E. I. DODDS.
END CONSTRUCTION FOR RAILWAY CARS.
APPLICATION FILED AUG. 18, 1906.

Fig. 1.

Witnesses,
Fred Mann
Walter M. Fuller

Inventor.
Ethan I. Dodds

Byfield Town & Lunenburg
Mass.
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Ethan J. Dodds

By Offield Tool Co., Lithicum, Md.
To all whom it may concern:

Be it known that I, Ethan I. Dodds, a citizen of the United States, residing at Pullman, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in End Constructions for Railway-Cars, of which the following is a specification.

My invention concerns the end construction of cars, and more particularly relates to the end stakes and manner of fastening them to cooperating parts. Owing to the outward pressure of the lading within the car-body and to its tendency to bow or bulge out the end of the car-body by sudden stopping and starting of the train, it becomes desirable to provide some especially firm and strong means to maintain the end wall in proper position. Since the outward strain on the end stakes is least at their tops and gradually increases downwardly, it is evident that for economy of metal the stakes should be tapered, being widest or thickest at their bases or roots. Inasmuch as a flange along the inner edge of the stake affords convenient means for attachment to the wall and as a buffer or striking plate may be readily held in position by flanges on the outer edges of the stakes, I use stakes whose roots are of channel-section, while the upper parts of the stakes are of angle-section, with one outstanding leg tapered toward the end wall. The anchorage of the bases of these stakes is an important feature, and to secure an especially rigid and strong connection I extend the longitudinal sills of the car, which preferably have vertical webs, beyond the end wall and rivet the roots of the stakes to the protruding ends of the sills web to web. To the short outer flanges of the pair of stakes at each end of the car I rivet a buffer or striking bar or plate and also an end plate, which is suitably bent and provided with ears to enable it to be attached to the stakes above the sills and to a transverse angle-bar located across and above the longitudinal sills, which may be the center or draft beams. The buffer bar or plate is therefore positioned in front of the ends of the draft-beams, being indirectly fastened to them through the stakes.

In the accompanying drawings, which form a part of this specification, and on which the same reference characters refer to the same parts throughout, I have illustrated the preferred embodiments of my invention.

Figure 1 is a perspective view of an end of a railroad box-car built in accordance with my invention. Fig. 2 is an enlarged perspective view of the end construction of the car. Fig. 3 is a plan view of the structure shown in Fig. 2. Fig. 4 is a perspective view of the end of one of the center or draft sills, and Fig. 5 is a perspective showing of a modified form of end plate.

A car embodying my invention preferably has channel center or draft sills; but beams of Z or other section may be used. When channel-sills 10 are used, they are spaced apart, as is usual, with their top and bottom flanges 11 and 12 extended outwardly, and an end portion of their top marginal flanges 11 is cut away, as at 13, to accommodate the end stake. These center or draft beams project beyond the end wall 14 of the car-body 15, which may be a box, hopper, or gondola structure.

For end stakes I prefer to use channel-beams, part of one flange and a tapering portion of the web of which has been cut off to produce a tapered stake thickest at the bottom and tapering to almost a point at the top. At the stake's root both flanges are left on, so that the anchorage part of the stake is of channel-section. In the drawings each end stake is characterized 16 and has an inner flange 17 extending the full length of the stake and fastened to the cross-bars 14, forming the supporting means for the end wall of the car-body. Above the center or draft sills 10 each stake has an outstanding leg 18, tapered to converge upwardly toward the flange 17 and end wall 14. At its lower end each stake has a web 19, which forms an extension or prolongation of the leg 18, the web having on its outer edge the comparatively short flange 20. Two of these upright end stakes are provided at each end of the car, and their roots are securely fastened to the vertically-disposed projecting webs of the center or draft sills 10 by means of rivets 21. The connection being web to web, the web of the stake lying against the outer face of the corresponding center beam or sill and extending substantially down to the flange 12. Rivets 22 secure the flange 17 of each stake to the web of the channel end-sill 23, which extends from the corresponding corner of the
car to the center sill, while an additional rivet 24* fastens the same stake-flange to the vertical leg of a cross-angle-bar 24, extending across the full width of the car above channel end sills 23 and center sills 10.

Each end of the car has a face or end plate 25, with lateral ears 26 riveted to the outer short flanges 20 of the pair of end stakes 16, and in addition each plate 25 has a pair of upper-standing ears 27, riveted to the tapered legs 18 of the stakes, and a similar ear or lug 28, secured to angle-bar 24. The lower part of plate 25 has a rectangular opening 29 to permit the coupler-shank to pass there-through and to support the latter. I bolt to the two flanges 12 of the center sills a coupler-carrier angle-bar 30, faced on its upper surface with a wearing plate or bar 31.

To receive the blows incident to coupling and switching cars, I provide a buffer or striking bar 32, which lies in front of the ends of the draft-beams 10 and the face-plate 25. Buffer 32 is held in place by being riveted to the outer flanges 20 of the end stakes.

Instead of having the upturned ears 27 and 28 of the end plate 25 separated they may be united together directly, as by being pressed up from a plate 25* Fig. 5, so as to form a continuous rim comprising side ears 27* and the back or connecting ear or strip 28*.

By this construction a very secure and rigid structure is secured. The end stakes are firmly and effectively fastened to the vertically-disposed webs of the main center sills, while their short outer flanges afford convenient means to which to rivet the end plate and buffer, the inner flanges of the stakes being fastened to the end wall of the car-body, whereby the latter is maintained in place and bulging or bowing thereof outwardly is entirely prevented. Since the outstanding legs of the stakes which are disposed at right angles to the car-body end wall are tapered, as shown and described, they are proportioned to sustain the end wall with a minimum of metal and weight.

Although I have illustrated and described my invention as embodied in a box-car, it will be readily understood that it is not limited to such use and that various mechanical changes may be made in the structure without departing from the essence of my invention or the sacrifice of any of its benefits.

I claim—

1. In a railway-car, the combination of an end wall of a car-body, a longitudinal sill having a vertical plate portion, and an upright end stake fastened to said end wall, the root only of said stake being of channel-section, the web of said stake-root being secured to the vertical web of said longitudinal sill, substantially as described.

2. In a railway-car, the combination of an end wall of a car-body, a longitudinal sill having a vertical web, an upright end stake fastened to said end wall, the root only of said stake being of channel-section with its web disposed vertically, a tapered upright end stake fastened to said end wall, the root only of said stake being of channel-section with its web riveted to the vertical web of said longitudinal sill, substantially as described.

3. In a railway-car, the combination of an end wall of a car-body, a longitudinal channel-sill with its web disposed vertically, a tapered upright end stake fastened to said end wall, the root only of said stake being of channel-section with its web riveted to the vertical web of said longitudinal sill, substantially as described.

4. In a railway-car, the combination of an end wall of a car-body, a longitudinal sill projecting beyond said end wall and having a vertical plate portion, an upright end stake fastened to said end wall, the root only of said stake having a web with flanges on its opposite edges, said stake-root web being secured to the protruding vertical plate portion of said longitudinal sill, substantially as described.

5. In a railway-car, the combination of an end wall of a car-body, a longitudinal sill projecting beyond said end wall, said sill having a web disposed in a vertical plane, a tapered upright end stake fastened to said end wall, the root only of said stake being of channel-section, the web of said root lying against said end wall, and being riveted to the protruding web of said sill, substantially as described.

6. In a railway-car, the combination of an end wall of a car-body, a longitudinal sill projecting beyond said end wall, said sill having a vertical web, an upright end stake having a flange extended substantially the full length of the stake fastened to said end wall, and a tapered leg projecting outwardly from said end wall, said leg at its root only being a web hiving on its outer edge a short flange, the web of said stake being riveted to the projecting web of said sill, substantially as described.

7. In a railway-car, the combination of an end wall of a car-body, a pair of longitudinal sills with vertical webs, said sills projecting beyond said end wall, a pair of end stakes which at their lower ends only have webs with opposite marginal flanges, the webs of said stakes being riveted to the protruding webs of said longitudinal sills, the inner flanges of said stakes being fastened to said end wall, and a buffer lying in front of the ends of said sills and fastened to the outer flanges of said end stakes, substantially as described.

8. In a railway-car, the combination of an end wall of a car-body, a pair of longitudinal sills with vertical webs, said sills projecting beyond said end wall, a pair of end stakes fastened to said end wall, said stakes at their lower or root ends only having webs with opposite marginal flanges, the webs of said stakes being riveted to the protruding webs of said sills.
of said sills, a transverse bar, and an end or
cover plate having ears riveted to the outer
flanges of said stakes, other ears riveted to
the bodies of said stakes above said longitudi
nal sills, and an additional ear riveted to
said transverse bar, substantially as de
scribed.

9. In a railway-car, the combination of an
end wall of a car-body, a pair of longitudinal
channel-sills placed with their webs vertical,
said sills projecting beyond said end wall, a
pair of end stakes of channel-section at their
roots and angle-section for the remainder of
their length, said stakes being fastened to
said end wall and the webs of the stake-roots
being riveted to the protruding webs of said
sills, a transverse bar above said center sills,
an end plate having ears riveted to the outer
flanges of the roots of said stakes to the legs
of the angle-sections of said stakes, and to
said transverse bar, and a buffer lying in
front of the ends of said longitudinal sills and
riveted to the outer flanges of the channel
roots of said stakes, substantially as described.

10. In a railway-car, the combination of an
end wall of a car-body, a pair of longitudinal
sills with vertical plate portions projecting
beyond said end wall, a pair of end stakes,
each having a flange along its inner edge fas
tened to said end wall, and a plate portion
projecting outwardly from said end wall, said
plate portion being fastened at its lower end
to a face of one of said sills and having a
flange along its outer edge, the top edge of
said outer flange being approximately at the
level of the tops of said sills, and a buffer se
cured to said outer flanges, substantially as
described.

ETHAN I. DODDS.

Witnesses:
WALTER M. FULLER,
FREDERICK C. GOODWIN.