No. 751,943. PATENTED FEB. 9, 1904.

# G. P. RITTER.

# FRICTION DRAFT GEAR.

APPLICATION FILED JULY 11, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

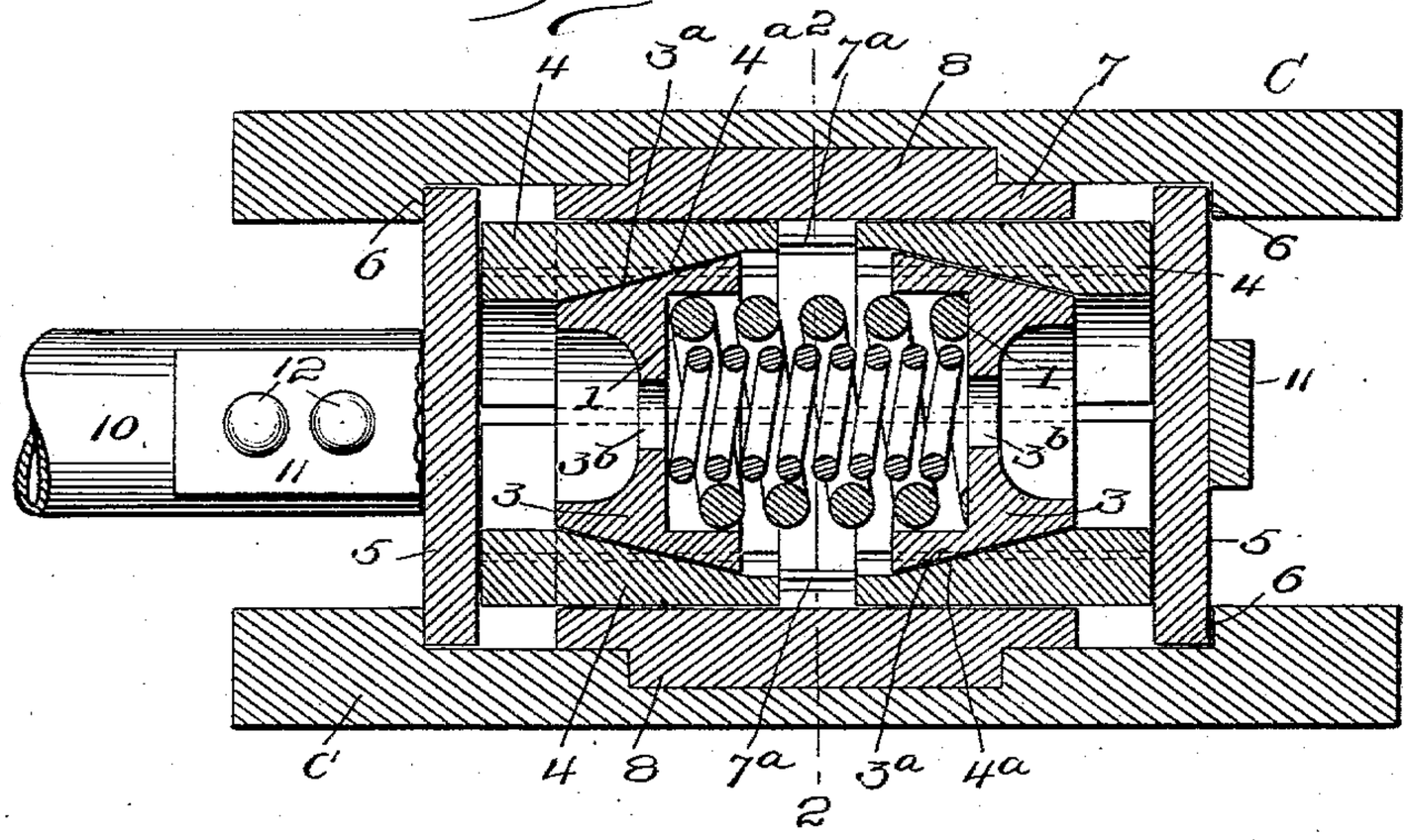



FIG. 2.

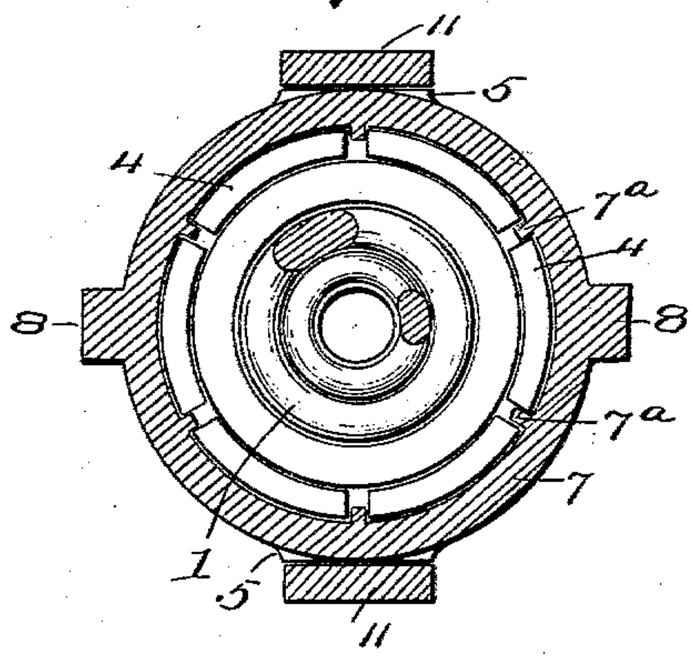



FIG. 3.

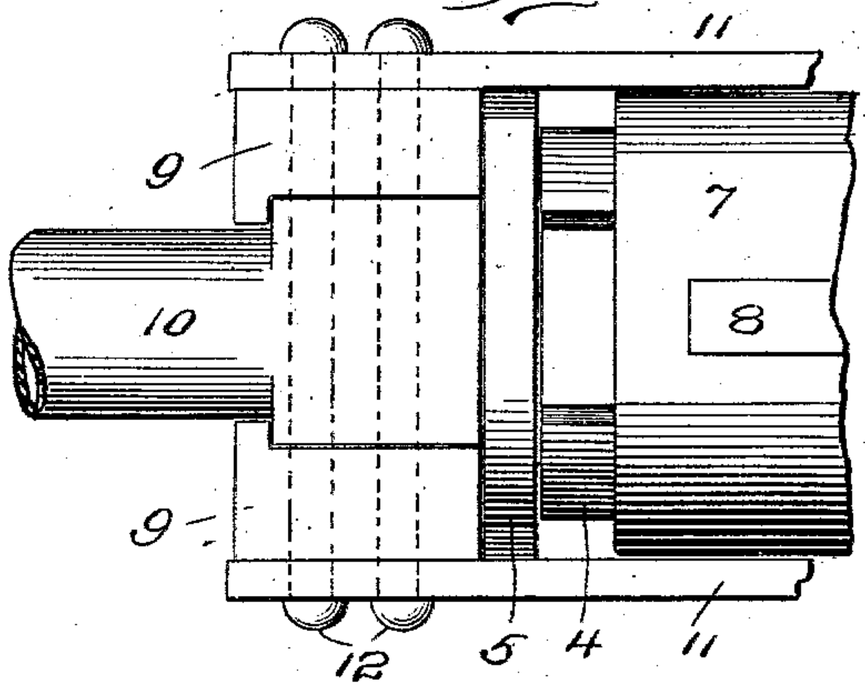



FIG. 4.

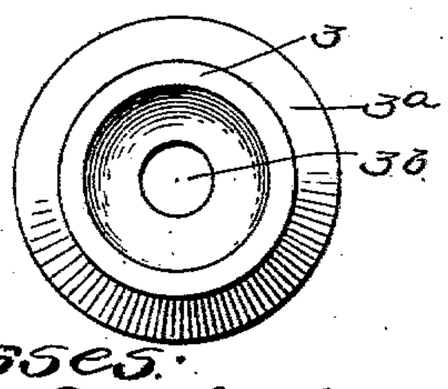
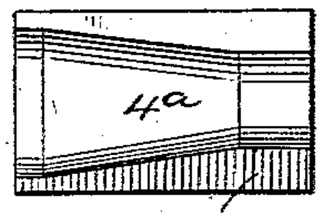



FIG. 5.

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# FRICTION DRAFT GEAR.

APPLICATION FILED JULY 11, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6

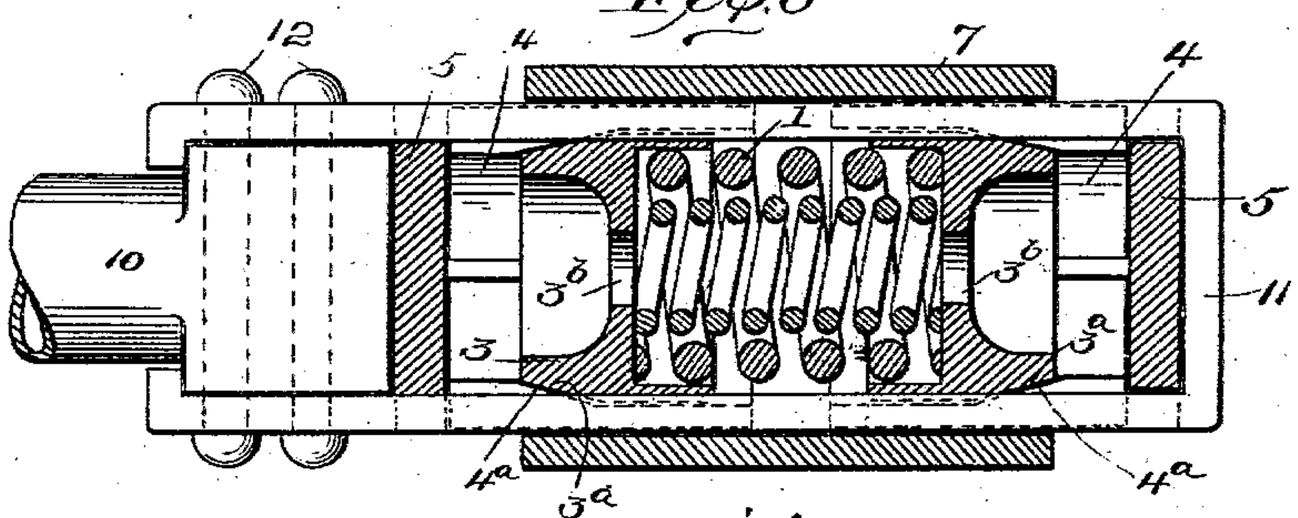



Fig. 10

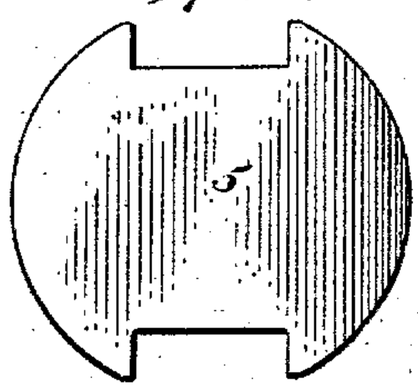



Fig. 7.

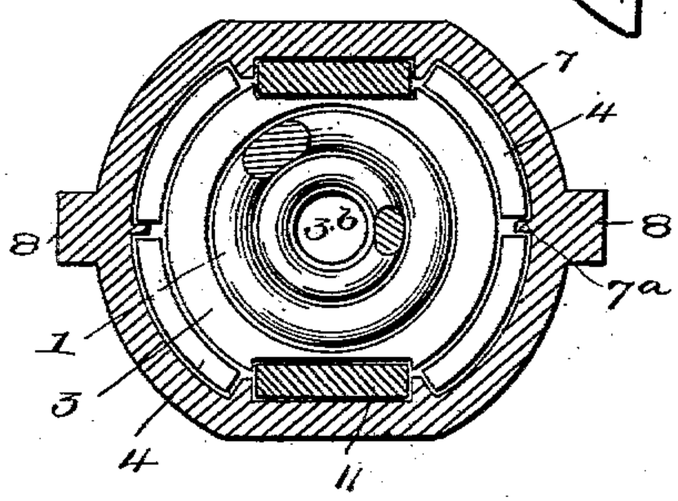



Fig. 9.

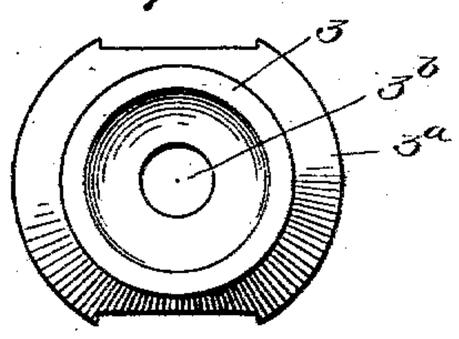
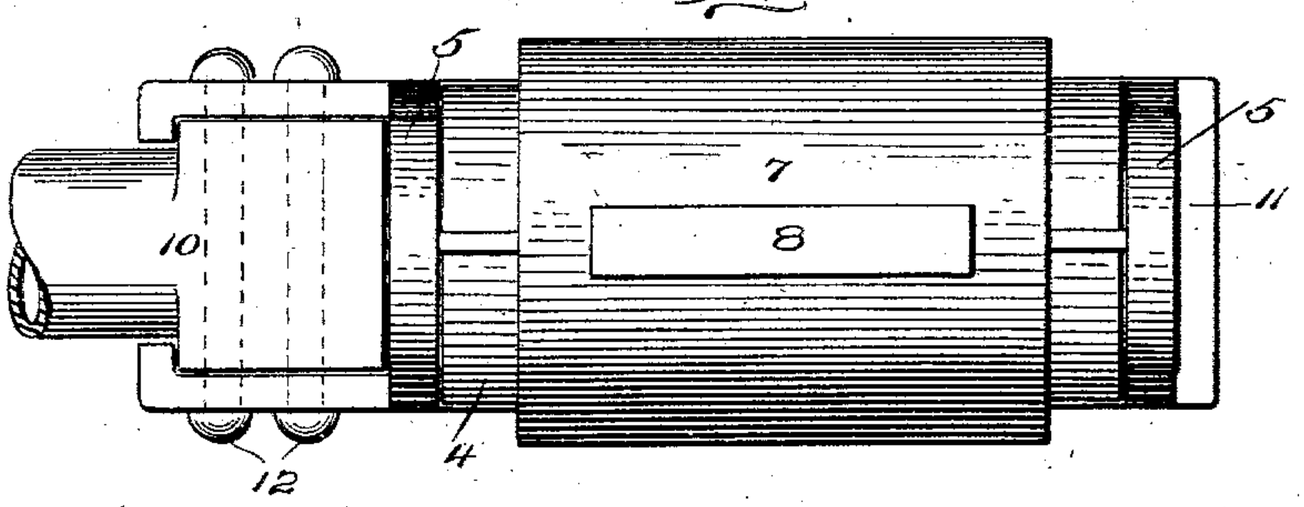



Fig. 8.

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No. 751,943. Patented February 9, 1904.

# UNITED STATES PATENT OFFICE.

GILBERT P. RITTER, OF CHICAGO, ILLINOIS.

## FRICTION DRAFT-GEAR.

SPECIFICATION forming part of Letters Patent No. 751,943, dated February 9, 1904.

Application filed July 11, 1902. Serial No. 115,179. (No model.)

*To all whom it may concern:*

Be it known that I, GILBERT P. RITTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Friction Draft-Gear; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal central section of a draft-gear embodying my invention, the draft-timbers, draw-bar guides, and stops or other portion of the car to which the draft-gear is attached being represented conventionally by the section-lined portion C C. Fig. 2 is a transverse section taken on the line 2 2, Fig. 1. Fig. 3 is a side elevation of the coupler end of the draft-gear, showing the attachment of the strap to the coupler-shank. Fig. 4 is a detached plan view of one of the movable spring-abutments or blocks looking from the apex toward the base. Fig. 5 is a detached plan view of one of the movable friction elements looking radially outward from the longitudinal axis of the draft-gear. Fig. 6 is a longitudinal vertical central section of a modification of my invention, the yoke and coupler-shank being in elevation. Fig. 7 is a central transverse section of the modification. Fig. 8 is a side elevation of the modification. Fig. 9 is a detached plan view of one of the movable spring-abutments or blocks of the modification looking from the apex toward the base, and Fig. 10 is a detached plan view of one of the followers of the modification.

Like symbols refer to like parts wherever they occur.

My invention relates to that class of draft-gear for railway-cars which has for its object increased shock or load resistance capacity without destructive recoil of the resisting members, and this I accomplish in such a manner, as will be hereinafter more particularly pointed out, that the structure is rendered compact, easily and quickly assembled and repaired, and large frictional area is attained.

Generally stated, my invention may be said to reside in a combination wherein frictional resistance is produced by means of movable spring-abutments upon which certain of the friction elements are immovably seated when operating as friction elements, said abutments being movable in the line of force.

There are other minor features of invention, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the construction chosen for the purpose of illustrating my invention, 1 indicates a centrally-located spring seated upon conical blocks or spring-abutments 3 3, which contact or engage on their inclined faces $3^a$ the correspondingly-inclined surfaces $4^a$ of the friction elements 4, the friction members 4 having an end bearing against follower-plates 5 5, which are limited in their movement apart by stops, as represented at 6 6.

On reference to Fig. 5, which shows one of the friction elements detached, it will be noted that these elements have the form of the casing on their exterior faces, their interior faces corresponding to the face of the movable spring-abutments or blocks 3. The number and arrangement of the friction elements 4 will depend upon the location of the yoke 11—whether inside or outside the casing 7.

The hollow casing 7 is open at its ends and is provided with lugs 8 8 or other suitable means on its exterior for attaching the same to the draft-timbers, its interior face forming a friction-surface with which the elements 4 (see Fig. 5) coact and by which the outward movement of the said elements 4 is restrained, $7^a$ $7^a$ being inwardly-projecting ribs which serve as guides for the friction elements 4; but the same may be omitted, if desired.

9 9 are blocks to which and to the coupler-shank 10 the strap or yoke 11, which passes around or through the casing 7 (as the case may be) and includes the followers 5 5, is connected by rivets 12, thus transmitting pulling or draft strains to the inclosed mechanism, buffing strains being transmitted by the coup-

ler-shank 10 directly, which bears against the forward follower 5. However, the well-known tail-bolt construction may be adopted, if desired, in lieu of the strap or yoke construction herein shown, the holes $3^b$ in the spring-abutments 3 (see Figs. 4 and 9) admitting of such a construction.

The modification of my invention shown in Figs. 6 to 10, inclusive, is substantially similar to the construction heretofore described except that the blocks 9 9 are omitted, the friction elements 4 are fewer in number and laterally disposed, and the spring-abutments 3 and followers 5 are cut away, (see Figs. 9 and 10,) thus permitting the passage of the strap or yoke 11 within the housing 7. The operation is the same. The followers 5 5 are here shown as substantially circular in form; but they may be rectangular or any other shape that circumstances may dictate, and the movable spring-abutments, which are here shown as conical, may evidently be pyramidal or of wedge form.

It will be noted in the preferred construction shown in the drawings that the spring or resilient medium 1 is inclosed or enveloped by the friction elements 4 and 7, as are also the spring-abutments 3 and the movable friction elements 4, which are relatively movable, and as a result of such construction an exceedingly compact and protected structure is obtained. It will also be noted that the elements 3, 4, and 5 taken as a whole constitute a friction-follower for compressing the centrally-disposed spring, said follower comprised of a plurality of parts having inclined contacting faces at rest with respect to each other, and that the friction-faces are parallel to the line of draft.

The construction being substantially as hereinbefore pointed out, the operation of the device will be as follows: Draft being made upon the coupler-shank 10, the strap or yoke 11 will pick up the rear follower 5 and force it and the friction elements 4 seated thereon to the left, while the forward follower 5 is prevented from retreating on account of its stop 6, the result being that the friction elements 4 adjacent thereto are also unable to retreat, and hence the forward inclined spring-abutment 3 (the friction elements 4 being impossible of outward motion) forms a fixed abutment for the spring 1, while the movement of the rear elements 4 in contact with the interior of the casing 7 develops friction by reason of the pressure exerted by the rear inclined spring-abutment 3 and the spring 1. In passing from draft to buffing and then to a buffing operation the rear elements retreat until the rear follower 5 can go no farther on account of its stop 6, and when the strap 11 retreats (to the right, Fig. 1) said friction elements are held to perform the function of an abutment for the spring 1, as before explained of the corresponding parts at the opposite end, while at the forward end the coupler-shank 10 forces the forward follower 5 and the contiguous friction elements 4 to the right, thus compressing the spring 1 and developing friction between the coacting faces of the casing and the friction members 4, as previously explained.

In the construction herein shown it will be noted that the friction function of the elements 4 is simultaneous and coextensive with the traveling spring abutment or block 3, upon which they are constantly and immovably seated, and that said frictional resistance is proportional to the displacement of the movable spring-abutments.

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

1. In a friction draft-gear, the combination with a centrally-disposed spring, of relatively movable spring-abutments adapted to transmit pressure to coacting friction elements said abutments constantly and immovably seated upon friction elements external thereto, a plurality of friction elements, and means for inducing relative movement of said friction elements, substantially as and for the purposes specified.

2. In a friction draft-gear, the combination with an interposed resilient medium arranged to induce pressure between coacting friction elements, of relatively movable spring-abutments having inclined faces constantly and immovably seated upon correspondingly-inclined faces of friction elements external to said abutments, a plurality of friction elements, and means for inducing a relative movement of said friction elements, substantially as and for the purposes specified.

3. In a friction draft-gear, the combination with an interposed resilient medium arranged to induce pressure between coacting friction elements, of abutments for said resilient medium said abutments having inclined faces constantly and immovably seated upon corresponding faces of relatively movable friction elements, a load-transmission element, and relatively movable friction elements having friction-faces parallel to the line of draft, substantially as and for the purposes specified.

4. In a friction draft-gear, the combination with a coacting friction element, of a plurality of yieldingly-supported spring-abutments having inclined faces, a plurality of friction elements movable toward and from each other and having inclined faces upon which the said spring-abutments are constantly and immovably seated, and an interposed spring acting upon said spring-abutments, substantially as and for the purposes specified.

5. In a friction draft-gear, the combination with a coacting friction element, of yieldingly-supported spring-abutments capable of transmitting pressure to the coacting friction elements, a plurality of friction elements movable toward and from each other and having seats upon which the said spring-abutments are constantly and immovably seated, and an interposed spring acting upon said spring-abutments, substantially as and for the purposes specified.

6. In a friction draft-gear, the combination with a coacting friction element, of yieldingly-supported spring-abutments having inclined faces, a plurality of relatively movable friction elements having friction-faces parallel to the line of draft and inclined faces upon which the said spring-abutments are constantly and immovably seated, and a spring arranged to induce pressure between the coacting friction elements and interposed between said spring-abutments, substantially as and for the purposes specified.

7. In a friction draft-gear, the combination with an interposed spring arranged to induce pressure between coacting friction elements, of a plurality of spring-abutments having inclined faces, a plurality of friction elements having correspondingly-inclined faces upon which the said spring-abutments are constantly and immovably seated, a coacting friction element, and means for actuating said spring, substantially as and for the purposes specified.

8. In a friction draft-gear, the combination with an interposed spring arranged to induce pressure between coacting friction elements, of a plurality of oppositely-disposed spring-blocks having inclined faces, a plurality of friction elements having friction-faces parallel to the line of applied force and inclined faces upon which the said spring-blocks are constantly and immovably seated, a coacting friction element, and means for causing relative movement of the coacting friction elements, substantially as and for the purposes specified.

9. In a friction draft-gear, the combination with a coacting friction element, of a plurality of yieldingly-supported blocks having inclined faces, a plurality of relatively movable friction elements having correspondingly-inclined faces upon which the said blocks are constantly and immovably seated, and a yielding resistance element interposed between said blocks and compressible by the movement of the relatively movable friction elements, substantially as and for the purposes specified.

10. In a friction draft-gear, the combination with coacting friction elements some of said elements being relatively movable and having a plurality of oppositely-disposed inclined seats, of a plurality of blocks having correspondingly-inclined seats constantly and immovably seated thereon, and means for inducing pressure between said inclined seats, substantially as and for the purposes specified.

11. In a friction draft-gear, the combination with a centrally-located spring, of oppositely-disposed inclined spring-abutments constantly and immovably seated upon correspondingly-inclined faces of relatively movable friction elements, relatively movable friction elements having inclined faces, a friction element coacting with said friction elements having inclined faces, and means for causing relative movement of the coacting friction elements, substantially as and for the purposes specified.

12. In a friction draft-gear, the combination with a centrally-located spring, of oppositely-disposed spring-abutments adapted to transmit pressure to the coacting friction elements said abutments constantly and immovably seated upon corresponding faces of relatively movable friction elements, relatively movable friction elements having friction-faces parallel to the line of applied force, a friction element coacting with said relatively movable friction elements, and means for causing a relative movement of the coacting friction elements, substantially as and for the purposes specified.

13. In a friction draft-gear, the combination with a load-transmission element, of including and included friction elements having contacting friction-faces parallel with each other and with the line of movement of said elements, said including and included elements being relatively movable with a displacement equal to the travel of the transmission element, and a spring-supported inclined seat for the included elements whereby a variable frictional resistance proportionate to the load on the transmission element is developed, substantially as and for the purposes specified.

14. In a friction draft-gear, the combination with a centrally-located spring and an external coacting friction element, of the orderly arrangement in alinement from both ends toward the center of the following members, to wit; a follower, a plurality of friction elements having friction-faces parallel to the line of draft and faces inclined thereto to form seats for correspondingly-inclined spring-abutments, and a spring-abutment for the centrally-located spring said abutment having inclined faces, substantially as and for the purposes specified.

15. In a friction draft-gear, the combination with a casing, of an included yoke, and friction elements which coact with the casing, substantially as and for the purposes specified.

16. In a friction draft-gear, the combination with an interposed spring, of friction-followers comprised of a plurality of parts having

inclined contacting faces relatively at rest with respect to each other some of said parts of said friction-followers having friction-faces parallel to their line of motion and acting as friction elements, and coacting friction elements also having friction-faces parallel to the line of motion of said friction-followers, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 11th day of July, 1902.

GILBERT P. RITTER.

Witnesses:
EDWIN S. CLARKSON,
H. G. DIETERICH.