

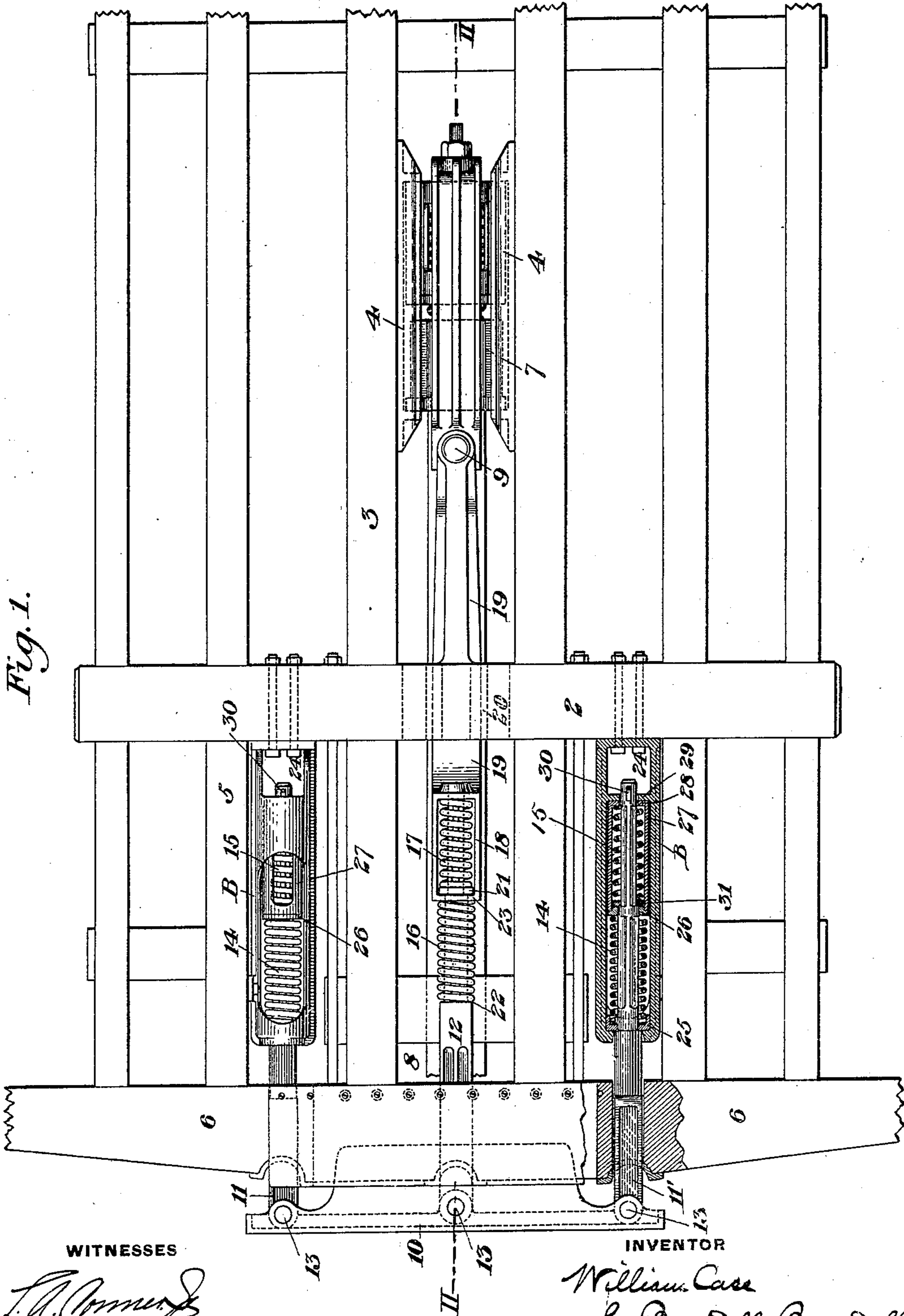
No. 673,614.

Patented May 7, 1901.

W. CASE.
SPRING RIGGING FOR CARS.
(Application filed Mar. 26, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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INVENTOR

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2 Sheets—Sheet 2.

Fig. 2.

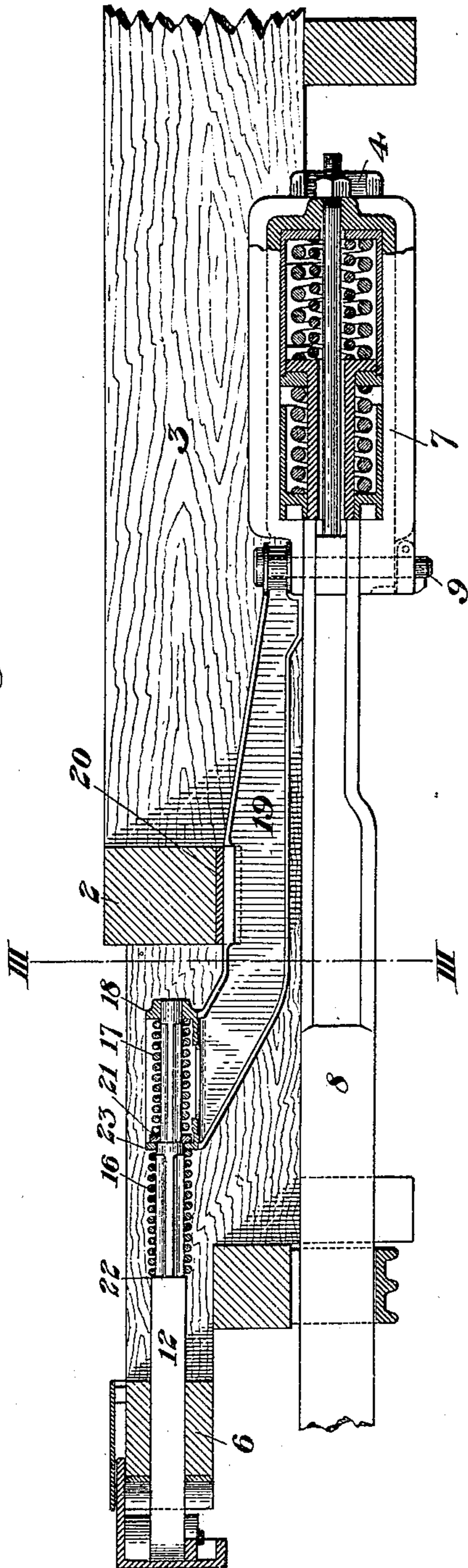


Fig. 3.

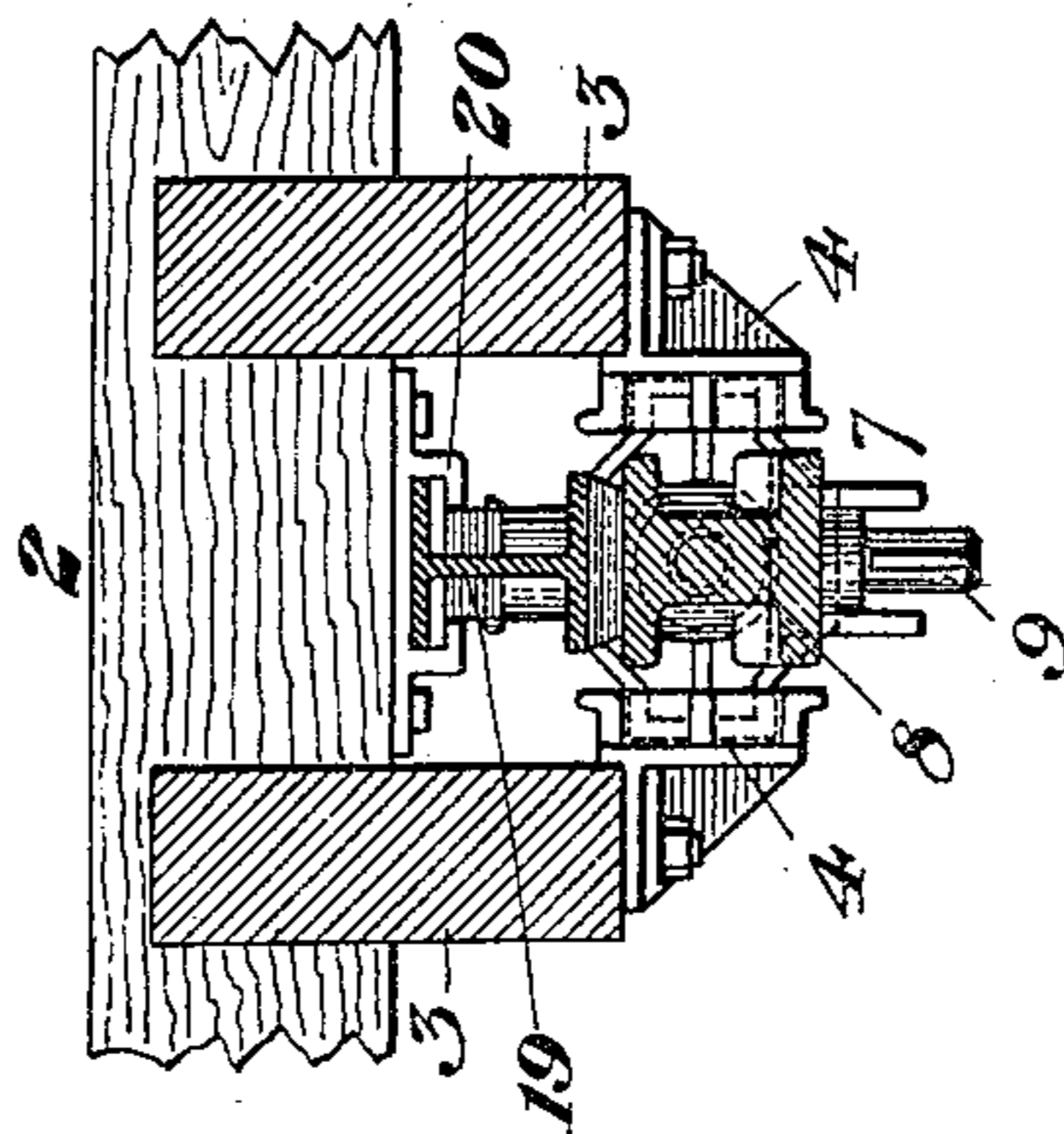
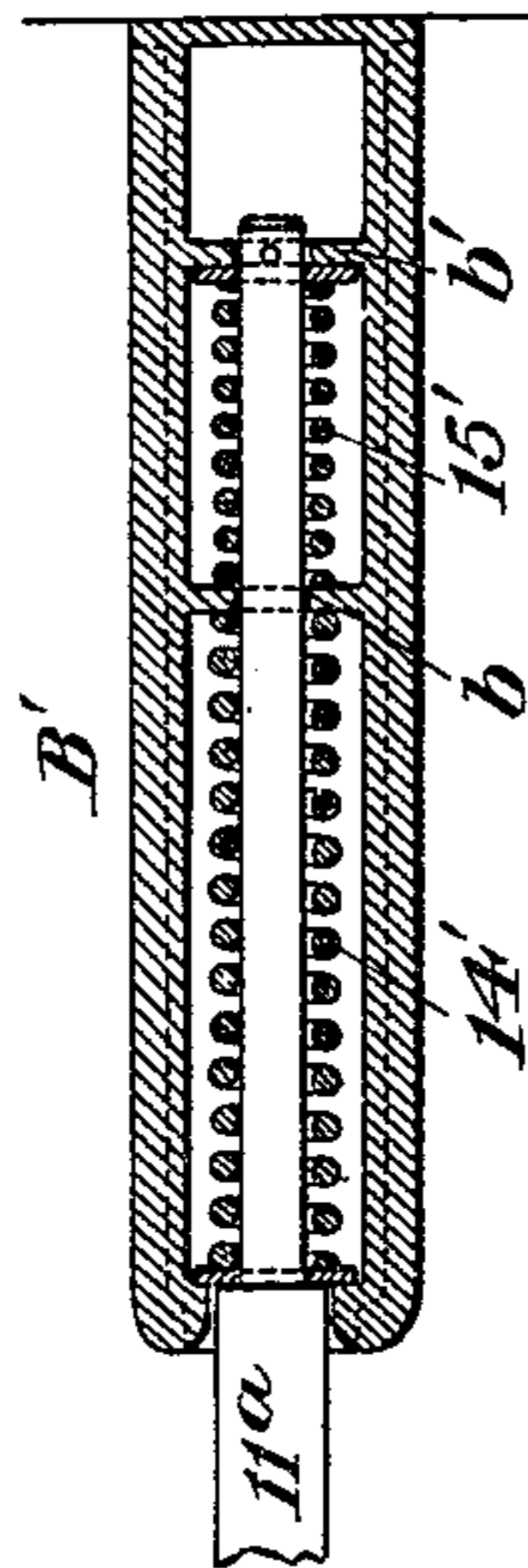


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM CASE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO.

SPRING-RIGGING FOR CARS.

SPECIFICATION forming part of Letters Patent No. 673,614, dated May 7, 1901.

Application filed March 26, 1897. Serial No. 629,324. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CASE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Spring-Riggings for Cars, 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 plan view, partly in section, of the spring-rigging of a car-platform embodying my invention. Fig. 2 is a longitudinal section on the line II II of Fig. 1. Fig. 3 is a cross-section on the line III III of Fig. 2. Fig. 4 is a modification of the spring-rigging, and Fig. 5 is another modification thereof.

In the drawings, 2 represents the end sill of the car-body, 3 3 the draft-timbers, and 4 4 the draft-irons between which the draft-rigging is set.

5 5 are the longitudinal timbers of the platform, and 6 is the platform end sill.

7 is the draft-rigging, and 8 is the draw-bar, whose rear end is connected pivotally therewith by a pin 9. The specific construction of the draft-rigging, although I believe it to be original with me, is not claimed herein, since I have made it the subject of another copending application for Letters Patent, Serial No. 612,194, filed on November 16, 1896.

10 is a buffer-plate set in front of the platform-sill 6 and having three stems 11, 12, and 11', pivotally connected to it by pins 13 and extending rearwardly through the sill 6, at the back of which they are provided with spring-riggings, now to be described. Each of the outer stems 11 has a spring-rigging B, having two springs 14 15 arranged in tandem, the auxiliary parts being so constructed that on backward motion of the stem both of its springs 14 15 are compressed, whereas outward motion of the stem will only compress one of its springs—for example, the spring 14. The middle stem 12 is also backed by two springs 16 and 17, which encircle the stem 12, and the spring 17 is contained in a housing or case 18, formed at the end of a push-bar 19, which extends rearwardly under the end sill 2 and in contact with a guide 20 thereon and is pivotally connected to the rear end of the draw-bar at or by a pin 9, the purpose of

pivoting it at this point being to give to the draw-bar full and unimpeded lateral swing on said pin. The stem 12 passes freely through the opposite ends of the housing 18 and has an encircling follower 21, between which and the end of the housing the spring 17 is interposed. The other spring 16 bears at one end against a shoulder 22 on the stem and at the other end against the forward side 23 of the housing.

When the car is coupled in a train, if the draw-bar 8 should be drawn forward it will move forward the push-bar, and the latter bearing against the springs 16 and 17 at the points 18 and 23 will compress both of them and will push forward the stem 12. In like manner when the stem 12 is forced back beyond its normal position by pressure on the buffer-plate 10 it will compress both springs acting thereon at the shoulder 22 and follower 21.

Each of the spring-riggings B comprises a housing or spring-carrier 24, fixed to and supported by the end sill of the car-body, so that its weight shall be upheld by the car-body and not by the platform, as in like devices heretofore employed. Both springs 14 and 15 encircle the stem 11 or 11' and are contained within the housing. A follower 25 on the stem bears against the forward end of the spring 14, while the other end of the stem bears against a follower 26 at the end of or fixed to the end of a longitudinally-movable box or cylinder 27, which extends outside the spring 15 and terminates in a follower 28, against which the rear end of the spring bears and which in turn is seated against a stop or abutment 29 on the housing. A key or other stop 30 on the stem bears against the rear end of the box 27, adapting the latter to be moved forward when the stem is drawn forward. At the end of the spring 15 is a follower 31, which bears against a shoulder on the stem. If the stem be pushed back, it will move with it the followers 25 and 31 and will thus compress both of the springs 14 and 15, the follower 26 acting as a stationary stop or abutment for the spring 14 and the parts 28 and 29 acting similarly as the stop or abutment for the other spring. If, however, the stem be drawn forward, it will move with it

the box 27 and the follower 26 and will thus compress the spring 14 against the follower 25, but the other spring 15 will not be compressed. This construction of the spring

5 mechanism may be modified in various ways to produce the result which I desire—namely, compression of both of the springs in buffing and the compression of only one spring when the buffer-platform is extended.

10 The operation of the device is as follows: When the car is coupled in a train and when the buffer-plate 10 is compressed thereby, it will compress all of the springs 14 and 15 of the two side spring-riggings and also the two

15 springs 16 and 17 at the middle, thus securing conjoint action of all these springs. When the train is in forward motion, the draft on the draw-bar 8 will pull forward the draft-rigging and extend the draw-bar somewhat,

20 and such forward motion will be communicated by the push-bar 19 to the springs 17 and 16. Both of these springs will thus be compressed. Their strength is so chosen that together they are sufficient to move the buffer-plate 10 outwardly against the compression of the two springs 14, which, as above explained, act when the stems 11 11' are moved

25 outwardly, while the other springs 15 15 do not then act. Contact of the buffer-plate with the buffer-plate of the adjacent car is thus maintained, and the single pair of springs on the middle stem is enabled to counteract and balance the operation of the two pairs of

30 springs at its side. When the train is going around a curve, the deflection of the cars from a straight line will apply an unequal pressure to the ends of the plate and will urge the stem at one side inwardly against the pressure of both its springs, while the outward motion of

35 the other side stem is resisted by compression of the spring 14 only.

The advantages of my invention will be apparent to those skilled in the art. Important results are secured by the following parts, among others, of my device, each of which is

40 capable of independent use in other combinations and constructions.

First. A buffing-stem backed by spring mechanism comprising two springs, both of

50 which are compressed in buffing and only one of which is compressed in outward motion. This part of my invention is not limited to its application to the buffer-plate of passenger-cars, but may be applied to the single buffers

55 of freight-cars, &c.

Second. A buffing-plate having at each end, and whether a middle stem be employed or not, a spring-rigging comprising two springs, both of which springs act in buffing and only

60 one of which acts when the plate is extended. The advantage of this during the rocking motion of the buffing-plate when one end moves inward and the other end moves outward is very material. This part of my invention

65 may be applied with advantage in constructions in which two side spring-riggings are employed without any middle spring-rigging.

Third. A buffer-plate backed by three sets of tandem springs, two at the ends and one in the middle.

Fourth. The three sets of spring-rigging, the end spring-riggings being adapted to act singly on their outward motion and to afford a double compression in buffing, while the middle spring-rigging acts doubly in its out-

70 ward motion. The advantage of this is that the middle spring mechanism will counterbalance the operation of the other two and the device is rendered much more effective than heretofore. This construction also en-

75 ables me to use lighter springs.

Fifth. The push-bar having at its end and rigid therewith a spring-carrying box or cylinder, the advantage of which is that it affords rigidity and strength.

Sixth. The push-bar which has a bearing against or under the end sill of the car to guide its operation and to strengthen the construction.

Within the scope of the invention as defined in the following claims many changes in the form and construction of the various parts may be made by the skilled mechanic. Thus in Fig. 4 I show a modified construction of spring mechanism for the two side spring-riggings to be used in combination with the middle spring-rigging and adapted to afford compression of only one spring in either motion of the buffing-stem whether forward or back. This construction, intended to be covered by my broad claims, will enable the middle spring-rigging to counterbalance the side spring-riggings in the outward motion or extension of the parts. In this figure the housing B' has internal partitions b b' and two

90 springs 14' and 15', the spring 14' being situated between a follower at the end of the housing and the partition and the spring 15' being interposed between the partitions b b'.

95 In rearward motion or buffing of the stem 11^a the spring 14' is compressed while the stem moves idly through the spring 15', and in forward motion of the stem the spring 15' is compressed while the spring 14' is idle. I prefer in this construction to make the spring

100 14' stouter than the spring 15', and thus to get a stronger resistance in buffing than in extension.

In Fig. 5 I show another modified construction of spring mechanism for the side spring-riggings covered by my broad claims, and I intend also to claim the same specifically. This modification is designed to afford independent compression of both springs in buffing and conjoint compression thereof in extension of the stem. Here the housing B² has internal partitions or fixed stops b² b³ and two springs 14^b and 15^b. The stem 11^b has a stop or shoulder c, against which is fitted a follower d, which and also the spring 15^b are

105 of suitable dimensions to pass through the hole in the partition b². This follower bears against the inner end of the spring 15^b and on the other side of the partition, and bear-

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ing against the spring 14^b is a follower *e*, which is of such dimension that it will not pass through said hole. The construction otherwise may be the same as in Fig. 4. If
 5 now an inward motion, as in buffing, be imparted to the stem 11^b, it will compress both springs, the spring 14^b being stopped by the follower *e* bearing against the partition *b*²
 10 and the spring 15^b being stopped by the partition *b*³. On outward motion of the stem both springs will be compressed together against the forward end of the housing, for the follower *d* will pass through the partition and will thus prevent independent compression of the springs.

I claim—

1. A buffing-stem having two springs thereon, and followers on the stem adapted to press against both springs on inward motion of the
 20 stem, and to press against one spring on outward motion of the stem; substantially as described.

2. A buffing-plate having at each end a spring-rigging comprising two springs, and
 25 means adapted to compress both of said springs in buffing, and one only of said springs when the plate is extended.

3. A buffing-plate having three sets of spring-rigging, one at the middle and one at
 30 each end, the end spring-riggings having single springs acting in extension of the parts forward beyond their normal position, and the middle rigging having two springs both of which act in any extension of the parts forward beyond their normal position.

4. A buffing-plate having three sets of spring-rigging, one at the middle and one at
 35 each end, the end spring-riggings having tandem springs, both of which act in compression while only one acts in extension, and the middle spring-rigging having two springs which act in extension of the parts.

5. A buffer-plate having two tandem
 45 springs at the middle and having tandem springs at each end, said end springs being constructed to afford greater resistance in compression than in extension and the middle

springs being adapted to afford an extension of greater resistance than the combined resistance of the end springs.

6. A buffing-plate having three sets of spring-rigging, one at the middle and one at
 50 each end, the end spring-riggings having single springs acting in extension of the parts forward beyond their normal position, and the middle rigging having two springs both of
 55 which act in any extension of the parts forward beyond their normal position, and a connection such as a push-bar between the middle spring-rigging and the draw-bar of the car.

7. The combination with a draw-bar and buffer mechanism, of a push-bar connected to the draw-bar at the rear end and extending
 60 forwardly and having rigidly carried thereon a spring-containing box or housing in advance of the end sill of the car; substantially as described.

8. The combination with a draw-bar and spring-rigging, of a push-bar having pivotal
 70 connection at the rear end of the draw-bar, and having a bearing at the end sill of the car.

9. The combination with a draw-bar, of a push-bar, and a guide on the end sill of the car-frame by which the push-bar is guided.

10. A spring-rigging comprising tandem
 75 springs, followers therefor, an intermediate fixed stop, one of the springs and its follower being of proper dimensions to pass by the fixed stop, and the other spring having a follower adapted to be stopped thereby; substantially as described.

11. A spring-rigging comprising tandem
 80 springs and followers and stops adapted to cause compression of one of the springs when the parts are moved in one direction, and conjoint compression thereof when they are moved in the opposite direction.

In testimony whereof I have hereunto set my hand.

WILLIAM CASE.

Witnesses:

S. E. SCHOOLEY,
 F. R. ANGELL.