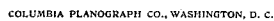


1,064,684.

2 SHEETS—SHEET 1.



1,064,684.

Patented June 10, 1913.

2 SHEETS-SHEET 2.

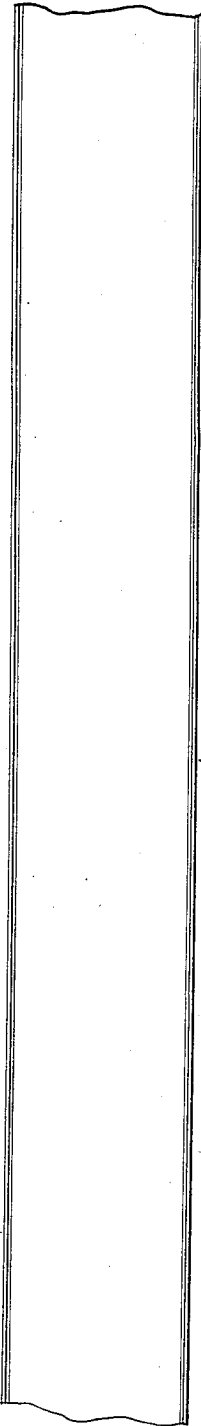


Fig. 6.

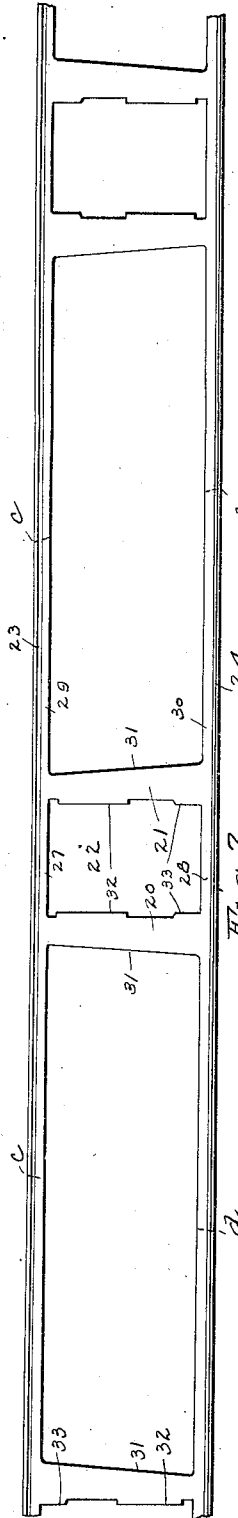


Fig. 7.

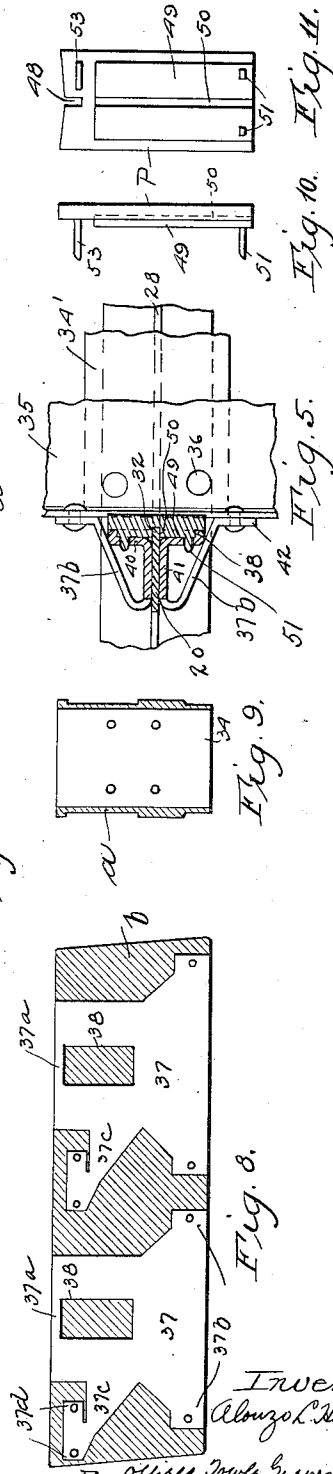


Fig. 8.

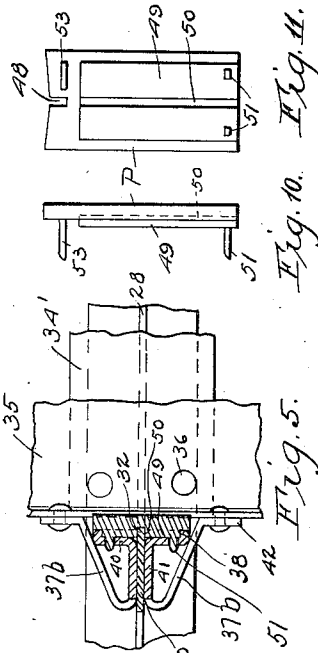


Fig. 9.

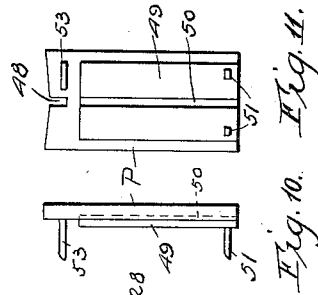


Fig. 10.

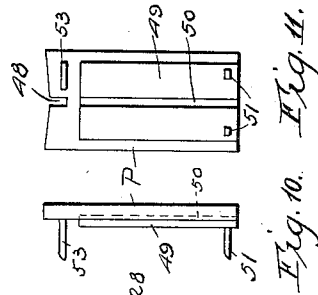


Fig. 11.

Witnesses:
Charles J. Schmitt
Willie D. Deane

Inventor:
Alonzo L. Hastings
By Office, Towle, Evans & Coffey
Attys

UNITED STATES PATENT OFFICE.

ALONZO L. HASTINGS, OF CHICAGO, ILLINOIS.

RAILWAY-TRUCK.

1,064,684.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed December 12, 1911. Serial No. 665,267.

To all whom it may concern:

Be it known that I, ALONZO L. HASTINGS, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Trucks, of which the following is a full, clear, and precise specification.

My invention relates to railway trucks, and particularly to improved construction for the side frames thereof.

The invention may be considered as an improvement over the form of side frame disclosed in my Patents No. 936,626, October 12, 1909, and No. 1,006,549, dated October 24, 1911. In both these patents the construction involves a side frame formed up from a length of I-beam, a central section and the end sections of the web of a length of I-beam being punched out to leave adjacent vertical chafing frame supporting columns and the free ends of the flange section of the I-beam length, which flange sections are bent and securely welded together at their ends to form supports for the journal boxes. The adjacent vertical walls or columns form supports for chafing frame structures which form guideways and retaining means for the bolster. In the first-mentioned patent these chafing frames are bent up of sheet metal and are of substantially T-cross-section, the limbs thereof receiving the vertical walls, and the heads serving to receive and to guide the bolster. In both these patents, also, short stubs of the web are left along the flange sections, and in the first mentioned patent the chafing frames are slotted at their upper ends for receiving the web stubs at the top of the central bolster accommodating opening, so that these chafing frames may extend upwardly into abutting engagement at their upper ends with the upper flange of the side frame, thus to strengthen this flange section against strains imposed by brake mechanism which is suspended in brackets extending inwardly from the chafing frames. In this first mentioned patent a saddle block for supporting the spring plank is also provided for straddling the web stub on the lower flange, and the ends of this saddle block extend to receive the lower ends of the chafing frames so that both chafing frames have abutting engagement with the upper and lower flanges. In the second

mentioned patent the saddle block is formed up of metal stamped from the central part of the I-beam length, and the chafing frames which are to engage with the wall sections left adjacent the central opening are formed up from blanks cut from the material punched from the ends of the webs of the I-beam blank. When thus formed the height of the chafing frames is equal only to the distance between the web stubs on the upper and lower flange sections of the central opening, and these frames therefore do not abut at their ends against the upper and lower flanges of the side frames.

One of the important objects of my present invention is, therefore, to provide a construction which embodies the features of both the patents referred to, namely formation of the chafing frames from the material punched from the end web sections stamped from the I-beam length, and the abutting engagement of the formed up and applied chafing frames with the upper and lower flanges of the side frame, the upper and lower ends of the heads of the chafing frames, after formation of the chafing frames, being drawn out under the hammer until they are of sufficient length to abut against the upper and lower flanges of the side frame when applied to the vertical wall sections adjacent the central opening. The bolsters used in connection with the frames of my construction have vertical side grooves for receiving the opposed heads of the chafing frames, spring mechanism being interposed between the bolster and the spring plank. During service of the truck the bolster vibrates vertically and with considerable friction against the chafing frame heads, and these heads eventually become worn, and it then becomes necessary to replace the entire chafing frames.

Another important object of my invention is, therefore, to provide chafing frames or column guides with removable wearing plates on their heads, which wearing plates engage in the vertical grooves of the bolster and which plates, when worn, can readily be extracted and replaced by other plates. This arrangement makes it unnecessary to remove and to replace the entire chafing frames or column guides and introduces a great saving in the operation of the truck.

Another object of the invention is to pro-

vide such construction and arrangement for these wearing plates that they can be readily applied to the column guides or chafing frames to be rigidly secured thereto during operation of the truck, but so that they can be readily loosened and removed when it is desired to replace them.

Another object of the invention is to extend these wearing plates upwardly into abutting engagement with the top flange of the side frame to assist the column guides or chafing frames in producing a rigid and strong structure which will take care of all strains imposed on the side frame by the brake mechanism and by the side thrust of the car.

The various features of the invention are clearly illustrated on the accompanying drawings, in which—

Figure 1 is a side elevational view, showing a completed truck side frame, Fig. 2 is a plan view of the parts shown in Fig. 1, Fig. 3 is a sectional view taken on plane 3—3, Fig. 1, Fig. 4 is a sectional view taken on plane 4—4, Fig. 1, Fig. 5 is a sectional view taken on plane 5—5, Fig. 1, Fig. 6 is a side elevational view of a commercial I-beam from which the side frame blanks are punched, Fig. 7 shows the manner of punching the I-beam, Fig. 8 shows the manner in which the blanks for the chafing frames or column guides are stamped from the webs cut from the I-beam, Fig. 9 shows the manner of forming the blank for the spring plank supporting saddle, Fig. 10 is a side elevational view of the wearing plate, and Fig. 11 is a rear view of said plate.

Referring first to Figs. 6 and 7 of the drawings, Fig. 6 illustrates an I-beam, from which the blanks for the side frame are constructed. The I-beam is run through a press, and sections *a* and *b* stamped therefrom to leave at intervals the adjacent vertical web sections or walls 20 and 21 which bound the sides of a central opening 22. During or after this stamping operation the upper and lower flange sections 23 and 24 of the I-beam are cut at points *c* and *d*, so that we have a series of blanks each comprising the upper and lower flange sections 23 and 24 connected at their centers by the adjacent vertical wall sections 20 and 21. Just as in my prior patent referred to, the ends of the flange sections are brought together and securely welded together to form the rectangular ends 25 and 26 (Fig. 1) for receiving and supporting the journal boxes. In order to strengthen the flange sections web stubs 27 and 28 are left between the vertical walls 20 and 21 and the web stubs 29 and 30 are left on the upper and lower flange ends. The outer edges 31 of the wall sections 20 and 21 may remain vertical or slightly inclined, as shown, but the inner edges of these wall sections are irregular,

each being provided near its top with an inward projection 32 and adjacent its bottom with an inward projection 33, as clearly shown in Fig. 7, and the purpose of these projections will appear later.

As shown in Fig. 9, the web section cut out of the I-beam length to leave the walls 20 and 21 is trimmed off to leave a rectangular plate 34, which is then formed up into a saddle block 34' for supporting one end of a spring plank 35 extending between the two side frames of a truck. As best shown in Fig. 4, this saddle frame has the body part 34^a which rests on top of the flange stub 28 at the bottom of opening 22, and its ends 34^b are bent downwardly and then inwardly to rest against the flange 24. The spring plank 35, here shown, as in the form of a channel beam, has one of the saddle blocks secured thereto at each end, as by rivets 36, the width of the spring plank being equal to the length of the saddle blocks. These saddle blocks engage snugly between the chafing frame heads covering the extensions 33 at the lower parts of the walls 20 and 21, so that the spring plank is rigidly locked against transverse movement, and is also rigidly locked against longitudinal movement or displacement with reference to the side frames by the abutting engagement of the ends 34^b of the saddle blocks with the web stubs 28 of the opposite side frames of the truck.

As illustrated in Fig. 8, two blanks 37 are stamped from each large web section cut from the I-beam. Each blank comprises a rectangular body part 37^a having the laterally extending wings 37^b at its lower end, and having the laterally extending bracket 37^c from one edge near the top thereof, the end of the bracket having ears 37^d. Each blank has also punched from its body part a rectangular section to leave a rectangular opening 38 for receiving a wearing plate, to be described more in detail later.

In Figs. 2 to 5 the form of the finished chafing frames or column guides is clearly shown. Each blank is first bent along vertical lines adjacent the sides of its opening 38 to leave a head section 39, the sections 40 being bent abruptly back against this head, and the sections 41 being bent outwardly at right angles to the sections 39 and 40 but separated a distance equal to the thickness of the walls 20 and 21. The wings 37^b are then bent abruptly toward the head, and the end sections 42 thereof are bent outwardly into parallelism with the head. The bracket 37^c is also bent backwardly toward the head, and the wings deflected laterally in a direction away from the head and into parallelism to form a bearing pocket 43 for supporting brake hanger mechanism, the ears being suitably punctured to receive a pivot pin in a manner well understood. A

chafing frame is applied to each of the walls 20 and 21, as indicated in the drawings, the sections 41 receiving between them the respective walls, and the opening 38 of the frame receiving the extension 32 at the upper part of the wall, the head of the frame above and below the extension 32 resting against the inner edge of the respective wall above and below the extension 32 and against the extension 33 at the lower part of the wall, the lower section 44 of the head of each frame being deflected inwardly a distance to follow the extension 33. When the chafing frames are thus applied the spring plank is dropped into place between the lower ends 44 of the opposite chafing frames, and the ends 42 of the wings 37 which then engage with the sides of the spring plank are securely riveted to the spring plank 35. The chafing frames after application are securely spot welded to their supporting walls, and their connection with the spring plank by means of their wings gives additional support to the spring plank, which, together with the saddle support of the spring plank of the side frames, will prevent any relative displacement between the spring plank and side frames during operation of the truck.

As the chafing frame blanks are of a height equal only to the distance between the upper and lower web stubs 29 and 30, the chafing frames, after formation from the blanks, and when applied to the supporting walls 20 and 21, will extend only between the web stubs 27 and 28 between the walls 20 and 21. However, it is very desirable to extend these chafing frames into abutting engagement with the upper and lower flanges of the side frames in order that these flange sections may be strengthened and rendered more rigid. In order to accomplish such abutting engagement I extend one half of the upper end of each chafing frame head by heating and hammering to form an extension 46 of sufficient length to abut against the upper flange, this upper extension being preferably on the side adjacent the brake mechanism supporting bracket 37. Likewise the opposite lower corner of the chafing frame head is heated and hammered out to form the extension 47 for abutting against the lower flange of the side frame. With this arrangement each chafing frame can be readily tilted into engaging position with its supporting wall, and after such application the extensions 46 and 47 will have abutting engagement with the upper and lower flanges, as indicated.

the chafing frame to which it is to be applied, and each plate extends upwardly from the lower end of the respective extension 32 and into abutting engagement with the top flange, each plate having the notch 48 at its top for receiving the web stub 27. Each plate has also the inner extension or lug 49 fitting the opening 38 in the face of the chafing frame, and this lug has the central vertical slot 50 for receiving the extension 32 projecting into said opening. The base of the lug 49 engages the lower wall of the opening 38 and thus securely holds its upper end in abutting engagement with the top flange. In order to further secure each plate to its chafing frame, tongues 51 extend inwardly from adjacent its lower end, and these tongues extend through openings 52 cut in the walls 40 of the chafing frame, the ends of the tongues being bent over, as clearly indicated in Figs. 1 and 5. At the top of each wearing plate another tongue 53 extends inwardly and over the unextended top 54 of the chafing frame, the end of the tongue being bent back against the chafing frame head, as clearly indicated in Figs. 1 and 2. By means of these tongues and the engagement of the lug 49 in the opening 38 of the chafing frame the wearing plate is securely and rigidly locked in position. If at any time it is desired to renew a plate after it has become worn the bent-over ends of the tongues are straightened out or removed, and the plate can be withdrawn, and another plate applied. This firm engagement of the wearing plates with the chafing frames also securely holds the upper ends of the plates in abutting engagement with the top flanges of the side frames, and such abutting engagement, together with the abutting extensions of the chafing frames themselves, will add greatly to the rigidity and strength of the flanges. The wearing plates can of course be in the form of castings or drop forgings or can be formed up of sheet metal properly bent and drawn out to provide the lug and tongue portions. Referring to Fig. 2, the bolster B shown has the vertical ridges *r* between which is the groove *g* for receiving the wearing plate, the faces of the grooves engaging with the faces of the opposed wearing plates, and the ridges *r* engaging with the front and rear side edges of the wearing plates, so that all wear falls on the wearing plates and none on the chafing frames themselves. As best indicated in Fig. 1, the faces of the wearing plates are in vertical alinement with the inner faces of the inwardly deflected lower sections 44 of the chafing frame heads, this arrangement leaving the opposed grooves 55, through which the ridged end of the bolster is first applied, thereafter the bolster is raised to receive the wearing plates between its ridges *r*. Spring mechanism is then applied

Coming now to the wearing plates for the chafing frames, the construction and arrangement is clearly indicated in Figs. 1, 2, 4, 5, 10 and 11. Each wearing plate P has substantially the same width as the head of

between the bolster and the spring plate and the bolster in its vertical vibration will bear against the wearing plates.

As before stated, the chafing frames are spot welded to their supporting walls 20 and 21, but in order to enable application of the welding mechanism to the wall sections 41 of the chafing frames the wings 37^b and bracket 37^c are not primarily bent into permanent position but are only partly bent, as indicated in dotted lines, Fig. 2, so as to allow application of the welding machine terminals to the wall sections 41. After the welding process the wings and brackets are bent into their permanent position, as indicated in full lines.

I thus provide a construction and arrangement for railway trucks in which the side frames are formed up from blanks stamped from I-beams, and in which the web sections stamped from the I-beam are fully utilized for forming spring plank supporting saddles and chafing frames or column guides, there being, therefore, no waste of metal. The construction and arrangement furthermore provides for removable bearing plates which can be rigidly secured to the chafing frames and which can be readily detached therefrom and replaced after being worn, the entire wear being on these wearing plates and there being no wear on the chafing frames themselves. Furthermore, the construction and arrangement provides for abutting engagement of the chafing frame structures with the upper and lower flanges of the side frames and for secure engagement of the chafing frame structures with the spring plank, so that the side frames are very much strengthened and relative movement between the spring plank and side frames prevented, the result being a very rigid truck in which there can be no distortion and consequent strain on the journal boxes and journal box bearings. There are no bolts or other securing means to become loosened and lost, and the wearing plates, although detachable, can be rigidly and tightly applied to the chafing frames so that they cannot work loose or rattle. The entire structure is built entirely of rolled steel, giving a maximum of strength with minimum weight, and in this respect the structure is far superior to cast side frames.

I do not of course desire to be limited to the precise construction and arrangement which I have shown and described, as changes and modifications are of course possible which would still come within the scope of my invention, and I therefore claim the following:

1. In a railway truck, the combination of a side frame having a central opening surrounded by side walls and a top and bottom wall, a chafing frame formed integral of sheet metal and having a slot for receiving

one of said side walls, a spring plank extending through said central opening and supported from the lower wall thereof, and wings extending laterally from the lower end of each chafing frame into engagement with the sides of the spring plank and rigidly secured to the spring plank.

2. In a railway truck side frame, the combination of a body part having a central opening surrounded by side walls and by an upper and a lower wall, a chafing frame secured to each of the side walls of said opening, said frames having pockets in their opposed faces, and a wearing plate secured in the pocket of each of said chafing frames.

3. In a railway truck side frame, the combination of a body part having a central opening surrounded by side walls and by an upper and a lower wall, a chafing frame secured to each of the side walls of said opening, said frames having pockets in their opposed faces, and a wearing plate detachably secured in the pocket of each chafing frame.

4. In a railway truck, the combination of a side frame having a central opening surrounded by side walls and an upper and a lower wall, a chafing frame applied to each side wall and having a head part, said head parts extending transversely through said central opening and opposed to each other, and a wearing plate detachably secured to each head part for receiving bolster mechanism.

5. In a railway truck, the combination of a side frame having a central opening surrounded by side walls and an upper and a lower wall, a chafing frame applied to each side wall and having a head part, said head parts extending transversely through said central opening and opposed to each other, the head of each chafing frame having a pocket in its face, and a wearing plate for each chafing frame having a lug extending into said pocket.

6. In a railway truck, the combination of a side frame having a central opening surrounded by side walls and a top and bottom wall, a chafing frame secured to each side wall and the heads of said chafing frames extending transversely across said central opening and opposed to each other, a detachable wearing plate on the face of each chafing frame, said wearing plates being adapted to receive bolster mechanism, a spring plank extending through said central opening and mounted on the lower wall thereof, and wings on each chafing frame extended into engagement with the spring plank and rigidly secured thereto.

7. The process of constructing a side frame for railway trucks from flanged metal beams, which consists in cutting blanks from the web of the beam at an intermediate portion and at its ends, to thereby leave top and bottom members and chafing frame sup-

porting webs adjacent a central opening, in bending together and uniting the ends of said top and bottom members, in forming chafing frames from the blanks cut from the ends of said beam and applying said chafing frames to said supporting webs, in forming a spring plank saddle from the blank cut from the intermediate portion of the web of said beam, and in applying said saddle to the bottom frame member between said chafing frames.

8. A side frame for railway trucks having vertical webs and chafing frames applied to the webs with their upper and lower ends abutting against and interlocked with the top and bottom members of said side frame.

9. A side frame for railway trucks having vertical webs and chafing frames applied to the webs with their upper and lower ends abutting against and interlocked with the top and bottom members of said side frame, and a saddle block applied to the bottom frame member between said chafing frames and rigidly connected to said chafing frames.

10. In a side frame for railway trucks, the combination of a body part having upper and lower chord members each of T-shaped cross-section and having vertical webs connecting said chords to leave a central opening, a chafing frame applied to each web and extending between the web part of the upper and lower chord members, the upper and lower opposite corners of each chafing frame being extended into abutting engagement with the flange portions of said upper and lower members respectively.

11. In a side frame for railway trucks, the combination of a body part comprising upper and lower chord members each of T-shaped cross-section and vertical web members connecting said chord members to provide a central opening, a chafing frame of T-shaped cross-section applied to each of said web members and extending between

the web parts of the upper and lower chord members, and a wearing plate applied to the inner face of each chafing frame, said wearing plates abutting at their lower ends against said chafing frames and extending at their upper ends into abutting engagement with the flanges of the upper chord member.

12. In a side frame for railway trucks, the combination of a body part comprising upper and lower chord members of T-shaped cross section and vertical web members extending between said chord members to provide a central opening and a chafing frame applied to each web member and extended at its ends into abutting engagement with the flanges of said upper and lower chord members.

13. In a side frame for railway trucks, the combination of a body part having upper and lower chord members and vertical web members connecting said chord members to leave a central opening, a chafing frame applied to each web member, each chafing frame having a body part of T-shaped cross section receiving between its web sections the web member to which it is applied, outward extensions from the lower ends of the web sections of each chafing frame, a spring plank applied to said central opening and secured to said extensions, and outward extensions from the upper ends of the web members of each chafing frame, said extensions being formed to serve as brake hangers, each chafing frame together with its extensions being formed integrally of sheet-metal.

In witness whereof, I hereunto subscribe my name this 6th day of December, A. D., 1911.

ALONZO L. HASTINGS.

Witnesses:

CHARLES J. SCHMIDT,
J. M. LUTZ.