

June 24, 1930.

C. H. SMITH

1,765,705

BEARING FOR RAILWAY CARS AND THE LIKE

Filed May 18, 1927

2 Sheets-Sheet 1

Fig. 1.

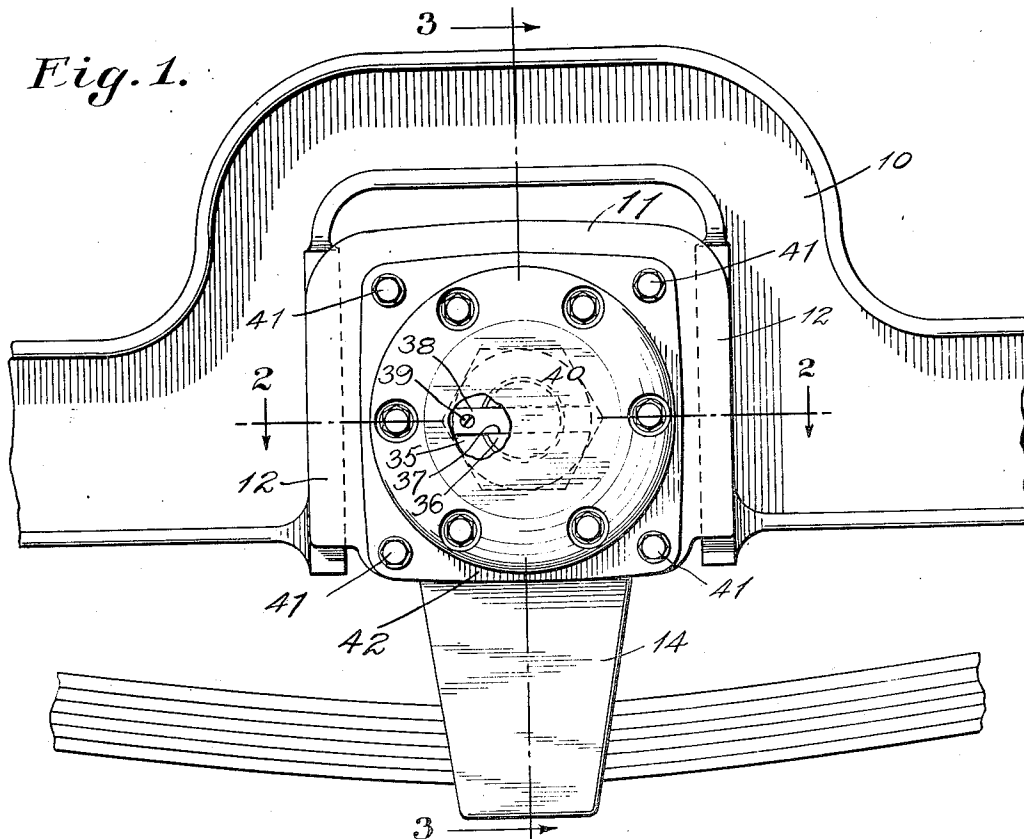
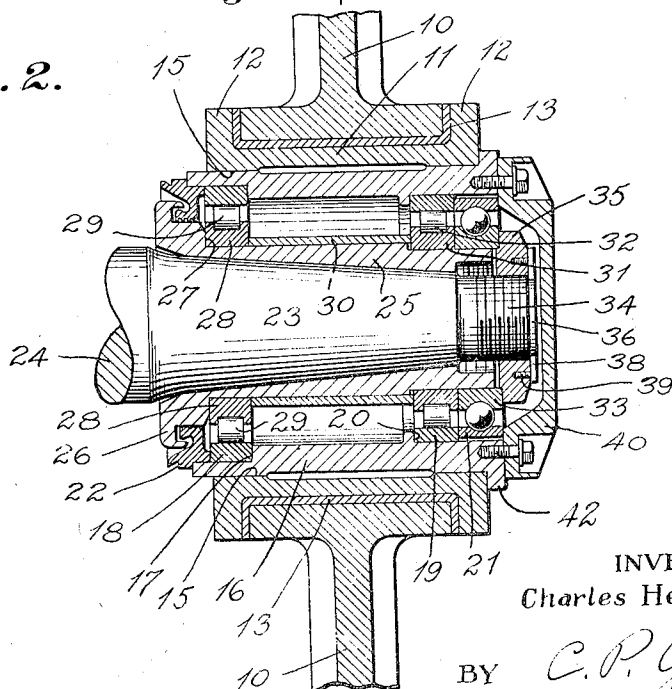


Fig. 2.



INVENTOR  
Charles Henry Smith

BY *C. P. Goepel*  
his ATTORNEY

June 24, 1930.

C. H. SMITH

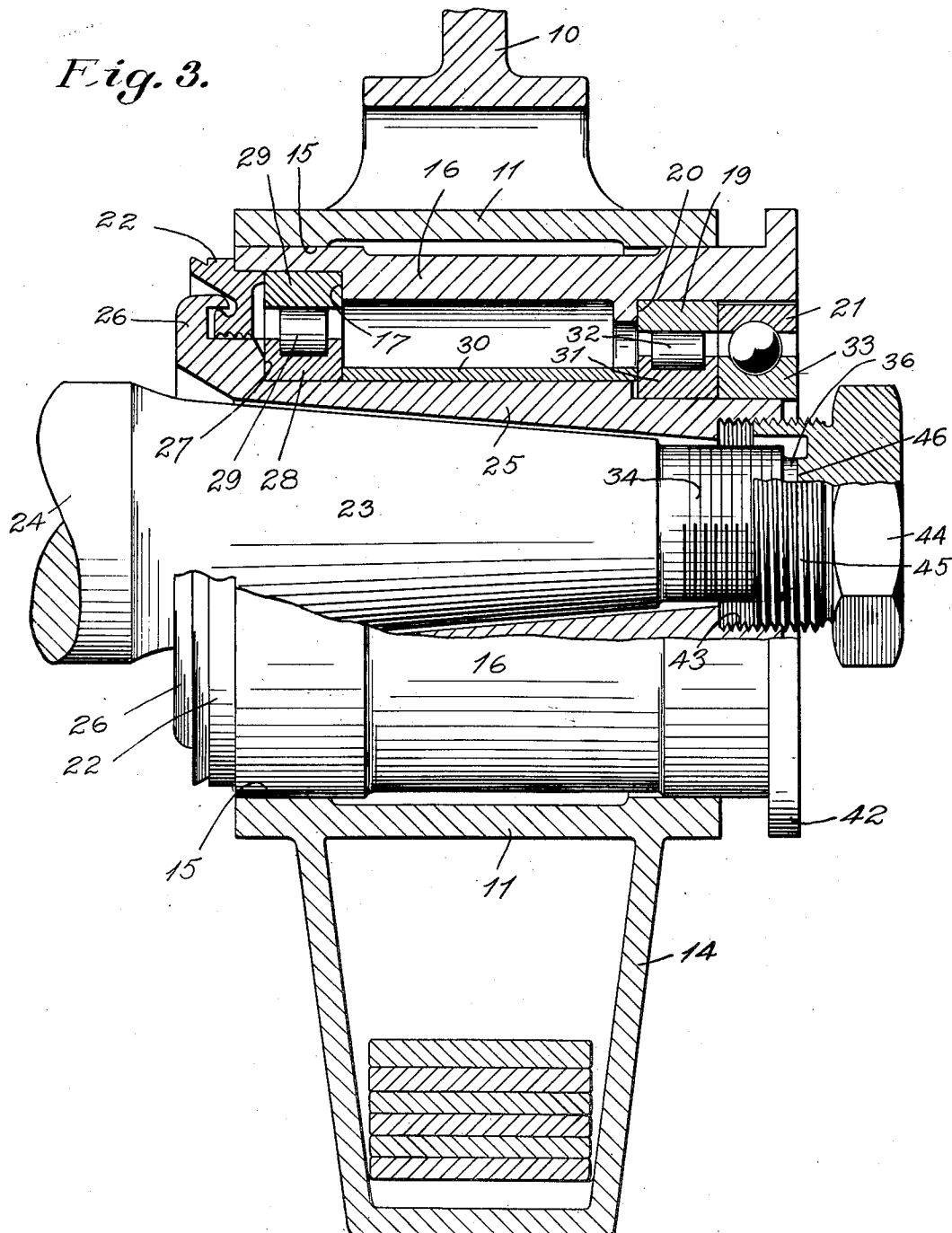
1,765,705

BEARING FOR RAILWAY CARS AND THE LIKE

Filed May 18, 1927

2 Sheets-Sheet 2

*Fig. 3.*



INVENTOR  
Charles Henry Smith

BY *C. P. Goepel*  
his ATTORNEY

## UNITED STATES PATENT OFFICE

CHARLES HENRY SMITH, OF CHELMSFORD, ENGLAND, ASSIGNOR TO NORMA HOFFMAN-BEARINGS CORPORATION, OF STAMFORD, CONNECTICUT, A CORPORATION OF NEW YORK

## BEARING FOR RAILWAY CARS AND THE LIKE

Application filed May 18, 1927, Serial No. 192,197, and in Great Britain July 21, 1926.

This invention relates to improvements in bearings for railway cars and the like, and more particularly to axle boxes for housing anti-friction bearings.

5 The primary object of the invention is to enable the bearing to be readily removed from the axle and the attendant mechanism without requiring that the car be elevated.

10 Another object of the invention is to facilitate the removal of the bearing without disturbing the fixtures of the journal boxes, springs or other fittings, such as current collector bars and the like, which may be attached to or carried by the car truck.

15 A further object of the invention is to securely lock the bearing in place so that danger of accidental removal of the parts may be eliminated.

20 A feature of the present invention is the external housing, which is slidably fitted in the horn block casting of the car truck for the purpose of removably supporting the bearing in place.

25 Another feature of the invention is the removable connection between the axle and the outer thrust element of the bearing, which firmly locks the bearing in place on the axle and in the horn block casting.

30 A further feature of the invention is the action of the extractor means on the end of the axle, causing withdrawal of the bearing when it is to be removed for repairs or adjustment.

35 With the above and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, which will be fully set forth in the following specification, claimed and illustrated in the accompanying drawings, in which:

40 Fig. 1 is a fragmentary side view of a car truck illustrating the same equipped with this improved bearing,

Fig. 2 is an enlarged horizontal sectional view taken on line 2—2 of Fig. 1, and

45 Fig. 3 is a vertical sectional view taken on

line 3—3 of Fig. 1 illustrating the extraction means in detail with the bearing partially removed.

Referring to the drawings in detail, the truck 10 is provided with the customary 50 bifurcated horn plate between the two limbs of which is slidably fitted the horn plate casting 11. This casting comprises a substantially rectangular box provided at its inner and outer ends with angular flanges 12, which 55 partially overlie opposite side faces of the horn plate 10 and form guides to retain the horn plate casting in place and yet permit the same to move vertically between the limbs of the horn plate. Wear plates 13 are inter- 60 posed between the horn plate casting 11 and the two limbs of the bifurcated horn plate and depending from the under-side of said casting is a yoke 14 in which the springs of 65 the car truck are seated. This yoke is substantially U-shaped, as shown in Fig. 3 and the bight portion of the yoke forms the seat in which the spring rests. Formed longitudinally through the horn plate casting 11 is a cylindrical bore 15 for the reception of 70 the bearing, to be more fully hereinafter described.

The bearing above referred to comprises a bearing housing 16 of a diameter to snugly fit the opening 15, as will be clearly seen upon 75 reference to the drawings. Seated against a shoulder 17 formed near the inner end of the housing 16 is the race 18 of the innermost bearing member. A similar race 19 engages 80 against a shoulder 20 formed near the outer end of the housing 16 and this race 19 is retained in proper position by means of the race 21 of a ball thrust or location bearing. The inner end of the housing 16 is provided with a dust cap or ring 22 which engages the 85 outer edge of the race 18 and secures the same in place against the shoulder 17.

As will be understood the casting 11 serves as a support for the bearing construction comprising the housing, the sleeve 25 and 90

the other parts; and while the bearing is described in connection with the axles for railway cars, it may obviously be used for shafts in other fields as well.

5 Fitted on the tapered end 23 of the axle 24 is a sleeve 25 which is provided at its inner end with an annular flange 26, which co-operates with the dust cap 22 in excluding foreign matter from the interior of the bearing. 10 Seated against a shoulder 27 formed near the inner end of the sleeve 25 is a race 28 and interposed between the race 28 and the race 18 are the rollers 29 of the innermost roller bearing. A spacing bushing 30 extends around 15 the sleeve 25 and its inner end engages the race 28 while its outer end forms a stop against which the inner end of the race 31 is seated. Like the inner bearing member, the races 19 and 31 are spaced by rollers 32 to provide an anti-friction roller bearing member at the outer end of the device. Seated 20 against the outer end of the race 31 is the race 33 of the ball thrust bearing above mentioned.

25 In order to retain the parts in assembled position the outer end of the axle is formed with screw threads 34, upon which the retaining nut 35 is threaded. This nut is of sufficient diameter to engage the outer end of 30 the race 33 and prevent longitudinal displacement thereof. In order to secure the nut against accidental displacement, the axle is provided with a relatively short cylindrical extension 36, which is formed with a transverse groove 37 for the reception of the lock 35 bar 38, which in turn is secured to the nut by suitable screws 39. Cap screws 41 enter 35 threaded sockets in the horn plate casting 11 through openings formed in the flange 42 which in turn is formed at the outer end of the housing 15, and these screws 41 lock the parts against relative movement.

A dust cap or cover 40 is removably secured to the outer end of the housing 16 as 45 will be readily apparent upon reference to the drawings, and is independently removable to give access to the interior of the bearing without requiring its withdrawal from the horn plate casting.

50 In order to remove the bearing from the axle and from its position within the horn plate casting, the nut 35 is removed from the end of the axle, after which the extraction means is threaded into the internally screw 55 threaded socket 43, formed at the outer end of the sleeve 25. This extraction device comprises a head 44 provided with an externally screw threaded tubular extension 45, which fits into the socket 43 as clearly illustrated 60 in Fig. 3. Formed on the head 44 and extending into the extension 45 is a pad 46 for engagement against the grooved end of the axle 24. It will thus be seen that by continued turning movement of the head 44 after the 65 pad 46 has come into engagement with the

extension 36, the sleeve 25 will be drawn outwardly until the flange 26 engages the cap 22, at which time the bearing will move as a unit toward the outer end of the axle and the housing may be withdrawn from the horn plate casting. As the sleeve 25 advances toward the outer end of the axle, it will be apparent that its removal will be facilitated due to the taper of the axle and the bore of the sleeve and after the initial loosening of the parts by the use of the extracting device, the bearing as a unit may be wholly withdrawn 70 from its position in the horn plate casting and such repairs or inspection as may be required may be readily accomplished. Furthermore, a substitute bearing may be readily placed in position and the car need not remain out of service for any protracted period. 75

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as 80 claimed. 85

I claim:

1. In a bearing for the purpose set forth, consisting of a supporting structure which receives an axle and a housing removably fitting therein around the axle, inner and outer shoulders formed on the housing and extending, respectively, outwardly away from and inwardly toward the axle, a sleeve surrounding the axle within the housing and having an interlocking connection with the housing, anti-friction bearing devices arranged between the sleeve and housing at opposite sides of said shoulders, the axle having a threaded outer end portion and the sleeve and axle tapering toward said portion, providing for the removal of the sleeve, housing and bearing devices as an unitary structure, the interior of the sleeve having at its outer end an open recess spaced from the axle threaded portion, a retaining device received in said recess and threadedly engaged with said axle threaded portion, and a part on said retaining device constituting an abutment for holding such unitary structure in place. 90 95 100 105 110 115

2. In a bearing for the purpose set forth, consisting of a supporting structure which receives an axle and a housing removably fitting therein around the axle and provided with a flange at its outer end, inner and outer shoulders formed on the housing and extending, respectively, outwardly away from and inwardly toward the axle, a sleeve surrounding the axle within the housing and having an interlocking connection with the housing, anti-friction bearing devices arranged between the sleeve and housing at opposite sides of said shoulders, the axle having a threaded outer end portion and the sleeve and axle tapering toward said portion, providing for the 120 125 130

removal of the sleeve, housing and bearing devices as an unitary structure, the interior of the sleeve having at its outer end an open recess spaced from the axle threaded portion, a retaining device received in said recess and threadedly engaged with said axle threaded portion, a part on said retaining device constituting an abutment for holding such unitary structure in place, and cap means enveloping said part and removably secured to the flange at the outer end of the housing.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

CHARLES HENRY SMITH.