No. 736,071. PATENTED AUG. 11, 1903.

A. CHRISTIANSON.

FRICTION DRAFT GEAR.

APPLICATION FILED MAR. 17, 1903.

NO MODEL.

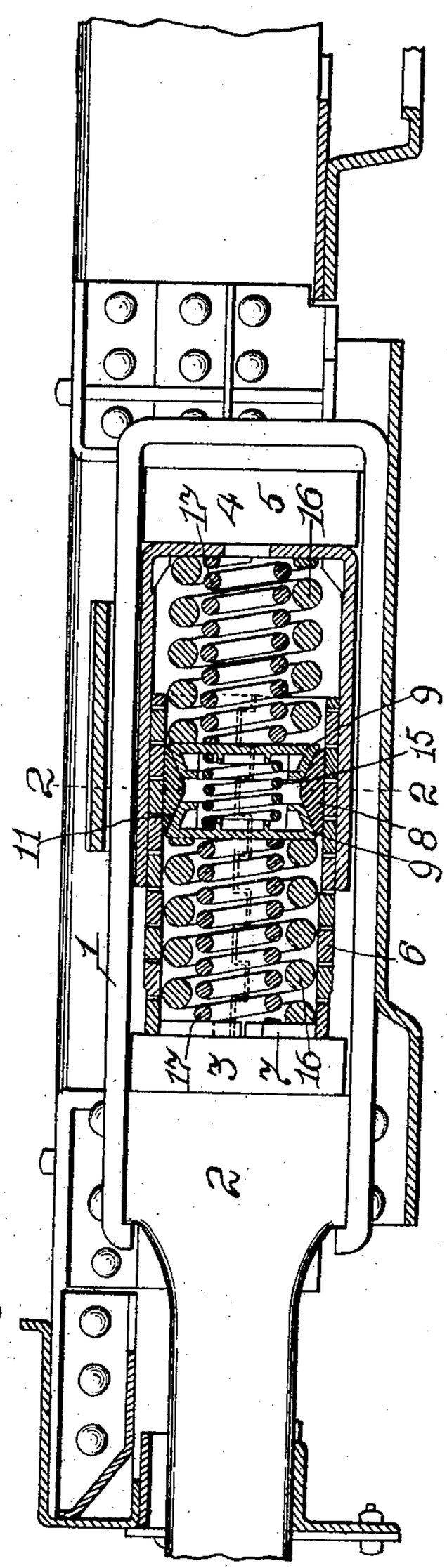

Fig. 1

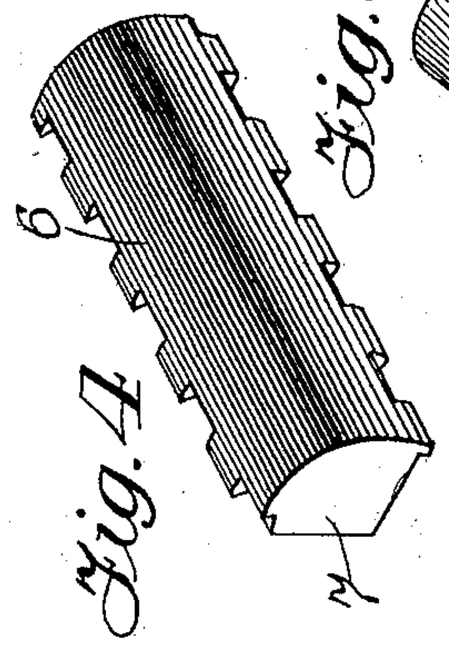

Fig. 4

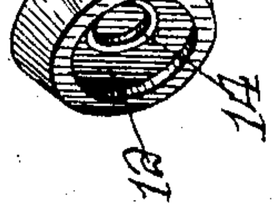

Fig. 6

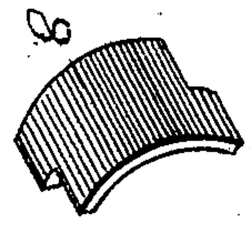

Fig. 5

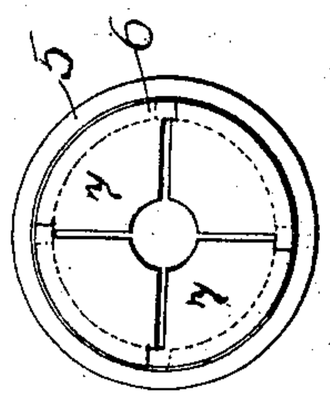

Fig. 3

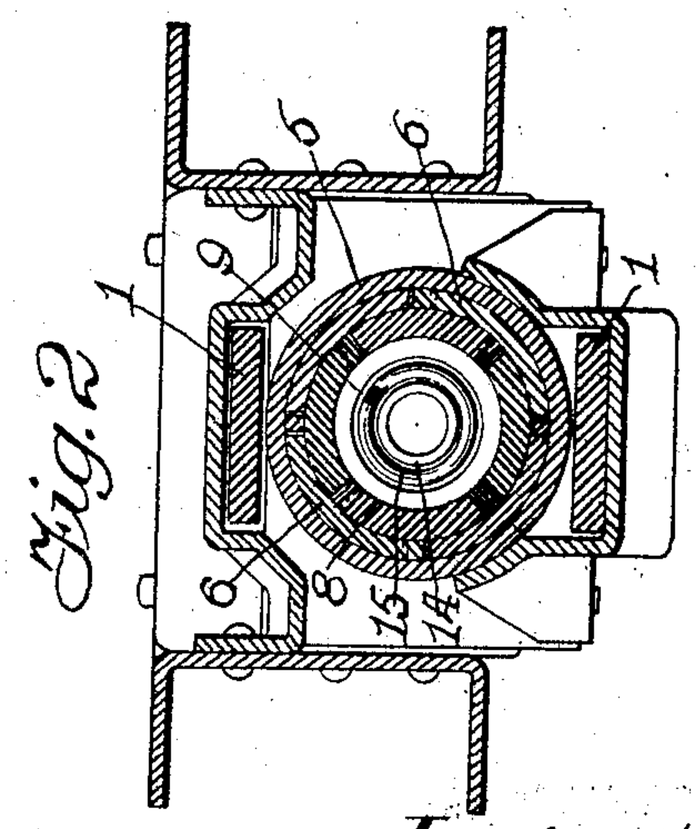

Fig. 2

Witnesses:
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No. 736,071. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

ANDREW CHRISTIANSON, OF BUTLER, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM MILLIGAN, OF ALLEGHENY, PENNSYLVANIA.

FRICTION DRAFT-GEAR.

SPECIFICATION forming part of Letters Patent No. 736,071, dated August 11, 1903.

Application filed March 17, 1903. Serial No. 148,207. (No model.)

To all whom it may concern:

Be it known that I, ANDREW CHRISTIANSON, a citizen of the United States of America, residing at Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Friction Draft-Gears, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in devices for resisting and counteracting the shocks and strains of draft and buffing which are encountered in railroad service, and one of the primary advantages of my improved device resides in its simplicity and in the cheapness for which it can be manufactured, it being so arranged as to employ springs of standard design.

Another of the advantages derived from my improved construction is that it permits a long travel in which the force of the impact is taken up and in its very low initial resistance, being only that of a single group of springs, but instantly increasing gradually with the compression of the springs.

A further object of my invention is to construct a friction draft-gear which may be employed in connection with the standard draft-rigging now generally used.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is a horizontal sectional view of my improved friction draft-gear, showing the same in position in the draft-rigging of the standard Master Car-Builders' type. Fig. 2 is a transverse vertical sectional view on the line 2 2 of Fig. 1. Fig. 3 is an end view of the device detached from the draft-rigging. Fig. 4 is a detached detail perspective view of one section or member of the inner barrel. Fig. 5 is a detached detail perspective view of one member of a wedge block or ring. Fig. 6 is a detached detail perspective view of one of the friction-disks or conical wedges.

In the illustration of the invention I have shown the same as applied to the draft-rigging of the standard Master Car-Builders' type and in which—

1 indicates the draft-yoke, 2 the tread-bar, and 3 4 the follower-plates placed within the draft-yoke 1. Mounted in this draft-yoke, between the follower-plates 3 and 4, is my improved friction draft-gear, which I will now describe in detail.

5 indicates the outer barrel, the rear end of which abuts against the follower-plate 4, and arranged to telescope within this outer barrel 5 is an inner barrel cylindrical in form, but made up of sections or members interlocking together. Each section or member 6 of this inner barrel is provided on its edges with interlocking tongues or lugs to interlock with those of the adjacent section or member. In the present illustration of my invention I have shown this inner barrel as comprising four members; but it will be evident that the same may readily be constructed of a greater or less number of sections or members, as may be desired. In the manufacture this inner barrel may be cast, and in such manufacture I employ sand cores to produce the interlocking tongues or lugs, employing, however, a chilled-steel mold whereby to produce a perfectly smooth surface on the sections forming the barrel. Each of the sections or members of this inner barrel, it will be noted, is formed at its forward end with the inwardly-extending lug or end plate 7, whereby to form a rest for the resistance-springs at the forward end of the latter. Interior of the inner barrel is a wedge-block 8, also preferably constructed of a plurality of interlocking sections or members. The particular construction of each member or section is fully shown in detail in Fig. 5 of the drawings. This wedge-block is expanded, so as to force the same into frictional engagement with the inner circumference of the inner barrel through the medium of a pair of substantially conical-shaped wedges or disks 9, the conical faces 10 of which engage with the conical faces 11 of the wedge block or ring 8. These wedges or disks 9 may also in construction be cast in chilled-steel molds, and when so made I employ a sand core for producing the hollowed-out portion 12 of the wedges or disks and having the conical

surfaces 10 in engagement with the chilled steel to produce a perfectly smooth surface. The disks or wedges are both constructed with interior angular extensions 14 to hold the release-springs 15 in position. Interposed between the conical wedges or disks and the ends of the barrels or cylinders are two groups of resistance-springs 16 17, the latter arranged within the former, as clearly shown in Fig. 1 of the drawings. The outer barrel 5 is preferably cast with a turned core for the purpose of securing a perfectly circular inner surface, thereby producing a more perfect contact between the said barrel and the friction-blocks 6.

In operation it is to be noted that the conical wedges or disks 9 in the center receive the reaction of both groups of springs 16 17 and force the wedge-blocks 8 against the inside of the cylinder or barrel 6, and this barrel or cylinder, being in sections, is in turn expanded and forced into frictional contact with the inner wall of the barrel or cylinder 5. As the force of the springs 16 17 tends to force both conical wedges or disks toward each other and a component part of this force goes outward, and thus forces the wedge-blocks up against the inner surface of the inner cylinder; the movement of the wedge-blocks on the inner cylinder in longitudinal is equal to the compression of one spring, whereas the sliding movement of the inner cylinder against the outer cylinder is equal to the compression of both springs. It will be observed that the movement of the outer cylinder and the wedge-blocks is in the same direction and opposite to the movement of the inner cylinder, thereby causing frictional resistance on the inside as well as on the outside of the cylinder. The release-spring 15, interposed between the wedge-disks, tends to relieve frictional resistance when the rigging is acting under a light load. It is to be noted also that the friction of the parts therefore increases in a direct ratio to the strain applied to the gear, thus producing an extremely serviceable and efficient device.

The manner of construction, which, as stated, may be by casting of the inner barrel, the conical wedges or disks, and the wedge-block in chilled-steel molds and by providing a turned core for the outer barrel, enables me to produce a comparatively inexpensive gear as well as a serviceable one.

While I have herein shown and described the invention in detail as to the construction as it is practiced by me, yet I do not wish to unduly limit myself to this exact construction as described, as it will be observed that various changes may be made in the details of construction without departing from the spirit of my invention.

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

1. In a friction draft-gear, the combination of an outer barrel, an inner barrel comprising a plurality of interlocking sections or members, a sectional wedge-block within the inner barrel, conical wedges or disks engaging said wedge-block, and spring interposed between the ends of the barrels and said wedges or disks, substantially as described.

2. In a friction draft-gear, the combination with an outer barrel, of an inner barrel comprising a plurality of interlocking sections, and means within the barrels for expanding the inner barrel into frictional contact with the outer barrel, substantially as described.

3. In a friction draft-gear, the combination with an outer barrel, of a telescoping inner barrel, a sectional wedge-block within the inner barrel, and means for expanding said sectional wedge-block into frictional engagement with the inner barrel, substantially as described.

4. In a friction draft-gear, the combination with an outer barrel, and a telescoping sectional inner barrel, of means for expanding the inner barrel to frictionally engage the same with the outer barrel, substantially as described.

5. In a friction draft-gear, the combination with two telescoping barrels, of means for expanding one barrel into frictional engagement with the other, and means within the expansible barrel and on opposite sides thereof for frictional engagement therewith, substantially as described.

6. In a friction draft-gear, an outer barrel, a telescoping sectional inner barrel, a sectional wedge-block within the inner barrel, and means adapted when the inner barrel is forced inward in the outer barrel to cause frictional engagement between the two barrels and frictional engagement between the wedge-block and inner barrel, substantially as described.

7. In a friction draft-gear, the combination with an outer barrel, and a telescoping inner barrel, of a sectional wedge-block within the inner barrel, conical wedges or disks engaging said wedge-blocks, springs interposed between said conical wedges or disks and the ends of the cylinders, and a release-spring between the conical wedges or disks, substantially as described.

8. In a friction draft-gear, an outer barrel, a telescoping inner barrel comprising a plurality of sections or members having interlocking edges and inturned end plates, and means within the barrels for expanding the inner barrel into frictional engagement with the outer barrel, substantially as described.

9. In a friction draft-gear, an outer barrel, and a telescoping inner barrel comprising a plurality of interlocking sections or members, and means embodying a sectional wedge-block and conical wedges or disks for expanding the inner barrel into frictional engagement with the outer barrel, substantially as described.

10. In a friction draft-gear, the combination with two barrels one telescoping the other, of friction means within the barrels, embodying a wedge-block, conical wedges or disks engaging said block for forcing the same into

frictional contact with one of the barrels, and compression-springs interposed between the conical wedges or disks and ends of the barrels, substantially as described.

11. In a friction draft-gear, an outer barrel, a telescoping inner barrel comprising a plurality of interlocking sections, and interior means for expanding the sectional barrel into frictional engagement with the outer barrel, substantially as described.

12. A friction draft-gear embodying two barrels one being formed in sections and extending into the other, and means for causing frictional engagement between the two barrels as the one is forced within the other, substantially as described.

13. A friction draft-gear embodying an outer barrel, a telescoping expanding sectional member, and means for forcing said member into frictional contact with the outer barrel, substantially as described.

14. A friction draft-gear embodying an outer barrel, a telescoping expanding member, a wedge-block carried by said member, and means engaging said block at opposite points for expanding said member.

15. In combination with the telescoping barrels, an expansible block, and oppositely-disposed means for engagement with said block for causing the inner barrel to frictionally engage the outer barrel.

16. In combination with the telescoping barrels, the inner of which is expansible, an expansible wedge-block engaging the inner barrel, wedges engaging the opposite faces of said block, compressible means arranged between said wedges, and means for forcing said wedges toward each other as the said barrels are moved inwardly.

17. In combination with the telescoping barrels, a means for forcing the same into frictional engagement with each other comprising a wedge-block carried by one barrel, and oppositely-moving members for engagement with said block, and a releasing means.

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

ANDREW CHRISTIANSON.

Witnesses:
A. M. WILSON,
E. E. POTTER.