J. F. O'CONNOR.

RAILWAY-CAR DRAFT GEAR.

APPLICATION FILED OCT. 18, 1915.

1,251,089.

Patented Dec. 25, 1917.

2 SHEETS—SHEET 1.

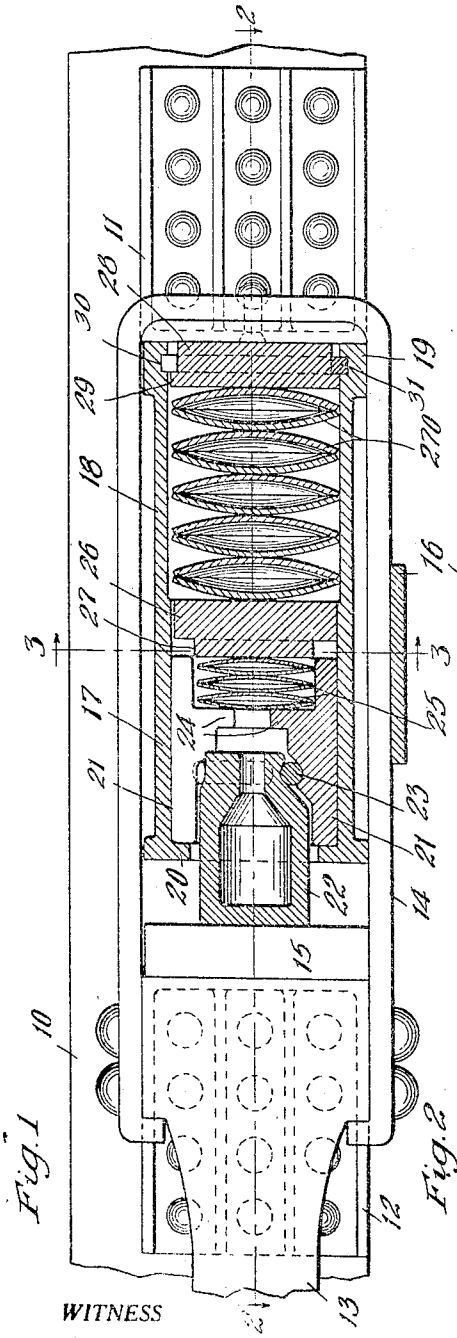


Fig. 1

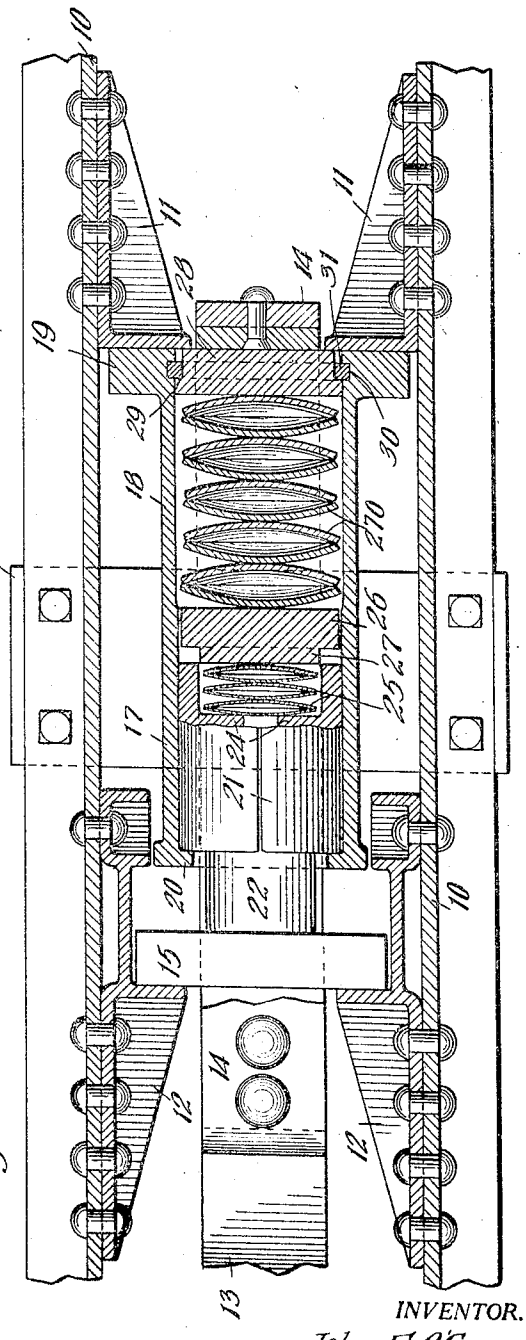


Fig. 2

WITNESS

Wm. Gayer

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Fig. 3

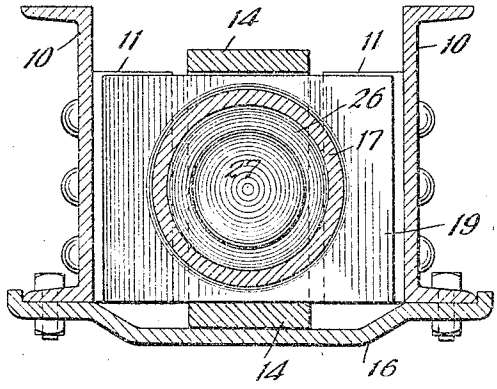
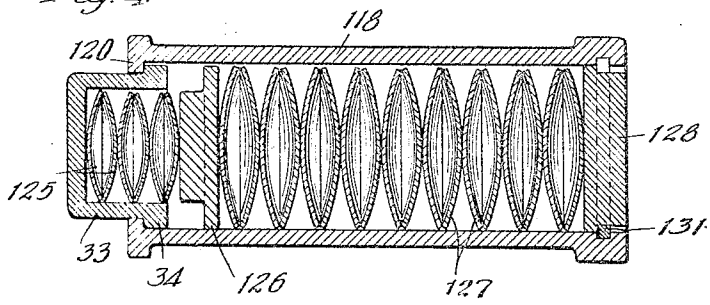


Fig. 4



WITNESS

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UNITED STATES PATENT OFFICE.

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RAILWAY-CAR DRAFT-GEAR.

1,251,089. Specification of Letters Patent. Patented Dec. 25, 1917.

Application filed October 18, 1915. Serial No. 56,433.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway-Car Draft-Gears, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in railway car draft gears.

It has been customary heretofore, in some types of draft gears, to employ disk springs but, so far as I am aware, such disk springs have always been perforated at the center to receive a bolt or other retaining means extending therethrough. This is a serious disadvantage in that it removes from the disk springs those sections of the metal which afford much of the effective resiliency of the disks.

The object of my invention is to provide a gear or other shock absorbing member which employs disk springs but without the objection above noted, the disk springs being used intact.

In the drawing forming a part of this specification, Figure 1 is a vertical, longitudinal sectional view of a draft rigging showing my improvements in connection therewith. Fig. 2 is a horizontal, sectional view taken substantially on the line 2—2 of Fig. 1. Fig. 3 is a transverse, vertical sectional view taken substantially on the line 3—3 of Fig. 1. And Fig. 4 is a longitudinal, sectional view of another embodiment of my improvement.

In said drawing, and referring first to Figs. 1, 2 and 3, 10—10 denote the draft members to which are secured rear stops 11—11 and front stops 12—12. The draft rigging is shown as embodying a draw-bar 13 to which is secured a yoke 14, the latter encircling the gear proper and a front follower 15. The parts are supported by means of a tie plate 16 bolted or otherwise secured to the sills.

As shown, the gear comprises a friction shell 17 having cast integrally therewith a spring casing 18, the latter at its rear end being formed with an integral rear follower 19 adapted to abut the rear stops 11. At its front end, the cylinder 17 is provided with an inwardly extending annular flange 20 adapted to limit and prevent the outward movement of a plurality of friction shoes 21—21 which coöperate with the cylinder 17, the shoes 21 being kept in engagement with the cylinder by means of a wedge 22 and anti-friction rollers 23 interposed between the wedge and the shoes. Each of the shoes 21 is provided with an inwardly extending shoulder 24 and bearing against these shoulders 24 is a plurality of relatively small circular disks 25—25, the same being arranged in pairs or couplets, each pair consisting of two dish shaped disks oppositely arranged. To the rear of the gang of the disks 25, which act as a preliminary spring, is a spring follower 26, the latter having a forwardly extended annular boss 27 which is adapted to slide within the rear ends of the shoes 21, the normal position of the follower 26 relatively to the shoes 21 being as indicated in Figs. 1 and 2. In this position, as will be seen from an inspection of the drawing, the disks 25 are prevented from becoming accidentally displaced. At the rear of the follower 26, is another gang of disk springs 270, the latter being also arranged in pairs or couplets and of larger size and capacity than the springs 25. The rear end of the casing 18 is open but in order to retain the springs and other elements within the shell and casing, I have provided a block 28 which fits within the spring casing. Said block 28 is provided with a shoulder 29 at its inner end which snugly fits within the spring casing 18. At its rear end the spring casing is provided with an annular groove 30 and within this groove is adapted to be sprung an annular retaining ring 31, said ring projecting beyond the face of the interior surface of the shell and preventing the block 28 from coming outwardly, as will be understood. The relation of the diameter of the block 28 to the rear stops 11 is preferably such that the latter will project over the rear face of the block 28 and thereby assist in absorbing the pressure upon buff and relieving the strains on the annular ring 31.

In assembling the device, the wedge, anti-friction rollers and shoes are properly assembled and then put in at the rear end of the spring casing and shell and moved forwardly to their normal position. After this, the preliminary springs 25 are inserted, then

the follower 26, then the springs 270 and next, the block 28. Pressure is then applied to compress the springs within the gear sufficiently for the outer face of the block 28 to clear the annular groove 30 in the rear end of the spring casing. Whereupon, the annular ring 31 is sprung into position and the pressure on the block 28 released. In this way, all the parts are self contained within the shell and casing and necessity for perforating the disk springs is obviated, thereby retaining the maximum spring effectiveness of the disks. It will also be observed that the springs may be put under a preliminary compression by the method of assembling above described.

From the foregoing, it will be seen that I have provided a gear of high capacity, the springs are relatively cheap in first cost, and the number and capacity of said springs may be varied to suit working conditions.

In the structure shown in Fig. 4, 118 denotes a cylindrical spring casing, the same being open at each end and at its forward end being provided with an inturned annular flange 120. Instead of employing friction devices, I use springs entirely and in order to get a graduated action I use a hollow cup shaped block 33 at the front end, said block having an outwardly extending annular shoulder 34 which coöperates with the shoulder or flange 120 and prevents the block 33 from being outwardly displaced. Mounted within the hollow block 33 is a gang of disk springs 125 and at the rear of the latter is a spring follower 126. Between the follower 126 and the rear block 128 is interposed another gang of larger disk springs 127. The block 128 is assembled and held in the same manner as the block 28 by means of a ring 131.

It is believed the operation of this shock absorbing member will be apparent from the preceding description of the structure illustrated in Figs. 1, 2 and 3.

I claim:

1. In a device of the character described, the combination with a hollow member open at each end and a plurality of spring elements within said member, the spring elements being insertible through one open end of said member, of means for closing each end of said member, said means being movable inwardly to thereby compress the spring elements, said means being prevented from outward movement relatively to said member.

2. In a device of the character described, the combination with a hollow container open at each end, and a plurality of disk springs within said container, of detachable means for closing one end of said container, a block at the opposite end of said container, the block being insertible after the springs have been placed within said container, and detachable means for preventing said block from outward movement relatively to said casing.

3. In a device of the character described, the combination with a hollow container, having spring means therewithin, of a shouldered block at one end of said container, said container having a groove on the interior thereof at that end where the block is located, and an expansible ring snapped into position in said groove and when in position, preventing outward movement of said block relatively to the container.

4. In a device of the character described, the combination with a combined friction shell and spring casing open at both ends, said shell being provided with an inwardly extending annular shoulder at one end and the spring casing being provided with an annular groove at the other end, of a plurality of friction elements within said shell and prevented from outward movement relatively thereto by said shoulder, spring means within said spring casing, a retaining block and a spring band sprung into position in said groove and adapted to prevent outward movement of said block relatively to the spring casing.

In witness that I claim the foregoing I have hereunto subscribed my name this 30th day of Sept. 1915.

JOHN F. O'CONNOR.