No. 837,533. PATENTED DEC. 4, 1906.

H. ÄSPER & C. B. BORYESON.

FRICTION DRAFT RIGGING.

APPLICATION FILED APR. 3, 1906.

2 SHEETS—SHEET 2.

FIG. 5

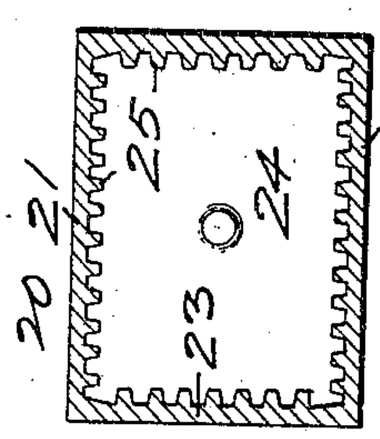


FIG. 9

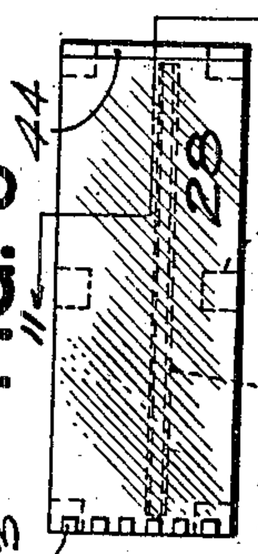


FIG. 10

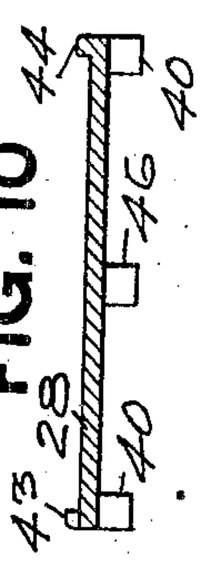


FIG. 11

FIG. 15

FIG. 4

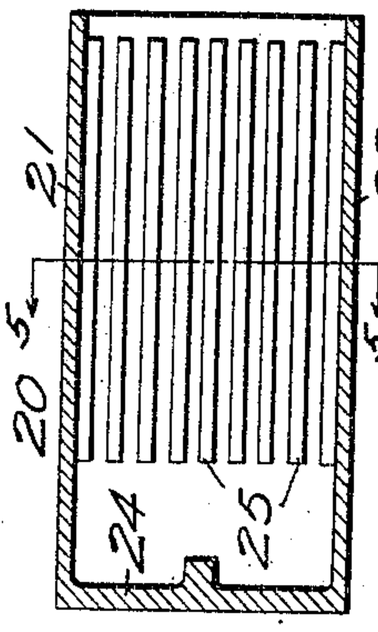


FIG. 6

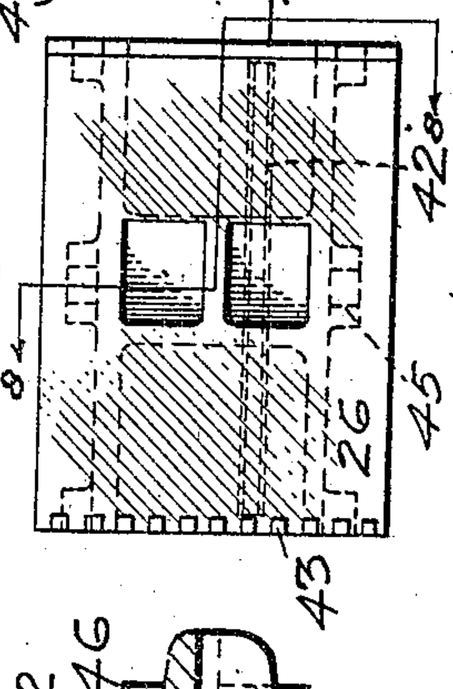


FIG. 7

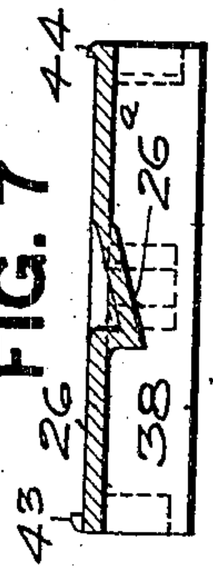


FIG. 8

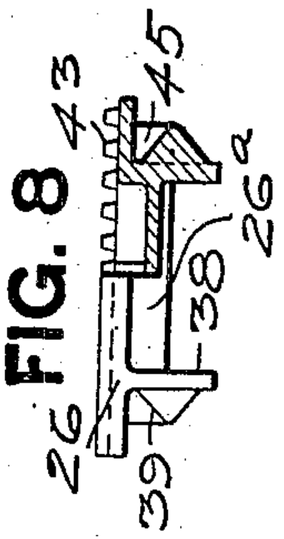


FIG. 3

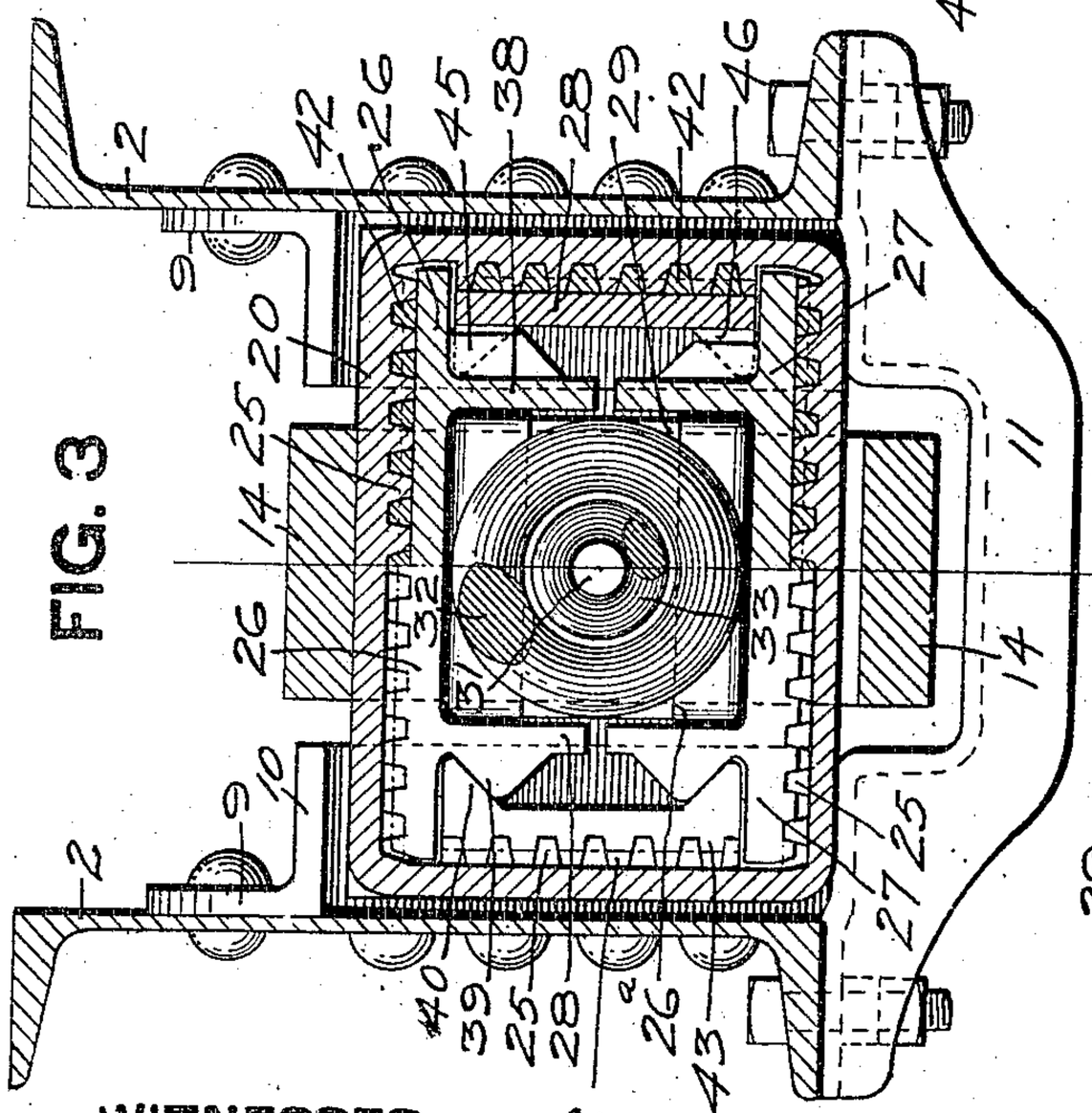


FIG. 13

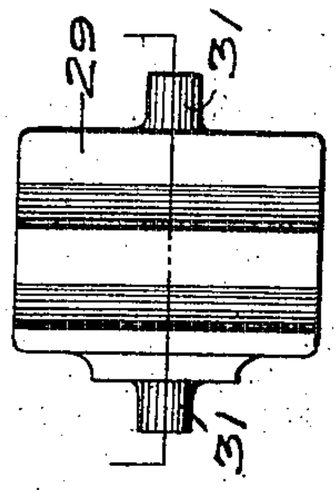
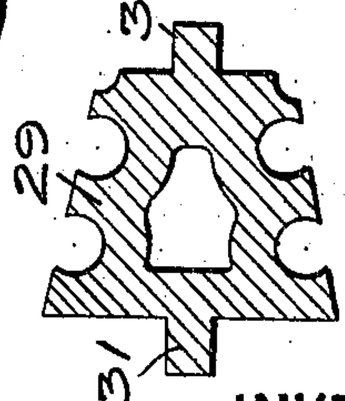


FIG. 14

FIG. 12



WITNESSES.

J. R. Keller

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2 SHEETS—SHEET 1.

FIG. 1

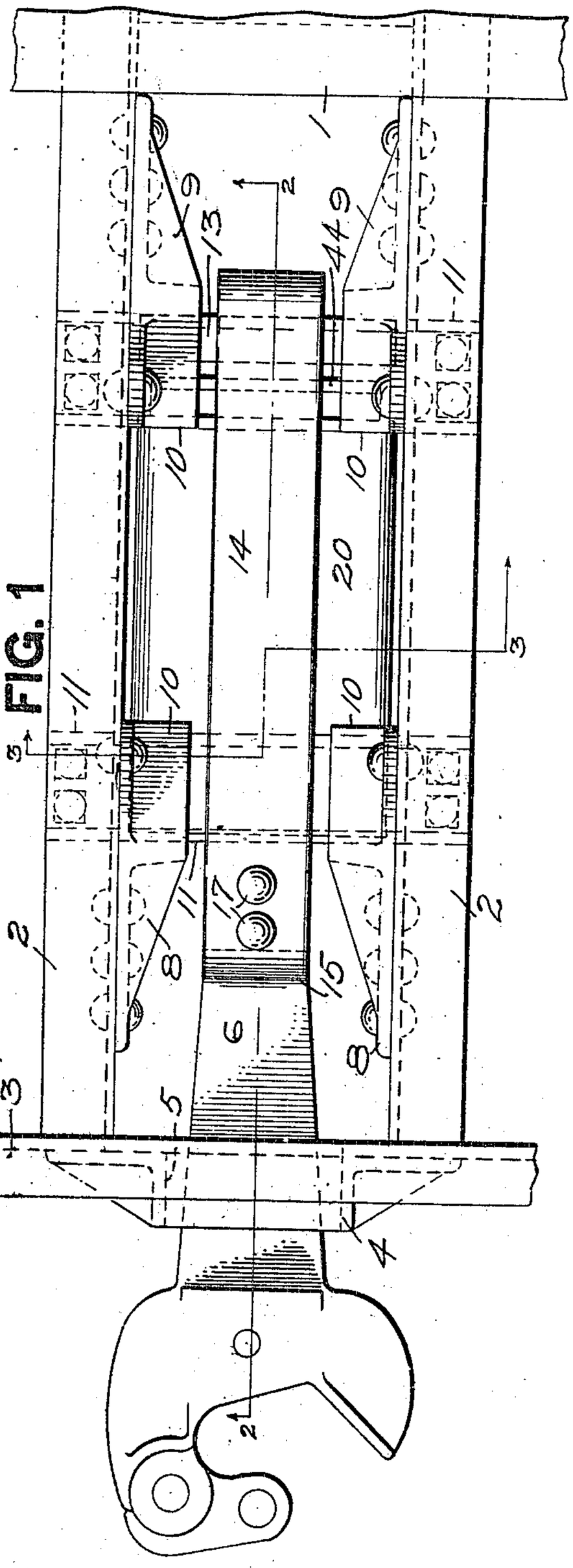
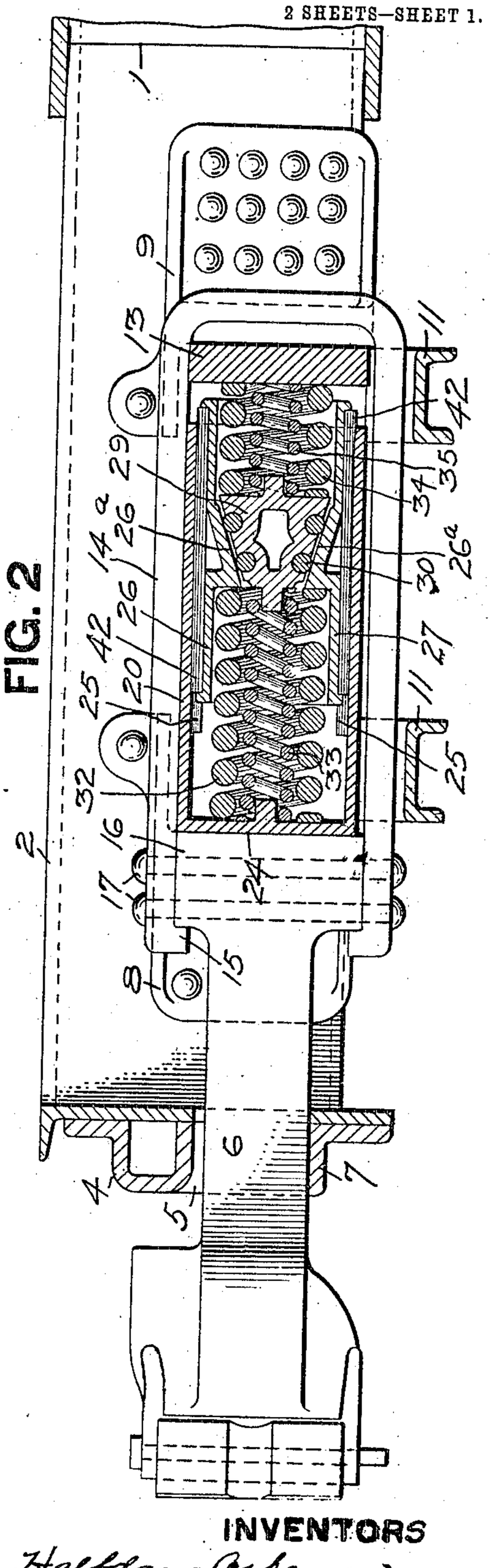


FIG. 2



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UNITED STATES PATENT OFFICE.

HALFDAN ASPER AND CHARLES B. BORYESON, OF BUTLER, PENNSYLVANIA.

FRICTION DRAFT-RIGGING.

No. 837,533. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed April 3, 1906. Serial No. 309,655.

To all whom it may concern:

Be it known that we, HALFDAN ASPER and CHARLES B. BORYESON, residents of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Friction Draft-Rigging; and we do hereby declare the following to be a full, clear, and exact description thereof.

This invention relates to friction draft mechanism for railway-cars; and its object is to provide a device of this character embodying features of construction, arrangement, and advantages hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of our draft-gear. Fig. 2 is a vertical longitudinal section through the same on the line 2 2, Fig. 1. Fig. 3 is a transverse section on the line 3 3, Fig. 1. Fig. 4 is a longitudinal section through the outer or main friction member. Fig. 5 is a transverse section of the same on the line 5 5, Fig. 4. Fig. 6 is a plan view of one of the top or bottom internal friction-plates. Fig. 7 is a longitudinal section through the same. Fig. 8 is in part an end view and in part a transverse section of the same on the line 8 8, Fig. 6. Fig. 9 is a face view of one of the side internal friction-plates. Fig. 10 is an edge view of the same. Fig. 11 is in part an end view and in part a transverse section of the same on the line 11 11, Fig. 9. Fig. 12 is a longitudinal section of the wedge-block. Fig. 13 is a plan view of the same. Fig. 14 is a perspective view of one of the antifriction-rollers, and Fig. 15 is a similar view of one of the friction-ribs.

Our friction draft-gear is adapted to be applied to any construction or type of railway-car, and while the drawings show the same applied to a steel underframe it will be understood that this is illustrative merely.

In the drawings the body-bolster is indicated at 1, the draft-beams at 2, and the end sill at 3. All of these parts are shown as of standard steel construction. The end sill is provided with a buffer-casting 4, having an opening 5, through which passes a coupler-shank 6, said coupler-shank being supported by the angle-bar 7, as is the usual custom.

Riveted to the inner faces of the draft-beams are the front draft-lugs 8 and the rear draft-lugs 9, which are or may be of any desirable construction, those shown being castings. Preferably, however, these draft-lugs are provided with top projecting portions 10, which overhang the draft-gear and prevent the same from jumping out under the jolting of the train. The draft-gear is prevented from dropping down by the cross supporting members 11, shown as castings, which are secured to the lower flanges of the draft-beams.

Bearing normally against the rear draft-lugs 9 is a follower-plate 13, which is arranged to be engaged by the strap or yoke 14, having its forward ends bent inwardly, as at 15, to engage a head 16 on the coupler-shank, to which head said yoke is suitably secured, as by means of rivets 17. These parts are old and their function and mode of operation are well understood.

The friction-gear itself comprises a main or outer friction member 20, preferably rectangular in cross-section and being, in effect, a box having a top wall 21, bottom wall 22, side walls 23, and front end wall 24 and being open at its rear end. The front end of this friction member bears against the head 16 on the coupler-shank and normally also bears against the front draft-lugs 8. It is provided on all four inner faces with longitudinal ribs 25. Coöperating with this main friction member are four internal friction-plates—namely, top plate 26, bottom plate 27, and two side plates 28. The top and bottom plates are similar in construction, and each thereof is provided on its inner face with an incline or wedge 26^a, with which coöperates the wedge-block 29. This wedge-block is preferably provided with seats for receiving antifriction-rollers 30, which prevent the same from sticking between the top and bottom friction-plates. Said wedge-block is provided on its forward and rear faces with centering-lugs 31 for the springs 32 33 34 35, which are interposed between said wedge-block and the rear follower-plate 13 and the forward end wall 24 of the box, respectively. There is nothing new in the arrangement of these springs and they may be varied within wide limits.

The top and bottom plates are provided with inwardly-projecting webs 38, having on

their outer faces inclined portions 39, which bear against corresponding inclined portions 40 on the inner faces of the side friction-plates 28. From Fig. 3 it is evident that when the top and bottom plates are moved, respectively, up and down the inclined faces 39 will ride up and down on the inclined faces 40, thus forcing the side friction-plate 28 outwardly.

The top, bottom, and side friction-plates are provided with longitudinal ribs 42, and to facilitate manufacture and assemblage these ribs are preferably formed separate from the friction-plates and are located between front end ribs 43 and rear end ribs 44, so that said longitudinal ribs move with the friction-plates themselves. The front cross-ribs 43 are notched, as shown, to pass the longitudinal ribs on the outer friction member. The top and bottom friction-plates are provided with notches 45 for receiving lugs 46 on the side plates to cause all of said plates to move in unison.

The operation of our draft-gear is substantially the same as in prior devices. Under tugging strains the outer friction member 20 rests against the front draft-lugs 8 and is therefore the stationary member. The draw-bar by means of the yoke 14 draws the follower-plate 13 forwardly, thus compressing the springs 34 35 and forcing the wedge-block 29 between the inclined faces on the top and bottom friction-plates. Consequently said friction-plates are forced outwardly—that is, up and down, respectively, and into firm frictional engagement with the ribbed inner faces of the outer friction member 20. This outward movement of the top and bottom friction-plates through the contacting inclined faces 39 and 40 on said top and bottom plates and side plates, respectively, also forces the side plates 28 outwardly and into firm frictional engagement with the ribbed inner side faces of the outer member 20. Consequently a strong frictional engagement is secured on all sides of the friction members.

Under buffing strains the rear follower-plate 13 is in contact with the rear draft-lugs 9 and becomes the relatively stationary portion, while the draw-bar forces the outer friction member 20 to the rear, thus carrying the friction-plates backwardly over the wedge-block 29 and producing the same expansion of the internal friction-plates as is above described.

The friction mechanism illustrated is simple and cheap of construction and provides a maximum amount of friction-surface, and the efficiency is correspondingly high. There are no parts which are liable to derangement or displacement, and the device possesses great durability under severe uses.

It is obvious that changes may be made in the details of construction and arrangement. For instance, the top, bottom, and side friction-plates might be reversed—that is, inwardly-inclined projections might be formed on the side plates instead of on the top and bottom plates. The effect would be the same as though the rigging were rotated a quarter-turn on its longitudinal axis.

What we claim is—

1. In friction draft mechanism, the combination of an outer friction member, two pairs of oppositely-facing inner friction-plates, means for expanding one pair of said plates, and connections between the two pairs whereby the expansion of one pair causes the expansion of the other pair.

2. In friction draft mechanism, the combination of an outer rectangular friction member provided with internal friction-faces, a pair of friction-plates oppositely arranged and provided with inclines on their inner faces and with transverse inclines, a wedge-block engaging the inclines on the inner faces of said plates and arranged to expand the same, and two other friction-plates provided with transverse inclines on their inner faces arranged to contact with the transverse inclines on the first-named plates.

3. In friction draft mechanism, the combination of an outer rectangular friction member provided with four internal ribbed friction-faces, two pairs of oppositely-facing ribbed friction-plates coöperating with the ribbed friction-faces of the outer member, one pair of said friction-plates being provided with internal inclined faces, a wedge-block coöperating with said inclined faces and serving to expand said plates, and coöperating inclined faces on the two pairs of friction-plates whereby the expansion of the one pair also expands the other.

4. In friction draft mechanism, the combination of a rectangular internally-ribbed outer friction member, two pairs of oppositely-facing externally-ribbed friction-plates, means for expanding one pair of said plates, and connections between the two pairs whereby the expansion of the one pair causes the expansion of the other pair.

5. In friction draft mechanism, the combination of an outer friction member provided with internal longitudinal ribs, a pair of oppositely-facing ribbed friction-plates coöperating therewith, a wedge-block arranged to expand said friction-plates, another pair of friction-plates ribbed externally and coöperating with the outer friction member, and coöperating wedge-faces on said friction-plates whereby the expansion of the one pair causes the expansion of the other pair.

6. In friction draft mechanism, the combination of an outer friction member provided with internal friction-faces, a pair of friction-plates coöperating therewith, means for expanding said friction-plates under buffing and tugging strains, inclined faces on said friction-plates arranged at right angles to

their friction-faces and to the axis thereof, a second pair of friction-plates provided with transverse inclines on their inner faces which coöperate with the wedges on the first-named friction-plates whereby the expansion of the first-mentioned friction-plates causes the expansion of the second pair of friction-plates.

In testimony whereof we, the said HALFDAN ASPER and CHARLES B. BORYESON, have hereunto set our hands.

HALFDAN ASPER.
CHARLES B. BORYESON.

Witnesses:
ROBERT C. MCABOY,
JACOB M. PAINTER.