

No. 708,110.

Patented Sept. 2, 1902.

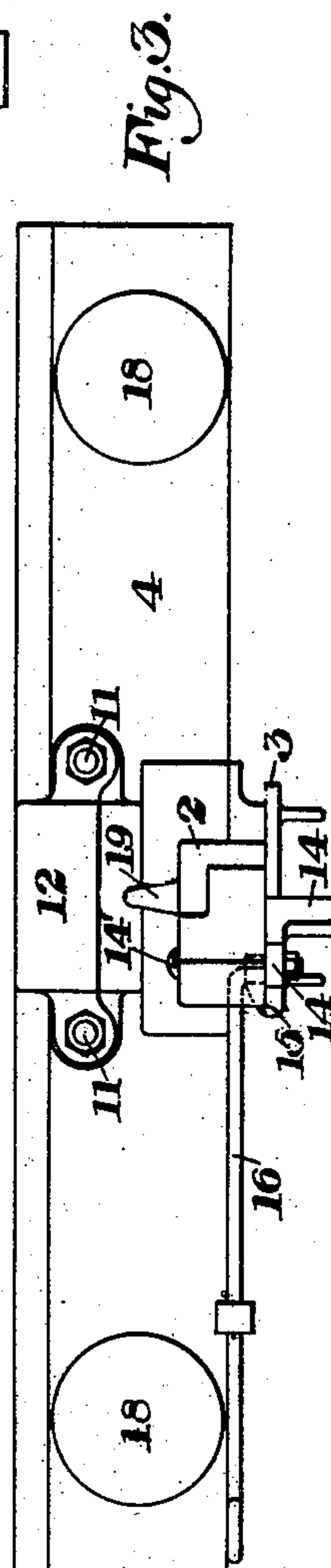
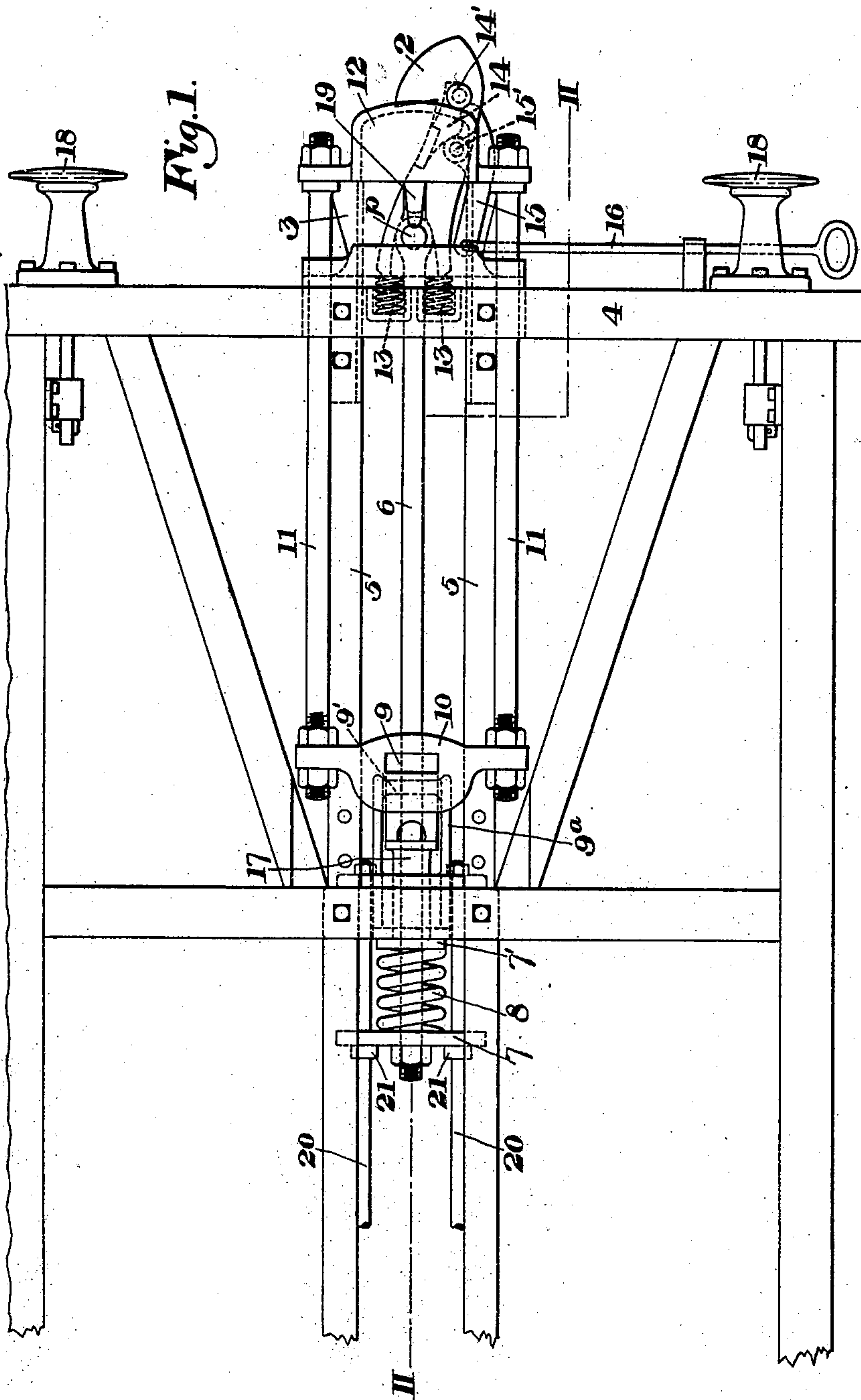
J. WILLISON.

COUPLING FOR RAILWAY CARRIAGES, &c.

(Application filed Sept. 30, 1899. Renewed Jan. 20, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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Fig. 2.

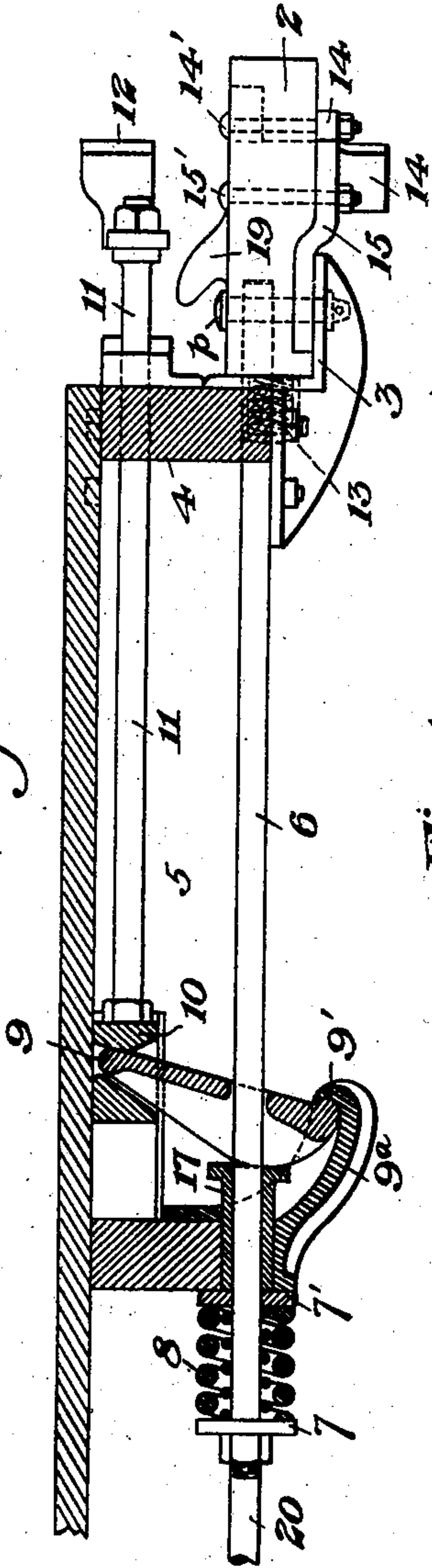


Fig. 4.

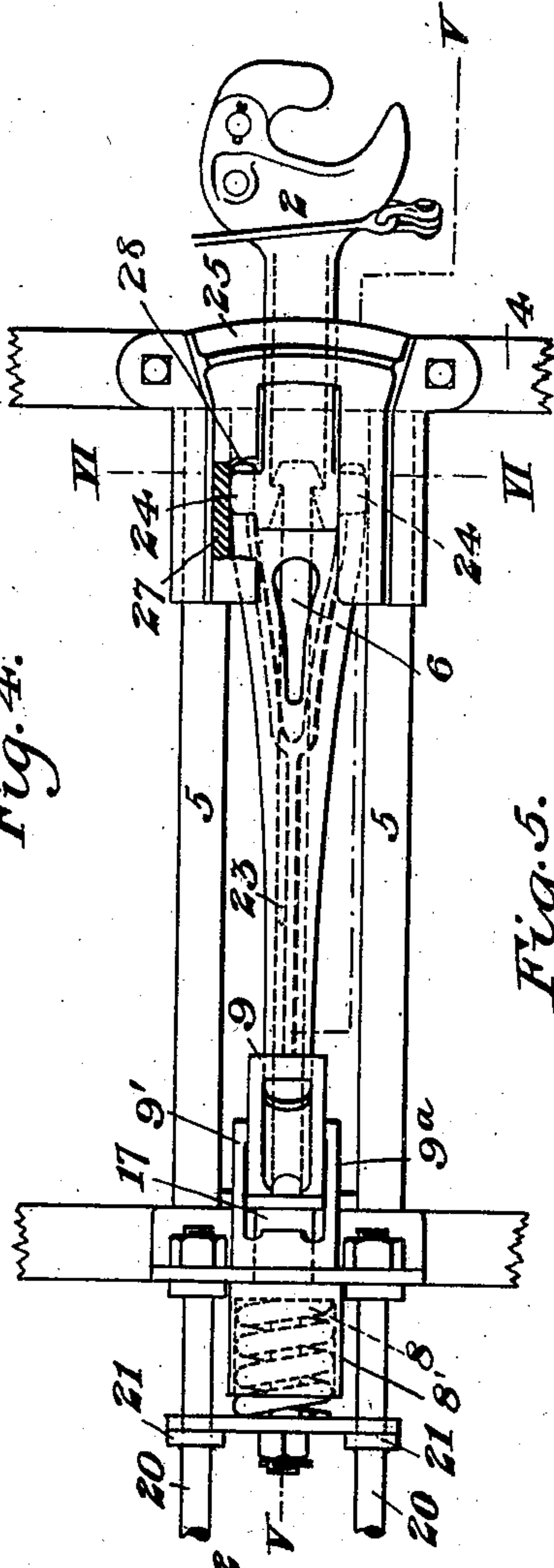


Fig. 7.

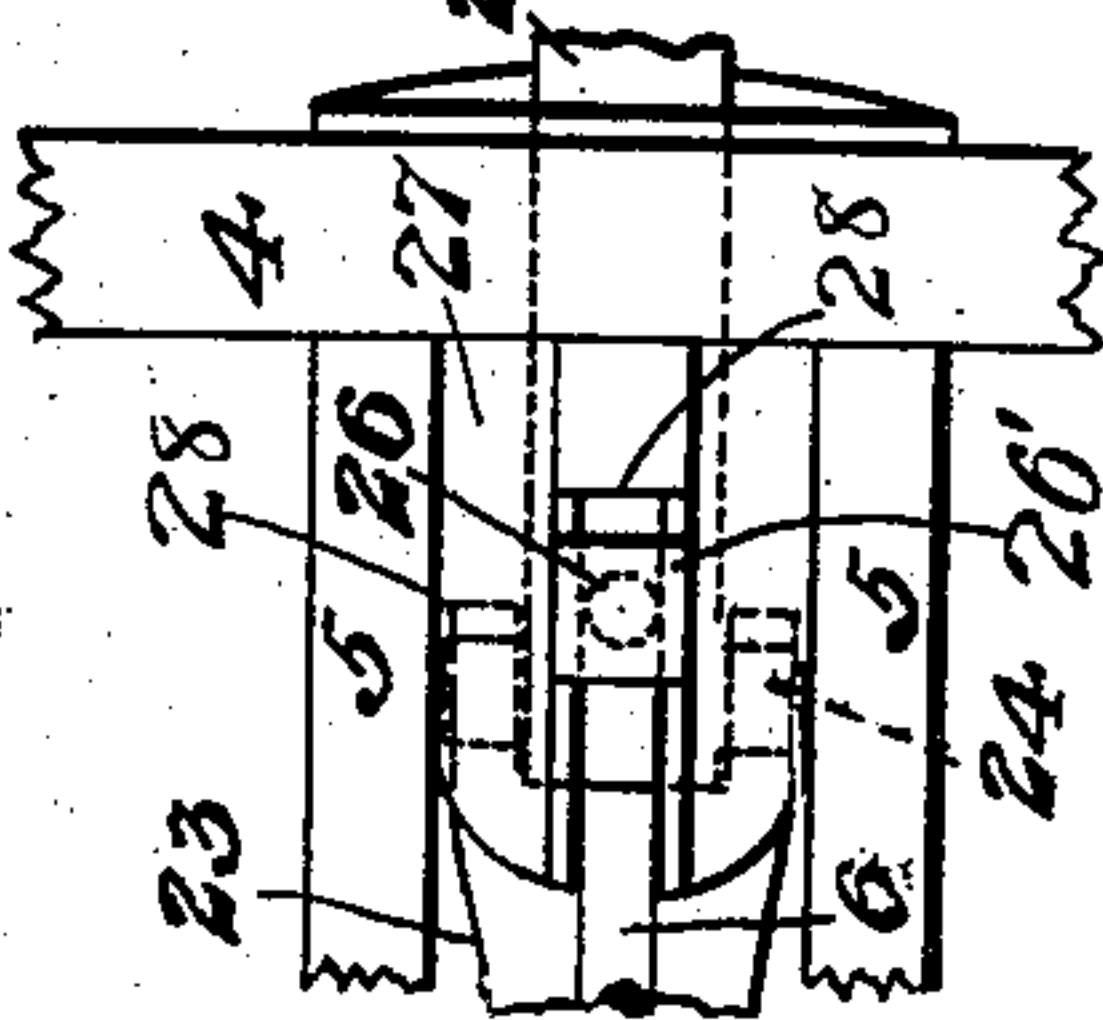


Fig. 6.

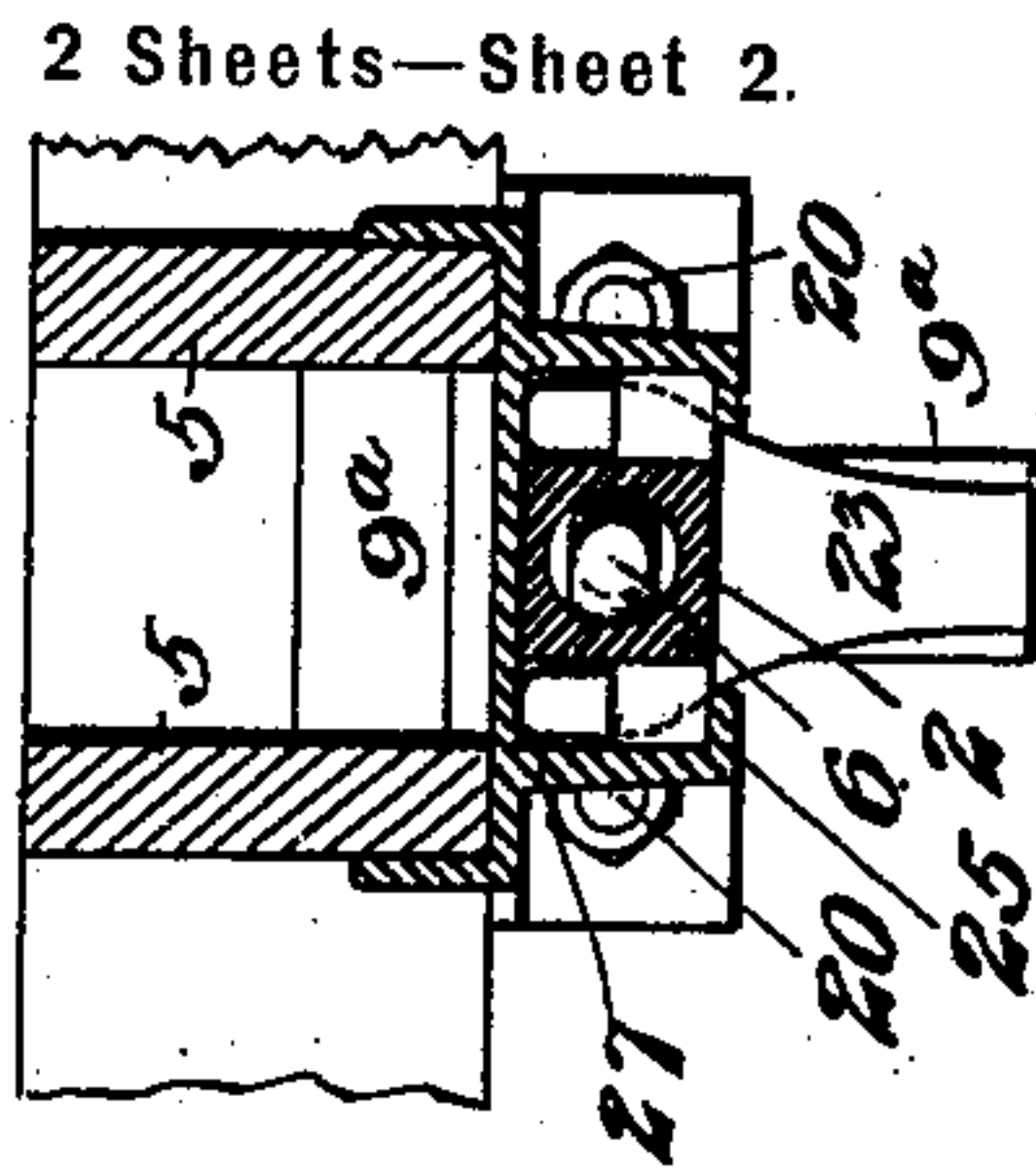
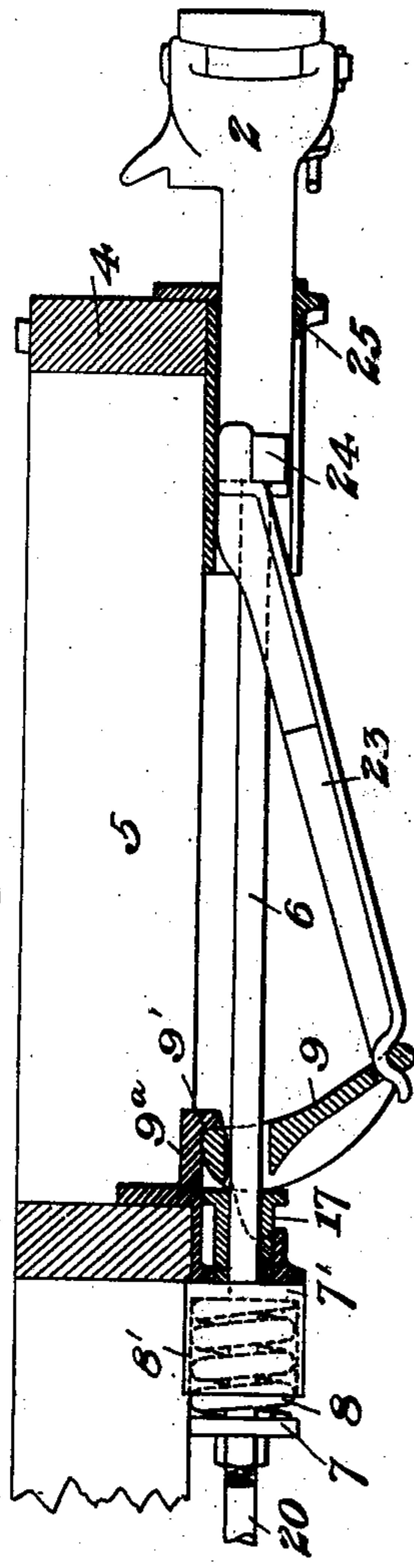


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COUPLING FOR RAILWAY-CARRIAGES, &c.

SPECIFICATION forming part of Letters Patent No. 708,110, dated September 2, 1902.

Application filed September 30, 1899. Renewed January 20, 1902. Serial No. 90,516. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILLISON, of No. 7 Berghoff street, Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Couplers for Railway Carriages and Wagons, 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 top plan view of my improved apparatus. Fig. 2 is a vertical longitudinal section on the line II II of Fig. 1. Fig. 3 is an end view thereof. Fig. 4 is a bottom plan view illustrating a modified construction. Fig. 5 is a longitudinal section thereof on the line V V of Fig. 4. Fig. 6 is a cross-section on the line VI VI of Fig. 5, and Fig. 7 is a detail view of a modification.

In railway wagons or carriages built with a rigid wheel-base, such as the railway-carriages used in England and on the continent of Europe, it is recognized that center buffer-couplings should be capable of a considerable lateral deflection, so that they may couple and uncouple readily on all curves without having the undesirable quality of becoming slack or capable of loose longitudinal motion when the carriages are on a straight track. The securing of these features of advantage in automatic couplers has hitherto presented many difficulties; but all of them are overcome by my invention, which is designed to afford a vertical-plane central automatic coupler and buffer having the full extent of lateral flexibility and elasticity required for the purpose, having also a sufficient lengthwise motion and adapted to return to a central position when relieved of side pressure. I also provide the coupler with a draw-hook on its upper side, adapting it to be coupled with the link-coupling heretofore commonly used.

In the drawings, Fig. 1, 2 represents the draw-head, which is supported by the bracket 3 at its inner end, the bracket being attached to the head-stock 4 and to the longitudinals 5.

6 is the draw-bolt, which is connected to the draw-head by a pin *p*, the outer end of the draw-bolt being rounded and fitted in a

pocket of the draw-head in order to permit lateral flexibility. The inner end of the draw-head has a flat face fitting against the bracket 3, so that when it is drawn against the bracket by the spring 8, hereinafter described, it will center the draw-head in its middle and locked position. The rear end of the draw-bolt 6 is provided with follower-plates 7 7' and an interposed spring 8.

A lever 9, set preferably in a vertical plane, is seated at its end in a fulcrum-socket 9' on a bracket 9^a and at the other end is connected loosely with a yoke or cross-head 10, to which are connected the buffer-rods 11, leading from a central buffer-head 12 at the end of the carriage. The draw-bolt 6 passes through the lever and upholds the same.

13 13 are auxiliary springs, which, if desired, may be set in pockets in the bracket 3 and bear against the flat end of the draw-head 2 at opposite sides of the center. The draw-head is made in the form of a hook, as shown, and is adapted to engage a like draw-head on another carriage.

For the purpose of unlocking the coupler I provide an uncoupling set 14, consisting of a plate having an arm which is pivoted to the underside of the draw-head at 14', and an uncoupling-lever 15, which is pivoted at 15' to the draw-head, one end bearing against the uncoupling set and the other end being connected to an uncoupling-rod 16, so that when the trainman pulls the rod the turning of the lever 15 on its pivot will not only push the set 14 against the draw-head of the next carriage, and will thus tend to push it out of locking engagement, but by reaction will also tend to cause the draw-head itself to move laterally on its pivot away from engagement with the other draw-head. The uncoupling set will thus move the draw-heads out of engagement with each other and then extending in the direction at right angles to the draw-head will hold them in unlocked position, being itself held open by the lever 15, so that the carriages may be separated. When the cars come together, the draw-head of the opposing car will strike the projecting set and will restore it to its original position. In case the couplers are set inadvertently in

uncoupled position and it is desired to recouple them without moving the carriages a slight inward motion of the uncoupling-rod 16 will trip the set and permit the draw-heads to come again into locking engagement. The trainman is thus enabled to set the coupler in unlocked position and then to leave the same to attend to his other duties without waiting for the carriages to separate. In backing into a siding also the carriages may be uncoupled at any point, and it will therefore be unnecessary for the trainman to accompany them to their destination on the siding. The coupler is at all times ready for recoupling, and is thus in every respect automatic.

The arrangement of the draft-rigging above described is such as to give the buffer a long travel in buffing and the draw-head a short extension when under draft. The long motion of the buffer is effected by the lever 9, which by means of an intermediate sleeve 17 bears against the follower-plate 7'. When the buffer is compressed, a long rocking motion of the lever will cause only a short compression of the spring 8; but as the draw-bolt 6 is connected directly to the follower-plate 7 the draw-bolt and draw-head can only have a short longitudinal motion when under draft. The cross-head 10 is supported on wearing-plates on the longitudinals 5. When the draw-head 2 is moved laterally on its pivot-pin *p*, either in uncoupling or when the car is moving on a curve, the bearing of the edge of the flat rear face against the bracket (or against the spring 13 when such spring is used) will cause it to tip thereon as on a fulcrum, and thus to draw upon the draw-bolt 6 and to compress the spring 8. When the lateral pressure on the draw-head is relieved, the spring 8, pulling on the draw-bolt 6 and pin, will restore the draw-head to central position.

18 18 are fixed buffers, which may be employed for the purpose of engaging the buffers of carriages of the construction heretofore employed, and for the purpose of coupling with carriages having the ordinary three-link coupling I form on top of the draw-head an integral hook 19, adapted to engage such link.

Each of the two couplers on a carriage may be provided with its own spring 8; but the two springs are mounted between parallel guide-rods 20, on which are formed stops 21, against which the follower-plates 7 abut. These follower-plates and the stops resist the compression of the spring, and thus take up the strain of buffing.

In Figs. 4, 5, and 6 I show the device applied to a coupler of the type known as the "Master Car-Builders' coupler." In these figures the device is provided with the spring 8, rods 20, and follower-plates 7 7', above described; but the lever 9 has its fulcrum in the bracket 9^a, in which the sleeve 7 is set, and extends downwardly therefrom, being sup-

ported by the draw-bolt 6, which passes through the lever, its free end being connected by a hook connection with a rod 23, which extends forwardly and at its end bears against lugs 24 on opposite sides of the shank of the draw-head 2. The shank of the draw-head is supported by a carry-iron 25, and the draw-bolt 6 extends into the shank, where it is formed with a head connecting it therewith, the hole in the end of the shank being sufficiently large to permit lateral swinging of the draw-head and the draw-head being capable of being moved inwardly over the draw-bolt.

In order to permit the draw-heads to be moved laterally and to be restored to central position, I may employ either of two expedients shown in Fig. 4 and in the detail view Fig. 7. In Fig. 4 the draw-bolt is fitted in a socket at the end of the draw-head, which provides for the swinging motion of the latter. This motion is permitted by the lugs 24, which bear against the parallel guide-walls 27 of the carry-iron. In Fig. 7 I also employ the lug 24; but I provide for the radial motion by supporting the draw-head near its rear end by a pin 26, having an enlarged head 26', which engages the slotted guide 28 in the carry-iron 27', secured to the draft-timbers 5. The stud 26 in one case and the lugs 24 in the other case serve as stops to limit the outward pulling of the draw-head, suitable abutments 28 being provided for them on the carry-iron; or stops may be provided to engage the follower-plate 7 in its forward motion to effect the same result—for example, by providing a shell 8' around the spring 8 in one piece with the follower-plate 7'.

In the form of my invention shown in Figs. 4, 5, and 6 the draw-head serves not only as a coupling device, but as a buffer. When under compression, the draw-head moves inwardly and by means of the rod 23 will move the lever 9 on its fulcrum 9', causing it to bear against the sleeve 17 and to compress the spring 8, a short compression of the spring permitting a long travel of the draw-head. When under draft, the outward pulling of the draw-head will act through the draw-bolt 6 and by pulling on the follower-plate 7 will compress the spring, a short outward motion being thus permitted to the draw-head. On its inward buffing motion the draw-bolt 6 moves loosely through the follower-plates and spring. When the draw-head is moved laterally when the carriage is on a curve, the lug 24 on the side toward which the draw-head is deflected will bear against the end of the rod 23, and, turning on the end of the draw-bolt 6 as a fulcrum, it will move the rod 23 back, thus turning the lever 9 slightly and compressing the spring 8, which when the lateral pressure on the draw-head is relieved will react and restore the draw-head to central position, so that both of the lugs 24 will bear against the end of the rod 23.

Within the scope of my broader claims my invention may be modified in various ways.

For example, the springs may be transverse instead of longitudinal.

I claim—

1. In a draft-rigging the combination with
5 the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring; substantially as described.
10

2. In a draft-rigging, the combination with the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to
15 convert a long buffing motion into a short compression of the spring, and a rod interposed between the lever and the buffer parts; substantially as described.

3. In a draft-rigging, the combination with
20 the central buffer or draw-head, and a longitudinally-extending draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring; substantially as described.
25

4. The combination of a laterally-swinging draw-head, a movable push-bar against which it has a bearing on both sides of its axial line, a spring, and a lever between the push-
30 bar and the spring; substantially as described.

5. The combination of a laterally-swinging draw-head, having lateral lugs mounted in guide-walls, and a longitudinally-movable
35 spring-backed part against which the lugs bear, and which is adapted to be actuated by lateral swinging of the draw-head; substantially as described.

6. The combination of a draft-spring, a
40 draw-bolt, a lever and a push-bar, and a sleeve 17 on the draw-bolt interposed between the lever and the spring and adapted to be moved by the lever; substantially as described.

7. The combination with a draw-head hook,
45 of an uncoupling-set arm pivoted to the hook, a lever 15 also pivoted to the hook and adapted to engage the side of the set-arm and to hold the same in open position, and an operating-rod; substantially as described.

50 8. The combination with a central buffer or draw-head, and draft-spring, a bracket at such spring, a lever set in a vertical plane and having its end fitting in a fulcrum-socket in the bracket and bearing against the spring,
55 and means for connecting the spring to the buffer or draw-head; substantially as described.

9. In a draft-rigging, the combination of the draft-spring and buffing device, of a lever

interposed between the buffing device and the
60 spring, a sleeve between the spring and the lever, follower-plates for the spring, guide-rods on which the plates are movable, and stops on the guide-rods; substantially as described.
65

10. The combination of a draft-spring, a draw-head having a direct connection therewith, a buffer, and a lever interposed between the buffer and the draft-spring and adapted to transmit compression of the buffer to com-
70 press the spring; substantially as described.

11. The combination of a laterally-swinging draw-head, having lateral lugs mounted in guide-walls, and a longitudinally-movable push-bar against which the lugs have a bearing
75 on both sides of the axial line of the draw-head, a spring, and a lever interposed between the push-bar and the spring; substantially as described.

12. A draw-head and a draft-spring, said
80 draw-head being connected with the draft-spring directly and by an interposed lever and adapted to transmit pulling and buffing force thereto, and also connected therewith in such manner as to transmit to the spring
85 force produced by lateral deflection of the draw-head, whereby the draft-spring is made to perform a triple function of yieldingly resisting the pressure of draft and buffing and lateral deflection; substantially as described.
90

13. In a draft-rigging, the combination with the central buffer or draw-head, and a spring, of a lever set in a vertical plane and interposed between these parts and arranged to convert a long buffing motion into a short
95 compression of the spring; substantially as described.

14. The combination in a draft-rigging, of a draw-head, a spring, a lever, a push-rod adapted to transmit buffing force to the lever
100 and thence to the spring, and a draw-bolt extending from the draw-head through the lever, said lever being upheld by the draw-bolt; substantially as described.

15. In a draft-rigging the combination with
105 the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring, and a draw-bolt arranged
110 to transmit the force of draft from the draw-head to the spring; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN WILLISON.

Witnesses:

O. K. BROOKS,
A. P. BURCH.