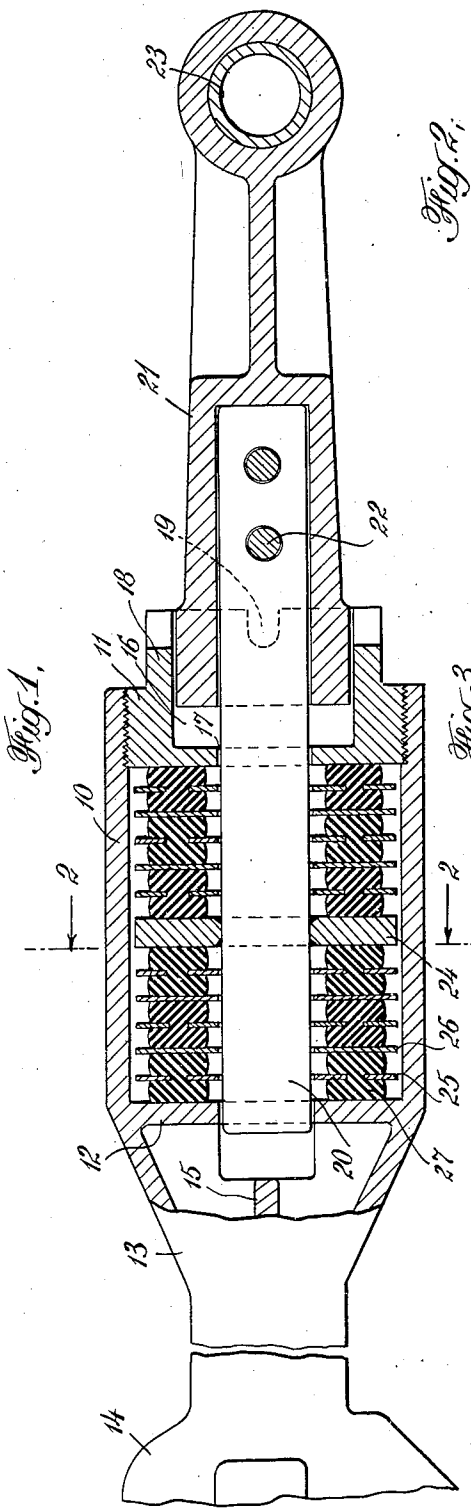
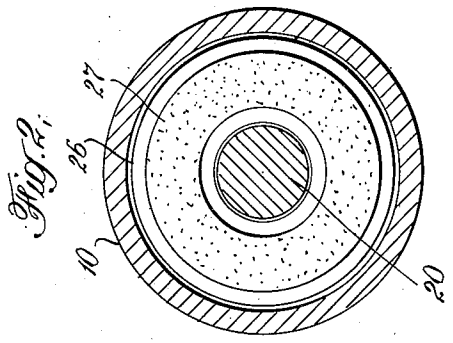
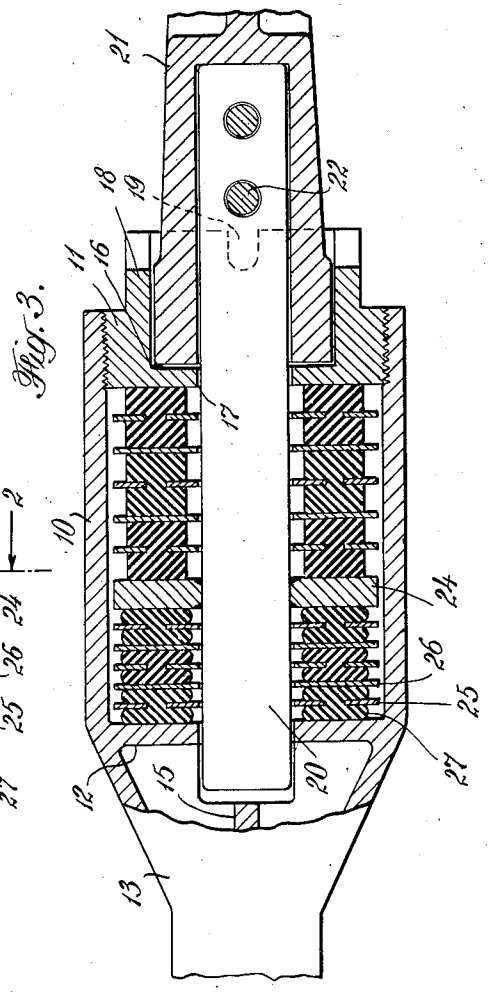
May 3, 1949. G. R. MUNRO ET AL. 2,469,126

SHOCK ABSORBING STRUCTURE FOR RAILWAY DRAFT GEARS

Filed Jan. 16, 1948







INVENTORS
George R. Munro
Walter C. Dale
BY Pennie Edmonds, Morton & Barrows
ATTORNEYS

Patented May 3, 1949 2,469,126

UNITED STATES PATENT OFFICE

2,469,126

SHOCK ABSORBING STRUCTURE FOR RAILWAY DRAFT GEARS

George R. Munro, Massapequa, and Walter C. Dilg, Hewlett, N. Y., assignors to Waugh Equipment Company, New York, N. Y., a corporation of Maine

Application January 16, 1948, Serial No. 2,584

5 Claims. (Cl. 213—46)

1

This invention relates to draft gears for railway rolling stock, especially light weight cars, such as are used for subway and elevated service. More particularly, the invention is concerned with a novel draft gear of simple, inexpensive construction, which can be readily assembled and installed, has a long life, and, under normal operating conditions, eliminates free slack in the connections between the coupler and the car body.

In the new gear, the cushioning elements are preferably rubber springs, which are wholly enclosed within and protected by a housing connected to the coupler. The springs are arranged within the housing in two groups or units, which lie on either side of an abutment on a rod, which extends through the springs and housing and has one end connected to a part of the car body. The housing is closed at one end by a threaded plug, through which the rod projects, and, by adjusting the position of the plug, the units may be placed under substantial initial compression. In the operation of the gear, the application of a force to the coupler causes a movement of the housing relative to the abutment with the result that one of the units is compressed between the housing or plug and the abutment. During the compression of one unit, the other is free to expand, and, if the units are installed under suitable initial compression, the expansion of either unit is equal to the compression of the other produced by forces applied to the coupler under normal operating conditions. With one unit thus expanding as much as the other is compressed, there is no free slack in the connections between the coupler and car structure and any movement of the coupler relative to the structure is against the resistance of one unit.

For a better understanding of the invention, reference may be had to the accompanying drawing, in which

Fig. 1 is a view, partly in plan and partly in section, of one form of the draft gear of the invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1; and

Fig. 3 is a view similar to Fig. 1, showing the condition of the gear, when the coupler is subjected to a force in buff.

The new draft gear in the form shown in the drawing comprises a metallic casing 10, illustrated as cylindrical in form, although the cross-sectional shape of the casing is unimportant. The casing is open at one end and the opening normally is closed by a removable plug 11. At the other end, the casing has a wall 12 with an axial opening. Beyond the wall 12, the casing has an integral hollow shank 13, which is adapted to be attached to the coupler 14 and may be integral with the coupler shank. The interior of

2

the shank 13 may be stiffened by a rib 15, if desired.

In its outer end, the plug 11 has an axial recess 16, from which an axial passage 17 leads to the interior of the casing. The recess is defined in part by a flange 18, which is notched as indicated at 19, so that a tool may be employed to tighten the plug in the end of the casing.

A rod 20 extends through the casing and one end of the rod lies within the opening in wall 12, while the other end extends through passage 17 and recess 16 of the plug. The end of the rod projecting through the plug is connected to a part of the car structure and, for this purpose, a bar 21 may be used. The bar is recessed at one end to receive the end of the rod and is connected thereto by pins 22. This end of the bar extends into the recess 16 of the plug. At its other end, the bar has a circular opening containing a bushing 23 and, in the installation of the gear, the bar is secured to the car structure by a pin passing through the bushing.

The rod 20 is provided with an abutment plate 24 fast thereon and normally lying within the housing midway between plug 11 and wall 12. A pair of spring units lie within the housing on opposite sides of the abutment and the units illustrated include rubber springs 25 separated by divider plates 26. Each spring includes a metal plate and rubber rings 27 secured against opposite faces thereof and held in place by portions of the rubber, which extend through perforations in the plate. The divider plates are flat metallic discs. In the construction shown, each spring unit consists of three rubber springs and all of the springs are of the same size and capacity. The springs and divider plates for use in the cylindrical housing are of circular outline and have central openings for the passage of rod 20.

In the assembly of the gear, the springs and divider plates making up the unit, which is to bear against wall 12, are first placed within the housing, after which the rod 20 is inserted with its shorter end passing through the springs and divider plates. The rod is pushed into the housing, until its abutment strikes the adjacent spring, after which the springs and divider plates of the second unit are positioned around the longer end of the rod. The plug is then slipped over the projecting end of the rod and screwed into the housing. As the plug moves inwardly, it causes the units to be compressed and the degree of compression may be regulated by the inward movement of the plug. The installation is completed by mounting the housing on suitable supporting members on the car, inserting the end of the rod within the bar, and connecting the parts together. The connection of the bar to the car structure by the pin may be made before or after the bar is connected to the rod.

In assembling and installing the gear, it is desirable to turn the plug 11 into the housing, until the spring units are placed under substantial initial compression and are capable of corresponding expansion. When the gear is in use, the application of a force to the coupler causes the housing to move lengthwise of the rod 20 in one direction or the other, depending upon the direction of application of the force. In Fig. 3, the parts of the gear are shown in the relative positions, which they assume, when a force in buff has been applied to the coupler and the housing has moved lengthwise of the rod 20 toward the end thereof encircling the fixed pin. Under such conditions, the front spring unit in contact with the wall 12 is compressed against abutment 24 and the springs of the rear unit are free to expand by the movement of the inner wall of the plug away from the abutment. If the units are installed under substantial initial compression, the extent to which one unit will expand may be equal to the extent to which the other unit is compressed by such forces as are applied to the coupler under normal conditions of operation. Accordingly, with the expansion of one unit equalling the compression of the other, each unit bears continuously at one end against the abutment and at the other end against either wall 12 or the inner face of plug 16. The result is that there is no slack in the connections between the coupler and the car structure and if, after the application of a force in one direction to the coupler, a force in the other direction is quickly applied, the movement of the coupler relative to the car structure will not be uncontrolled but will be against the resistance of the previously partially expanded unit. The gear, when installed under the conditions described, will, therefore, produce a continuous cushioning effect in normal operation.

We claim:

1. A draft gear for use on railway rolling stock, which comprises a housing having a closed end with an axial opening, a shank attached to the housing at its closed end and adapted to be connected to the coupler of the vehicle, a removable plug in the other end of the housing, the plug having an axial passage through it, a rod extending through the opening, the housing, and the passage, means for connecting the portion of the rod projecting through the plug to the vehicle structure, an abutment on the rod within the housing, and a pair of spring units encircling the rod within the housing and lying on opposite sides of and in contact with the abutment, one of the units engaging the closed end of the housing and the other the inner side of the plug.

2. A draft gear for use on railway rolling stock, which comprises a housing having a closed end with an axial opening, a shank attached to the housing at its closed end and adapted to be connected to the coupler of the vehicles, a removable plug in the other end of the housing, the plug having an axial passage through it, a rod extending through the opening, the housing, and the passage, means for connecting the portion of the rod projecting through the plug to the vehicle structure, an abutment on the rod within the housing, and a pair of spring units encircling the rod within the housing and lying on opposite sides of and in contact with the abutment, one of the units engaging the closed end of the housing and the other the inner side of the plug, the units being of like capacity and each including a plurality of rubber springs.

3. A draft gear for use on railway rolling stock, which comprises a housing having a closed end with an axial opening, a shank attached to the housing at its closed end and adapted to be connected to the coupler of the vehicle, a removable plug in the other end of the housing, the plug having an axial recess opening outwardly with an axial passage of reduced diameter through the bottom of the recess, a rod extending through the opening, the housing, and the passage and recess of the plug, a bar having a recess at one end, the end of the rod projecting beyond the plug entering the recess in the bar and being connected to the bar, the recessed end of the bar entering the recess in the plug and the other end of the bar being adapted to be connected to a part of the vehicle structure, an abutment on the rod within the housing, and a pair of spring units encircling the rod within the housing and lying on oppostie sides of and in contact with the abutment, one of the units engaging the closed end of the housing and the other the inner side of the plug.

4. A draft gear for use on railway rolling stock, which comprises a housing having an integral extension from one end adapted to be connected to the coupler of the vehicle, a transverse partition within the housing adjacent said end, the partition having an axial opening, a removable plug closing the other end of the housing, the plug having an axial opening and a longitudinal flange extending about said opening and of greater internal diameter than said opening, a rod extending through the housing and openings and beyond the outer end of said flange, a bar having a recess at one end entered by the end of the rod projecting beyond said flange, the recessed end of the bar extending within the flange on the plug and the other end of the bar being adapted to be connected to the vehicle structure, means connected the rod and the bar, an abutment fast on the rod within the housing, and spring units within the housing encircling the rod and engaging the abutment, one of the units engaging the partition and the other the inner side of the plug.

5. A draft gear for use on railway rolling stock, which comprises a housing having a closed end with an axial opening, a shank attached to the housing at its closed end and adapted to be connected to the coupler of the vehicle, a removable plug in the other end of the housing, the plug having an axial passage through it, a rod extending through the opening, the housing, and the passage, means for connecting the portion of the rod projecting through the plug to the vehicle structure, an abutment on the rod within the housing, and a pair of spring units encircling the rod within the housing and lying on opposite sides of and in contact with the abutment, one of the units engaging the closed end of the housing and the other the inner side of the plug, the units being under such initial compression, that, under normal operation, one unit is capable of expanding as much as the other is compressed by a force transmitted in the housing through the coupler.

GEORGE R. MUNRO.
WALTER C. DILG.

No references cited.