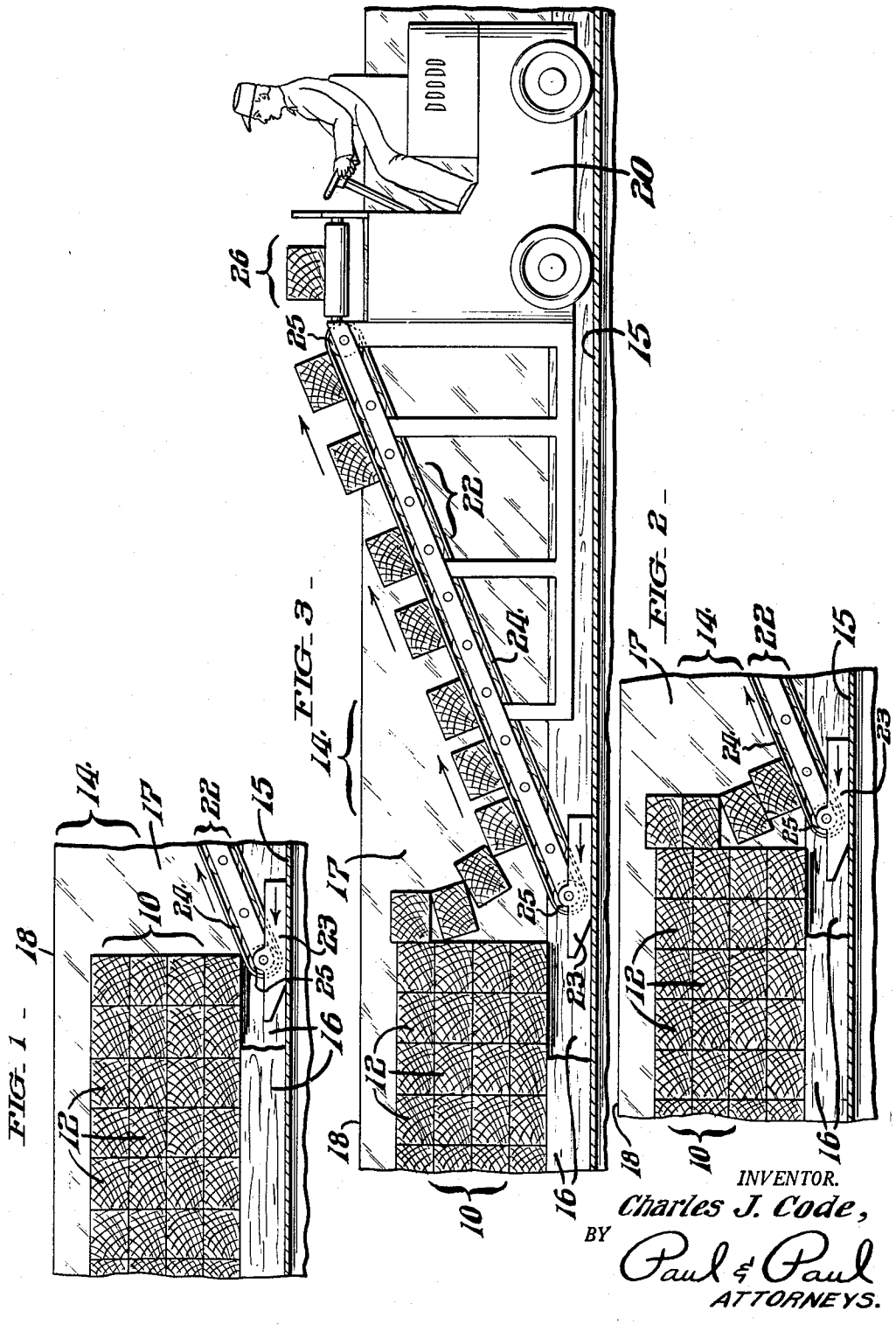
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METHOD OF HANDLING RAILROAD CROSS TIES

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METHOD OF HANDLING RAILROAD CROSS TIES

Charles J. Code, 327 Highland Ave., Devon, Pa.

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This invention relates to a method of transporting railroad cross ties in gondola cars of the drop-end type and of unloading the cross ties therefrom.

One type of prior art machine for unloading cross ties from gondola cars requires a specially equipped gondola car. Another type of prior art machine requires hand labor for placing ties which are loaded lengthwise in the gondola car on to a conveyor. The method of my present invention requires that the gondola car be of the drop-end type (as distinguished from the solid-end type) but does not require the gondola car to be specially equipped nor does it require hand labor to load the conveyor.

My present invention will become clear from a consideration of the following detailed description of a preferred method illustrated in the drawing in which:

FIG. 1 is a side elevational view in section showing the manner in which the ties are stacked crosswise in the gondola car and supported above the floor by stringers running lengthwise along each side of the car;

FIG. 2 is a side elevational view in section showing the manner in which the skid-supported front end of an inclined endless-belt conveyor is thrust under the lower cross tie of the foremost tier of the stack, and the manner in which the lateral pull exerted by the moving endless belt breaks down the foremost tier; and

FIG. 3 is a side elevational view in section showing the tractor operated conveyor and the manner in which the cross ties are conveyed up the inclined conveyor and transferred on to a cross conveyor for discharge over the side of the car.

In describing the preferred embodiment of the invention illustrated in the drawing, specific terminology has been resorted to for the sake of clarity. However, it is not the intention to be limited to the specific terms so selected, and it is to be understood that each specific term includes all technical equivalents which operate in a similar manner to accomplish a similar purpose.

Referring now to the drawing, there is shown a stack **10** of ties **12** lying crosswise in a gondola car **14** and supported above the car floor **15** on stringers **16** laid on the car floor lengthwise along each side wall. In the drawing, the far side wall of the car is identified by the reference numeral **17**, while **18** represents the top of the side wall. In a typical gondola car, the side wall rises about three feet above the car floor. The stringers **16** are preferably about eight inches high and may, if desired, be cross ties themselves. For example, grade 3*a*, 4 or 5 cross ties may be laid on edge to provide a supporting ledge 8" or 9" above the car floor. The stringers are spaced from 7 to 7½ feet apart, thus providing a space 8–9 inches high and 7–7½ feet wide beneath the stack of cross ties **12** for receiving the forward end of the conveyor, as will be described. With gondola cars of the drop-end type, the end tier of the stack of ties is bulkheaded far enough away from the end door so that it can be dropped inwardly.

The unloading machine employed in accordance with the method of the present invention is a tractor **20** having mounted forwardly thereof an endless-belt conveyor **22** supported at its front end on skids **23**. The tractor **20** is capable of moving itself and the conveyor from one gondola car to another, traveling across the gap between cars on a temporary transfer plate or other supporting means not shown. The endless belt **24** which is preferably of rubber fabric, is driven rotationally by known means, as

by pulleys **25**, which in turn are driven rotationally by tractor **20** through suitable coupling means, not shown.

The optimum length of conveyor **22** is, of course, a function of the height to which the cross ties must be raised and the optimum angle of inclination of the conveyor. Gondola cars have side walls ranging in height from 3' 0" to 3' 9". Assuming that the conveyor belt **24** is a rubber fabric, the coefficient of friction, rubber to wood, is such that an angle of inclination up to about 25° may be used with very satisfactory results. On this basis, the length of the conveyor **22** would be of the order of from eight to ten feet.

In view of what has just been said about the length of the conveyor relative to its height, it will be seen that the illustration in FIG. 3 of the drawing is out of proportion; this has been done in order to accommodate the illustration to the standard size of drawing.

While the method of my present invention is by now probably apparent, the method will be briefly summarized: Stringers are first laid on the car floor lengthwise along each side wall. The cross ties are stacked crosswise in tier-like fashion upon the stringers, as shown in the drawing. In the drawing, the ties are all shown to be of the same width, but the ties may very well be of varying widths. My method will work even though the ties are of unequal width and are unevenly stacked in tier-like fashion. They need not be precisely stacked as shown in the drawing. As previously indicated, with the gondola car of the drop-end type, the end tier of ties is bulkheaded or otherwise secured sufficiently far from the end of the car to permit the end to drop inwardly.

In the unloading operation, the tractor-conveyor is loaded in one of the cars, and is then driven forwardly, crossing where necessary a temporary floor plate laid down between adjoining cars. The skid-supported front end of the inclined conveyor is thrust into the space between the stringers and below the lowermost cross tie of the foremost tier until the conveyor belt lifts the first tier or ties and the moving belt exhibits sufficient lateral pull to pull the bottom tie out from under the front tier, thus breaking down the tier. The individual ties of the tier then fall into place one by one on the moving conveyor belt and are transported upwardly as shown in FIG. 3 of the drawing. In a preferred method of operation, the ties are dropped down on to a transverse conveyor belt **26** (FIG. 3) for conveyance over the side wall of the car. The action just described is continued as the machine works into the pile of ties.

While the preferred embodiment of this invention has been described in some detail, it will be obvious to one skilled in the art that various modifications may be made without departing from the invention as hereinafter claimed.

Having thus described my invention, I claim:

1. The method of handling railroad cross ties for transportation and unloading, comprising the steps of, stacking the ties crosswise of the car in tier-like fashion, the lowermost tie of each tier being supported above the car floor by a stringer running lengthwise of the car along each side thereof, the upper ties being supported by the ties therebeneath, thrusting the front end of an upwardly - inclined longitudinally - disposed endless-belt tractor-driven conveyor under the foremost tier until the frictional lateral pull of the moving endless belt causes the lowermost tie of said foremost tier to be displaced in the direction of the conveyor thus breaking down the foremost tier, conveying the ties of said foremost tier upwardly on the inclined conveyor belt, transferring the ties to a transverse conveyor belt for discharge over the side of the car, and repeating the action just described until the stack of ties has been unloaded from the car.

2. The method of handling railroad cross ties for

transportation and unloading, comprising the steps of, placing stringers longitudinally on the floor of the car along the sides thereof, supporting the cross ties above the floor by placing the ties crosswise of the car on said stringers, stacking the ties one on another in tier-like fashion, thrusting the front end of an endless-belt tractor-driven upwardly-inclined conveyor under the nearest tier of ties until the lateral pull of the moving conveyor belt pulls the lowermost tie out from under said nearest tier thereby breaking down the tier, conveying the ties upwardly along the inclined surface of the belt, transferring the ties to a transverse conveyor belt for conveyance over the side of the car, and repeating the action just described, tier by tier.

3. The method of handling railroad cross ties for transportation and unloading, comprising the steps of, stacking the ties crosswise of the car in tier-like fashion supported above the car floor by a stringer running lengthwise of the car along each side thereof, thrusting the front end of an upwardly-inclined longitudinally-disposed endless-belt conveyor under the foremost tier until the frictional lateral pull of the moving endless belt causes the lowermost tie of said foremost tier to be displaced in the direction of the conveyor thus breaking down the foremost tier, conveying the ties of said foremost tier upwardly on the inclined conveyor belt, discharging the ties over the side of the car, and repeating the action described until the stack of ties has been unloaded from the car.

4. The method of handling railroad cross ties for transportation and unloading, comprising the steps of, placing stringers longitudinally on the floor of the car along the sides thereof, supporting the cross ties above the floor by placing the ties crosswise of the car on said stringers, stacking the ties one on another in tier-like fashion, thrusting the front end of an endless-belt upwardly-inclined conveyor under the nearest tier of ties until the lateral pull of the moving conveyor belt pulls the lowermost tie out from under said nearest tier thereby breaking down the tier, conveying the ties upwardly along the inclined surface of the belt, discharging the ties over the side of the car, and repeating the action just described, tier by tier.

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