

(No Model.)

S. TOWNSEND, A. ANDREWS & F. E. TOWNSEND.
RAILWAY SIGNAL.

No. 442,152.

Patented Dec. 9, 1890.

Fig. 1.

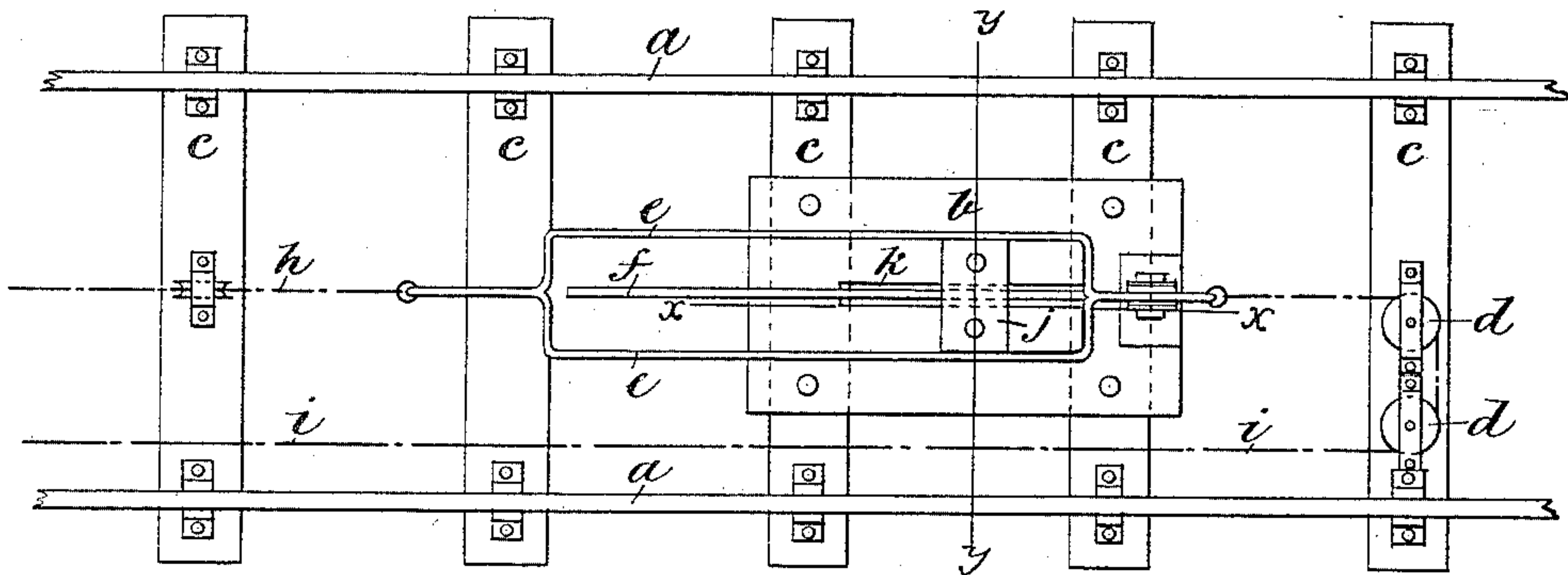


Fig. 2.

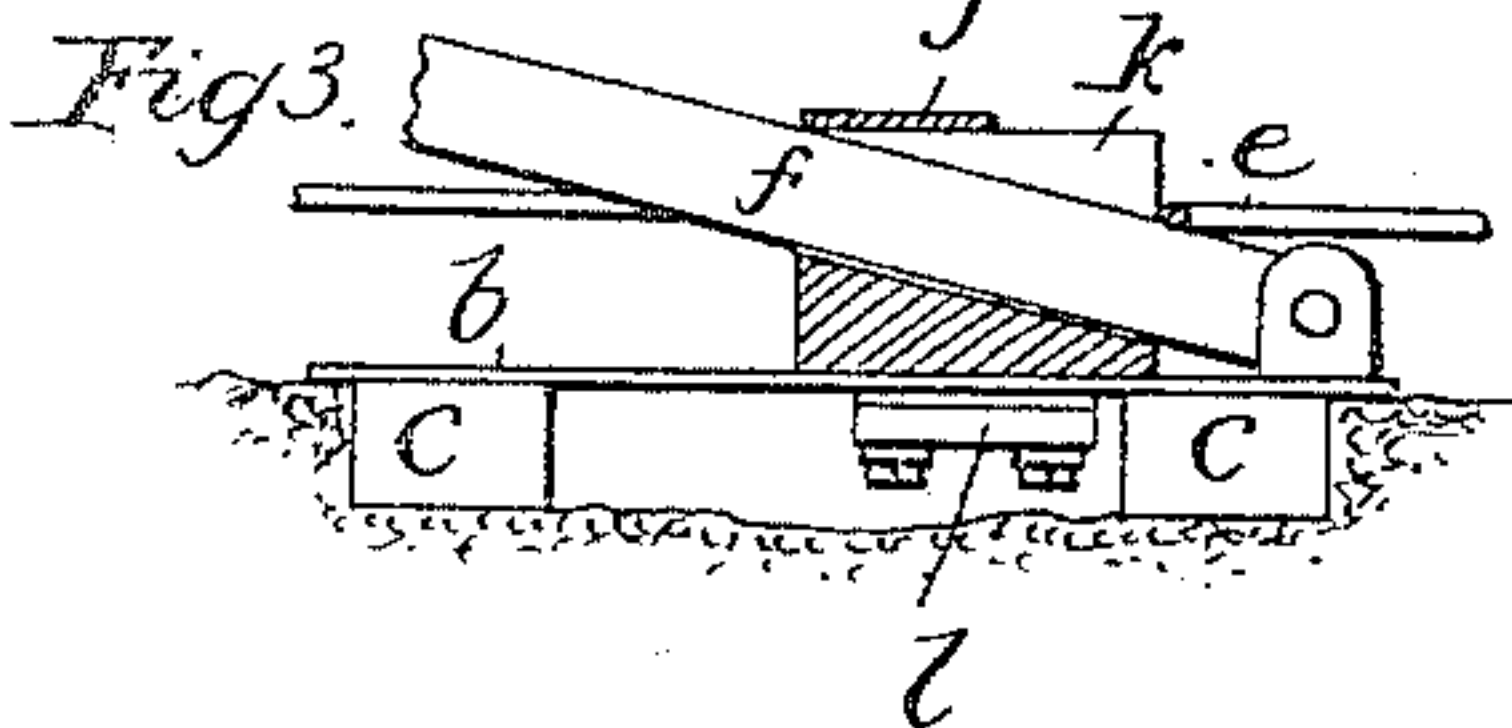
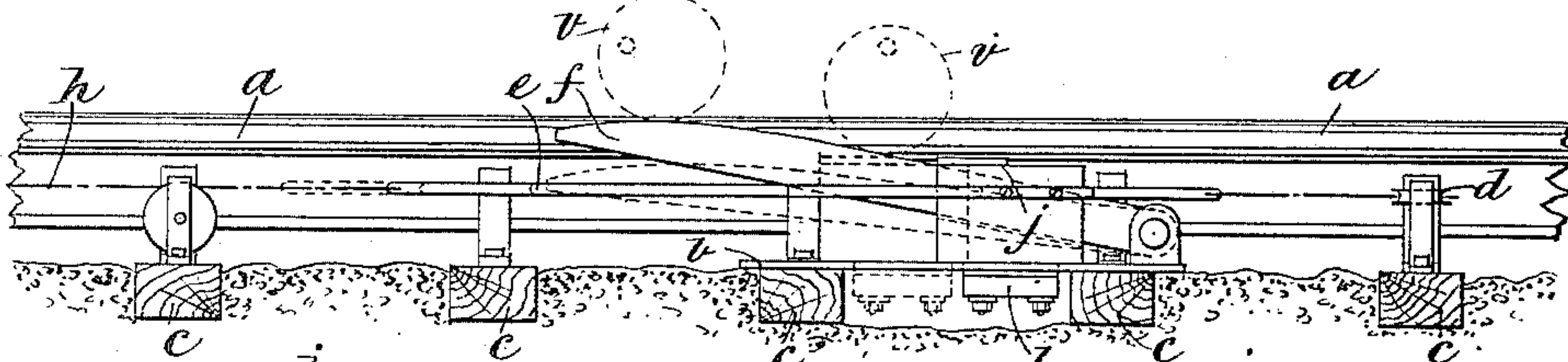


Fig. 6.

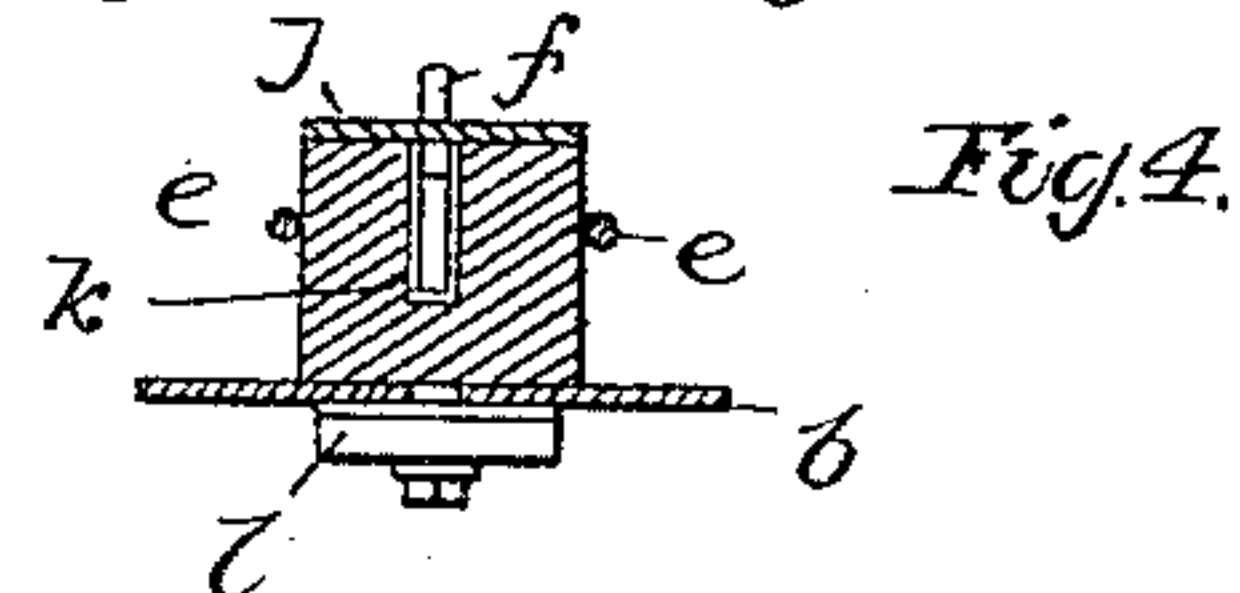
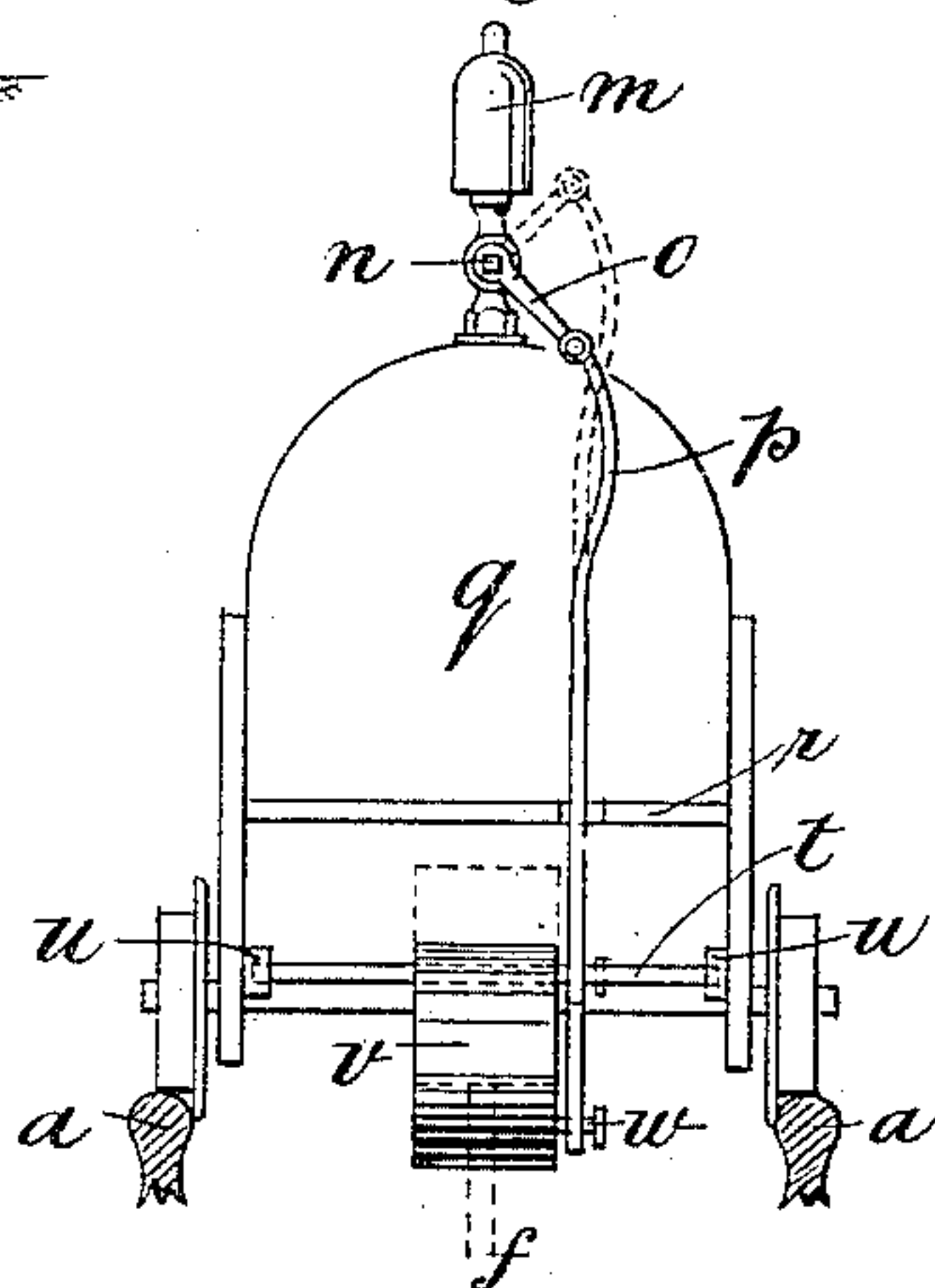


Fig. 4.

Fig. 7.

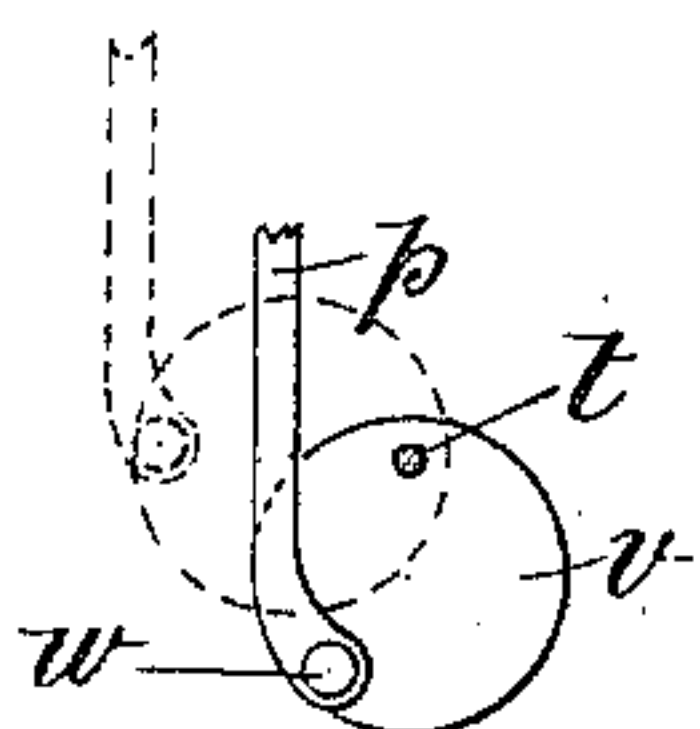
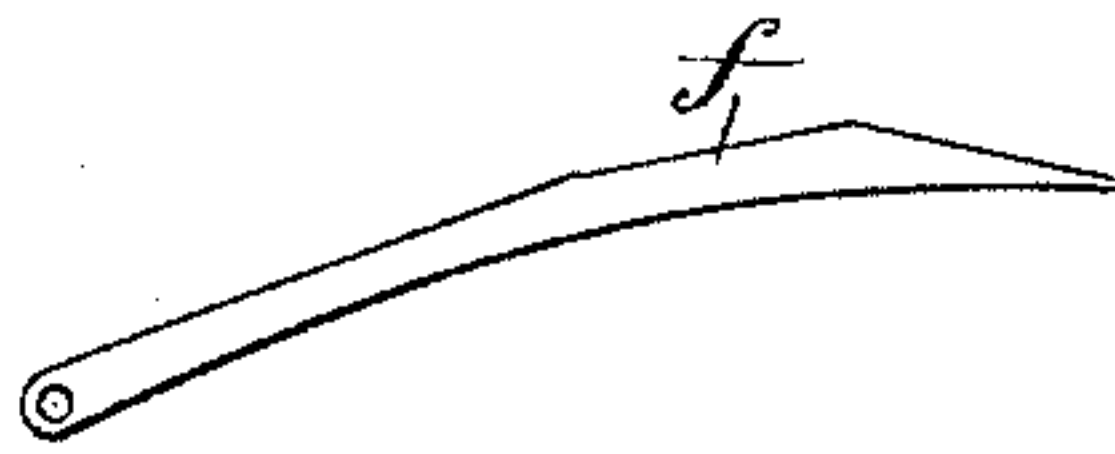


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL TOWNSEND, ALBERT ANDREWS, AND FREDERICK ERNEST TOWNSEND, OF LUTON, ENGLAND.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 442,152, dated December 9, 1890.

Application filed August 12, 1890. Serial No. 361,817. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL TOWNSEND, botanical druggist, residing at 7 Stuart Street, ALBERT ANDREWS, engineer, residing at 12 High Town Road, and FREDERICK ERNEST TOWNSEND, shop-manager, of 7 Stuart Street, all of Luton, in the county of Bedford, in England, subjects of the Queen of Great Britain, have invented new and useful Improvements in Signals to be Used on Railways, (for which we have applied for a patent in Great Britain, No. 8,487, bearing date June 2, 1890,) of which the following is a specification.

This invention relates to improvements in signals to be used upon railways; and it consists in a movable rail arranged upon the track and adapted to be moved into and out of a position where it will come in contact with a movable device upon a railway-locomotive or other vehicle, and thereby operate a signal upon such vehicle.

In carrying out our invention we prefer to use mechanism which may be generally described as follows: A metal plate having a guide-slot is bolted to the sleepers or other fixed portion of the track. A sliding block or carriage is mounted upon the plate and provided with a shank which passes through the slot and has a plate bolted upon its lower end to prevent it from rising. The top of the block is provided with a recess running lengthwise and slanting downward toward the pivot of the movable rail, and at one end of the above-mentioned bed and near to the slot in the bed we provide a vertically-movable rail of any suitable length or shape, but preferably bent, as shown, and attached to the bed between two ears by a pivot, or to some other fixed part of the track. This movable rail rests lengthwise in the slanting recess of the sliding block or carriage, and is prevented from being jerked out of the same by a cap or plate. On each side of the said carriage a rod-frame (or wire) is secured thereto by screw bolts or pins. These said rod or wire frames are termed "connecting-rods," and are closed or brought together at each end. The open space between these said rods or wires is of sufficient length to allow the aforesaid movable rail to rise and fall with-

out coming in contact with the closed ends of the frame. Sufficient play is allowed between the aforesaid carriage or sliding block and bed for the former to slide easily along the latter. Any required number of the above-described appliances or apparatus may be connected together by rods or wires placed in or near the center of the engine-track at any suitable distance apart from each other, the rods or chains working over pulleys attached to the sleepers, so as to cause as little friction as possible. On or near the farther end of the bed farthest from the signal-box are mounted devices for transmitting the movement of the operating cord or wire to the sliding carriage.

As shown in Figure 1, a rope passes around two pulleys; but we do not limit ourselves to this construction, as equivalent devices—such as a lever or levers—might be used.

To the railway locomotive-engine is attached a whistle or gong having a connecting-rod to the lever-handle of the whistle. In case a gong is used this said rod is connected to the hammer of the same. Underneath the bottom of the engine we place a movable device in position to contact with the movable rail. As shown, it is an eccentric wheel or block fixed on a shaft, the said shaft working loosely in two bearings, and the said eccentric being placed so as to ride on the raised movable rails, which raise the eccentric, thereby raising the rod, which is loosely attached to the eccentric. When the engine is running over either of the raised movable rails, the eccentric strikes the top or highest point of the same, and thus opens the valve of the whistle or causes the hammer of the gong to strike to give the desired signal to the driver. If a gong or other indicator is used, the apparatus may be placed in any suitable part of the train.

The object of our invention is that it can be used for either up or down lines, the engine passing over the movable rails both ways, or used for distance, caution, and stop signals, and to obviate the necessity of placing explosive fog-signals by hand, which is often fatal to the operator.

The advantages of our invention are that the signal-man has direct communication with

the driver of the train he wishes to signal; also, in a pecuniary point of view it is a great saving to any railway company that adopts our system. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Fig. 1 is a plan view of our invention applied to a railway-track. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are enlarged sections on the lines $x x$ and $y y$ of Fig. 1, respectively. Fig. 5 shows a form of rail suitable for trains going in either direction. Fig. 6 is an end view of a locomotive adapted to our invention, and Fig. 7 is a detail of the same.

The rails $a a$ are connected to the sleepers c in the usual way. On two of the sleepers we bolt the bed b , with the slot k , in which the carriage j slides up or down to raise or lower the rail f by the action of the frame e , being pulled to or away from the cabin by the chains h and i around and over pulleys d , placed in any position along the line, in order to bring the rail f into the raised position.

Fig. 2 is a section of the track and sleepers, giving a view of the apparatus in position for the eccentric v to strike on the movable rail, as indicated by the dotted circles describing the action. The dotted lines indicate the position of the rail when it is placed out of action, which is so placed by the chain h being pulled toward the signal-box or home cabin. The shank l , with bolts, is shown in this figure.

Fig. 6 is the back elevation of the engine q , with the eccentric v fixed to the shaft t , this shaft working in bearings $u u$, with the lever-rod p attached loosely at w to the eccentric and passing up through an opening in the floor r , and connected to the valve n of the whistle m by the lever-arm o . The dotted lines in this figure indicate the position of the eccentric on the top of the movable rail and the rod and lever raised to open the valve.

Fig. 7 is a side view of the eccentric and a part of the rod p broken off. The dotted lines indicate the position of the eccentric when the signal is given.

In operation, when it is desired to communicate with the engineer or to sound the bell or whistle, the rope i is pulled in the direction which draws the carriage toward the pivot of the lever, thus raising the rail f into position to contact with the cam upon the engine. At other times the rail f is allowed to remain its lowered or normal position, to which position it falls by gravity upon a reverse movement of the carriage.

What we claim as our invention, and desire to secure by Letters Patent of the United States, is—

1. In a signaling device, the combination, with the railway-track, of the slotted plate b , the rail f , pivoted to said plate, the carriage arranged to slide upon the plate and support the rail, and means for moving the carriage, substantially as described.

2. In a signaling device, the combination, with the railway-track, of a vertically-movable rail pivotally attached at one end to the track, and a carriage having a slot to receive the rail and arranged to slide in guides upon the track, substantially as described.

3. In a signaling device, the combination, with the railway-track, of the slotted plate b , the rail f , pivoted to said plate, the carriage arranged to slide upon the plate and provided with a shank extending through the slot, and means for moving the carriage, substantially as described.

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