

G. WESTINGHOUSE.
FRICTION DEVICE.

APPLICATION FILED NOV. 28, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

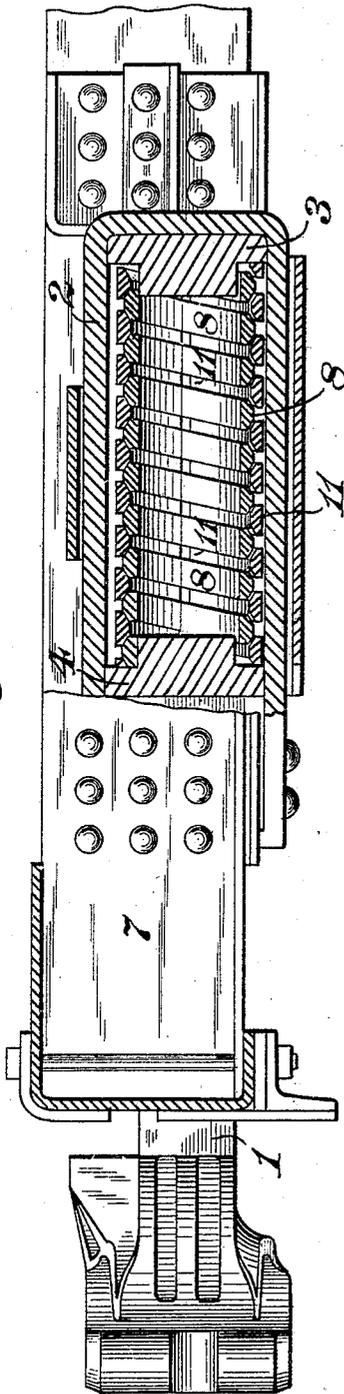
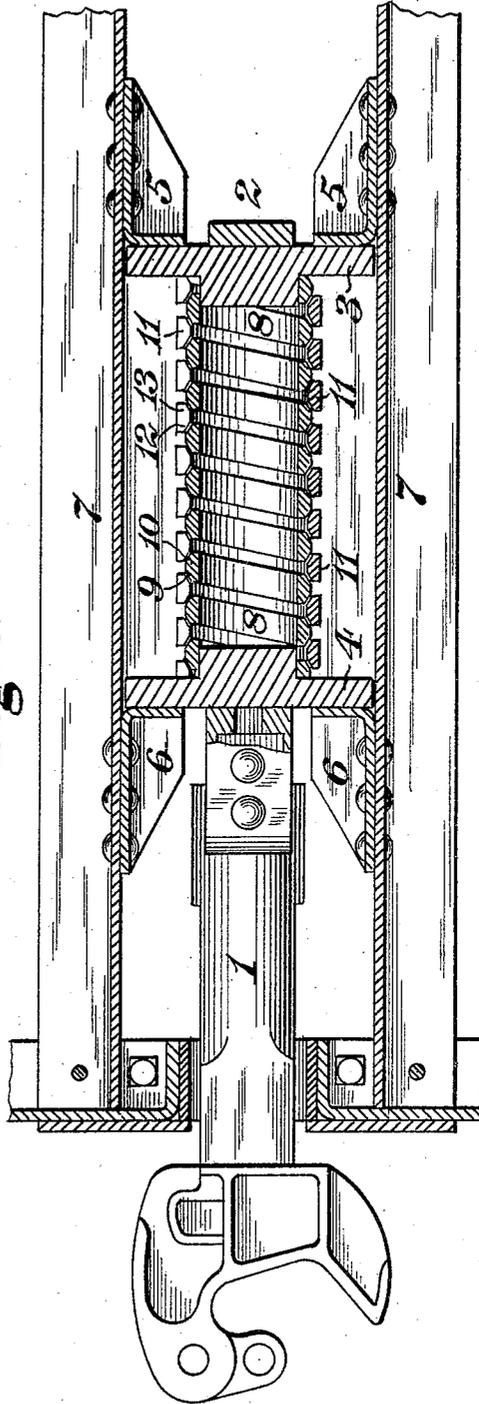


Fig. 2.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

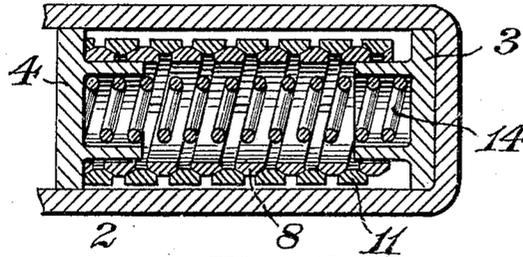


Fig. 5.

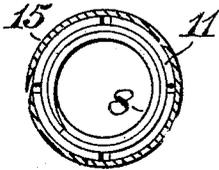


Fig. 4.

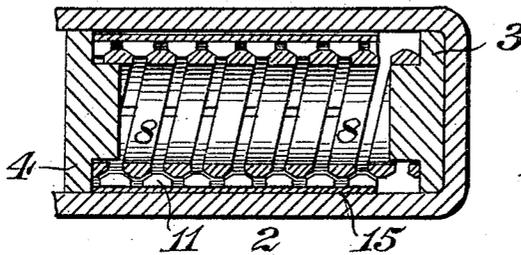


Fig. 6.

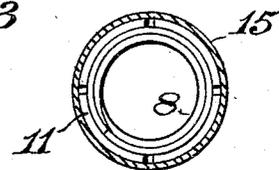


Fig. 7.

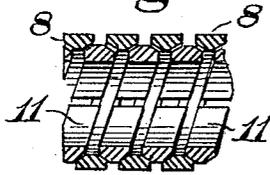


Fig. 8.

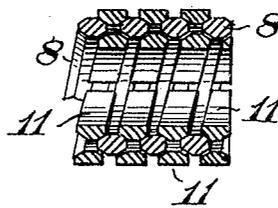
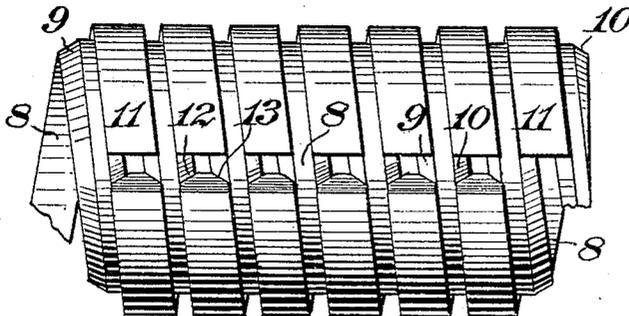


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE WESTINGHOUSE, OF PITTSBURG, PENNSYLVANIA.

FRICITION DEVICE.

SPECIFICATION forming part of Letters Patent No. 794,761, dated July 18, 1905.

Application filed November 28, 1902. Serial No. 133,080½.

To all whom it may concern:

Be it known that I, GEORGE WESTINGHOUSE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Friction Devices, of which improvement the following is a specification.

My invention relates to friction devices generally, and more particularly to those appliances which are employed to resist and absorb strains of varying force, such as friction draw-gear and buffing apparatus or spring-dampening devices for cars; and it has for its primary object to provide an improved construction of simple and compact form whereby various parts heretofore used may be dispensed with.

To this end my invention, generally stated, consists in a combined spring and friction device comprising a continuous helical spring extending between the abutments or followers subject to the strain to be resisted and having its adjacent coils or convolutions provided with frictional surfaces adapted to engage with corresponding surfaces on a cooperating friction member located between the adjacent coils.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section through a draw-gear and buffing apparatus, illustrating an application of my invention; Fig. 2, a horizontal section through the same; Fig. 3, a similar section showing an additional spring for receiving preliminary strain; Fig. 4, a similar section illustrating a modification; Figs. 5 and 6, transverse sections showing, respectively, a split and an unbroken inclosing casing; Fig. 7, a longitudinal section showing the friction-rings located inside the coils of the spring; Fig. 8, a similar section showing friction-rings located both outside and inside the spring, and Fig. 9 a view in elevation of a spring and surrounding helical friction-rings.

In the application of my invention in a draw-gear and buffing apparatus the draw-bar 1 is provided with the ordinary draft strap or yoke 2, which extends around the follower-plates

3 and 4, these plates being located between the pairs of draw-bar stops or draft-lugs 5 and 6 on the sills 7 of the car-frame.

My improved spring and friction device, which is located within the draft-strap and between the follower-plates, comprises a continuous helical spring 8, extending between the followers and on which are formed inclined friction-faces 9 and 10 and friction members 11, which cooperate with the friction-faces of the spring, said friction members being shown in Figs. 1, 2, 3, and 9 as helical rings located between adjacent coils of the spring and having friction-faces 12 and 13, inclined correspondingly with and adapted to engage the friction-faces 9 and 10, respectively, of the spring 8.

The friction-rings 11 are preferably made of resilient material and are formed with a camber or pitch corresponding with that of the helical spring and located on the outside of the spring-coils, as shown in Figs. 1 and 2. They may, however, be located inside the coils of the spring, as shown in Fig. 7, or both outside and inside thereof, as shown in Fig. 8. While it may be preferable to use a plurality of friction-rings following each other closely along the helix, it is evident that any desired number or length of such resilient helices may be employed and that the same may be located at any desired point or points in the length of the helical spring.

In order to provide for a preliminary compression of the helical spring before the friction-rings are brought into action, the rings are preferably loosely mounted between the spring-coils—that is, the width of a ring between its frictional faces is less than the normal distance between the corresponding frictional faces of adjacent coils of the spring, as clearly indicated in Figs. 1 and 2. By this means preliminary strains and those which are of minor degree may be resisted and absorbed by the compression of the spring without producing wear upon the friction-rings. Another means for affording preliminary spring action is shown in Fig. 3, in which an additional spring 14, slightly longer than the helical spring 8, is located within the same and between the follower-plates. With this construc-

tion the friction-rings 11 are made to fit snugly between the coils of the spring 8 and the preliminary strains are taken by the spring 14. When greater strains are applied, the combined spring and frictional resistance of the spring 8 and the friction-rings 11 is brought into action.

As shown in Figs. 4, 5, and 6, the friction members 11 are composed of sectional or divided rings or blocks, which are held in place by means of an inclosing cylindrical casing 15, which may be either split, as shown in Fig. 5, or unbroken, as shown in Fig. 6. With this form of construction the friction members may comprise any number of short sections or blocks and may be formed of other than resilient material, since the inclosing casing retains each of the frictional members in its position between adjacent coils of the helical spring. The casing is made of a proper length to allow for the full movement of the follower-plates.

In operation, referring to Figs. 1 and 2, when the bar 1 is subjected to a draft or buffing strain one of the follower-plates 3 4 is forced toward the other, thereby compressing the helical spring 8 between said follower-plates. By reason of the friction-rings being loosely mounted between the coils of the spring the preliminary movement of the follower-plates merely compresses said spring, thus bringing the adjacent coils closer together, so that under a further movement, due to greater strain, the inclined friction-faces of the spring engage those of the friction-rings and a large amount of yielding frictional resistance is developed, which will absorb and dissipate all heavy strains and shocks to which the draw-gear may be subjected without injury to the parts of the apparatus or framing of the car.

It will be evident that my improved combined spring and friction device comprises a very simple and compact apparatus in which the spring itself forms one of the friction members, thus dispensing with all unnecessary parts, while at the same time securing a very efficient and durable apparatus.

While I have particularly described my improvement as applied in a draw-gear appliance, it is not limited to such application, but may also be employed in any location where it is desired to provide a yielding resistance to counteract and absorb shocks and heavy strains.

I claim as my invention and desire to secure by Letters Patent—

1. A friction-spring device comprising a continuous helical spring extending between abutments or followers, and a resilient helix

located between the convolutions of the helical spring.

2. A friction-spring device comprising a continuous helical spring extending between abutments or followers and having inclined frictional surfaces upon its adjacent convolutions, and a resilient helix provided with cooperating frictional surfaces and located between said convolutions.

3. A friction-spring device comprising a continuous helical spring extending between abutments or followers and having frictional surfaces upon its adjacent convolutions, and a resilient friction member located between the adjacent convolutions of said helix and engaging therewith.

4. The combination with abutments or follower-plates, of a continuous helical spring extending between said followers and having friction-faces, and a resilient friction member located between adjacent coils of said spring and having cooperating frictional faces.

5. A frictional device comprising a continuous helical spring extending between the followers and having inclined friction-faces on its adjacent coils, in combination with a plurality of slip friction-rings located between adjacent coils of the spring and having corresponding inclined friction-faces engaging those of the spring.

6. A friction device comprising a continuous helical spring extending between the followers and provided with inclined frictional faces, in combination with a friction member located between adjacent coils and having cooperating frictional faces, the width of the friction members between said faces being less than the normal distance between the corresponding faces on adjacent coils of the spring.

7. A friction device comprising a continuous helical spring extending between the followers and having inclined frictional faces on its adjacent coils, in combination with a helical friction member loosely mounted between adjacent coils and having cooperating frictional faces adapted to engage those of the spring when the latter is compressed.

8. In a friction device, outer and inner coiled members, and a friction member located between the coiled members and brought into frictional engagement with both when the device is compressed.

In testimony whereof I have hereunto set my hand.

GEO. WESTINGHOUSE.

Witnesses:

EDWARD A. WRIGHT,
JAS. B. MACDONALD.