Nov. 10, 1942. R. J. KIRSTEN ET AL 2,301,705

CAR TRUCK

Filed May 11, 1940 3 Sheets-Sheet 1

Fig. 3

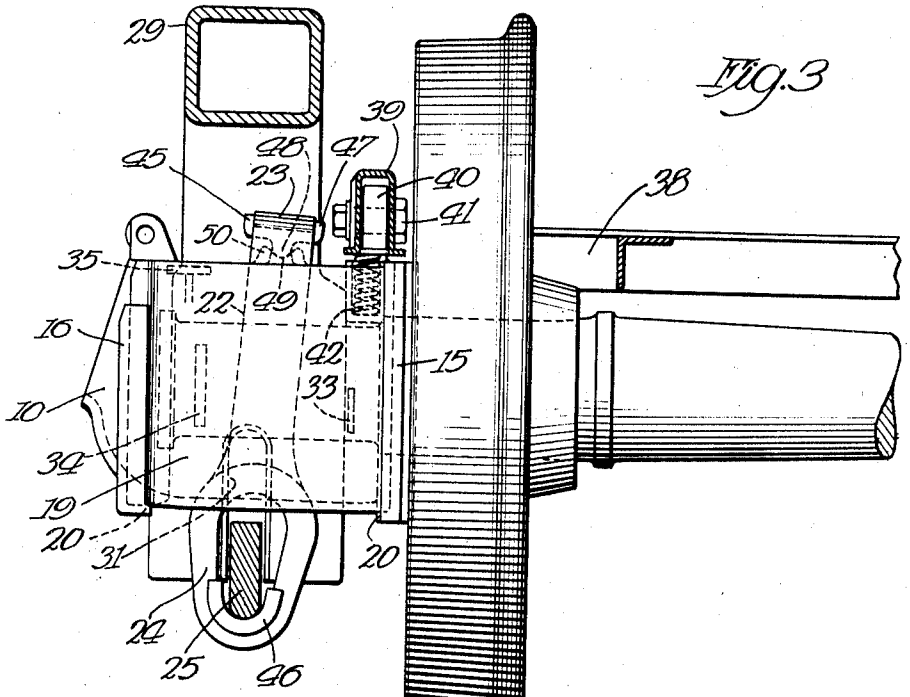


Fig. 1

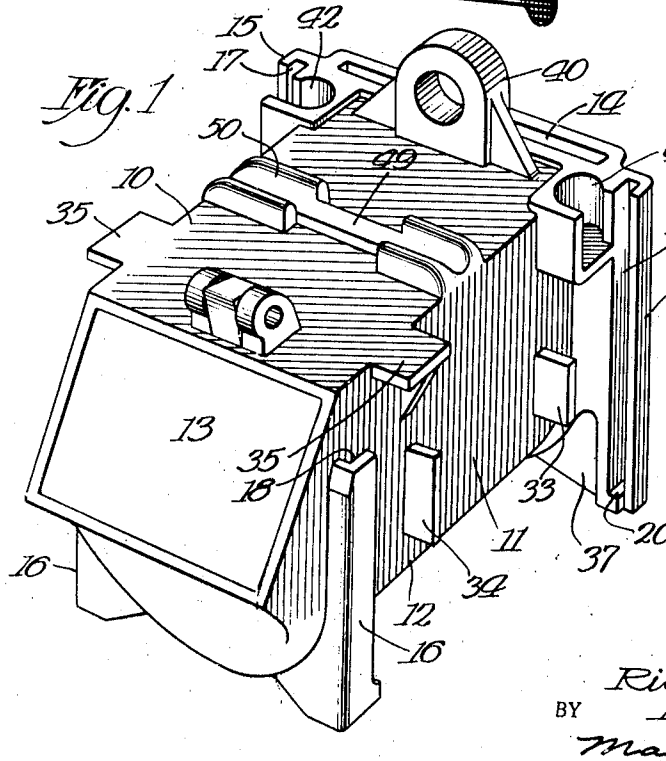
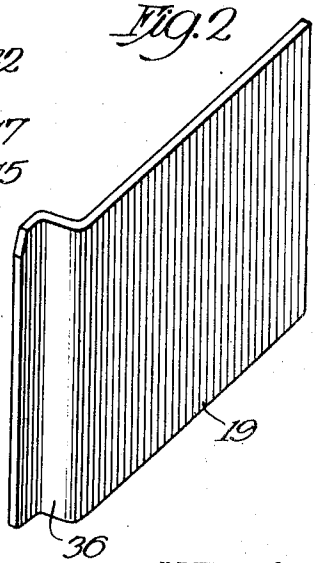


Fig. 2



INVENTORS.
Richard J. Kirsten
BY Roy E. Lave
Mann, Brown & Co.
ATTORNEYS.

Nov. 10, 1942. R. J. KIRSTEN ET AL 2,301,705

CAR TRUCK

Filed May 11, 1940 3 Sheets-Sheet 2

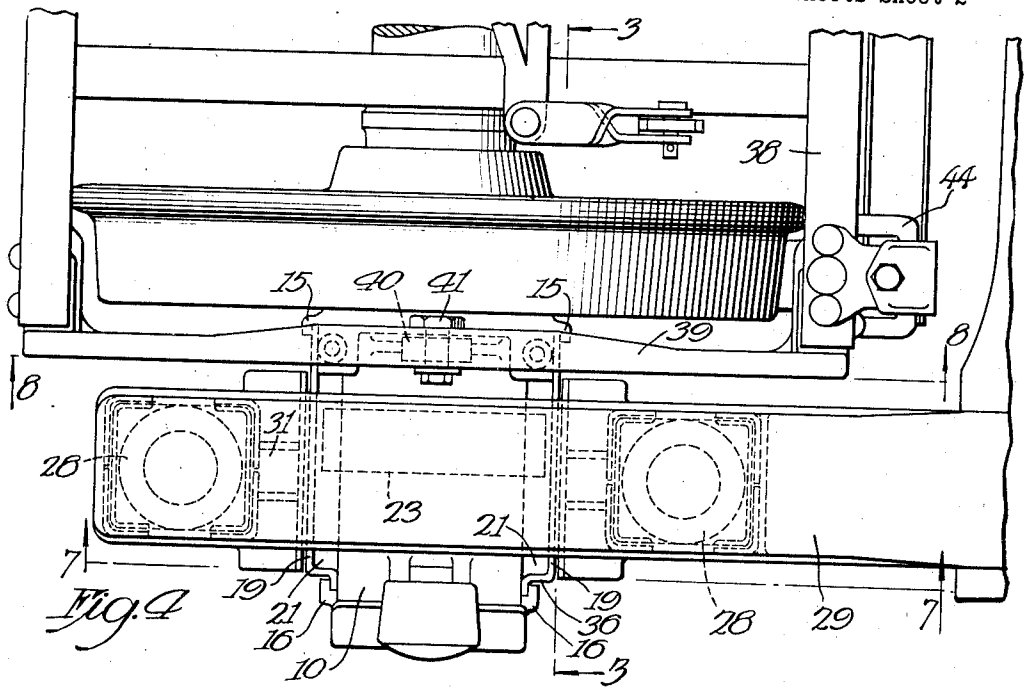


Fig. 4

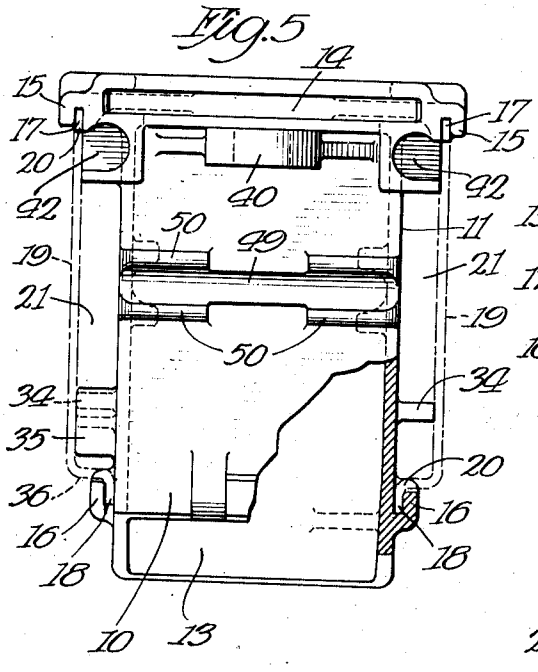


Fig. 5

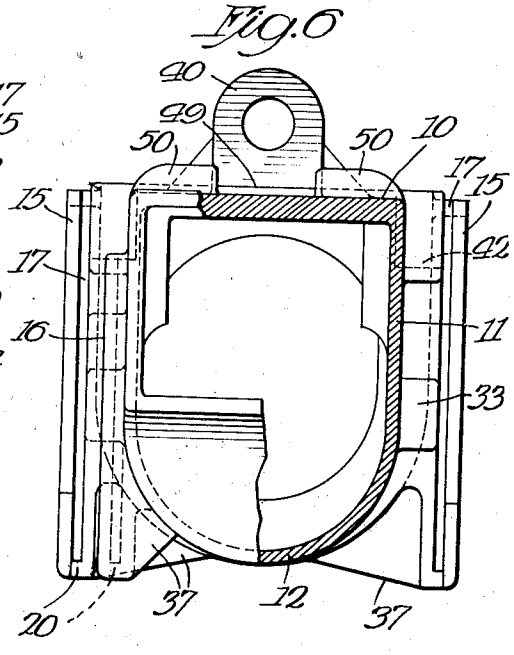


Fig. 6

INVENTORS
Richard J. Kirsten
Roy E. Lave
BY Mann, Brown & Co.
ATTORNEYS.

Nov. 10, 1942. R. J. KIRSTEN ET AL 2,301,705

CAR TRUCK

Filed May 11, 1940 3 Sheets-Sheet 3

Fig. 7

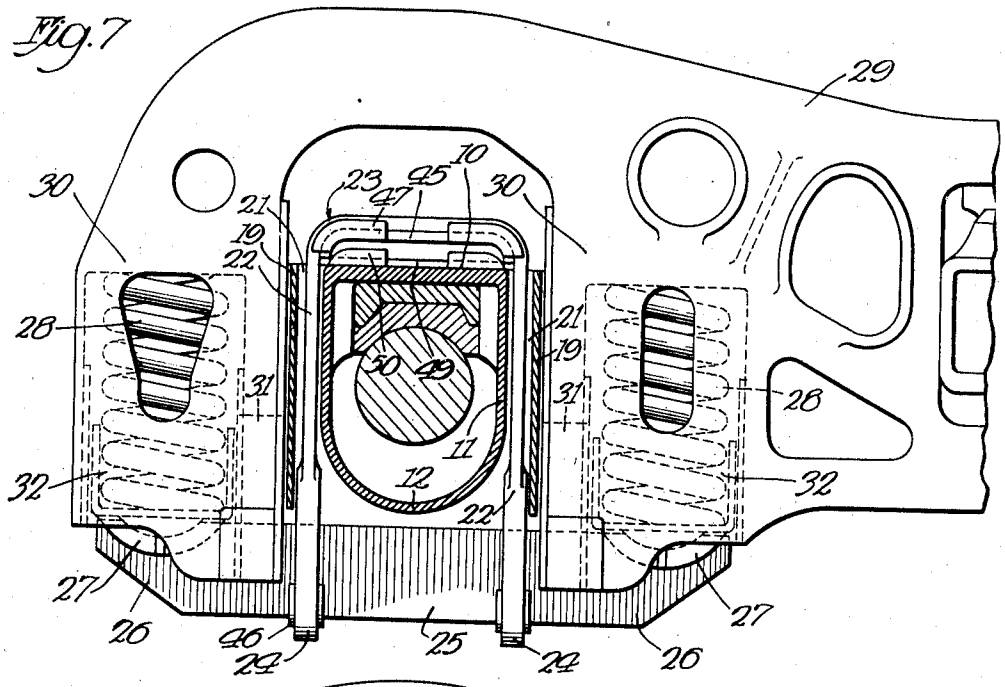
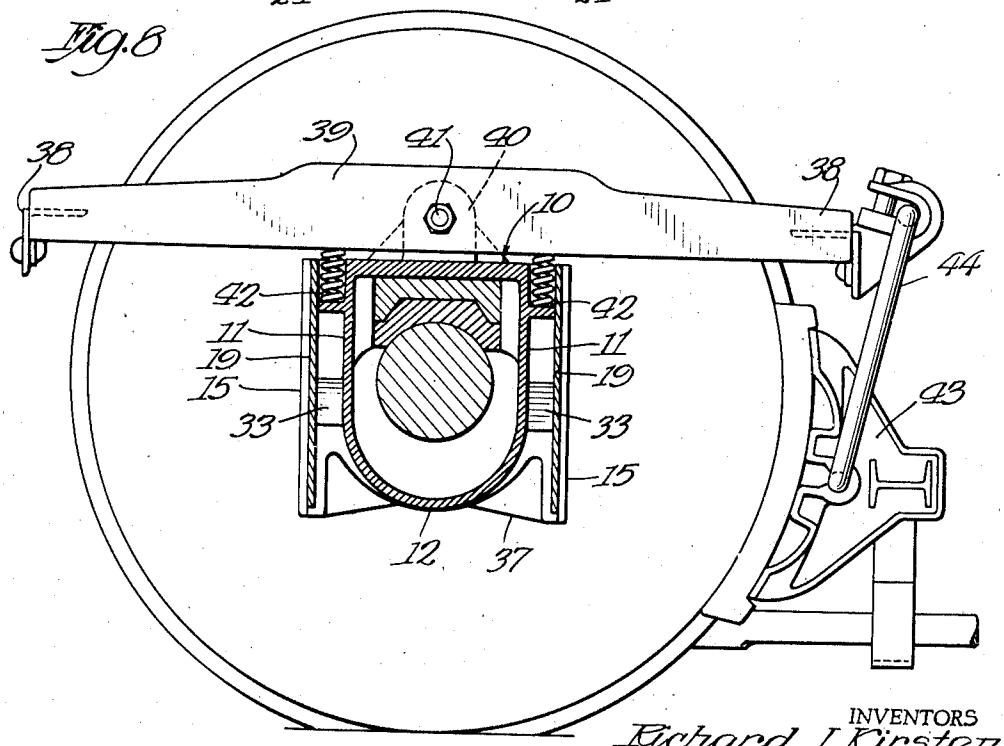


Fig. 8



INVENTORS
Richard J. Kirsten
Roy E. Lave
BY Mann, Brown & Ol
ATTORNEYS.

Patented Nov. 10, 1942

2,301,705

UNITED STATES PATENT OFFICE

2,301,705

CAR TRUCK

Richard J. Kirsten, Chicago, and Roy E. Lave, Homewood, Ill., assignors to Allied Railway Equipment Company, a corporation of Illinois

Application May 11, 1940, Serial No. 334,549

7 Claims. (Cl. 105—222)

This invention relates to railway rolling stock and has for its principal object to provide a journal box with separate wear plates at each side for engagement with the pedestal of the truck to transmit the pulling and braking forces.

Further objects and advantages of the invention will appear as the disclosure proceeds and the description is read in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of the body of the journal box;

Fig. 2 is a perspective view of one of the separate wear plates;

Fig. 3 is a vertical section through a portion of a truck in which the frame is supported on the journal box through swing hangers which allow the individual wheeled axles and their boxes to have limited lateral movement with respect to the truck to accommodate themselves to variations in the track without disturbing the even motion of the car;

Fig. 4 is a plan view of one corner of such a truck, including the improved journal box;

Fig. 5 is a plan view of the journal box, a portion of the front end being broken away;

Fig. 6 is partly a front elevation and partly a vertical section of the journal box;

Fig. 7 is a vertical section taken on the line 7—7 of Fig. 4, and

Fig. 8 is a vertical section taken one the line 8—8 of Fig. 4.

But these specific drawings and the corresponding description are used for the purpose of disclosure only and are not intended to impose unnecessary limitations on the claims.

The body of the journal box 10 is conventional for a 5½ by 10 Association of American Railroads Standard in that it has flat sides 11, a rounded bottom 12, the open front 13 to be closed by a journal box lid and the dust guard pocket 14.

At each side, adjacent to each end, grooved flanges 15 and 16 extend up and down along the flat portions 11 and downwardly to points below the rounded bottom 12. The grooves 17 and 18, in the flanges on the same side face each other and together form a pocket to receive a separate wear plate 19, which in assembly, is slid into position from the top and comes to rest against the bottoms 20 of the grooves.

The intermediate portion of each wear plate 19 is spaced away from the corresponding flat side 11 to form an opening 21 to receive the arms 22 (Fig. 7) of a swing hanger, including a bow 23 having ovate eyes 24 at the bottom of the arms 22, receiving a spring seat bar 25, the ends 26 of which carry spring seats 27 for springs 28, on which the truck frame 29, having the pedestal 30, rests. The ends 26 of the seat bars extend through slots 31 in the pedestal in order to reach the spring seats 27 in the bottom of the spring casings 32. The slots 31 are sufficiently deep vertically to allow the bar 26 up and down movement as the springs cushion the effect of vertical changes in the track. The walls of the slot 31, however, hold the seat bars always in upright position, and the ovate eyes 24 allow the axles, with their corresponding journal boxes, to move endwise with respect to the frame 29, the swing hangers rocking about the bottom of the spring seat bars 25.

The openings 21 at each side of the journal box body afford free clearance for the arms 22 of the swing hangers whereby the lateral movement or swing motion allowed the axles and journal boxes is practically unrestrained, except by the weight of the car acting on the inclined hangers (Fig. 3).

The wear plates 19 forming the outer walls of the openings 21 take the contact with the inner faces of the pedestal 30 in transmitting the pulling and braking forces, and in order to insure against undesirable yielding, the intermediate portions of those plates are braced and stayed by two vertical lugs or ribs 33 and 34, and one horizontal lug or rib 35, extending laterally from each side of the journal box body. As will be seen from Fig. 3 these are arranged so as to afford ample clearance for the arms 22 of the swing hanger.

The outer portions of the grooved flanges 15 at the back of the box are wider than the space between the arms of the pedestal 30 whereby these flanges become limit stops to the lateral swing motion, the flanges on two opposed boxes limiting the motion in opposite directions.

The grooved flanges 16 at the outer end of the box are narrow enough to pass within the pedestal (see Fig. 4) a provision which makes it possible to conform to the Association of American Railroads Standards for the length of the box and also provide an extremely wide pedestal.

The difference in the widths of the flanges at the front and backs of the boxes makes it necessary to offset the wear plates 19, as indicated at 36, in order to make the outer wearing faces parallel and in proper position for engagement with the pedestal.

The flanges 15 and 16 extend well below the flat sides 11 and preferably below the rounded bottom 12, to which they are connected by gus-

sets 37 (Figs. 1 and 6), and this makes it possible to give the wear plates 19 a vertical height sufficient to provide ample wearing and force transmitting surface.

In order to maintain the journal boxes on the respective axles in proper spaced relation and also to support the brakes always in alignment with the wheels, the journal boxes are connected by a frame 38, including longitudinal members 39 of channel shape, each of which receives a post 40 projecting upwardly from the top of the journal box body at the back and to which it is secured by a bolt or pin 41. This results in a pivotal support for the frame on the journal boxes at about the center of balance and in order to maintain the frame 38 in even position with respect to the journal boxes and also to afford a slight yielding under braking stresses, each journal box is provided with a spring pocket 42 on each side of the post 40 and having its side open adjacent to the corresponding flange 15 (Figs. 1 and 8). These open sides are closed by the end portions of the wear plates 19.

The brake mechanism, which may be of any suitable kind, includes the brake heads 43 and the hangers 44, pivotally mounted on the projecting end of the frame 38, as illustrated in Fig. 8. The brake mechanism, including those parts and others not specifically mentioned, is familiar and further description is unnecessary.

The journal box body 11, as shown, is intended to be made of cast iron but, of course, variations appropriate to making it of other materials or composite materials will be readily made. The wear plates 19 will be made of a material suited to the conditions and the materials used in the pedestal. So-called spring steel lends itself very satisfactorily to ordinary conditions. When the atmosphere makes it appropriate, so-called non-corrosive alloys, such as Manten may be used, and under appropriate conditions plating with such hard metals as chromium may be resorted to.

The wear plates can be assembled with the body and replaced as easily as the usual journal bearing and wedge.

The swing hanger bow, here shown, is made of low carbon steel forging and equipped with a wear shoe 45 at the top and wear plates 46 at the bottom of the eyes 24, these to be made of materials suited to the condition. As shown, they are drop forgings of so-called spring steel, but may be made of corrosion resisting alloys.

The shoe 45 has flanges 47 forming a seat for the bight of the bow 22 and on the lower side it has a sort of knife-edge bearing rim 48 which is received within a groove bearing 49 of larger radius on the top of the journal box body 10. Adjacent to the ends of the bearing 49 are relatively high flanges 50 between which the bearing 49 is quite shallow to make it self-cleaning.

The wear plates 46 are U-shaped and of an inside curvature greater in diameter than the curve at the bottom of the spring seat bar 25, which they receive and support. This arrangement of bearing surfaces makes the hanger rock rather than slip, thereby reducing the wear and friction, as more clearly described in our co-pending application, Serial No. 334,550, filed of even date herewith.

We claim:

1. A journal box comprising a body, a grooved flange extending up and down adjacent to each end of the body on each side thereof with the grooves and the flanges on the same side facing each other, and a plate having its end portions in said facing grooves at each side of the body, the front flanges being narrow as compared with the rear flanges and the wear plate being correspondingly offset adjacent to where it enters the groove in the front flange.

2. A journal box comprising a body, a grooved flange extending up and down adjacent to each end of the body on each side with the grooves in the flanges on the same side facing each other, the body having a spring pocket open at the side adjacent to each of the rear flanges and a wear plate having its end portions in said facing grooves and closing said spring pockets.

3. A journal box comprising a body portion having side walls, spaced flanges extending laterally from each wall, said flanges being provided with vertical grooves, the inner grooves being spaced a greater distance from the corresponding walls than the outer grooves, and plates having their forward ends offset inwardly for engaging the grooves at opposite sides of the journal box for forming slots between the inner portions of said plates and corresponding walls for providing clearances for swing hangers.

4. A journal box comprising a body, a grooved flange extending up and down adjacent to each end of the body on each side thereof with the grooves and the flanges on the same side facing each other and spaced from said body, said flanges extending below the body of said journal box, and a plate having its end portions in said facing grooves at each side of the body and extending below said body to provide ample wearing and force transmitting surface, the intermediate portion of said plate being spaced from said body to form therewith a vertical slot through which a swing hanger is adapted to extend.

5. In a railway truck having side frames provided with depending pedestals spaced apart at each side of the truck at each end thereof, a journal box comprising a body movable between said pedestals, a grooved flange extending up and down adjacent to each end of the body on each side thereof with the grooves in the flanges on the same side facing each other, and a wear plate having its end portions slidably mounted in said facing grooves at each side of the body, the intermediate portion of the wear plate being spaced from the body of the box a sufficient distance to provide vertical openings at each side of the box between its ends for receiving swing hangers, the outer flanges of said body being narrower than the inner flanges whereby the outer end of the journal box may pass between the pedestals of the side frames and the inner flanges constitute stops for limiting the lateral swing motion of said frames.

6. A journal box comprising a body, a grooved flange extending up and down adjacent to each end of the body on each side with the grooves in the flanges on the same side facing each other, a wear plate having its end portions slidably mounted in said facing grooves, and means comprising lugs on said journal box for engaging the intermediate portions of said wear plates for reinforcing said plates against lateral thrusts and for positioning the wear plates at opposite sides of the body and spaced therefrom for forming openings for the swinging movement of swing hangers.

7. In a device of the class described, a wheeled axle having a journal at each end thereof, a journal box assembly on each journal, said assembly including a journal box and a wear plate cooper-

ating with each side of the journal box to form an elongated opening, a swing hanger journaled on the upper side of each journal box assembly and having its lower ends freely movable longitudinally of said axle, said swing hanger extending through said elongated opening in said journal box assembly at each side thereof, a truck frame carried by the swing hanger including a pedestal astride each journal box assembly, and a flange adjacent to the inner end of each journal box for holding one end of the adjacent wear plate and serving as a stop for limiting the relative lateral movement of said frame and axle, the outer end of the journal box being narrow enough to be insertable endwise through the opening in the pedestal.

RICHARD J. KIRSTEN.
ROY E. LAVE.