

(No Model.)

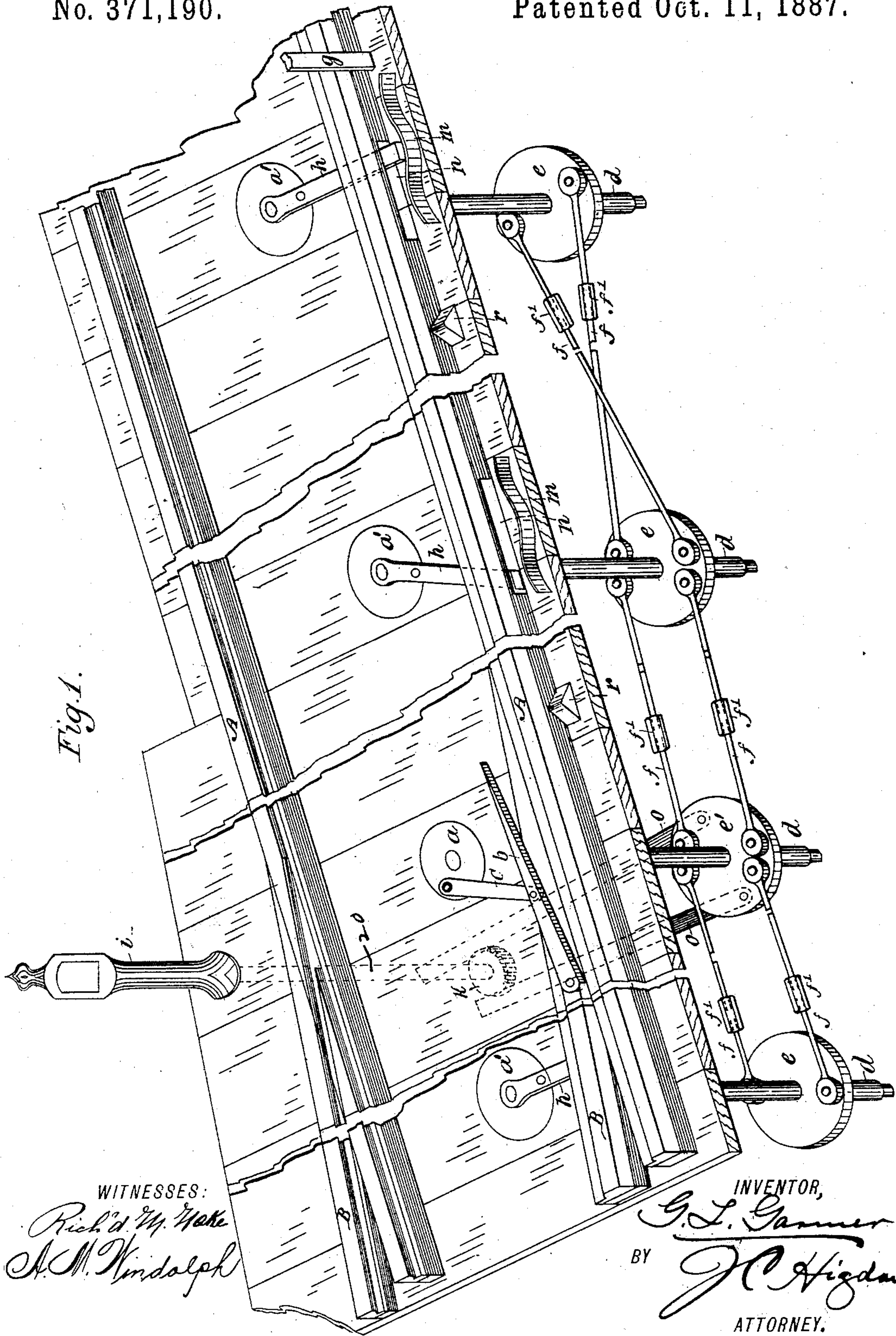
2 Sheets—Sheet 1.

G. L. GARMER.

AUTOMATIC RAILWAY SWITCH.

No. 371,190.

Patented Oct. 11, 1887.



(No Model.)

2 Sheets—Sheet 2.

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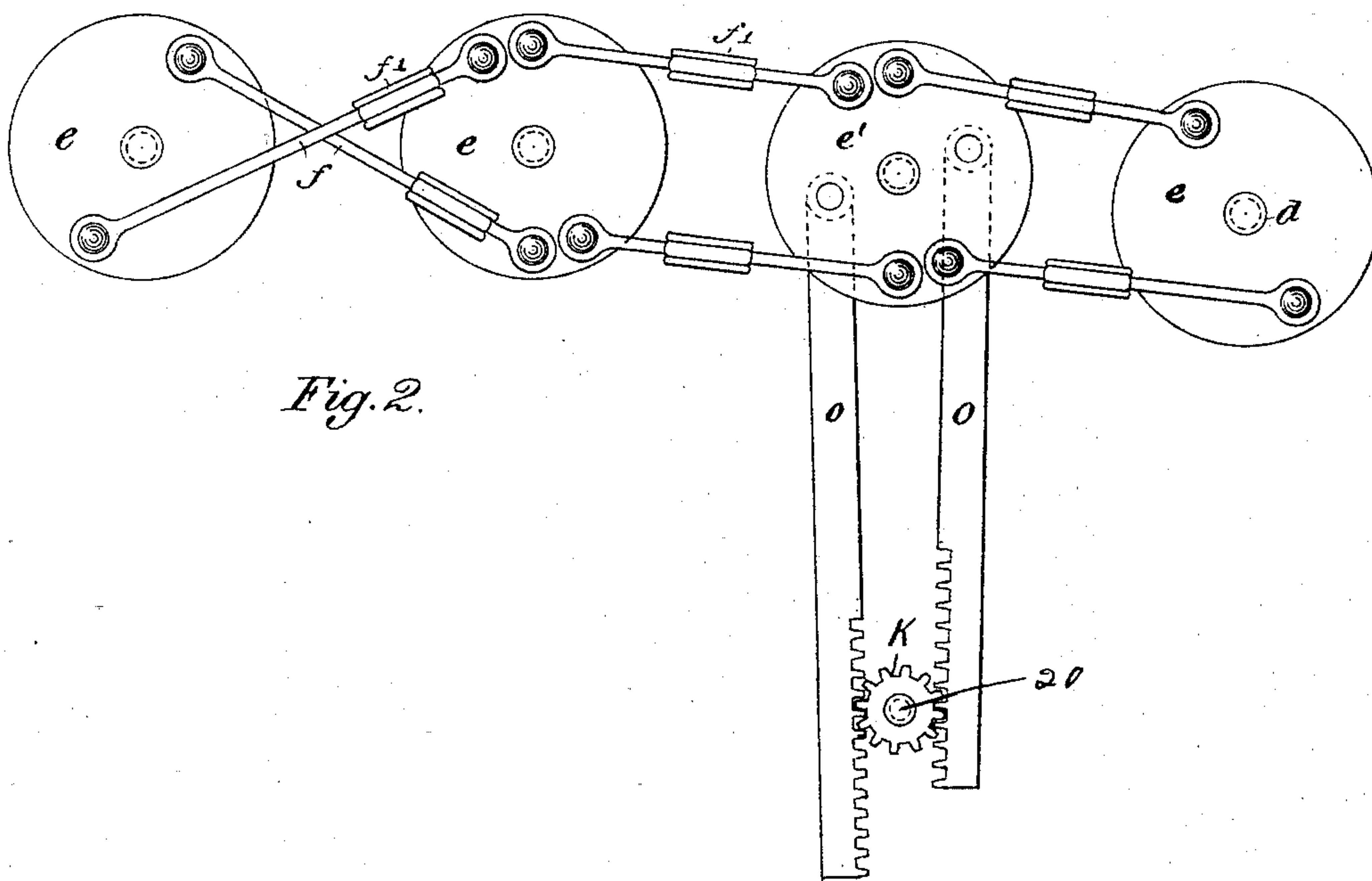


Fig. 2.

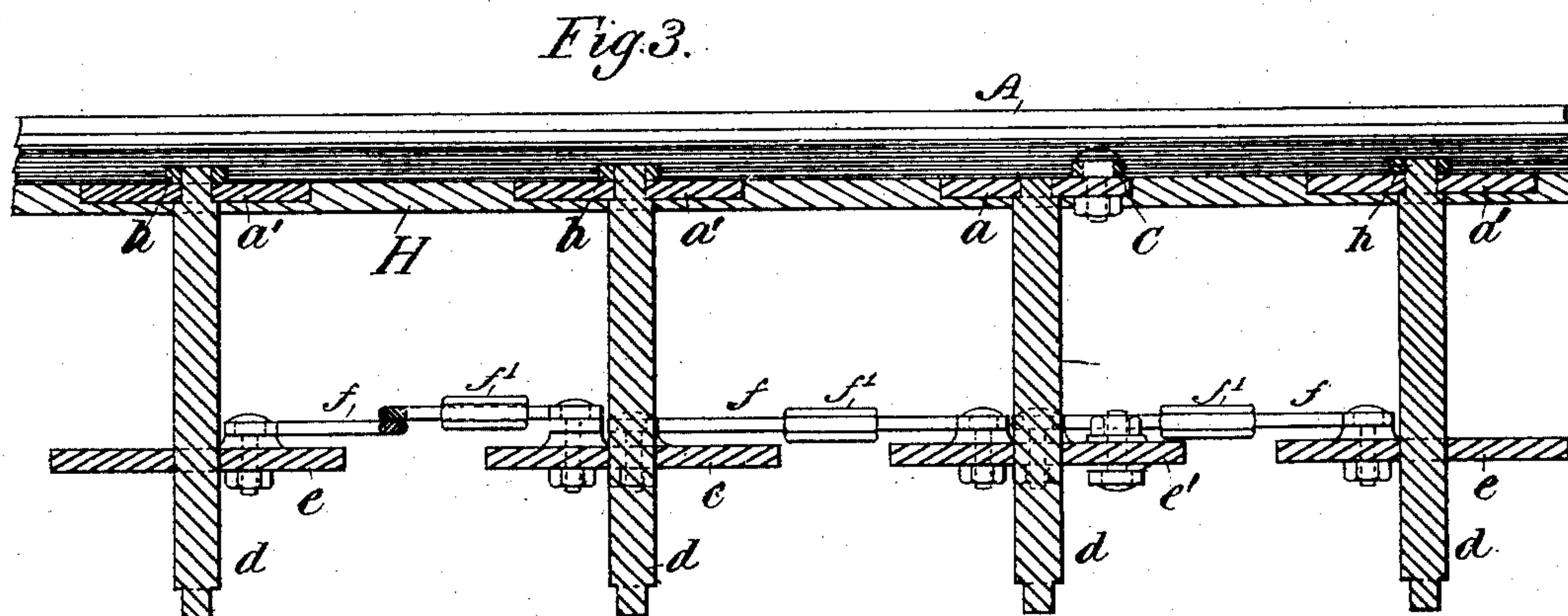


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE LARENZO GARMER, OF KANSAS CITY, MISSOURI.

AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 371,190, dated October 11, 1887.

Application filed October 18, 1886. Serial No. 216,486. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LARENZO GARMER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Automatic Railway-Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates more particularly to switches and signals that are designed for use upon street-railways or elevated structures; and it consists in the devices and the combination and arrangement of devices hereinafter set forth, and pointed out in the claims.

In the drawings which illustrate the general form of my invention, Figure 1 is a perspective view of a portion of a street-railway track to which my devices have been applied. Fig. 2 is a plan view of the operative portions that are located below the track, and Fig. 3 is a longitudinal section through the devices shown in Fig. 1.

A A represent the rails of the main track, and B B the rails of the side track, which latter are joined to the former by means of the usual frogs and other devices.

b is the V or switch bar, that is hinged to one of the side-track rails B, (in the usual way,) and it is connected to one of the vertical shafts d through the medium of bar C and switch-plate a. The vertical shafts d are to be located any desired distance apart along the track, and in the case of surface roads they will be located in a suitable pit formed in the ground for their reception, while in the case of elevated roads they can be supported below the track by means of suitable framing; but in either case I would say the general arrangement will be the same as I here show.

For the purpose of excluding dust and dirt and rain from the devices that are located below the track, I provide a substantially tight covering or floor, H, above said devices, and the upper ends of the shafts d have a bearing in the floor H, and a number of circular plates, a', are securely attached to the upper ends of said shafts. In order that said plates a' may not project up above the upper surface of the floor, a circular recess is formed therein for their reception, as shown. In this connection I may say, however, that the plates a' may be dispensed with, if desired, and the

striking-levers h can then be attached directly to the upper end of the several shafts d, as the object in providing the circular plates is mainly to form a tight joint with the floor, and thus prevent dust and dirt from dropping down upon the devices that are below the track.

The striking-levers h project from the upper end of the shafts d, or from the plates a', and extend transversely to and under one of the main-track rails A, and project on the outside thereof a sufficient distance for easy contact of the striking-bar g, which is to be attached to the engine. Openings n, in which the striking-levers move, are formed in the rails, or in the timbers upon which the rails are located.

For the purpose of preventing the bar g from sliding off the end of the striking-levers without throwing the switch, as in some cases it might do, I locate curved guiding strips or boards m on the upper surface of the floor H at a point that is nearly opposite the openings n. In striking one of the striking-levers h the bar g will not slide off its free end; but, on the other hand, it will be so guided that it will press on the said lever until the switch is fully thrown, one of its sides bearing against the inner side of the guiding-strip.

It is designed that the striking-bar g shall be lowered into contact with the different striking-levers by the engineer; but for the purpose of raising it, so that the switch may not be thrown unless it is again depressed, I locate cam-blocks r along the outside of the track between the points where the several striking-levers project. These cam-blocks may be of wood or any suitable material, so that they are provided with oppositely-inclined upper surfaces, upon which the lower end of the bar g may readily slide, as shown.

Keyed or otherwise securely fastened on the vertical shafts d at about midway of their length are the lower or connecting plates, e, the object of which is to form bearings for the ends of the several connecting-rods f.

The rods f are provided with couplings f', whereby they may be tightened up from time to time, as may be required. The couplings f' may of course be of a different form from what is here shown, or they may be omitted altogether, if desired, and that, too, without detracting in any appreciable measure from the effective operation of the invention. The con-

necting-rods *f* are loosely attached by suitable bolts to opposite sides of the plates *e* and the plate *e'*, as shown, thereby coupling together all of them in a series and compelling all of them to operate in unison.

For the purpose of allowing the switch to be thrown first to the side track and afterward back again to the main track while the train or engine is advancing from the right hand in Fig. 1, the first set of rods are made to cross each other, as shown. I would say that it is often necessary to do this in the operation of switching cars, as in this way the locomotive can shunt cars either onto the main track past the switch or it can throw them upon the side track, at the will of the engineer, and while remaining all the time on the main track itself. Crossing the connecting-rods on the main track will thus cause the motion of the three remaining shafts *d* to be directly opposite to that of the one which is primarily moved by the engine on the main track, thereby accomplishing the result above mentioned.

It will be observed that all of the rods work on what may be termed the "pull-back" principle, so that they may be of any length desired.

O O are a pair of signal-operating rods connected at one end to opposite sides of the plate *e'*, while their other ends have formed upon or attached to them a series of teeth for engaging the pinion K. The pinion K is mounted on the signal shaft or post 20 about midway of its length, and said pinion should be of such diameter that it will cause the signal-shaft to make a quarter-revolution in one direction or another every time that the switch is thrown, thereby enabling the train-men to see at all times the position of said switch.

It is clear that one signal-operating rod such as O would be sufficient to operate the signal *i* perfectly if said signal were placed comparatively near to the track, and so allow a short rod to be used, and I only use two rods where the signal is to be placed some distance away from the track. In this last-named arrangement when one rod is pulling the signal around the other one will have nothing to do until the movement is reversed, and then it will pull the signal around in an opposite direction. The lower end of the signal-shaft 20 is provided with a suitable bearing below the track in a manner similar to the way in which the shafts *d* are arranged, and its upper portion has a bearing in the floor H, or it is otherwise provided with a suitable bearing.

With this construction the operation of the

invention will be about as follows: Suppose the engine, with the bar *g* suitably located thereon, to be advancing from the right hand in Fig. 1. The engineer will depress the said bar until it is in the position shown, and then, as the engine continues to advance, bar *g* will come in contact with the first of the striking-levers *h*, and so throw the switch-bar *b* in position for the side-track rails B, and simultaneously throw the signal *i* to indicate the "side track," and as the movement of the engine still further continues the bar *g* will be raised by contact with cam-block *r*, and the entire train may then pass onto the side track; but, should the engineer not desire to have the entire train pass to the side track, he will simply depress the bar *g* again after passing the first cam-block, and said bar will then come into contact with the second striking-lever from the right hand, and so throw the switch to the main track again, and likewise when the train is advancing from the side track.

I am aware that in automatic switches disks adapted to be rotated in both vertical and horizontal planes and carrying connecting-rods have heretofore been used to operate switch-rails, and I do not, therefore, broadly claim a combination of such disks and rods, they being only a portion of the elements used by me in making up my invention.

Having thus described my invention, what I claim is—

1. The combination, with the main and side track rails, of vertically-located shafts carrying disks or plates, striking levers mounted on the upper end of said shafts and extending to one side of the track, rods for connecting the shafts together, so that they will operate in unison, a bar or striker depending from the engine or car, a switch-bar hinged at one end to a rail or frog and connected to one of the vertically-located shafts, a signal and a pinion, also mounted on a shaft, and a rod provided with teeth for engaging said pinion and connected to one of the switch-operating shafts, substantially as set forth.

2. The combination, with the main and side track rails and the strikers *h*, of curved guiding strips or boards *m*, located alongside of the main-track rails, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE LARENZO GARMER.

Witnesses:

C. A. KENYON,

RICHARD FISCHER.