

No. 741,145.

PATENTED OCT. 13, 1903.

W. J. KNOX.
CAR TRUCK.

APPLICATION FILED JULY 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

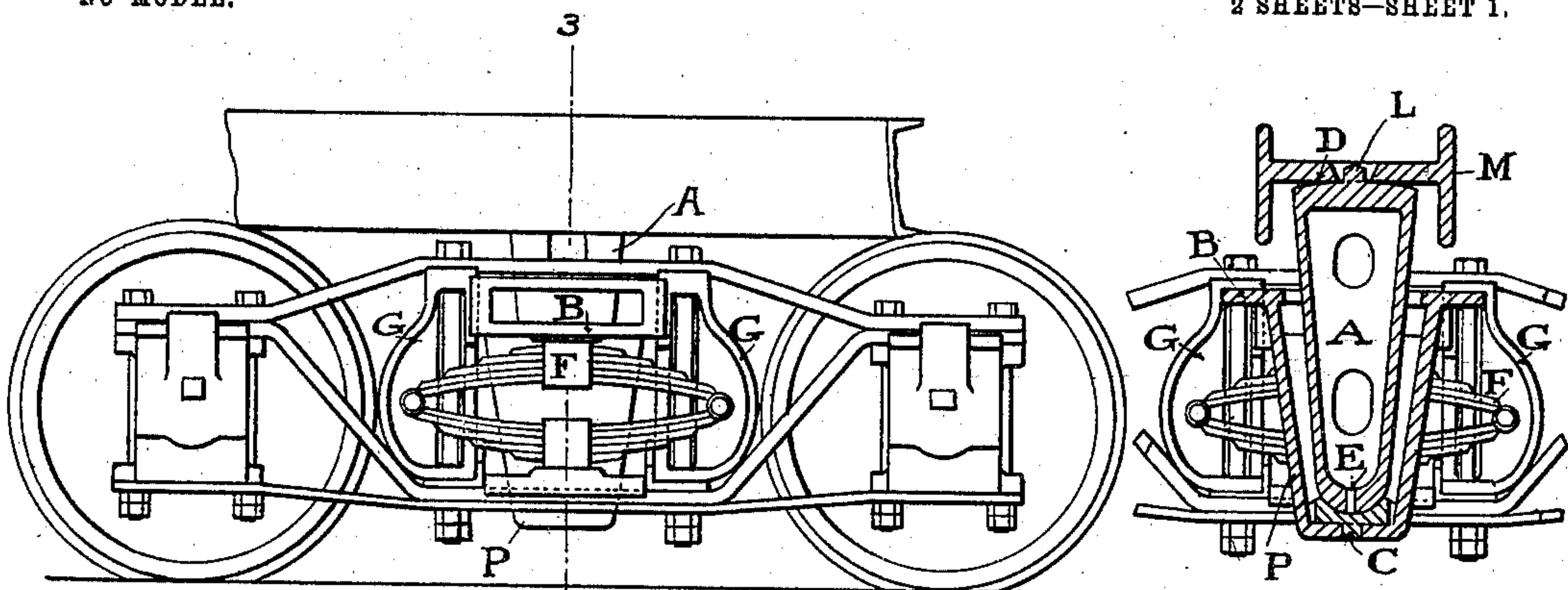


FIG. 1.

FIG. 2.

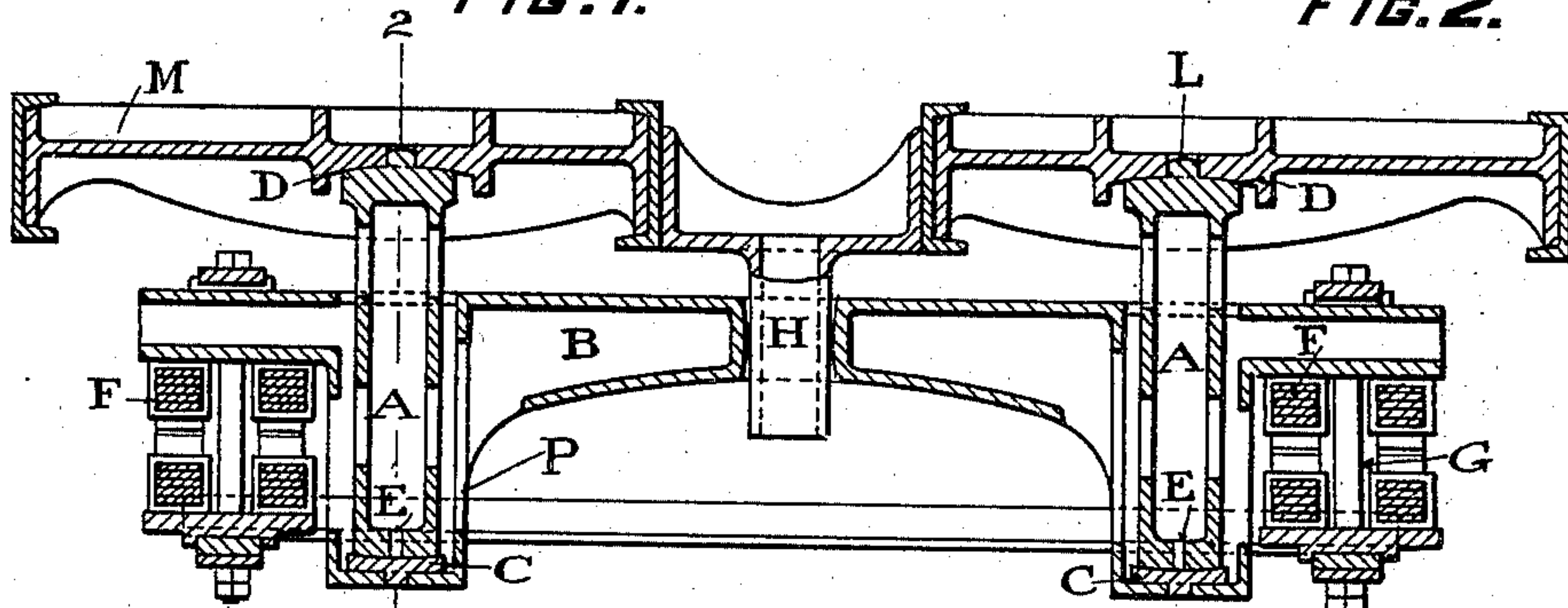


FIG. 3.

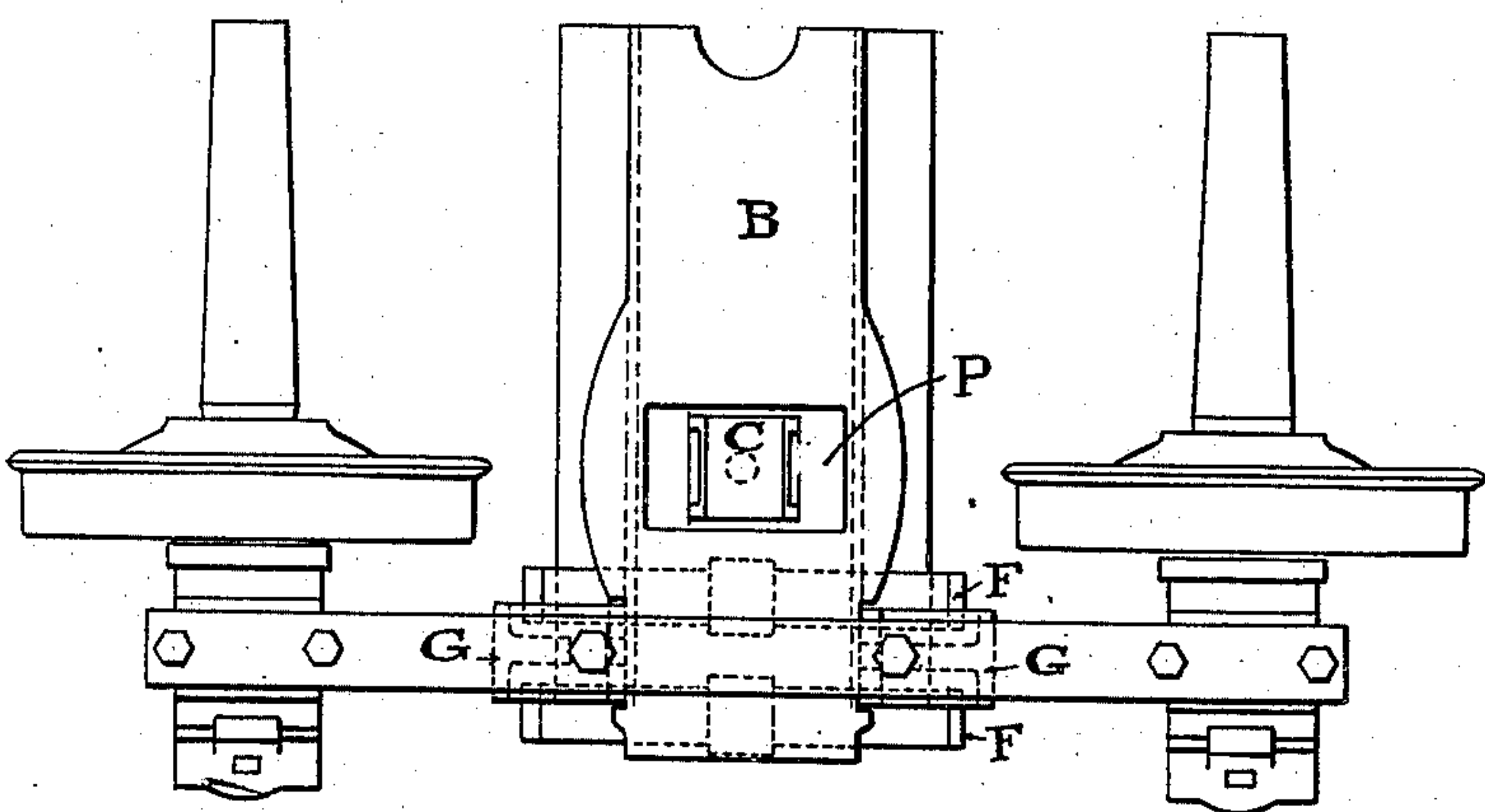


FIG. 4.

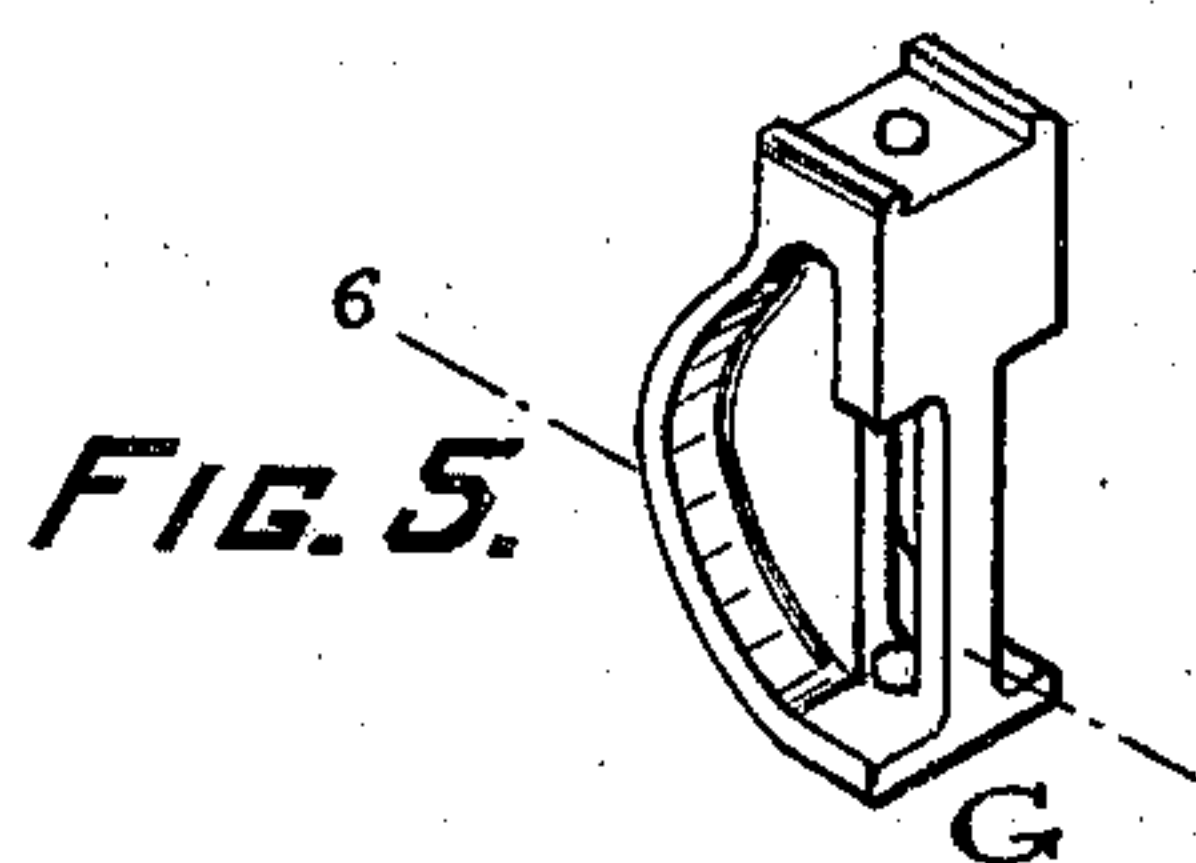


FIG. 5.



FIG. 6.

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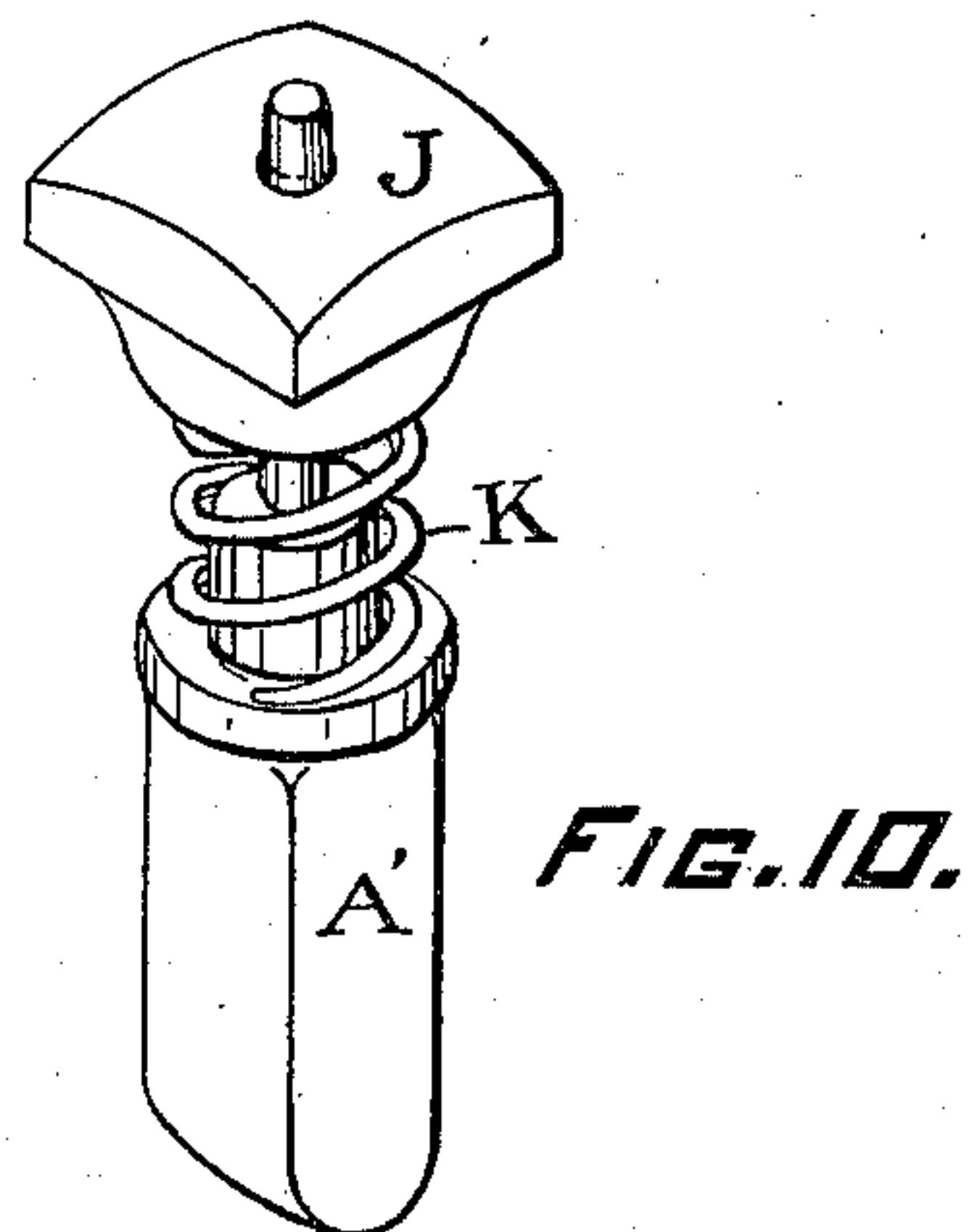
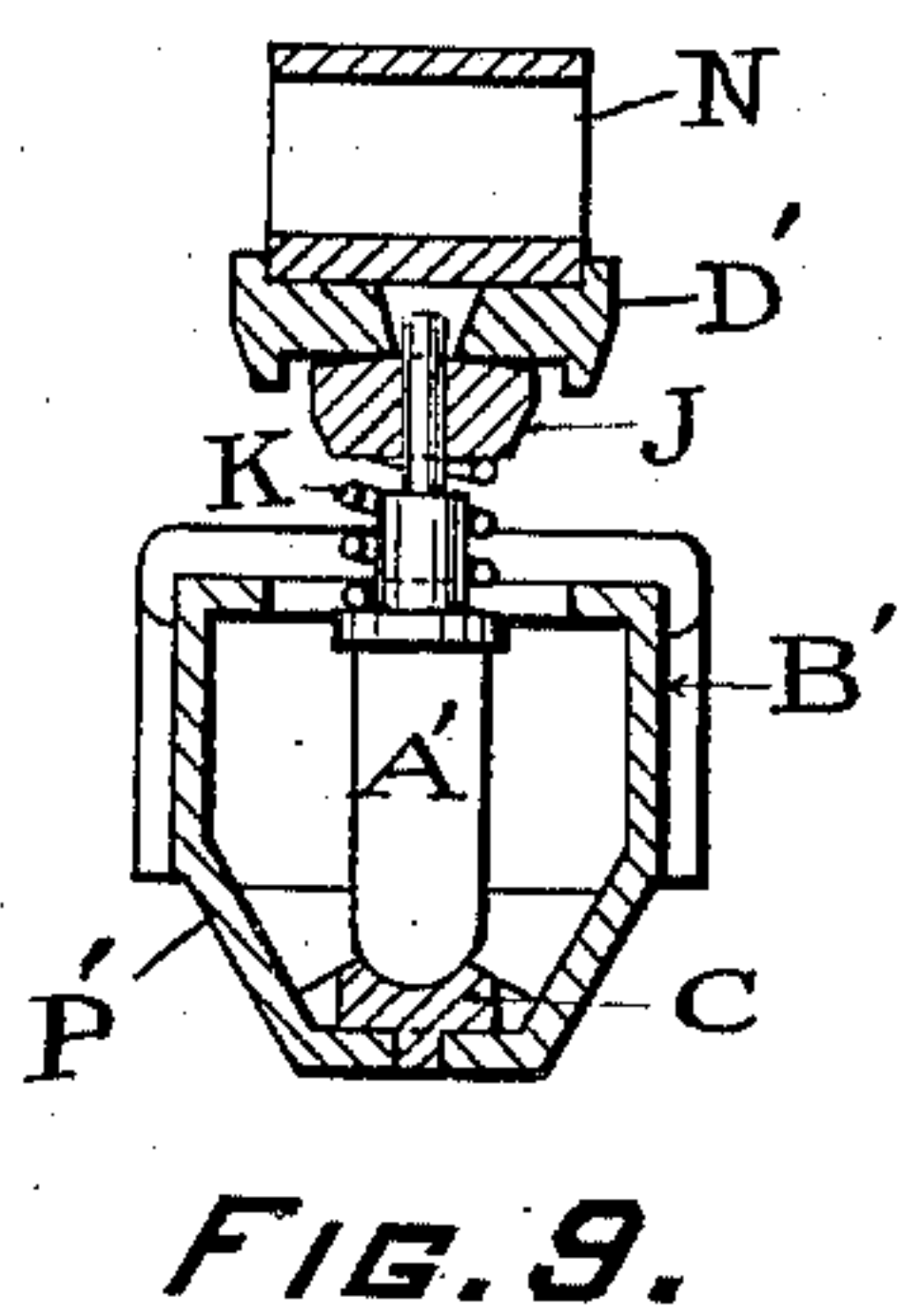
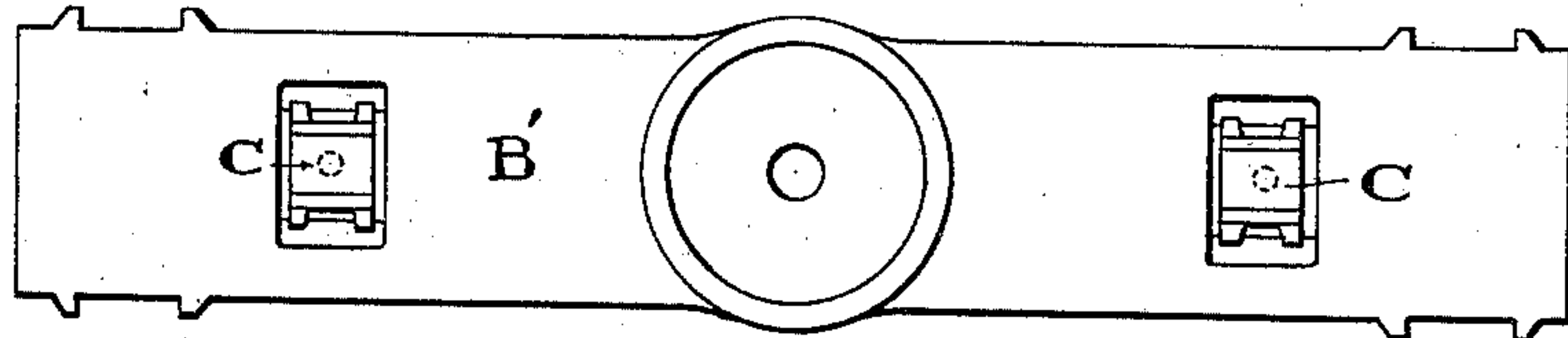
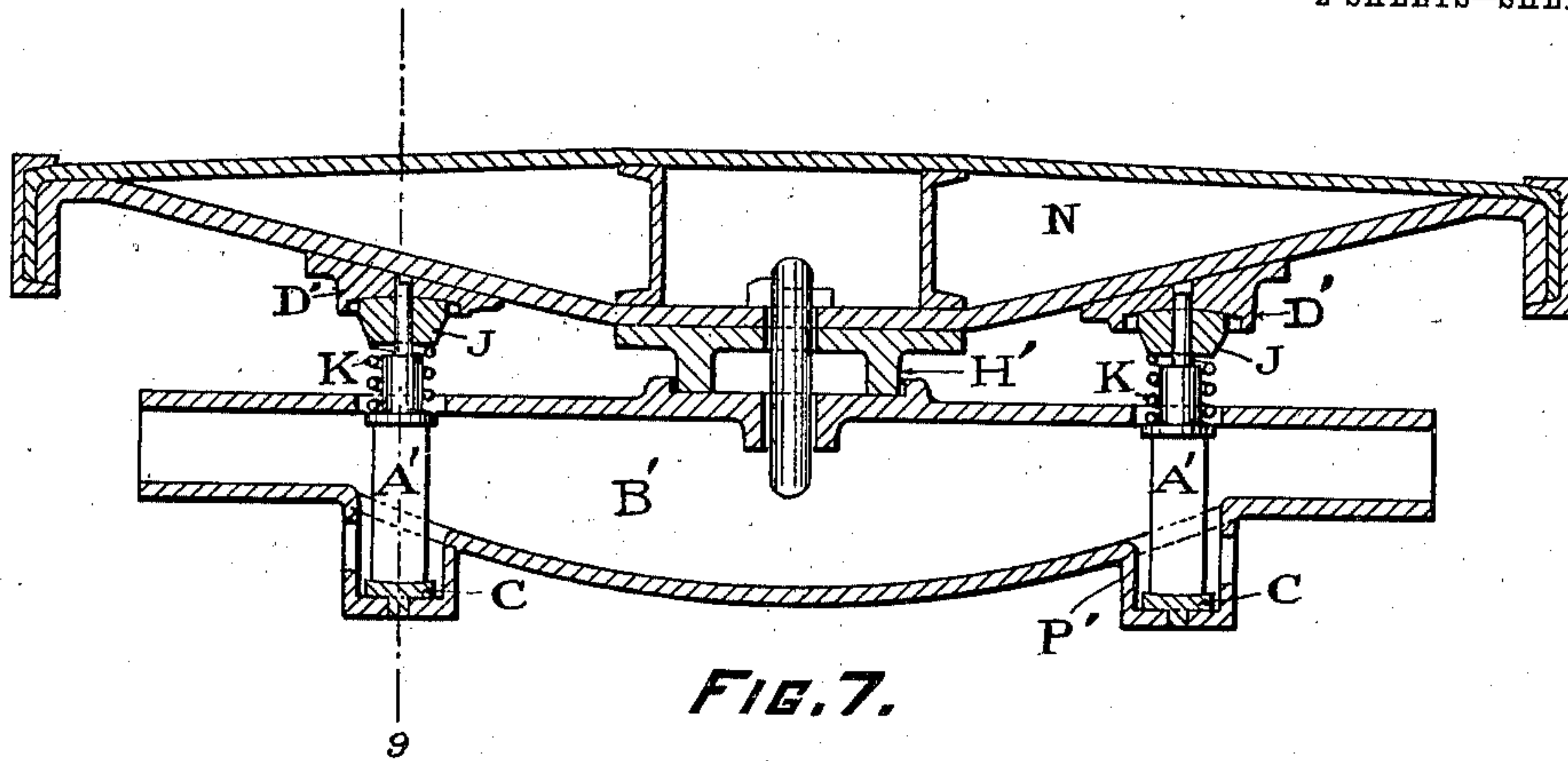
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UNITED STATES PATENT OFFICE.

WILLIAM J. KNOX, OF ALLEGHENY, PENNSYLVANIA.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 741,145, dated October 13, 1903.

Application filed July 13, 1903. Serial No. 165,240. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KNOX, a citizen of the United States, residing at Allegheny, in the State of Pennsylvania, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

My invention relates to the structures for mounting cars upon wheels, and particularly to the side-bearing supports of the trucks therefor.

The objects of the invention are to provide for the partial or total support of the car upon side bearings, to provide for taking up the lateral thrusts of the car in rounding curves without interfering with the free play of the truck under the car, to provide side bearings to support the weight of the car-body and at the same time reduce the friction incident to rounding curves to a minimum in order to diminish the flange wear on the wheels, and to generally improve the structure and operation of car-trucks.

The above objects, together with other advantages which will hereinafter appear, I attain by means of the structure illustrated in preferred forms in the accompanying drawings, wherein—

Figure 1 is a side elevation of the car-truck and mounting of the body thereon. Fig. 2 is a vertical section taken at right angles to the wheel-axle along the line 2 of Fig. 3. Fig. 3 is a vertical central longitudinal section along the line of the bolsters indicated by 3 in Fig. 1. Fig. 4 is a half-plan view of the truck with the side-bearing columns removed therefrom. Figs. 5 and 6 are respectively a perspective and a section on line 6 of the pedestal of the wheel-truss. Fig. 7 is a vertical central longitudinal section through the bolsters in a modification which is designed to support only a part of the weight of the car on the side bearings. Fig. 8 is a plan view of the truck-bolster of Fig. 7. Fig. 9 is a cross-section taken on the line 9 of Fig. 7, and Fig. 10 is a perspective view of the side-bearing column shown in Fig. 7.

The mounting of the car to be supported on a single bearing at the center of the truck is designed in part to allow free play of the wheels when the car goes around curves; but in such cases the centrifugal force always

throws a large portion of the weight over on the outer side bearing, and this introduces a very large friction which opposes the slewing of the truck, and therefore results in very harsh wear on the wheel-flange. It also frequently happens that the deflection of the bolsters does away with the play between the side bearings on the two bolsters and throws the load on the side bearings at all times.

My invention is designed to support the weight of the car wholly or in part upon side bearings and at the same time avoid the friction in turning of the truck under the car. Such support of the car also has the advantage of keeping the center of gravity nearer to the center of the railway-track, so that there is a more equal distribution of weight on the inside and the outside wheels.

The wheel-truss and general structure of the parts of the truck may be of any desired form for the purposes; but I prefer to make the truck-bolster B with side pockets P depending below the level of the axles and provided with a center opening, in which is placed the center pin H, depending from the body-bolster M. Extending through openings in the upper face of the truck-bolster B and resting on bearings C in the bottom of the pockets are side-bearing columns A, whose upper faces D may be spherical and provided with a central teat or lug L and rest upon suitable bearings on the body-bolster M. The columns A are preferably of a height sufficient to make the bearing-surface D on a wide curve struck from the center of curvature of the lower bearing of the column. The bearing on the body-bolster is preferably curved to correspond longitudinally of the bolster, but is flat laterally of the bolster, as shown in Fig. 2.

In order to retain the bottom bearing of the column A properly in place, the bearing-block C is preferably provided with a surface concaved upward. The bottom of the column A is provided with an opening E, so that the hollow column may be packed with oil-saturated waste for lubricating purposes, as this bearing is designed to slide, while the upper bearing D rolls in place.

The bolster B may rest upon the wheel-truss by the medium of any desired form of springs F. In case plate-springs are used,

as shown, the truss-pedestals G are preferably made of the T-shape, as shown in Figs. 5 and 6, and having the flange bowed outward toward the wheels to accommodate the spring of the bolster, and the web is divided to allow passage of the vertical frame-bolt. This structure I regard as highly important, since it will be observed that in order to use the depending pockets at the proper position next to the wheel-truss plate-springs could not be used which extended in a direction longitudinal of the bolster. At the same time plate-springs of sufficient strength could not be placed in the truss longitudinally of the truss except for this provision of the curved post G, which allows room for the ends of the springs on the two sides thereof. It will be seen that by this structure the whole weight of the car-body transmitted through the car-bolster M is carried upon the bearing-columns A to the truck-bolster and applied near the spring-support, while the center pin H merely serves to pivotally retain the two bolsters in proper relation. While any desired form of bolster which provides a suitable bearing for the lower end of column A could be used, I prefer the hollow casting of the form shown for lightness and strength, and it will be observed that the pockets P are situated near the position of the rail under the wheels.

In the modification of the structure shown in the figures from 7 to 10 I have provided for support of only part of the weight of the body on the side bearings, while part is carried, as usual, on the center bearing H'. For this purpose the truck-bolster B' may be made of the general truss form, as shown, and I prefer to use the truss form of the body-bolster N, which is provided with bearing-plates D', fixed thereon to cooperate with the side-bearing columns. The bearing-columns A' are provided with bottom bearing-seats C in the pockets P', as before, and may be made solid, with an enlarged shank for the accommodation of spiral springs K and with a reduced stem at the top, upon which freely rides the separable cap J, which has a spherical upper face to bear upon the blocks D', all as will be clear from Fig. 10. When pressure is brought upon the cap J sufficient to overcome the spring K, the cap seats upon the enlarged portion of the column. The amount of weight carried by the side bearings ordinarily will of course be governed by the strength of the spring K and the play of the bolsters by the distance between the cap and the enlarged shank of the column. It will be observed that in this instance also there is a rolling engagement between cap J and the bearing-block on the car-bolster and a sliding engagement between the bottom of the column and the bearing C in the pocket, while the top of the column is maintained in place by the projection of the reduced stem of the column into a central opening in the block D'. Provision for lubricating the bearings may be

provided by packing in the pocket P'. It will be seen that by these structures the weight of the car, either in ordinary running or under the special conditions obtaining in rounding curves at high speed, may be borne directly upon the side bearings, and at the same time the rocking movement of the columns A' allows of the free swinging of the truck under the car without introducing any appreciable friction, which is so injurious to the wear on the wheel-flange. Other advantages of the structure will readily occur to those familiar with the art.

Having thus described my invention and illustrated its use, what I claim as new, and desire to secure by Letters Patent, is the following:

1. In a car-truck the combination with a body-bolster having a center pin, of a truck-bolster provided with a pivot-opening for said pin and with side-bearing columns resting on the truck-bolster and supporting the car-bolster and designed to freely rock upon the ends as the bolsters turn about the pivot-pin.

2. The combination with a car body-bolster and centering means, of a truck-bolster having depending pockets therein, and side-bearing columns resting in said pockets and supporting the body-bolster, said columns being free to rock at both ends, substantially as described.

3. In a car-truck the combination with a truck-bolster spring-mounted upon the wheel-truss, of a side-bearing support on said truck-bolster below the wheel-axle line, and a side-bearing column resting thereon and directly supporting the weight of the car, said column being free to rock at both ends.

4. In a car-truck a truck-bolster provided with a central opening for the center pin and bearings for the wheel-truss, and having an opening in the top of the bolster and a depending pocket on each side to receive a side-bearing column to support the car-body thereon.

5. The combination with a body-bolster, and wheel-trusses, of a truck-bolster spring-supported on the wheel-trusses and provided with a depending pocket on each side, removable bearing-blocks in said pockets, and side-bearing columns resting in said pockets to support the car upon the truck.

6. In a car-truck the combination with a body-bolster having bearings on the sides with perforations in the center of said bearings, and a truck-bolster provided with side-bearing pockets, of a side-bearing column comprising a hollow post with a curved-faced lower bearing and a perforation therethrough, and an upper bearing designed to roll upon the bearing of the car-bolster, and provided with a guiding-lug to cooperate with the perforation of the body-bolster bearing to maintain the column in place.

7. In a car-truck the combination with a body-bolster having centering means and center and side bearing plates, of a truck-bol-

ster having a center bearing and pockets containing bearings on the side, and a side-bearing column in the pocket provided with a movable member and a spring to support the same against the side bearing of the body-bolster, substantially as described.

8. The combination of a truck-bolster having an opening in the top and a depending pocket, of a side-bearing column resting on a bearing in said pocket and extending freely through said opening in the top and provided with means for rocking upon a bearing on the body-bolster and having a spring-supported portion movable upon an extension of said column, substantially as described.

9. In combination with a truck-bolster having depending supports and means for supporting the car from points near the wheel-truss, a wheel-truss provided with central thrust members consisting of an outwardly-bowed flange and a central web, and a pair

of plate-springs situated one on each side of the said webs of the said thrust members, substantially as described.

10. The combination with a truck-bolster having a depending pocket near the wheel-truss, of a wheel-truss provided with central thrust members consisting of an outwardly-bowed flange and of a thin central web extending in line with the truss, whereby a pair of plate-springs may be placed on the respective sides of said thrust members to support the bolster on the truck, substantially as described.

In testimony whereof I have hereunder set my hand in the presence of the two subscribing witnesses.

WILLIAM J. KNOX.

Witnesses:

PAUL SYNNESTVEDT,
F. W. H. CLAY.