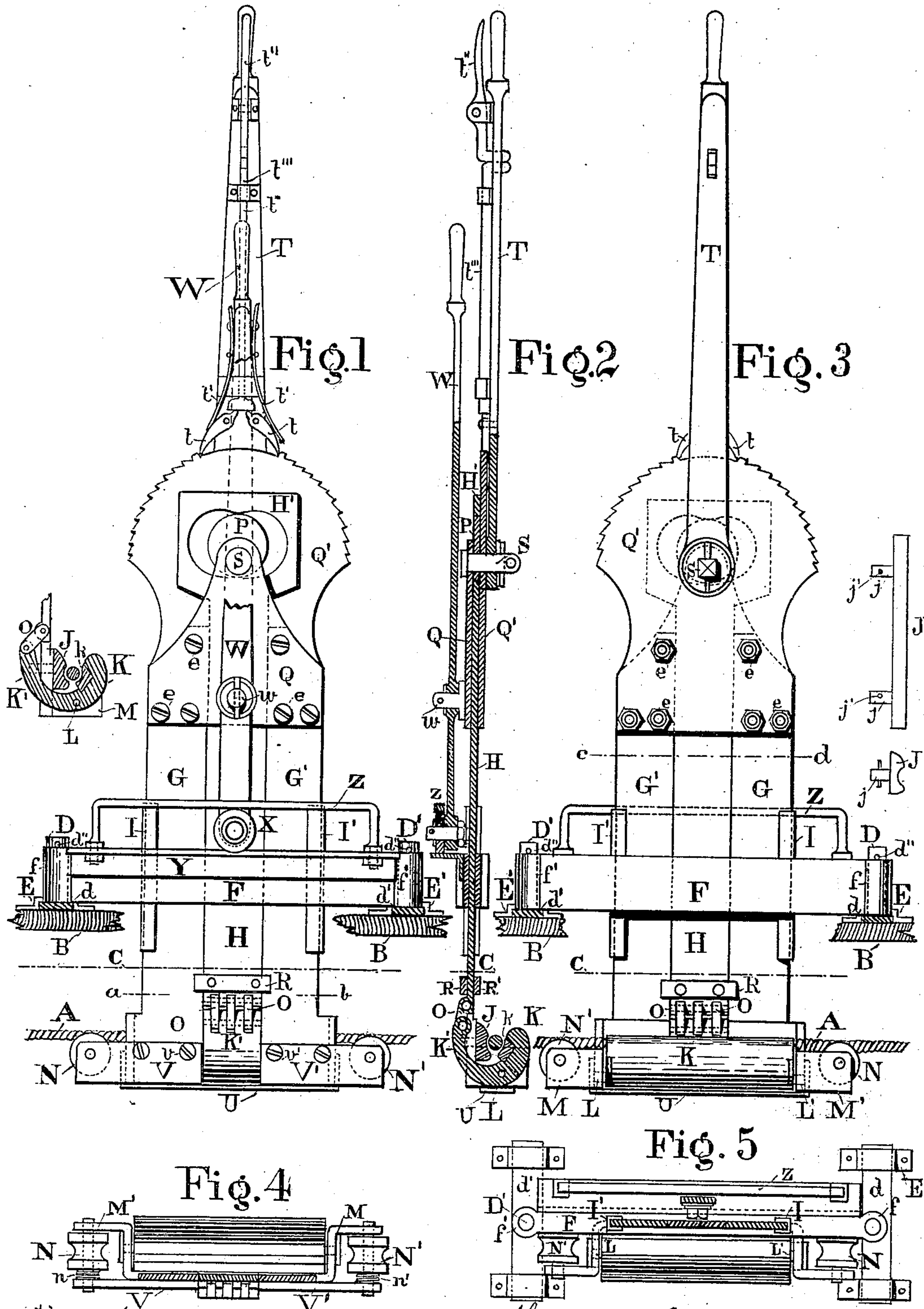


(No Model.)

A. K. GRIM & J. B. LOW.
GRIFE FOR ROPE RAILWAYS.

No. 245,627.

Patented Aug. 16, 1881.



Attest

Charles Monmonier
Charles Monmonier

Abraham H. Grim } Inventors
Joel B. Low }
by George Pardy their Atty

UNITED STATES PATENT OFFICE.

ABRAHAM K. GRIM AND JOEL B. LOW, OF SAN FRANCISCO, CALIFORNIA.

GRIPE FOR ROPE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 245,627, dated August 16, 1881.

Application filed December 22, 1880. (No model.)

To all whom it may concern:

Be it known that we, ABRAHAM K. GRIM and JOEL B. LOW, both of city and county of San Francisco, State of California, have invented new and useful Improvements in Gripes for Wire-Rope Railways, of which the following is a specification.

Our invention relates to the manner of constructing that device generally called the "gripe," which connects and disconnects the car or "dummy" at will and the moving wire rope in the underground tube, by which construction certain advantages of operation are obtained, as hereinafter set forth.

In the accompanying drawings, Figure 1 represents a side elevation; Fig. 2, a cross-sectional elevation taken through center line, the upper part of levers being shown in full. Fig. 3 is the other side elevation. Fig. 4 is a sectional plan or top view of parts below line *a b*, Fig. 1. Fig. 5 is a sectional plan or top view of parts below line *c d*, Fig. 3. The remaining figures are detached details of parts sufficiently indicated by the reference-letters.

Similar letters of reference refer to similar parts throughout the several figures.

The drawings are confined to the parts which constitute the gripe proper. The application of the device and its relation to the car or dummy and the moving wire rope will be readily understood by those acquainted with the subject. We have shown, however, in the drawings the wire rope *A*, a section of the car or dummy floor *B*, and the dotted line *C*, the level of the slot in the rope carrying the tube, which is also the level of the street-pavement.

In the drawings, *D D'* are two standards, formed of short columns projecting upward from the center of long flat bars *d d'*. These standards are held down by the stirrups or straps *E E'*, which are firmly bolted to the dummy-floor. The stirrups straddle the bars *d d'* and allow the standards to be adjusted sidewise by sliding the bars *d d'* through them.

F is a stout iron cross-bar, having bosses *f f'* on each end. These bosses are perforated with holes to fit the columns of the standards *D D'*. The pins *d'' d''*, passing through the columns above the bosses, hold the bar down, the cross-bar being supported upon these standards, and adjustable as to its horizontal alignment

by moving the separate standards sidewise independently. This cross-bar supports the whole of the machinery of the gripe as it is moved or adjusted sidewise by reason of shifting the position of the standards. So is the position of the whole device changed in relation to the center line of the car or dummy, so that if from any cause the track and the slot in the rope-channel vary from their true parallel relation to each other an immediate accommodation to the variation will take place, and no damage occur. In the center of this cross-bar there is a vertical slot, giving passage through it to the sides *G G'* of the gripe-frame and the operating-bar *H*. The cross-bar forms a guide for the sides of the gripe-frame and the operating-bar in their movements up and down. Its guiding-surface is, however, too limited; so we supplement it by adding the guides *I I'*, which may be attached to the cross-bar in any suitable manner.

In Fig. 2 a clear idea is obtained of the manner in which the rope is griped.

J is a stationary shoe or jaw as long as the entire width across the frame. It is made of wood, steel, case-hardened iron, or other suitable material. It fits against the sides *G G'* of the frame, being secured thereto by having little spurs *j* project from the back of the shoe through holes in the sides *G G'*, and small pins *j'* being passed through the spurs where they project through the holes to fasten them. (See detail detached.) The face of this shoe is made concave to fit half around the rope, or nearly so. The opposing jaw *K* is a movable one. It has also a shoe or wearing-plate, *k*, resting in a recess made to receive it, it being unnecessary to provide any means of fastening this shoe in place, as it has no tendency to get dislodged. The jaw *K* is vibrated on the fulcrum-pins *L L'*, which project from each of its ends, the pins entering into holes made to receive them in the bracket-pieces *M M'*, which support the carrying-pulleys *N N'*. These brackets are simply L-shaped pieces projecting forward from the outer edge at the bottom of each side piece, *G G'*. They may be solid with the side pieces, or they may be bolted thereto, as the facilities for manufacturing may dictate.

The rope *A* is shown passing between the two jaws *J* and *K*. Now, when these jaws

are spread apart a distance greater than the diameter of the rope, the rope will freely pass between; but when the jaws are closed together the intervening rope will be tightly 5 pinched, and, instead of passing through, it will carry along the gripe and the attached car or dummy. To open and close these gripping-jaws, or rather to operate the jaw K to open from and close against the jaw J, we have 10 extended a tail-piece, K', from the middle of the length of the jaw K, which gives us a leverage or handle to enable us to pinch upon the rope with some power. This tail-piece is exactly the width of the operating-bar H, to the 15 lower end of which it is secured by three links, O O O, so that when the operating-bar H is moved up or down the motion will be transmitted to open and close the gripe. When these links are so related to the tail of the jaw 20 K and bar H as to approach a horizontal position it will be seen that the connection will involve the principle of that powerful device known as the "toggle-joint." In Fig. 2 the links stand rather nearer a vertical position 25 than in practice we intend to apply them. In the detail figure to the right of Fig. 1 the position is about right. The operating-bar H extends upward between the sides G G', and terminates in a frame, H', surrounding the cam or eccentric P. This bar is guided and held 30 from having side motion by the cheek pieces or plates Q Q' and the bars R R', which are riveted to the bar H and overlap the sides G G'.

35 The cam P is secured firmly upon the pin or axle S, upon which axle is also secured the hand-lever T, so that when this lever is swung back or forth the cam is moved to elevate or depress the bar H, and the gripping-jaws are 40 opened or closed to act on the rope.

The two cheeks or plates Q Q' and sides of frame G G' are all bolted firmly together by the six bolts e e, &c., and a brace-piece, U, at bottom is supplied to stiffen the brackets M 45 M'. The carrying-pulleys N N' are supported by having their axles set in holes made to receive them on one side of the brackets M M', and on the other side in the plates V V', which are fastened to frame G G' by the bolts or 50 rivets v v'.

The plate Q' has formed upon its upper edge the ordinary ratchet-toothed quadrant, and the lever T has double-acting pawls t t, which are pressed into the notches of quadrant 55 by springs t' t', and lifted out when the palm of the hand is pushed against the lever t'', and the bar t''' is pressed down upon the pawls, so as to tip them over. There is nothing new, however, in the construction or operation of 60 this pawl-and-ratchet contrivance, and we need but refer to the drawings as amply descriptive.

There is a distinct part of our invention from the foregoing, which we will now describe.

65 It is sometimes necessary to disconnect the gripe from the wire rope for a length of time beyond the usual few seconds required to take

up and let down passengers upon the road—as, for instance, when the track is obstructed for half an hour or more. On these occasions it is desirable to avoid running the small carrying-pulleys N N' by the moving rope supported by them. So we arrange to drop the gripe and all its parts until it is entirely free from contact therewith and the rope sinks to rest upon the main carrying-pulleys of the road. 75 This is done by canting the lever W, which vibrates on the fulcrum-pin w of a piece with or fastened to the plate Q. On the lower end of this lever there is a roller or anti-friction wheel, X, which rolls along the ledge Y when the lever is drawn over. The ledge Y is formed by 80 bolting a piece of angle-iron to the back of cross-bar F, and the guard-rail Z is applied to give security against the gripe rising from jolting on the track or other cause. It also limits 85 the throw of the lever, and consequent distance the whole gripe may be allowed to drop, by confining the travel of the roller X within the space inclosed by the guard.

As the whole gripe is supported or propped 90 up by the lower part of the lever W interposing between the ledge Y and the pin S, it will be readily seen that if this lever be canted over so as to bring the pin S nearer to the ledge the effect will be to depress the gripe, 95 and when the lever is brought to its true perpendicular position the gripe will have attained its greatest elevation, which is the position it is required to occupy when engaging with the rope. To give firmness and stability to the 100 gripe in this latter position, we provide a little hollow place for the roller to rest in in the middle of the ledge.

In Fig. 4 we show the spiral springs n n' interposed between the hubs of the carrying-wheels N N' and the plates V V'. This is intended to provide for the wheels a little side-play, though in practice we may find it is not 105 necessary.

It will be seen from the foregoing description that our gripe may be operated with a pull or a push, indiscriminately, and whether the operator be facing one end of the car or the other; and also it will be observed that three 110 systems of leverage are introduced: first, that resulting from the relative proportion between the distance from the fulcrum-center that the links are connected to the tail-piece K' and the distance from the same center where the jaw bears on the rope; second, the toggle-joint 115 principle, which may be introduced at the place where the links are; third, the leverage obtained from the difference between the throw of the cam P and the lever T. From these compound leverages it will be readily appreciated that the operator will have little difficulty in firmly gripping the rope. 125

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a gripping device connecting the rope 130 with the car or dummy of a rope railway, the stationary shoe or jaw J, resting against or at-

5 tached to any suitable support, in combination with the moving jaw K, having tail-piece K' to act as a lever to operate it with, and vibrating on fulcrum-pins L L', suitably supported in bearings, (the two jaws being related to each other, so as to permit the rope to escape from between them when the jaws are lowered or dropped,) and the operating mechanism, substantially as and for the purpose herein described.

10 2. In a griping device connecting the rope with the car or dummy of a rope railway, the combination of the hand-lever T, secured upon the axle S, the eccentric or cam P, also secured upon said axle and vibrated with said hand-lever, and the frame H' of the bar H, the whole supported in a suitable frame, as a means of operating said griping device with the same effect whether the lever T be moved back or forth from the perpendicular, thus giving equal facility for operating whether the operator stand facing one end of the car or the other, and at the same time giving a convenient leverage by which the power may be applied, substantially as and for the purposes herein described.

30 3. In a griping device which connects the rope with the car or dummy of a rope railway, the combination of the cross-bar F, to or upon which the griping device is attached, with the standards D d' D' d', held down to car-floor by stirrups E E', but each independently adjusta-

ble sidewise therein, as a means of accommodating automatically any variation which may occur in the track which throws the rails out of parallel with the slot in the tube, substantially as and for the purpose herein described.

4. In a griping device which connects the car or dummy with the rope of a rope railway, the lever W, swinging on the pin or axle w, and having the anti-friction roller X at bottom end, in combination with the ledge Y or the floor of the car or dummy, the pin or axle w being so secured to the parts of the gripe as to form a handle by which it may be raised or lowered, the whole operating as a means by which the griping device may be elevated or depressed to engage with or escape from contact with the moving wire rope, substantially as and for the purpose herein described.

50 5. In a griping device which connects the car or dummy with the rope of a rope railway, the combination of the sides of frame G G', plates Q Q', bar H, with frame H', cam P, and lever T, supported on axle S, griping-jaws J and K, with links O, and the carrying-pulleys N, substantially as and for the purpose herein described.

ABRAHAM K. GRIM.
JOEL B. LOW.

Witnesses:

GEORGE PARDY,
AUGUST E. GANS.