

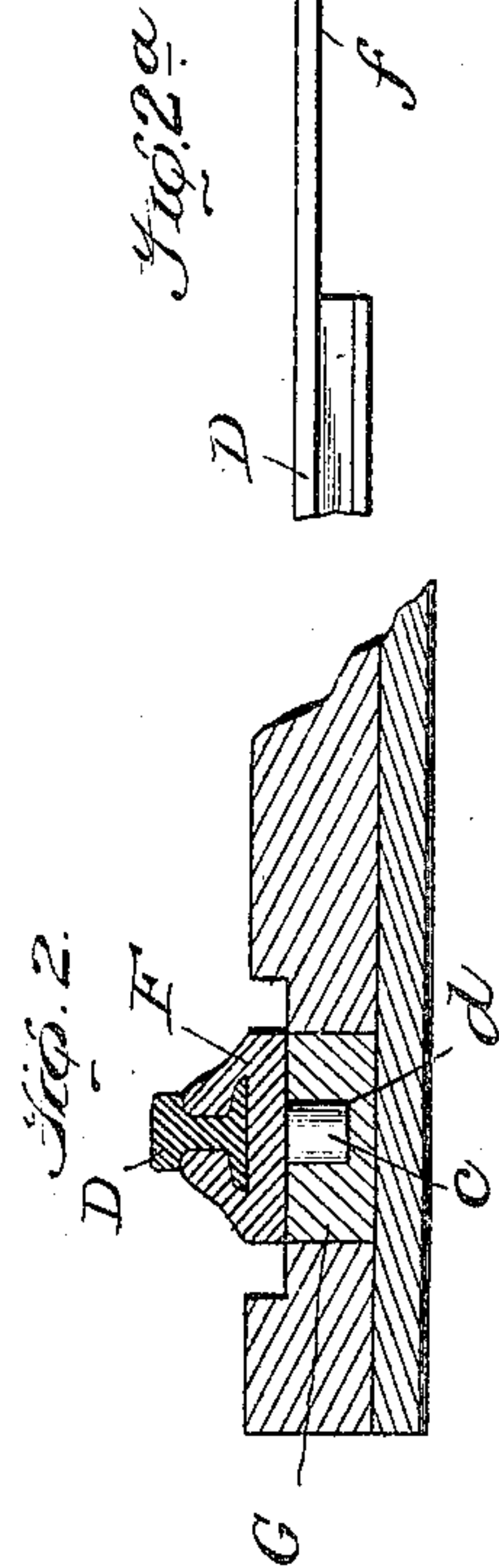
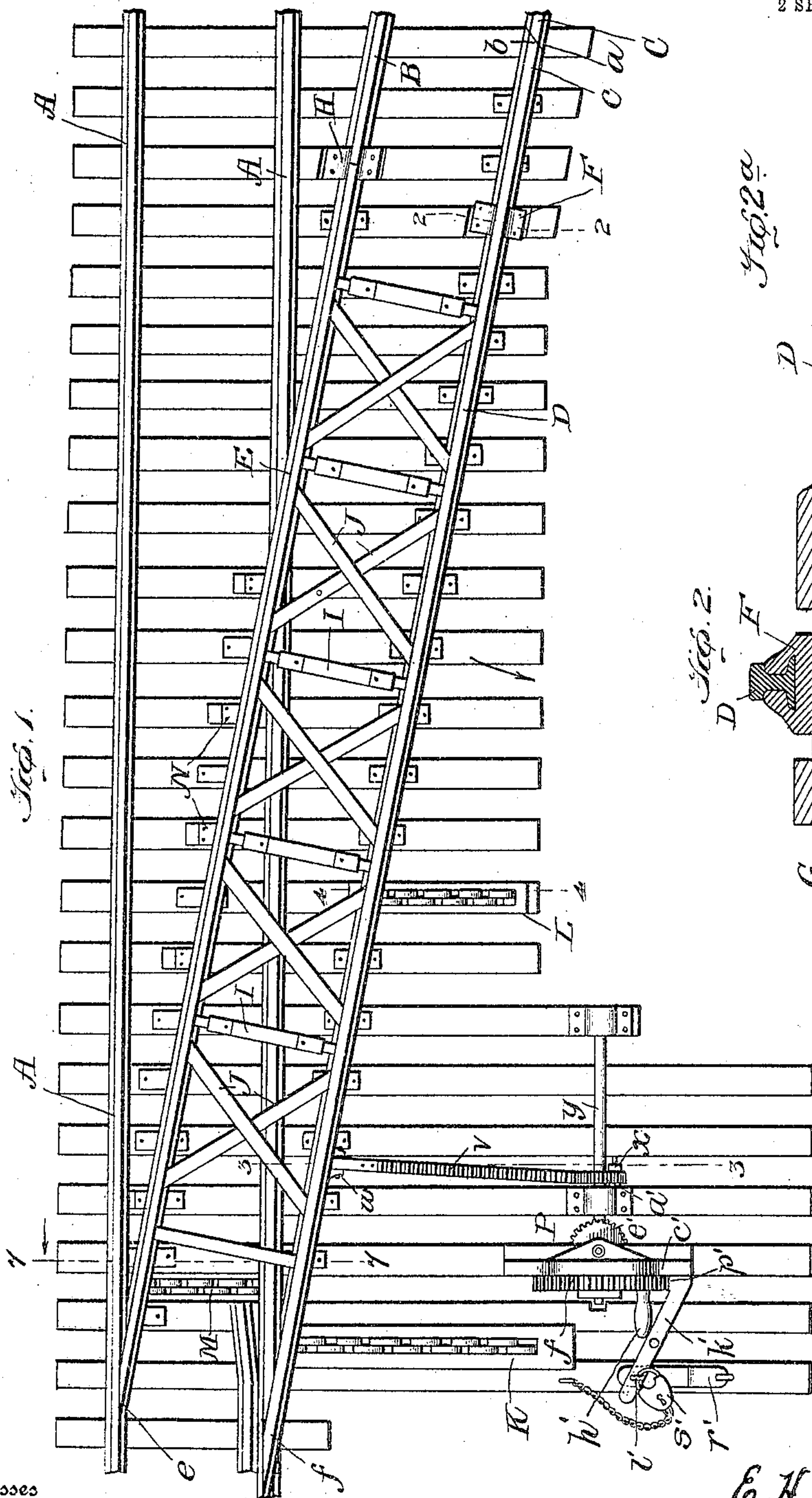
No. 821,001.

PATENTED MAY 22, 1906.

E. H. THORNE.
RAILWAY SWITCH.

APPLICATION FILED MAR. 14, 1906.

2 SHEETS—SHEET 1



Witnesses

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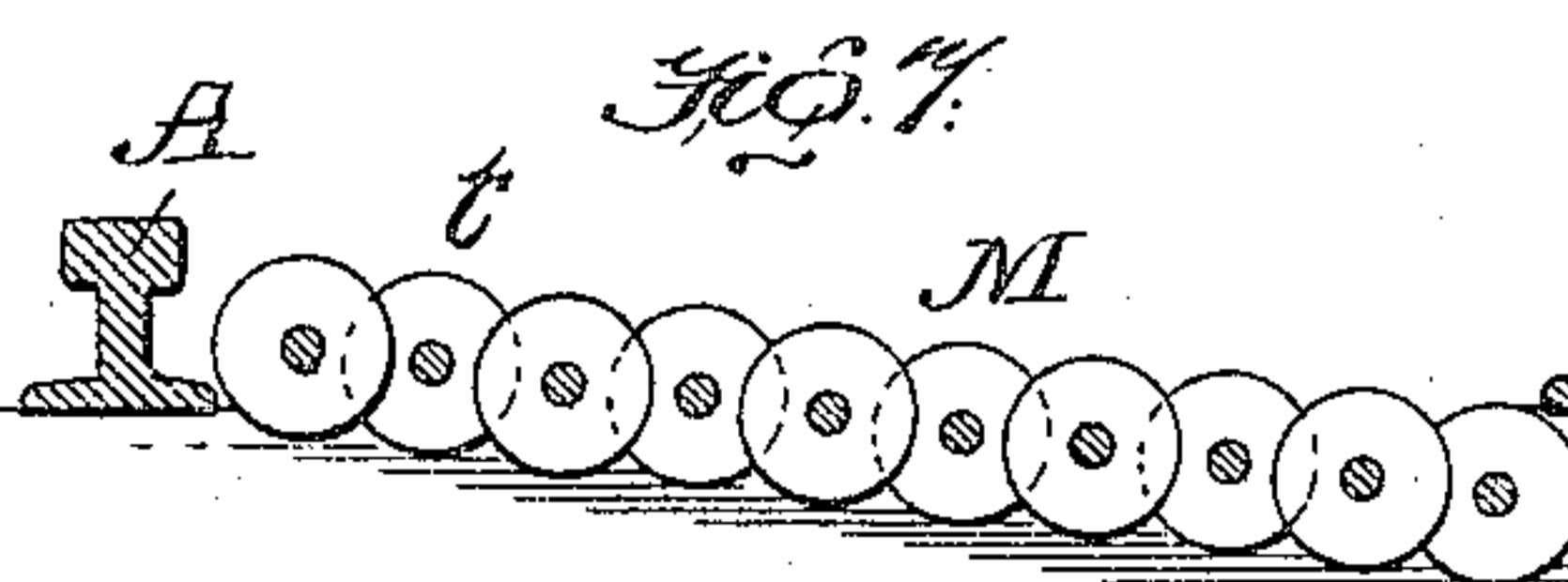
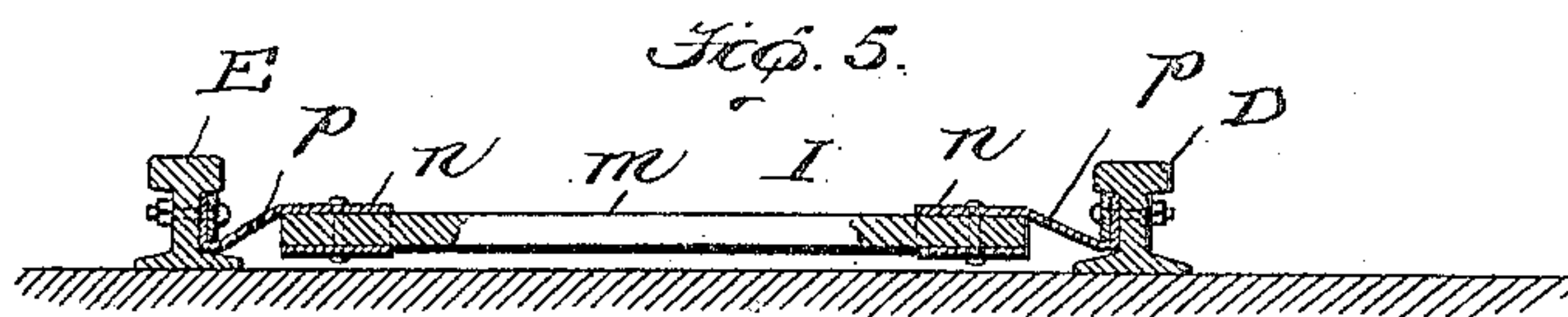
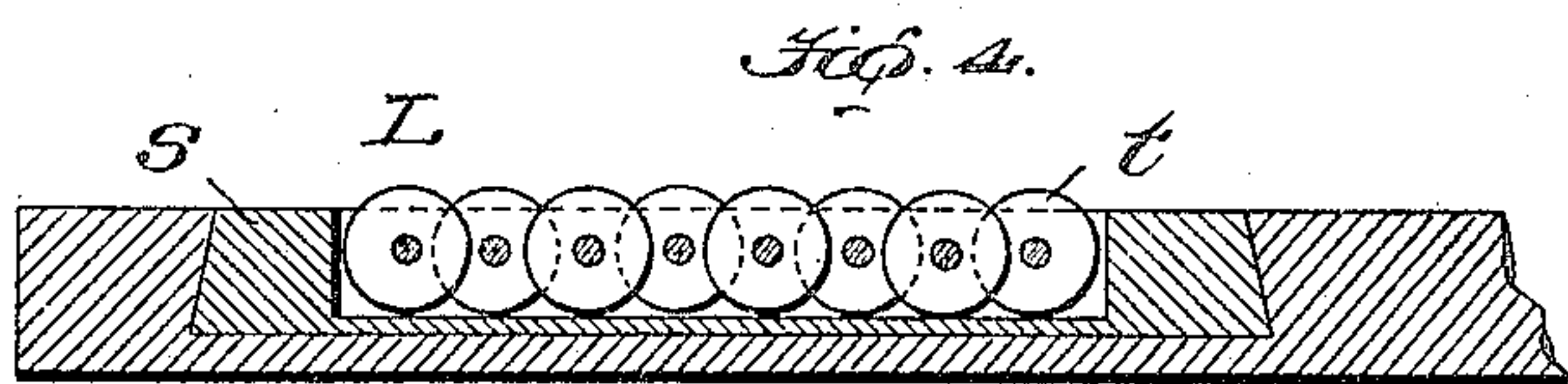
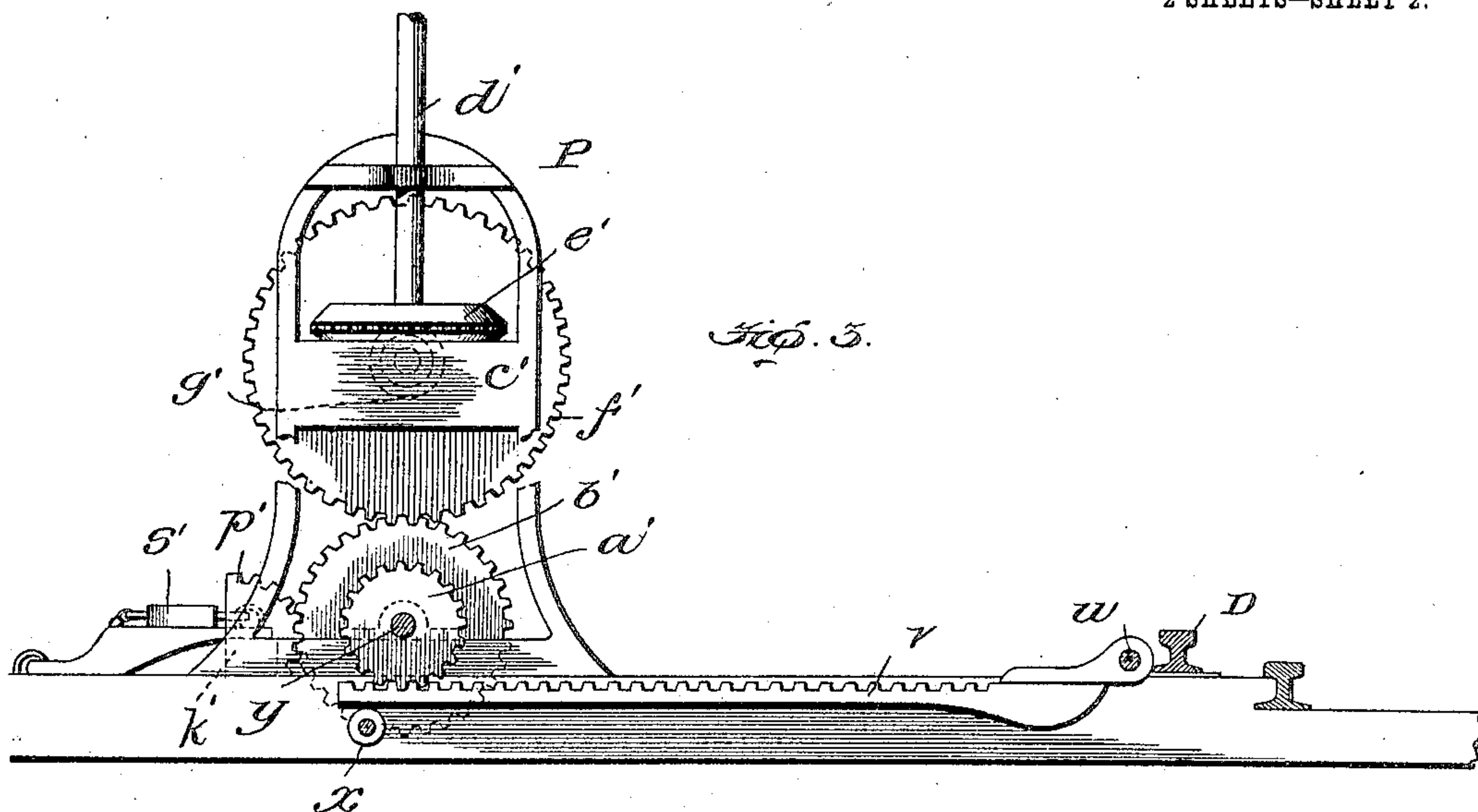
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UNITED STATES PATENT OFFICE.

EMANUEL HENRY THORNE, OF HAGAN, GEORGIA.

RAILWAY-SWITCH.

No. 821,001.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed March 14, 1906. Serial No. 306,053.

To all whom it may concern:

Be it known that I, EMANUEL HENRY THORNE, a citizen of the United States, residing at Hagan, in the county of Tattnall and State of Georgia, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

My invention pertains to railway-switches; and it has for its general object to provide a simple and durable switch embodying such a construction that the switch-rails may be quickly and easily thrown as an entirety on and off the main-line rails, this being materially advantageous, since it assures a continuous and unobstructed main line when the switch-rails are in their idle position and enables the switch-rails in such position to derail cars in the event of the same tending to casually pass from the siding to the main line, where they would be liable to cause disaster.

Other objects and advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my novel switch as the same appears when the switch-rails are positioned on the main-line rails, so as to cause a train traveling toward the right on the main-line rails to take the siding. Fig. 2 is an enlarged detail transverse section taken in the plane indicated by the line 2 2 of Fig. 1 and illustrating the manner in which the inner switch-rail is pivotally mounted. Fig. 2^a shows the free end of the inner switch-rail. Fig. 3 is an enlarged transverse section taken in the plane indicated by the line 3 3 of Fig. 1 and illustrating the switch-operating mechanism. Fig. 4 is a similar view taken in the plane indicated by the line 4 4 of Fig. 1 and illustrating one of the horizontal antifriction-supports of the switch-rails. Fig. 5 is a transverse section, partly in elevation, illustrating one of the tie-rods through the medium of which the switch-rails are fixedly connected together, so as to move as one piece. Fig. 6 is a perspective view of one of the diagonal braces interposed between and connected to the switch-rails; and Fig. 7 is a detail transverse section taken in the plane indicated by the line 7 7 of Fig. 1 looking in the direction indicated by arrow and with the switch-rails omitted, so as to better show the inclined antifriction-support for the said switch-rails.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A A are the rails of the main line, which may be of the ordinary or any other type compatible with the purposes of my invention, and are continuous or unbroken, as shown.

B and C are the rails of the siding or turnout, which may be and preferably are of the usual construction, with the exception that the rail C has a beveled end *a*.

D is the inner switch-rail, and E is the outer switch-rail, the switch-rail D having a beveled end *b* opposed to the beveled end *a* of the siding-rail C and the switch-rail E abutting at its heel against the siding-rail B, as shown in Fig. 1. The rear portion of the inner switch-rail D is secured at an intermediate point of its length in a chair F, Figs. 1 and 2, and the said chair is provided with a depending pin *c*, which is disposed in a complementary socket *d* in a metallic rest or support G, secured to one of the sleepers or ties, whereby it will be apparent that the said switch-rail D is free to be moved laterally toward and from the main-line rails A. The heel or rear end of the switch-rail E is loosely arranged in a chair H, which also receives the end of the siding-rail B and is free to move in and out of the said chair H incident to the movements of the switch-rails toward and away from the main-line rails. At its forward end the switch-rail E is beveled or pointed, as indicated by *e*, so as to lap the inner side of one of the main-line rails A, while at its forward end the switch-rail D is provided with a beveled overhanging extension *f*, designed to rest over the tread of the other main-line rail, as shown in Fig. 1. In virtue of this construction it will be apparent that a train traveling on the main line toward the right will readily pass from the main-line rails to the switch-rails and be guided by the latter to the siding or turnout rails. It will also be apparent that when the switch-rails are moved in the direction indicated by arrow in Fig. 1 to a position off of the main-line rails the main line is left entirely clear of obstructions and is free from breaks or interruptions of any kind, which is an important desideratum. The switch-rails D and E are fixedly connected together, so as to move as one piece through the medium of tie-rods I and diagonal braces J. (Clearly shown in Figs. 1, 5, and 6.) The tie-rods I for the sake of econ-

omy are respectively made up of a body *m* of tough wood and metallic sleeves *n*, receiving and bolted to the ends of the body and having extensions *p*, connected by bolts or other
 5 suitable means to the webs of the switch-rails. There are preferably two of the braces *J* intermediate each pair of tie-rods *I*, the said braces, which are in the form of metallic bars, being crossed, as shown in Fig. 1, and
 10 bolted at their ends to the webs of the switch-rails. By virtue of this construction it will be seen that the switch-rails are strongly connected, so as to move together or as one piece, and at the same time the liability of
 15 either of the switch-rails spreading is precluded.

K and *L* are transversely-arranged anti-friction-supports on which the inner switch-rail *D* is arranged and adapted to move. In
 20 the preferred embodiment of my invention the said anti-friction-supports are horizontal and are respectively made up of a body *s*, embedded in and fixed to one of the sleepers or ties, and lapped wheels *t*, mounted in and
 25 projecting above the body, so as to present a rolling surface to the base of the said switch-rail *D*. The outer switch-rail *D* rests when the switch-rails are entirely off of the main-line rails in a horizontal plane immediately
 30 above that of the treads of the said main-line rails, and in order to assure the point of the switch-rail *E* moving down to the same plane as the main-line rails when the switch-rails are thrown into their working position I provide the inclined anti-friction - support *M*.
 35 (Shown in Figs. 1 and 7.) The said support *M*, like the supports *K* and *L*, comprises a body and lapped wheels mounted in and projecting above the body; but the said wheels
 40 are arranged in an inclined plane for the purpose stated.

N N are abutments mounted between the rails of the main line in position to engage and support the base of the switch-rail *E*
 45 when the latter is in the position shown in Fig. 1; and *P* is the switch-operating mechanism as a whole, the said mechanism being shown in Figs. 1 and 3. In the present and preferred embodiment of my invention the
 50 switch-operating mechanism comprises a rack-bar *v*, pivotally connected at *w* to the switch-rail *D* and movable over an anti-friction supporting-roller *x*, a shaft *y* journaled in suitable fixed bearings and carrying spur-gears *a'* and *b'*, the former of which is intermeshed with the rack-bar *v*, a stand *c'*, a vertical shaft *d'*, carrying a gear *e'* and designed to be equipped with a target or a signal-lamp, (not shown,) a spur-gear *f'*, mounted on the
 60 stand *c'* and intermeshed with the spur-gear *b'* and having a circular series of teeth *g'* in its side intermeshed with the gear *e'* and also having a crank *h'*, Fig. 1, a locking-lever *k'*, and a keeper *l'*, to which the locking-lever is
 65 secured, as will be presently described. The

locking-lever *k'* is provided on one of its arms with a toothed portion *p'*, and when the said toothed portion *p'* is engaged with the spur-gear *b'* and the lever is secured on the keeper *l'* by the hasp *r'* and lock *s'* it will be appar-
 70 ent that there is no liability of the switch-rails being moved by a mischievous or careless person. When, however, the locking-lever *k'* is released and moved out of engagement with the spur-gear *b'*, rotation of the
 75 spur-gear *f'* will obviously effect movement of the switch-rail on or off the main-line rail according to the direction in which the said spur-gear is turned through the medium of its crank *h'*. It will also be apparent that move-
 80 ment of the switch-rails will be attended by turning of the shaft *d'* so as to properly position the target to show the position of the switch-rails relative to the main-line rails.

It will be gathered from the foregoing that
 85 when the switch-rails are in their idle position the rails of the main line are continuous and free from obstruction of any kind, and it will also be gathered that when the switch-rails are in their working position a train may
 90 smoothly pass from the main line to the siding or turnout. It will further be gathered that my improvements as a whole are well adapted to withstand the rough usage to
 95 which railway-track appliances are ordinarily subjected, and hence there is little liability of any of the parts becoming deranged while in use.

In practice the inside switch-rail *f* will preferably be made to extend about three feet
 100 six inches ahead of the switch-rail *e*, this in order to assure a wheel on a car having passed across the adjacent main-line rail *A* when it reaches a point opposite the end of the switch-rail *e*.
 105

When desirable, the bodies *m* of the tie-rods *I* may be made of iron and may be connected to the sleeves *n* through the medium of bolts and jam-nuts, the latter being, by
 110 preference, arranged below the sleeves.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a definite understanding of the said
 115 embodiment. I do not desire, however, to be understood as confining myself to the said specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall
 120 within the scope of my claimed invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a railway-switch, the combination
 125 with main-line rails and siding or turnout rails; of switch-rails, the outer one of which is arranged to move bodily over one of the main-line rails and assume a position at the inner side of the other main-line rail, and an in-
 130

clined support disposed between the rails of the main line and under the said switch-rail for the purpose set forth.

2. In a railway-switch, the combination
5 with main-line rails and siding or turnout rails; of switch-rails, the outer one of which is arranged to move bodily over one of the main-line rails and assume a position at the inner
10 side of the other main-line rail, and a support for the said switch-rail, arranged between the main-line rail and having antifriction devices arranged to present an inclined rolling surface to the said switch-rail, for the purpose set forth.

15 3. In a railway-switch, the combination with main-line rails and siding or turnout rails; of switch-rails, the outer one of which is arranged to move bodily over one of the main-line rails and assume a position at the inner
20 side of the other main-line rail, a chair receiving and connected to the inner switch-rail and having a depending pin, and a fixed rest or support disposed under the said chair and having a socket receiving the depending
25 pin thereof.

4. In a railway-switch, the combination with main-line rails and siding or turnout rails; of switch-rails, the outer one of which is arranged to move bodily over one of the main-
30 line rails and assume a position at the inner side of the other main-line rail, and the inner one of which has a beveled end opposed to a corresponding end of one siding or turnout rail, a chair connecting the other siding or
35 turnout rail and the outer switch-rail and loosely receiving the end of the latter, a chair receiving and connected to the inner switch-rail at an intermediate point in the length thereof and having a depending pin, and a
40 fixed rest or support disposed under the said chair and having a socket receiving the depending pin thereof.

5. In a railway-switch, the combination with main-line rails and siding or turnout
45 rails; of switch-rails abutting at their heels against the siding or turnout rails, the outer

one of the said switch-rails being arranged to move bodily over one of the main-line rails and assume a position at the inner side of the other main-line rail, and suitable means for
50 supporting the switch-rails incident to the described movements thereof.

6. In a railway-switch, the combination of main-line rails, siding or turnout rails, switch-rails, the outer one of which is ar-
55 ranged to move bodily over one of the main-line rails and has a beveled or pointed end shaped to assume a position at the inner side of the other main-line rail and the other of which is fixed to the first-mentioned switch-
60 rail so as to move therewith and is provided at its free end with an overhanging beveled portion adapted to lap over and rest on the tread of one main-line rail, and suitable means for supporting the switch-rails incident to the
65 described movements thereof.

7. In a railway-switch, the combination of main-line rails, abutments arranged between the said main-line rails, siding or turnout rails, switch-rails, the outer one of which is
70 arranged to move bodily over one of the main-line rails and assume a position at the inner side of the other main-line rail, tie-rods and braces interposed between and fixedly connecting the switch-rails together, an inclined,
75 antifriction-support for the outer switch-rail, arranged between the main-line rails, one or more horizontal, antifriction-supports for the inner switch-rail, an operating mechanism connected with the inner switch-rail, and
80 means for locking the said mechanism against movement; the said means comprising a spur-gear and a locking-lever having teeth positioned to engage those of the spur-gear.

In testimony whereof I have hereunto set
85 my hand in presence of two subscribing witnesses.

EMANUEL HENRY THORNE.

Witnesses:

H. J. BREWTON,

J. L. SOUTHWELL.