

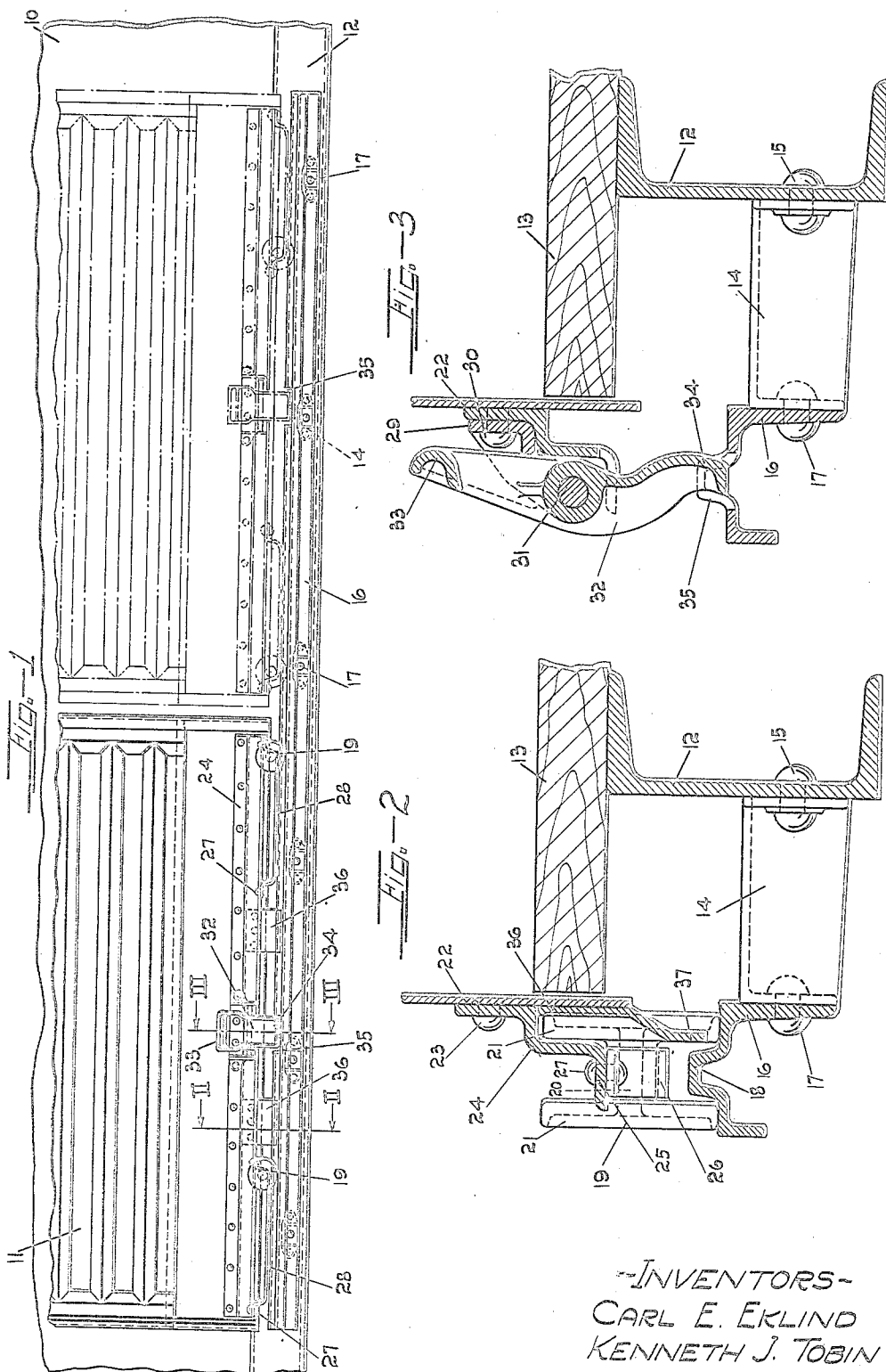
July 18, 1933.

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1,918,253

CAR DOOR

Filed July 26, 1929



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CAR DOOR

Application filed July 26, 1929. Serial No. 381,120.

This invention relates to improvements in car doors.

More particularly the present invention relates to improvements in the supporting means and latching means for a freight car door. It has been customary practice to support a slidable freight car door on rollers, permitting frictionless movement of the door, but in such constructions the rollers have generally been held by retaining means to the door, so that the rollers traveled the entire distance of the door movement. Therefore, in such constructions there is relative movement only between the rollers and the track.

It is an object of the present invention to improve upon a supporting roller construction for car doors whereby the rollers have a differential movement intermediate the full movement of the door with respect to the fixed track. It is a feature of the present invention to carry out this object by providing a relatively fixed track upon which spool rollers travel. The weight of the door rests on the axle portions of the spool rollers and has relative movement with respect thereto. By this construction the door, during its full sliding movement, will be in relative rolling contact with respect to the rollers, while the rollers will also be in rolling contact with respect to the track. The force required to move the door is therefore reduced from that which is required when the rollers are held by fixed pivots and move with the door.

It is a further object of the present invention to provide improved and simplified latching means associated with the bottom of the door and cooperating with the track member. The latching means are designed to automatically engage the track and hold the door against movement in its full open or closed position. This construction eliminates damage to the door and car occasioned by shifting of the car with the door unlatched.

Further objects and advantages of the present improvements will be more readily apparent from the full description of a preferred embodiment taken in connection with the accompanying drawing, in which—

Figure 1 is a fragmentary front elevation of a portion of a car side illustrating in full lines the door in closed position and in dotted lines the door in open position;

Figure 2 is a detail vertical section taken transverse to the door on the plane indicated by 2—2 in Figure 1; and

Figure 3 is a detail vertical section taken transverse to the door on the plane indicated by 3—3 in Figure 1 and illustrating the latching means.

First having reference to Figure 1, 10 is a customary car side having a door opening which is closed by the slidable door 11. Extending throughout the length of the car side is a channel member 12 supporting the bottom 13 of the car. To the channel member 12 at a plurality of spaced points are attached the brackets 14—14 held by rivets 15—15. To the outer ends of the brackets 14 is attached a longitudinal track member 16, fastened by the rivets 17—17. The track 16 is formed throughout its length with a raised portion 18, whereby roller spools 19—19 are guided for longitudinal movement on the track and support the weight of the door 11. In the present embodiment, two roller spools 19 are used to support the door 11. The spools 19 comprise a central axle 20 and inner and outer wheels 21—21. The wheels 21 roll on the track 16, while the raised portion 18 extends upward between the wheels 21.

Instead of carrying the roller spools 19 by fixed pivots secured to the door, the door is allowed to have a differential movement with respect to the spools 19. Thus, in Figure 2, 22 is a lower door sheet of the door, to which it is attached by rivets 23, a bracket member 24 formed to be offset from the door sheet 22 and extending over the inner wheels 21 of the spools 19. The bracket 24 includes a horizontal portion 25, which is adapted to rest upon the axles 20 of the spools 19. In order to prevent displacement of the spools 19, there is attached to the portion 25 of the bracket 24 a strip 26 fastened at its ends by the rivets 27. The middle portion of the strip 26 extends beneath the axles 20 of the spools 19. Thus there are formed retaining housings 28, in which the spools 19 are held

but are free to move between the ends of the housings. The door as illustrated in Figure 1 in full lines is in closed position and the roller spools 19 are at the right-hand ends of the housings 28. The weight of the door is transmitted through the bracket 24 and the portion 25 to the axles of the spools and through the wheels of the spools to the fixed track 16. Upon movement of the door, the spools will not only be in rolling relation with respect to the track, but also with respect to the door. The differential movement of the roller with respect to the door will be determined by the relative diameters of the axles of the wheels of the spools 19. In the present embodiment, a full movement of the door to the open position shown in dotted lines in Figure 1 will bring the spools 19 to the left-hand end of the housings 28 without resulting in any sliding movement between the spools and the track. It will be clearly apparent that the force required to move the door will be much less than if the rollers were carried by fixed pivots movable with the door. The retainer strips 26 may preferably be so designed that the rollers 19 will be brought to the end of the member 26 before the door has completed its full movement. During the remaining movement of the door, the rollers 19 will rotate on relatively fixed axes and cause a braking action to prevent slamming of the doors against the end abutments.

Another feature of the present invention consists in the improved latching means which cooperates with the particular shape of the track. Secured to the lower edge of the door, at the central portion thereof, is a bracket member 29, which is fastened by the rivets 30 to a flange of the bracket 24. The bracket 29 carries a pivot 31, upon which is supported a latch member 32. The latch member 32 includes an upwardly extending operating handle 33 and a depending latching portion 34. The raised portion 18 of the track 16 is cut away to form a recessed opening 35 at points corresponding to the full open and closed positions of the door. When the door is in its full open or closed position, the latching portion 34 of the latch member will swing into the recessed opening 35 and prevent longitudinal movement of the door. In order to move the door, the operator may pull upon the handle 33 and swing the latching portion 34 out of engagement with the recessed opening 35. If the door is stopped in intermediate position, the portion 34 of the latch member will rest against the back of the raised portion 18 of the track; but when the door is moved to the limit of its movement in either direction, the latching engagement will automatically take place. Strips 36 secured to the door sheet form retaining members to prevent outward swinging of the lower portion of the door. The

strips 36 include depending flanges 37 which extend behind the raised portion 18 of the track.

It will be apparent that the latching means described is particularly applicable for co-operation with a track of the form shown, which also cooperates with the particular form of rollers used. The parts required are simple to manufacture and are readily applicable to existing designs of freight cars.

Although a preferred embodiment of the present invention has been described in detail, it will be readily understood that many modifications and changes will occur to those skilled in the art which may be resorted to without departing from the spirit of our invention as expressed in the appended claims.

We claim—

1. In combination with a car, a sliding door and a latching member at the bottom of said door pivotally carried by said door for movement on an axis parallel with the lower edge of said door, a track member fixed to said car adapted to support said door including a longitudinal channel shaped portion adjacent and parallel to the lower edge of said door, said longitudinal channel shaped portion including spaced, cut-away latch receiving openings therein, said latch being arranged to gravitally hang in latching position in engagement with one of said cut-away openings to hold said door against sliding movement and said latching member being movable into inclined inoperative position and adapted to be retained in inoperative position by said channel shaped portion while said door is displaced from its latching positions.

2. In combination with a car, a sliding door and a latching member at the bottom of said door pivotally carried by said door for movement on an axis parallel to the lower edge of said door, said latching member including a depending latching arm and an upwardly extending operating handle, a track adapted to support said door including a longitudinal channel shaped portion fixed to said car adjacent to and parallel with the lower edge of said door, said channel shaped portion including a plurality of spaced, latch receiving openings, said latching member being arranged to gravitally hang in latching position with the depending arm in engagement with a latch receiving opening of said channel shaped portion of said rail and said latching member being movable into inclined inoperative position by said handle and adapted to be retained in inoperative position by engagement with the outer surface of the inner side wall of said channel shaped portion while said door is displaced from its latching positions.

3. In combination with a car, a slidable door, a latching member carried by said door adjacent the bottom edge thereof pivoted on

an axis parallel with respect to the bottom edge of said door, a track adapted to support said door fixed with respect to said car arranged adjacent to and parallel with respect to the bottom edge of said door, said track having a raised longitudinal portion including a plurality of latch receiving openings therein and said latching member being arranged to gravitally hang in latching position in engagement with one of said latch- receiving openings to hold said door against sliding movement, said latching member being movable to inclined inoperative position and adapted to be retained in inoperative position by said raised longitudinal portion of said track while said door is displaced with respect to its latching positions.

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