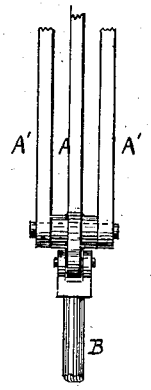
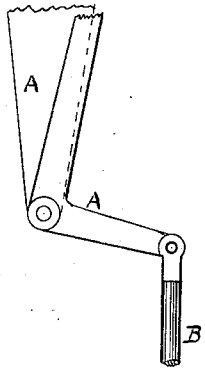
(No Model.)

O. GASSETT.

SWITCH AND SIGNAL LOCKING APPARATUS.

No. 256,797. Patented Apr. 18, 1882





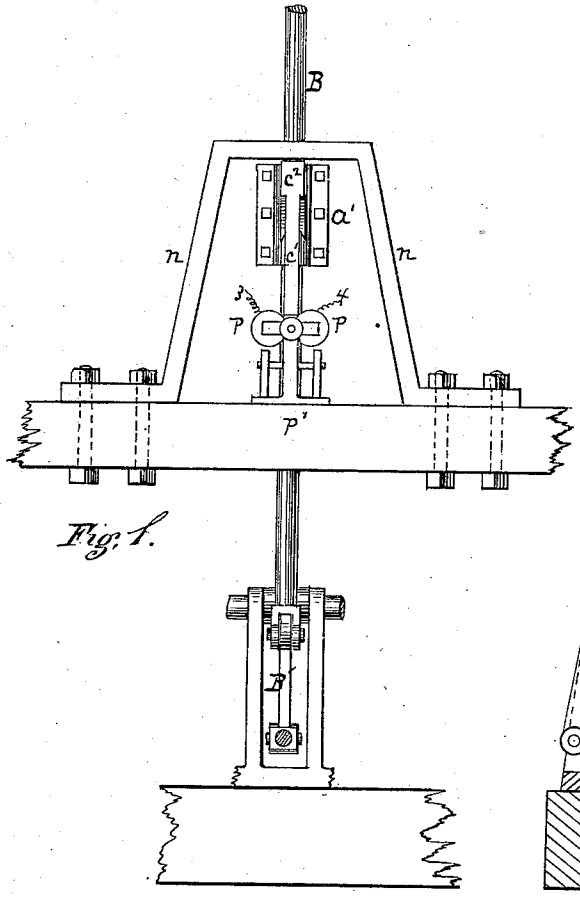


Fig. 1.

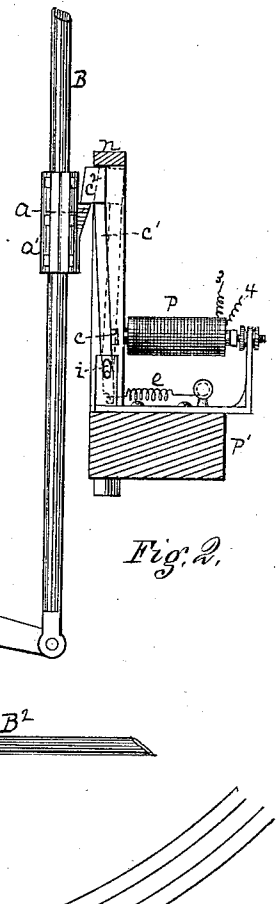


Fig. 2.

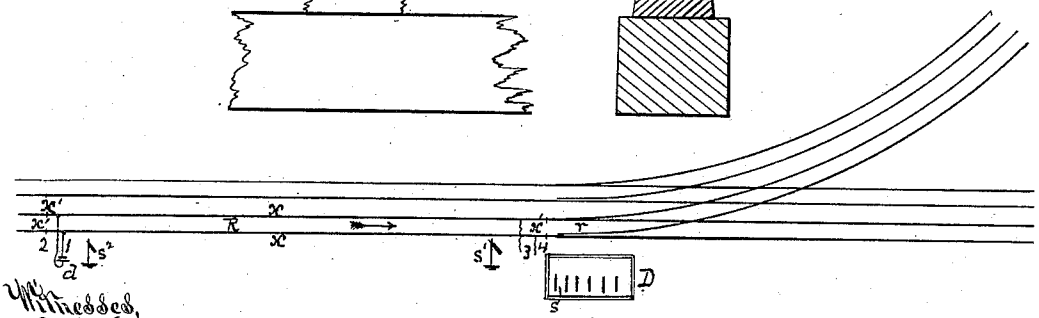


Fig. 3

Witnesses,
R. F. Whittlesey
E. L. Parker

Inventor Oscar Gassett,
By Attorney George H. Christy

UNITED STATES PATENT OFFICE.

OSCAR GASSETT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF PITTSBURG, PENNSYLVANIA.

SWITCH AND SIGNAL LOCKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 256,797, dated April 18, 1882.

Application filed February 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, OSCAR GASSETT, of Boston, county of Suffolk, State of Massachusetts, temporarily residing at Sewickley, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Switch and Signal Locking Apparatus; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 shows in elevation such parts of an electrically-locked switch-shifting mechanism as are necessary to illustrate my present invention. Fig. 2 is a sectional elevation of Fig. 1, taken a little to the right of the central vertical plane; and Fig. 3 illustrates by diagram the manner of applying or using the present improvement in combination with a railway-track circuit.

My present invention relates to an improved apparatus for electrically locking or unlocking the switch or signal shifting lever of a railway switch or signal apparatus, whereby the reversal of the switch or signal, after it is once properly set and after the train shall have entered upon the track-circuit, shall be effectually prevented; and while I include as of my invention the application of the mechanism herein described to signal-locking purposes, I have for convenience of illustration more particularly shown it as arranged in connection with a switch-actuating lever.

A represents the lower end of a bent lever such as is employed extensively in signal and switch cabins, (commonly in the second story,) and at A′, I have shown the lower ends of the hangers. A vertically-moving rod, B, is employed to transmit the lever motion through a bell-crank, B′, to the switch-rod B^2, which may be of any known construction and connected in any known way with the movable rails *r* of the switch. (See Fig. 3.)

At D, Fig. 3, I have illustrated a convenient position of the cabin wherein this apparatus may be arranged, along with other like apparatus as may be desired, and for purposes of illustration I will assume the presence of a like lever, as at *s*, by which to set the home and distant signals s' s^2 for the right-hand main track R; and other levers may be added at pleasure for kindred purpose on the other lines, or by which to actuate other switches.

The proper movement of the levers in order to actuate either the switch or signal will be readily understood by those skilled in the art.

It is considered of some importance in railroads, when a switch is set in any proper position for the incoming of a train, especially when, as is usually the case, the train has to or is liable to pass the switch for a greater or less distance before coming to a full stop, that the switch so set be locked in such way that the switchman cannot, through carelessness, forgetfulness, or otherwise, reverse the switch at a time when it is too late to stop the train. To secure this desirable end I arrange on the vertical rod B a stop or shoulder, *a*, in suitable position to be engaged by a hook, c^2, made on the armature-lever c' of the armature *c* of an electro-magnet, P, which latter may be arranged in position and supported on the framing P′ or other suitable support. These devices are so arranged that when the electro-magnet P is excited or charged it will attract the armature *c*, and thereby cause the hook c^2 to clear the stop *a*, and when the electro-magnet ceases to be excited or charged the hook c^2 will, under the action of a spring, *e*, be thrown forward into engagement with the stop *a*, and thereby the rod B will be locked as against a movement upward. These devices—that is to say, a stop and an armature-lever adapted to engage the same—may be varied at pleasure in form, construction, and relative arrangement with reference to engaging each other, and thereby locking the rod B as against movement either upward or downward, as the work to be done may require; but as organized in the drawings the rod B is presumed to be down, and the switch thereby to be in position for the reception of the incoming train.

The stop *a* may be secured to the rod B in any desired way, as by clamps and screw-bolts a' or otherwise.

The preferable mode of using the devices de-

scribed is as illustrated in Fig. 3, wherein I have shown a track-circuit formed by the line of rails *x x*, electrically connected one rail to another, to any desired distance—say to or past the distant signal—and the track-section thus formed is electrically insulated at its ends by suitable insulating material, as at *x'*. The opposite lines of rails are connected at or near their outer ends, by wires 1 and 2, with the opposite poles of a battery, *d*, and at or near their opposite ends, by wires 3 and 4, with the opposite ends of the coils of the electro-magnet P. Hence a normally-closed track-circuit is thus formed which normally will hold the hook c^2 clear of the stop *a;* but, assuming the switch to be properly set for the reception of an incoming train, as soon as the forward end of such train enters on the track-section it short-circuits the track-circuit, so as to cut out the magnet P from the influence of the battery *d*. The result will be that the hook c^2 will engage the stop *a*, and the rod B, and with it the lever A and the switch, will be securely locked in position, so that the switch cannot be shifted or reversed until the train shall have passed entirely off the track-section referred to. The circuit then being restored through the magnet, the lever and switch will be unlocked.

As the lever affords means of bringing a severe strain on the hook c^2, I guard against breakage by carrying a stirrup, *n*, over the end of the armature-lever, and pivot the latter by a slot, *i*, so as to enable the armature-lever to work clear of the stirrup *n* in its movements, and at the same time be supported by the stirrup when any unusual strain is put on the lever A. The same apparatus may be applied in like manner to a signal-lever, if so desired, by connecting the wires 3 4 with an electro-magnet properly arranged, as illustrated in Fig. 2, in relation to the connecting-rod of such signal-lever; and the stop *a* may be arranged in any of the connecting-rods of the mechanism of the kind or class referred to.

I do not claim herein, broadly, the invention of operating the lock of a switch or signal lever by electricity; but

What I do claim is—

1. In combination with the connecting-rod of a switch or signal operating mechanism, a stop, *a*, arranged on such rod, an armature-lever arranged to engage with and be disengaged from such stop, an electro-magnet, battery, and track-circuit, substantially as set forth.

2. The stirrup *n*, in combination with armature-lever *c'* and stop *a* on rod B, substantially as set forth.

In testimony whereof I have hereunto set my hand.

OSCAR GASSETT.

Witnesses:

R. H. WHITTLESEY,

GEORGE H. CHRISTY.