No. 773,155. PATENTED OCT. 25, 1904.

C. J. O'NEILL.

FRICTION DRAFT GEAR.

APPLICATION FILED DEC. 21, 1903.

NO MODEL.

Fig. 1.

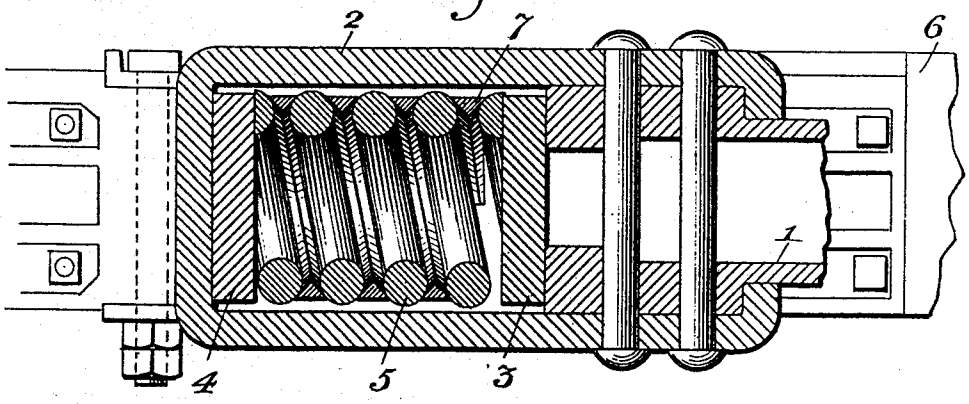


Fig. 2.

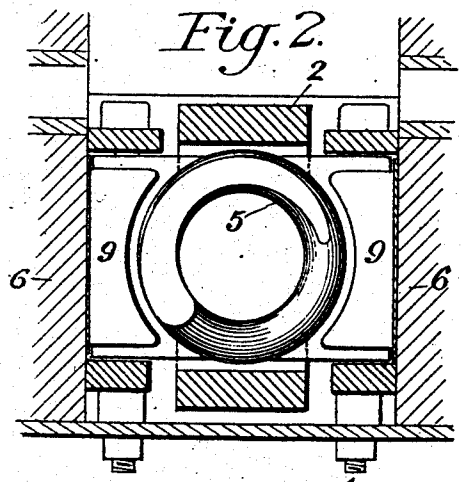


Fig. 3.

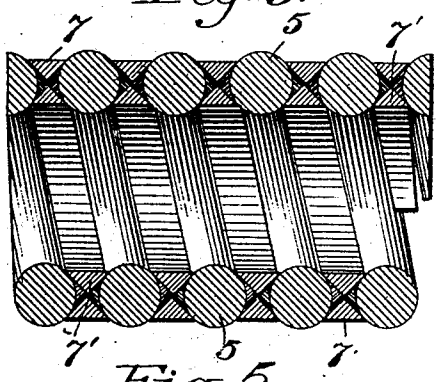


Fig. 4.

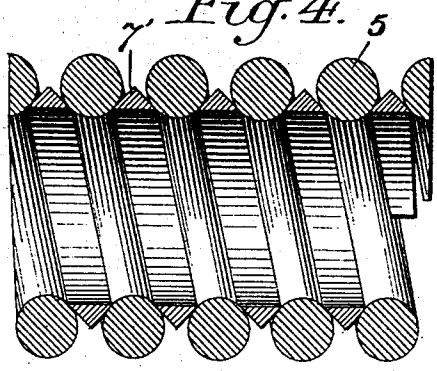
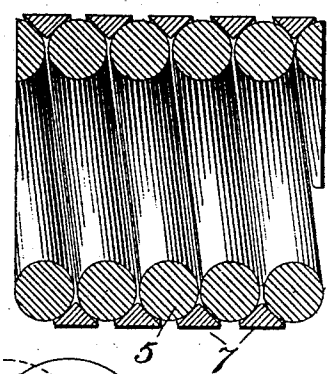


Fig. 5.



Witnesses:

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Fig. 6.

No. 773,155. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

CHARLES J. O'NEILL, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO STANDARD COUPLER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

FRICTION DRAFT-GEAR.

SPECIFICATION forming part of Letters Patent No. 773,155, dated October 25, 1904.

Application filed December 21, 1903. Serial No. 186,025. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. O'NEILL, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Friction Draft-Gear; 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.

My invention relates to that class of draft-rigging in which the frictional resistance is employed to supplement the usual spring resistance to absorb or reduce the shocks and strains incident to buffing and draft in the operation of heavy railway-cars.

The object of my invention is to provide a simple, efficient, and inexpensive draft and buffing apparatus that may be applied to the standard car constructions without in any way changing or modifying the latter; and to this end the invention comprises a draft-gear, preferably provided with the usual standard helical spring-resistance member and a second spring member which is disposed between the coils or convolutions of the first-mentioned spring member in frictional engagement therewith, so that upon compression or recoil of the main spring a heavy frictional resistance between the contacting surfaces of the springs is produced.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional side elevation of a standard draft and buffing gear with my improved friction-spring applied thereto. Fig. 2 is a transverse section of the same. Fig. 3 illustrates a modification in which a friction-spring is applied to both the exterior and interior of the main spring. Fig. 4 shows a friction-spring applied to the interior only of the main spring. Fig. 5 represents the arrangement of spring shown in Fig. 1 when under compression. Fig. 6 is a diagram illustrating the relation of the engaging spring members in their normal and compressed conditions, respectively.

Referring to the drawings, 1 indicates the draw-bar of a railway-car, which is provided at its outer end with the usual coupler-head (not shown) and is connected at its inner end to a draft strap or yoke 2 of the ordinary or standard construction. Within the strap 2 are mounted the usual front and rear followers 3 and 4, between which is interposed a standard draft-spring 5, said followers bearing in turn upon the usual front and rear draw-bar stops mounted upon the sills or draft-timbers of the car. It is well understood that the followers move in a longitudinal direction within the yoke, the rear follower under the influence of draft strains and the forward follower under the influence of buffing or check strains, and these movements cause a corresponding compression of the helical draft-spring 5. Under normal conditions of operation with heavy cars the buffer-springs are not powerful enough to take up the excessive buffing shocks and draft strains, and it has been found necessary to augment the resisting power of the buffer-springs by the introduction of frictional-resistance members in the draft-rigging. The addition of these subsidiary resistance members necessitates various changes and modifications in the standard draft apparatus, so that even under the most favorable conditions when the new apparatus is to be applied the old standard rigging is removed and discarded, thereby entailing much labor and heavy expense.

In the practice of my invention no change in the standard rigging is necessary in order to apply the additional frictional-resistance member thereto, and the relation of the latter to the ordinary draft and buffing spring is such that said additional resistance member may be quickly placed in operative position in the draft apparatus either before or after the latter is attached to the car with the loss of little time, at a minimum cost of labor and materials, and without the usual requisite of care and skilful adjustment by expert mechanics to insure efficient operation. To these ends I provide an auxiliary friction-spring 7,

preferably triangular in cross-section, which auxiliary spring occupies the spaces between successive turns or convolutions of the main spring 5, so that the contiguous faces of the respective springs engage with a frictional pressure that is enormously increased under relative movement of the two springs. When the spring 5 is expanded, as in Figs. 1, 3, and 4, the auxiliary spring closely hugs the coils thereof and opposes any movement of compression. As the spring 5, however, yields under the strains of buffing or draft the coils of spring 7 are forced out laterally from between the engaging coils and slide with heavy frictional resistance on the surface of the main spring. In the forms shown in Figs. 1, 3, and 5 coil 7 is expanded radially and contracted longitudinally, and the interiorly-arranged auxiliary coil 7′ in Figs. 3 and 4, under like conditions, is compressed in a direction substantially transverse to its axis and also in the direction of its length, the transverse compression resulting in a bodily endwise movement of the spring in the direction of its convolutions, which greatly increases the friction between the springs. Of course the employment of both an outside auxiliary spring, as 7, and an inside spring, as 7′, will add the spring and frictional components of both to the normal power of spring 5 in resisting movement of the followers 3 and 4. When the strain on the draw-bar 1, whether of tension or compression, is released, spring 5 tends to return instantly to its normal expanded condition; but its movement to accomplish this is strongly resisted by the powerful frictional pressure exerted by the auxiliary springs 7 and 7′, respectively, which act as efficient dampers or retarders to restrain the too rapid and violent recoil of the main spring and causes the latter to expand slowly, smoothly, and without shock or jar to the connected parts of the draft apparatus and the car.

While it may be generally expedient to employ my friction-spring member, whether exteriorly, interiorly, or jointly applied, in combination with a standard draft-spring 5 of the usual round cross-section, it is to be understood that the invention is not limited to any particular form of spring, as it may be found advantageous under certain conditions to provide the said spring 5 with flat surfaces to engage the faces of the auxiliary springs, and, if desired, the contour or configuration of the latter spring may be changed to meet varying conditions of practice. Furthermore, the auxiliary spring members may, if desired, be divided or applied in smaller sections to the main spring, each section being capable of independent operation, but each interposing its spring and frictional components of resistance to the movement of the main spring in either direction.

In order to introduce an additional frictional resistance to the movement of the followers 3 and 4, stationary friction-blocks 9 9 are mounted on the draft-sills 6 6 adjacent to the spring 5. These blocks 9 have concave wearing-faces, preferably lined with hard metal, which faces conform to and are engaged by the outer surface of the auxiliary spring 7 when said spring has been expanded by the compression of the main spring. The blocks 9 9 may be so adjusted that they are engaged by the coils of spring 7 just before the spring 5 has completed its inward movement, when said coils bind hard on the blocks, and the final movement of the spring 5 before it "goes solid" under full compression is resisted by the sliding friction between spring 7 and blocks 9.

Having thus described my invention, what I claim is—

1. In a draft and buffing apparatus, a main helical spring located between the followers, and an auxiliary helical spring, having a triangular cross-section, located between the convolutions of the main spring and having a frictional engagement therewith.

2. In a draft and buffing apparatus, a main helical spring located between the followers, and auxiliary helical springs, having triangular cross-sections, located interiorly and exteriorly of the main spring and having frictional engagement with said main spring.

3. In a draft and buffing apparatus, a main spring member located between the followers, an auxiliary spring member in frictional engagement therewith, and a stationary friction member with which said auxiliary spring engages under movement of both springs.

4. In a draft and buffing apparatus, a main helical spring located between the followers, an auxiliary helical spring in frictional engagement with said main spring, and stationary friction members adapted to be engaged by the auxiliary spring as the diameter of the latter is varied under movement of said springs.

5. In a friction device, inner and outer compressible members, one of which is composed of triangular bar-metal, substantially as described.

6. In a friction-spring device, the combination with an element resilient in a plane transverse of the line of strain to be resisted and having a friction-surface and a coöperating element having a friction-surface, of a stationary member having a friction-surface extending substantially parallel with the line of strain to be resisted and in position to coöperate with the transversely-elastic element; substantially as described.

7. In a friction-spring device, the combination with a plurality of elements both resilient in a plane transverse of the line of strain to be resisted and having coöperating friction-

surfaces, of a stationary member having a friction-surface with which one of said elastic elements coöperates; substantially as described.

8. In a friction-spring device, the combination with a plurality of elastic coils nested together and having coöperating friction-surfaces, of a stationary member having a friction-surface with which one of said coils cooperates; substantially as described.

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

CHARLES J. O'NEILL.

Witnesses:

G. P. RITTER,

EDWIN S. CLARKSON.