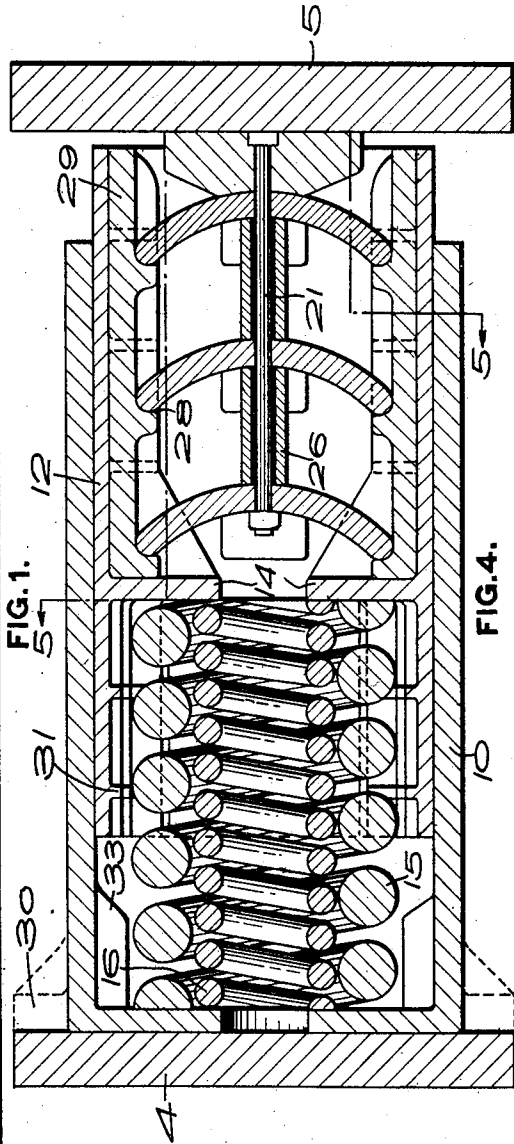
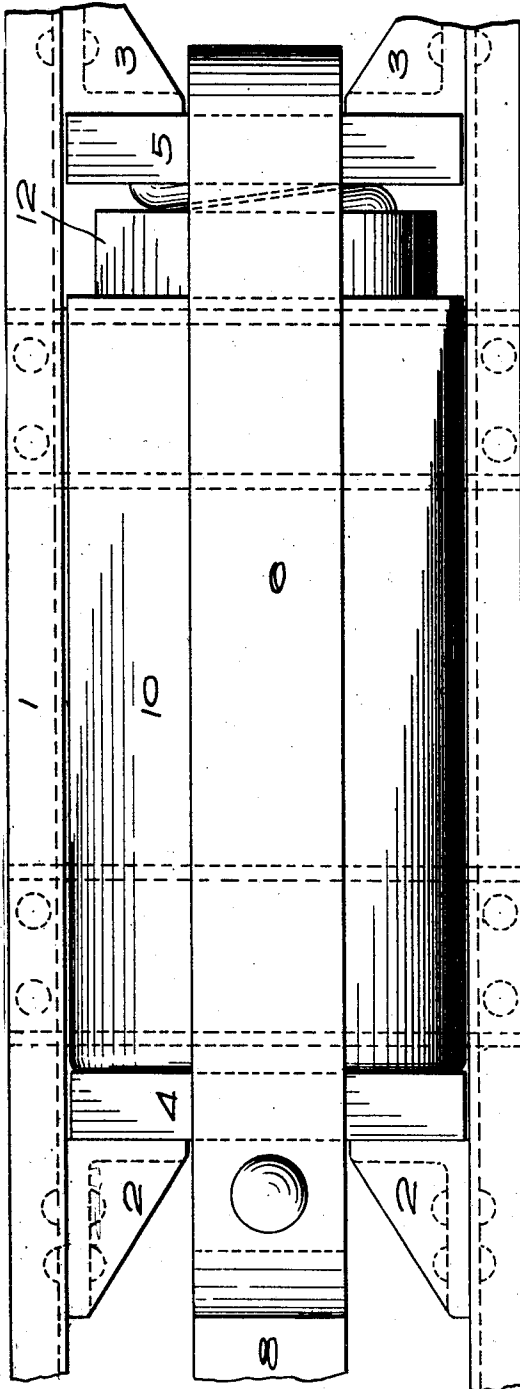


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 FRICTION DRAFT AND BUFFING MECHANISM.
 APPLICATION FILED FEB. 10, 1909.

933,046.

Patented Sept. 7, 1909.
 2 SHEETS—SHEET 1.



WITNESSES

Estelle M. Johnson.
Chas. Foxterman

INVENTOR

Halfdan Asper.
By Fredk. W. Hinton
Attorney.

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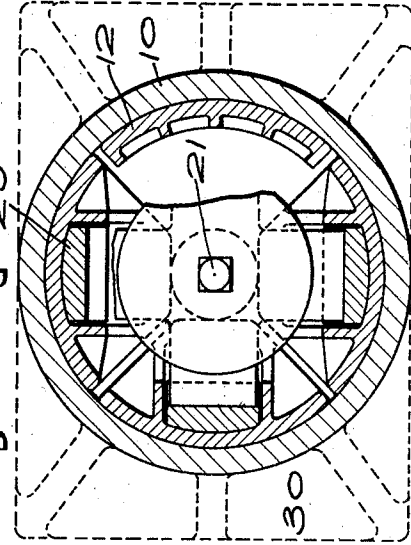
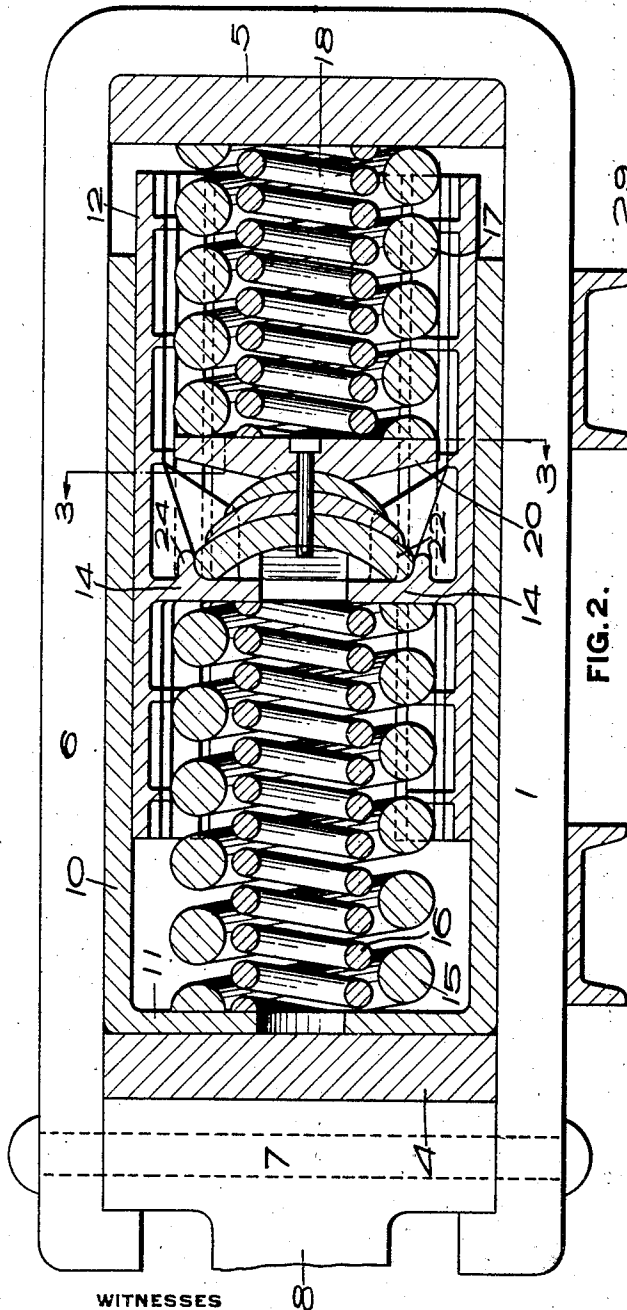


FIG. 2.

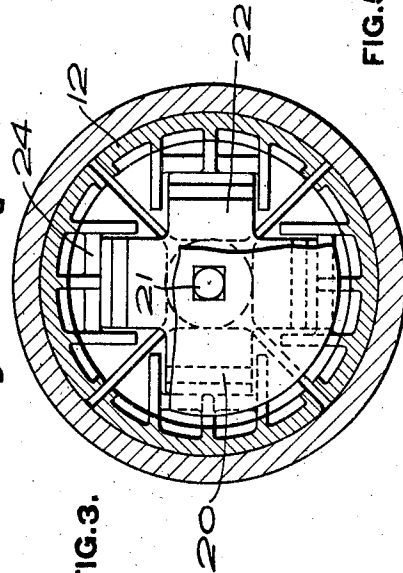


FIG. 3.

FIG. 5.

WITNESSES

Estelle M. Johnson.
Chas. Fosterman

INVENTOR

Halldan Asper.
By Fredk M. Hunter
Attorney.

UNITED STATES PATENT OFFICE.

HALFDAN ASPER, OF BUTLER, PENNSYLVANIA.

FRICTION DRAFT AND BUFFING MECHANISM.

933,046.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed February 10, 1909. Serial No. 477,146.

To all whom it may concern:

Be it known that I, HALFDAN ASPER, a resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Friction Draft and Buffing Mechanism, of which the following is a specification.

This invention relates to friction draft and buffing mechanism for railway cars and the like.

The object is to provide a device of this character of simple construction and efficient in operation.

The invention comprises the construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings Figure 1 is a plan view of the friction mechanism; Fig. 2 is a longitudinal vertical section through the same; Fig. 3 is a transverse section on the line 3—3, Fig. 2; Fig. 4 is a longitudinal section showing a modification; and Fig. 5 is a transverse section through the same on the line 5—5, Fig. 4.

This friction mechanism is adapted to be applied to any construction or type of railway car.

In the drawings the draft beams of a railway car are indicated at 1, and while these are shown as composed of metal it will be understood that this is illustrative merely. Secured to the inner faces of these draft beams are front draft lugs 2 and rear draft lugs 3 which also may be of any desired construction. Bearing normally against the front draft lugs 2 is a front follower plate 4 and bearing normally against the rear draft lugs 3 is a rear follower plate 5 which is engaged by a strap or yoke 6 of the usual construction and having its forward ends bent inwardly to engage the head 7 of the coupler shank 8 to which head said yoke is secured by means of a rivet as shown. The head 7 is adapted to bear against the front follower plate 4. These parts are all old and their function and mode of operation well understood.

The friction gear itself comprises the main or outer friction member or barrel or housing 10 which may be of any suitable shape in cross section, being shown as substantially circular. This housing or barrel is preferably closed at its forward end by the end wall 11 bearing against the front follower plate, while its rear end is open. Arranged within this housing or barrel are

the inner friction members or plates 12. Four such friction plates are preferably used and 4 are shown each extending for substantially a quadrant of the circle. These friction plates in cross section are curved to the inner contour of the housing or barrel and bear against the inner face of the latter. The inner faces of the housing or barrel and the outer faces of the plates 12 constitute the friction surfaces of the gear.

The friction plates 12 may be provided with transverse inwardly projecting webs 14 arranged intermediate their ends. Interposed between these webs and the front wall 11 of the housing or barrel, or the front follower plate, is a compression spring or springs, the drawing showing an outer heavy spring 15 and an inner lighter spring 16 which serve to release the gear after compression. Rear compression springs consisting of a heavy outer spring 17 and a lighter inner spring 18 are arranged between the rear follower plate 5 and a transverse plate or disk 20 located between the friction plates 12. Secured to the plate 20, such as by means of a bolt 21, is a bowed or curved spring 22, which is of substantially the form of a semi-elliptic spring with the ends bowed forwardly and rounded and seating in concave seats 23 formed on the friction plates, such as by means of transverse ribs 24 on the rear faces of the inwardly projecting webs 14. The bowed spring is of cruciform or cross shape, as shown in Fig. 3, having four arms which engage respectively with the four friction plates. This bowed spring is of considerable width viewing the gear transversely so as to give long bearings at the outer ends and also to give ample strength. It is made of strong spring metal and normally is curved as shown in the drawings, but when under buffing or tugging stresses the gear shortens, this spring straightens out and therefore becomes relatively longer transversely of the gear and acts to thrust the friction plates 12 outwardly, that is, spread the same against the inner face of the housing or barrel. The degree of outward thrust exerted by the bowed spring varies with the extent of straightening of the same and varies the degree of friction between the friction surfaces.

In Figs. 1 and 3 a single bowed spring member is shown, this being formed of a series of leaves of successively shorter lengths

in order to give the necessary strength, on the principle of semi-elliptic springs. Figs. 4 and 5 show a modification in which a plurality of bowed spring members are used, each consisting of a single leaf and separated by spacing sleeves 26 surrounding the bolt 21 which connects the members to the transverse plate or disk 20. In this modification the posterior springs 17 and 18 are dispensed with and the disk rests directly against the rear follower plate. The outer ends of the several bowed spring members engage seats 28 formed on the inner faces of separate strips or blocks 29 bearing against the inner faces of the friction plates 12 and against the transverse webs 14 of the latter. The action, however, is the same as in the form shown in Figs. 1 to 3. The separate blocks or strips 29 allow of adjustment, such as by grinding off their outer faces, as in the case of too tight a fit, or permitting the insertion of shims between the same and the friction plates 12 in the case of too loose a fit. The forward end wall 11 of the housing may be extended beyond the periphery of the barrel or housing and of substantially rectangular shape, as at 30, so as to form in effect a front follower plate to bear directly against the front draft lugs 2. This feature can of course also be embodied in the form shown in Figs. 1 to 3. The friction plates 12 on their inner surfaces are provided with suitable longitudinal and transverse ribs to strengthen the same, indicated at 31. The forward end of the housing is provided with inwardly projecting lugs or webs 33 for guiding and centering the springs.

The friction gear described is of simple construction having a minimum number of parts and is also of comparatively light weight. The parts are so assembled that they cannot get out of place, but at the same time can be easily removed for repair or other purpose and again assembled. The operation of the friction gear is not materially different from that of ordinary friction draft gears. Under tugging stresses the housing or barrel is held stationary against the front draft lugs. The yoke of the draw bar moves the rear follower plate forwardly, thus compressing the springs and forcing the transverse plate or spring seat 20 forwardly. The friction plates 12 also move forwardly somewhat but are resisted by the front spring which slowly compresses. The effect is to straighten out the bowed spring member or members, thereby increasing the length thereof transversely of the gear and spreading the friction plates 12 and forcing them strongly against the inner faces of the housing or barrel and producing a high degree of pressure and friction at this point. On account of the cruciform shape of the bowed spring members all four plates are

forced out simultaneously and under uniform pressure. The degree of friction of course depends upon the extent of straightening of the bowed spring members, and this depends upon the force of the tugging or buffing stresses. When the tugging stress is removed the forward springs 15 and 16 expand, forcing the friction plates rearwardly and under the reaction the parts assume their normal positions. Under buffing stresses the operation is substantially the reverse of that described, the rear follower plate in this case becoming stationary against the rear draft lugs and the housing or barrel moving rearwardly, thereby carrying the friction plates 12 rearwardly and causing the bowed spring members to straighten.

The friction gear described is very efficient, giving a high degree of friction between parallel surfaces due to the spreading action caused by the straightening of the bowed spring members whenever the gear shortens.

What I claim is:

1. In a friction draft and buffing gear, the combination of contacting friction elements, followers and springs, and a bowed spring member arranged transversely of the gear and arranged on shortening of the gear to straighten and exert a thrust against and force the friction elements into closer contact.
2. In a friction draft and buffing gear, the combination of outer friction elements, oppositely facing cooperating inner friction elements, followers and springs, and a bowed spring member extending transversely of the gear and arranged on the shortening of the latter to straighten and exert a thrust against and spread the inner friction elements into closer contact with the outer friction elements.
3. In a friction draft and buffing gear, the combination of a housing provided with friction faces, friction plates arranged within the same, followers and springs, a plate arranged transversely of the gear and movable longitudinally thereof, and a bowed spring member between said transverse plate and the friction plates and arranged on the shortening of the gear to straighten and exert a thrust against and spread said friction plates.
4. In a friction draft and buffing gear, the combination of a housing, cooperating friction plates therein, a compression spring arranged to force said friction plates in one direction longitudinally, a follower plate, and a bowed spring member arranged transversely of the gear and on the shortening thereof being caused to straighten and exerting a thrust against and spread the friction plates.
5. In a friction draft and buffing gear, the combination of outer friction elements, op-

positely facing cooperating inner friction elements, followers and springs, and a bowed spring member arranged with its ends having thrust bearings against the oppositely facing inner friction elements and arranged on shortening of the gear to straighten and spread said inner friction elements.

6. In a friction draft and buffing gear, the combination of a housing, friction plates therein provided with inwardly projecting transverse webs, a compression spring acting on one face of said webs, a follower plate, and a transverse bowed spring member between said follower plate and the inwardly projecting transverse webs and arranged upon shortening of the gear to straighten and spread the friction plates.

7. In a friction draft and buffing gear, the combination of a housing, friction plates therein provided with transverse seats, springs and followers, and a bowed spring member arranged transversely of the gear with its ends engaging the transverse seats of the friction plates and arranged on shortening of the gear to straighten and spread said friction plates.

8. In a friction draft and buffing gear, the combination of a housing, two pair of oppositely arranged friction members therein, and a four armed bow spring member extending transversely of the gear, each arm engaging a friction member and arranged on shortening of the gear to straighten and spread said friction members.

9. In a friction draft and buffing gear, the combination of a housing, a plurality of oppositely arranged friction plates therein, a

spring member arranged transversely of the gear and provided with arms engaging each of the friction plates and arranged on shortening of the gear to straighten and spread said plates simultaneously.

10. In a friction draft and buffing gear, the combination of outer friction elements, oppositely facing cooperating inner friction elements, followers and springs, and a plurality of bowed spring members arranged transversely of the gear and engaging said oppositely facing friction elements and arranged on shortening of the gear to straighten and spread said elements.

11. In a friction draft and buffing gear, the combination of a housing, a plurality of pairs of oppositely facing friction plates therein, followers and springs, and a plurality of bowed spring members extending transversely of the gear and having the ends thereof engaging the oppositely facing friction plates.

12. In a friction draft and buffing gear, the combination of a housing, two pairs of oppositely facing friction plates therein, followers and springs, and a plurality of cruciform bowed friction members arranged transversely in said gear with the ends thereof engaging said friction plates and arranged on shortening of the gear to straighten and spread said friction plates.

In testimony whereof, I have hereunto set my hand.

HALFDAN ASPER.

Witnesses:

F. H. DAVY,
M. SHERIDAN.