Feb. 14, 1933. R. L. WHITMORE 1,897,287

CENTRAL BUFFING AND DRAWGEAR

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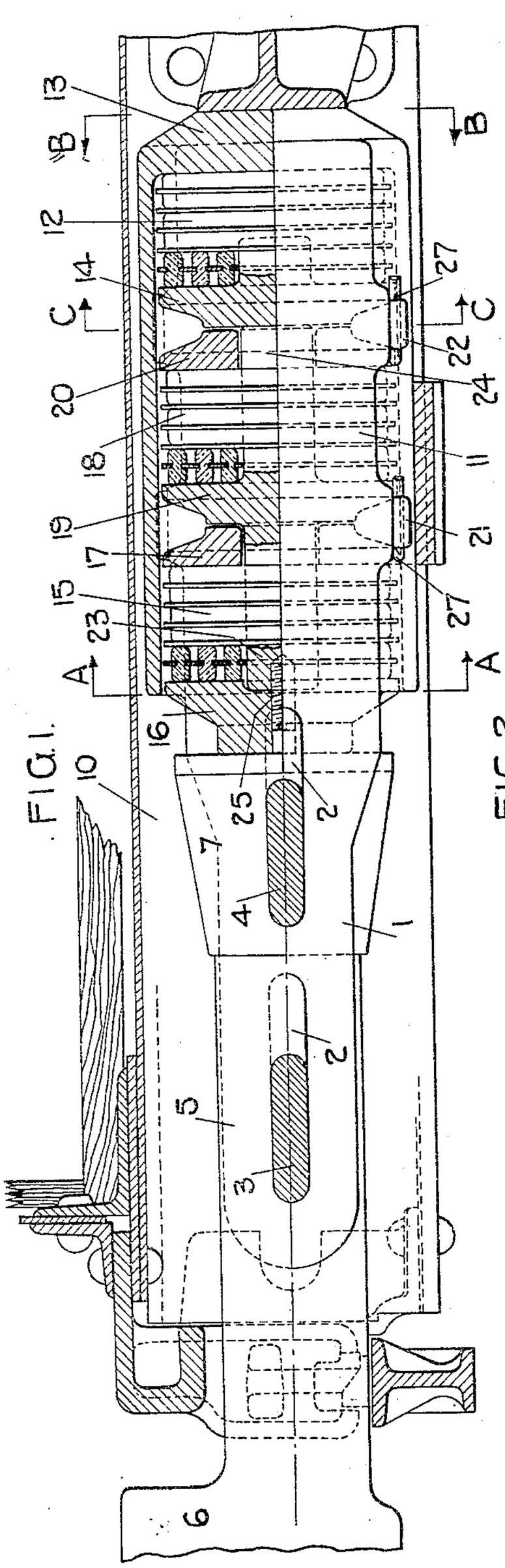

FIG. 1.

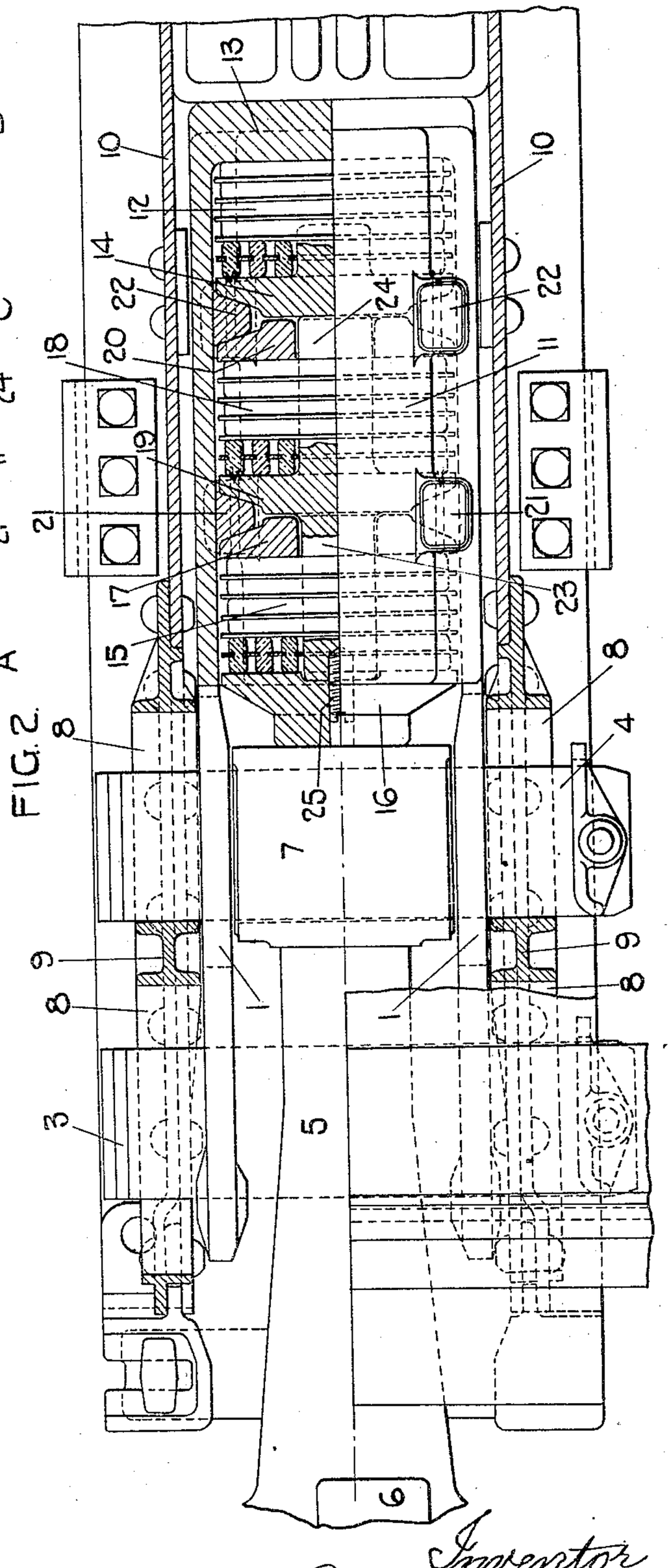

FIG. 2.

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FIG. 3

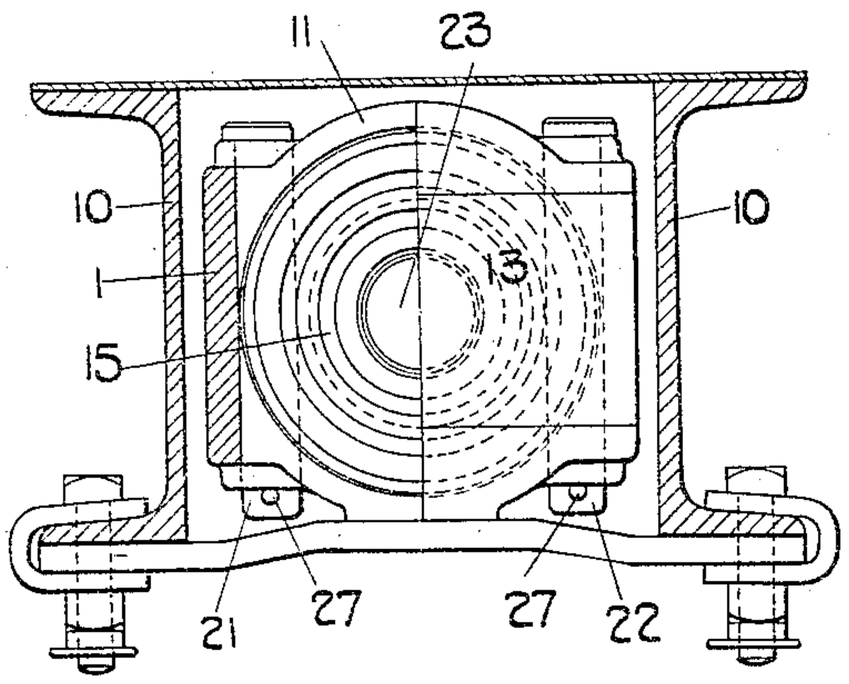
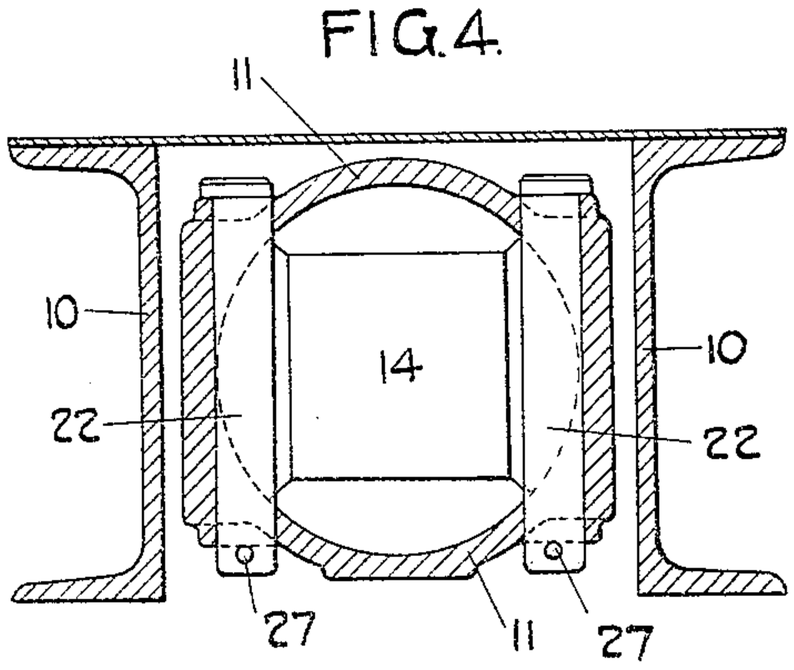


FIG. 4.



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UNITED STATES PATENT OFFICE

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CENTRAL BUFFING AND DRAWGEAR

Application filed January 6, 1930, Serial No. 418,824, and in Great Britain December 4, 1929.

This invention relates to central buffing and draw gear of the kind in which buffing and draw springs are embraced by a yoke that, by a cotter and slot connection with the coupler head shank, is pulled outwardly when drawing and relatively to which the coupler head and shank can move inwardly when buffing.

In heretofore usual constructions of buffing and draw gear of this character it is customary to mount the buffing and draw springs in a casing or structure formed as a self-contained independent unit.

An object of this invention is to provide better accommodation for the buffing and draw springs and improved spring arrangements without increasing the overall or critical dimensions of the yoke. For this purpose a casing or structure for the springs formed as an independent unit is dispensed with and the yoke itself is so formed towards its inner end as to house the springs. An advantage of constructing the yoke in this manner is that the space occupied by the heretofore usual casing or structure embraced by the yoke is available for the springs so that it is possible to provide larger springs and improved arrangements thereof such as to be better adapted to give the resistance desirable under the heavy blows to which high capacity railway vehicles are subjected when both buffing and drawing. Dispensing with a spring casing or structure formed as a separate unit simplifies construction and reduces the number of parts, in addition to enabling a spring arrangement of increased efficiency to be provided.

The springs employed in carrying out the invention are preferably India-rubber springs of the well known type comprising units, each consisting of concentric rings or frames of India-rubber moulded on to opposite sides of a metal plate, arranged in column form with metal dividing plates between the several units of the column. The invention is not however restricted to the use of India-rubber springs as in some cases steel springs may be employed or a combination of India-rubber springs and steel springs. In an arrangement comprising steel springs and India-rubber springs care should be taken so to arrange the springs that the India-rubber springs prevent the steel springs being pressed home. With advantage a number of springs may be arranged to function in parallel when either buffing or drawing. In some cases however the springs may be arranged to function in series or first in series and then in parallel, or in any desired order.

Means of any appropriate character carried by or formed in one with the yoke constitute abutment stops for the spring compression plates when the arrangement comprises a number of springs functioning in parallel. To enable or facilitate assembly the said abutment stops may be for example in the form of removable cotters passed through holes formed therefor in the spring housing portion of the yoke, or may consist of split rings engaging recesses formed therefor in the internal wall of the said housing.

Fig. 1 of the accompanying drawings illustrates in sectional elevation a construction of buffing and draw gear embodying the invention.

Fig. 2 shows the gear in sectional plan.

Fig. 3, as regards its left-hand half is a section corresponding to the line A A of Fig. 1 with parts removed for the sake of clearness, and, as regards its right-hand half is a section corresponding to the line B B of Fig. 1.

Fig. 4 is a section corresponding to the line C C of Fig. 1, the stop cotters being shown in elevation.

In the construction shown the limbs 1 of the yoke are formed as heretofore usual at their front ends with slots 2 through which pass cotters 3 and 4 that connect the yoke to the shank 5 of the coupler head 6 and to

the follower head 7 respectively, the ends of said cotters sliding in slots 8 formed therefor in brackets 9 fixed to longitudinal members 10 of the vehicle underframe, all as heretofore usual.

The inner portion of the yoke is formed as a casing 11 having a cylindrical boring within which are arranged three sets of India-rubber springs of the type hereinbefore-mentioned located one behind the other. The inner spring 12 is arranged between the closed end 13 of the casing 11, which constitutes the end of the yoke, and a bearing plate 14 arranged to slide in the casing. The front spring 15 is located between a front compression plate 16 that abuts against the follower head 7, and a bearing plate 17 mounted to slide in the casing 11. The intermediate spring 18 is located between two intermediate plates 19 and 20 mounted to slide in the casing. The bearing plate 17 for the inner end of the front spring 15 and the compression plate 19 for the front end of the intermediate spring 18 normally bear against the opposite sides of stops in the form of cotters 21 passed through holes formed therefor in the wall of the casing 11. The compression plate 14 for the front end of the rear spring 12 and the bearing plate 20 for the rear end of the intermediate spring 18 in like manner bear normally against the opposite faces of other similar stop cotters 22 mounted in like manner in the casing.

In order to effect compression of the three springs 15, 18 and 12 in parallel, in the spring arrangement being described by way of example, the compression plate 19 for the front end of the intermediate spring 18 is formed or provided on its front face with an axial pin or long boss 23 that projects through the bearing plate 17 and the front spring 15 and the inner end of which bears against the compression plate 16 for the front spring 15. A similar pin or long boss 24 projecting axially from the rear face of the said compression plate 19 passes through the said intermediate spring 18 and the bearing plate 20 and bears against the compression plate 14 for the front end of the rear spring. To facilitate assembly the front compression plate 16 is formed with a tapped axial hole through which an assembly stud 25 is screwed into a tapped axial hole formed therefor in the front end of the axial pin or long boss 23 that bears against the said compression plate. Preferably, as shown, the front end of said axial pin or boss 23 fits into a recess provided to receive it in the rear face of the front compression plate 16. It will be understood that the assembly stud 25 holds the front spring 15 in any required condition of initial compression during assembly of the parts.

Each of the three springs 15, 18 and 12 may comprise any appropriate number of spring units and instead of three springs one or two or a greater number than three may be employed. In the example under notice each spring comprises three units of the concentric India-rubber ring type.

The construction and arrangement are such that in buffing the front spring 15 is directly compressed by inward movement of the follower head 7 and at the same time the two other springs 18 and 12 are compressed in parallel therewith by movement of their front compression plates 19 and 14 through the before-mentioned axial pins or bosses 23 and 24. In drawing, the three springs 15, 18 and 12 are in like manner compressed in parallel, the stop cotters 21 and 22, that move with the yoke, carrying with them the bearing plates 17 and 20 the movement of which effects the compression of the front and intermediate springs 15 and 18 respectively.

With advantage the stop cotters 21 and 22 are of the wedge-shaped cross section shown as by making them of such a cross-section the compression and bearing plates that abut against the inclined opposite sides thereof may be made of gradually increasing thickness towards their axes in order to give them strength and stiffness. Preferably that face of each of the said compression or bearing plates which abuts against the stop cotters is of truncated pyramidical formation to provide faces of substantial area that bear against the stop cotters, see Fig. 4. The stop cotters may, as shown, be located vertically one towards each side of the spring housing 11 and if desired, in order to balance the stresses, short additional stop members may be passed through slots formed in the top and bottom walls of the housing.

It is to be emphasized that the specific constructions described are merely examples of embodiments of the invention and that in details of construction variations may be made without departure from the invention.

What I claim is:—

In buffing and draw gear of the type set forth, a draw yoke the inner end of which is formed as a casing and the limbs of which are slotted, a follower head, a cotter passed through the said follower head and through slots in the limbs of the yoke, a draw rod, a cotter passed through said draw rod and through slots in the limbs of the yoke, three sets of India-rubber springs located one behind the other in said casing, a compression plate for the front end of the inner set of springs mounted to slide in said casing, a compression plate for the rear end of the intermediate set of springs mounted to slide in said casing, cotters mounted in said casing between the said two compression plates and constituting abutments for the same, a compression plate for the front end of the intermediate set of springs mounted to slide in said casing, an axial boss projecting rearwardly from said last-mentioned compression

plate and on which said intermediate set of springs is mounted, an axial boss projecting forwardly from said last-mentioned compression plate and on which the front set of springs is mounted, a compression plate for the rear end of the front spring mounted to slide in said casing, cotters mounted in said casing between the said two last-mentioned compression plates and constituting abutments for the same, and a front compression plate located between said follower head and the front set of springs.

In testimony whereof I affix my signature.

REGINALD LAWRENCE WHITMORE.