No. 845,121. PATENTED FEB. 26, 1907.

J. R. RENIFF.

CONNECTING PIN.

APPLICATION FILED AUG. 6, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

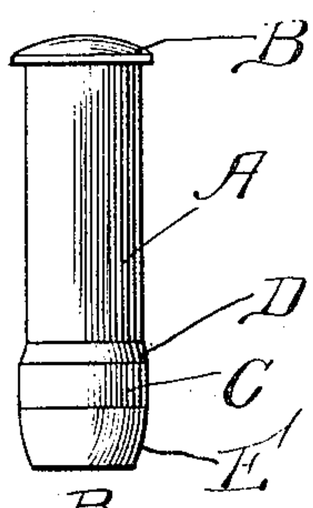


FIG. 2.

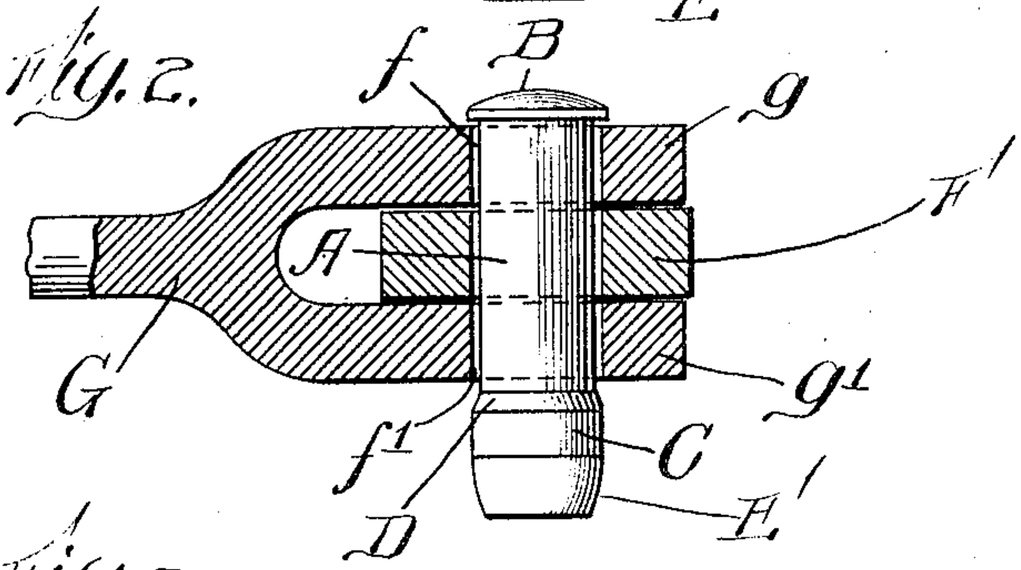


FIG. 3

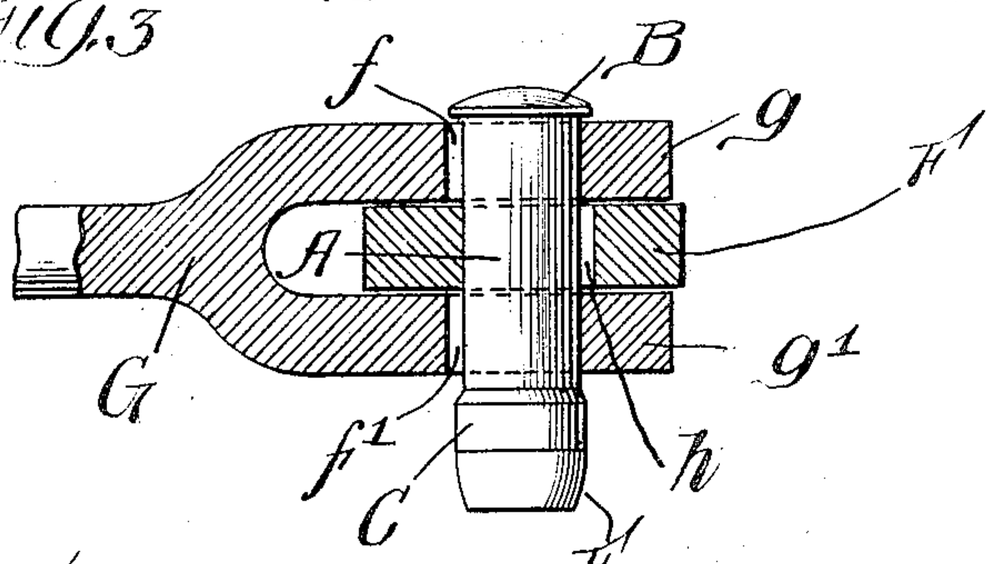
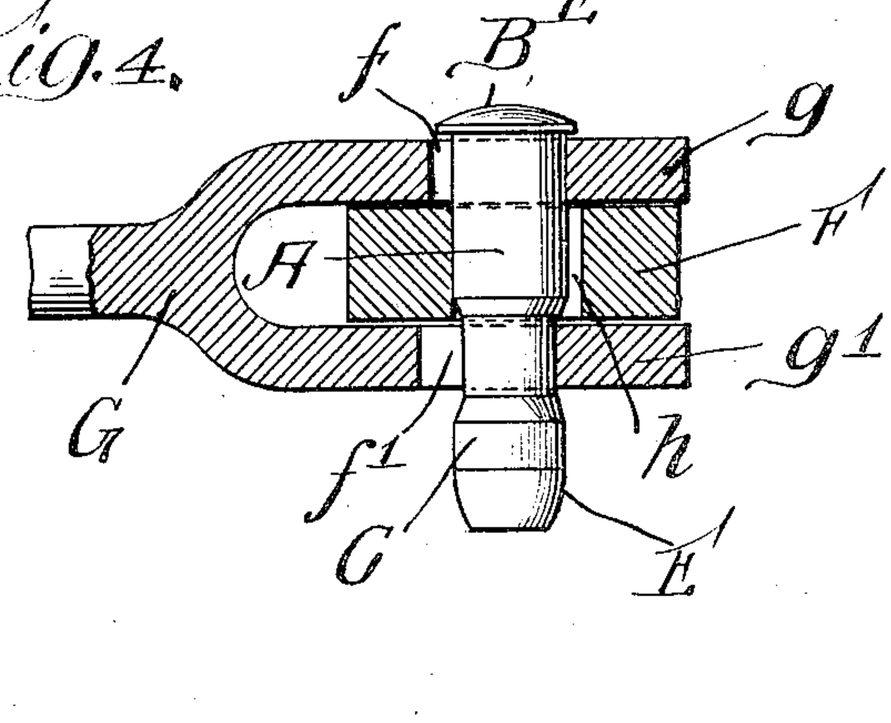


FIG. 4.



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2 SHEETS—SHEET 2.

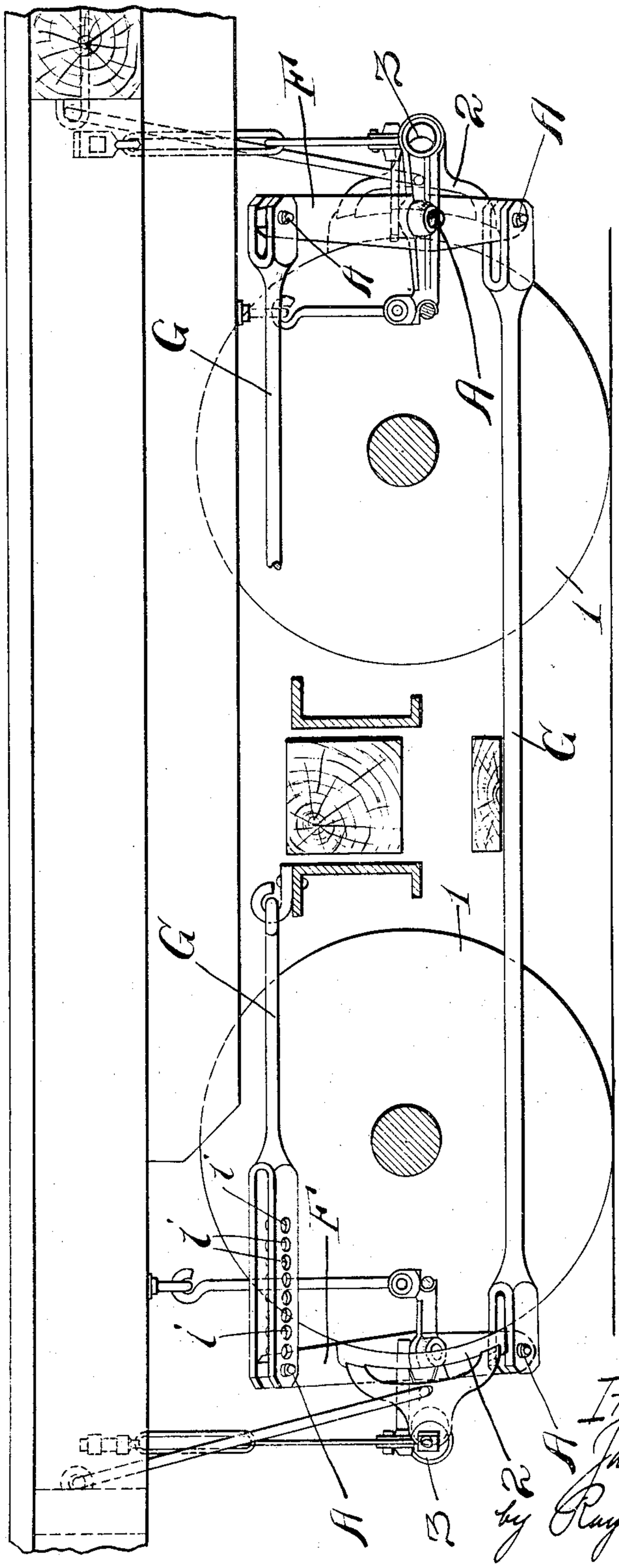

Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES R. RENIFF, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO EGBERT H. GOLD, OF CHICAGO, ILLINOIS.

CONNECTING-PIN.

No. 845,121. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed August 6, 1906. Serial No. 329,415.

To all whom it may concern:

Be it known that I, JAMES R. RENIFF, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Connecting-Pins, of which the following is a specification.

My invention relates to improvements in connecting-pins, and is especially intended and adapted for use in connecting the various rods and levers of a brake-rigging for railway-cars.

The object of my invention is to provide a connecting-pin which may be easily and quickly applied and readily removed and which shall at the same time be proof against accidental loss.

In the construction of brake-rigging it is the common practice to connect the ends of the various rods and levers by means of a pin extending through such connecting ends and held in place by a cotter which extends through the small end of such pin. If such cotters are omitted, as sometimes happens, or their ends are not sufficiently spread apart, as also sometimes happens, the jolting of the cars in service will result in the brake-rigging coming apart and dropping to the track, sometimes causing derailment of the train and always causing injury to the brake-rigging. On the other hand, it often happens in railway practice that such cotter-pins become so corroded that they must be cut off and driven out before the levers of the brake-rigging can be taken apart for purposes of repair or for any other purposes.

While my invention is adapted for use in various situations, it is especially valuable in overcoming these imperfections and dangers in the assembling of brake-rigging for railway-cars.

Certain convenient embodiments of my invention are shown in the accompanying drawings, in which—

Figure 1 shows my improved connecting-pin in what I consider its preferred form. Fig. 2 shows one manner in which the connecting-pin may be applied to two adjacent members of a brake-rigging. Fig. 3 shows the same parts as Fig. 2, but in the position assumed by them when the parts of the brake-rigging are put under strain by the adjustment of the parts to take up slack and eliminate lost motion. Fig. 4 is similar to Fig. 3, but shows my improved pin in a modified form. Fig. 5 is a sectional side elevation a well-known form of brake-rigging, showing an application of my invention to a use for which it is particularly adapted.

In the several figures of the drawings like characters of references indicate the same parts throughout.

My invention consists, preferably, in providing a pin with a head or like means upon one of its ends, a portion adjacent its opposite end of smaller diameter than the head, and a portion intermediate the head and the last-named portion of still further reduced diameter and inserting a pin of such form through openings in the members to be connected by said pin, which openings are adapted to register during the insertion of the pin and to be out of register after the insertion of the pin, so that the walls of said openings may engage the pin and prevent the accidental removal of the pin from the openings.

In the drawings, 1 1 are wheels of a car. 2 2 are the brakes; 3 3, the brake-beams. F F are brake-levers. G G G are rods connecting the ends of the brake-levers. These parts of a brake-rigging and their functions are well understood and need no description here.

A A A A are connecting-pins securing the ends of the various rods and levers together, as is customary.

The subject of the present invention is an improved form of pin, which while adapted for use in many situations and under various circumstances is particularly well adapted for connecting the various rods and levers of a brake-rigging such as herein shown or in many other forms of brake-rigging in use upon railroads.

Referring now particularly to Figs. 1, 2, and 3, A is a pin provided at one end with a head B and provided toward its other end with an enlargement or shoulder C slightly smaller in diameter than the head B and preferably tapering upwardly at D and downwardly at E. These tapers are not essential features, although they are preferred for reasons which will hereinafter appear.

In Fig. 2 are shown two members of a brake-rigging—such, for example, as the lever F and rod G, the end of the lever F fitting between the forks *g g'* of the bifurcated end of the rod G. The forks *g g'* are provided with openings *f f'*, the end of the lever F being similarly provided with an opening

h. These openings are of sufficient diameter to permit the passage therethrough of the portion C, but are preferably not of sufficient diameter to permit the passage therethrough of the head B. As shown in Fig. 2, the pin has been inserted in these openings, the openings being still in register with each other. As shown in Fig. 3, these openings are out of register with each other. This occurs when the parts are put under strain upon taking up the slack and eliminating lost motion in the usual adjustment of the parts of the brake-rigging. It will be seen that the pin is now engaged by the walls of the openings at three points, being sustained at each side of the lever F by the wall at one side of each of the openings *f f'* in the forks *g g'* and pressed upon at a point intermediate the above-named points by a wall of the opening *h* in the lever F. It will be seen that as long as the parts are under strain, and therefore held in the position shown in Fig. 3, it is impossible for the pin to become disengaged, and thereby permit the lever F and rod G to become disconnected from each other.

In practice the various rods and levers of a brake-rigging are kept under a certain degree of strain at all times to prevent lost motion between the various parts. A well-known form of device for taking up this slack is that shown in Fig. 5, which consists in making the fork at the end of one of the levers extremely long and providing the same with a series of openings *i i i i*. In adjustment the connecting-pin A at this point of connection will be inserted through such an opening in this series of openings as will take up lost motion and properly adjust the brake-rigging as a whole, so that but a slight movement of the brake-operating means, such as the piston in an air-brake cylinder, will efficiently apply the brakes. Various other adjusting devices for this purpose are commonly used. Where a slack-adjusting device is used sufficient slack is provided in the brake-rigging to permit the parts, such as the members F G, to be brought into the position with relation to each other, (shown in Fig. 2 of the drawings,) whereupon the pin A will be dropped into position, as shown in Fig. 2, the head B supporting the pin A upon the fork *g*. This will be true in assembling the connecting ends of each connecting pair of members of the brake-rigging. The slack being then adjusted, the members, such as F G, will be pulled away from each other and the pin A will be drawn laterally to the position shown in Fig. 3, in which the shoulder C extends beyond the hole *f'* in the fork *g'* of the rod G and under the end of the fork *g'* immediately adjacent to the hole *f'*. Consequently the shoulder C abuts against the lower surface of the end of the fork *g'*, so as to prevent the displacement of the pin A and the consequent separation of the members F G. Where no such slack-adjusting device is used, the parts F G will normally occupy the positions relatively to each other (shown in Fig. 3) in which the hole *h* in the lever F will partially register with the holes *f f'* in the forks of the rod G. Consequently if the preferred form of my pin shown in Fig. 1 is used it can be driven to position, and as the tapered end of the pin is driven into the hole *h* it will act as a wedge to draw the members F G together sufficiently to permit the shoulder portion C of the pin to be driven entirely through the hole *h* and the hole *f'*, whereupon the parts will assume the positions shown in Fig. 3. This wedging action will serve to quickly and conveniently bring the various holes into register with each other. In any event when the assembling is completed the pins are under constant tension, and are thus constantly held in position. The pin may be removed either by loosening the slack-adjusting device, where one is used, or when the preferred form of pin is used the pin may be driven upwardly, the taper D, leading upwardly from the shoulder C, serving as a wedge to draw the members F G together sufficiently to permit of the pin being driven out of the connection.

In Fig. 4 I have shown a modification of my pin in which the narrowest portion of the pin instead of being of sufficient length to engage the walls of all three of the holes *f*, *f'*, and *h* is of such limited length as to engage merely the wall of the hole *f'*. Obviously this is a mere variation of the same inventive idea and is suggestive of various other adaptations of my invention.

It will be seen that under the above-outlined conditions of use it is impossible for a pin formed in accordance with my invention to work out of the openings in which it is inserted, because, as above stated, the various parts of the brake-rigging are always under a certain degree of strain and no lost motion is permitted between these parts.

I claim—

1. The combination of a pair of members to be connected, one of said members having its end bifurcated and the end of the other of said members adapted to be inserted between the forks of said first-named member, said forks and the end of said last-named member being perforated, and a pin adapted to be inserted through said members, said pin having a head of greater diameter than the perforations, and an enlarged portion adjacent its opposite end of smaller diameter than said head and adapted to pass through the perforations and to serve as a lock, to prevent the withdrawal of said pin when the perforations in the members are moved out of alinement with each other.

2. In a brake-rigging, the combination with a pair of interengaging members provided with openings adapted to be brought

into register with each other for the insertion of a pin, of a pin for connecting said members, said pin having a head of greater diameter than the openings in said members, said pin having also a main body portion of substantially smaller diameter than said openings and an enlarged portion adjacent its point having a diameter greater than said main body portion and less than that of said head, and means for maintaining said members under strain when so connected.

3. The combination of the meeting ends of a pair of members, the end of one of said members being divided, the end of the other of said members being adapted to be inserted between the forks of said first-named member, said forks and the end of said last-named member being provided with openings extending therethrough and adapted to be brought into register for the insertion of a pin, a pin for connecting said members together, said pin having a portion of nearly as great diameter as the openings in the members, a portion of reduced diameter, and a head.

4. The combination of a pair of members to be connected, one of said members having its end bifurcated and perforated, the other member having an end adapted to be inserted between the forks of said first-named member, said end being also perforated, and a connecting-pin adapted to be passed through the openings in said members, said pin being provided with means whereby it is adapted to be driven through said openings so as to force said openings into alinement with each other during its passage through said openings, and having a portion of reduced diameter adapted to permit slight movement of said members when the latter are placed under strain, whereby the openings are moved slightly out of alinement with each other, and the pin is locked and prevented from falling out.

5. The combination with a member having its end bifurcated and another member having its end adapted to be inserted between the forks of said first-named member, of a pin for connecting said members, said members being provided with openings extending therethrough, normally out of alinement with each other, but adapted to be brought into alinement with each other, said pin being adapted to be passed through said openings when the latter are in alinement with each other, and having a portion of its body of nearly as great diameter as the openings, a head upon one of its ends, and a part of reduced diameter adapted to permit slight movement of the members so that the openings may become somewhat out of alinement with each other, whereby the pin is locked in position.

6. A connecting-pin for the parts of a brake-rigging, said pin having a head, a portion of reduced diameter, and another portion connecting the head with said reduced portion and having a diameter intermediate that of the head and the reduced portion and tapering into the latter.

7. The combination with two connecting members of a brake-rigging, provided with pin-holes adapted to register when said members are not under strain, of a connecting-pin provided with two shoulders connected by a part of said pin of less diameter than said shoulders, said pin being adapted to be inserted in said holes when in register with each other and means for putting said members under a constant strain whereby said holes are drawn out of register and said shoulders on said pin are brought into engagement with said members so as to prevent removal of said pin.

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