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Patented Apr. 23, 1901.

H. M. PERRY.
SIDE BEARING FOR CARS.

(No Model.)

(Application filed Jan. 16, 1901.)

2 Sheets—Sheet 1.

Fig. 1.

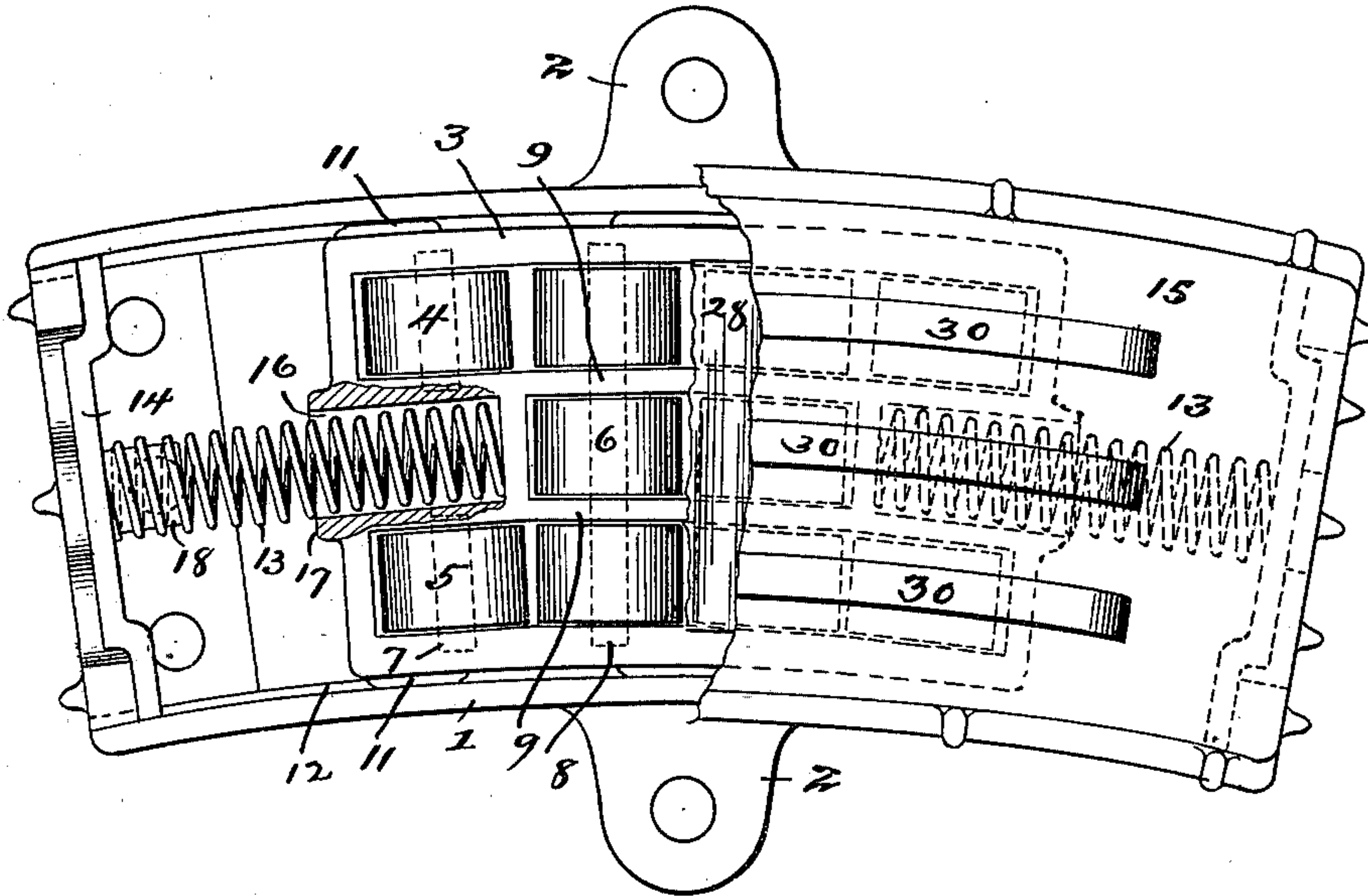
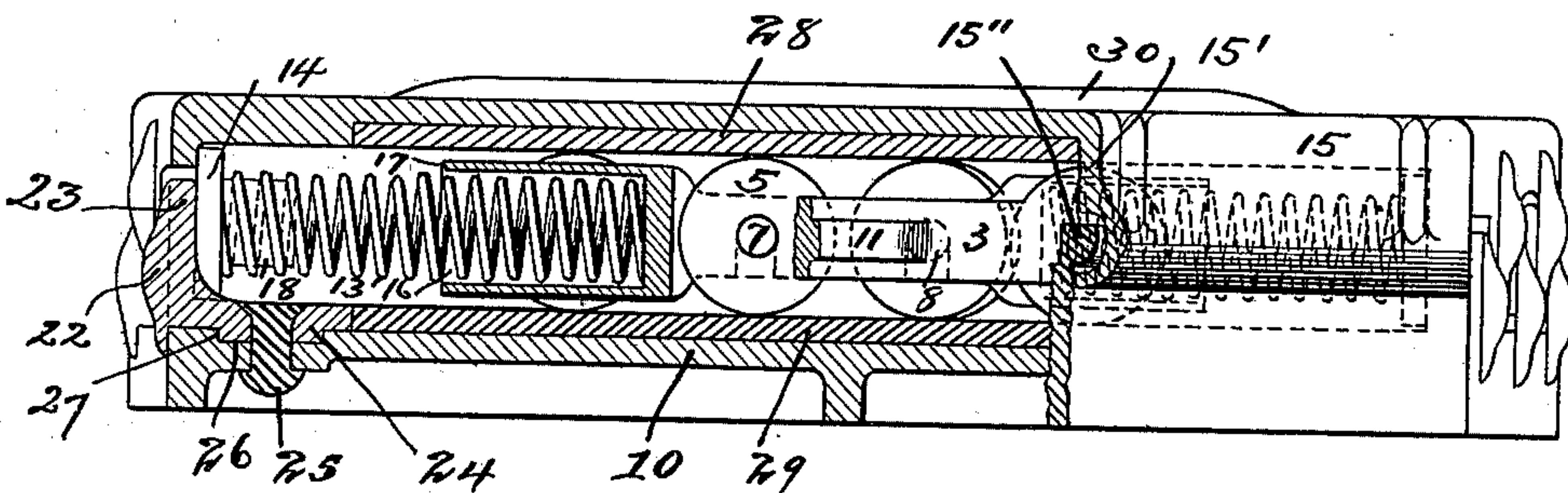


Fig. 2.



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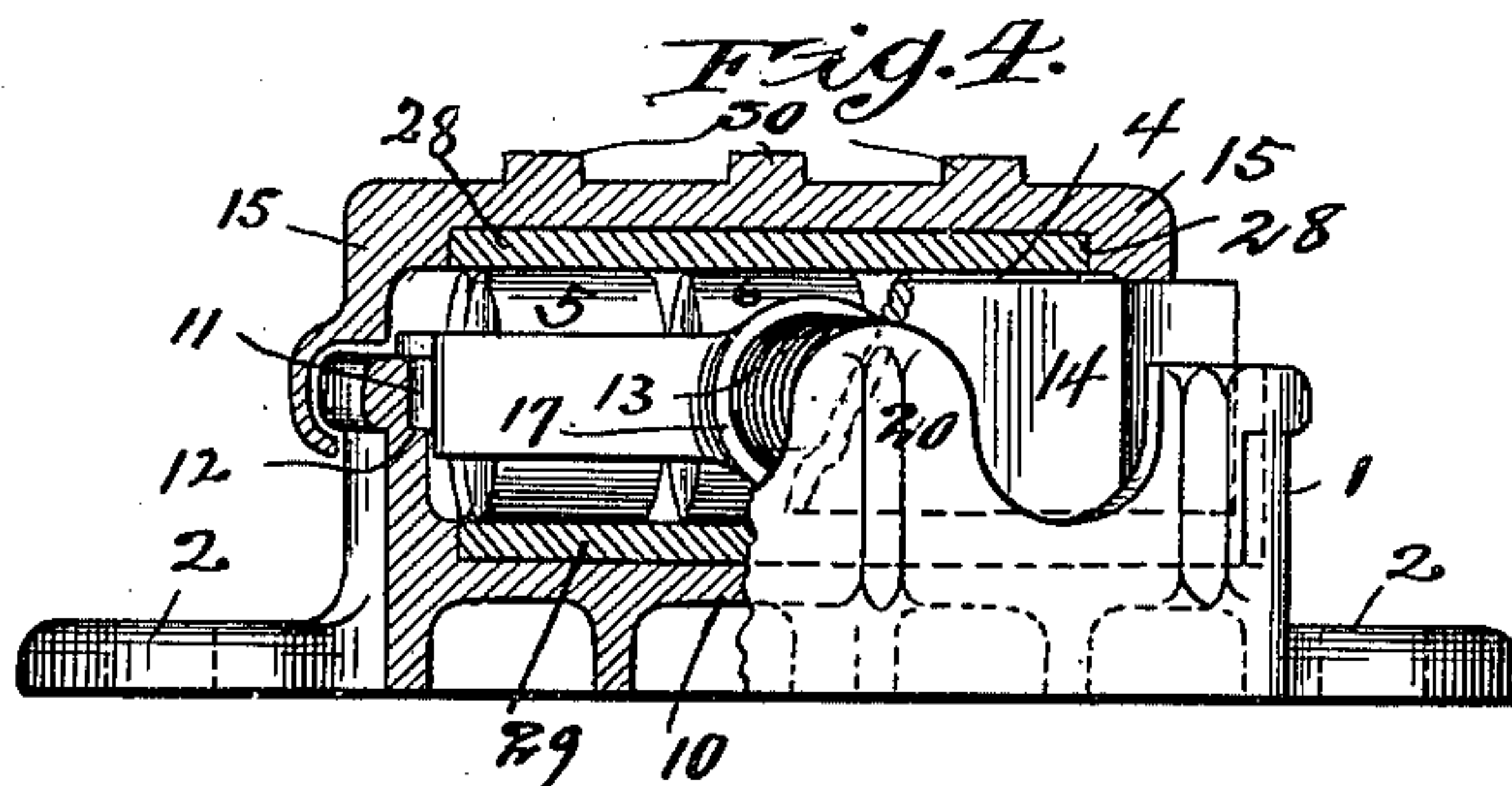
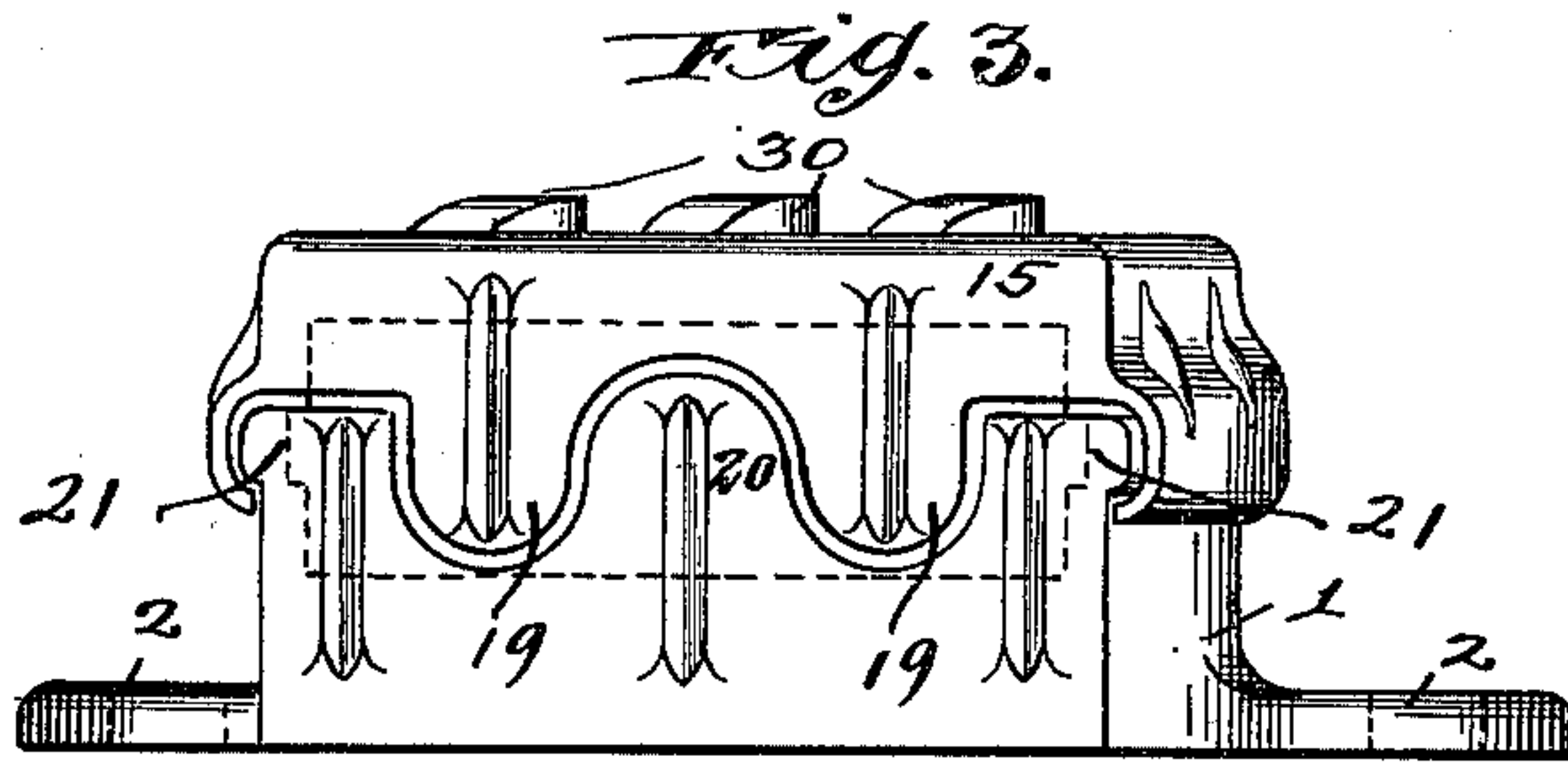
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UNITED STATES PATENT OFFICE.

HUBERT M. PERRY, OF CHICAGO, ILLINOIS, ASSIGNOR TO HENRY D. LAUGHLIN, OF SAME PLACE.

SIDE BEARING FOR CARS.

SPECIFICATION forming part of Letters Patent No. 672,648, dated April 23, 1901.

Application filed January 16, 1901. Serial No. 43,452. (No model.)

To all whom it may concern:

Be it known that I, HUBERT M. PERRY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Side Bearings for Railway-Cars, of which the following is a specification.

This invention relates to improvements in side bearings, and refers more specifically to improvements in antifriction side bearings of that type wherein the antifriction-rollers are automatically returned to central position relatively to their length of travel by means of springs.

Among the salient objects of the present invention are to provide an improved construction wherein the roller-carriage is acted upon by a plurality of springs exerting their tension in a direction substantially parallel with the direction of travel of the carriage and so arranged as to exert their combined tension to return the carriage when the latter is shifted in either direction; to provide a construction wherein the bearing-plate which is interposed between the antifriction-rollers and the car-body or that part thereof which contacts with the side bearing is made a part of the housing of the antifriction-rollers as distinguished from a separate plate attached to the car-body; to provide an improved construction wherein the bearing-plate interposed between the rollers and the car-body is likewise acted upon by a plurality of springs acting to center the plate relatively to the roller-carriage; to provide an improved arrangement in a construction of this character whereby the same springs which serve to center the roller-carriage also act to center the bearing-plate and in which the combined tension of the springs acts upon said plate to center the same when shifted in either direction; to provide an improved arrangement which permits the bearing-plate to have a greater travel in each direction than that of the roller-carriage, while at the same time controlled by the same set of springs; to provide improved details of construction contributing to the durability and reliability of the bearing; to so construct and arrange the bearing that the roller-carriage and rollers contained therein shall remain housed at all times, and in general to

provide an improved construction of the character referred to.

To these ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims and will be readily understood from the following description, reference being had to the accompanying drawings.

Figure 1 illustrates in plan view, with parts broken away, a side bearing embodying my invention. Fig. 2 is a view, partly in side elevation and partly in longitudinal vertical section, of the device. Fig. 3 is an end elevation, and Fig. 4 is a view partly in end elevation and partly in transverse vertical section.

Referring to said drawings, 1 designates as a whole a box-shaped base member provided with suitable lugs, as 2, whereby it may be secured rigidly to the top of the bolster, said base member having the form of an open-topped, oblong, and approximately rectangular box, curved, however, throughout its length to conform to the arc of oscillation of that part of the bolster upon which it is mounted. Within said base member is arranged a roller-carriage 3, in the present instance constructed to receive three longitudinally-arranged series of roller elements, (designated, respectively, in this particular instance, 4 5 6,) each outer set comprising four rollers, while the intermediate series 6 consists of two rollers only. The several roller elements are mounted on a series of transversely-extending supporting-shafts 7 8, severally mounted in the carriage 3 to extend radially with reference to the axis of the car-bolster, or approximately so, the shafts 8, which support the centrally-located rollers, being extended through from side to side of the carriage, while the end shafts 7 are interrupted or each formed in two short sections, the inner ends of which have bearing in two intermediate roller-separating webs 9 of the carriage. The several roller elements rest and travel directly upon the floor 10 or base of the box and through the medium of the roller-supporting shafts support the carriage. The latter, however, is guided to follow the curvature of the box by means of guiding surfaces or lugs 11, formed upon the sides of the carriage, which engage corresponding ways or guiding-sur-

faces 12 upon the inner side faces of the bearing-box, as best indicated in Figs. 1 and 4, and in order that the carriage may travel in the curved path described the several roller elements are made slightly conical, so as to impart a curved travel to the carriage and roll freely or without friction.

In order to center the carriage relatively to the bearing-box, a pair of coiled expansion-springs 13 is provided, one arranged at each end of the carriage and with their axes extended substantially parallel to the line of travel of the carriage, one end of each spring being arranged to abut against the proximate end of the carriage and the opposite end against a bearing-plate 14, which, as will hereinafter appear, is caused to travel with the bearing plate or cover 15 of the bearing. The inner ends of said springs 13 extend within sockets 16, formed in the respective ends of the carriage to extend between the pairs of end rollers, this construction being adopted for the double purpose of enabling longer springs to be used and also in order that the end margins 17 of said sockets may act as stops to limit the approach of the bearing-plates 14. The outer ends of said centering-springs are conveniently held in proper engagement with the bearing-plates 14 by means of centering-lugs 18.

The bearing-plates 14 are constructed to fit at their ends easily between the side walls of the bearing-box, so as to slide freely therebetween, and in order that the top bearing-plate 15 may have operative engagement with said bearing-plates 14, so as to carry the latter endwise with it as the top plate reciprocates, said top plate is provided at each end with depending portions or lugs 19, which overlap the outer surfaces of the corresponding spring-supporting bearing-plates. The top plate 15 is made coextensive with the bearing-box and is provided at each side with depending side walls or flanges 15', which are provided near their lower margins with internal grooves 15'', which engage and slide upon correspondingly-shaped ribs 12', formed upon the upper margins of the side walls of the box, thereby holding the bearing-plate against lifting up, while at the same time permitting the latter to reciprocate freely over the box. The end walls of the bearing-box are provided with upstanding portions 20 21, which interfit with the depending portions 19 of the top plate and serve to arrest and limit the movement of the spring-supporting plates when the latter reach their outer limits of movement, and thus arrest the movement of both the carriage and top plate when the latter reach a central position.

Inasmuch as the depending lug portions 19 of the top plate are formed integrally with the latter a special construction is required in order that the parts may be properly assembled, and to this end the end-wall portion 22 at one end of the bearing-box is made removable, as best indicated in Fig. 2. Said

end-wall portion comprises the upstanding part 23 or end wall proper and a horizontally-extending flange portion 24, which extends inwardly and overlaps a portion of the bottom wall of the box and is secured to the latter by means of through-rivets 25. In order to more rigidly support said end wall 22 in position, the bottom wall of the box is provided with a transversely-extending rabbet 26, within which fits a corresponding rib 27, formed upon the flange 24. It will be obvious that with this construction the spring-supporting plate 14 at the opposite end may be first placed in position, the carriage and springs next assembled within the box, the second spring-supporting plate then placed in position, and the top bearing-plate may be shifted endwise against the tension of the spring far enough to permit the insertion of the end wall 22 and the placing and securing of the rivets 25.

As a further feature of the improvement I provide wearing-plates 28 29, of hardened metal, which are suitably secured upon the inner surfaces of the top bearing-plate 15 and bottom wall or floor of the bearing-box, respectively. These wearing-plates may be made removable and renewable, if desired. In this same connection it is to be noted that the upper or outer surface of the top bearing-plate is provided with a centrally-disposed raised portion 30, adapted for sliding engagement with the overhanging part of the car or transom. In the present instance the raised portion 30 consists of a plurality of longitudinally-extending ribs, which terminate at their ends at a distance from the corresponding ends of the bearing-plate approximately equal to the distance which the latter overhangs the bearing-box when shifted to its outer limit in either direction. The object in providing the raised supporting-surfaces 30 is in order to prevent any weight coming upon the end portions of the bearing-plate when the latter are in overhanging position relatively to the bearing-box, thereby avoiding the danger of the bearing-plate being broken by pressure upon an unsupported part. It is to be further noted that this top surface permits the engaging plate, which is usually provided upon the under side of the car-body or transom, to slide thereon after the top bearing-plate has been positively arrested by reaching the limit of its movement in either direction, the bearing-plate at such time serving simply as an ordinary friction-plate, such as is commonly used where antifriction side bearings are not provided.

From the foregoing description it will be seen that I attain the several objects of my invention and produce a bearing of a peculiarly strong, durable, and effective character. It will be obvious that as the top bearing-plate is shifted in either direction by the engagement of the transom or car-body therewith it will be carried with a minimum amount of friction by means of the roller elements, but at

the same time its movement will be opposed by the combined tension of both springs, since the spring at that end of the bearing toward which the bearing-plate is being shifted will be there-
 5 by compressed to the extent to which the carriage travels, while the spring at the opposite end of the bearing-box will be simultaneously compressed, since the travel of the bearing-plate will be twice that of the carriage. The
 10 result of this combined tension is to return the carriage and top bearing-plate to their central positions reliably and promptly, and to impart such a strong or vigorous return to the carriage that the roller elements therein
 15 will usually be revolved to bring given points upon their peripheries into different positions upon succeeding movements, thereby insuring a uniform wear upon the rollers and preventing the flattening of the same and at the
 20 same time uniting the top bearing-plate, the carriage, and the bearing-box with each other under tension, so that rattling and unnecessary wear are to the greatest extent avoided. To so construct the bearing that the top bear-
 25 ing-plate becomes a part of the bearing-box is a feature of importance, for the reason that the constructions heretofore commonly in use, wherein a separate plate secured to the body of the car or transom has been arranged to
 30 act directly upon the antifriction-rollers, have been the cause of much difficulty, owing to the employment of unsatisfactory wearing-plates (these latter being usually supplied by the car-builder and not supplied with the
 35 bearing) which frequently become worn into grooves, indented by the rollers, and otherwise disfigured and distorted, so as to prevent the proper operation of the rollers and then injure or destroy the bearing itself.
 40 With the present construction, in which the top bearing-plate is not only supplied with the bearing, but is so connected therewith as to be retained in proper relation to the antifriction device at all times, such difficulties
 45 are avoided. Moreover, the present construction serves to maintain the antifriction devices housed at all times and prevents access of obstructions and dirt to the bearing. It is to be particularly noted that the construction
 50 of the bearing-box as a whole is such as to afford a maximum degree of strength and rigidity, so that the bearing is not likely to be crushed or broken under severe use.

While I have herein described a preferred
 55 construction of the bearing, yet it will be obvious that the details may be modified without departing from the spirit of the invention. For example, a greater number of springs might be employed and the springs
 60 might be somewhat differently located and still exert their tension upon the several parts in the same characteristic manner as described herein. Likewise the details of construction of the several features of the bear-
 65 ing may be modified. I do not, therefore, wish to be limited to the details of construction described herein except to the extent

that the same are made the subject of specific claims.

I claim as my invention—

1. In a side bearing for cars, the combination of a reciprocatory antifriction device and opposing springs acting to center said antifriction device, said springs being arranged to exert a combined tension in opposition to
 75 the movement of the antifriction device in both directions.

2. In a side bearing for cars, the combination of a reciprocatory antifriction device and opposing springs arranged to extend parallel with the direction of movement of said
 80 antifriction device and acting to center the latter, said springs being arranged to exert a combined tension in opposition to the movement of the antifriction device in either di-
 85 rection.

3. In a side bearing for cars, the combination of a reciprocatory antifriction device comprising a roller-carriage and a plurality of antifriction-rollers caged therein and opposing
 90 springs arranged at opposite ends of said carriage and acting to center the latter, said springs being arranged to exert their combined tension in opposition to the movement of the carriage when the latter is shifted
 95 in either direction.

4. In a side bearing for cars, the combination of the reciprocatory antifriction device comprising a carriage and a plurality of con-
 100 ical roller elements caged therein to maintain definite relation to the carriage, a base upon which said carriage travels, opposing springs acting to center said carriage relatively to its length of travel across the base, said springs
 105 being arranged at opposite ends of the carriage and a part advancing with said carriage and operatively engaged with the ends of said springs remote from the carriage, whereby the combined tension of the springs acts to
 110 center the carriage when the latter is shifted in either direction.

5. In a side bearing for cars, the combination of a reciprocatory bearing-plate and opposing springs acting to center said bearing-
 115 plate, said springs being arranged to exert a combined tension in opposition to movement of the bearing-plate when the latter is shifted in either direction.

6. In a side bearing for cars, the combination of a reciprocatory antifriction device,
 120 opposing springs arranged to act in opposition to the movement of said antifriction device away from its central position and a bearing-plate arranged to advance with the
 125 antifriction device, said bearing-plate having operative engagement with said springs whereby the latter are caused to exert their combined tension in opposition to the movement of the carriage and bearing-plate in
 130 either direction.

7. In a side bearing for cars, the combination of a reciprocatory antifriction device, a coiled expansion-spring arranged to extend parallel with the path of movement of the

antifriction device at each side of the center of movement of the latter and respectively adapted to be placed under compression by the advance of the antifriction device, and a bearing-plate in bearing with said antifriction device and operatively connected with the ends of said expansion-springs opposite those acting upon the antifriction device and whereby the advance of the bearing-plate operates to place one spring under tension while the advance of the antifriction device places the other spring under tension.

8. In a side bearing for cars, the combination of a reciprocatory antifriction device, a coiled expansion-spring arranged at each end of said antifriction device and acting upon the latter to oppose its advance toward said spring, a movable abutment supporting that end of each spring remote from the antifriction device and a bearing-plate in bearing with said antifriction device and constructed to engage and carry with it said abutment-plates, substantially as set forth.

9. In a side bearing for cars, the combination of a base-support, an antifriction device adapted to reciprocate upon said base, a coiled expansion-spring arranged at each end of said antifriction device to extend parallel with the direction of movement of the latter, the proximate ends of said springs having bearing with said antifriction device, an abutment movably mounted upon said base at each end thereof and supporting the ends of the respective springs remote from the antifriction device, stops upon the base limiting the movement of said abutments in a direction away from the antifriction device and a bearing-plate overlying the antifriction device and provided at each end with projections adapted to engage the respective abutments and carry them with the bearing-plate when the latter is reciprocated, as and for the purpose set forth.

10. In a side bearing for cars the combination of a base-support provided with upstanding sides, an antifriction device adapted to reciprocate upon said base, a coiled expansion-spring arranged at each end of said antifriction device to extend parallel with the direction of movement of the latter, the proximate ends of said springs having bearing with said antifriction device an abutment movably mounted upon said base at each end thereof and supporting the ends of the respective springs remote from the antifriction device, stops upon the base limiting the movement of said abutments in a direction away from the antifriction device, a bearing-plate overlying and bearing upon the antifriction device provided at each end with projections

adapted to engage and carry the abutments with it in its reciprocatory movement and said plate having sliding engagement with the upstanding sides of the base member, whereby it is guided and confined in its reciprocatory movements.

11. In a side bearing for cars the combination of a reciprocatory antifriction-carriage, a box-like base within which said carriage is arranged to reciprocate, a coiled expansion-spring arranged at each end of the carriage to extend in alinement with the path of movement of the carriage and acting upon the latter, an abutment-plate movably mounted within said box-like base at each end thereof to receive and support the ends of the respective springs an overlying bearing-plate having sliding and interlocked engagement with said bearing-box and provided with depending projections at each end adapted to engage the respective abutment-plates, one end wall of said box-like base being made removable to enable said parts to be assembled, substantially as set forth.

12. In a side bearing for cars, the combination with a bearing-plate and an antifriction device arranged to reciprocate thereon, of a bearing-plate slidingly engaged with the lower base member, and stops arranged to limit the movement of said sliding plate relatively to the base member in each direction, said bearing-plate being provided throughout the central portion of its upper or outer surface with a raised portion terminating at a distance from the ends of said plate substantially equal to the distance which said plate overhangs the lower base member when shifted to its limit and adapted to permit the engaging part of the car-body or transom to slide freely thereon in the direction of movement of the bearing-plate, as and for the purpose set forth.

13. In a side bearing for cars the combination of a base, an antifriction device arranged to reciprocate across said base, one or more springs arranged to oppose the movement of said antifriction device, in each direction, and a bearing-plate in bearing with said antifriction device and having a differential movement relatively thereto, said bearing-plate having operative connections with said opposing springs whereby it tensions the spring or springs at one side of the antifriction device while the spring or springs at the opposite side thereof is or are tensioned by the advance of said antifriction device.

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Witnesses:

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