CAR END STRAIGHTENER

Fig. 1.

Fig. 4.

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2 SHEETS—SHEET 1
This invention relates to devices for straightening railway freight car ends, or the like.

In the transportation of lading by freight cars, due to the increased speed at which such cars are presently moved, the inertia or momentum thereby built up in the load, the sudden stopping and starting of cars, and especially the buffing shocks to which such cars are subjected in switching, the load shifts against the ends of the cars, and if the impact is greater than the bending moment of the steel end, a permanent bulging of said end results. If the bulge is beyond certain limits, the thus damaged car must be removed from service until the end is repaired, and the use of the car is lost during the repair period.

Machines have been developed to deal with this condition, but because of the enormous pressure required to restore bulged ends to serviceable condition, such machines have not been altogether satisfactory. Again, railway car steel ends are usually corrugated, the corrugations being on equally spaced centers, and such machines as are known to applicant, usually employ spaced arms which engage in the valley of a single corrugation and exert its force against that corrugation, and is then moved to the next adjacent corrugation and so on until the entire end is straightened.

Experience has shown that when a box car is damaged by bulging, it is usually the lower portion of the end that is involved. This lower damaged portion is about the height of the end of an open top car, and thus a device which will straighten the damaged part of a box car end with one operation of the machine could also be used to straighten a damaged end of an open top car with one operation of the machine.

It is consequently the object of the invention to provide a machine capable of straightening the damaged part of an end of any type with one application of power.

Another object is to provide a machine of this character which in operation engages the valleys of a plurality of corrugations of a car end for a substantial portion of their length and thus insures that said corrugations will be straightened substantially from end to end thereof.

Other objects and advantages of the invention will appear in the following description thereof.

Referring now to the accompanying drawing forming part of this application, and wherein like reference characters indicate like parts:

Figure 1 is a side elevation of one of the improved car end straighteners showing the end of a car in dotted lines to which the straightener is applied.

Figure 2 is an end elevation of Figure 1. Figure 3 is a partial top view of Figure 1. Figure 4 is a view on line 4-4 of Figure 1.

The straightening device comprises a pair of I-beams 10-10 arranged in the form of an A-frame, as shown in Figure 2, with what will be termed the upper end curved on a radius, as shown clearly in Figure 1. The outer flanges of the I-beams 10 are chamfered or cut away progressively from the point A to point B so that at a point C midway between points A and B the top of the webs of said beams engage each other. To hold said beams in spaced relation at their free ends, pieces of spaced plate material 11 and 12 span the space between said webs and are welded thereto, and a similar plate 13 is welded across the free ends of I-beams 10.

A plate 14, curved to conform to the curvature of the upper curved ends of beams 10 and having concave sides is welded to the tops of beams 10 to reinforce that part of said beams where the flanges are cut away.

A pair of angle iron braces 15-15 are disposed diagonally from end to end of the beams or legs 10, being riveted at as 16, to lower end of inner flange of legs 10 and as at 17 to the webs of the diverging free upper ends of said legs 10, the inner flanges of said legs being cut away so that the angles are attached on opposite sides of said webs and are thus spaced apart a distance equal to the thickness of said webs. A substantially crescent shaped plate 18 conforming in shape to the space between angles 15 and legs 10 is welded, as at 19, along the curved edge to the inner flange of legs 10 and the opposite edge thereof extends between the angles 15 and is skip welded thereto as at 20. A triangular plate 25 is positioned between angles 15 abutting edge to the plate 18 and said plate 25 is welded, as at 26, to flanges of angles 15.

Plates 27 are provided with aligned holes through which extend the ends of a tubular member 27, which ends are welded to said plates 27. A pair of supporting legs 28-28 are pivotally mounted at their upper ends to member 27, and said legs 28 are held in spaced relation by braces 29 being welded at their ends thereto. These legs 28 support the device in any elevated position as will hereinafter be described.

To the outer flanges of legs 10 and in vertically spaced relation from the lower end thereof are welded a plurality of blocks 30 of progressively decreasing length, the ends of which are formed with arcuate recesses which are aligned and within each pair of said aligned recesses are welded tubular members 31, which also assist in holding the legs 10 in rigidly spaced relation. These
members 31 are spaced apart a distance equal to the spacing of the corrugations of the steel end to be straightened, and also project from legs 10 of the frame in progressively spaced relation so that when elevated said members progressively engage the valleys of the corrugations to be straightened for the straightening operation.

The lower ends of the flanges of legs 10—10 are cut away and rectangular plates 32 are welded upon opposite sides of the webs to support cable sockets 33 to which cables 34 are secured at one end and hooks (not shown) are secured to the other ends of said cables, which hooks are adapted to be hooked onto an underframe part of the car being worked upon.

At the upper ends of said legs 10—10, wedge blocks 36 are welded to the outer sides of the spaced webs of legs 10—10, which blocks 36 are shaped so as to have outer faces in parallel planes. Aligned holes 37 are provided through said blocks and flanges for the support of a U-shaped lifting clevis 38.

Also spanning the space between legs 10—10 is a rod 39, the ends of which are welded to said legs, parallel with members 31. This rod 39 rests upon the coupler shank of the car being operated upon when the straightener is in use and is held in position thereon by the cable 34 during the straightening operation.

When a car end, indicated at 50, is to be straightened, the device is positioned with rod 39 resting upon the coupler shank and with hook on end of cable 34 engaging a bolster or other car underframe part. At this time the nose of the A-frame is resting upon the floor. A crane hook is then secured in clevis 38 and the crane then exerts an upward pull on the A-frame which then pivots on rod 39 until the tubular members 31 successively engage the valleys of the corrugations of the end to be straightened and ultimately pushes the same back in original position. Any means of anchoring the device to the floor during this operation may be resorted to so that the crane will not raise the device off the car. The drag legs 28 drag on the floor so as to always support the device in case of any failure of the crane lift.

I claim:

1. A device for straightening distorted horizontally corrugated car ends comprising a frame having means at one end for attachment to one end of a car in pivotal relation upon a car coupler, a plurality of spaced horizontal members projecting from said frame adapted to engage in the valleys of the corrugations of a car end upon pivotal movement of said frame on said pivotal mounting in a direction toward the car end, and means at the other end of said frame for attachment of power means to move said frame on its pivot to cause said members to engage in the valleys of said corrugations.

2. A device for straightening distorted horizontally corrugated car ends comprising a frame having means at one end for attachment to one end of a car in pivotal relation upon a car coupler, a plurality of spaced horizontal members projecting in varying spaced relation from said frame adapted to successively engage in the valleys of the corrugations of a car end upon pivotal movement of said frame upwardly and against said car end, and a clevis at the other end of said frame for attachment of power means to pivot said frame upwardly and against said car end.

3. A device for restoring distorted horizontally corrugated ends of railroad cars to normal condition, comprising a frame, means associated with one end of said frame to facilitate its attachment to one end of a car in pivotal relation upon a car coupler, spaced horizontal bars secured to said frame and projecting from said frame in progressively varying spaced relation therefrom, and clevis means at the other end of said frame for attachment of power means thereby to lift the frame and thereby cause the bars to successively engage the valleys of the corrugations of a car end and restore said end to normal condition.

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