

(No Model.)

2 Sheets—Sheet 1.

R. F. BRIDEWELL.  
GRIPE FOR PROPELLING CARS.

No. 253,673.

Patented Feb. 14, 1882.

Fig. 1.

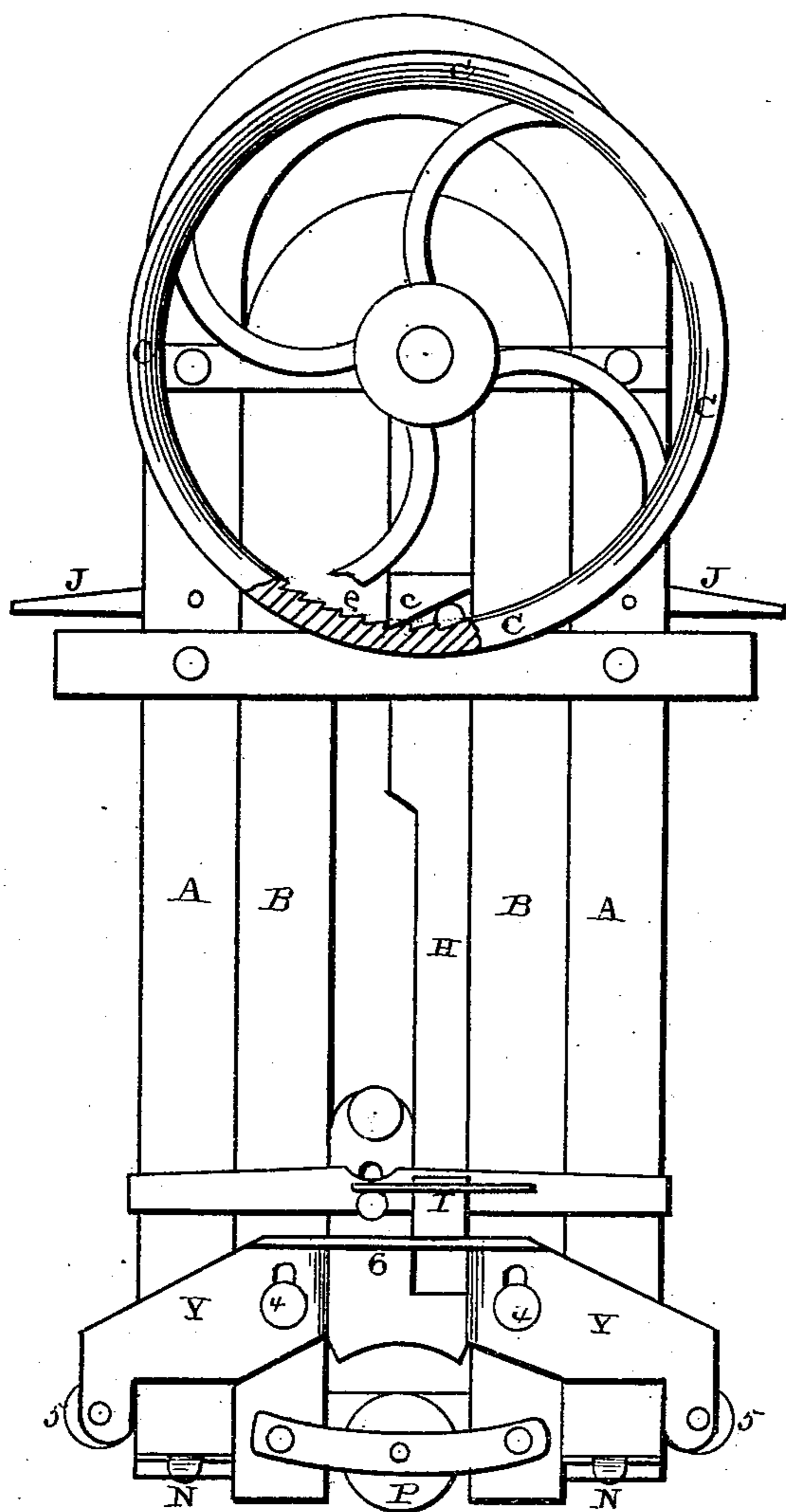
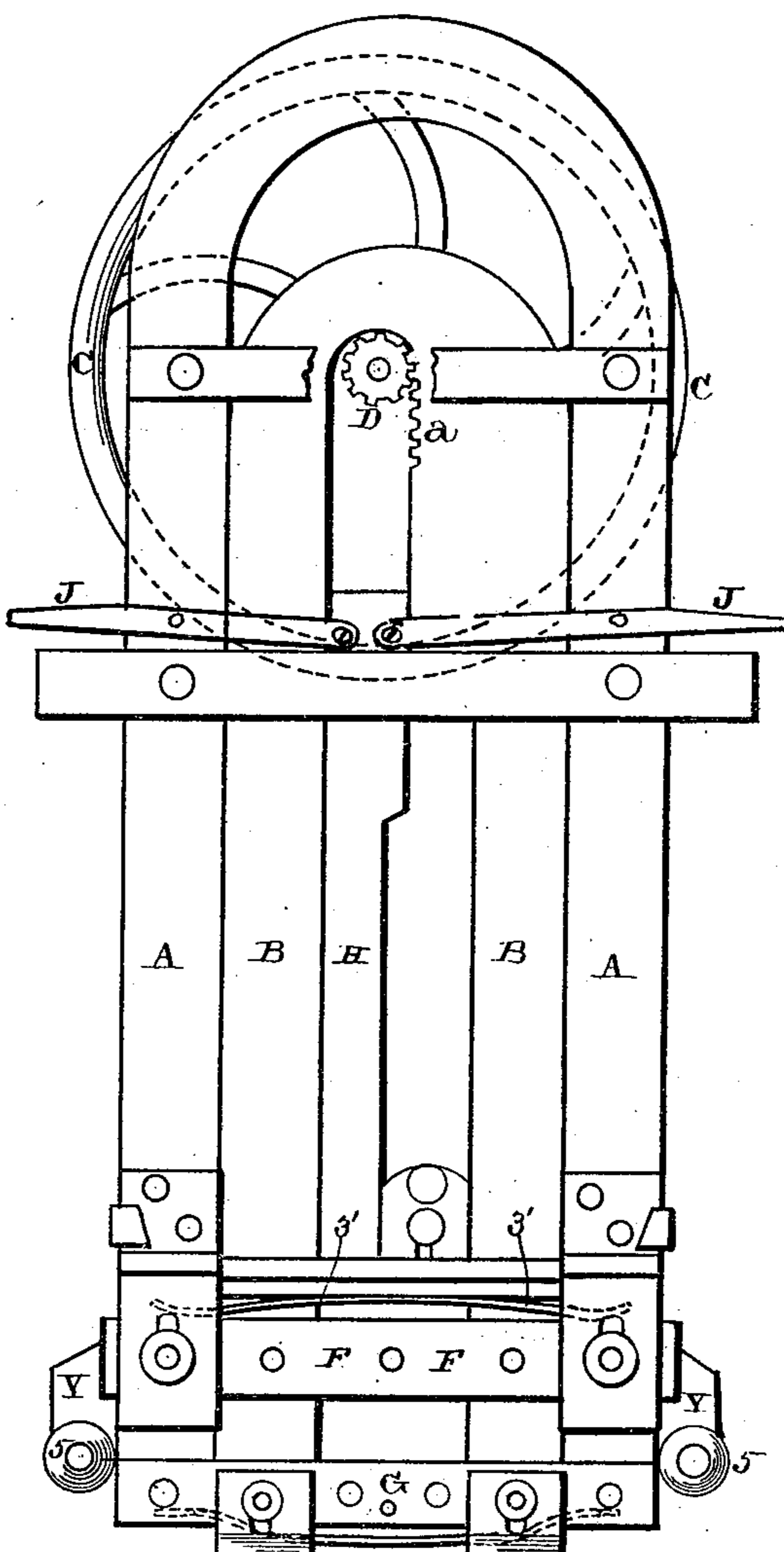


Fig. 2.



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att'y.

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Fig. 3.

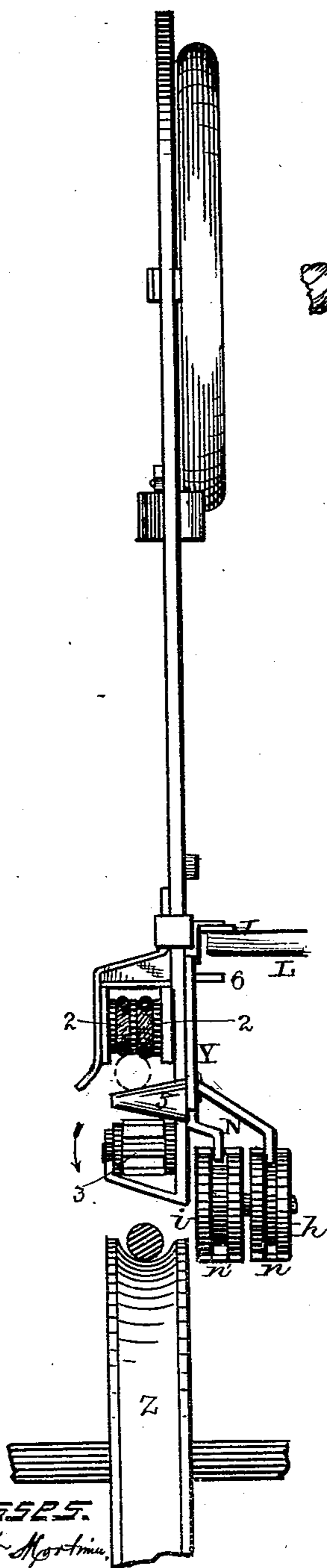


Fig. 4.

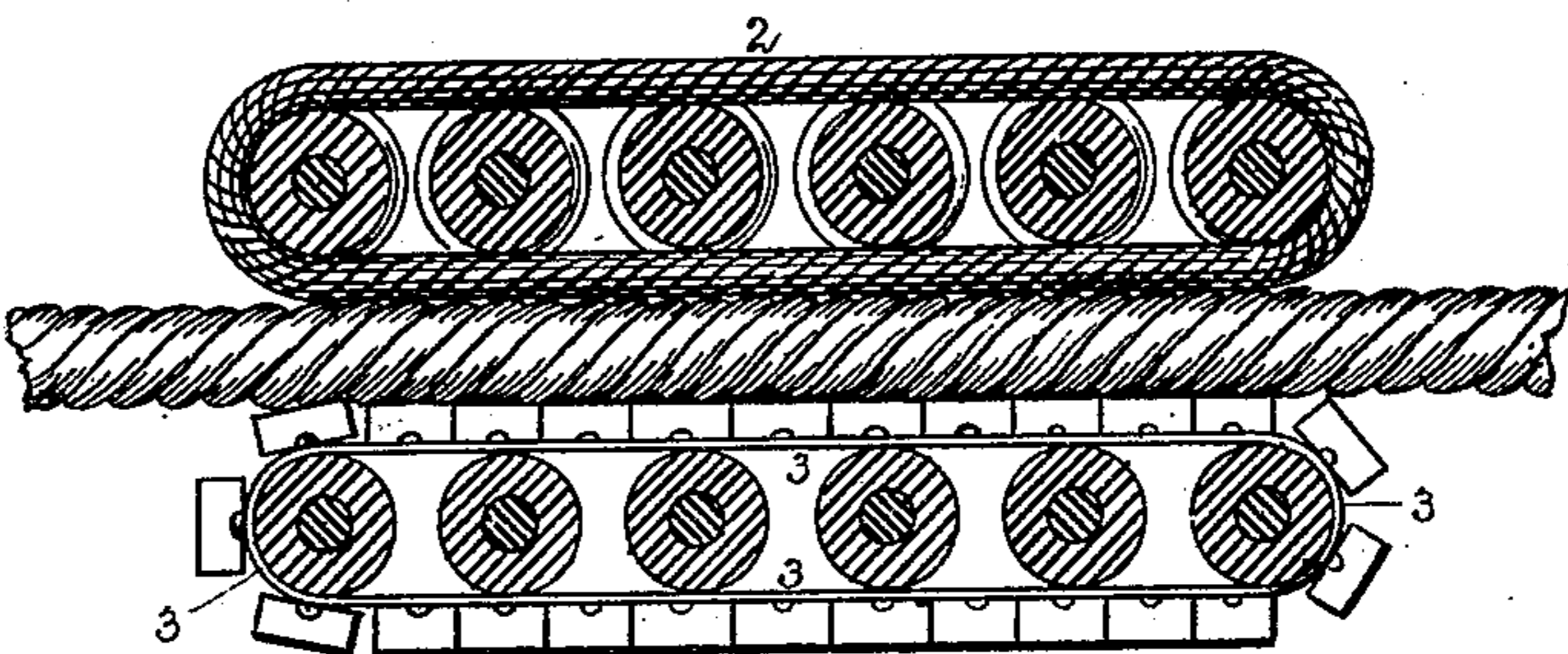
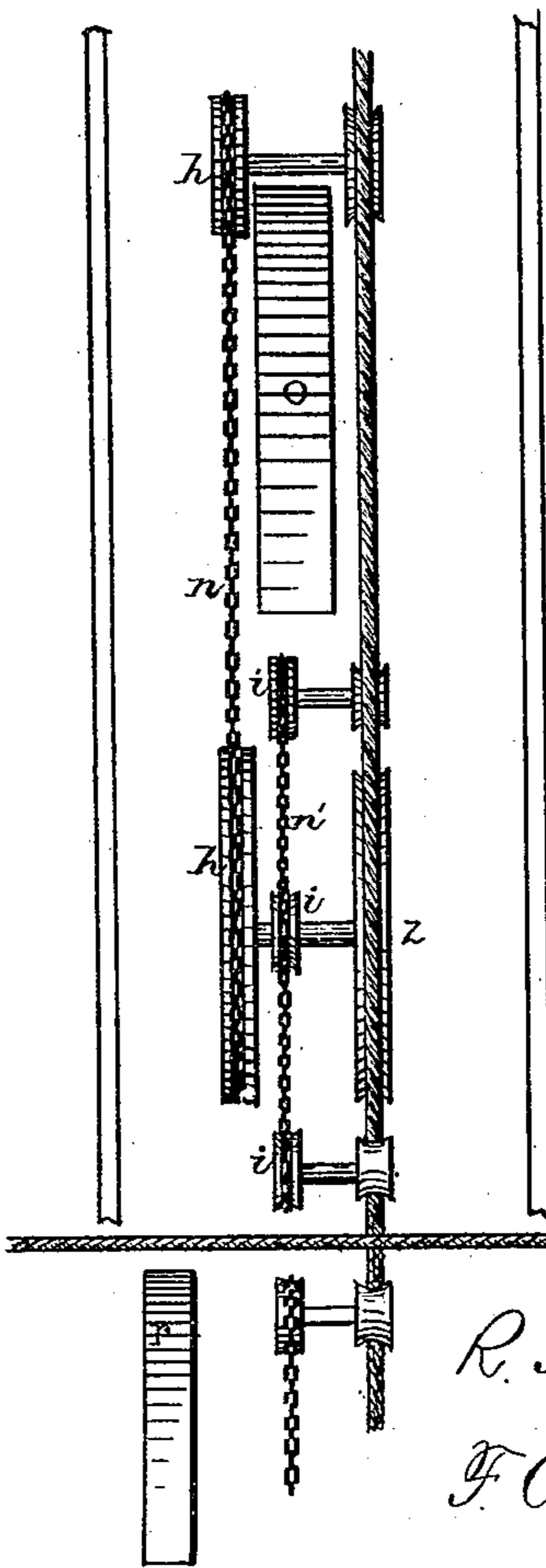


Fig. 5.



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# UNITED STATES PATENT OFFICE.

RICHARD F. BRIDEWELL, OF SAN FRANCISCO, CALIFORNIA.

## GRIPE FOR PROPELLING CARS.

SPECIFICATION forming part of Letters Patent No. 253,673, dated February 14, 1882.

Application filed November 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD F. BRIDEWELL, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Gripes for Propelling Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in gripes for railroad-cars which are drawn along by means of an endless cable; and it consists, first, in the combination of an upper and a lower jaw, each of which is provided with rollers, which are inclosed by endless bands, belts, or ropes, whereby the jaws can be closed upon the cable without injury either to the cable or gripe; second, in a vertically-moving frame having the lower jaw secured thereto, and which is provided with a series of teeth or cogs to engage with a pinion which is secured to the operating-shaft, in combination with a suitable dog, which catches in ratchet-teeth made in the inner side of the fly-wheel, whereby, as the car to which the gripe is secured is moved along by the cable, the dog is tripped by a projection placed in the road-bed and the lower jaw allowed to drop downward, and thus loosen the hold of the gripe upon the cable when the dummy or car is crossing a cross-road; third, it further consists in suitable teeth or projections which are formed on the lower end of the framework of the gripe, and which catch in an endless chain after the gripe has loosened its hold upon the cable, so as to move the car along as though the gripe were still fastened to the cable; fourth, in providing the lower end of the vertically-moving frame with a friction-roller, so that as the gripe is passing along over an inclined plane, after the hold of the gripe has been loosened from the cable, this roller will come in contact with the inclined plane and force the lower jaw upward, so as to automatically tighten it upon the cable again, at the same time that the upward movement of the frame sets the balance-wheel in motion and causes the dog to lock the wheel in place, and thus hold the jaw closed

upon the cable, all of which will be more fully described hereinafter.

The object of my invention is to provide a gripe for railroad-cars which are propelled by endless chains or cables, and which is so constructed that when the car approaches a cross-road the gripe will be automatically released from the cable until after the cross-road has been passed, and then again catch hold of the cable and lock itself in place without any attention upon the part of the driver.

Figure 1 is a side elevation of my gripe, taken from one side. Fig. 2 is a similar view taken from the opposite side. Fig. 3 is an edge view. Fig. 4 is a vertical section taken through the two jaws. Fig. 5 is a detail view of the pulleys and chains arranged upon the opposite sides of the cross-road.

The cable, by means of which the cars, or dummy to which one or more cars will be attached, are to be propelled is intended to run under ground, and the gripe, which forms the subject-matter of this invention, passes down through the slot which is made in the top of the road-bed, and connects the cars or dummy, to which one or more passenger-cars will be coupled, to the cable.

This gripe will be preferably located in the center of the car or dummy, though I do not limit myself to any precise location in this respect. The gripe consists of two frames, the outer one, A, of which is stationary and has the upper jaw secured to it, and the other frame, B, which is placed inside of the stationary frame, has a vertically-sliding movement, and has the lower movable jaw secured to it. Formed in one of the inner edges of this frame B are a number of notches or teeth, and secured upon the shaft of the fly-wheel C is the small pinion D, which meshes with these notches or teeth for the purpose of raising and lowering the jaw. The fly-wheel may either consist simply of a large wheel, as shown, or it may be provided with spokes on its surface to enable it to be readily grasped by the operator of the gripe for the purpose of stopping the cars to take on or to let off passengers. When this wheel is turned in one direction the pinion engages with the teeth of the movable frame, raises the frame upward so as to grasp the

cable tightly between the upper and lower jaws, and when the wheel is turned in the opposite direction it separates the two jaws, so as to slacken their hold upon the cable, and thus cause the car or dummy to stop or to move along but very slowly by taking but a slight hold upon the cable.

The upper jaw, F, and the lower one, G, are each provided with a series of friction-rollers, those in the upper jaw being grooved, while those in the lower jaw are straight. Around the grooved rollers are passed two endless wire ropes, 2, and around the rollers in the lower jaw is passed an endless band, 3, which has a series of metallic blocks secured to it. The cable is caught between these two wire ropes and the belt of metallic blocks, and these devices upon the rollers prevent the cable from being stripped and injured, as is always the case where rollers alone are used. These incased rollers serve to allow the cable to be grasped rigidly between the jaws, so as to cause the car or dummy to move with the cable as rapidly as the cable is drawn along, or allow just sufficient hold to be taken upon the cable to move the cars slowly, the cable slipping through between the jaws, so as not to propel the car at the same speed at which the cable is moving. The pivots of the two end rollers in the upper jaw form supports for the jaw itself, and these pivots pass through slots in the bearings in which the jaw is held.

Upon the top of the upper jaw is placed a spring, 3', which keeps the jaw pressed downward; but when the two jaws are to be rigidly clamped to the cable the upper jaw rises as far as the slots will allow it and then becomes rigid. Should it be so desired, the spring may be made strong enough to make the upper jaw always elastic. The use of the springs prevents such a sudden hold being taken of the cable as to start the jaw with a jerk or injure the cable. The lower jaw will also have a slight vertical play, independently of the frame to which it is attached, by means of slots and a spring, the same as just described. This lower jaw being also made elastic, it will be almost impossible for the cable to be injured by the gripe.

Projecting out from the rear side of the sliding frame B are two projections, 4, and fastened loosely to this frame by means of these projections is the slotted vertically-moving plate or frame Y, which has its ends to project beyond the sides of the frame A; and secured to its lower corners are the two cone-pulleys 5, which serve to catch under the cable when the plate Y is raised and push the cable by means of the inclined sides of the pulleys out of the frame, so that the cable will drop upon the supporting-pulley in the road-bed below. To the upper portion of this plate or frame Y is secured a flange, 6, which, catching upon the inclined plane at the crossing of the roads, raises the plate upward far enough to throw the pulley out of the gripe, and thus release it from the cable. This flange should be

long enough to prevent the plate from falling while the other road is being crossed. This plate or frame Y slides vertically upon the supporting-projections 4 the length of the slots, and when in a normal position the frame is so low down that the conical rollers do not come in contact with the cable. When, however, the frame Y is raised upward at a cross-road these rollers force the cable sidewise, so as to push it out of the gripe. When the cross-road is crossed the frame Y drops down, so that the rollers 5 are carried along below the cable, and they are not again brought into use until another cross-road is reached.

Sliding vertically inside of the vertically-moving frame B is the dog H, which has its lower end formed into a tripping device, I, and its upper end curved downward and formed into a sharp point, *c*, so as to catch in the ratchet-teeth *c*, which are formed on the inner side of the fly-wheel. To this dog, near its upper end, are fastened the inner ends of the levers J, which are pivoted upon the stationary frame A, and which serve for the driver or engineer to place his foot upon for the purpose of raising the dog out of the ratchets in the wheel, and thus leave the wheel free to operate. While the dog is engaging with the ratchet-teeth the wheel is locked in position so as to hold the two jaws clamped tightly upon the driving-cable or separate them any desired distance apart. This dog sinks from its own weight, so that its upper end engages with the ratchet-teeth, and hence before the driver can operate the fly-wheel for the purpose of raising or depressing the lower jaw he must place his foot upon one of the levers and raise the dog upward. The tripping device formed upon the lower end of this dog is intended to strike against suitable projections, L, which are placed inside of the bed of the road upon one side of the cross-road and at the ends of curves in the road. As soon as this tripping device strikes the projection L the dog is raised upward, thus freeing the fly-wheel, when the weight of the vertically-moving frame B causes the lower jaw to drop downward, and thus release its hold upon the cable. The forward movement of the car or dummy would stop as soon as the momentum was overcome but for the fact upon each side of the cross-road and at the curves there are arranged one or two sets of pulleys, *h* *i*, to one side of the main cable, and around which the endless chains or perforated belts *nn'*, of any kind, are passed. These pulleys are operated by one or more of the large pulleys over which the driving-cable passes, so as to be always in motion. As soon as the lower jaw is dropped, when the cross-road is reached, the lifting devices cause the cable to slip sidewise from between the two jaws and to drop upon the pulley *z* below, when the projections N formed on the lower corners of the stationary frame catch in the chain or perforated belt, and thus continue the forward movement of the car or dummy with sufficient force to cause them to be carried across the cross-road and

the projections to again catch in the chains or perforated belts upon the opposite side, which will take up the movement and keep the car or dummy moving right along. Placed in the road-bed, besides these pulleys which continue the movement of the car, is an inclined plane, O, and as the lower jaw, which is provided with a friction-roller, P, comes in contact with this plane it is forced upward after picking up the cable, so as to clamp the cable between it and the upper jaw. This upward movement of the lower jaw causes the fly-wheel to be set in motion by the engagement of the pinion with the teeth in the edge of the frame, and the momentum thus given to the wheel will cause the wheel to draw the lower edge upward with sufficient force to cause the car or dummy to again be automatically fastened to the cable. Should the gripe which is thus automatically taken upon the cable not be sufficient to cause the car or dummy to travel along as fast as the cable is moving, the engineer or driver can tighten the jaws still more by moving the fly-wheel in the proper direction. When the car reaches the curve in the road the tripping device is again operated by means of a projection in the bed, when the projections or lugs N on the lower corners of the ratchet-frame will catch in the chain or perforated belt which runs around the rollers which are placed in the curve, and thus carry the car or dummy on around. After the curve is passed the gripe will again automatically take hold of the cable, and thus continue the movement of the car or dummy.

Having thus described my invention, I claim—

1. A gripe for street-cars, having two jaws, which are provided with rollers which are incased in ropes or belts, in combination with the drawing-cable, substantially as shown.

2. In an automatic gripe for railroads, the

combination of a stationary frame having one of the jaws secured thereto, a vertically-movable toothed frame having the other jaw secured to it, a fly-wheel, and a pinion, substantially as described.

3. In a gripe for street-cars, the combination of the two frames having the jaws secured to their lower ends, a fly-wheel, pinion, and automatically-acting dog for locking the jaws in any desired relation to each other, substantially as set forth.

4. The combination of the two frames having the jaws secured to their lower ends, a vertically-movable plate or frame provided with a flange or projection for raising the plate upward, and rollers to force the cable from between the jaws, with an inclined plane to catch under the said flange or projection, substantially as specified.

5. In a gripe for railroad-cars, the combination of the two frames having the jaws secured to their lower ends, a mechanism for raising the movable frame and its jaw, a dog for locking the movable frame and jaw in place, a projection in the road-bed for tripping the dog so as to allow the lower jaw to fall, a plate provided with means for throwing out the cable from between the jaws, and an inclined plane for raising this plate upward, substantially as shown.

6. In a gripe, the combination of the stationary frame and jaw, the vertically-movable frame and jaw, provided with a friction-roller, and an inclined plane for automatically closing the lower jaw on the cable, substantially as described.

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

RICHARD FRANCIS BRIDEWELL.

Witnesses:

JOHN WHITE,

CHRISTIAN PFORR.