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S. B. HASELTINE

FRICTION SHOCK ABSORBING MECHANISM

Filed Aug. 7, 1920

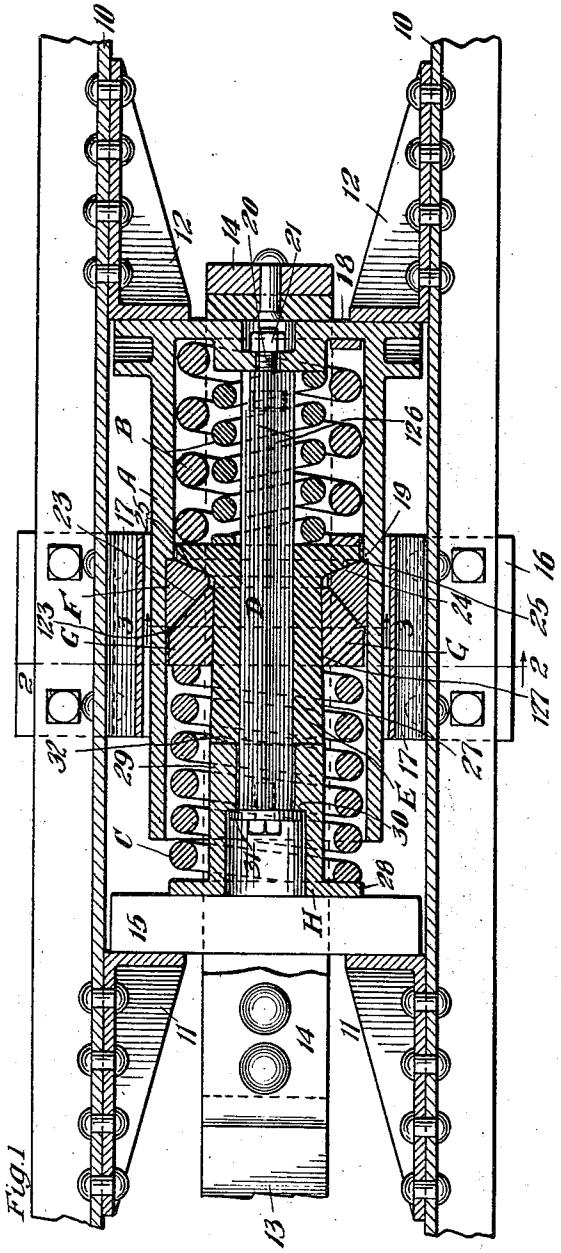


Fig. 1

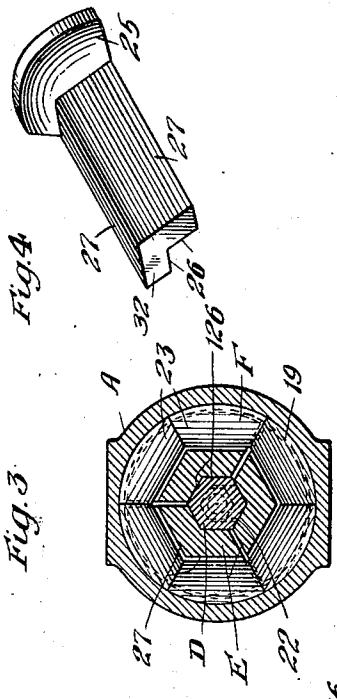


Fig. 4

Fig. 3

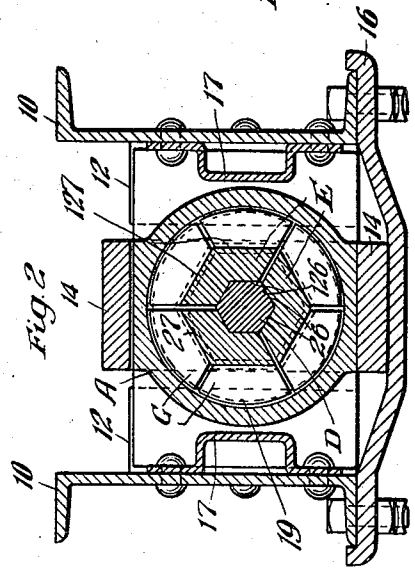


Fig. 2

Witnesses

Wm. Geiger

Inventor

Stacy B. Haseltine

By Geo. D. Haight

Atty.

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UNITED STATES PATENT OFFICE.

STACY B. HASELTINE, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM H. MINER, OF CHAZY, NEW YORK.

FRICTION SHOCK-ABSORBING MECHANISM.

Application filed August 7, 1920. Serial No. 401,901.

To all whom it may concern:

Be it known that I, STACY B. HASELTINE, 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 Friction Shock-Absorbing Mechanisms, 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 friction shock absorbing mechanisms.

The object of the invention is to provide a high capacity friction shock absorbing mechanism especially adapted for railway draft riggings and wherein are obtained large wearing frictional areas and a combined graduated frictional resistance and straight spring resistance.

In the drawing forming a part of this specification, Figure 1 is a horizontal longitudinal sectional view of a portion of a railway draft rigging showing my improvements in connection therewith. Figures 2 and 3 are vertical transverse sectional views taken on the lines 2—2 and 3—3 respectively of Figure 1. And Figure 4 is a detail perspective of one of the friction shoes.

In said drawing, 10—10 denote channel shaped center or draft sills of a railway car to the inner faces of which are secured front stop lugs 11 and rear stop lugs 12. A portion of a drawbar is indicated at 13 to which is rigidly attached a yoke 14 of well known form. The shock absorbing mechanism proper, hereinafter described, and a front follower 15 are disposed within the yoke. The yoke and movable parts therein are supported by a detachable saddle plate 16. The inner faces of the sills are also preferably provided with inwardly offset guide plates 17—17 to maintain the shell in central location, as clearly appears from Figure 2.

The improved shock absorbing mechanism, as shown, comprises a preferably cylindrical casting A; a rear spring resistance B; an outer spring resistance C; a friction post D; a plurality of friction shoes E—E; a wedge ring F; a plurality of combined friction shoes and wedges G; and a pressure-transmitting member H.

The casting A, as shown, is preferably of cylindrical form and provided at its rear end with an integral wall 18 adapted to act as the rear follower of the mechanism. Approximately at its center and on the interior thereof, the casting A is formed with an annular shoulder indicated at 19 to form a seat for the ring F to limit the inward movement of the latter with respect to the casting A.

The friction post D, as shown, is of hexagonal cross section and is rigidly but detachably secured at its rear end to the casting A by a bolt 20 and nut 21. The post D is formed with an open-sided slot indicated at 22 in Figure 3 to permit the head of the bolt being slipped therein, the shank of the bolt passing through a suitable opening in the rear wall of the casting A.

The ring F is shown as made in a single piece to thereby promote economy of manufacture and strength in operation. On its outer side, i. e., the side nearest the open end of the casting A, it is formed with a plurality of wedge faces 23—23, the same corresponding in number to the number of sides on the post D. On its inner side, the ring F is beveled as indicated at 24 to cooperate with correspondingly beveled flanges 25 on the inner ends of the shoes E.

The shoes E are preferably three in number and each is formed on its inner side with a pair of longitudinally extending friction surfaces 26 intersecting at an angle of 120° and adapted to cooperate with two adjacent corresponding longitudinally extending friction surfaces 126—126 on the post D. On its outer side, each shoe E is provided with another pair of longitudinally extending flat friction surfaces 27—27 arranged slightly forwardly diverging with reference to the surfaces 26. Each surface 27 is adapted to cooperate with a corresponding longitudinally extending flat friction surface 127 on a combined wedge-shoe G. The latter are formed with wedge faces 123 adapted to cooperate with the wedge faces 23 of the ring F.

The spring B preferably consists of inner and outer coils, the same bearing at their forward ends against the flanged inner ends of the shoes E.

The pressure-transmitting member H is formed at its outer end with an annular flange 28 contacting directly with the follower 15 and is extended inwardly thereof with a hollow stem 29 adapted to loosely surround the outer end of the post D. The stem

29 has an inner shoulder 30 with which is adapted to cooperate a washer 31 detachably bolted to the outer end of the post D so as to hold the parts in assembled relation. It will be noted that the inner end of the stem 29 engages the outer ends 32 of the shoes E.

The spring C is interposed between the flange 28 of the member H and the outer ends of the wedge-shoes G.

The operation is as follows, assuming an inward or buffing movement of the drawbar. As the follower 15 is moved inwardly the movement thereof is communicated to the shoes E through the member H. During the movement of the shoes E, it will be noted that they are resisted directly by the spring B. In addition, the spring C is gradually compressed between the flange 28 and the wedge-shoes G so that the latter are gradually or progressively wedged inwardly by the ring F into tighter and tighter frictional engagement with the outer surfaces of the shoes E, there being also a slight additional wedging action due to the diverging faces 27 of the wedge shoes E co-acting with surfaces 127 of the shoes G. This in turn causes the shoes E to be pressed more tightly against the post D, thus generating friction on all surfaces of the post, all surfaces 26, all surfaces 27, and all surfaces 127. The length of the casting A is preferably so made that it will limit the inward movement of the follower 15 and thereby provide a strong column to transmit the ultimate excessive blows. In release, it will be noted that the member H is free to move outwardly toward normal full released position independently of the shoes E and in this way the spring C is free to extend to its normal condition, thus relieving the pressure on the wedge-shoes G. This permits the shoes E being projected outwardly under the influence of the spring B.

From the preceding description, it will be noted that the frictional resistance is a gradually increasing one proportionate to the degree of compression of the spring C. The resistance afforded by the spring B is merely that of an ordinary spring without modification. Inner and outer sets of friction surfaces on the shoes E are provided thus giving unusually large wearing areas and promoting the life of the mechanism.

I have herein shown and described what I now consider the preferred manner of carrying out the invention, but the same is merely by way of illustration and all changes and modifications are contemplated that come within the scope of the claims appended hereto.

I claim:

1. In a friction shock absorbing mechanism, the combination with a central friction post; of a plurality of friction shoes having inner friction surfaces cooperable with said post and provided also with outer friction surfaces; wedging means disposed exteriorly of the shoes; wedge-shoes cooperable with said wedging means and the first named friction shoes, said wedge shoes and friction shoes sliding relatively during a compression stroke, and spring means encircling said post for restoring said friction shoes upon removal of the actuating force.

2. In a friction shock absorbing mechanism, the combination with an outer shell having wedging means on the interior thereof; of a friction post extending longitudinally within the shell and fixed with respect thereto; a plurality of friction shoes disposed around the post and having both inner and outer friction surfaces; friction wedge-shoes interposed between said wedging means and the first named friction shoes and cooperable with the friction surfaces on the outer sides of the latter; and spring means for restoring the friction shoes to normal position upon removal of the actuating force.

3. In a friction shock absorbing mechanism, the combination with a friction post; of a plurality of friction shoes disposed around said post and provided with friction surfaces on the inner and outer sides thereof; spring means for directly resisting relative movement between said shoes and post; wedging means disposed exteriorly of the shoes; friction wedge-shoes interposed between and cooperating with said wedging means and first named friction shoes; and spring means, independent of the first named spring means, cooperable directly with said wedge-shoes and arranged to be compressed proportionately to the movement of the first named friction shoes on the post.

4. In a friction shock absorbing mechanism, the combination with a friction post; of a plurality of friction shoes disposed around said post and provided with friction surfaces on the inner and outer sides thereof; wedging means disposed exteriorly of the shoes; combined wedges and friction shoes interposed between said wedging means and the first named friction shoes; a member adapted to transmit actuating pressure to said first named friction shoes and formed independently of the latter; and a spring interposed between said member and the combined wedge-shoes.

5. In a friction shock absorbing mechanism, the combination with a friction shell having wedging means on the interior thereof; of a friction post centrally disposed within the shell; a plurality of friction shoes disposed around said post and having both inner and outer sets of friction surfaces; a plurality of wedge friction shoes interposed between said wedg-

ing means and the first named friction shoes; a spring interposed between one set of ends of the first named friction shoes and said shell; means for transmitting pressure to said first named friction shoes; and a spring resistance interposed between said means and said wedge-shoes, said shell being adapted to act as a column at the end of the permissible compressive action.

6. In a friction shock absorbing mechanism, the combination with a shell having a centrally disposed friction post; of a wedge ring mounted within said shell and prevented against movement in one direction relatively thereto; a plurality of friction shoes disposed around said post; a spring resistance interposed between the inner ends of said shoes and the shell; a plurality of wedge-shoes interposed between said ring and first named friction shoes; a pressure-transmitting member engaging the other ends of said first named friction shoes; and a spring resistance interposed between said pressure-transmitting member and the wedge-shoes.

7. In a friction shock absorbing mechanism, the combination with a central friction member having peripherally located longitudinally extending friction surfaces; of a plurality of friction shoes encircling said friction member and frictionally cooperable with said friction surfaces thereof; an outer casing; wedging means fixed with respect to said casing during a compression stroke, between said casing and friction shoes and located on the interior of the casing intermediate the ends thereof; movable wedging means co-acting with said first named wedging means, operative to press said friction shoes against said member; and spring means disposed within said casing.

8. In a friction shock absorbing mechanism, the combination with a friction post; of a plurality of slightly tapering friction shoes disposed around said post and provided with friction surfaces on the inner and outer sides thereof; spring means for directly resisting relative movement between said shoes and post; wedging means disposed exteriorly of the shoes; friction wedge shoes interposed between and cooperating with said wedge means and first named friction shoes; and spring means independent of the first named spring means, cooperable directly with said wedge shoes and arranged to be compressed proportionately to the movement of the first named friction shoes on the post.

In witness that I claim the foregoing I have hereunto subscribed my name this 13th day of July, 1920.

STACY B. HASELTINE.

Witness:

CARRIE GAILING.