(No Model.)

F. P. FISH.

CONTROLLING THE OPENING OF GATES OF CAR PLATFORMS.

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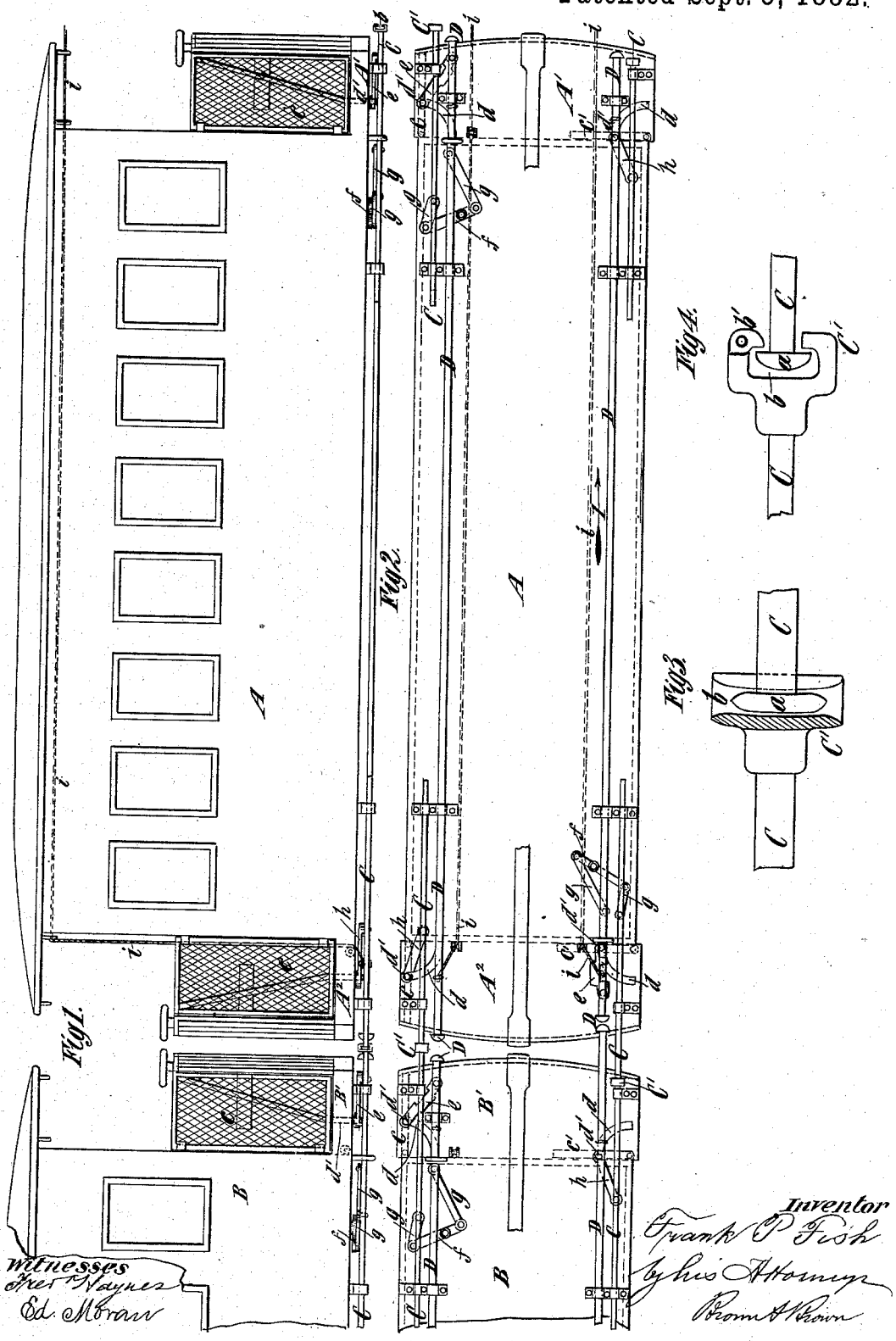

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CONTROLLING THE OPENING OF GATES OF CAR-PLATFORMS.

SPECIFICATION forming part of Letters Patent No. 263,884, dated September 5, 1882.

Application filed May 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. FISH, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Controlling the Opening of Gates of Car-Platforms, of which the following is a specification.

My invention is applicable to the gates of cars for elevated and rapid-transit surface roads where frequent stops are made; and the principal object of the invention is to place all the gates of the train under the control of the conductor or head brakeman who occupies a position on the rear platform of the first car, so that none of the gates on the train can be opened until the conductor has opened his gate, and all the other gates must be closed before the conductor can close his gate.

Another object of the invention is to signal the engineer automatically when the conductor closes his gate, so that the train will not be started until all the gates have been closed.

To this end the invention consists essentially in the combination, with the cars of a train provided with swinging or hinged gates, of signal-rods extending under or through the cars in line with each other, but unconnected, and so arranged that the signal-rod upon each car, except the forward car, will be prevented from being moved fully forward by the rod upon the car before it, and connections between the pair of gates at adjacent car-platforms and the signal-rod upon one of said adjacent cars, whereby both gates of the pair are made to open simultaneously, and at the same time the signal-rod is moved ahead. Thus it will be seen that the brakeman upon any platform cannot open his pair of gates until the signal-rod of the car in advance of him has been moved ahead, and that none of the brakemen can open their gates until the conductor at the forward car has opened his gates.

The invention also consists in the combination, with the signal-rod of the forward car of the train, of a signal-rope extending therefrom to the engine, and adapted to be pulled by the sliding of said rod in closing the conductor's gates to signal the engineer to go ahead. Hence it is evident that, inasmuch as the conductor cannot close his gates until all the other gates of the train are closed, the engineer cannot be signaled to start until all the gates are closed.

The invention also consists in various details of construction in the devices, whereby the several pairs of gates are connected with the signal-rods, hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side view of a portion of two cars provided with swinging gates connected according to my invention. Fig. 2 represents an inverted plan of portions of two cars with my improved attachments. Fig. 3 represents a horizontal section of the connection or coupling employed between auxiliary rods which form part of the connection between the signal-rods and the gates and upon a larger scale, and Fig. 4 represents a side view thereof upon the same scale as Fig. 3.

Similar letters of reference designate corresponding parts in all the figures.

A B designate two cars of a train, of which the former may be supposed to be the forward car.

A′ designates the forward platform of the car A, and A^2 designates the rear platform thereof.

B′ designates the forward platform of the car B.

On the opposite sides of each car and, in this example of my invention, below the floor of the car are arranged signal-rods D, which are shown clearly in Fig. 2, and which are mounted in bearings which permit of their moving freely longitudinally.

At opposite sides of each car, at the ends thereof, are auxiliary rods C, which project beyond the car, and are coupled to the corresponding or abutting rod of the adjacent car by a coupling, C′, the form of which is shown clearly in Figs. 3 and 4, so as to constitute in effect a single rod for extending past a pair of gates. The end of one rod C is provided with a head, *a*, and the adjacent end of the other rod is provided with a socket, *b*, which is curved in a horizontal direction, so that when the car A strikes a curve the head *a* will readily move laterally relatively to the socket *b*, so as to disengage itself therefrom, and when the cars again reach a straight line the head *a* will readily move into engagement with the socket *b*.

When cars are to be coupled the head *a* should automatically enter the socket *b*, and to enable it to do this I provide the socket

with a hinged lip, b', as shown clearly in Fig. 4, which will swing backward or inward when the head strikes it, and allow the head to enter the socket, but which will prevent the head from escaping from the socket except in a lateral direction.

The platforms are provided with the usual swinging or hinged gates, the gates c upon one side of the train being represented as closed, while the gates c' at the opposite side of the train are shown open.

Below each gate c c' is an arc-shaped slot, d, in the platform, and from the gate a stud or bolt, d', projects downward through and works in said slot.

The gate c on the forward platform, A', which is represented as closed, is connected by a link, e, with the rod D upon that side of the car, said link being connected to the gate through the stud or bolt d', which works in the slot d, and adjacent to the said gate the two rods C and D are connected by a lever, f, and links or rods g g, so that when one rod is moved in one direction the other rod will be caused to move in the opposite direction.

The gate c' of the platform A', which is represented as open, is connected, through its stud or bolt d', by a link, h, to the rod C.

At the platform A^2 the gate c, which is closed, is connected by a link, h, with the rod C, and the gate c', which is open, is connected by a link, e, with the rod D, and adjacent to the latter gate the rods C and D are connected by a lever, f, and links on rods g g, similar to those before described.

The gate c of the platform B', which is closed, is connected by a link, e, with the rod D, and adjacent to said gate the rods C and D are connected by a lever, f, and rods or links g g, like those before described, and the gate c', which is open, is connected by a link, h, with the rod C.

At the rear platform of the car B the gates are connected with the rods C D in the same manner as are the gates at the platform A^2, and the gates of all the cars of the train are connected with similar rods in a similar manner.

It will be understood that the two gates on adjacent car-platforms at each side of the train constitute a pair, and are controlled by a single brakeman, and the conductor would occupy the platforms A^2 B'.

By the connection between the gates and the signal-bars above described I prevent any brakeman behind the conductor from opening his pair of gates until the conductor has opened his pair, and I also prevent the conductor from closing his pair of gates until all the gates except his are closed, and therefore it will be seen that the conductor's gates are the first opened when the train stops and the last closed before it starts.

I will now describe the operation of my invention, it being understood that in opening any pair of gates the signal-rod D of the car to which the gate of the pair which is nearest the engine belongs is moved in the direction of the arrow 1, Fig. 2, and that in closing said gates said signal-bar is moved in the reverse direction. When the train stops the conductor on the platform A^2 or B' takes hold of either of the gates c' and opens it. If he takes hold of the gate c' on the platform A^2, for instance, the movement of the gate, acting through the link e, moves the signal-rod of the car A ahead or in the direction of the arrow 1, and the movement of the rod D, acting through the lever f, links g, and auxiliary rod C and link h, opens the gate c' on the platform B'. By this opening of the conductor's gates and the movement of the signal-rod D of the car A ahead in the direction of the arrow 1 space is afforded between the rods D on the cars A and B, so that the brakeman behind the conductor can open his pair of gates and move the rod D on the car B ahead; but said brakeman cannot open his gates until the conductor has opened his, because the rod D on the car B would strike against the corresponding rod of the car A.

From the above description it will be seen that no brakeman can open his pair of gates until the pair of gates in advance of him are opened.

The gates c' are all represented as opened, and it will be readily seen that the conductor cannot close the gates of the platforms A^2 B', because to do so the signal-rod D on the car A would have to move in the reverse direction to that indicated by the arrow 1, and would strike against the signal-rod D of the car B. So, also, the brakeman behind the conductor cannot close his pair of gates until the brakeman behind him has closed his. Hence it will be seen that the rear gates must first be closed, and each pair must be closed before the pair next nearer the engine can be closed, and the conductor's gates are closed last of all.

The forward car of the train may be provided with bell-ropes i, which are connected with the rods D on the forward car, A, as clearly shown, or with the rods C of said car, and when said rods are moved in closing the gates the rope or ropes will be operated or pulled to ring a bell or give a signal to the engineer to start.

It is obvious that the form of connection between the longitudinally-sliding rods and the gates and also the connections between the rods themselves may be varied as may be desired.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the cars of a train provided with hinged or swinging gates, of sliding signal-rods extending through or under each car and arranged end to end with those of adjacent cars, and connections between the several pairs of gates and said rods, whereby said rods are moved longitudinally when the gates are opened and closed, substantially as and for the purpose herein described.

2. The combination, with two adjacent cars provided with a pair of hinged or swinging

gates, of the signal-rod D, to which one gate of the pair is connected, the auxiliary rod C, to which the other gate of the pair is connected, and connections between said rods, whereby they are caused to move in reverse directions, substantially as and for the purpose described.

3. The combination, with the rods C of adjacent cars, of the couplings C′, constructed and operating substantially as and for the purpose described.

4. The combination, with a car provided with swinging or hinged gates, of a signal-rod extending through or under the car and connected with said gates, so as to be moved longitudinally when the gates are opened or closed, and a bell-rope or signal-connection extending from and operated by said signal-rod for signaling the engineer, substantially as and for the purpose described.

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