

No. 814,924.

PATENTED MAR. 13, 1906.

C. H. TOMLINSON.

CAR COUPLING.

APPLICATION FILED DEC. 9, 1904

2 SHEETS—SHEET 1.

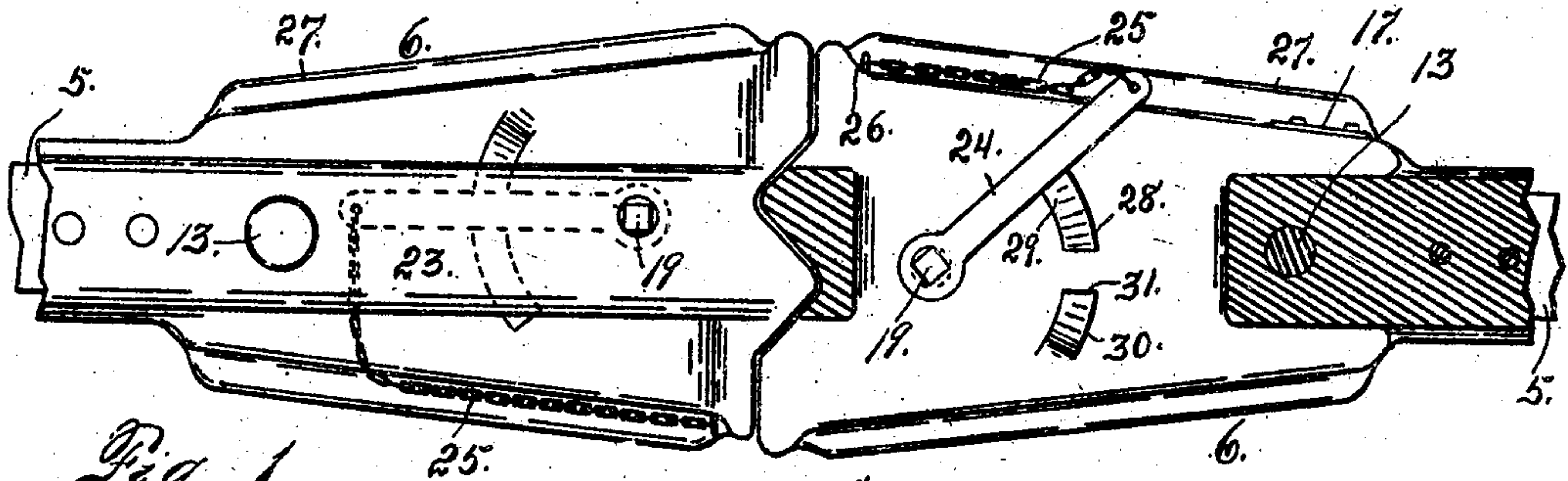


Fig. 1

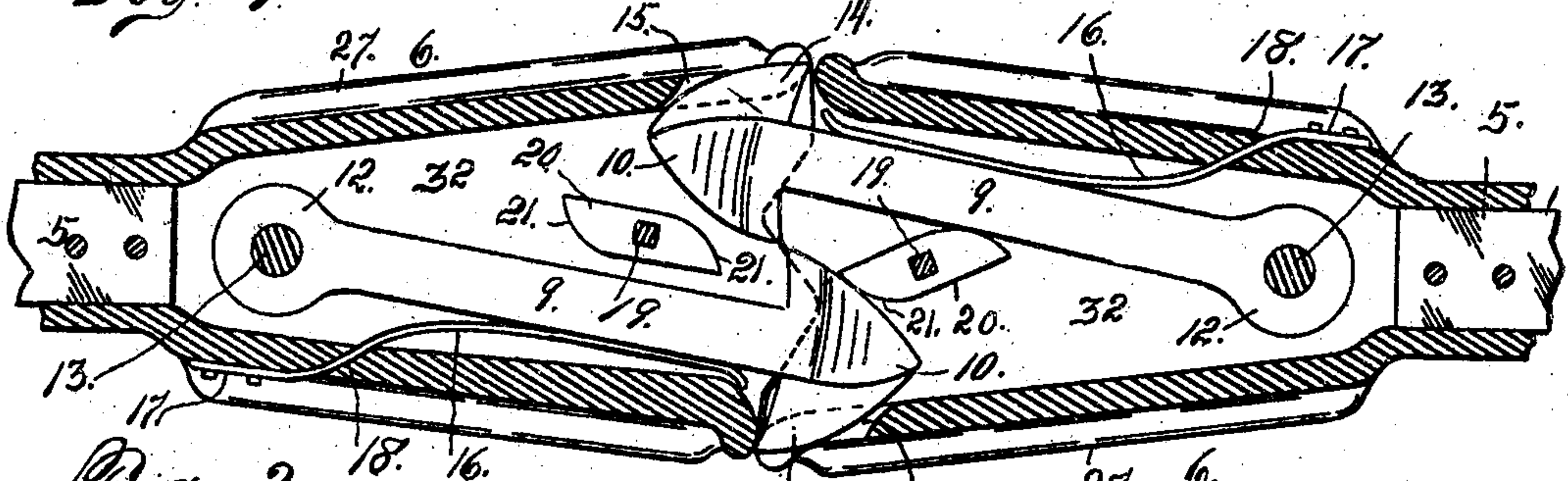


Fig. 2

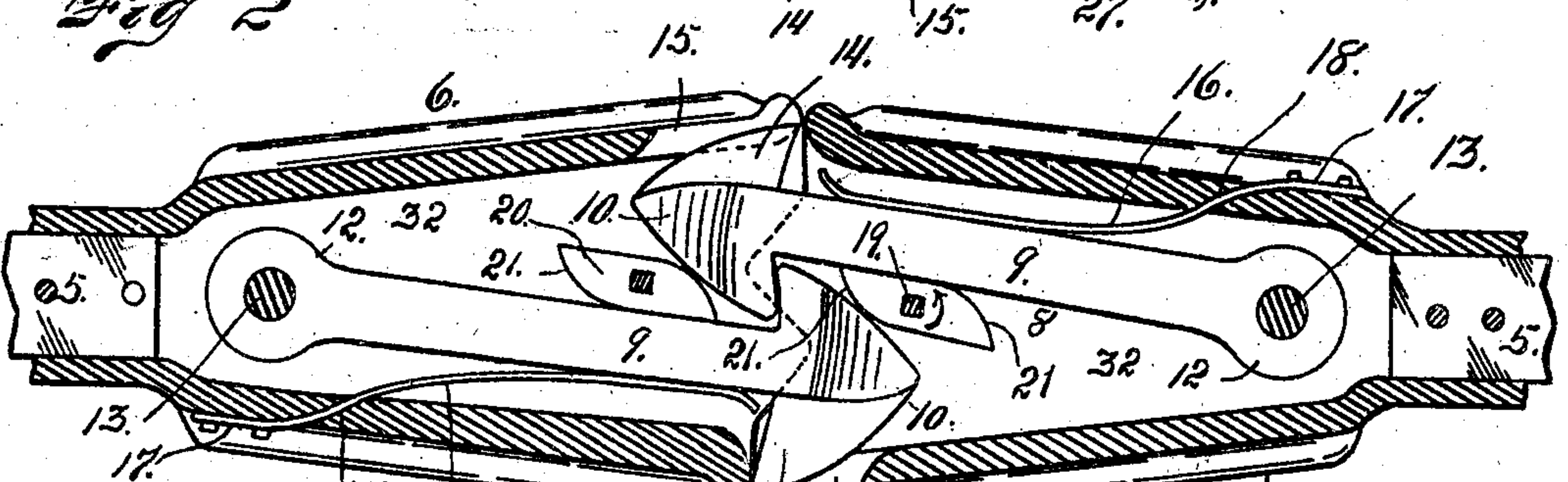


Fig. 3

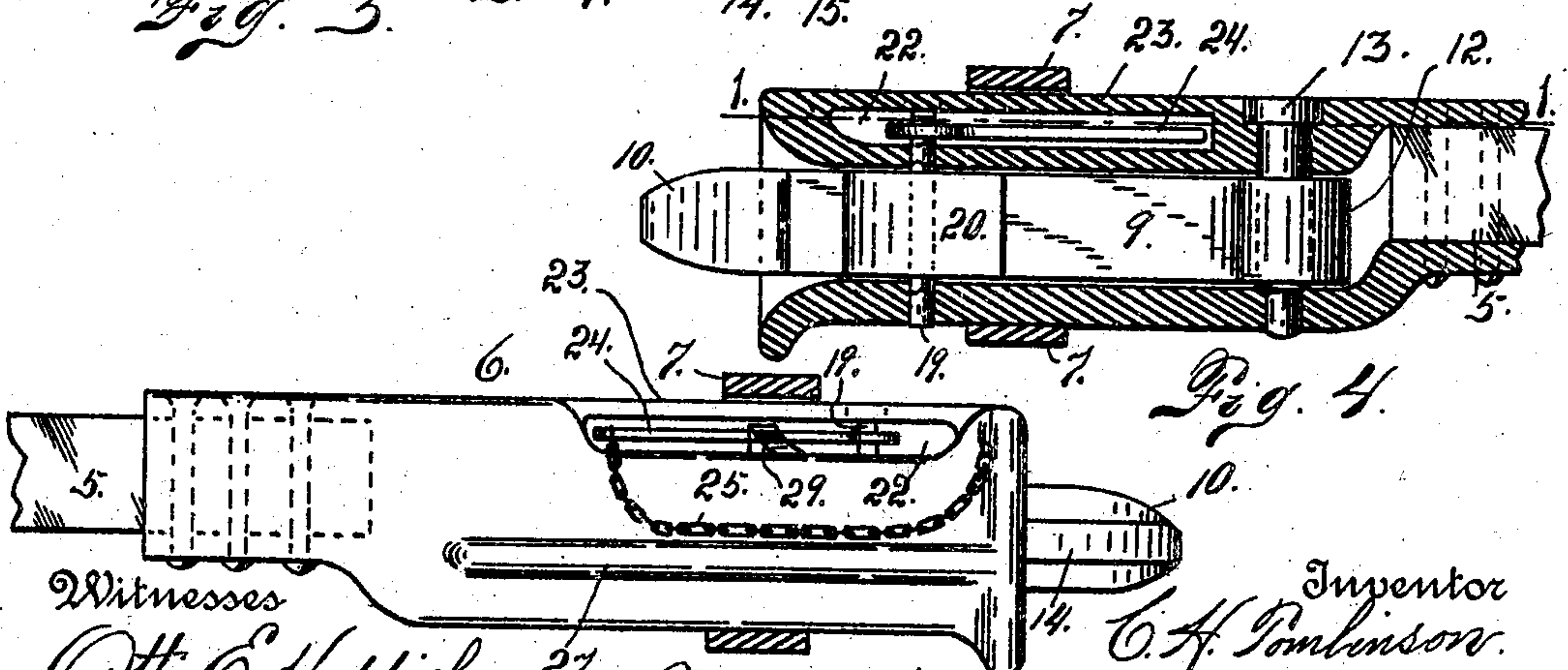


Fig. 4

Fig. 5

Witnesses

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2 SHEETS—SHEET 2.

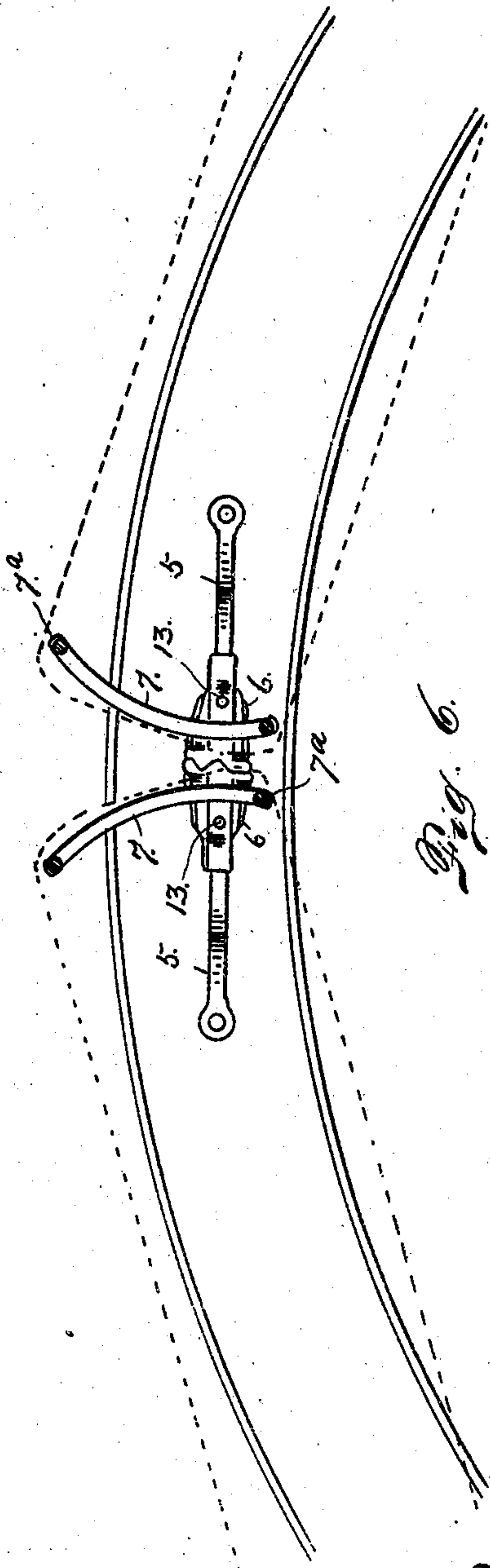


Fig. 6.

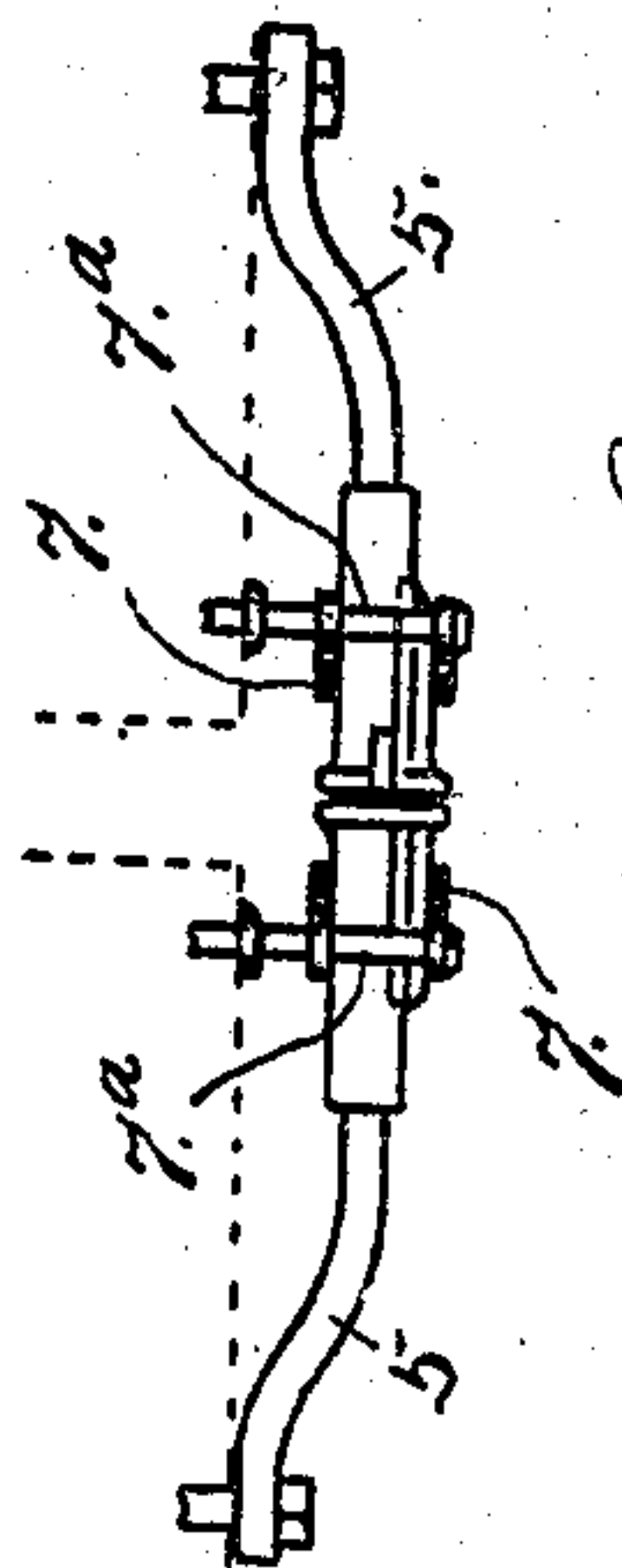


Fig. 7.

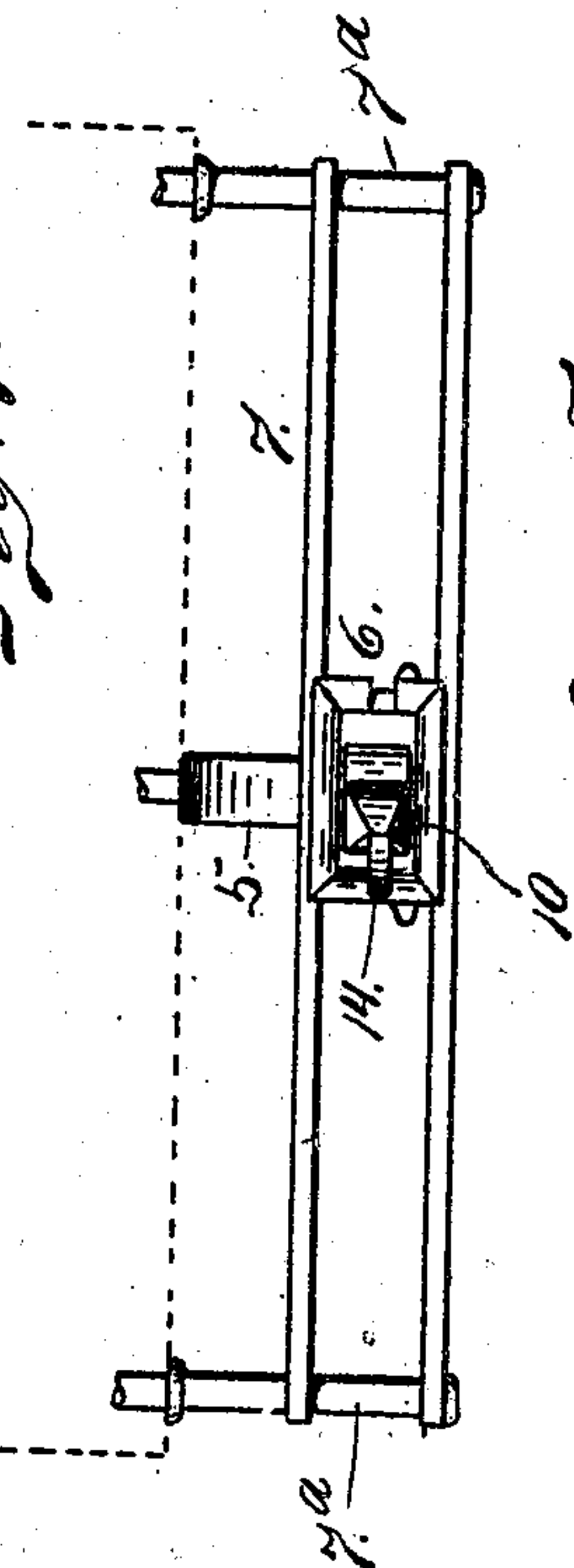


Fig. 8.

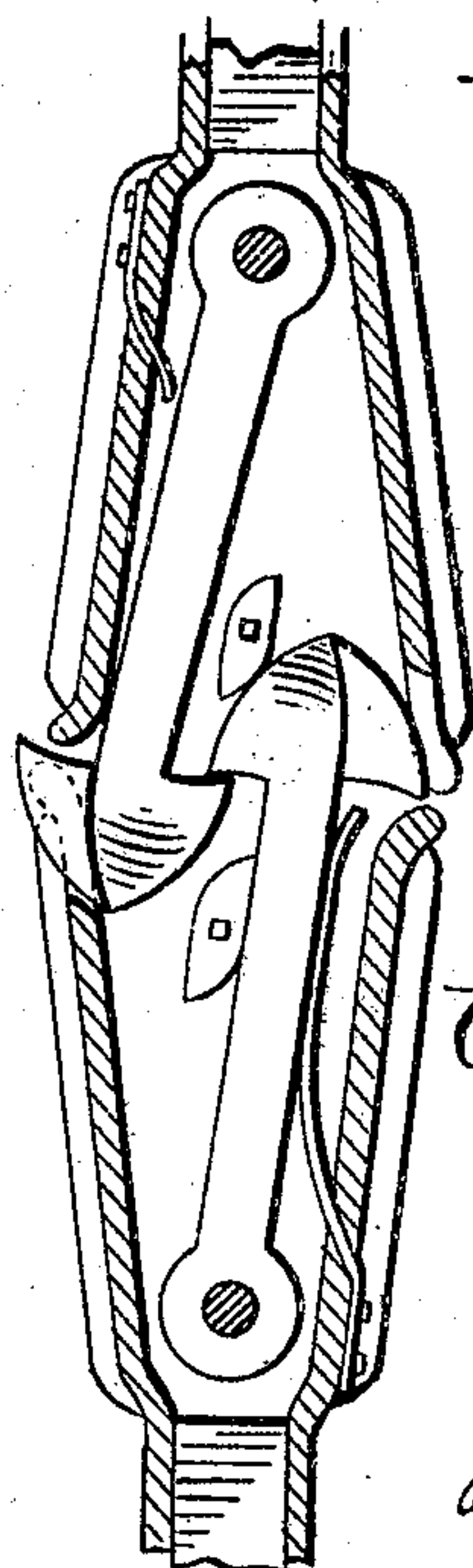


Fig. 9.

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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

No. 814,924.

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To all whom it may concern:

Be it known that I, CHARLES H. TOMLINSON, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Car-Couplers; and I do declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in car-couplers of the class for use in connection with radiating draw-bars or draw-bars which are pivoted to the car at their inner extremities in such a manner that they may swing within certain limits in order to permit the making of short turns or curves, as for use on street-cars in cities where very short turns are necessary. Each draw-head is equipped with a spring-actuated coupling device and a dog or cam adapted to act on the coupling device and also upon the corresponding device of the opposite draw-head when the coupling devices of the two draw-heads are in the locked position. This cam is employed for the purpose of throwing the two coupling devices to the unlocked position, whereby the cars may be moved away from each other. The cam is mounted on a pin which passes through a draw-head and is journaled therein. To one extremity of this pin is attached a lever-arm, with which may be connected any suitable device, as a chain, whereby the lever-arm may be manipulated for the purpose of actuating the cam to unlock the coupling devices.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a top or plan view showing two of my improved draw-heads with their coupling devices interlocked. In this view the right-hand draw-head is sectionized on the line 1 1, Fig. 4. Fig. 2 is a horizontal section taken through the two draw-heads, showing the coupling devices in the unlocked position. Fig. 3 is a similar view showing the coupling devices in the

locked position. Fig. 4 is a vertical section taken through a draw-head, showing the coupling device and its actuating-cam in elevation. Fig. 5 is a side elevation of one of the draw-heads. In Figs. 4 and 5 guide-loops in which the draw-heads swing are illustrated. Fig. 6 is a top view illustrating the use of my improvement on a curve, the draw-bar and draw-head construction, together with the guide-loops, being shown, while the cars to which they are attached are indicated by dotted lines, the parts being shown on a smaller scale. Fig. 7 is a side elevation of the same. Fig. 8 is a front end view of the said construction as applied to a single car, which is indicated by dotted lines, the parts being shown on a larger scale than in Figs. 6 and 7. Fig. 9 is a view similar to Fig. 3, but showing one of the coupling devices thrown outwardly as far as possible and the spring broken on that side of the draw-head.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate the radiating draw-bar, to which each draw-head 6 is rigidly secured in any suitable manner. These draw-bars 5 are pivotally connected with the car at their rear extremities in a manner that will be readily understood. (See Figs. 6 and 7.) The draw-heads swing horizontally in loops designated 7 and illustrated in Figs. 4 to 8, inclusive. These loops guide the draw-heads in their swinging movement on curves. Each draw-head is provided with a coupling device 8, consisting of a shank 9, a hook-shaped forward extremity 10, and a rear extremity 12, having an opening through which a pin 13 is passed and on which the coupling device moves freely. It is evident that the pin may be stationary, while the coupling device turns thereon, or that the pin may be fast in the coupling device and journaled in the draw-head, as may be desired. Each coupling device is further provided with a lateral part 14, projecting outwardly from its head 10 and adapted to enter a slot 15, formed in the opposite draw-head when the two draw-heads are in the coupling or abutting position.

The shank of each coupling device is engaged by a suitable spring 16. In the drawings a strong leaf-spring is illustrated, being fastened at its rear extremity to the exterior

of the draw-bar, as shown at 17, and passing through an opening formed in the wall of the draw-bar, as shown at 18. In each draw-bar is journaled a spindle 19, to which is secured
 5 a cam 20, having curved extremities 21, arranged to act on the shank of one coupling device and the head of the other for the purpose of throwing them to the unlocked position or that shown in Fig. 2, when the spindle
 10 is turned in the direction indicated by the arrow in Fig. 3. The upper part of each draw-head is provided with a recess 22, which is covered by a plate 23, integral with the body of the draw-head. Within the recess 22 is
 15 located a lever-arm 24, which is made fast to the upper extremity of the spindle 19. To the free extremity of this lever-arm is attached an operating device 25. In the drawings a chain is illustrated. It is evident that
 20 any suitable flexible device may be employed. As shown in the drawings, one end of this device is attached to the lever-arm, while the other extremity is connected with the outer wall of the draw-head, as shown at 26, or in
 25 any other suitable manner.

The side of each draw-bar is provided with a laterally-projecting rib 27, so that when the draw-bar during its swinging movement engages a stop 7^a the operating-chain 25 will be
 30 protected and left in position to move freely for the purpose of operating the lever-arm 24. If it were not for this rib, the chain might be crowded or held tightly between the wall of the draw-head and the stop, which the latter
 35 may engage. This stop may be the extremity of the guide-loop 7 or any other suitable device employed to limit the swing of the draw-head.

Attention is called to the fact that the
 40 abutting extremities of the draw-bars are notched, as shown in Fig. 1, whereby the two extremities interlock, the one extremity being the counterpart of the other extremity, so that as the two draw-heads approach each
 45 other they are guided by these notched parts into proper alinement with each other. These notched features also prevent lateral play or movement of the draw-heads on each other when coupled.

From the foregoing description the use and operation of my improved device will be readily understood. Each car is equipped with one of my improved draw-heads, which is attached to a bar 5, connected with the car, as
 55 heretofore explained. Assuming that the cams 20 of each draw-head are in the position shown in Fig. 3 or at the left of Fig. 2, as the two cars equipped as aforesaid approach each other their hook-shaped heads will en-
 60 gage, and as the movement of the cars continues the two spring-actuated coupling devices 8 will interlock, as shown in Fig. 3. It will be observed that the engaging faces of the two coupling devices are curved or beveled, whereby as the cars approach each other

each coupling device is forced outwardly against its spring until the offsets of the hook-shaped heads of the coupling devices are in position to interlock. When the cams 20 are
 70 in position to allow the coupling devices to interlock, as aforesaid, the lever-arm 24 is in alinement with the center of the draw-heads or with the draw-bar 5, as indicated by dotted lines at the left of Fig. 1. Now when it is desired to uncouple the cars, the two locking or
 75 coupling devices may be thrown to the unlocked position by grasping the chain 25 and throwing the lever-arm 24 to the position shown at the right of Fig. 1, the corresponding position of the cam 20 being indicated at
 80 the right of Fig. 2. When this is done, the two coupling devices are separated, as indicated in Fig. 2, whereby the cars may be moved apart in a manner that will be readily understood.
 85

The top of each draw-head below the plane of the plate 23 is provided with an inclined lug 28, having an offset 29, which the lever-arm 24 engages when its cam 20 is thrown to the position to unlock the coupling devices.
 90 Each draw-head is further provided with a lug 30, having an offset or shoulder 31, which prevents the lever 24 from moving out of its normal or central position in the direction opposite that in which it moves when its
 95 cam is actuated to unlock the coupling devices.

Each draw-head is hollow or provided with a chamber 32 to permit the necessary movement of its coupling device and to allow the
 100 interlocking head of the other coupling device to enter or move to the locking position. Attention is also called to the fact that the head or coupling extremity of each coupling device 8 protrudes from the chamber of its
 105 draw-head a sufficient distance to permit the interlocking of the two coupling devices when the two draw-heads have reached the abutting or approximately the abutting position. In accordance with the use of the chamber 32
 110 of each draw-head, as just explained, the inner extremity of this chamber is comparatively narrow, while the chamber increases in width toward its forward extremity. Hence the side walls of the draw-head diverge from
 115 each other as they extend forwardly from the connection of the draw-head with the draw-bar.

The lateral projection 14 of the head of each coupling device forms a deflector to prevent the head of the opposite coupling device
 120 from engaging the forward extremity of the draw-head and possibly breaking the same in case the approaching coupling device should strike the opposite coupling device outside of
 125 the proper position for coupling purposes. For instance, if an approaching car should be in such position that its coupling device 8 will engage the opposite coupling device 9 outside of the inclined or curved inner sur-
 130

face of the head the one coupling device would be deflected outwardly by the projection 14, whereby it would be prevented from passing between the other coupling device and the side wall of the draw-head. It is therefore evident that if it were not for this projection 14 it would be possible for the coupling device of an approaching car to break the draw-head of the opposite car, since the force of the approaching car would be great. Hence it is evident that the deflecting projections 14 perform an important function.

Attention is also called to the fact that by providing an opening or recess 22, in which the lever-arm 24 for manipulating a cam 21 operates, this manipulating-arm and its connections are below the top of the draw-head and are thus completely protected from coming in contact with the top of the guide-loops 7, which otherwise would interfere with the operation of the lever-arm and its connections, as will be readily understood. In further explanation of the advantages of my improved construction it may be stated that in case a spring 16 should break its coupling device 8 cannot move far enough outwardly to disconnect it from the opposite coupling device. Hence unless both springs 16 should be broken at the same time the cars cannot uncouple. This is clearly illustrated in Fig. 9, in which the spring on one side of the draw-head is broken and the coupling device of that draw-head thrown outwardly as far as possible, while the coupling devices of the two draw-heads are still interlocked.

Having thus described my invention, what I claim is—

1. In a car-coupler, the combination with a car, of a hollow draw-head pivotally connected therewith, a spring-actuated coupling device pivotally connected with the draw-head and having a hook-shaped coupling extremity protruding from the forward extremity of the draw-head which is provided with a chamber to permit the locking device the necessary movement, and means connected with the draw-head and arranged to act on the coupling device to throw it to the unlocked position, said means being accessible from the outside of the draw-head, the latter being provided with a top protecting-plate for the unlocking means and the forward extremity of the draw-head being notched to interlock with the corresponding extremity of the opposite draw-head.

2. The combination with a car, of a draw-bar pivotally connected therewith, a draw-head rigidly secured to the draw-bar and having a chamber open in front, the forward extremity of the draw-head being notched to interlock with the corresponding extremity of the opposite draw-head, a coupling device located in the said chamber and pivotally connected with the draw-head at its rear ex-

trinity, its forward extremity being hook-shaped, and protruding from the forward extremity of the draw-head, a spring engaging the coupling device and normally holding it in position to interlock with the corresponding coupling device of an opposite draw-head, a cam movably mounted on the draw-head and adapted to be manipulated from the outside, the said cam acting as a stop to limit the movement of the coupling device in response to its spring and also acting on the coupling device to throw it to the unlocked position, and means connected with the cam but located outside of the draw-head chamber, for manipulating the cam, the draw-head being provided with a protecting-plate for the said manipulating means.

3. In a car-coupler, the combination with a car, of a hollow draw-head pivotally connected with the car whereby it is allowed a lateral swing on its pivot, the draw-head having its forward extremity notched, a coupling device pivotally mounted in the draw-head and having its forward extremity hook-shaped and protruding from the forward extremity of the draw-head to interlock with the corresponding device of an opposite draw-head, a spring acting on the coupling device, a spindle journaled in the draw-head, a cam fast on the spindle and located within the draw-head and in position to act on the coupling device to throw it to the unlocked position, and means connected with the spindle whereby the cam may be manipulated from the outside of the draw-head, the latter being provided with a top plate for protecting the said cam-manipulating means.

4. In a car-coupler, the combination of a hollow draw-head, a spring-actuated coupling device movably mounted therein, means for throwing the coupling device to the unlocked position consisting of a cam located within the draw-head, a spindle connected with the cam and journaled in the draw-head, a lever-arm connected with the spindle, a flexible device connected with the lever-arm and occupying a position exteriorly of the draw-head and along one side thereof, the draw-head being provided with a rib along the side thereof, to protect the flexible device for the purpose set forth.

5. The combination of a draw-head, a suitable coupling device, a cam located within the draw-head and acting on the coupling device, a spindle journaled in the draw-head to which spindle the cam is made fast, the upper part of the draw-head being provided with a recess open at the sides but covered on top, and a lever-arm made fast to the spindle and adapted to move within the said recess for manipulating the spindle to operate the cam for the purpose set forth.

6. In a car-coupler, the combination of two hollow draw-heads pivotally connected with their respective cars whereby they have a

swinging movement, the adjacent extremities of the draw-heads being notched to interlock to prevent independent lateral movement when the cars are coupled, coupling devices movably mounted in the draw-heads and having protruding hook-shaped cooperating coupling extremities, springs engaging the coupling devices, cams movably mounted in the respective draw-heads, each cam being adapted to act on both coupling devices to throw them to the unlocked position, and means connected with the cams but located outside of the draw-head chambers for manipulating the cams within the chambers, the draw-heads being provided with top protecting-plates for the cam-manipulating means.

7. The combination of a swinging draw-head and a coupling device movably mounted therein and having a coupling extremity provided with a horizontally-disposed deflecting part projecting outwardly from the head, the latter being provided with a slot in the side remote from the deflecting part, to receive the said part of the coupling device of the opposite draw-head.

8. The combination of two draw-heads, and coupling devices movably mounted in the draw-heads, the said devices having hook-shaped interlocking heads, the space between each coupling device and one wall of its draw-head being less than the length of the interlocking hooks of the coupling devices for the purpose set forth.

9. The combination of a draw-head, a coupling device located therein, and means for manipulating the coupling device from the outside of the draw-head, the said means including an exteriorly-located member, the draw-head being provided with a top protecting-plate for the said member.

10. The combination of a draw-head, a coupling device located therein, and means for manipulating the coupling device from the outside of the draw-head, the said means including an exteriorly-located member, the draw-head being provided with a top protecting-plate for the said member, the latter being located in a recess formed in the top wall of the draw-head, the said top plate having its upper surface lying in the same plane with the corresponding surface of the body of the draw-head.

11. In a car-coupler, the combination of

two hollow draw-heads pivotally connected with their respective cars, coupling devices pivotally mounted in the respective draw-heads and normally spring held in the coupled position, the said coupling devices protruding from the draw-heads in front and adapted to interlock for coupling purposes, the abutting extremities of the draw-heads being provided with interlocking counterpart recesses and projections located in the rear of the forward extremities of the coupling devices to prevent independent lateral movement of the draw-heads when the cars are coupled.

12. The combination with a draw-head, of a suitable coupling device, a cam located within the draw-head and acting on the coupling device, a spindle journaled in the draw-head to which spindle the cam is made fast, and a lever-arm made fast to the spindle and actuating the latter to throw the locking device to the unlocked position, the draw-head being provided with a lug adapted to engage the lever and hold it in the position corresponding with the unlocked position of the cam and spindle.

13. The combination with a draw-head, of a suitable coupling device, a cam located within the draw-head and acting on the coupling device, a spindle journaled in the draw-head to which spindle the cam is made fast, and a lever-arm made fast to the spindle for manipulating the latter to operate the cam, the upper part of the draw-head adjacent the spindle being provided with lugs forming stops to hold the lever-arm in either position of adjustment.

14. The combination with a draw-head, of a spring-actuated coupling device located therein, a lever located outside of the draw-head and connected with the coupling device for throwing the latter to the unlocked position, the draw-head being provided adjacent the lever with an inclined lug having an offset for holding the lever in the position corresponding with the unlocked position of the coupling device.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. TOMLINSON.

Witnesses:

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A. J. O'BRIEN.