No. 818,642. PATENTED APR. 24, 1906.

W. G. PRICE.

BOLSTER SWING DAMPER.

APPLICATION FILED FEB. 20, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

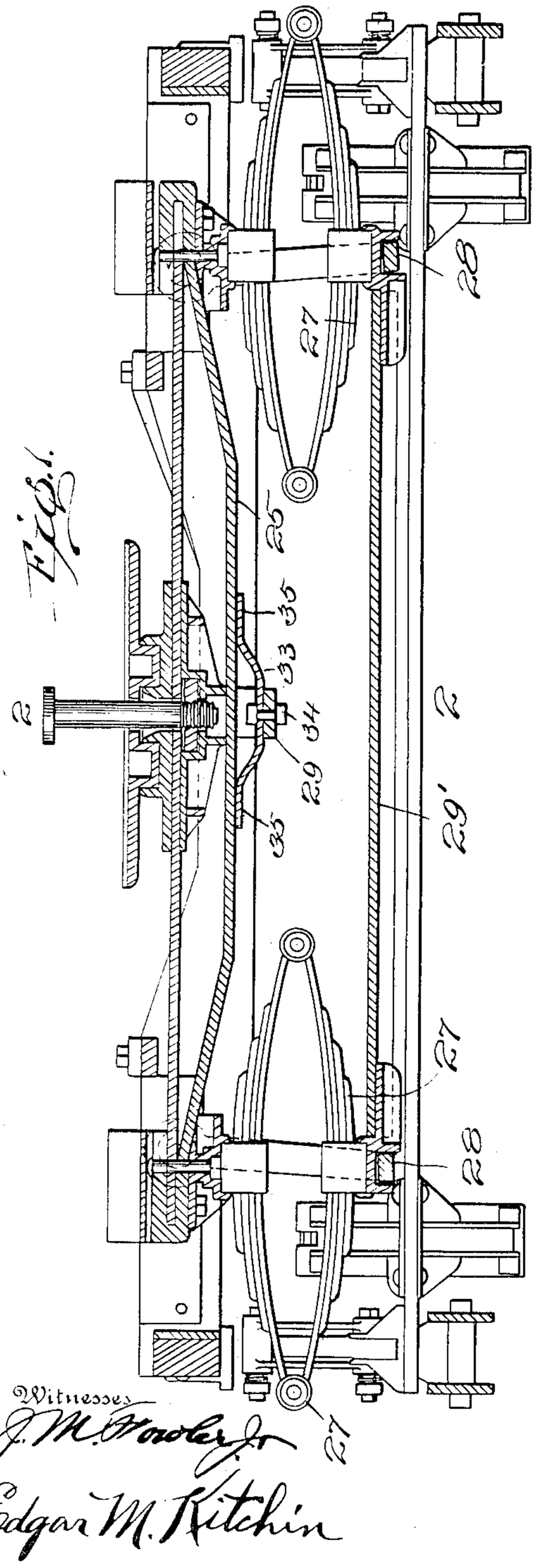
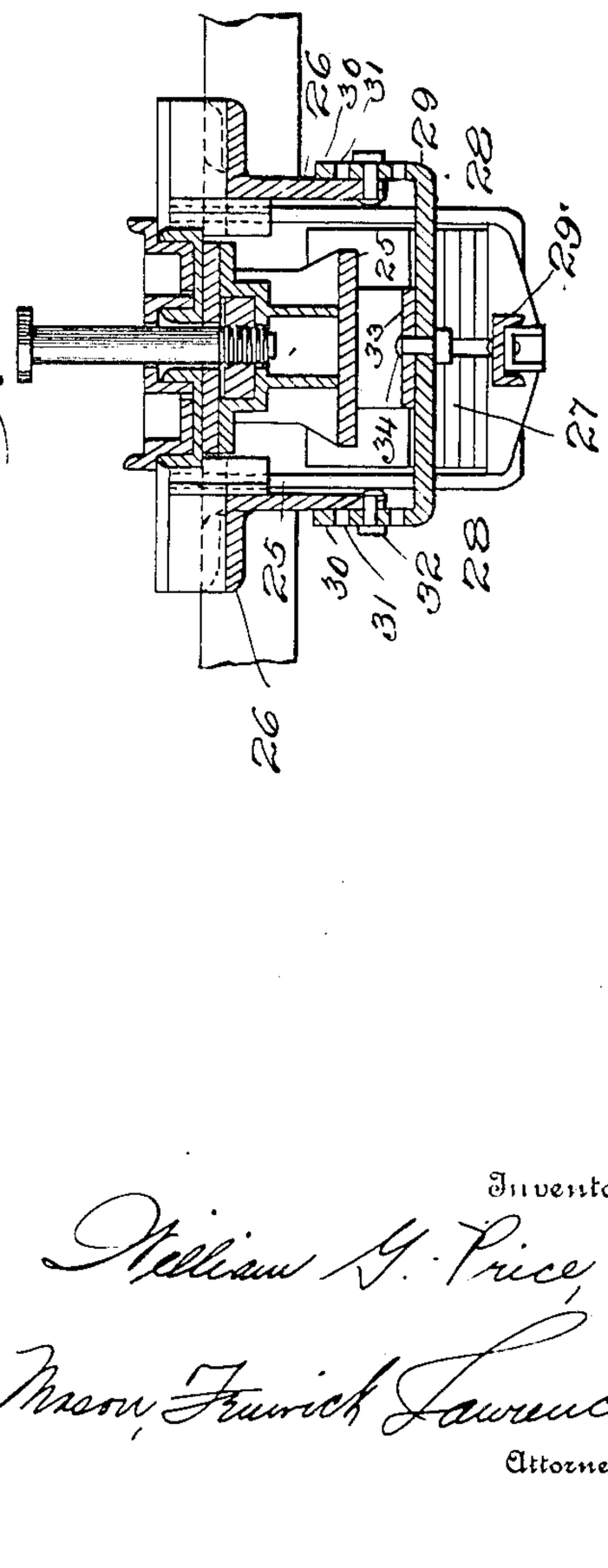


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

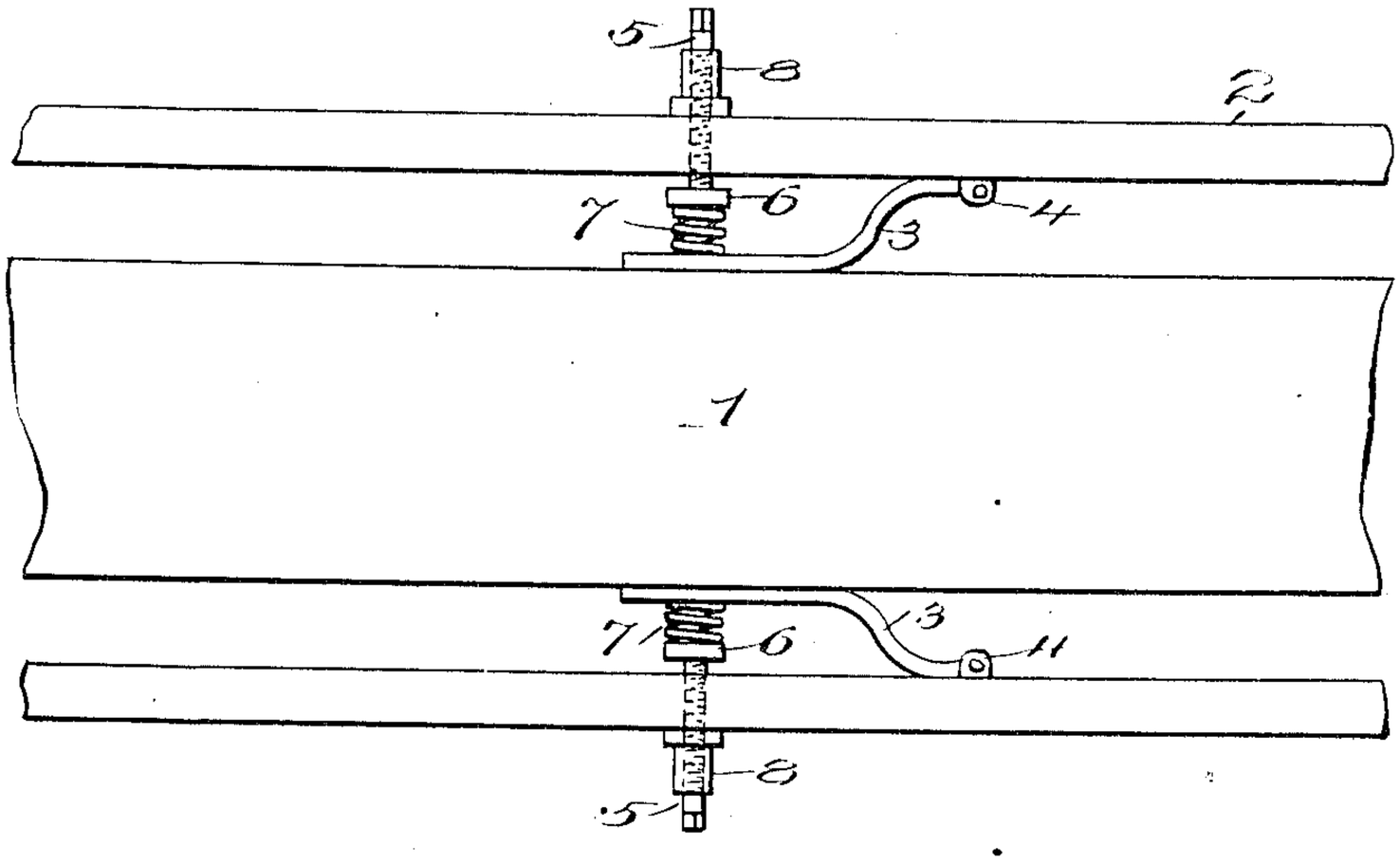


Fig. 4.

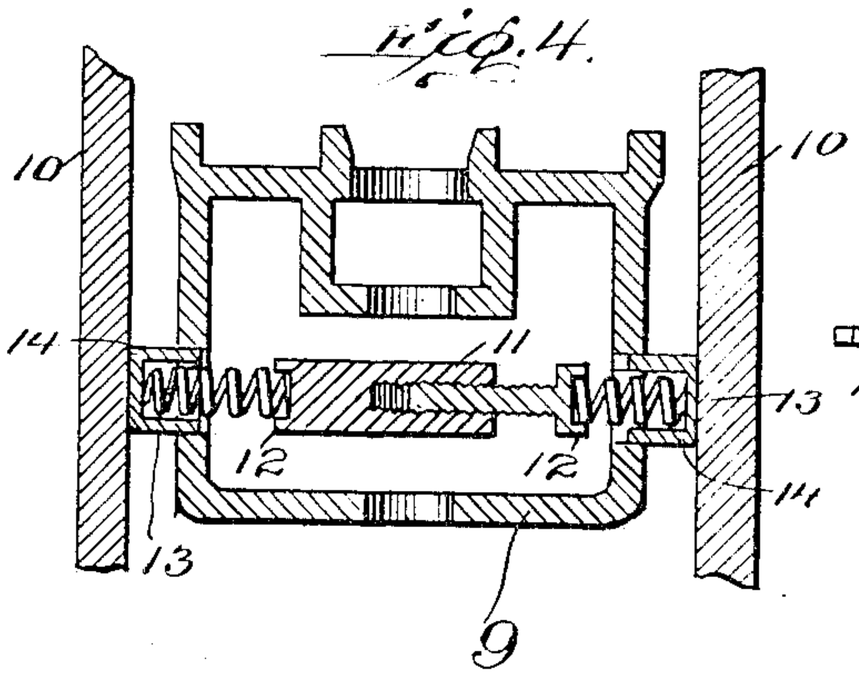
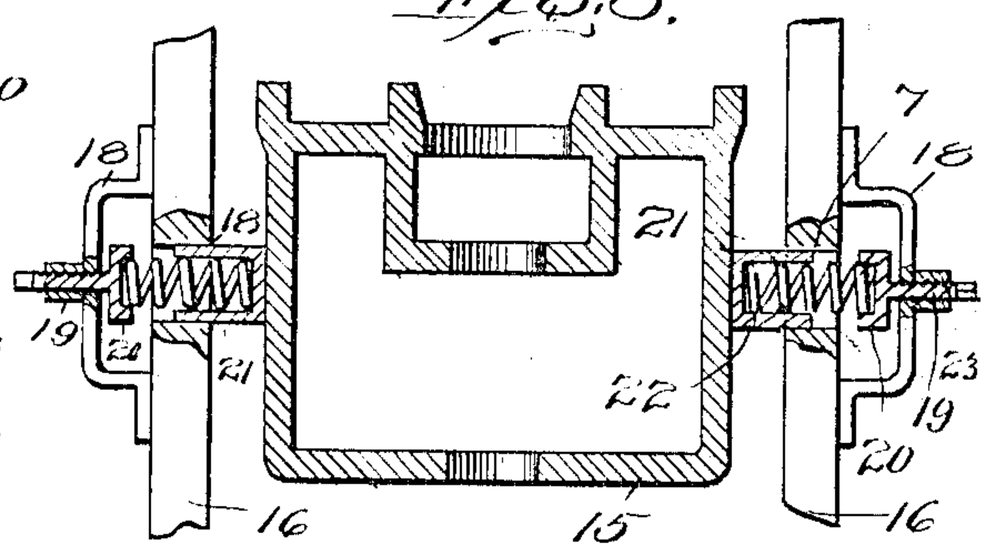


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM G. PRICE, OF PITTSBURG, PENNSYLVANIA.

BOLSTER SWING-DAMPER.

No. 818,642. Specification of Letters Patent. Patented April 24, 1906.

Application filed February 20, 1905. Serial No. 246,555.

To all whom it may concern:

Be it known that I, WILLIAM G. PRICE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Bolster Swing-Dampers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in controlling means for bolsters of car-trucks, and particularly to means for frictionally resisting movement of such bolsters and means for varying such friction.

One object in view is the obviation of the longitudinal swing of a bolster within a truck while leaving the bolster free to have all the necessary movement for absorbing shocks received during transit.

A further object is the provision of means for resisting the movement of a bolster in a ratio proportionate to the weight sustained by the bolster.

With these and many other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a transverse vertical section through a portion of the truck, illustrating an embodiment of the present invention. Fig. 2 represents a transverse vertical section taken on the plane indicated by line 2 2, Fig. 1. Fig. 3 represents a top plan view of a fragment of a pair of transoms and bolster provided with a modified embodiment of the present invention. Fig. 4 represents a transverse vertical central section through the embodiment of a further modification. Fig. 5 represents a similar view of a still further modification.

The present invention relates to the class of structures disclosed in my former application, Serial No. 232,504, filed by me on the 12th day of November, 1904, and has the same general object in view, with the addition that the present structures are designed for varying the friction upon the bolster, as will hereinafter fully appear.

In the application above referred to I have disclosed a bolster mounted to swing longitudinally between a pair of transoms and spring-arms frictionally engaging the said bolster for resisting the longitudinal movement thereof and, as will be seen by reference to the accompanying drawings, I employ in the present improved structure the same general conception with certain additions involving a longitudinally movably mounted bolster 25, arranged between the transoms 26 26, said bolster being supported by the usual elliptic springs 27 27, carried by the pivotally-mounted U-shaped hangers 28 28. The hangers 28 may be connected by the ordinary cross-bar 29', so as to swing together, the bolster 25 being thus left free to swing transversely of the truck carrying the same. Arranged transversely of and beneath the bolster 25 is a supporting-plate 29, which has its ends upturned, as at 30, each of said ends being formed with a series of apertures 31 31, any one of which is adapted to receive a bolt 32, extending through the corresponding transom 26. The plate 29 is thus adapted to be rigidly secured to the transoms 26 and may be adjusted toward or away from the same by removal of the bolts 32 and replacing the same in a higher or lower aperture 31, as desired. A spring 33 is carried by the plate 29 and preferably secured thereto by any suitable bolt 34, said spring 33 extending transversely of the plate 29 and longitudinally of the bolster 25, the spring 33 being formed with spring-arms extending in opposite directions from the bolt 34, the ends of the spring-arms being flattened, as at 35 35, and engaging the flattened under surface of the bolster 25 for frictionally resisting longitudinal movement of the bolster, the frictional contact of the said spring-arms against the bolster being designed to be increased or decreased by adjustment of the plate 29 by means of the apertures 31 and bolts 32.

In assembling a truck embodying the features of the present invention it is obvious that the spring 33 may be positioned as illustrated and the bolster 25 then placed upon the same, so that the spring 33 will be depressed by said bolster to a given degree relative to the weight of the bolster and the resistance of the springs 27 and spring 33. Thus it will be apparent that as a car provided with a truck embodying the features of the present invention becomes heavily loaded the bolster 25 will sink as the springs 27 give way under the increased weight, and such lowering of the bolster 25 will of course expand the arms of spring 33 and increase the friction of the flat portion 35, so that the

frictional resistance of the spring 33 to the longitudinal throw of the bolster 25 will be exactly proportionate to the weight upon said bolster. In other words, when only a small weight is being carried a lateral strain upon the bolster will only tend to throw the same longitudinally under a slight inertia, which may readily be overcome by a correspondingly-slight frictional resistance of the spring 35, and when the bolster 25 is subjected to enormous weight the tendency for movement under lateral strain will be of course correspondingly increased, and the frictional resistance of spring 33 to such movement will increase proportionally, due to the depression of said spring, whereby the damping effect of said spring 33 is proportionate to the force of the thrust of the bolster.

It is to be noted that if from any cause the resistance of the spring 33 is insufficient when the bolts 32 are passed through the apertures 31 of the upturned ends of the plate 29 such resistance may readily be increased by removing said bolts, raising said plate, and passing the bolts 32 through a higher set of apertures 31. Thus the frictional resistance of the spring 35 will not only be varied relative to the pressure upon the bolster 25, but may be altered and adjusted as required by the adjustment of the bolts 32.

As illustrating further embodiments of the present invention I have shown in Figs. 3, 4, and 5 several constructions which demonstrate various methods of frictionally resisting the longitudinal thrust of the bolster, means being provided for varying such resistance. For an understanding of such embodiment of the invention reference is had to the drawings, and first with respect particularly to Fig. 3, in which 1 indicates a bolster arranged between transoms 2 2 and engaged by arms 3 3, each of said arms 3 being pivoted, as at 4, to its respective transoms 2 and being provided with a relatively large flat face engaging the respective side of the bolster 1. Bolts 5 5 are threaded through the transoms 2, each bolt being arranged opposite the flat face of the respective arm 3 and each of said bolts carrying at its inner end a cup 6, inclosing the outer end of a coil-spring 7, the inner end of each of said springs engaging the flat face of the respective arm 3. A suitable jam-nut 8 is threaded onto each of the bolts 5 for locking the same in its given position, said nut being designed to be loosened and the bolt 5 threaded longitudinally inwardly or outwardly for increasing or decreasing the tension of the spring 7 and correspondingly increasing or decreasing the frictional engagement of the arm 3. When the bolts 5 have been given the desired adjustment, the nuts 8 are threaded home against the sides of the transoms 2 or against a bushing interposed between the respective nut and the respective side of the transom for binding the threads of the respective bolt and preventing movement of such bolt. In operation when from any unevenness in the track or other cause the bolster 1 is thrown to one side the frictional contact of the arms 3, while resisting such movement, will permit a sufficient amount for taking up the vibration and upon the return stroke of the bolster the further resistance of the arms 3 will bring the bolster to a standstill. It is to be observed that the frictional engagement of the arms 3 is such as to exert an even unchanging resistance to the movement of the bolster, and employment of said arms has the further advantage over structures heretofore known in the art of damping the movement of the bolster without resiliency, tending to prolong the longitudinal thrusts of the bolster, this advantage being also present in the structure seen in Figs. 1 and 2.

The modification seen in Fig. 4 embodies the conception disclosed in Fig. 3 and involves a bolster 9, arranged to swing between transoms 10 10. Mounted within the bolster 9 is a turnbuckle 11, designed to be lengthened or shortened by having one of its members threaded into the other. Each of the members is provided at its outer end with a cup 12, inclosing the inner end of a coil-spring 13. Each of the springs 13 extends through the respective side of the bolster 9 and carries at its outer end a cup or slide 14, slidingly contacting with the respective transom 10. In this embodiment of the invention it is only necessary to lengthen or shorten the turnbuckle 11 for increasing or decreasing the tension of the springs 13, whereby the friction of the slides 14 against the transoms 10 may be increased or decreased. The operation of the structure seen in Fig 4 is precisely the same as that seen in Fig. 3, and therefore need not be set forth in detail.

In Fig. 5 I have illustrated a further embodiment of the present invention involving a reversal of the parts disclosed in Fig. 4, consisting of a bolster 15, longitudinally movably arranged between the transoms 16 16. Each of the transoms 16 is apertured, as at 17, and carries a bracket 18. A bolt 19 is threaded through each bracket 18 and carries at its inner end a cup 20, each of the cups 20 inclosing the outer end of a coiled spring 21, each of said springs 21 extending through the respective apertures 17 and carrying at its inner end a cap or slide 22, frictionally contacting with the side of the bolster 15. A jam-nut 23 is carried by each of the bolts 19 for being threaded into contact with the respective bracket 18 for locking the respective bolt in any given adjusted position, each of said bolts being designed to be adjusted longitudinally by being threaded inwardly or outwardly through the respective bracket.

In each of the embodiments of the inven-

tion as disclosed in Figs. 3, 4, and 5 the friction-creating devices are adjustably mounted so that the same may be withdrawn for facilitating the introduction of the bolster to its normal position between the transoms, and after such positioning of the bolster the said friction devices may be adjusted to a position for frictionally resisting movement of the bolster. The structure seen in Figs. 1 and 2 of course is capable of permitting the bolster to assume its normal position readily, and after the bolster has assumed such position if it is found that greater friction is desired the supporting-plate for the spring may be adjusted for giving the required friction. Therefore in each of the embodiments herein disclosed the friction device is susceptible of admitting the bolster to its normal position and is designed then to be adjusted to the required condition for applying such resistance to the movement of the bolster as may afford the best results.

In each of the embodiments of the present invention is seen the generic conception of controlling the longitudinal swing of a bolster by friction and of varying the friction for governing the movement of the bolster to the greatest advantage.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring frictionally resisting movement of the same, and a support for said spring adjustable with respect to the bolster.

2. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, means for frictionally resisting movement of the bolster in varying degrees relative to the weight sustained by the bolster and means for adjusting said friction means.

3. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring arranged beneath said bolster and adapted to have its ends engage the bolster for frictionally resisting movement of the bolster, and vertically-adjustable means supporting said spring.

4. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring bent intermediate its length and having its ends resting against the bolster for frictionally resisting movement thereof, and a support engaging said spring intermediate the length thereof.

5. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring designed to frictionally engage said bolster and mounted adjustably with respect thereto.

6. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of an adjustable spring positioned for frictionally resisting movement of said bolster and for having its frictional contact with the bolster varied relative to the weight sustained by the bolster.

7. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring frictionally resisting movement thereof positioned for having its frictional contact varied relative to the vertical movement of the bolster and means adjustably sustaining said spring in position.

8. In a bolster-controlling apparatus, the combination with a bolster, of a spring designed to frictionally engage the same for resisting movement thereof, and means for supporting said spring at various points of adjustment toward and away from said bolster.

9. In a bolster-controlling apparatus, the combination of a movably-mounted bolster, and adjustable means engaging the under surface of said bolster for frictionally resisting movement thereof.

10. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of adjustable means fixedly sustained with respect to said bolster beneath the same and frictionally engaging the under surface of said bolster for resisting movement thereof.

11. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, and transoms fixed with respect thereto, of a plate secured to said transoms, and a spring carried by said plate arranged beneath said bolster for frictionally resisting movement thereof.

12. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of an adjustable spring normally fixed against movement with respect to said bolster in position for having its deflection varied relative to the vertical movement of the bolster.

13. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring bent intermediate its length in position with its ends resting against the bolster for frictionally resisting movement thereof, and an adjustable support for said spring engaging the spring at the point of the bend therein.

14. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring bent intermediate its length and having its ends resting against the bolster for frictionally resisting movement thereof, and supporting means for said spring, adjustably mounted and adapted to be adjusted transversely of the bolster.

15. In a bolster-controlling apparatus, the combination with a rigidly-mounted support, of a bolster movable with respect to said support, and a spring bent intermediate its length and having its ends frictionally engaging said bolster and its intermediate bent portion engaged by said support.

16. In a bolster-controlling apparatus, the combination with a movably-mounted bol-

ster, means for frictionally resisting movement of the bolster, means for adjusting said frictional means toward and away from the bolster for varying the operation of the friction means.

17. In an apparatus for controlling a bolster, the combination with a movably-mounted bolster, of a transom at the side thereof, a spring carried by said transom and frictionally resisting movement of said bolster, and means for facilitating adjustment of the spring for varying the tension of said spring.

18. In an apparatus for controlling a bolster, the combination with a movably-mounted bolster, of a transom at the side thereof, and a spring carried by said transom and engaging said bolster for frictionally resisting movement thereof, said spring being positioned for having its tension varied in a ratio proportionate to the vertical movement of the bolster.

19. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of an arm frictionally contacting therewith, and means for varying the friction of said arm.

20. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of an arm frictionally contacting therewith, and means for increasing the friction thereof.

21. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring fixed with respect to said bolster beneath the same and frictionally engaging the bolster for resisting movement thereof.

22. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring fixed with respect to the bolster and engaging the under surface thereof for frictionally resisting movement of the bolster.

23. In a bolster-controlling apparatus, the combination with a longitudinally movably mounted bolster and transoms fixed with respect thereto, of a plate secured to said transoms, and means carried by said plate and arranged beneath said bolster for frictionally resisting the longitudinal movement thereof.

24. In a bolster-controlling apparatus, the combination with a longitudinally movably mounted bolster and transoms fixed with respect thereto, of a plate carried by said transoms arranged transversely with respect to said bolster, and means carried by said plate for frictionally resisting movement of the bolster.

25. In a bolster-controlling apparatus, the combination with a movably-mounted bolster and transoms fixed with respect thereto, of a plate secured to said transoms transversely of and beneath said bolster, and a spring fixed to said plate and extending longitudinally of and frictionally engaging said bolster.

26. In a bolster-controlling apparatus, the combination with a longitudinally movably mounted bolster, of means for resisting the longitudinal movement thereof in a ratio directly proportionate to the weight sustained by the bolster and means adjustable with respect to said bolster for varying said resistance.

27. In a bolster-controlling apparatus, the combination with a longitudinally-movable bolster, of adjustable means for frictionally damping the longitudinal movement of the bolster, the friction of said damping means varying in a ratio proportionate to the weight sustained by the bolster.

28. In a bolster-controlling apparatus, the combination with a movably-mounted bolster and a spring arranged longitudinally of the bolster and engaging the under face thereof and a support arranged transversely of the bolster beneath the same carrying said spring.

29. In a bolster-controlling apparatus, the combination with a swinging bolster, of a spring disposed for assisting in sustaining the weight of the bolster and arranged to frictionally resist the longitudinal or swinging movement of the bolster.

30. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring having flat surfaces directly engaging the bolster and arranged to frictionally damp the movement thereof in a ratio proportionate to the rise and fall of the bolster.

31. In a bolster-controlling apparatus, the combination with a movably-mounted bolster and a support spaced therefrom, of a spring interposed between the bolster and support and frictionally resisting longitudinal or swinging movement of the bolster, the wear due to friction being taken up directly by the spring.

32. In a bolster-controlling apparatus, the combination with a movably-mounted bolster, of a spring positioned beneath the same and an adjustable support extending beneath said bolster and sustaining said spring in position for frictionally resisting movement of the bolster.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM G. PRICE.

Witnesses:
FRED SCHUTTE,
WALTER BURKE.