(No Model.)

2 Sheets—Sheet 1.

W. P. WIDDIFIELD.

CAR BRAKE.

No. 277,436. Patented May 8, 1883.

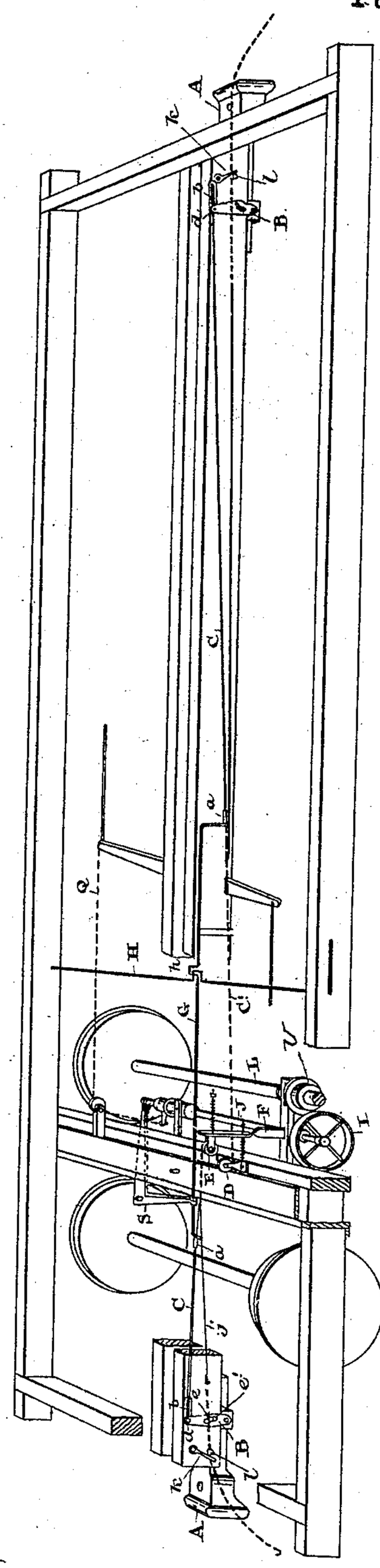

Fig. 1.

Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

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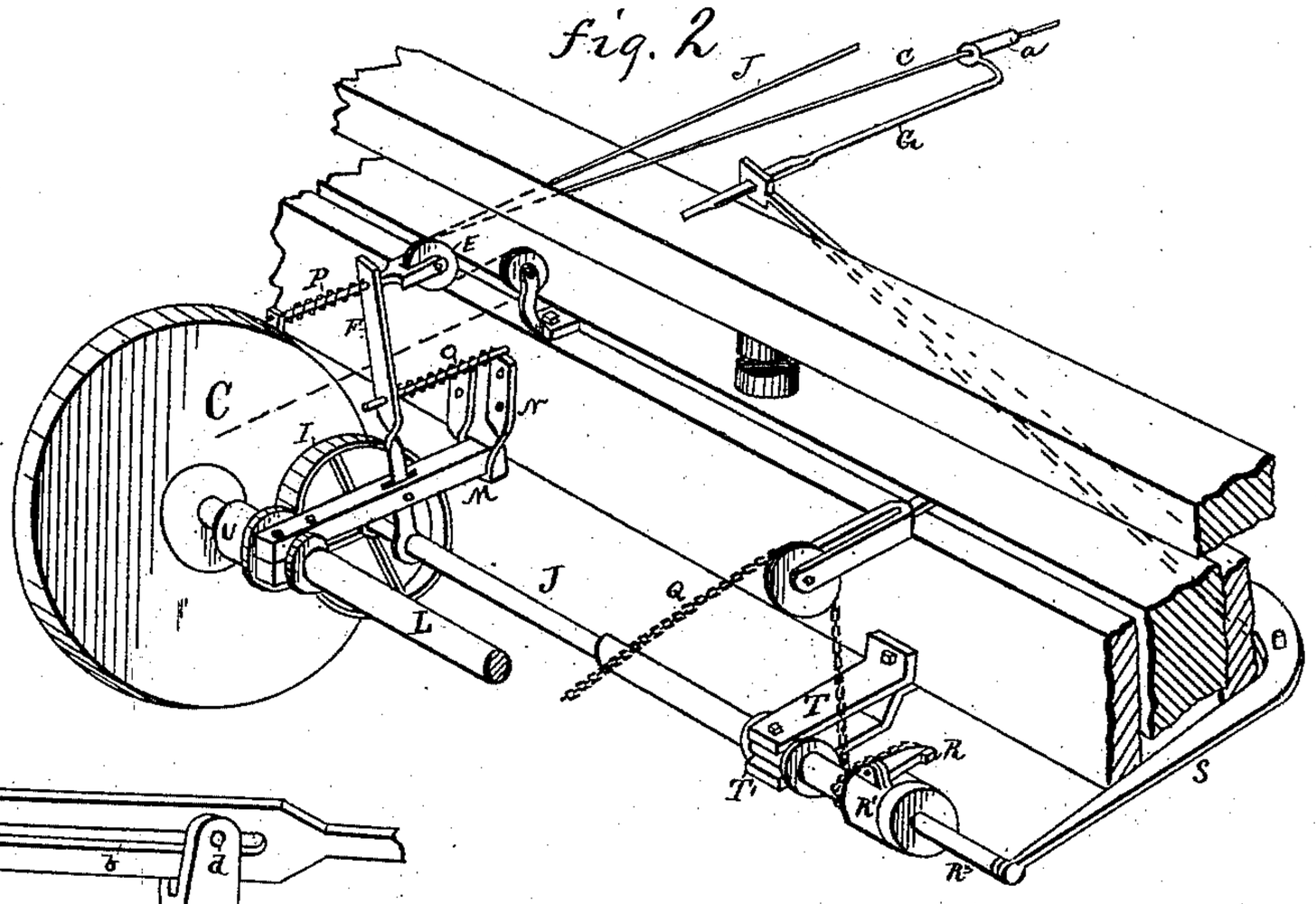
fig. 2



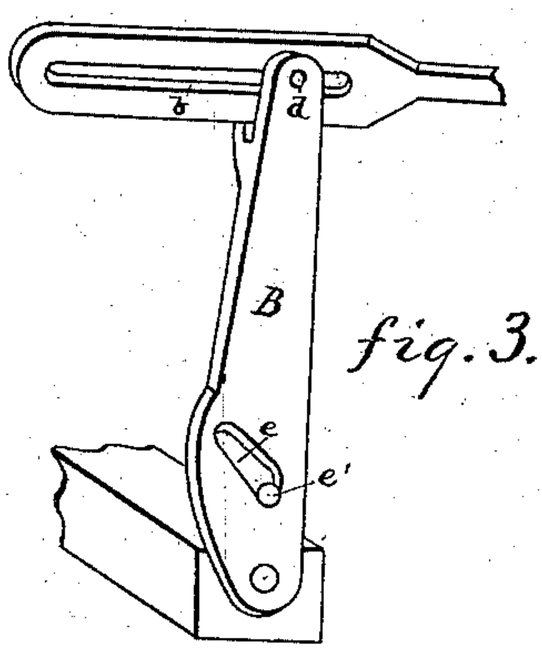
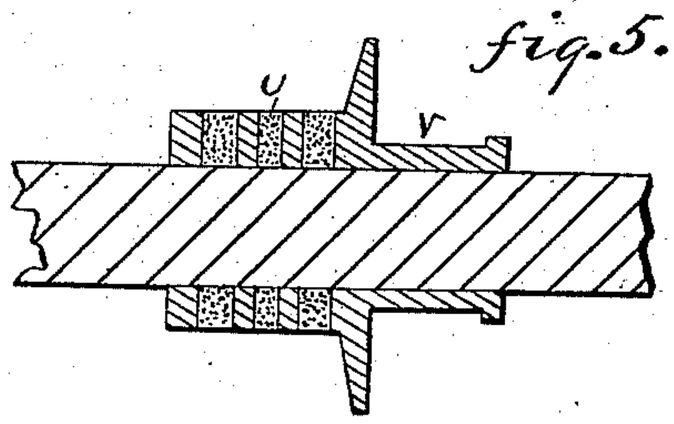


fig. 3.

fig. 5.



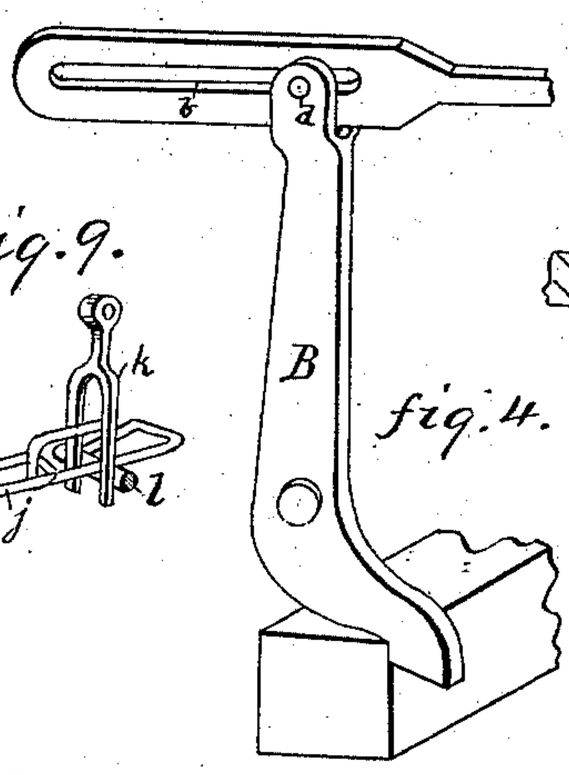


fig. 4.

fig. 6.

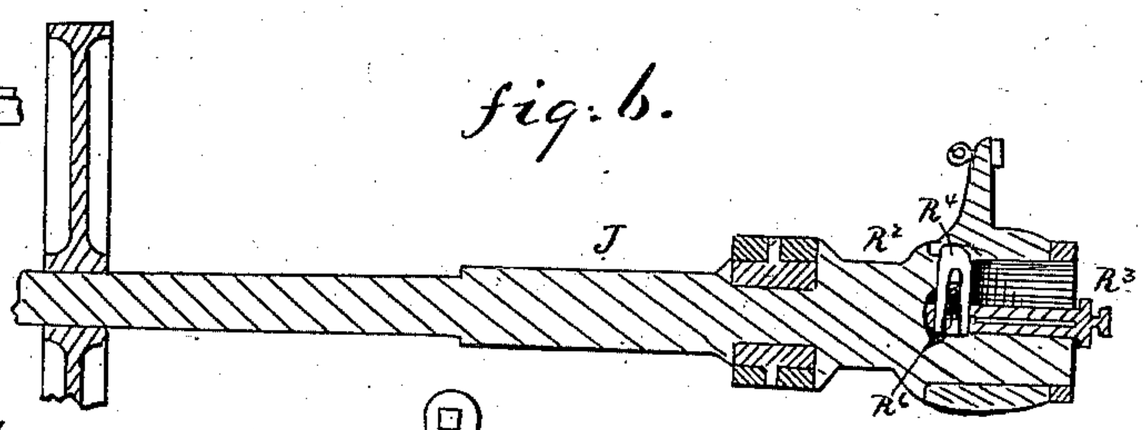


fig. 9.

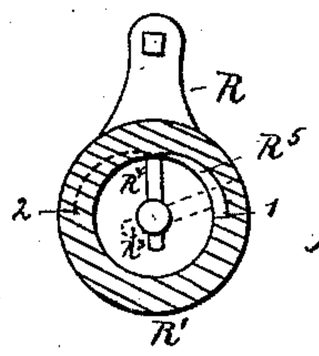


fig. 7.

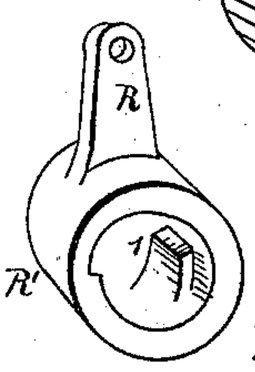


fig. 8.

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UNITED STATES PATENT OFFICE.

WATSON P. WIDDIFIELD, OF UXBRIDGE, ONTARIO, CANADA.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 277,436, dated May 8, 1883.

Application filed November 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, WATSON PLAYTER WIDDIFIELD, a subject of the Queen of Great Britain, residing at the village of Uxbridge, in the county of Ontario, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Railroad-Car Brakes, of which the following is a specification.

The invention relates to certain improvements in an apparatus for operating railroad-car brakes patented in the United States of America on the 26th of September, 1882, under No. 265,200; and the object of the invention is to simplify and improve the construction of the brake then patented.

It consists in the arrangement and construction of parts hereinafter explained.

Figure 1 is a skeleton view of the body of a car and of a truck, showing the general arrangement of the friction brake-operating mechanism. Fig. 2 is a perspective detail of the friction mechanism. Fig. 3 is a detail showing a device for connecting the operating-rod to the draw-head. Fig. 4 is an alternative form of this device. Fig. 5 is a sectional detail of the friction-pulley to be attached to the axle of the car-truck. Fig. 6 is a sectional detail of the bar upon which the brake-chain is wound. Fig. 7 is a cross-section of this bar. Fig. 8 is a detail of sleeve. Fig. 9 is a detail of the dog *k*.

In the drawings like letters indicate corresponding parts in each figure.

A represents the draw-heads, fixed to the car in the usual manner.

B is a small lever pivoted upon the draw-timber of the car, and connected at one end to the draw-head A and at its other end to a rod, C. The draw-head at each end of the car is provided with a similar bar, C, which bars are connected together by a chain, C′, the said chain being carried around the pulley D, which is journaled in a suitable bracket fixed to the cross-timber of the truck, and around the pulley E, journaled on a spindle on the end of the lever F.

G is a rod suitably supported by the timbers of the car, and having loops formed at each end, through which the rods C pass, stops *a* being placed on the rods C to butt against the ends of the rod G, so that the movement of the latter will cause a corresponding longitudinal adjustment of the rods C, which adjustment puts the friction brake mechanism into operation. It will be noticed that the ends of the rod C which connect with the lever B have slotted passage-ways *b* cut in them, to permit the longitudinal movement of the said rods C. This movement, as will hereinafter be explained, permits the adjustment of the rods C, so that only one draw-head at a time shall affect the mechanism operated by the rods C.

H is a rod running across the car, and having a crank, *h*, made in it to engage with the crank shown in the rod G. It will thus be seen that by turning the rod H the rod G has a longitudinal adjustment imparted to it, and through it the rods C are correspondingly moved.

As illustrated in Fig. 1, the rods C are set so that only the movement of the draw-head on the left-hand side of the figure shall have any effect on the friction brake mechanism operated thereby. The pin *d* on the lever B, at the opposite end of the car, would move in the slot *b* at the end of the rod C should its draw-head be compressed. Should the draw-head A on the left-hand side of the figure be compressed the lever B will be tilted on its pivot, drawing with it the rod C, which, by pulling on the chains C′, tilts the lever F on its pivot, and throws the friction-pulley I, which is keyed to the shaft J, against the friction-pulley U, which is fastened to the revolving truck-axle L, causing the said rod J to revolve. On reference to Fig. 2, it will be seen that the lever F is pivoted upon an arm, M, journaled on the axle L at one end, and passing through a staple, N, fixed to one of the truck-timbers. By thus supporting the lever F the friction-pulley I, which is keyed to the shaft J, supported by the said lever F, will always be held at the same relative distance from the axle L, notwithstanding the changes which will occur in the distance between the truck-timbers and truck-axle.

O is a spiral spring placed behind the lever F, so that immediately upon the chain C′ being loosened the said lever F will be tilted on its pivot, so as to carry the friction-pulley I clear of the friction-pulley on the axle L, thereby arresting the movement of the brake-gear.

P is a similar but heavier spiral spring, placed on the spindle of the pulley E, so as to receive the strain caused by the tightening of the chain C′, and thereby prevent any undue strain being directed against the lever F. The brake-chain Q, which is connected in the usual manner to the ordinary brake-levers, is connected at its other end to an arm, R, formed on a sleeve, R′, which is journaled on the drum R^2, formed on the end of the shaft J.

R^3 is a spindle fitted into a hole made in the end of the shaft J. Through a slot in this spindle is fitted a dog, R^4, which works in a slot, R^5, made in the end of the shaft J. This slot permits the dog R^4 to move with the spindle in and out of the end of the shaft J. On reference to Fig. 8, it will be noticed that the interior of the sleeve R′, which is journaled on the shaft J over the slot R^5, has two ratchet-stops formed on it at its opposite ends, and facing in reverse directions to each other. As shown in Fig. 6, the dog R^4 is opposite to the ratchet-stop marked 1 on the sleeve. As in all other ratchet-stops, the stop 1 will only present an obstruction to the dog R^4 when the shaft J is revolved in one direction. A spiral spring, R^6, is arranged to hold the dog out beyond the periphery of the shaft; or it will permit it to recede when the shaft is caused to revolve in the opposite direction to that which will bring the stop 1 against the dog. Consequently, when the shaft is so reversed, the dog permits the shaft to revolve freely, and as a consequence the sleeve R′ will not revolve with it, and therefore the brake-chain Q, attached thereto, will not be wound upon the shaft. By moving the spindle out, so as to bring the dog opposite to the ratchet-stop marked 2 on the sleeve R′, the act of connection will be reversed.

S is a pivoted lever, one end of which is attached to the spindle R^3, and its other end to the rod G, so that the movement of the rod G will adjust the spindle R^3, for the purpose of effecting the desired change of connection between the shaft J and sleeve R. For instance, as shown in Fig. 1, the lever S is by its connection with the rod G thrown at an angle, so as to bring the dog R^4 opposite to the ratchet-stop 2, when the rod H is turned so as to move the rod G in the opposite direction, carrying with it the pivoted lever S, causing the spindle R^3 to move into the axle till the dog R^4 is opposite to the ratchet-stop 1. Thus it will be seen that the rod H not only throws one draw-head out of action while bringing the other one into action, but it also changes the connection between the sleeve carrying the brake-chain Q and the axle J, which is caused to revolve by the truck-axle, as hereinbefore explained.

As it is important that if undue strain be exerted on the friction mechanism by the cars coming suddenly together and compressing the draw-heads more than is necessary to produce the desired movement of the friction mechanism, I connect as follows the lever B, which transmits the movement of the draw-head A to the rod C, which operates the friction mechanism, as hereinbefore explained. On reference to Fig. 3, it will be noticed that the end of the lever B is pivoted upon the draw-head A, and that the diagonal slot *e* is made at or near the center of the lever B. Through this slot a pin, *e′*, passes, which pin is fixed to the draw-timber. This pin fits into a recess formed in the bottom of the slot *e*, when the said lever is set so as to direct the movement of the draw-head to the friction mechanism, as only a very limited movement of the draw-head is necessary to impart the required movement to the friction mechanism. The lever B is so set on the pin *e* that should the operation of the draw-head be greater than required the lever B will slide on the pins *e′*, this movement being permitted by the diagonal slot *e*, which fits upon the pin. Another means of accomplishing the same end is shown in Fig. 4. In this arrangement the lever B is permanently pivoted upon a pin fixed to the draw-timber; but it has an end, *m*, shaped as shown in Fig. 4, to fit over a projection formed on the draw-head A. In this arrangement, should the movement of the draw-head be greater than required to put the friction mechanism in motion, the lever B turns on a pivot, so as to clear the hooked end of the draw-head, when, of course, no further movement is given to the lever B until reset by the draw-head springing back into its initial position. It has been found in practice that when a friction-pulley is directed against a revolving truck-axle the strain on the said pulley is greater when the car is going in one direction than when it is moving in the opposite direction. To neutralize this strain I place a bracket, T, on one of the truck-timbers, and provide its other end with a rocking journal-box, T′, situated between the point on the shaft J where the chain Q is wound and the arm M. By thus placing the journal-box the strain referred to is neutralized, while the rocking journal-box permits the adjustment of the angle of the shaft without producing any undue strain thereon.

In Fig. 5, I show a section of an improved friction-pulley to be applied to the axle. This friction-pulley U is composed of paper and Babbitt metal, or any other soft metal. In order to fix this pulley to the axle, I form a mold to fit around the axle, placing disks of paper 3 round the axle and in the mold. When these disks are adjusted in position I pour into the mold the Babbitt or other metal, thereby casting the friction-pulley in position, and at the same time casting a bearing, V, to carry the end of the arm M, as shown in Fig. 2.

In order to provide for the application of the brakes in the event of the cars accidentally uncoupling, I provide what may be termed a "branch" chain, *j*, attached at one end to the chain C′, and extending beyond the end of the draw-head A, as a hook or some form of con-

necting-link for connecting it to the branch chain attached to the next car.

k is a forked dog, shown in detail in Fig. 9, and pivoted to the draw-timber, near the end of the car. This forked dog fits over one of the vertical links in the chain *j*.

l is a stop-block placed on the draw-timber, just behind the dog *k*, so that when the said stop is in a vertical position it shall be in contact with the dog, so that the said dog cannot swing back out of a vertical position, while it may swing forward freely. By thus providing a dog to fit over the vertical links of the chain, and arranging the said dog so that it may swing freely forward, while it cannot go backward out of a vertical position, the chain which passes through the dog will have a free outward movement, the forked end of the dog *k* swinging forward and slipping over each horizontal link during the forward movement of the chain; but should the chain be drawn backward the forked end of the lever *j*, in slipping past the horizontal link, falls over the next vertical link, and, coming in contact with the stop *l*, presents an obstruction to the next horizontal link, thereby preventing the backward movement of the chain. Owing to this arrangement, it will be seen that, in the event of the coupling between the cars breaking, a strain will immediately be exerted on the branch chain *j*, and through it, the chain C being drawn upon, the friction mechanism is put into operation. The moment that the branch chain breaks it will have a natural tendency to spring backward, when its movement will immediately be arrested by the forked end of the dog *k* coming in contact with the horizontal link, thereby holding the chain, and through it maintaining the brake mechanism in operation until the motion of the car has been arrested.

What I claim as my invention is—

1. In a railway-car brake substantially as described, the combination of the draw-heads A and rods C C, connecting them with the cranked rod G, having convenient operating means, and the cranked rod H, whereby a longitudinal movement is imparted to the rods to adjust the connection with one of the draw-heads, while the other is simultaneously thrown out of operation, as set forth.

2. In an apparatus for operating railroad-car brakes, in which the brake-chain Q is attached to a sleeve, R, journaled on a shaft caused to revolve by being brought in contact with a revolving truck-axle, a spindle, R^3, fitting into the end of the shaft, and provided with a dog, R^4, arranged to come in contact with ratchet-stops formed on the inner surface of the sleeve R, at either end thereof, and facing in the reverse direction to each other, in combination with a pivoted lever, S, one end of which is connected to the spindle and the other to the rod G, so that the longitudinal movement of the said rod shall move the spindle in or out and bring the dog opposite to one or the other of the ratchet-stops, all combined and arranged to serve substantially as and for the purpose specified.

3. In combination with a draw-head, A, the pivoted lever B, connecting the rod C with the said draw-head, the said rod C having slot *b*, and friction operating-mechanism, whereby the compression of the draw-head to a given point will be transmitted through the rod C, but beyond which point the strain on said rod C ceases, as set forth.

4. In an apparatus for operating railroad-car brakes, a chain, C′, passing around the pulley E on the lever, and around the pulley on the truck-timber, in combination with the rods C, connected to the said chain at one end, and to the levers B at their other end, which levers are pivoted to the draw-timber and to the draw-heads, so that the compression of the latter shall impart a longitudinal movement to the rods, and through them put in operation friction mechanism for operating the brake mechanism, as specified.

5. In an apparatus for operating railroad-car brakes by friction mechanism put in motion by the compression of the draw-heads, the rods C, connected to the draw-heads A, and to each other by the chain C′, which chain passes around the pulleys D and E, and through loop-holes in the ends of the rod G, in combination with stop-blocks *a*, fixed to the rods C, opposite to the loop-holes, for the purpose of coming in contact with the rod G, and forming a stop against which the chain C′ may be tightened, substantially as and for the purpose specified.

6. In an apparatus for operating railroad-car brakes, in which an adjustable friction-pulley operating against the revolving axle of the car is employed for tightening the ordinary brake-chain, a sleeve journaled on the shaft carrying the adjustable friction-pulley, and to which the brake-chain is attached, in combination with a spindle fitting into a hole in the end of the shaft, and having a pawl or projection attached to it, for the purpose of coming in contact with a stop on the sleeve, in order to connect the said sleeve carrying the chains Q and the shaft carrying the friction-pulley, all combined and arranged to serve as and for the purposes set forth.

7. In an apparatus for operating railroad-car brakes, in which a friction-pulley, I, is keyed to the shaft J, supported on the end of the lever F, a spring placed on the spindle of pulley, so as to relieve the lever of any undue strain, as specified, in combination with the spring placed on the opposite side of the lever, for the purpose of throwing the lever back, after having been tilted on its pivot, by the action of the chain and the sliding bar M, as and for the purposes specified.

8. The composite friction-pulley cast on the axle, and having a hub to form a bearing, V, in combination with the arm supported at one end by the said bearing V, and at the other

end by a staple fastened to the truck-timber, substantially as and for the purpose specified.

9. The combination of the friction-surface U, friction-wheel I, and shaft J, with the rocking journal T′ and bracket T, secured to one of the truck-timbers between the friction-pulley and the chain, as set forth.

10. In an apparatus for operating railroad-car brakes by friction mechanism put in motion by the longitudinal movement of a rod or chain, a branch chain for connecting the friction brake mechanism of one car with that of the car next to it, and a forked dog pivoted to the draw-timber and fitting over the chain, in combination with a stop placed on the draw-timber, behind the dog, in such a manner that the said dog, while permitting the free outward movement of the chain, will catch and retard its backward movement, for the purpose of holding the friction brake mechanism in operation in the event of the connection between the cars being broken.

11. In an apparatus for operating railway-car brakes, in which a friction-pulley, I, is caused to revolve by being brought in contact with the revolving axles of the car, the arm M, journaled at one end to the axle L, and the other end supported by some part of the truck-frame, in combination with the lever F and pulley I, for the purpose specified.

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