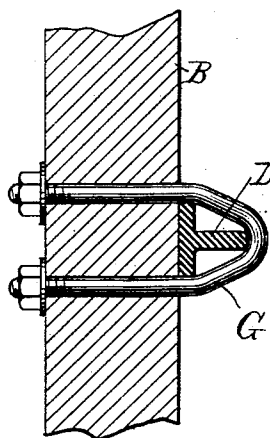
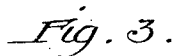
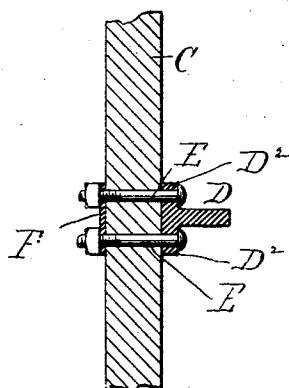
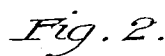
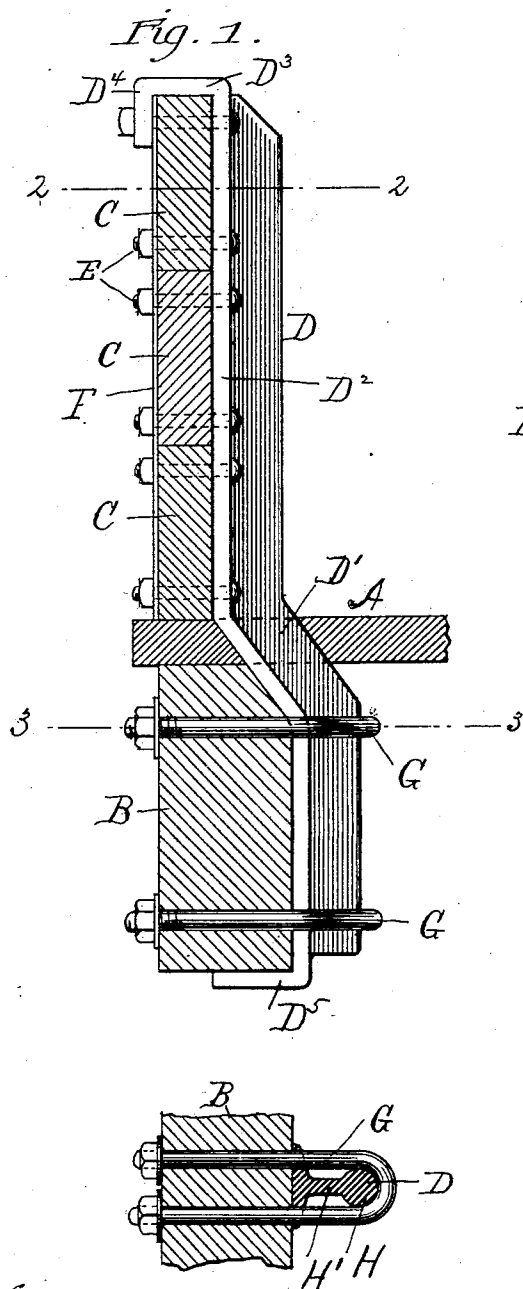


(No Model.)

E. S. HART.
GONDOLA CAR.

No. 579,978.

Patented Apr. 6, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

ELI S. HART, OF CHICAGO, ILLINOIS.

GONDOLA CAR.

SPECIFICATION forming part of Letters Patent No. 579,978, dated April 6, 1897.

Application filed February 3, 1897. Serial No. 621,740. (No model.)

To all whom it may concern:

Be it known that I, ELI S. HART, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Improvement in Gondola Cars, of which the following is a specification.

My invention applies to that class of cars which have the sides of their bodies or boxes
10 supported by stakes attached and secured by stake-pockets, or otherwise, placed on the outside of the outer or side sills, gondola cars and coal-cars being the most common representatives of this class. The width to which these
15 cars can be built is regulated by what are termed the "clearances" on the line of the road, being the platforms and other structures at the sides of the tracks. The width of cars safely passing these clearances is usually limited to about nine feet outside limit, although
20 sometimes somewhat exceeding this. In the construction of this class of cars the stakes are most commonly secured to the outside of the sills by "stake-pockets," which are fastened
25 to the sills by bolts passing either through or around them, although the bolts are sometimes passed around or through the stakes. The latter manner of fastening, however, is weak and not generally adopted. On the
30 heavier cars the space occupied by the stakes and pockets on the outside of the sills is about six inches on each side. The side planks, forming the boxes of the cars, are placed on the inside of these stakes, bringing the outside
35 of the planks flush with the outside of the sills. Hence it follows that while the clearances of the road will permit the use of a car of nine feet extreme width still as these outside stakes and pockets occupy on each side
40 about six inches the actual width of the car-box can be only about eight feet.

My invention enables me to utilize the space heretofore required for the stakes and pockets and thus to give to a car having, say, a nine-
45 foot clearance a box full nine feet wide, while as now built the same car will have a box only eight feet wide, thus increasing the carrying capacity of the car about one-eighth without increasing its length or height or cost.

50 In cars of this class, on account of the rapidly-increasing practice on the part of the rail-

roads of loading their cars more heavily than was formerly done, it has become customary to strengthen the cars by tying the side planks and the sills together in such manner as will
55 cause the planks to act as a truss to the sills and thus sustain an important part of the load and prevent in large measure the deflection of the center of the car under the weight of the load. To accomplish this tying, two
60 devices have heretofore been used, one being a side-plank tie-strap and the other being a side-plank tie-rod. The strap is usually a band of iron about five-eighths of an inch in thickness by three inches wide and passes up
65 the side of the planking and is firmly bolted to each of the planks, and its lower end is rounded to about three-fourths of an inch in diameter and passes down through an opening cut in the sill, a washer and nut being
70 applied to its extreme lower end on the under side of the sill. There are usually about six of these side-plank ties on each side of the car and of course that number of holes are cut in the sill. Each of the holes thus formed
75 in the sill reduces its strength about one-fifth, and such holes also form a serious objection because they afford so many openings by which the rain and water obtain access to the
80 inside of the sill and cause them to decay rapidly, thus materially decreasing their life of service. The other device for tying the planks to the sills—viz., the tie-rod—consists of an iron rod usually three-fourths of an inch in
85 diameter and is passed vertically down through the center of the side planks and through the sill and is provided with a nut and washer both at top and bottom. The holes required for this rod in the planking must be about seven-
90 eighths of an inch in diameter, and a series of them are formed in the planks at each side of the car. The holes thus formed in the planking and sills not only materially reduce the strength of these parts, but they also facilitate
95 decay by admitting water to their inner fibers. The planks are reduced in strength by the holes about one-third. In many cars now built for heavy traffic it is common to use both tie-rods and tie-straps to the number
100 of ten or twelve upon each side of the car. By my invention I entirely dispense with these tie-straps and tie-rods by using stakes which

are adapted to serve the additional function of tying the sills and side planks together, so that the planks may assist in sustaining the load and preventing deflection. At the same time I avoid all necessity for making vertical holes of any kind in either the sills or the side planking and retain the full strength of the timber in both of them. Indeed I believe that my invention will enable me to obtain the same strength from plank reduced in thickness one-half inch or more from the thickness of plank now used, and this reduction in their thickness will enable me to obtain a corresponding increase in carrying-room.

My invention also enables me to dispense with the metal stake-pockets heretofore used, thus saving a material item of cost in the construction of the car and avoiding a serious trouble and expense, as these stake-pockets are very frequently broken or torn off by contact with obstructions in the yards, &c.

The nature of my invention is fully set forth below, and is also illustrated in the accompanying drawings, in which—

Figure 1 is a partial transverse vertical section of a car-body constructed according to my invention. Figs. 2 and 3 are sections on the lines 2 2 and 3 3, respectively, of Fig. 1. Fig. 4 is a section similar to that of Fig. 3, but taken in the plane of the lower bolt, of a modified construction.

In said drawings, A represents the floor of the car; B, the side sill or beam located nearer the outer line of the car than heretofore; C C, the side planks, and D one of the side stakes. As plainly shown, the planking is located outside the stakes, and the latter are made of metal and attached to the inner surface of the sill, and are given an offset or bend, as shown at D', so the portion thereof above the floor and to which the planking is secured may stand directly over the sill and near enough to the outside of the car to bring the outer surface of the planking flush with the outside of the sill. Preferably, to accommodate the angle of the bend the inner corner of the sill is cut away slightly, which also makes a seat against which the stake presses to resist the force of the load pressing the stake outward.

The stakes are made of any suitable form of rolled metal, such as angle, channel, T, deck-beam, or railroad iron. I preferably use one of the three forms last mentioned and secure the planking to them by means of bolts E, passing through the flanges D² of the stakes, as plainly illustrated at Fig. 2. Upon the outside of the planking a flat strip of metal F is employed to stay the plank and prevent the nuts from working into the wood. For securing the stakes to the sill the U-shaped bolts G G are employed, and the lower one is preferably let into the stake in some manner which will prevent any up or down movement by the loop portion of the bolt. One manner of letting the bolt into the stake is shown at

Fig. 4, the side flanges being provided with openings or notches in which the limbs of the bolt may lie.

To enable the stakes to better resist the outward pressure of the load, the deck-beams or railroad-iron seen at Fig. 4 is perhaps preferable to the regular form of T-iron shown in the other figures, as thereby the head H strengthens the web H' of the stake, particularly at the offset D', where the most severe strain is caused by the pressure. The stakes may, however, be otherwise reinforced either throughout their length or merely at the offset in some other way than by providing the web with a thickened or enlarged head, such as H.

Instead of employing the plank tie-straps and tie-rods heretofore used for tying the sills and side planks together I devolve this office upon the stakes by lengthening them at the top and giving them a right-angle bend D³, which is adapted to set down upon the upper edge of the uppermost plank, and the lower end of the stake being properly secured to the sill it follows that the planking is very securely attached to the sill and that the planking must necessarily sustain its proper share of the load. A downward bend may be imparted to the point of D³, if desired, and as shown at D⁴, thus forming a hook which will sustain the upper plank against outward pressure. The bottom of the stake is also preferably bent at right angles, as shown at D⁵, so it will set under the sill and resist any downward deflection of the sill. The web H' and head H may be cut off from the bent-over portions of the stake, if desired, and the stakes may be bent, as described, at either end or at both ends.

It will be noticed that by my invention I enlarge the freight-carrying space of the car very considerably and in a manner which leaves only the metal stakes projecting into the carrying-space from the planking. At the same time the outside of the car is rendered comparatively smooth and free from projections, and the liability to which the stakes have heretofore been subject of being caught or torn off by other cars or stationary objects is obviated. The sills are also very strongly stiffened by tying them rigidly to the side planks in the manner set forth and without the use of any devices specially for that purpose and without the cutting of vertical holes in either the planks or sills.

I claim—

1. The gondola car having its side planking located at the outer line of the car, side stakes located inside the planking, and bolts for securing the planking to the stakes, substantially as specified.

2. The gondola car having its side planking located outside the stakes, and said stakes being attached to the inner side of the car-sill, substantially as specified.

3. The car having its planking located outside the stakes, and said stakes being attached

to the inner side of the car-sill and having an offset or bend, substantially as specified.

4. The car having its side planking supported by stakes made with a bend or offset
5 as set forth, to enable the placing of the planking near the outer line of the car and the securing of the stakes to the inside of the sill, substantially as specified.

5. A gondola car having both its side planking
10 ing and its side sills placed at the outer line of the car, and stakes secured to the inside of the sill and sustaining said planking, substantially as specified.

6. A gondola car having both its side planking
15 ing and its side sills placed at the outer line of the car, and stakes secured to the inside

of the sill and to the inside of the planking, substantially as specified.

7. The gondola car provided with metal stakes having their ends bent over at top and
20 bottom to adapt them to act as ties in tying the planks and sills together, substantially as specified.

8. The gondola car provided with metal stakes having their lower ends bent at right
25 angles so as to set under the sills, substantially as specified.

ELI S. HART.

Witnesses:

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