No. 692,653. Patented Feb. 4, 1902.

R. D. GALLAGHER, JR.

DRAFT AND BUFFING RIGGING.

(Application filed Nov. 15, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2

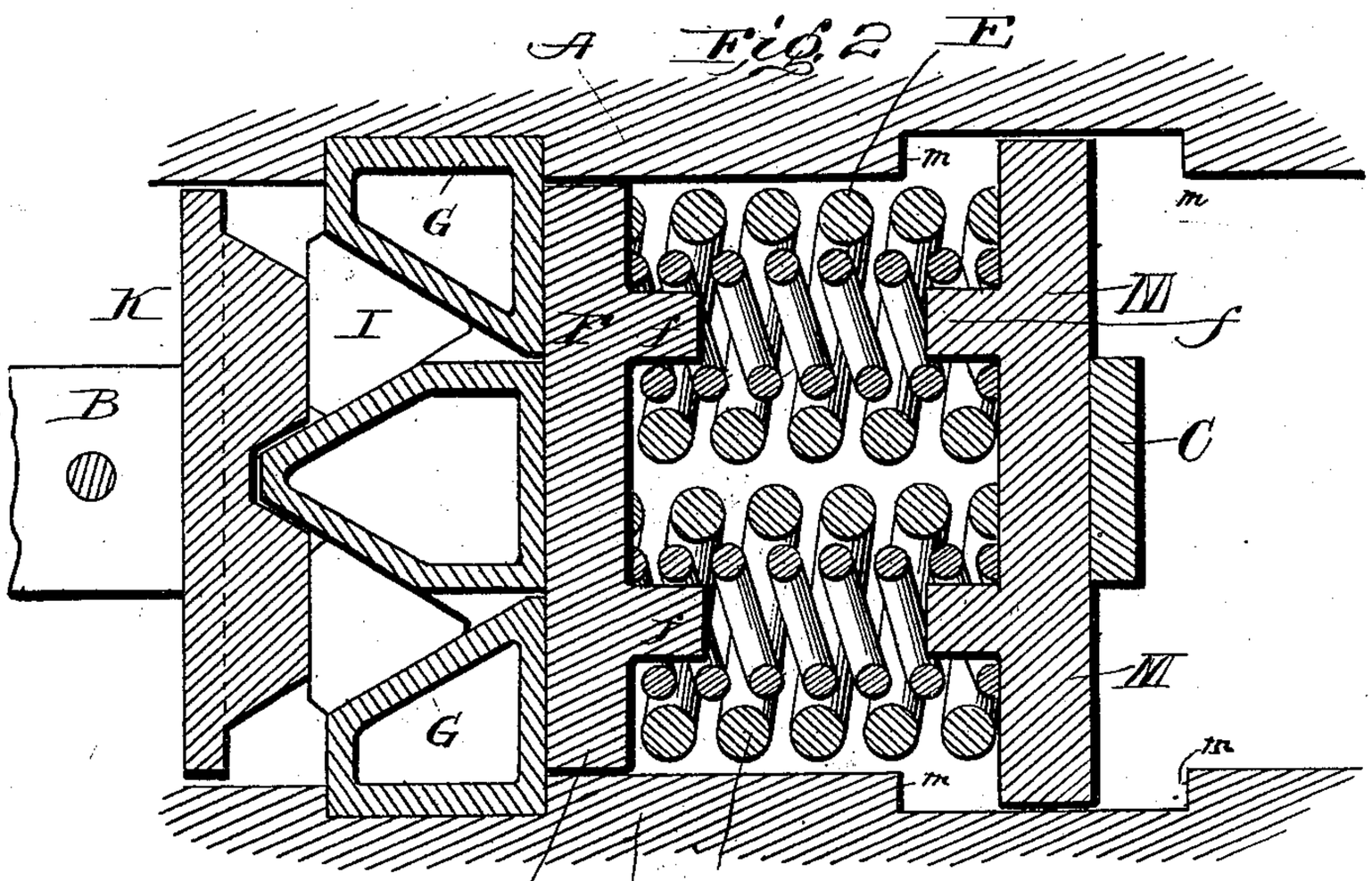

Fig. 1.

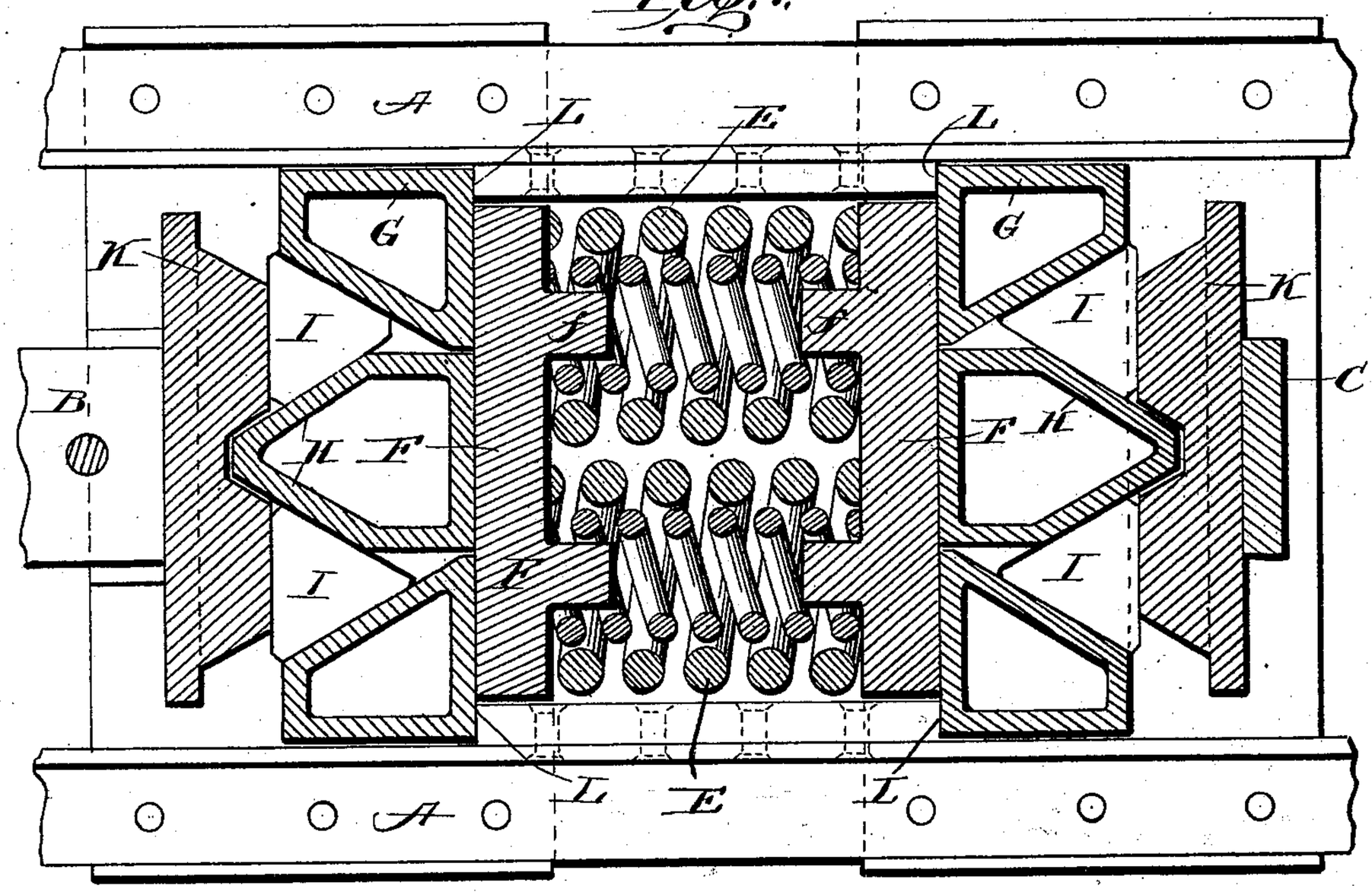

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Fig. 3

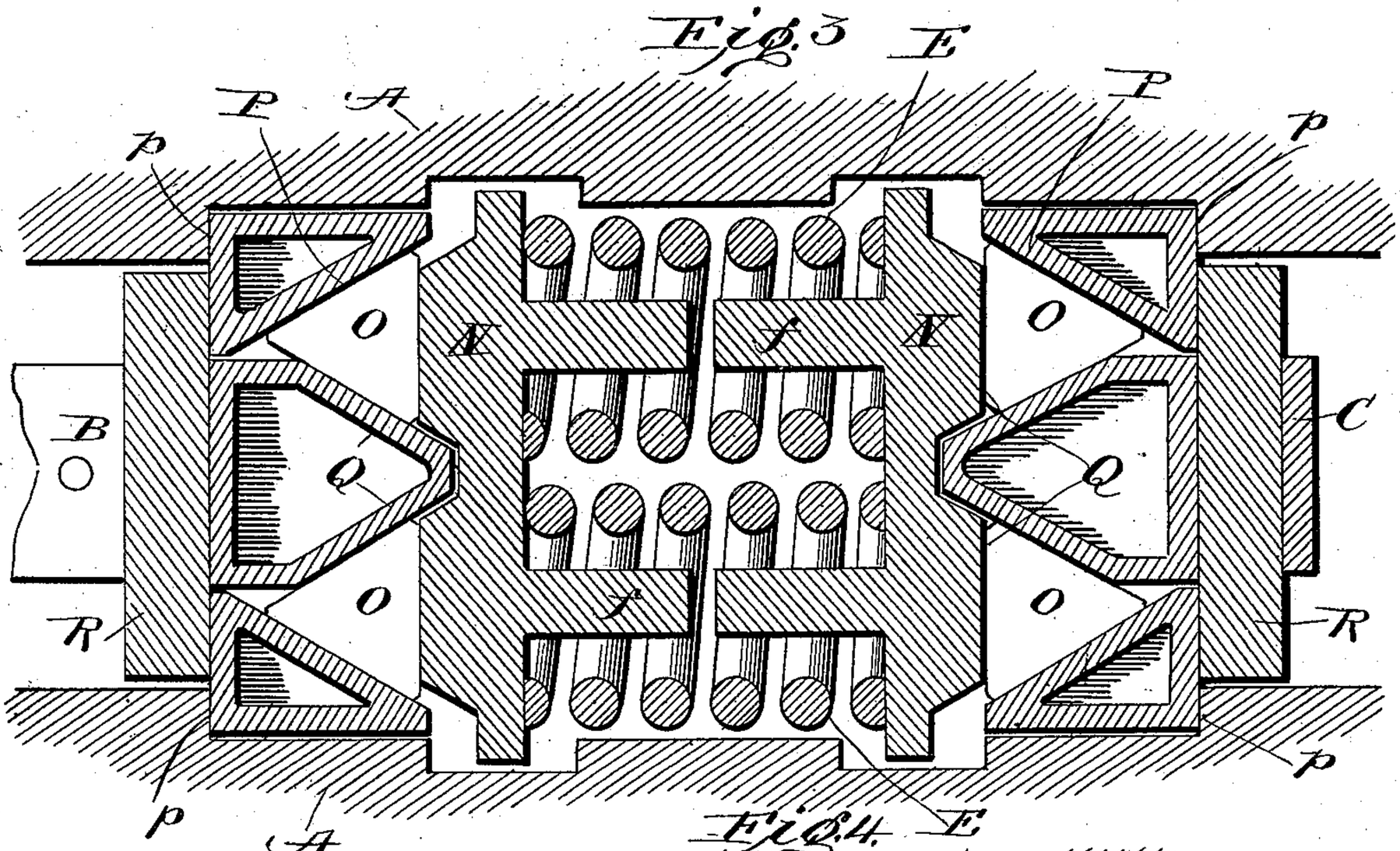
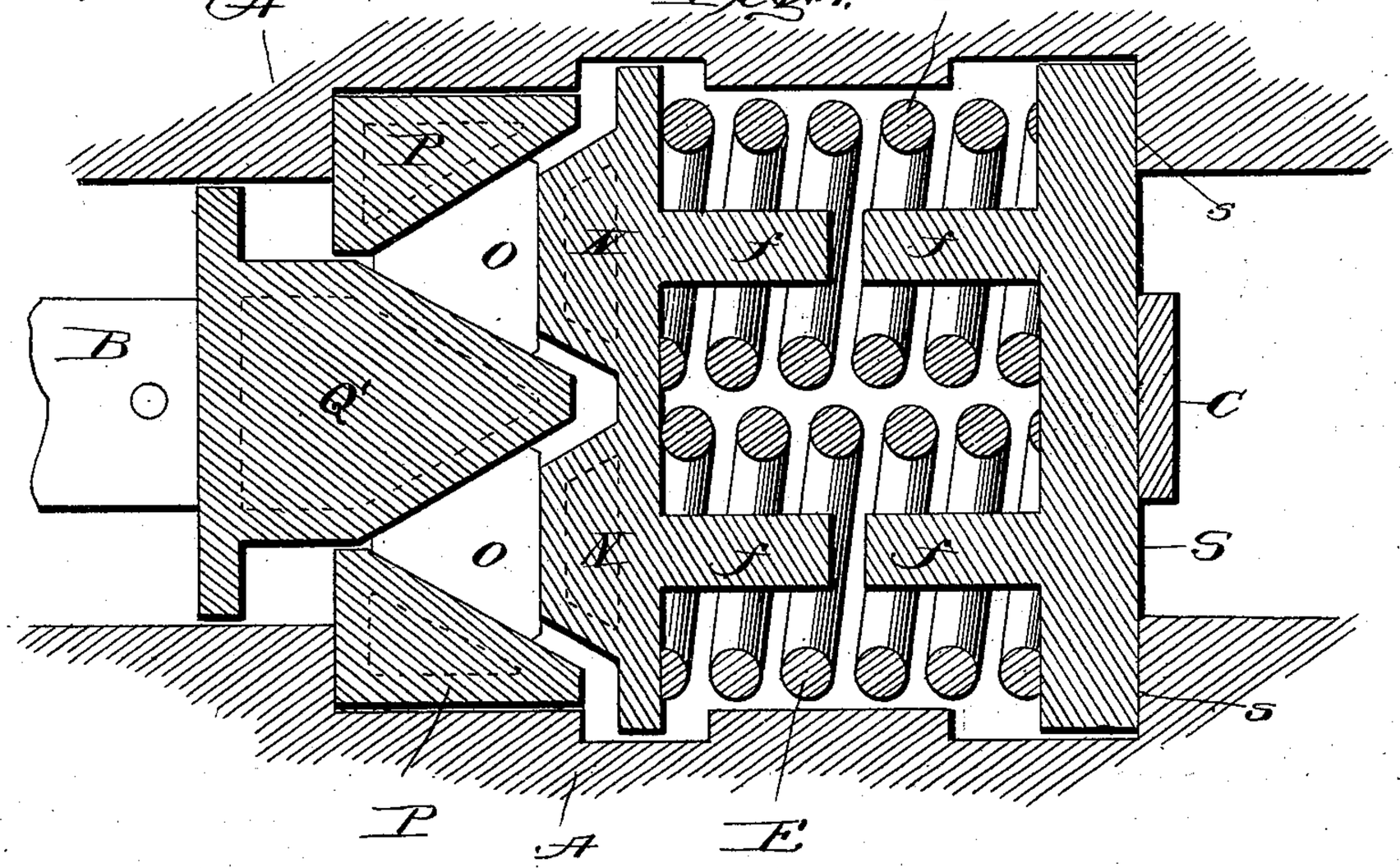


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DRAFT AND BUFFING RIGGING.

SPECIFICATION forming part of Letters Patent No. 692,653, dated February 4, 1902.

Application filed November 15, 1901. Serial No. 82,460. (No model.)

To all whom it may concern:

Be it known that I, RICHARD D. GALLAGHER, Jr., a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Draft and Buffing Rigging; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in rigging designed more especially for use in connection with railway-car equipment for resisting buffing and draft strains, although the invention is not limited to such use. The type of rigging is well exemplified in my prior patents, Nos. 677,654 and 681,880, and in contemporaneous applications, Serial Nos. 66,726, 73,287, 73,288, and 73,289.

The object of the present improvements is to provide a structure wherein ordinary springs, or springs having the usual or a short range of compression, may be employed with a corresponding range of draw-bar movement, if so desired, and at the same time secure the advantages due to the augmentation or modification of the spring resistance by the interposition between the draw-bar and spring of friction elements having a differential movement with relation to each other.

The invention consists, primarily, in providing the yielding pressure-resisting member or spring with a retreating support controlled in its movements by the pressure-transmitting member or draw-bar and with a friction-gear for creating a differential movement to effect the desired spring compression.

The invention further consists in certain novel details of construction and combinations and arrangements of parts, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a horizontal section through a draft and buffing rigging embodying the present improvements. Fig. 2 is a similar view showing friction elements at one end only of the spring. Fig. 3 is a view corresponding to Fig. 1, but with the friction elements reversely applied. Fig. 4 is a similar view with the reversed friction elements at one end only of the spring.

Similar letters of reference in the several figures denote the same parts.

The draft-timbers, car-framing, or other portion of the car structure which supports the draft-rigging is represented conventionally at A, while the draw-bar B and strap C, connected therewith, are of any usual or preferred character, but of course adapted for resisting the strains liable to be encountered in handling heavy rolling-stock.

Inasmuch as in accordance with the present invention it is designed that the strains shall be taken up with a relatively short spring, twin springs are preferably employed to give a greater effective resistance, and while twin springs E are illustrated in the drawings it will be understood that one or any desired number of springs may be employed without departing from the spirit of the invention.

The springs E are confined between followers F F′, which may or not, as desired, be provided with projections *f* for positioning the springs or for limiting the spring compression.

Wedging frictional elements are introduced between the follower at one or both ends and the strap or draw-bar, as the case may be, and the arrangement is such that when under pressure one follower is advanced the other is allowed to retreat, but at less speed, whereby a differential movement to render the friction elements effective and to compress the spring is secured. This result is accomplished, as shown in Fig. 1, by providing a movable guiding-frame G, a central wedge H, wedge-blocks I between the two, and a follower-plate K, coöperating with the other face of the wedge-blocks. The follower rests against the central wedge and guiding-frame, while the follower-plate receives the pressure of the pressure-transmitting member. Movement of the guiding-frame in one direction may be limited by shoulders L. Thus as against movement in one direction the frame and its inclines are fixed when the inclines

are operative, and the arrangement may be duplicated at each end of the springs. With such an arrangement pressure on one of the follower-plates causes the wedge-blocks to advance down the guiding-inclines of the frame (which is fixed while its inclines are operative) and the wedge to advance at a greater speed, the rate depending upon the relative angles of the wedging-faces. The advance of the pressure-transmitting member in applying the pressure to one follower-plate has also allowed the other follower-plate to retreat; but as the friction members at the rear end operate as a body they move in unison with the pressure-transmitting member, while the follower at the opposite end advances more rapidly, putting the spring under compression.

Obviously the friction elements need not be at both ends of the springs. Thus in Fig. 2 they are shown at one end only and the guiding-frame is shown in fixed position. The rear follower (lettered M in this instance) works loosely in a guideway between stops *m*, and the strap C engages directly therewith.

In operation forward pressure on the follower M compresses the spring directly, as in the ordinary rigging; but pressure in the opposite direction permits the rear follower to retreat and operates through the friction elements to advance the forward follower more rapidly, thereby compressing the spring, as described in connection with Fig. 1.

In Figs. 3 and 4 the arrangement of the friction elements is reversed, and as the result of such reversal the springs are compressed by the direct action of the pressure-transmitting member and the opposite end of the spring is permitted to retreat at less speed or in a less ratio. Referring particularly to Fig. 3, the springs are confined between followers N N, and coöperating with the followers are wedge-blocks O. The wedge-blocks O coöperate with inclines of guiding-frames P and with the inclines of wedges Q. The draw-bar and strap coöperate with the wedges and preferably also with the frame P, for which purpose follower-plates R may be interposed at each end, as shown. Outward movement of the frames is limited by shoulders *p;* but they are free to move inwardly together with the wedge, wedge-blocks, and follower to compress the spring. When such action takes place, the wedge at the opposite end is allowed to retreat by reason of the movement of the strap or draw-bar in the same direction, and the follower at that end being supported by the wedge-blocks will also move outwardly, but at a less speed than the draw-bar movement, and consequently the spring is compressed.

In Fig. 4 the friction elements are at one end only of the springs, the reverse arrangement of the elements (shown in Fig. 3) being preserved; but the wedge Q′ alone, and not the frame, is adapted to coöperate with the pressure-transmitting member. At the opposite end of the springs the pressure-transmitting member coöperates directly with a follower S, free to move inwardly, but limited in its outward movement by shoulders *s*.

In operation inward pressure on the follower S operates to directly compress the spring, while the opposite end of the spring is allowed to retreat, but in less ratio, owing to the action of the friction elements. Pressure in the opposite direction, acting on the wedge, causes the follower at that end of the spring to advance, but at less speed than the wedge and pressure-transmitting member, and consequently the spring compression is the same under pressure in either direction and is less in extent than the movement of the draw-bar in producing such compression. The ultimate resistance is effected in each instance through the frictional and wedging resistance of the friction elements, and such resistance is vastly increased by the compression of the spring.

With this invention short and heavy springs may be employed, the draw-bar movement being maintained, thereby saving space or permitting the equipment to be applied in the space usually occupied by an ordinary direct-compression equipment.

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

1. In a rigging such as described, the combination of the following instrumentalities, to wit; a pressure-transmitting member, a spring, connections between both ends of the spring and pressure-transmitting member whereby the spring may move bodily with the pressure-transmitting member and friction elements having a differential movement interposed between one end of said spring and pressure-transmitting member and embodying a guiding-frame held against movement when the friction elements are operative, whereby one end of the spring is advanced more rapidly than the other to effect spring compression, as set forth.

2. In a rigging such as described, the combination of the following instrumentalities, to wit; a yielding pressure-resisting member, supports therefor at opposite ends thereof, movable in the same direction during spring compression, a pressure-transmitting member and a differential friction mechanism interposed between one of said supports and the pressure-transmitting member, whereby one of said supports is moved at a greater speed than the other; substantially as described.

3. In a rigging such as described, the combination with a yielding pressure-resisting member and supports for opposite ends of said member, of a pressure-transmitting member constituting a retaining means for holding said supports against relative movement away from each other and a differential gear having friction-faces interposed between one of

said supports and the pressure-transmitting mechanism one of the elements of said gear being held in fixed position when the gear is operative whereby when the pressure-transmitting member is moved both said supports will advance in the same direction, but one will advance at greater speed than the other; substantially as described.

4. In a rigging, such as described, the combination with the bodily-movable yielding pressure-resisting member, and a pressure-transmitting member controlling the bodily movements of the resistance member, of friction-gear embodying inclines fixed when operative, wedge, follower-plate and wedge-blocks, interposed between said members at one end whereby during the bodily movement of the resisting member it is compressed to resist the movement of the pressure-transmitting member; substantially as described.

5. In a rigging, such as described, the combination with a friction-gear embodying fixed and movable inclines with interposed wedge-blocks, of a pressure-transmitting member cooperating with said friction-gear on one side, a spring coöperating with said friction-gear on the opposite side and a support moving in unison with the pressure-transmitting member and between which and the friction-gear the spring is held, whereby the spring may have a bodily movement in addition to the movement tending to compress the same; substantially as described.

6. In a rigging such as described, the combination with the spring, followers between which it is confined, and the draw-bar and strap constituting the support for preventing movement of the followers away from each other, of a guiding-frame having inclines thereon, stops for limiting the movement of the frame in one direction, a wedge, follower-plate and wedge-blocks located outside of one of the followers and coöperating therewith and with the inclines on the frame to produce a differential movement between the follower and draw-bar; substantially as described.

7. In a rigging such as described, the combination with the spring, followers between which it is confined, guiding-frames having inclined friction-faces and stops for limiting the movement of said frames, of the wedges, follower-plates and wedge-blocks, and the draw-bar and strap embracing the follower-plates and constituting the support for preventing expansion of the spring or movement of the followers away from each other; substantially as described.

8. In a rigging such as described, the combination with the guiding-frames having oppositely-directed inclines, stops for holding each of said frames against movement in one direction, the wedge-blocks coöperating with the inclines of the frame, the wedges coöperating with the wedge-blocks and the spring confined between and tending to force the wedges apart, of the draw-bar, strap and follower-plates forming an inclosing support for holding said wedges against separation, said frames, wedges and wedge-blocks forming a friction-gear for moving the wedges differentially to compress the spring; substantially as described.

9. In a rigging such as described, the combination with the oppositely-located guiding-frames, movable outwardly, fixed stops for limiting the inward movement, followers between said frames and springs confined between the followers, of wedges bearing on the followers, wedge-blocks interposed between the wedges and frames, follower-plates cooperating with the wedge-blocks and the draw-bar and strap surrounding the follower-plates and constituting the support for preventing the movement of the wedges away from each other whereby movement in either direction will allow the spring to move bodily and will cause the rear follower to advance more rapidly than the bodily movement of the spring, thereby compressing the latter to resist draw-bar movements; substantially as described.

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