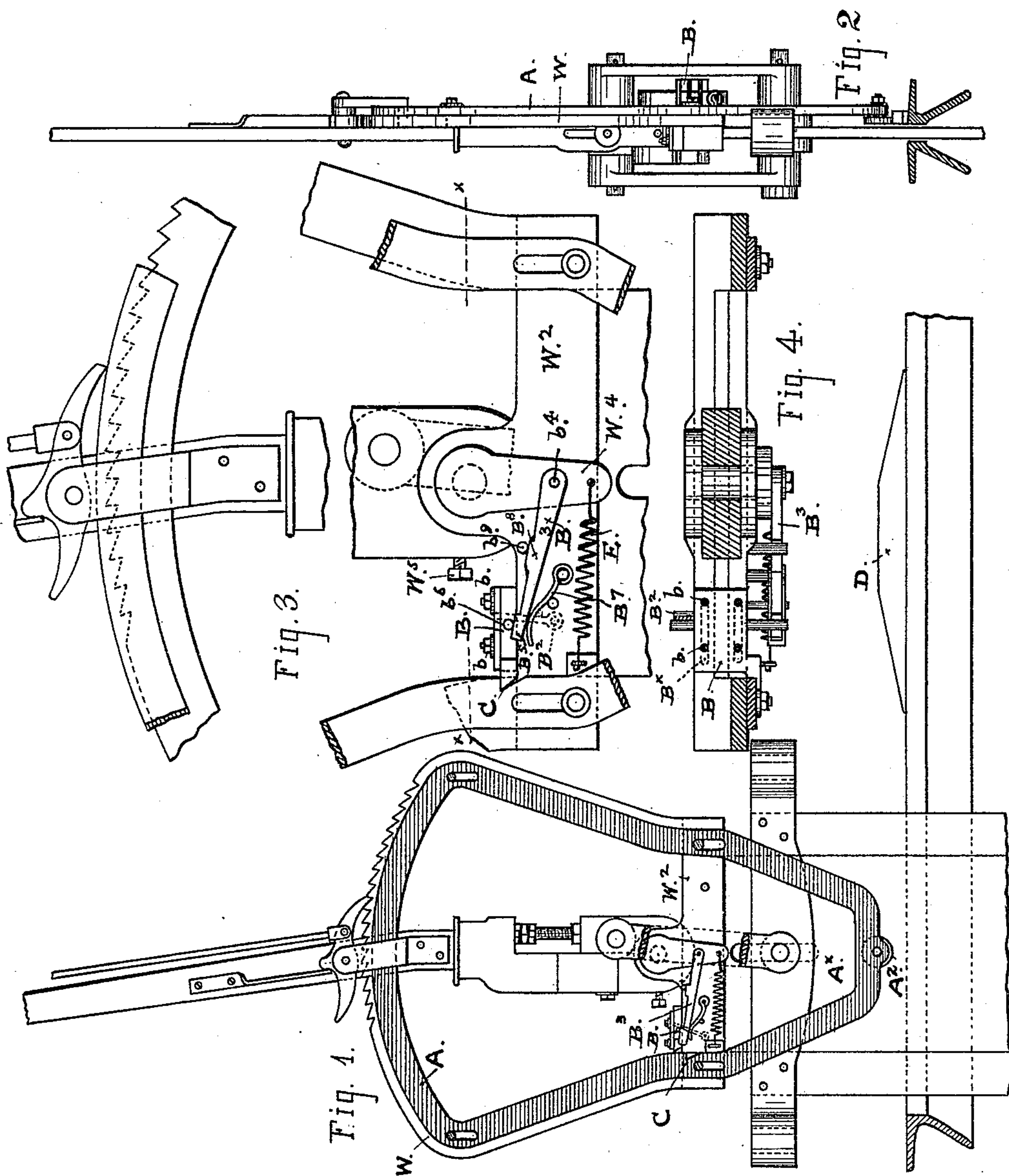


(No Model.)

T. W. C. SPENCER.  
AUTOMATIC THROW-OFF FOR CABLE GRIPS.

No. 438,449.

Patented Oct. 14, 1890.



Witnesses:

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*By J. M. Osborn*  
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# UNITED STATES PATENT OFFICE.

THOMAS W. C. SPENCER, OF SAN FRANCISCO, CALIFORNIA.

## AUTOMATIC THROW-OFF FOR CABLE-GRIPS.

SPECIFICATION forming part of Letters Patent No. 438,449, dated October 14, 1890.

Application filed July 14, 1890. Serial No. 358,686. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS W. C. SPENCER, 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 Automatic Throw-Offs for Cable-Grips, of which the following is a specification.

My invention relates to an improved throw-off device or mechanism for attachment to and operation on the gripping apparatus of a cable-car for automatically opening the grip to release the cable at the crossings of intersection-roads and at other points. It has for its object mainly to provide an attachment that can be readily applied for operation to many of the principal forms of lever-grips at present in use and that is both certain and automatic in its action.

The nature of my said improvement consists of a supplemental quadrant-frame capable of sliding vertically alongside of the stationary main frame that carries the notched segment upon which the grip-lever plays and adapted by its movement to throw up and hold out of the notches the dog or locking-pawl of the lever. The movement of this supplemental frame is produced automatically by a stationary incline or stop on the surface of the track, which engages the bottom part of the supplemental frame in line with such stop. In connection with the sliding frame a locking-catch is arranged to hold it up when raised into position and prevent it from drawing away from the pawl of the lever until the grip is brought into operation again. These parts are capable of being applied and arranged for operation as an attachment on most of the present forms of lever-grips without materially changing the form and general construction of the principal parts, so that the attachment can be made at comparatively small expense. The manner in which the same is constructed and combined with an ordinary lever-grip will be understood from the following description and the accompanying drawings that form part of this specification.

Figure 1 is a general side elevation of a lever-grip of ordinary construction with my throw-off device applied to it. Fig. 2 is an

end view taken from the left-hand side of Fig. 1. Fig. 3 is a side view of the parts in detail and on an enlarged scale. Fig. 4 is a horizontal section taken through the parts of the frame and the attachment at about the line *x x*, Fig. 3.

A indicates a frame that follows the general shape of the main quadrant-frame W of the grip, and particularly the upper segment portion, on which the locking-pawl of the lever rides, and it is attached by slots and bolts at suitable points to the grip-frame to slide freely up and down with limited movement. The side bars of this sliding frame are joined together at the bottom below the line of the carrier-bars of the grip-frame, and this bottom cross-piece  $A^x$  sets in close relation to the surface of the roadway and in line with a fixed incline or projection D, standing above the surface. A friction wheel or roller  $A^2$  on the bottom of the frame is arranged to run in contact with the incline and take the wear of these parts, the bottom cross-piece being suitably shaped to let the wheel ride on the incline while the frame itself travels clear. One of these inclines D is bolted down in place upon the slot-iron at the point where the grip is to be thrown off, and is provided with inclined faces at both ends, where the grip-cars are to pass over it from both directions, or with a gradual incline at one end only, where the cars travel in one direction without returning on the same track past the throwing-off point. The movement of the sliding frame thus produced by contact of its bottom part with the fixed projection D is sufficient to raise the top edge of the sliding frame above the line of the notches or teeth in the quadrant-frame, and the point of the locking-pawl being made of suitable width to project across the frame such movement acts to unship the pawl and carry it clear of the notched portion of the quadrant-frame, in which position it no longer holds the grip-lever, and that part thereupon throws over and opens the cable-gripping dies.

A spring bolt or catch B is set to engage with a notch or recess C in the sliding segment as a means of holding up that part when the pawl is bearing on it and of preventing it from dropping down below the line of the



notches until the pawl has passed over in the throw-off movement of the grip-lever. As the sliding frame or segment is arranged to drop back into place by gravity and set itself again after passing the fixed incline D, it becomes necessary to support the frame after it is raised and during the time the pawl is bearing upon it until the lever is pulled back again to put on the grip, and for such purpose the locking device B is applied, and is connected also with the grip-lever to release the sliding frame as the grip-lever is brought back into place.

Connection is made, therefore, of the spring-latch to the grip-lever, as shown in the detail views, Figs. 3 and 4, so that the grip is drawn as the lever is moved by the gripman to put on the grip after the throwing-off, and the sliding frame drops back to bring the pawl upon the notches of the quadrant. The latch is attached to the grip-frame by bolts  $b$ , working through slots  $B^x$  in the latch, and is pressed forward by a flat spring  $B^2$ . The slide-bar  $B^3$  is attached at one end  $b^4$  to the grip-lever, and at the opposite end is furnished with a hook  $B^5$ , that engages with a pin or stud  $b^6$ , projecting from one side of the latch. The hook is set against the pin of the latch by a flat spring  $B^7$ , and is uncoupled to break the connection after the latch is drawn back by means of the cam-shaped portion  $B^8$  of the slide bar and a fixed stud or pin  $b^9$  on the frame. The form and arrangement of these parts are such that the bar is unhooked from the latch when the grip is put on, and also remains uncoupled during the ordinary movements of the lever in stopping and starting the car; but in the throw-off movement the lever is moved over in a longer arc, and the hooked end of the connecting-bar is thrown forward sufficiently to engage the latch when the grip-lever is moved back. By such movement the latch is drawn back to drop the sliding frame, and is allowed to spring forward into position after the notch C has been brought below the nose of the latch ready to enter it when the frame is raised again. These two positions of the latch are represented in Figs. 1 and 3, respectively.

The coil-spring E is applied to the lower end of the grip-lever to insure a full length of movement at the throw-off when the pawl has been raised above the notches; but ordinarily the weight of the lever and the strain of the cable upon the die which is operated by the lever will be found to exert sufficient force

upon the lever and cause it to throw over and open the dies as soon as the pawl is pressed out of the notch. This coil-spring may therefore be dispensed with. It is attached at one end to the lower cross-bar  $W^2$  of the grip-frame and by the opposite end to a depending arm  $W^4$  upon the grip-lever or upon the center stud, on which the grip-lever is pivoted by a tap-bolt  $W^5$ , so that the arm is practically a continuation of the lever below the pivot.

As thus constructed this attachment can be applied at small expense to many of the present styles of lever-grips in use without altering or cutting the frame or changing the working parts.

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

1. In combination with the quadrant-frame and lever of a cable-grip, the sliding frame capable of limited vertical movement on the quadrant-frame having the top segment portion to engage the pawl of the lever and the bottom cross-piece to engage a fixed incline or projection on the roadway, and a locking device which is adapted to hold the sliding frame when it is raised or thrown into action, substantially as hereinbefore described.

2. The herein-described automatic throw-off for lever-grips, consisting, essentially, of the vertically-sliding frame A, having a top segment portion to engage the locking-pawl of the lever and hold it clear of the notched frame, and the bottom cross-piece to engage a fixed incline or projection on the roadway, a locking-latch adapted to engage said sliding frame and hold it up, and connecting means between said latch and the grip-lever, by which the latch is drawn away by the grip-lever to release and drop the sliding frame after the throw-off, when the lever is moved to put on the grip, and is disconnected during the ordinary movements of the lever in starting and stopping the car, and remains set for action to lock the sliding frame when it is raised, all combined and arranged for operation substantially as hereinbefore set forth.

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

THOS. W. C. SPENCER. [L. S.]

Witnesses:

EDWARD E. OSBORN,  
OTIS V. SAWYER.