

W. F. J. CASEY & G. CAVIN.

TRUCK.

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1,120,131.

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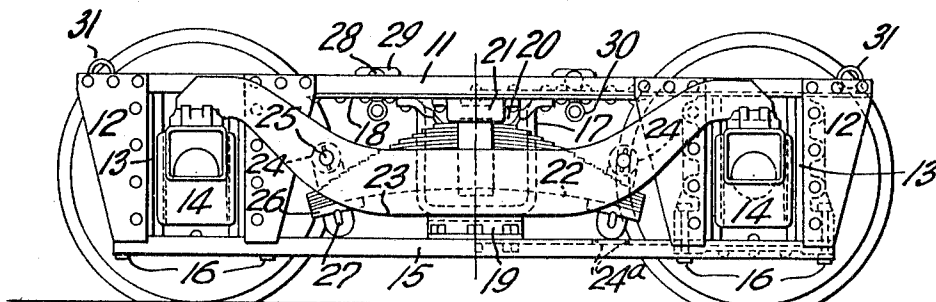


FIG. 1.

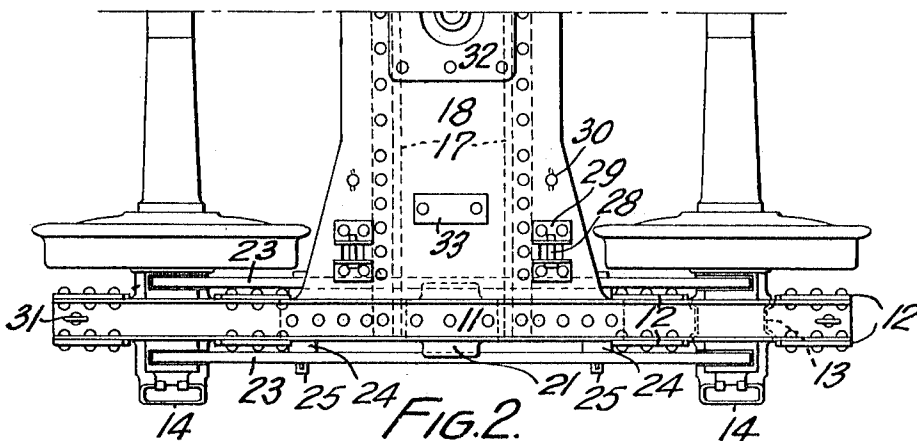


FIG. 2.

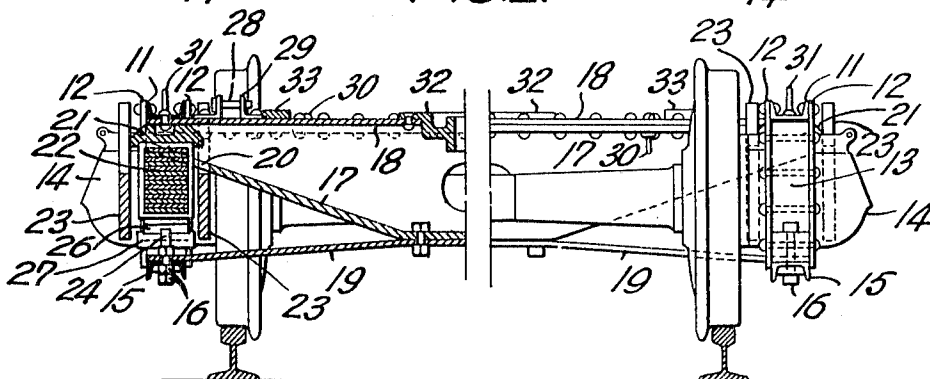


FIG. 3.

Witnesses

J. W. Allen
J. M. Macleand

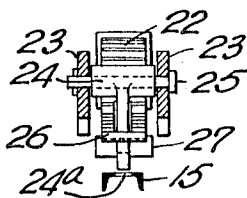


FIG. 5.

FIG. 4.

Inventors
 W. F. J. Casey
 G. Cavin

By *J. B. Lethbrunhaugh*
 Their Attorney

UNITED STATES PATENT OFFICE.

WILLIAM F. J. CASEY AND GUSTAVE CAVIN, OF KINGSTON, ONTARIO, CANADA.

TRUCK.

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To all whom it may concern:

Be it known that we, WILLIAM F. J. CASEY and GUSTAVE CAVIN, citizens of the Dominion of Canada, and residents of the city of Kingston, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Trucks, of which the following is a full, clear, and exact description.

This invention relates to improvements in trucks, and more particularly to that class of trucks used under locomotive tenders, and the primary object of the invention is to provide a stronger and more durable truck than heretofore.

A further object is to provide a truck much lighter in weight and of considerably lower cost than trucks of the same capacity constructed according to the present methods.

A still further object is to provide a truck much simpler in structure than heretofore, and permitting of much simpler fastening of the parts of the truck and mechanism carried thereby.

At the present time, the general practice in connection with tender trucks is to use cast steel pedestals, between which the journal boxes slide, bolted to a very heavy top rail and connected at the bottom by a binder. The side frames thus formed are connected by a large cast steel bolster, which for lightness and strength is made hollow. This bolster casting, however, with its numerous projections and openings, its large size and comparatively thin walls, is obviously of such nature that many internal stresses are set up by unequal cooling of the metal, so that the castings invariably have certain inherent weaknesses which rapidly develop in service until the bolster fails. Some of the flaws caused by these inherent weaknesses are discovered in the course of manufacture, but others which cannot be discovered remain in the bolster. In order to preserve an adequate factor of safety, such castings owing to the uncertain nature of the material must be made much heavier than would be the case with more reliable material. The additional metal and the cost of machining and assembling produces a heavy and expensive truck. Various means have been devised to produce a more reliable, lighter and cheaper truck, but it may be stated generally that an economy in any one direction has

been offset by a corresponding disadvantage in some other respect.

The present invention aims to overcome all the disadvantages found in the ordinary type of tender truck, and to this end the truck is built up, with two exceptions, entirely of rolled sections in which the maximum of strength is combined with the minimum of weight, and in which the strength of the material is uniform and definitely known, no allowance being necessary for inherent defects. The side frames of the truck comprise top rail and binder preferably of channel section connected by plates, which replace the cast pedestals and are much lighter and stronger. The bolster is of pressed plate and approximately of the bath tub type. This bolster has a large cover plate, which is securely riveted to the side frames and may also be connected to the binder. The castings used are journal box guides riveted into the pedestals and a center plate casting.

In the drawings which illustrate the invention:—Figure 1 is a side elevation of the truck. Fig. 2 is a half plan view. Fig. 3 is a half transverse section at the center of the truck. Fig. 4 is a half end elevation. Fig. 5 is an end view of one of the spring hangers.

Referring more particularly to the drawings, 11 designates the top rail of a truck side frame which is preferably of channel section arranged flanges up. Toward each end of the top rail, suitably shaped plates 12 are riveted to each of the flanges thereof. These plates together with the guide castings 13 riveted between them form pedestals, between which the journal boxes 14 rise and fall, the boxes bearing against the guides 13, which project slightly beyond the edges of the plates 12, as clearly shown in Fig. 1. The lower ends of the pedestals are connected by a binder 15, preferably in the form of a channel arranged flanges down. This binder is connected to the lower ends of the pedestals by bolts 16, so that the binder may be removed on occasion for the removal of journal boxes from the pedestals.

The structure just above described comprises the side frame of the truck, which is connected intermediate its ends by the bolster. The bolster 17 is preferably of the bath-tub type, being formed of a single

plate bent into trough shape and tapering from the center toward the ends, as clearly shown. The bolster is provided with outwardly turned flanges, to which are riveted the cover plate 18. This cover plate is increased in width toward the ends, so as to have a bearing under the top rails from pedestal to pedestal. The connection between the bolster and side frames is completed by a cross tie 19 riveted to the bottom of the bolster at its center and bolted at the ends to the binders 15. This cross tie 19 is preferably in the form of a comparatively wide plate, as shown in Fig. 1, and replaces the usual diagonal braces with a considerable saving of time and expense in the manufacture. The wide plate is moreover fully as efficient, if not more so, than the diagonal braces.

The ends of the bolster are cut away as at 20 to accommodate the spring seats 21, to which the truck springs 22 are attached at their centers. These springs 22, which are of the usual type, are connected at their ends to equalizers 23 extending between the journal boxes in the well known manner. These equalizers are arranged one inside and one outside of each side frame, the springs being arranged between. The method of spring suspension between these equalizers, as shown in Figs. 1 and 5, is thought to be new in the building of trucks. A T-shaped hanger 24 is provided having the head thereof extending between the equalizers and secured thereto by a pin 25. The tail of the hanger passes through a slot cut in the extremity of the spring, and is provided with a bearing plate 26 on which the spring rests. This bearing plate 26 is in turn supported by a gib key 27 passed through the end of the hanger tail. The advantage of this method of suspension is that a much stronger hanger may be used. The ordinary hanger being of U-shape embracing the spring is necessarily quite thin and fragile, owing to its position between the spring and equalizers. The use of the channel shaped binder also enables the binder to be apertured for the movement of the hanger, as at 24^a, instead of it being necessary to offset the binder sufficiently to give a longer clearance, as is the case when plain bars are used for binders.

The attachment of the mechanism carried by the truck is much simpler in this form of truck than in the ordinary type. The brake head hangers for example are attached to pins 28 supported in brackets 29 riveted to the flaring ends of the bolster top plate, while the brake beam hangers are secured to eye bolts 30 riveted farther along on the bolster top plate. These simple, inexpensive and obviously durable attaching means replace the cumbersome and comparatively fragile brackets usually found on cast

bolsters. The safety chains at the corners of the truck are also attached to eye bolts 31 riveted to the extremities of the top rail to replace the longitudinal projecting shackles usually employed.

At the center of the bolster, a casting 32 is provided forming the center bearing, while toward the ends side bearings, indicated at 33, may be provided.

From the foregoing description, it will be readily seen that the structure of the bolster has been reduced to the simplest form possible, rolled material of known and uniform strength being used for everything except the center plate and journal guides, for which the castings are used to reduce friction. A maximum of strength is obtained with a minimum of weight, while at the same time the manufacturer and user are certain that no inherent defects exist in the material. The use of rolled material, moreover, enables the parts to be riveted together, thus insuring greater stiffness and rigidity. The truck is lighter, cheaper, and more reliable than the ordinary types of truck, and in addition is much more simple in construction and permits of the easier and simpler attachment of the mechanism carried thereby. The truck has the additional advantage that in case of accident, it will undergo much distortion without becoming absolutely unserviceable, whereas trucks with cast bolsters and pedestals will not do this. The various advantages of this design of truck are due not specially to the merits of any one part, but to the design as a whole.

Having thus described our invention, what we claim is:—

1. In a device of the character described, side frames composed of upper and lower members of rolled section, rolled plate pedestals extending between said members, a pressed plate bolster extending between the side frames, and a cover plate secured to the bolster and side frames.
2. In a device of the character described, the combination with side frames built up of rolled sections of a bath-tub type bolster of pressed plate, and a cover plate for said bolster secured thereto and to the side frames.
3. In a device of the character described, side frames each comprising top and bottom members of rolled section, plate pedestals at the inner and outer sides secured between said top and bottom members, cast journal guides riveted between the pedestal plates, a pressed plate bolster connecting the upper members of the side frames, and a cross tie connecting the lower members of the side frames and the bolster.
4. A truck frame composed entirely of rolled plate and rolled sections, having top and bottom side frame members of channel

section, rolled plate pedestals connected between said members, a bath-tub type bolster of pressed plate, a rolled plate cover therefor connected to the top side frame member, and a cross tie of rolled plate connected to the bottom side frame members and to the bolster.

5. In a tender truck frame, the combination with side frames of a pressed plate bolster of bath-tub type, a cover plate therefor flaring at the ends and secured to the side frames, and a cross tie consisting of a wide plate secured to the side frames and to the bolster.

6. In a tender truck, side frames each comprising upper and lower members of channel section arranged web to web, rolled plate pedestals riveted to the upper frame members, journal box guides riveted in said pedestals and secured to the bottom frame members, a pressed plate bolster of bath-tub type secured between the side frames; a cover plate wider than said bolster and increasing in width at the ends secured to said bolster and to the upper side frame members, and a wide plate secured to the bottom side frame members and to the bolster forming a cross tie.

7. In a pedestal type truck, side frames comprising upper and lower members of

rolled channel section, pedestals of rolled plate riveted to inner and outer flanges of the upper side frame members, journal box guides riveted between said pedestal plates and bolted to the bottom side frame members, a bath-tub bolster of pressed plate tapering from the center toward the ends a cover plate therefor tapering from the ends toward the center riveted to the bolster and to the upper side frame members, and a cross tie consisting of a wide plate bolted to the bolster and to the bottom side frame members.

8. In a pedestal type truck, a straight pedestal binder of channel section apertured in the web thereof for the passage of spring hangers.

9. In a truck, an upper side frame member, a safety chain, eye bolts riveted to the upper surface of said member in such position that the stress on said bolts in supporting the weight of the truck is purely tensional.

In witness whereof, we have hereunto set our hands in the presence of two witnesses.

WILLIAM F. J. CASEY.
GUSTAVE CAVIN.

Witnesses:

W. M. BARTON,
F. A. HARRIGAN.