

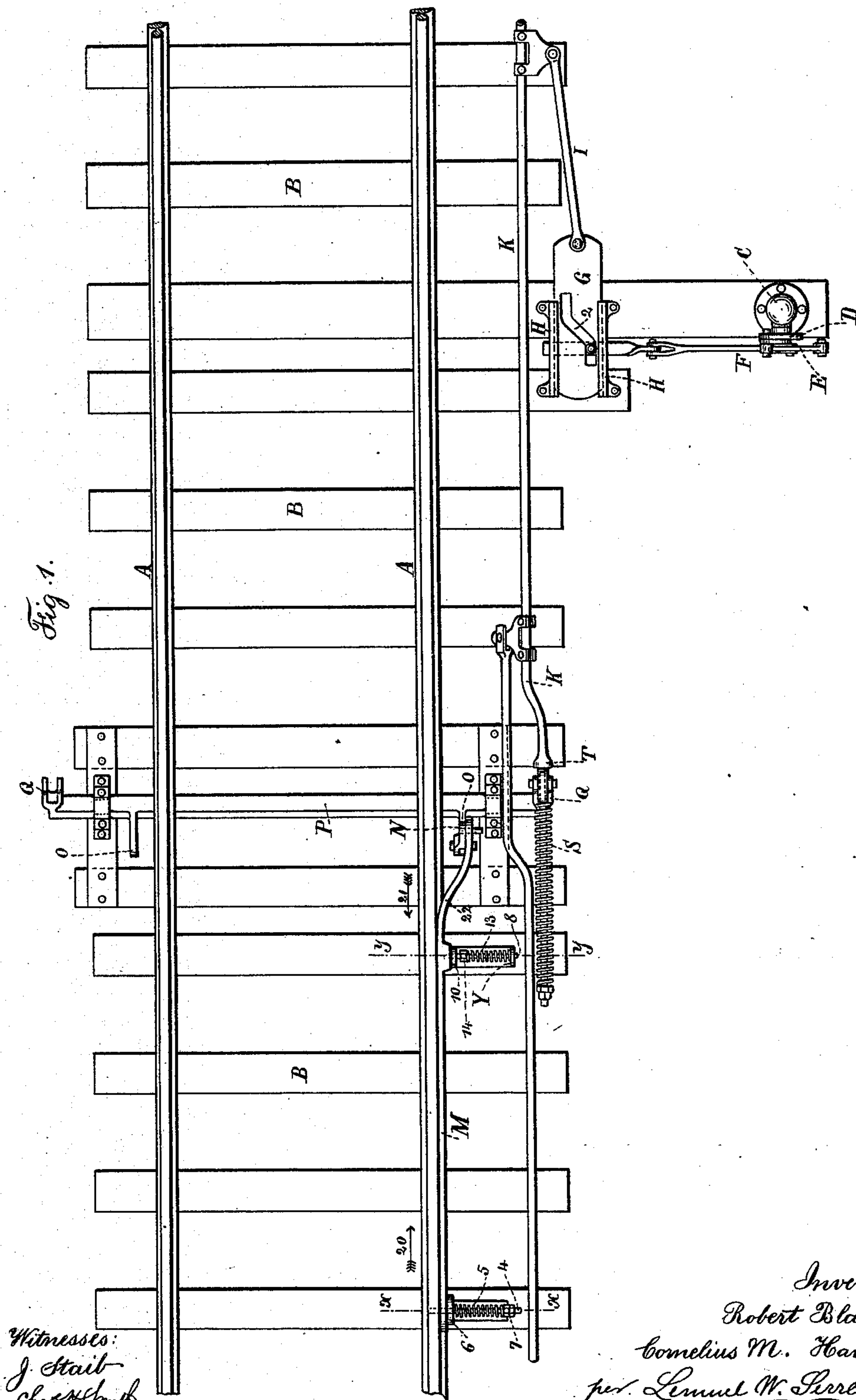
(No Model.)

2 Sheets—Sheet 1.

R. BLACK & C. M. HAVEY.
RAILWAY SIGNAL.

No. 413,800.

Patented Oct. 29, 1889.



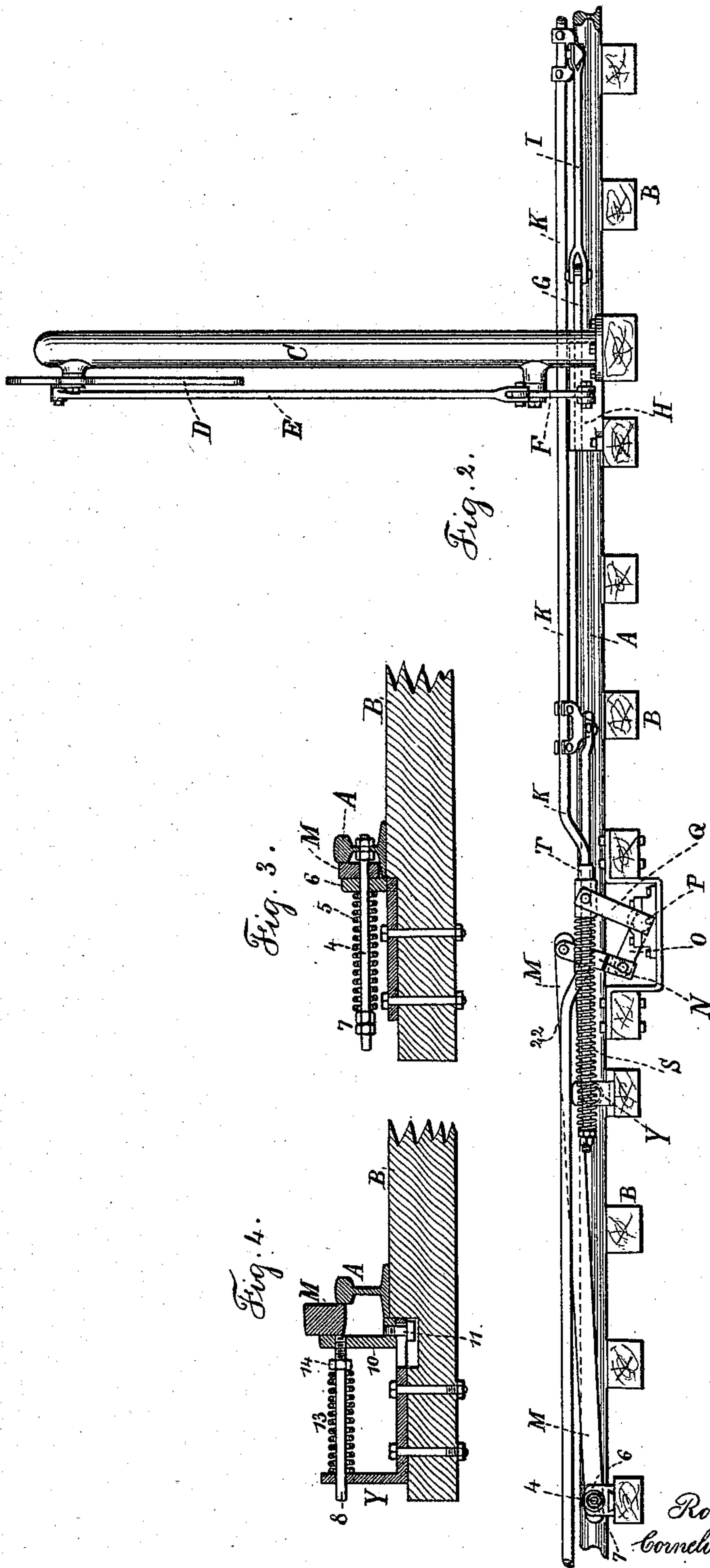
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RAILWAY SIGNAL.

No. 413,800.

Patented Oct. 29, 1889.



Witnesses:
J. Stait
Charles Smith

Inventors:
Robert Black
Cornelius M. Havey
per Lemuel W. Lennell atty.

UNITED STATES PATENT OFFICE.

ROBERT BLACK AND CORNELIUS M. HAVEY, OF NEW YORK, N. Y., ASSIGNORS
TO THE BLACK AUTOMATIC RAILWAY BLOCK SIGNAL COMPANY, OF
SAME PLACE.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 413,800, dated October 29, 1889.

Application filed May 13, 1889. Serial No. 310,518. (No model.)

To all whom it may concern:

Be it known that we, ROBERT BLACK and CORNELIUS M. HAVEY, of the city and State of New York, have invented an Improvement in Railway-Signals, of which the following is a specification.

The object of this invention is to operate the visual signal automatically by the passage of the train in order that an approaching train may be signaled, and this is especially useful where a train is run upon a turn-out or switch previous to being backed upon another track.

Visual signals have been operated in many instances by inclined rail-bars adjacent to the track and upon which rail-bars the treads of the wheels pass and depress such rail-bars and move the signal to indicate "danger." When the train is past and the signal is again set to "safety," the inclined rail-bars are raised, ready to be operated by the next passing train. An apparatus of this kind is illustrated in Patent No. 345,782, granted July 20, 1886, to C. M. Havey, R. Black, and T. G. Palmer.

The object of the present invention is to move the signal when the train is going in one direction, leaving such signal free to be operated when the train is going in the other direction, and in this manner a false signal is prevented when the train is simply being run upon a siding or single track.

In the drawings, Figure 1 is a plan view of the track with the signal apparatus applied thereto. Fig. 2 is an elevation of the same. Fig. 3 is a section at the line *x x*, and Fig. 4 is a section at the line *y y*, of Fig. 1.

The track-rails A and cross-ties B are of any ordinary character, and at C is a post having a swinging signal or semaphore D, that is operated by a connecting-rod E and bent lever F and link to a sliding cam-plate G, within a supporting-frame H, fastened upon the cross-ties of the track, and in this cam-plate G is an inclined slot 2, having parallel end portions, which allow the plate to be moved both before and after the visual signal is set, the diagonal portion of the slot either raising or lowering such visual signal. This cam-plate G is connected by a link I to the longitudinal bar K, which may be connected with the mechanism

employed in moving the switch-rails; or it may receive motion from a hand-lever at the signal-station, or in any other desired manner. The automatic connection to the signal is operated by the passing train, the wheel-treads running over and depressing the rail-bar M, at the moving end of which is a link N to a lever-arm O upon the cross-shaft P, at the end of which is a crank-arm Q to a sliding block on the longitudinal bar K, and there is a spring at S for pressing the sliding block and crank-arm Q toward the collar T, and which spring S yields and allows the rail M to be depressed and the sliding block moved without breaking the parts by the passing train, even should the longitudinal bar K be locked at any portion of its length. This feature is similar to the devices shown in the aforesaid patent. A cross-shaft P is supported in suitable bearings between the cross-ties of the track, the shaft being shown as square, except at the journals within the bearings. The pivot-bolt 4 for the rail-bar M passes through one of the track-rails A and is secured by nuts, as seen in Fig. 3, and around the bolt 4 is a spring 5 and a washer-plate 6, and the nut 7 applies the proper pressure to the spring 5 to force the washer 6 and the rail-bar M up against the side of the track-rail A, and near the moving end of the rail-bar M is a frame Y, fastened upon one of the cross-ties and receiving through one portion thereof the slide-rod 8, the end of which is fastened to a yielding angle-iron 10, there being a bolt 11 passing through a slot in the frame Y for holding the foot of this angle-iron 10 in position, but allowing it and the rod 8 to move toward or from the track-rail A, and around the rod 8 is a spring 13 and nut 14, by which the pressure of the spring is regulated, and this angle-iron guide 10 presses against the outer side of the rail-bar M to keep the same toward the rail, and the moving end of the rail-bar is bent outwardly, as seen in the plan Fig. 1, and passes to the link N.

It will now be understood that when the train is passing in the direction of the arrow 20, Fig. 1, the tread of the wheel that projects outside the rail acts upon the rail-bar M, de-

pressing the same and moving the signal D to
"danger," and in this position it remains un-
til it is set at "safety" by the train moving
forward over the next rail-bar; but should the
5 train be backed or run off upon a siding, so
as to be moving in the direction of the arrow
21, the visual signal is not thereby changed,
because the curved portion 22 of the rail-bar M
is above the track, as indicated in Figs. 1 and 4,
10 and the tread of the wheel comes into contact
therewith and cannot mount this end of the
rail-bar, but it pushes it bodily and laterally
away from the track against the action of the
springs 5 and 13; hence the visual signal is
15 not moved, but remains properly in position,
and after the train has passed along the springs
5 and 13 return the rail-bar M to the side of
the track A, in position to be acted upon by a
train passing in the direction of the arrow 20.
20 This arrangement is found in practice to be
of great convenience, especially in cases where
trains are temporarily run back upon a track
and switched off, so as to go upon another
track without changing the visual signal that
25 has been set automatically. The signal is
moved out of "danger" by an apparatus of a
similar character at a suitable distance off

and to which the bar K is extended, as in the
aforesaid patent. The second set of arms O
Q at the opposite side of the track are pro- 30
vided so that the connections and bar M can
be applied at either side of the track.

We claim as our invention—

1. The combination, with the signal and the
rail-bars and connections for moving the same, 35
of the springs 5 and 13 and the rods for the
same for pressing the rail-bar against the side
of the track-bar and for allowing the rail-bar
to yield laterally when the train is going in
one direction, substantially as set forth. 40

2. The combination, with the pivoted rail-
bar and the connections from the same to the
signal, of the frame Y, the yielding angle-iron
10, the rod 8, and spring 13, for pressing the
angle-iron against the rail-bar and for allow- 45
ing such rail-bar to yield laterally, substan-
tially as and for the purpose set forth.

Signed by us this 7th day of May, 1889.

ROBERT BLACK.

CORNELIUS M. HAVEY.

Witnesses:

T. G. PALMER,
HENRY A. COX.