No. 815,049. PATENTED MAR. 13, 1906.

C. A. TOWER.

DRAFT RIGGING.

APPLICATION FILED FEB. 9, 1905.

4 SHEETS—SHEET 1.

Fig. 1.

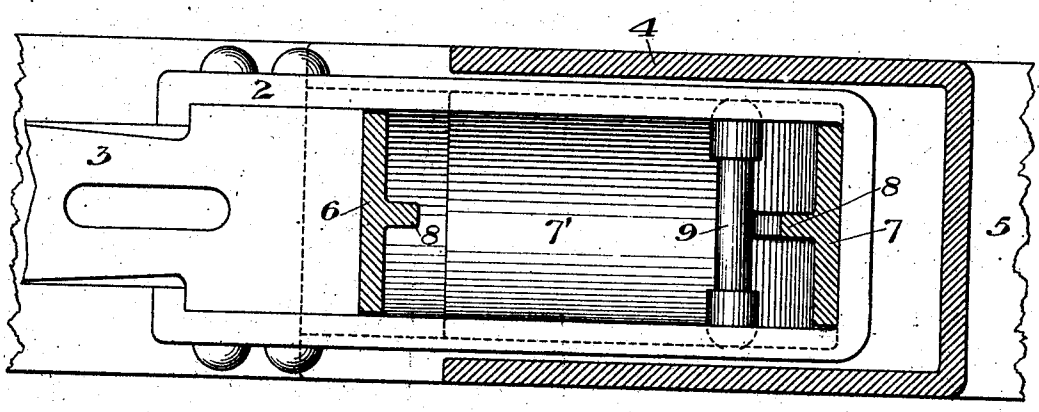
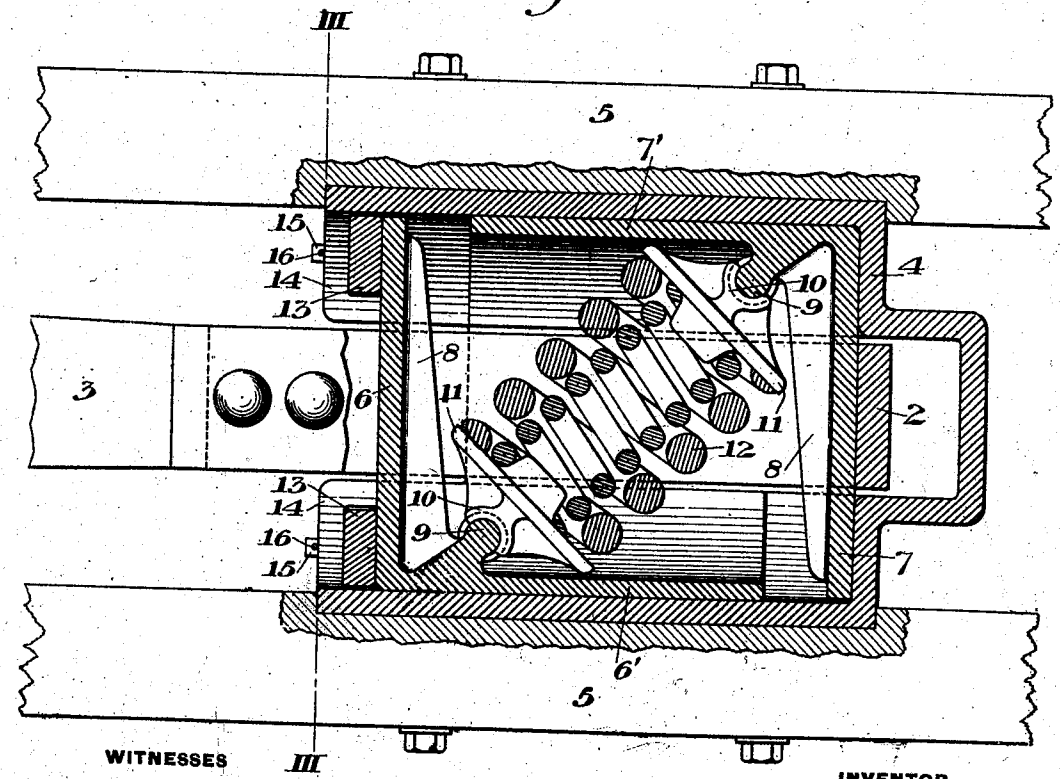


Fig. 2.



WITNESSES

Warren W. Swartz

R. A. Balderson.

INVENTOR

Clinton A. Tower

by Bartlett & Byrn

his Attorneys

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4 SHEETS—SHEET 2.

Fig. 3.

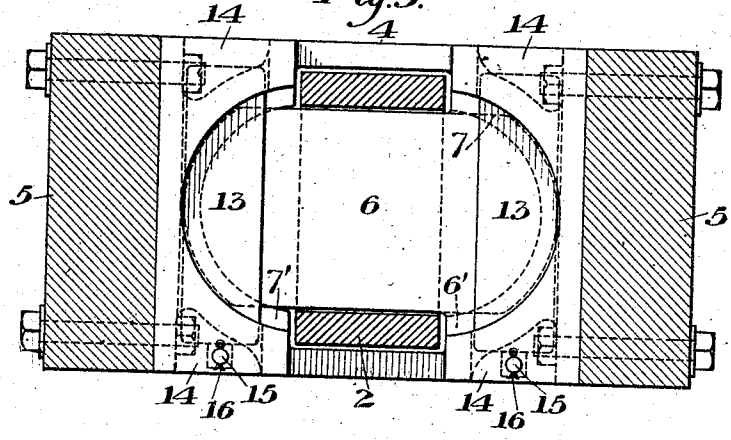


Fig. 5.

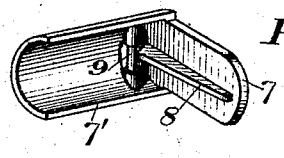
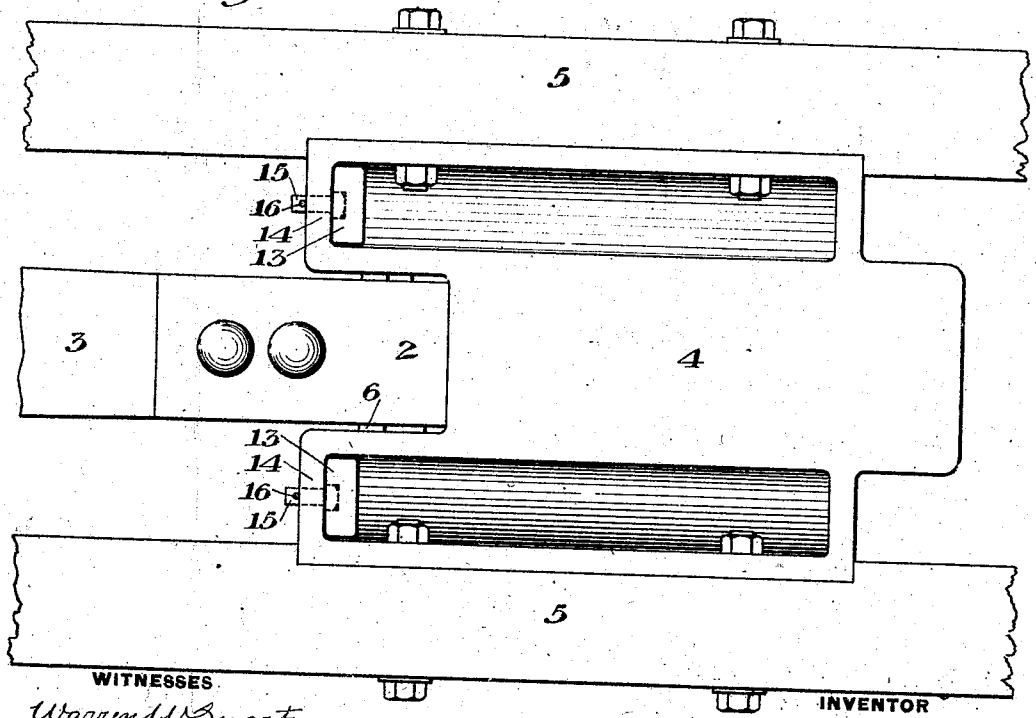


Fig. 4.



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Warren W. Swartz

R. A. Balderson

INVENTOR

Clinton A. Tower

by Bakewell Byrne

his Attorneys

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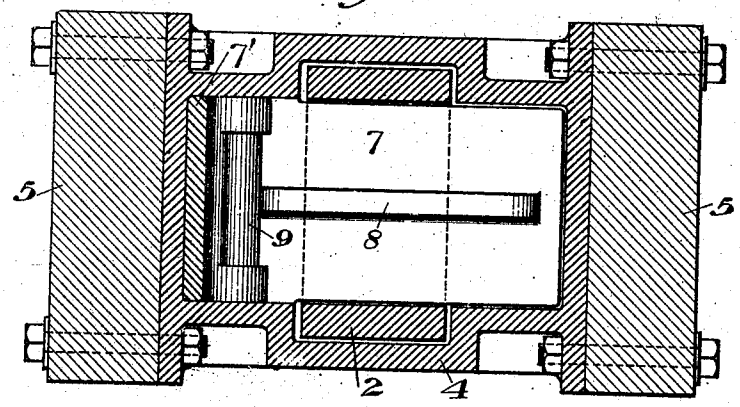
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4 SHEETS—SHEET 3.

Fig. 6.



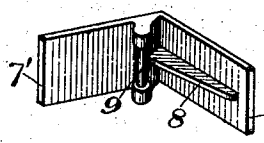
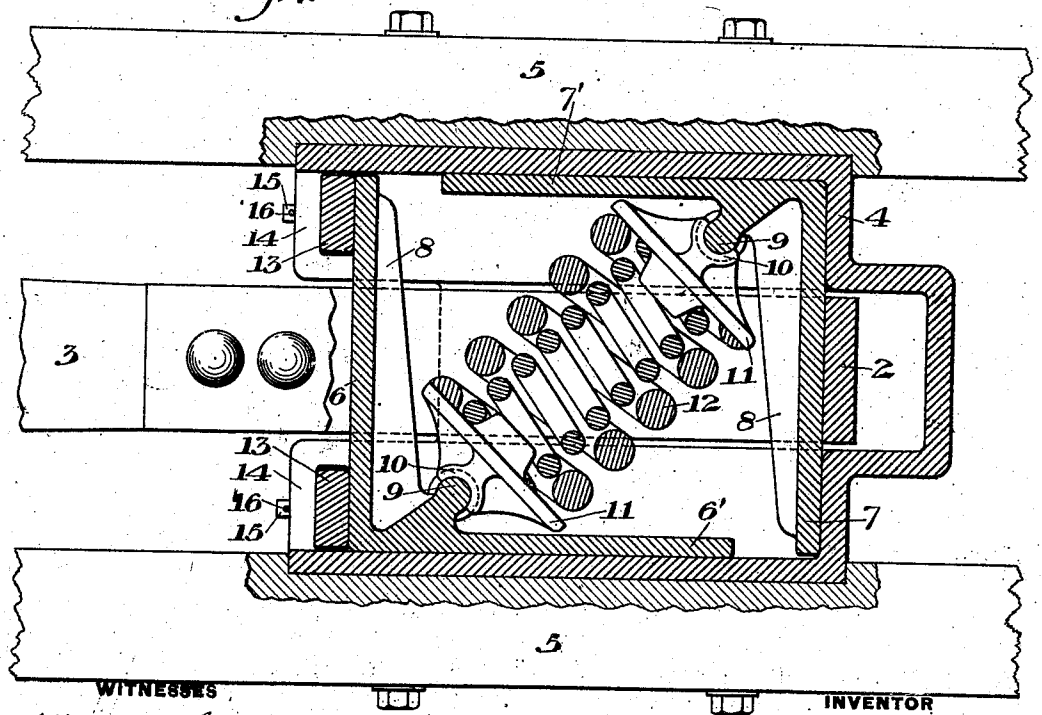


Fig. 8.

Fig. 7.



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Warren W. Swartz

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INVENTOR

Clinton A. Tower

by Bakewell & Byrnes

his Attorneys

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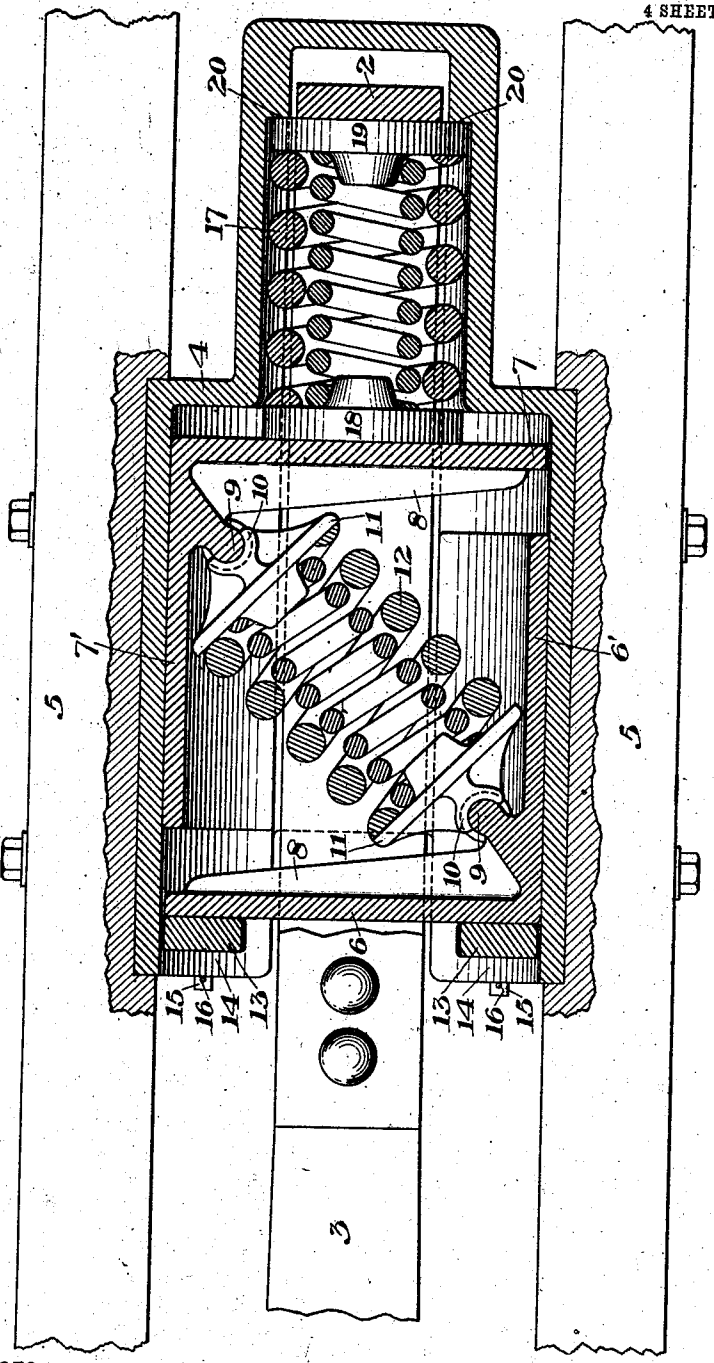
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4 SHEETS—SHEET 4.

Fig. 9.



WITNESSES

Warren W. Swartz

R. A. Balderson.

INVENTOR

Clinton A. Tower

by Baxendell & Byrnes

his Attorneys.

UNITED STATES PATENT OFFICE.

CLINTON A. TOWER, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

DRAFT-RIGGING.

No. 815,049. Specification of Letters Patent. Patented March 13, 1906.

Application filed February 9, 1905. Serial No. 244,886.

To all whom it may concern:

Be it known that I, CLINTON A. TOWER, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Draft-Rigging, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal section, partly in elevation, of my improved friction draft-rigging, the spring being omitted. Fig. 2 is a horizontal section in which the spring is illustrated. Fig. 3 is a vertical cross-section on the irregular line III III of Fig. 2. Fig. 4 is a top plan view. Fig. 5 is a perspective view of one of the friction elements. Fig. 6 is a vertical cross-section of a modified construction. Fig. 7 is a vertical longitudinal section thereof. Fig. 8 is a perspective view of one of the friction elements of Fig. 7. Fig. 9 is a longitudinal section of a modified construction, showing an additional spring applied to the device.

My invention provides a friction draft-rigging which is of simple construction and is comparatively cheap in its first cost and obviates the many difficulties due to the necessity for frequent repairing which are incident to other forms of friction draft-rigging. It is compact and will fit in the place now required for ordinary spring draft-riggings. It is well understood that friction draft-riggings must be simple and durable, for the work which is to be put upon them in service is of a very severe character, and if they are easily broken or put out of repair their desirability and usefulness are very much lessened.

My invention contemplates the use of frictional devices which are operated by the motion of the draw-bar and are used in conjunction with spring mechanism which is inclined to the line of draft, so that wedges and similar devices which complicate the apparatus and impair its efficiency can be dispensed with.

The principle of my invention may be applied in many ways; but I deem the forms shown in the drawings to be desirable.

In the drawings, 2 represents the yoke, which extends from the rear end of the draw-bar shank 3 and may be of any suitable construction, for the means of connection between the draw-bar and the elements of my friction device do not constitute a limiting feature of the invention.

4 is a case in which the parts of my apparatus are contained and which is preferably a strong casting of box form set between the draft-timbers 5 5 or otherwise suitably secured to the framing of the car. The opposite inner surfaces of this case constitute fixed friction elements. Fitting in this case are the movable friction elements, consisting, preferably, of opposite followers 6 7, which, as shown in the figures on the first and second sheets of the drawings, are of general L shape, their side portions 6′ 7′ being of circular outline to conform to the shape of the case 4, which is also curved on its interior, and the end portions 6 7, which are preferably integral with the side portions, being flat and provided, preferably, with strengthening ribs or flanges 8. At or near the corner of each follower is a shoulder 9, preferably of knuckle form and adapted to receive a correspondingly-shaped socket 10 of a spring-plate 11. The spring-plates face each other and are adapted to hold an interposed spring 12, which therefore extends at an angle to the line of the draw-bar and its yoke. The friction elements are therefore substantially parallel with the line of draft and the spring is inclined thereto. For the purpose of holding the followers and the spring removably in the case I employ keys 13, which are adapted to be set vertically within sockets at the forward end of the case and bear against shoulders 14, being held, preferably, by bolts 15, having cotters 16 at their lower ends. When the keys are in place, they block the end follower 6; but when the keys are removed, as can be done by first detaching the cotters and bolts, the entire rigging comprising the draw-bar, yoke, followers, and spring can be drawn endwise from the case.

When the parts are in the position shown in Fig. 2, if a buffing thrust is applied to the draw-bar the end of the latter bearing against the front follower 6 forces it inwardly, the rear follower being held in place by abutting against the back end of the case. The inward motion of the follower 6 acting upon the spring compresses the latter and causes it to force the follower 6 against the side of the case, bringing it into intimate frictional contact therewith, and the greater the extent of

motion of the follower the greater will be the compression of the spring and the greater the force with which the follower is held frictionally against the side of the case. This frictional engagement is also increased by the movement of the spring to a position more nearly at right angles to the line of draft as the follower 6 moves inwardly. The device therefore opposes the required yielding and frictional resistance to the buffing motion of the draw-bar. When the buffing force is released, the spring advances the front follower 6 into position against the keys 13, and if a pulling force is now exerted upon the draw-bar the yoke 2 acting upon the rear follower 7 draws it forwardly, thus again compressing the spring 12, the compression of which forces the follower 7 laterally against the case and exerts the required frictional resistance to the forward motion of the draw-bar.

In the modification shown in the figures on the third sheet of the drawings the interior of the case is rectangular in cross-section, and the followers have therefore flat sides as well as flat ends; but their operation is the same as that above described.

In the construction shown in Fig. 9 of the drawings I employ in addition to the followers 6 7 and the primary spring 12 an additional spring 17, which is interposed at the back of the case between the rear follower 7 and the end of the yoke 2, follower-plates 18 and 19 being preferably interposed between the follower 7 and the yoke, and the rear follower 19 having a seat against shoulders 20 on the extension of the case, which is provided for the spring, or the followers 7 and 18 may be a single piece. The use of the spring 17 affords an additional cushioning device which coacts with the friction mechanism, for in buffing the spring 17 is compressed by the follower 18, which forces it rearwardly against the follower 19. In pulling the yoke 2 acts on the follower 19 and compresses the spring 17, which in turn transmits the pressure through the follower 18 to the friction-follower 7.

Many other modifications of the invention will suggest themselves to those skilled in the art. For example, the frictional devices and the inclined spring may be duplicated, as many of them as desired being set in tandem or in the form of a twin rigging. They may also be varied in form and may be used in combination with spring devices of other constructions, since

What I claim is—

1. A spring friction structure for the draft-gear of railway-cars, comprising elements having friction-surfaces substantially parallel to the line of draft, and a spring disposed diagonally to the line of draft, said spring arranged to force the friction elements into contact; substantially as described.

2. A spring friction structure for the draft-gear of railway-cars, comprising elements having friction-surfaces substantially parallel to the line of draft, a spring disposed diagonally to the line of draft, said spring arranged to force the friction elements into contact, and a supplementary spring parallel with the longitudinal axis of the draft-gear and through which pressure is exerted upon said spring friction structure; substantially as described.

3. A frictional draft-rigging, comprising elements having friction-surfaces substantially parallel to the line of draft, and yielding mechanism inclined to the line of draft and arranged to force said friction elements into contact; substantially as described.

4. A frictional draft-rigging, comprising elements having friction-surfaces substantially parallel to the line of draft, and an inclined spring arranged to force said friction elements into contact; substantially as described.

5. A spring friction structure for the draft-gear of railway-cars, comprising lateral confining-surfaces, opposite followers between said surfaces, and an inclined spring arranged to force said followers into contact with said confining-surfaces; substantially as described.

6. A spring friction structure for the draft-gear of railway-cars, comprising lateral confining-surfaces, opposite followers between said surfaces, an inclined spring arranged to force said followers into contact with said confining-surfaces, and a supplementary spring parallel with the longitudinal axis of the draft-gear and through which pressure is exerted upon said spring friction structure; substantially as described.

7. A frictional draft-rigging, comprising lateral confining-surfaces, opposite followers between said surfaces, and yielding mechanism arranged to force said followers into contact with said confining-surfaces; substantially as described.

8. A frictional draft-rigging, comprising lateral confining-surfaces, opposite followers between said surfaces, and an interposed spring arranged to force said followers into contact with said confining-surfaces; substantially as described.

9. A frictional draft-rigging, comprising a case having friction-surfaces arranged substantially parallel to the line of draft, interposed friction-followers, and an inclined spring arranged to force said followers against said case; substantially as described.

10. A frictional draft-rigging, comprising friction-surfaces substantially parallel to the line of draft, friction-followers between said surfaces, and an inclined spring between said followers; substantially as described.

11. A frictional draft-rigging comprising a case, opposite followers of L shape, and spring mechanism extending between the followers and bearing on the corner portions thereof; substantially as described.

12. A frictional draft-rigging comprising a case, friction elements therein, an inclined spring, and a key by which the friction devices are held removably within the case; substantially as described.

13. A frictional draft-rigging comprising friction elements, an interposed inclined spring, and spring-plates, said spring-plates having a knuckle-joint connection with the friction elements, substantially as described.

14. A frictional draft-rigging comprising a case, friction elements therein arranged to be removable horizontally from the end of the case, and a key at the end of the case by which the friction devices are held removably therein; substantially as described.

In testimony whereof I have hereunto set my hand.

CLINTON A. TOWER.

Witnesses:
HENRY F. POPE,
HARRY E. ORR.