L. H. TURNER.

CENTER PLATE.

APPLICATION FILED FEB. 23, 1912.

1,121,150. Patented Dec. 15, 1914.

FIG. 1

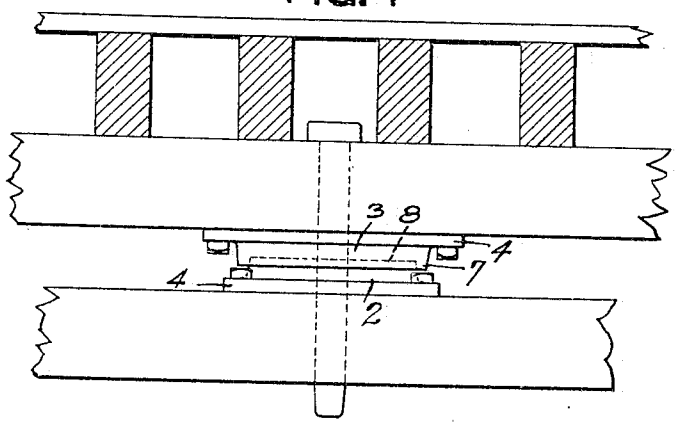


FIG. 2

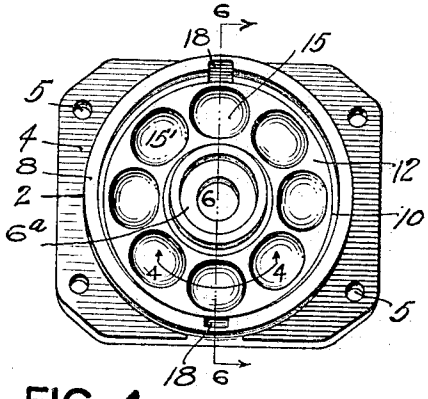


FIG. 3

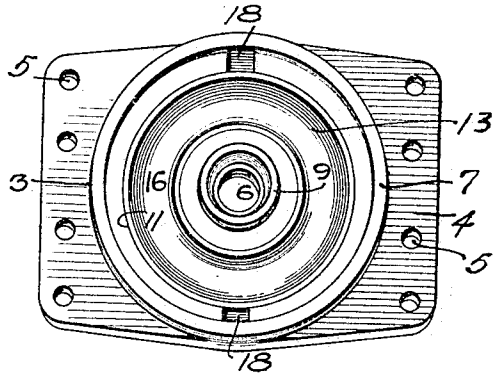


FIG. 4

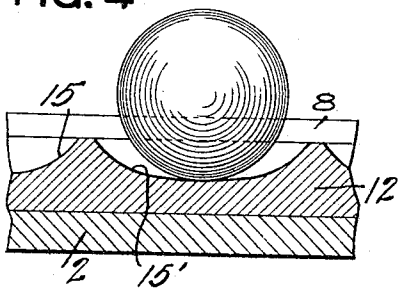


FIG. 5

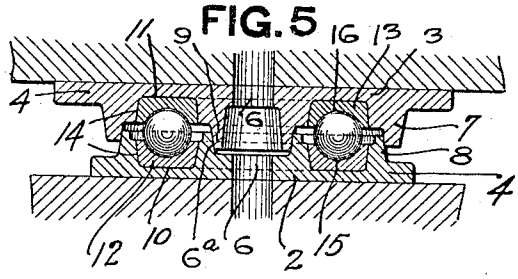
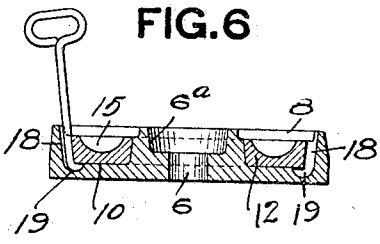


FIG. 6



WITNESSES.

J. R. Keller

John F. Hill

INVENTOR.

Loren H. Turner

By Kay & Gutten

attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LOREN H. TURNER, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO JAMES M. SCHOONMAKER, OF PITTSBURGH, PENNSYLVANIA.

CENTER PLATE.

1,121,150. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed February 23, 1912. Serial No. 679,513.

To all whom it may concern:

Be it known that I, LOREN H. TURNER, a citizen of the United States, and resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Center Plates; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to improvements in railroad center plates or bearings for car trucks and bodies, and relates more particularly to the construction set forth in Letters Patent No. 655,624 granted to C. H. Hartman August 7, 1900. The center plates made under said patent have been preferably made as steel forgings, and the forgings so made were necessarily of heavy weight to be provided for the plates attached to the car body or truck the annular inclosing rings and the seats or races for the balls, this adding considerably to the cost of the same and limiting the character of metal used in the forgings to the ordinary grades of steel, the employment of higher grades being practically prohibited on account of the weights and mass of metal in the forgings. Further than this, when the run-ways were worn the whole plates were necessarily discarded. In case of the breaking of the balls or their cutting into and forming pockets in the race-ways they resisted the turning or swiveling of the center plates. In case of a crack developing in the body of the center plate this crack was liable in a short time to extend throughout the body and destroy the plate. There was also some difficulty in assembling the two members of the center plate, as each plate was itself rigidly secured to the car truck or body.

My invention has for its object to overcome these difficulties and to provide a cheaper construction and one in which high grades of steel can be employed.

To these ends it consists, generally stated, in a railroad center plate having top and bottom supporting members formed of malleable cast iron body portions adapted to be secured to the car members and having annular grooved seats therein, and forged steel rings fitting and sliding within said seats, and having concave race-ways and anti-friction rollers seated in said race-ways between the two members.

It also comprises the employment with such supporting members and sliding rings of individual ball-races in the lower ring and a continuous race-way in the upper ring; as well as other improvements as hereinafter more particularly set forth and claimed.

In the accompanying drawing Figure 1 is a cross sectional view of a center plate embodying the invention, showing it in place as secured to the car truck and body; Fig. 2 is a top view of the bottom center plate; Fig. 3 is a bottom view of the top center plate; Fig. 4 is an enlarged cross section on the line 4—4 Fig. 2; Fig. 5 is a sectional view illustrating the assembling of the center plate between the truck and car body; and Fig. 6 is a section showing the withdrawal of the seat rings from the body of the center plate.

As illustrated in the drawing the main body portion 2 of the bottom center plate, and like body portion 3 of the top center plate are the supporting members and are each formed of a malleable casting with a flat outer face 4 and bolt holes 5 to secure the same to the car truck or body. They are also formed with the central passage 6 for the king-bolt. The top casting has also the annular flange 7 fitting around the cylindrical central portion 8 of the bottom center plate, and the central flange 9 entering within the enlarged portion 6^a of the enlarged king-bolt seat 6 of the bottom member, these flanges being employed to prevent the entrance of dust to the race-way. In each of said malleable cast iron members are the annular grooves 10 and 11 forming seats for the reception of the forged steel rings 12 and 13. These seats 10 and 11 have their walls tapering as at 14 and the forged steel rings have corresponding tapering faces so that the forged steel rings are loosely seated in the malleable castings and are capable of sliding therein, co-acting with the balls or rollers as hereafter described. These forged steel rings have the concave race-ways 15 and 16 forged therein, the lower ring 12 having a series of separated independent race-ways 15′, as shown in Fig. 2, each receiving a single ball, so properly spacing the balls thereon to enable them to sustain the load, these ball races being illustrated in Fig. 4 and, as shown, being hollow or concave to receive a portion of the bodies of the balls or rollers, and hold them within their individual race-ways. The ring 12 has a continuous annular concave

race-way as shown in Fig. 3. To facilitate the removal of the forged steel rings from the center plate members I provide in the center plate members the pockets 18 at the edges of the rings and having the portions 19 extending under the same for the insertion of a lifting hook so that these rings may be easily withdrawn and replaced.

It is a well known fact that the vibration caused in the running of the train leads to crystallization of the steel parts, though it does not affect the malleable iron in this way. Such action is liable to develop cracks or imperfections in the body of the center plates if made entirely of forged steel, and in the end leads to weakening and breaking of the center plate which may lead to accident. By the construction embodied in this invention the forged steel rings can be formed of any desired steel providing hard wearing surfaces and so increasing the wear of the rings, for example, of vanadium, nickel, manganese or other non-crystallizing steel which is of high price and which for this reason could not be used commercially where the entire plates were forged from the same. It is, however, practicable to form the rings of such metal. Further than this, in case of the development of any such crack in the body of the ring, even though it might work entirely across the same, as the ring is fully supported in the malleable iron body portion of the center plate member, it will be held to place thereby and even in carrying the tremendous loads now employed in metal freight cars it will sustain the same and prevent accident such as might occur were the entire forged steel plate under the conditions above stated. In case, however, the plate becomes worn or for any other reason it is found desirable to insert a fresh wearing face in the center plate, this is done at small cost by removing the worn ring from the malleable body portion and substituting a new like member in its place. Through the recesses 18 and 19 this can be easily accomplished.

In the operation, as the rings fit loosely in the seats of the supporting members and are thus free to slide therein it is evident that friction is reduced to a minimum in the turning of the center plates. The balls or rollers naturally roll in the swiveling of the trucks until they reach the ends of the individual race-ways in the bottom ring and if there is further swiveling movement the rings can slide in their grooves in the supporting members while the balls remain properly distributed in their race-ways and all tendency for them to mount up and escape from the race-ways is overcome. In case of breakage of balls or pocketing of the same through the wearing of deep seats in the race-ways which would obstruct or prevent the swiveling of the rings with relation to each other, the rings can slide in the supporting members and the center plate remain operative. As the forged steel rings are bodily and wholly seated within the supporting members they are fully and completely supported thereby and there is no necessity of mechanically securing them therein. This forms what might be termed a combined anti-friction and friction center plate.

In assembling a car having a bearing of the improved construction, instead of the liability of the car body displacing the anti-friction rolls as it is lowered to place, the upper ring 13 of the top bearing can be assembled upon the truck before the car body is lowered. That is, by withdrawing it from the supporting member 3, placing the balls in the ball races of the bottom ring 12 and then placing the upper ring 13 upon the balls, the balls are thus properly assembled before the car body is lowered to place, making the work easier and more accurate for the workmen.

While as above stated a higher grade of steel may be employed for the removable rings containing the ball races, the whole plate can be made at lower cost and its life indefinitely extended through the employment of such removable rings.

What I claim is:

1. A railroad center plate formed of two main supporting members each having an annular outwardly tapered grooved seat, a ring having a sliding fit in the seat of one member and having a series of individual concave race-ways formed on its outer surface, a ring fitting loosely in the annular seat of the other supporting member and having a continuous concave race-way, and anti-friction rollers fitting in said individual race-ways in the first mentioned ring and extending into the continuous race-way of the upper ring, said rings forming the sole bearings for said rollers.

2. A railroad center plate having a supporting member having an annular outwardly tapered grooved seat formed therein and a recess at the side of said seat and extending under the grooved portion thereof, and a ring fitting in said annular grooved seat and having a race-way in its upper face, a series of anti-friction rollers adapted to run in said raceway, said ring forming the sole bearing on said member for the rollers.

In testimony whereof, I the said LOREN H. TURNER have hereunto set my hand.

LOREN H. TURNER.

Witnesses:
JAMES I. KAY,
ALVAR C. PURDY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."