G. T. MOORE.

DRAFT RIGGING.

APPLICATION FILED JUNE 17, 1918.

1,403,617.

Patented Jan. 17, 1922.

3 SHEETS—SHEET 1.

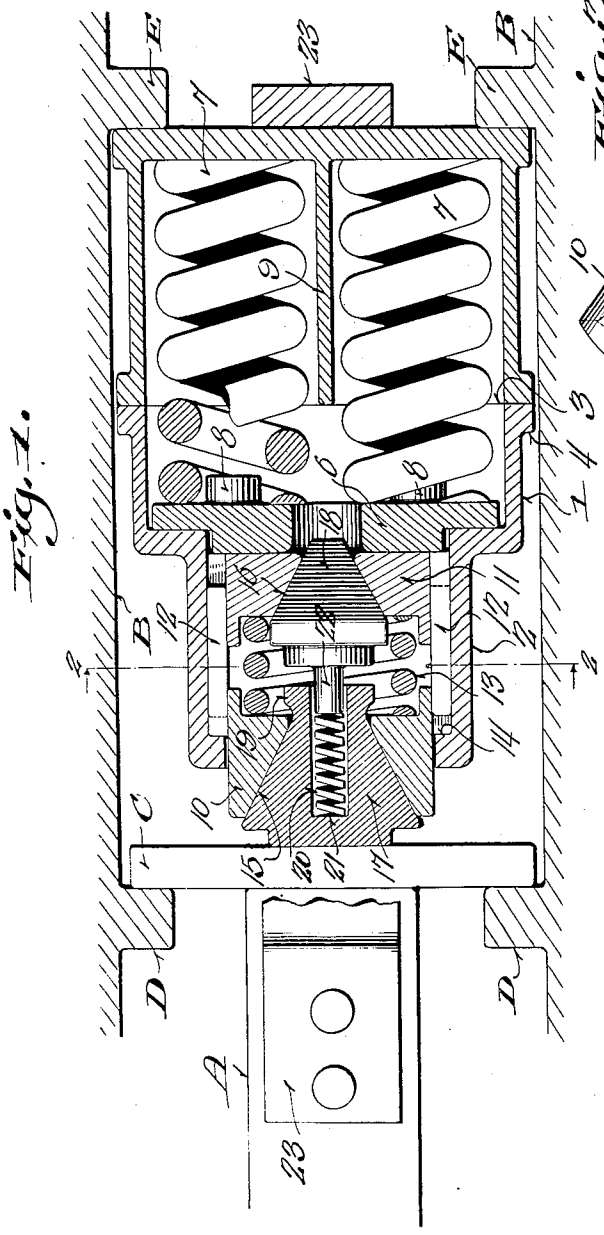


Fig. 1.

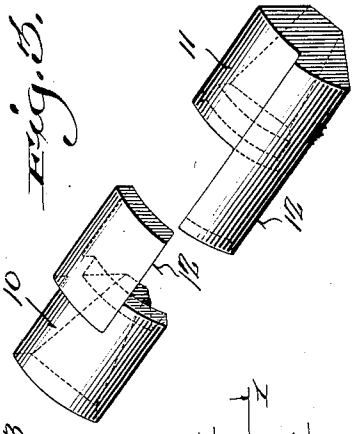


Fig. 3.

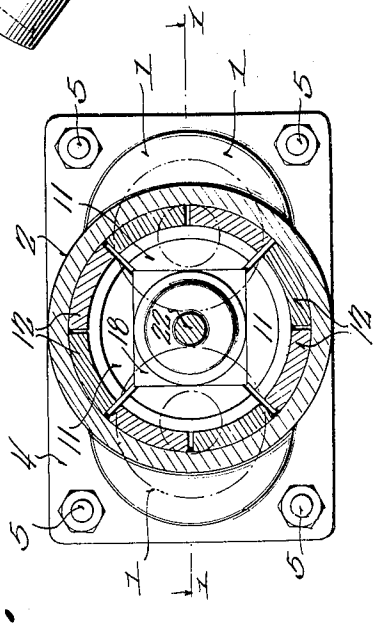


Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 4.

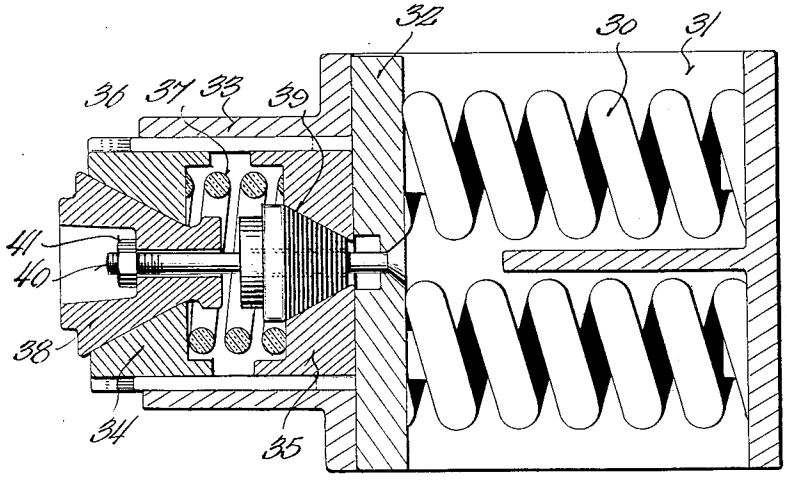
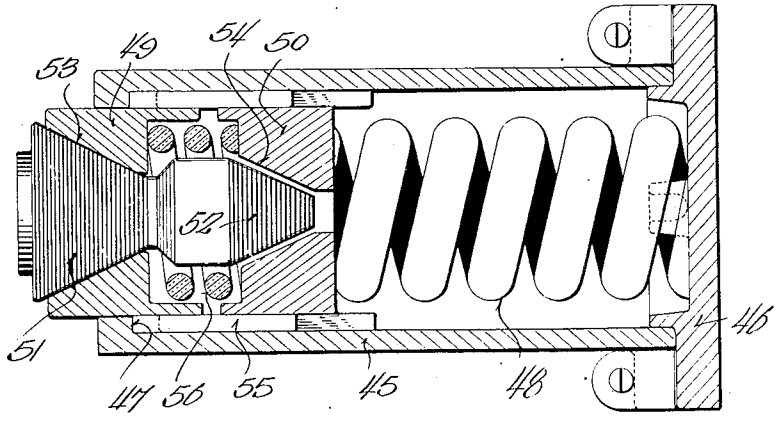


Fig. 5.



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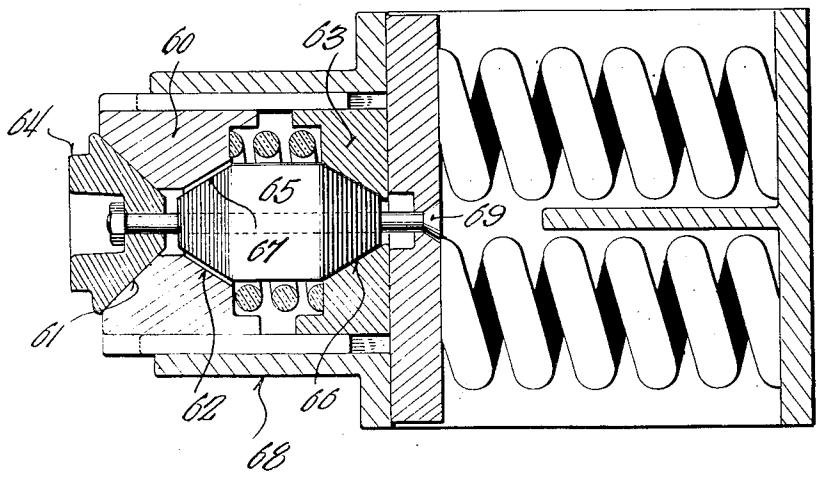
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3 SHEETS—SHEET 3.

Fig. 6.



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DRAFT RIGGING.

1,403,617. Specification of Letters Patent. Patented Jan. 17, 1922.

Application filed June 17, 1918. Serial No. 240,421.

To all whom it may concern:

Be it known that I, GEORGE T. MOORE, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Draft Rigging; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to improvements in mechanism for affording a frictional resistance to a strain in conjunction with that resistance which is exerted by a spring or springs.

The principal object of the invention is to provide a simply constructed rigging of this character which will be very efficient in operation and can be inexpensively manufactured.

A further object consists in providing a very compact arrangement of this character which, while the friction elements are of relatively small size, a maximum frictional resistance will be procured.

With these and other objects and advantages in view, the invention resides in the novel features of construction, combination and arrangement of parts which will be hereinafter more particularly described and claimed and shown in the drawings in which:

Figure 1 represents a longitudinal sectional view taken substantially on the plane of the line 1—1 of Figure 2 showing my invention applied to conventional mechanism.

Figure 2 is a transverse sectional view on the plane of the line 2—2 of Figure 1.

Figure 3 is a detail perspective view of two of the friction elements used in the device shown in Figure 1.

Figure 4 is a view similar to Figure 1 but illustrating a slightly modified form of the invention, the principal difference being in the method of assemblng the various elements.

Figure 5 is still another modified form of my invention in which a single transverse resisting spring is employed, the other two forms being for heavy duty work and therefore provided with a pair of such springs, and

Figure 6 is a sectional view of still another modified form of the invention.

Although in the present application I have illustrated several forms of the invention, it will be obvious from the examination of the drawings that each of them operates in precisely the same manner, that is to say all forms of the device are designed to offer a combined frictional and spring resistance to a load or strain, the same being applied by the draw-bar A as shown in Figure 1. The portions of the car or the like which carry the device are designated by the letter B and include a pair of center sills.

Referring more particularly to the first modification of the invention as depicted in Figures 1, 2 and 3, it will be seen that the operating parts are enclosed in a housing 1, one end of which is closed, the opposite ends having a central cylindrical barrel 2 extending therefrom; the diameter of said barrel is less than the greatest diameter of the housing, the latter, it will be noticed from Figure 2, being preferably oval. For the purpose of assembling the operating parts to be hereinafter more particularly referred to, the casing 1 is split transversely as at 3 and the abutting walls thus formed are provided with laterally extending flanges 4 which are held together by bolts and nuts 5.

The communicating opening between the main portion of the housing 1 and the barrel 2 thereof is normally closed by a yoke plate 6, against which and the opposite solid wall of the housing a pair of expansile coil springs 7 exert their tension. These springs are spaced apart and held in operative positions by teats 8 which extend from said plate 6 and by a central web extending inwardly from the closed wall of the housing 1 as indicated at 9.

The inner surface of the barrel 2 forms a friction face with which a plurality of sets of friction elements co-operate, two sets being shown in the present instance and including friction shoes designated by the numeral 10 in one set and by the numeral 11 in the other set, there being four of the shoes to each set, and the shoes have inwardly extending interlocking fingers 12, the fin-

gers of the opposite corresponding shoes being in overlapping relation thereto as shown in Figure 1. The shoes 11 have one end engaged with the spring plate 6, their other ends being spaced from the inner ends of the shoes 10, and are held in this position by an expansile coil spring 13. The shoes are retained against outward movement by the engagement of the outer ends of the fingers 12 thereof with an annular shoulder 14 formed at the outer end of the barrel 2.

Furthermore each of the shoes 10 and 11 has its inner side beveled inwardly to provide a cam face, the cam faces of the shoes 10 being designated by the numeral 15, and the similar faces of the shoes 11 by the numeral 16. In other words the cam faces 15 and 16 of both sets of shoes are inclined inwardly in the same direction toward the longitudinal axis of the barrel 2. A wedge or cam member 17 having four flat faces is provided for co-operation with the cam faces 15 of the shoes 10; a second wedge member 18 of substantially the same shape co-acts with the cam faces 16 of the shoes 11.

After the friction shoes 10 and 11 and the wedge members 17 and 18 are assembled through the inner end of the barrel 2, a head 19 on the member 17 prevents excessive outward movement thereof, similar movement of the shoes 10 being prevented by the shoulder 14 as herein before mentioned. The wedge members 17 and 18 are normally retained in spaced apart relation and in engagement with their respective cam faces 15 and 16 by an expansile coil spring 20 positioned in a socket 21 in the wedge member 17, the other member 18 having a stud 22 projecting into said socket for contact with one end of the spring.

In disposing the foregoing described device for operation in connection with the draw-bar A and the center sills of the support B, a draw-bar extension in the form of a strap or yoke 23 is disposed about the housing 1 and the barrel 2 thereof, its opposite ends being secured to the draw-bar as shown in Figure 1. Interposed between the outer end of the wedge member 17 and the adjacent end of the draw-bar A is a follower plate C, the same being extended across the channel formed between the center sills of the support B for engagement with inwardly extending stops D when a pull is exerted on said draw-bar A.

When a push is exerted on the draw-bar A the closed end of the housing 1 is brought into engagement with inwardly extending stops E similar to the stops D. This is a common form of mounting for such devices as shown in the present application. It will be obvious that when either a push or pull is exerted on the draw-bar A that the wedge members 17 and 18 will be practically simultaneously forced inwardly with respect to the housing 1 to thus expand the friction shoe elements 10 and 11 and move their friction fingers into engagement with the friction face of the barrel 2. In combination with this frictional resistance, movement of the friction elements 10 and 11 with respect to the housing 1, or vice versa, is further resisted by the tension of the springs 7.

The form of the invention illustrated in Figure 4 is quite similar to that shown in Figures 1, 2 and 3 and is likewise for heavy duty work, it having a pair of expansile coil springs 30 mounted in an open sided housing 31, the opposite ends of said springs being engaged with one end of the housing and with a spring plate 32. From the end of the housing against which this spring plate normally abuts, extends a substantially cylindrical barrel 33, the inner end of which communicates with the housing 31, the opposite end being open to permit the insertion thereinto of two sets of friction elements 34 and 35, the same having interlocking friction fingers 36 which overlap the opposite corresponding elements as in the case of the friction elements 10 and 11 and the fingers 12 thereof. As in the first described form of the invention the two sets of elements 34 and 35 are held in spaced relation by an expansile coil spring 37.

The inner faces of the elements 34 and 35 are inclined inwardly in the same direction to provide cam faces with which similarly shaped wedge members 38 and 39 respectively co-operate. Under normal inoperative conditions the inner adjacent ends of the wedge members 38 and 39 are spaced apart as in Figure 4, but as soon as tension is exerted on the device the first mentioned wedge member 38 is moved into contact with the other member 39 so that the friction elements 34 and 35 are expanded and the fingers thereof engaged with the inner surface of the barrel 33.

The friction elements 34 and 35 and the wedge members 38 and 39 are retained in assembled relation with respect to the housing 31 and the barrel 33 thereof by a bolt 40 which extends centrally of said barrel and through the members 38 and 39 and the spring plate 32. The head of the bolt engages the spring plate and a nut 41 is threaded on the opposite end and contacts with the wedge member 38.

This form of the device, as well as all the other modifications, is adapted to be associated with any preferred form of draft or buffing rigging mounting such as that designated by the characters A to E shown in Figure 1, or of any other desired design.

In the invention illustrated in Figure 5 the usual housing 45 is substantially the same size throughout its length, one end be-

ing provided with a detachable cover plate 46, while the other end has an annular shoulder 47. Therefore it will be seen that the mechanism associated with this housing is inserted thereinto when the cover plate 46 is removed.

Such mechanism includes a preferably single expansile coil spring 48, two sets of spaced friction elements 49 and 50, and a pair of wedge members 51 and 52 adapted to co-operate respectively with the elements 49 and 50. In the present instance the two wedge members 51 and 52 are formed integrally, or otherwise connected to move together.

The inclined faces of the wedge members which extend inwardly and in the same direction engage the similarly inclined or cam faces 53 and 54 of the elements 49 and 50 respectively. Said elements have interlocking friction fingers 55 for engagement with the inner surface of the housing 45; an expansile coil spring 56 normally holds the two sets of elements 49 and 50 in spaced relation as is the case in the other illustrated forms of the invention.

In Figure 6 the outermost set of friction elements 60 are considerably thicker than those heretofore described and each has its inner face inclined in two directions, that is to say, inwardly from its outer end as indicated at 61 and inwardly from its inner end as shown at 62. The inner face of each friction element 60 is therefore substantially V-shaped when viewed in side elevation or longitudinal section. The other set of friction elements 63 are substantially similar to the corresponding elements in the herein before described forms.

Also the outer wedge member 64 is similar to the outer wedge members 17, 38 and 51, and its faces engage the faces 61 of the elements 60. On the other hand, the inner wedge member 65 has its opposite ends provided with cam faces 66 and 67 respectively, the faces 66 being inclined inwardly toward its longitudinal axis for co-operation with the cam faces of the elements 63; the other faces 67 of the wedge member 65 are also inclined inwardly toward said axis but in an opposite direction to the other faces 66, the first mentioned faces 67 being engageable with the cam faces 62 of the elements 60.

The result of such construction is that the frictional force exerted by the two sets of elements 60 and 63 on the barrel 68 is more evenly distributed and the action of both sets is more nearly simultaneous than in the other forms. In other words as the wedge member 64 moves inwardly it tends to move the elements 60 in the same direction as well as outwardly, and the cam faces 62 thereof will engage the faces 67 of the inner wedge member 65 and cause the latter to shift in the same direction and consequently expand the elements 63. Thus a preliminary progressive expansion of both sets of elements 60 and 63 is provided before the inner adjacent ends of the wedge members 64 and 65 contact, after which the main movement of the wedge member 65 occurs.

The friction elements 60 and 63 and the wedge members 64 and 65 are retained in assembled relation by a bolt 69 as in the form shown in Figure 4. Also the other arrangements used in this modification are similar to such form. It is obvious that the important feature of the present modification may be readily associated with any of the other forms of the invention illustrated or in any other combination of parts.

I claim:

1. In a shock absorbing mechanism, the combination with a friction shell, of a pair of sets of friction elements arranged in tandem formation, each set including a plurality of friction shoes engageable with the shell, and a wedge for expanding the shoes, a spring disposed between the sets of friction elements for urging said sets apart, a second spring compressible in a direction parallel to the axis of the shell, and opposing inward movement of the sets of friction elements, and means for limiting expansion of the second spring to prevent compression of the first spring thereby.

2. In a shock absorbing mechanism, the combination with a friction shell, of a pair of sets of friction elements arranged in tandem formation, each set including a plurality of friction shoes engageable with the shell and a wedge for expanding the shoes, a spring disposed between the sets of friction elements for urging said sets apart, a second spring compressible in a direction parallel to the axis of the shell for exerting pressure against the inner set of elements upon inward movement thereof, and means limiting expansion of the second named spring to normally relieve the inner set of elements from the pressure of said spring.

3. In a shock absorbing mechanism, the combination of a casing having a reduced cylindrical extension at one end portion thereof, a yoke plate in the casing engageable against said end portion thereof, main compression springs in the casing bearing against the yoke plate, a pair of sets of friction elements arranged in tandem formation in the cylindrical extension, each set including a plurality of friction shoes engageable with the cylindrical extension, and a wedge for expanding said shoes, the shoes of the inner set being engageable with the yoke plate, and a spring disposed between the shoes of said sets.

4. In a shock absorbing mechanism, the combination with a friction shell, of a pair of sets of friction elements arranged in tandem formation, each set including a plu-

rality of friction shoes, and a wedge for expanding said shoes against the shell, a relatively weak spring opposing shock absorbing movement of one of the sets of friction elements, a relatively strong spring opposing shock absorbing movement of the other set of friction elements, and means for limiting expansion of the stronger spring to prevent compression of the weaker spring thereby.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

GEORGE T. MOORE.