

1,065,070.

J. F. O'CONNOR.
RAILWAY DRAFT RIGGING.
APPLICATION FILED DEC. 9, 1911.

Patented June 17, 1913.

3 SHEETS-SHEET 1.

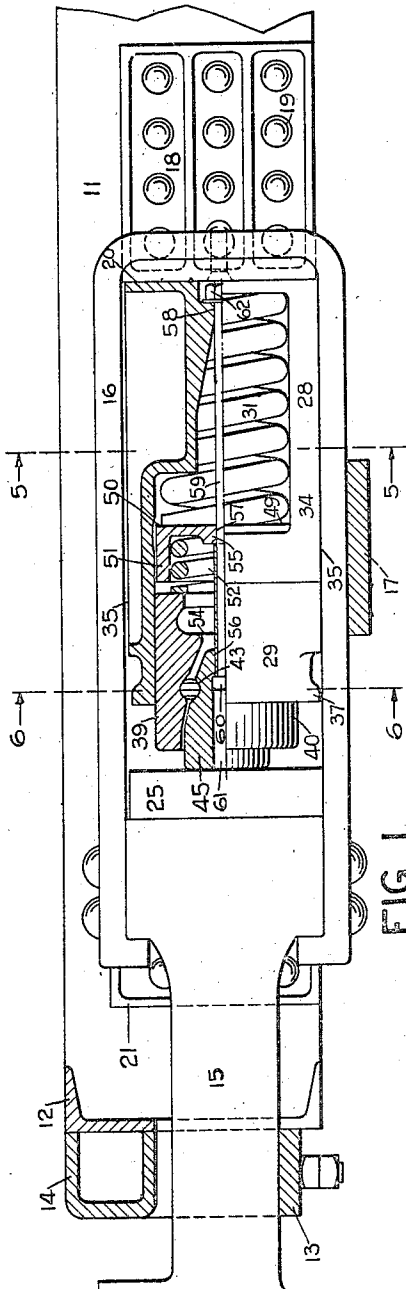


FIG. 1

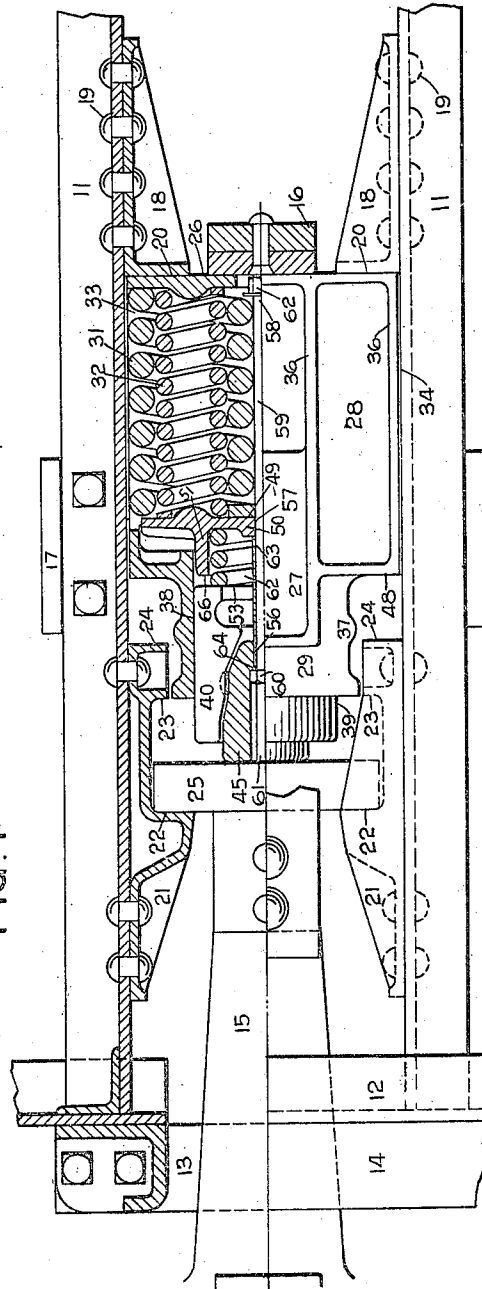


FIG. 2.

WITNESSES

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3 SHEETS—SHEET 2.

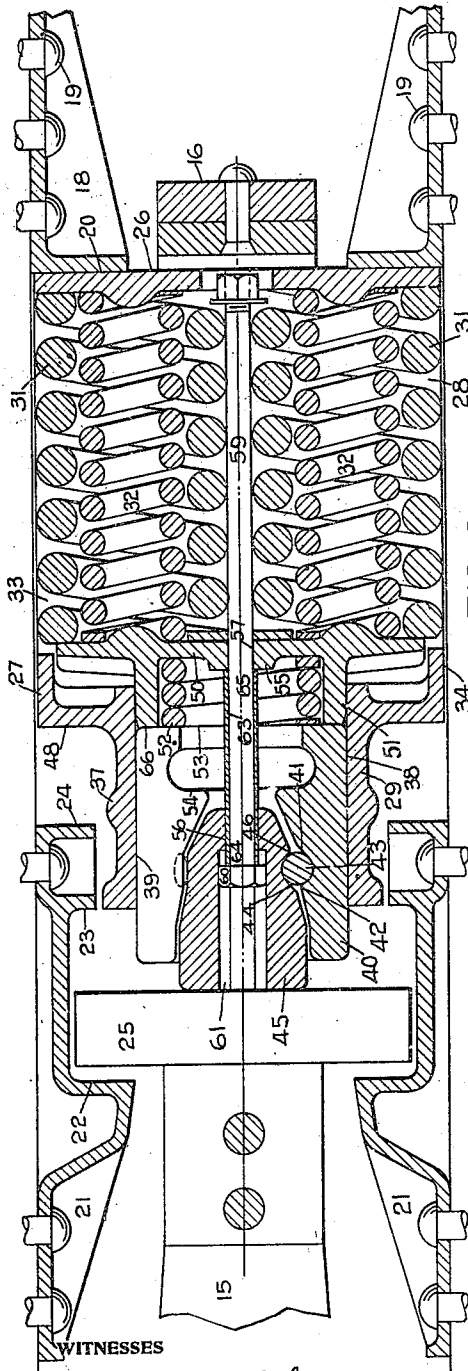


FIG. 3.

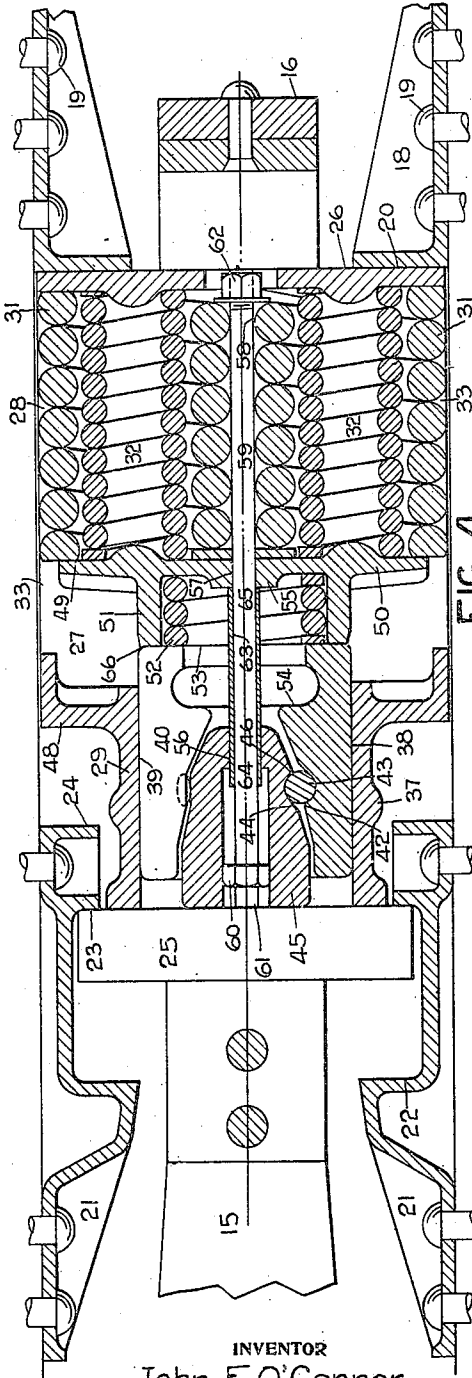


FIG. 4.

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3 SHEETS—SHEET 3.

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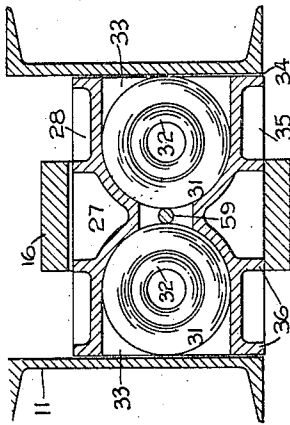


FIG. 5.

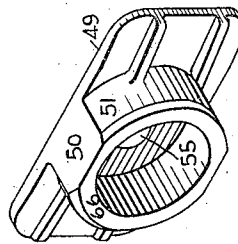


FIG. 9.

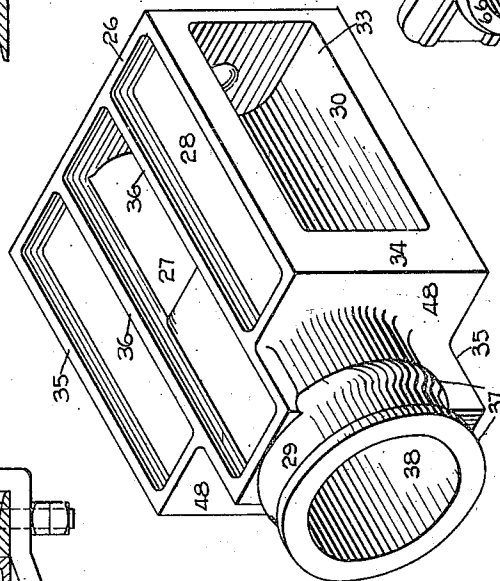


FIG. 7.

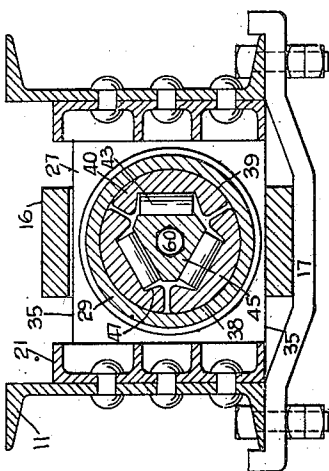


FIG. 6.

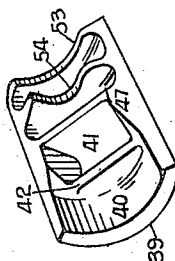


FIG. 8.

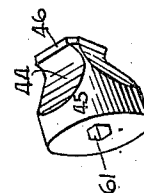


FIG. 10.

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RAILWAY DRAFT-RIGGING.

1,065,070.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Railway Draft-Rigging, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to improvements in railway draft rigging.

In the practical operation of railroads it is desirable in coupling cars, and in starting and stopping trains of cars, and accelerating and retarding train movement that the cars be capable through their tractive connection with the locomotive of receiving each in succession, and in graduating degrees in each, the impetus of the locomotive both in pulling and buffing action. In the draft rigging employed it is therefore desirable that the ratio of increase in resistance to compression be low on the initial movement, and for a determined distance, the ratio of increase for the remainder of the movement being preferably very high.

One of the objects of my invention is to provide a draft rigging which will practically accomplish this result.

Another object is to provide a friction draft rigging of strong, simple, efficient and durable construction, and in which the friction shell and spring cage may be in one piece, and arranged for the easy assembling, removing and changing of contained parts.

To practically accomplish these objects I combine with the draw bar, followers, stops, springs and friction devices, (the latter comprising a longitudinally movable friction shell, friction blocks within the shell, and a wedge or spreader block and anti-friction rollers interposed between the wedge and friction blocks), a two faced spring seat and supplemental compression resisting devices, preferably a supplemental spring, interposed between the friction blocks and the main springs by means of the said spring seat so that for a determined distance the movement of the friction blocks is resisted by the preliminary or supplemental spring only.

In the accompanying drawings forming a part of this specification Figure 1 is an ele-

vation partly in central vertical longitudinal section of a friction spring draft rigging embodying my invention. Fig. 2 is a plan view partly in horizontal section. Fig. 3 is a horizontal section showing the position of the parts within the friction shell and spring cage on preliminary buffing movement with the supplemental spring compressed without any movement of the two faced spring seat. Fig. 4 is a horizontal section showing the position of parts in full buff. Fig. 5 is a cross section upon line 5, 5 of Fig. 1. Fig. 6 is a cross section on line 6, 6 of Fig. 1. Fig. 7 is a perspective view of the integral friction shell and spring cage. Fig. 8 is a perspective view of one of the friction blocks or shoes. Fig. 9 is a perspective view of the double faced spring seat. Fig. 10 is a perspective view of the wedge or spreader block.

In the drawings 11 are the draft sills or members of the car frame to which the draft rigging is applied, 12 the end sill, 13 the carry iron, 14 the buffer block, 15 the draw bar, 16 the draft yoke, 17 the carrier plate, 18 rear stop members secured to the draft members or sills, preferably by the rivets 19, and having rear stop shoulders 20, 21 front stop members having front stop shoulders 22 and limiting stop shoulders 23 and 24, 25 is the front follower. The rear follower 26, which abuts against the stop shoulders 20 of the rear stop members 18, is preferably made integral with the shell 27. The shell 27 consists of a spring cage 28 and a friction cylinder 29, preferably integral therewith. The twin spring cage 28 is preferably of a general rectangular shape, and provided with sockets or seats 30 to receive the preferably side by side arranged spring cushioning members or main springs 31, 31, each of which preferably incloses a smaller spring 32, 32 nested within it. The spring cage 28 is provided with longitudinal slots or openings 33 in its upright faces 34, which fit between the center sills 11, the upright faces of the spring cage serving as guides in its reciprocating movements. The openings 33 permit the insertion into the spring cage therethrough of the main springs 31, 31 and 32, 32. The upper and lower horizontal faces 35 of the spring cage fit and engage the inner faces of the draft yoke 16, the lower member of which draft yoke rests

upon the carrier plate 17, and thus supports the entire cushioning mechanism of the draft rigging. The spring cage is provided in preferable construction with upper and lower longitudinal ribs 36.

The friction cylinder or friction shell 29 is cylindrical in form or circular in cross section, and is preferably provided with external annular ribs 37 to give it further strength. It has a longitudinally extending annular friction face 38, which is in sliding frictional contact with the exterior friction face 39 of the segmental friction shoes 40, which are preferably three in number. Each of the friction shoes 40 has an inclined or wedging inner face 41 furnished with a stop shoulder 42, which limits the release position of the anti-friction roller 43, one of which is interposed between each of the friction shoes and the corresponding wedge face 44 of the wedge 45, which abuts against the front follower 25. The wedge is preferably of pyramidal form and with three wedge faces, one for each of the friction shoes, and each inclined face of the wedge has a shoulder 46 to retain the anti-friction roller 43 in its proper transverse arrangement. Each of the friction shoes is also provided with shoulders 47 for engagement with the ends of the anti-friction roller 43 to keep the roller in place lengthwise. These friction cushioning members are within the friction shell 29, which is preferably integral with the spring cage 28, forming the shell 27.

The forward corners 48 of the spring cage serve as stop shoulders for engagement with the rear limiting stop shoulder 24 of the front stop member 21 to limit the forward movement of the shell under pulling strains, and to distribute the shock to the draft sills at different points of their length. The forward ends of the main springs 31, 31 and 32, 32 engage the rear face 49 of the double faced spring seat 50. The forward face of the spring seat 50 is provided with a collar 51 within which the rear end of the supplemental spring 52 is seated. The forward end of said spring is seated against the annularly arranged segmental friction shoes 40, and preferably against their rear end faces 53.

The numeral 54 designates shoulders upon the segmental friction shoes. In preferable construction I employ one supplemental spring, seated as hereinbefore described.

The double faced spring seat 50 is also provided with a central bearing or hub portion 55. The wedge 45 is provided with a perforation 56, the double faced spring seat with the perforation 57, and the rear end of the spring cage with the perforation 58 for the insertion of the connecting rod 59 therethrough. The connecting rod is furnished at its forward end with the head 60,

which fits in longitudinally sliding engagement within the recess 61 in the wedge 45. At its rear end the connecting rod 59 is threaded to receive the nut 62. The thimble 63 incloses a portion of the connecting rod 59, the forward end 64 of said thimble extending into the rear end of the opening in the wedge, and its rear end 65 is seated against the hub 55 of the double faced spring seat 50.

In normal position of the parts of the draft rigging, as illustrated in Fig. 2 of the drawings, the forward edge 66 of the collar 51 of the double faced spring seat is separated by a predetermined space from the rear ends 53 of the friction shoes 40. In assembling the gear the main springs 31, 31 and 32, 32 are given an initial loading, preferably greater than the compressed capacity of the preliminary spring 52, and are held in this position by the connecting rod 59 and the sleeve or thimble 63. On movement of the draw bar the supplemental compression resisting device or spring 52 compresses within the collar 51 of the double faced spring seat, and then the rear end of the friction shoes engage the forward faces 66 of the said collar. Thereupon the twin springs come into action. The supplemental compression resisting device also serves to take up the wear, if any there be, between the friction shoes and the friction shell.

I claim:—

1. In a friction draft rigging the combination with a draw bar, draft yoke, stop members, and a longitudinally movable shell, of friction members within the shell, a supplemental spring engaging the friction members, main springs and a spring seat connecting them with the supplemental spring, the movement of the draw bar being cushioned first by the supplemental spring in connection with the friction members, and secondly by the main springs in connection with the friction members.

2. In a friction draft rigging the combination with a draw bar, draft yoke, stop members and a shell, of friction shoes and wedge within the shell, a spring seat engaging therewith, a supplemental spring device contacting with the friction shoes, main springs and a double faced spring seat between the same and the supplemental spring device, the said spring seat being provided with means contacting with the friction shoes upon the compression of the supplemental spring device.

3. In a friction draft rigging the combination with a draw bar, draft yoke, stop members and a shell, of friction shoes within the shell, a supplemental spring in contact with the friction shoes, main springs, and a double faced spring seat between the same and the supplemental spring, the said spring seat being provided with a collar within

which the supplemental spring compresses, and which contacts with the friction shoes upon such compression.

4. In a friction draft rigging the combination with a draw bar, draft yoke and stop members, of a longitudinally movable friction shell, friction shoes and spreading device within said friction shell, a spring cage connected with said friction shell, springs within said spring cage, a double faced spring seat and supplemental spring, the said double faced spring seat being provided with a forwardly extending collar, the said spring devices re-acting at one end against the spring cage, and at the other end against the double faced spring seat, the said supplemental spring being interposed between the double faced spring seat and

the ends of the friction shoes, and the collar of the spring seat engaging the ends of the friction shoes upon full compression of the supplemental spring.

5. In a friction draft rigging, a compression resisting device comprising a friction cylinder, a spring cage connected thereto, friction members within the friction cylinder, main springs within the spring cage, a supplemental spring contacting with the friction members, and a movable spring seat interposed between the main springs and the supplemental spring.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."