the conveyors for ensuring that the extremities of two conveyor belts, one of which discharges material on to the other, will be at suitably different heights; this may be effected by means of supports of different heights in the same truck, or pairs of supports of different heights in different trucks. But these means do not secure the advantage of the same ease of displacement of the conveyors along a set of trucks, or from a full set of trucks to an available empty set.

The supports of the conveyors could be mounted on the lateral walls of the trucks, and their rollers K could be replaced by simple bars on which these conveyors could slide. Instead of mechanically coupling the conveyors and the elevator, it would be possible to make workmen perform the task of constantly keeping these devices at a suitable distance from one another by manual action.

We claim:

1. A method of loading a plurality of aligned open vehicles from a loading means adapted to extend longitudinally over said vehicles with the loading means including a series of aligned sections containing conveyor belts each positioned to receive the material discharged from the conveyor belt of an adjacent section and supported over said vehicles by supports carried by the vehicles, which comprises supplying material to be loaded to one end of the series of conveyor sections with the opposite end of the series of conveyor sections disposed over one end of the end vehicle and gradually moving said vehicles relatively to the conveyor sections while maintaining the number of said conveyor sections at a value which is one less than the number of vehicles being loaded at a given moment.

2. Apparatus for loading a train of railroad cars and the like comprising, in combination, support means carried by said cars and providing an anti-friction surface, a plurality of interengaging conveyor frames slidable over the anti-friction surfaces of said support means, each frame supporting a driven belt conveyor, said frames when interengaged having their conveyor belts in overlapping relationship for discharge of the material carried by one conveyor belt to the conveyor belt on an adjacent frame, the portion of said supports engaged by said frames being at a predetermined height above the level of the contents of said cars when loaded.

3. An apparatus as defined in claim 2, wherein the anti-friction surface of each support engaged by the conveyor frames is provided with a cylinder rotatably journalled in said support for rolling engagement with the conveyor frames.

4. An apparatus as defined in claim 3, wherein each support comprises four vertical feet and a rigid framework interconnecting said feet, and pairs of inclined bars at opposite sides of said framework and above said framework for rotatably supporting bearings for said cylinders.

5. An apparatus as defined in claim 2, wherein each car is provided with two supports, the surface engaged by the conveyor frames of one support being higher than the surface engaged by the conveyor frames of the second support.

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