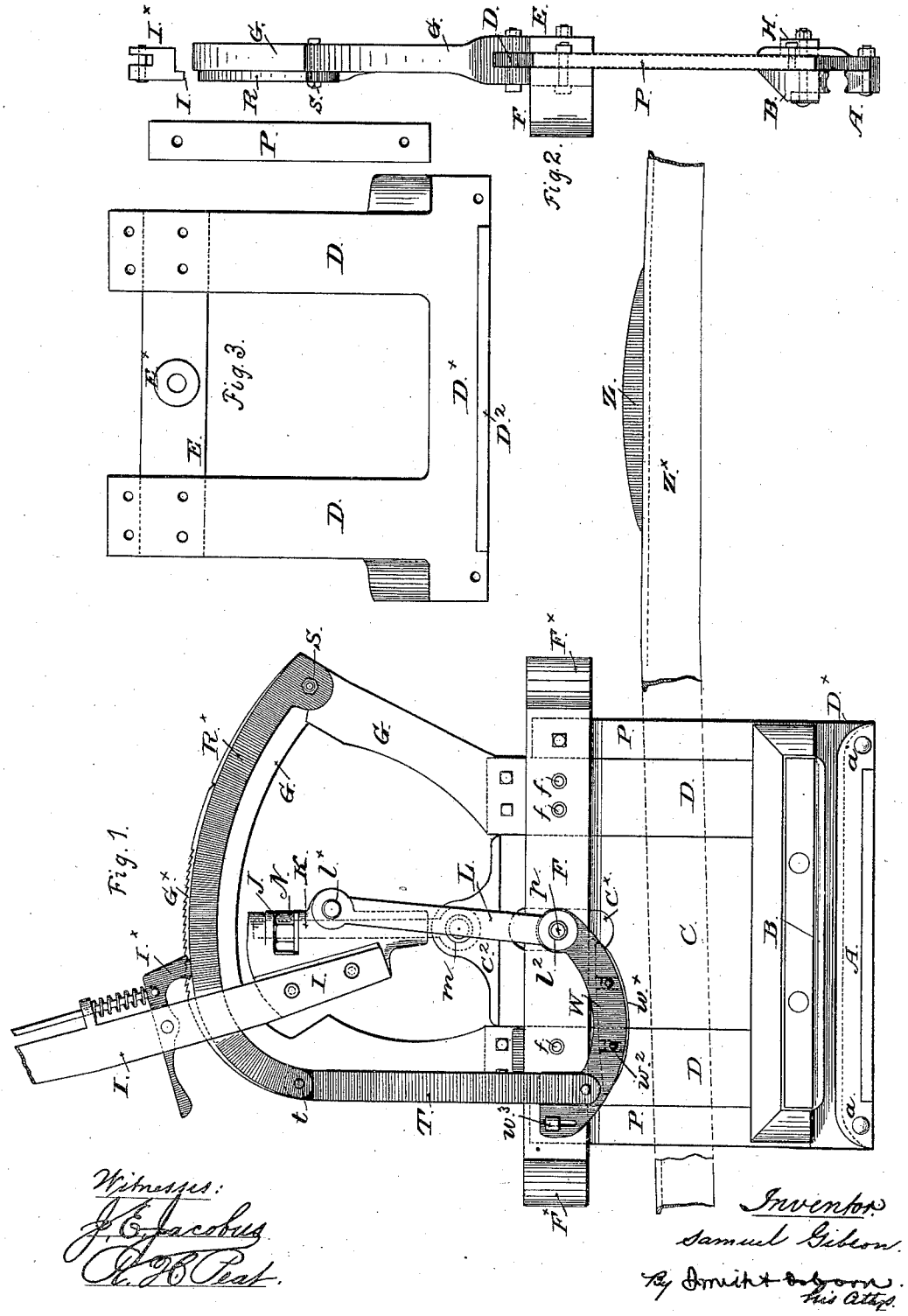
(No Model.) 2 Sheets—Sheet 1.

S. GIBSON.

CABLE RAILWAY GRIP.

No. 382,970. Patented May 15, 1888.



Witnesses:
J. E. Jacobus
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Inventor:
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By Dewitt & Osborn.
his Attys.

(No Model.) 2 Sheets—Sheet 2.

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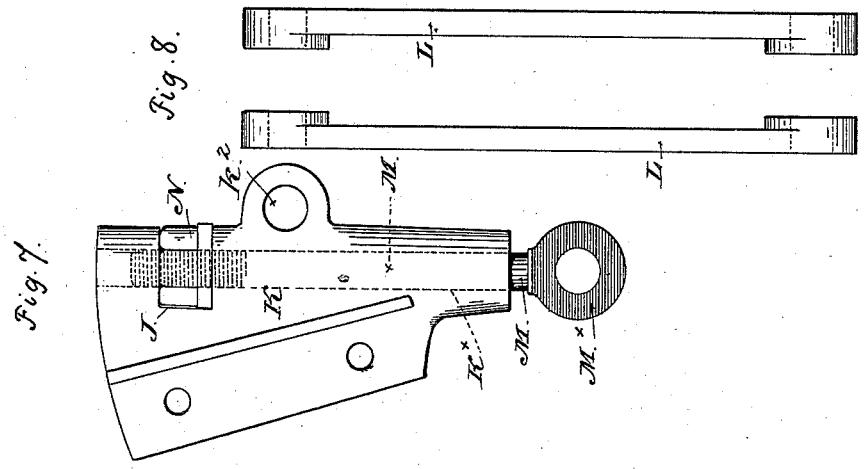

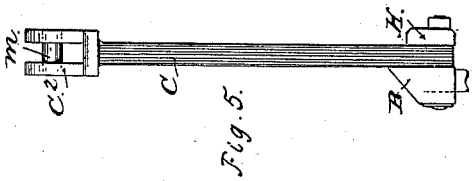

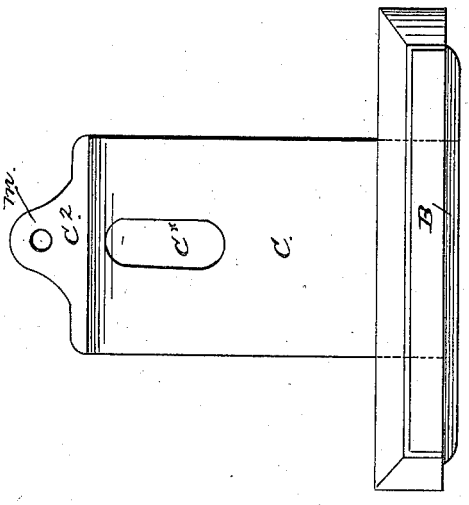

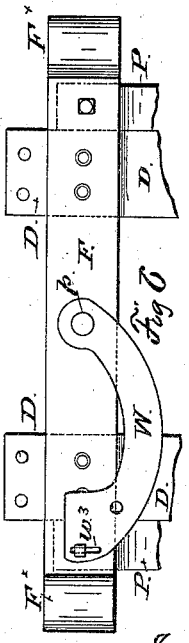

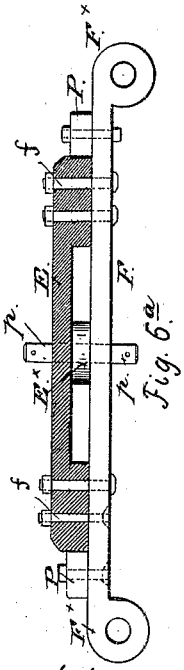

Witnesses:
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his Attys.

UNITED STATES PATENT OFFICE.

SAMUEL GIBSON, OF SAN FRANCISCO, CALIFORNIA.

CABLE-RAILWAY GRIP.

SPECIFICATION forming part of Letters Patent No. 382,970, dated May 15, 1888.

Application filed December 27, 1887. Serial No. 259,185. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL GIBSON, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Cable-Railway Grips; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the drawings that accompany and form part of this specification.

My invention relates to improvements in cable-railway gripping devices that are employed to connect the cars with the propelling-cable, and to devices of the kind that are known as "lever-grips."

It embraces certain improvements in devices or attachments for throwing off the grip automatically at any given point along the road where the cable is to be released, and also certain improved construction of grip-frame and joint or connection between the hand-lever and the slide that carries and operates the movable jaw, as hereinafter fully explained.

The nature of my said improvements and the manner in which I construct, apply, and carry out the same are fully set forth in the following description, wherein the accompanying drawings are referred to by figures and letters.

Figure 1 is a side elevation of a lever-grip constructed according to my said invention and containing all the improvements. Fig. 2 is an end view taken from the right-hand side of Fig. 1, the links and slide or connecting-bar being omitted for the sake of simplicity. Fig. 3 is a front view of the main frame of the grip that is cast in one piece. Fig. 4 is a side view, and Fig. 5 an edge view, of the sliding plate. Fig. 6 is a front and Fig. 6ª a top view of the stationary frame, and Figs. 7 and 8 are detail views of the toggle-connection.

A is the stationary jaw, and B the movable jaw of the grip.

C is the slide, on the lower end of which the movable jaw is secured, and D D are the side bars of the stationary frame.

E is a back plate that unites the two uprights D D at the upper part of the frame, and is cast in one piece with them. It sits across the backs of the uprights, and between it and the cross-bar F the slide-plate C is fitted to work smoothly.

The cross-bar F has knuckles $F^{\times}$ on the ends to take the pins or studs on the truck-frame, in the usual way, and it is fixed by bolts *f f* against the front of the casting D D E. The center pin, *p*, passes through the two cross-bars and through the boss $E^{\times}$, that is cast on the front of the bar E, and is of suitable length to project at both sides for the links L to set on.

The lower edge of the bottom cross-piece, $D^{\times}$, has a foot or offset, D^{2}, on the front side to take under the lower jaw, A. This foot is let into the bottom face of the jaw, and the bottom surface of the grip-frame is therefore without break or projection for its entire length. The lower jaw is secured by bolts *a a'* against one side of the frame and the back cross-bar, H, is fixed against the opposite side on the slide C. The slide C is cut away at $C^{\times}$ for the boss $E^{\times}$ to play through, and it is connected with the hand-lever I by a toggle-connection composed of the block K and the links L L. These are pivoted at l^{2} to the stationary frame and at the upper ends, $l^{\times}$, to the block K. The block itself is attached at *m* between these two points to the slide-plate. The pin *m*, fixed in the two ears C^{2} on the slide, passes through an eye, $M^{\times}$, on the end of the threaded bolt M, which sets in a socket in the end of the block and through the nut N. The recess J in the block, to let in the nut, intersects the socket $K^{\times}$, and below this point is the knuckle k^{2} for the pin $l^{\times}$ of the links. This construction of joint brings the point of connection of the lever with the slide-plate between the two points of attachment $l^{\times}$ l^{2} and allows the slide to be adjusted without affecting the lever I. By turning the nut N the point *m* can be moved to set the slide up or down as the wear of parts is to be taken up, and as the position of the block K is not affected thereby it will be seen that such adjustment does not alter the relative positions of the lever and the locking-segment. The segment G can therefore be a part of the stationary frame of the grip, and need not be placed on the slide C or movable part of the frame, as similar connections of the kind in these grips have required.

P P are reversible wearing-plates set against

the back of the cross-piece F of the stationary frame in line with the edges of the plates D D and held by bolts, so that they can be taken out and reversed end for end when worn. They are also made somewhat thicker than the parts D D, in order to keep the faces of the parts from coming in contact with the sides of the slot and to take the wear of the slot-irons $Z^{\times}$. The material used for these plates should be cast steel; but the frame itself can be made of cast metal of cheaper grade.

Figs. 1, 4, 7, and 8 illustrate the parts composing the improved "let-go" attachment for lever-grips, by which the holding-dog $I^{\times}$ of the lever is thrown out of the notches G* in the segment and the lever released at any point in the road. This attachment is readily applied to lever-grips where the locking-segment is on the stationary frame.

R is a segment-plate with a smooth edge set against the side of the segment G, to which it is attached by a pivot bolt, *s*, at one end. At the other end the plate R is attached by a joint, *t*, to a vertical slide, T, that is joined at the lower end by a pivot-bolt or similar connection to a curved plate, W. The lower edge of the curved plate is furnished with a wearing-plate, $w^{\times}$, having slots and bolts w^2 by which it is held in place, and is also adjusted to compensate for wear. The pin *p*, that connects the ends of the links L to the hanger-bar E, also passes through the plate W at one end, and on this point as a center the plate moves up and down. The pin and slot w^3 at the opposite end is employed to prevent lateral movement.

Z is a fixed stop or projection on the surface of the roadway at the point where the let-go is to work, and being set in line to meet the edge of the plate W it throws up the plate and raises the segment-plate R. The dog $I^{\times}$ has a lip, I, on one side setting over the segment-plate, as shown in Figs. 1 and 2, and against this part the plate R strikes when raised.

The required length of movement in the plate R is produced by a stop of small elevation by bending the slot-irons in a gradual curve, beginning at a point in advance of the stop, and then carrying it down in the same manner behind this point to the level of the roadway again. The pavement between the rails and the slot-irons is arched for the length of this elevated portion to set up close to the edges of the slot-irons and follow their curvature. The height of the stop Z, which is placed on the crown of this arched portion, will therefore be considerably less than if the surface of the roadway is laid flat, and the size of this projection will be such as to present but small obstruction to the wheels of vehicles.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An automatic let-go for cable-railway grips of the lever kind, consisting of the curved bar $R^{\times}$, the curved plate W, pivoted at one end to some stationary part of the grip-frame, and the connecting-bar T, constructed and applied for operation substantially as described, the said plate W being set to strike and be thrown up by a projection on the surface of the roadway and the curved bar being placed to engage with the point of the locking-dog that holds the grip-lever, as set forth.

2. In combination with the grip-frame having upright guide-plates D D and sliding plate C, with cross-pieces E F and the jaws A B, the removable wearing-plates P, placed as described, and secured by fastenings to the stationary frame, for the purpose set forth.

3. The herein-described grip-frame for lever-grips, consisting of the frame D D $D^{\times}$ E, cast in one piece, the removable wearing-plates P, the seat D^2, for the lower jaw, and the cross-piece F, constructed and combined as set forth.

4. In combination with the lever I and the slide to be operated by it, the block K, having an extensible rod or part, as M, let into the block, and having a nut, N, for adjusting it, to the end of which the slide is attached, and a connecting link or links pivoted at one end to a fixed point below said point of attachment to the slide, and at the other end to the block above said point, substantially as described, for operation as set forth.

5. The herein-described adjustable toggle-connection, consisting of the block K, having a socket for the eyebolt or screw-threaded rod M, the rod movable in said socket, the nut N, and the eye k^2 on the block for the pin of a connecting-link, as set forth.

6. In a cable-railway grip, a sliding jaw-carrier, a jaw operating lever, and a toggle-connection consisting of the block K on the end of the lever, the links L L, connecting said block to some fixed point on the stationary frame, and the adjustable bolt or bar M, attached to the slide at a point between the ends of said links and capable of being extended in said block, as set forth.

7. The combination, with the locking-segment fixed to or making a part of the stationary frame of a cable-grip, as described, of the curved bar $R^{\times}$, pivoted at one end to the segment, the bar T, which is jointed to said curved bar, and the curved plate W, pivoted to the grip-frame and attached to the bar T, substantially as described, for operation with a stop or projection on the roadway, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

SAMUEL GIBSON. [L. S.]

Witnesses:
CHAS. E. KELLY,
EDWARD E. OSBORN.