

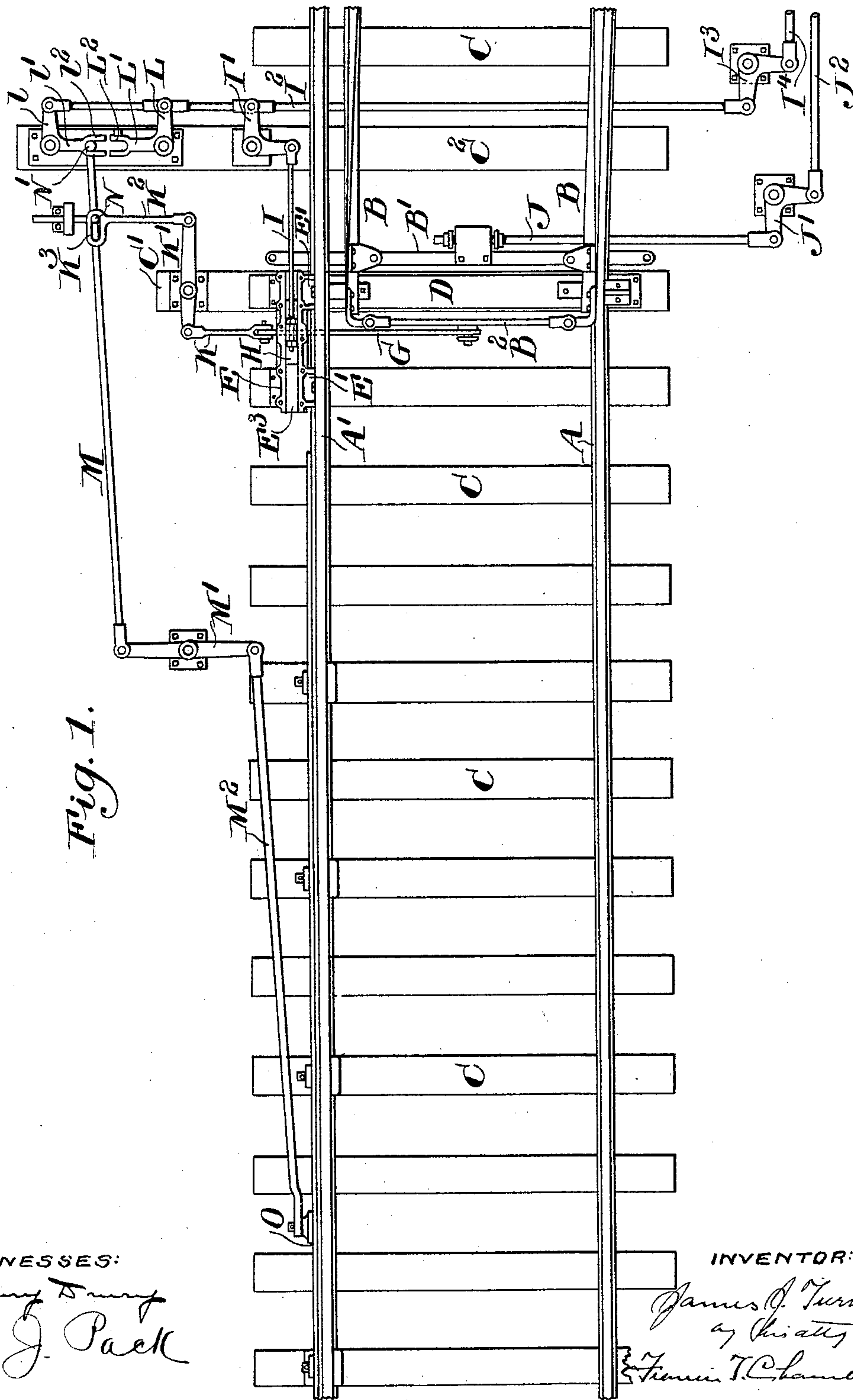
(No Model.)

4 Sheets—Sheet 1.

J. J. TURNER.
SWITCH INTERLOCKING MECHANISM.

No. 536,668.

Patented Apr. 2, 1895.



WITNESSES:
Henry D. Dwyer
H. J. Pack

INVENTOR:
James J. Turner
by his atty
F. T. Chambers

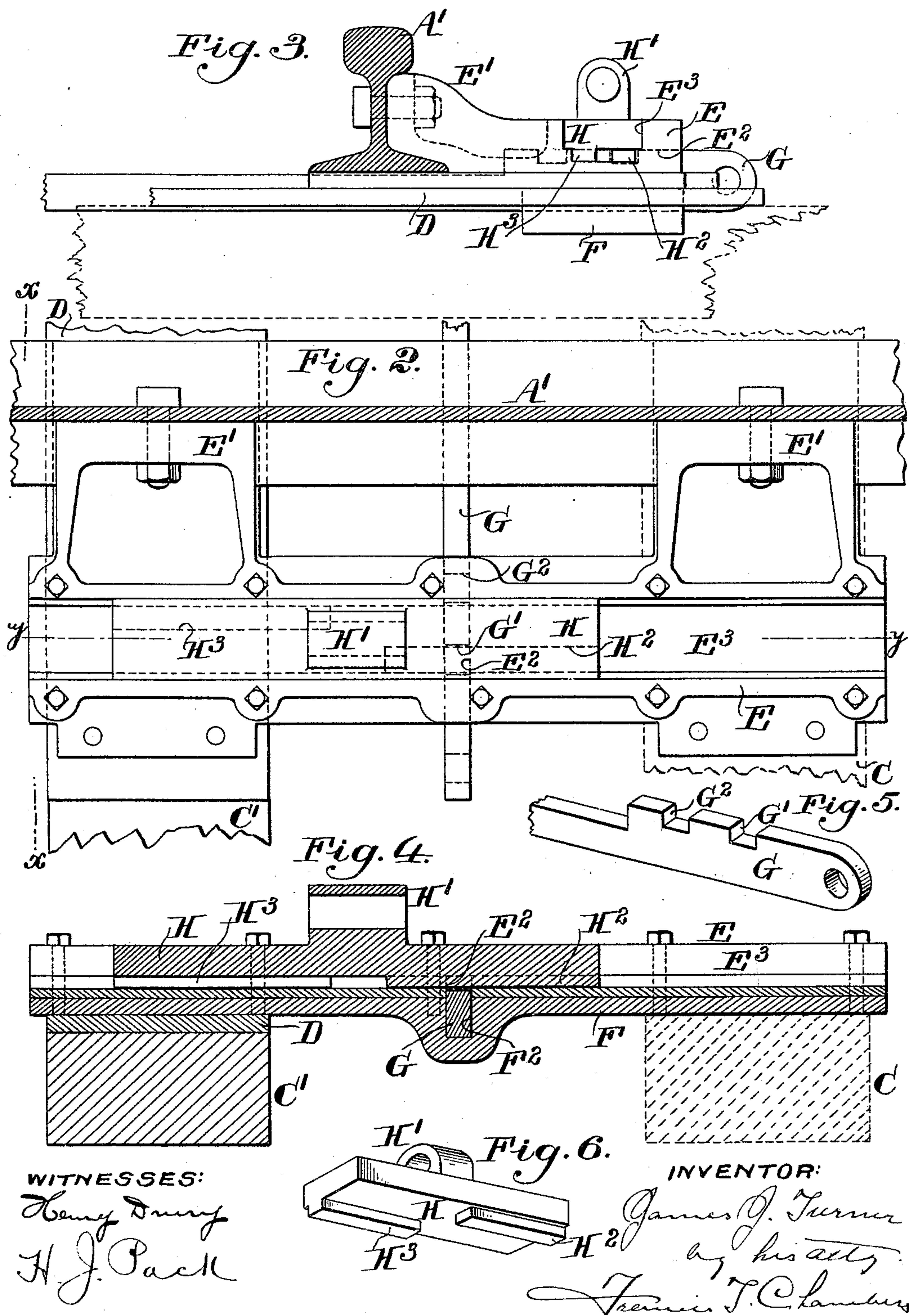
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4 Sheets—Sheet 2.

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4 Sheets—Sheet 3.

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Fig. 7.

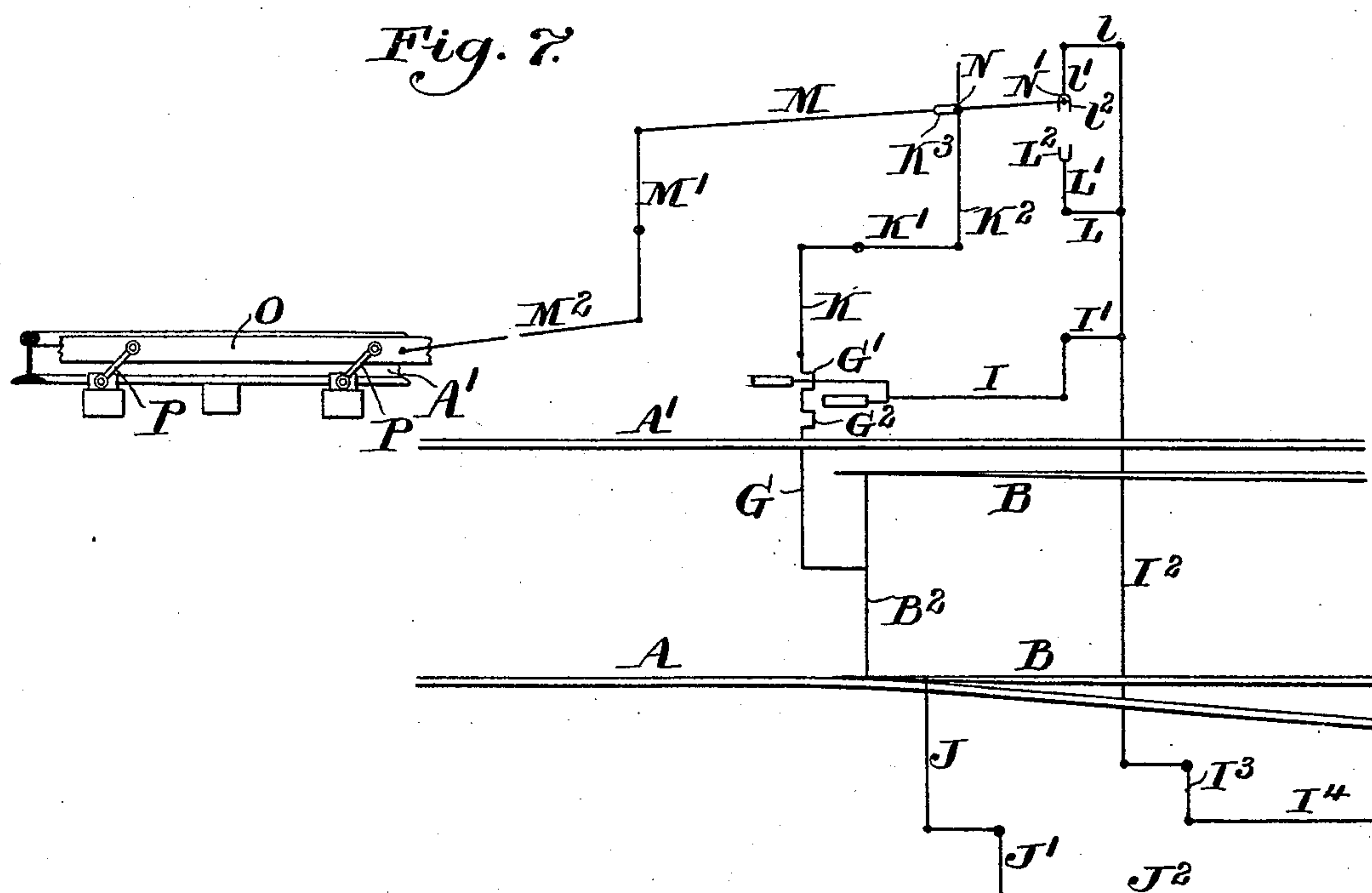
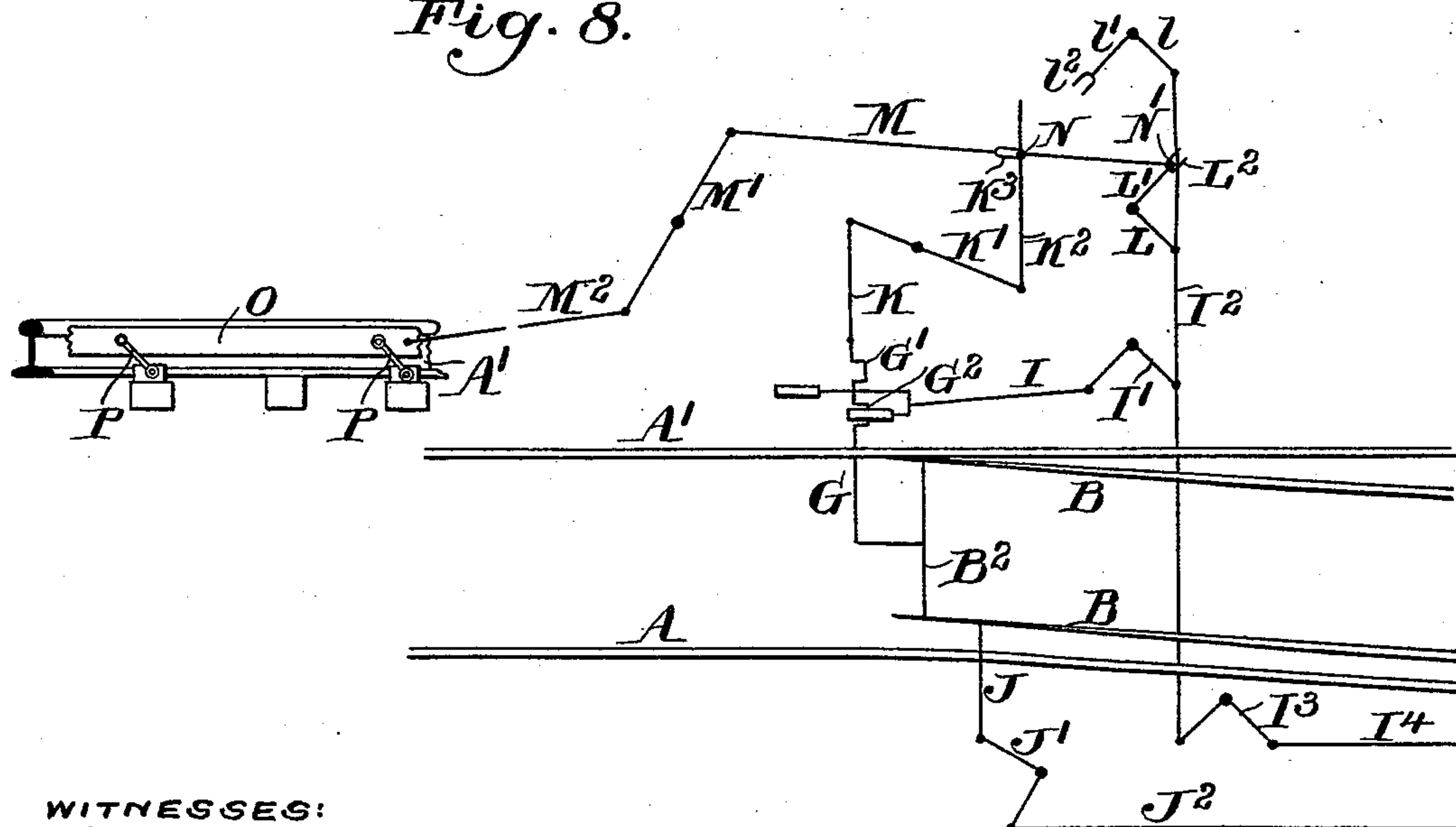


Fig. 8.



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(No Model.)

4 Sheets—Sheet 4.

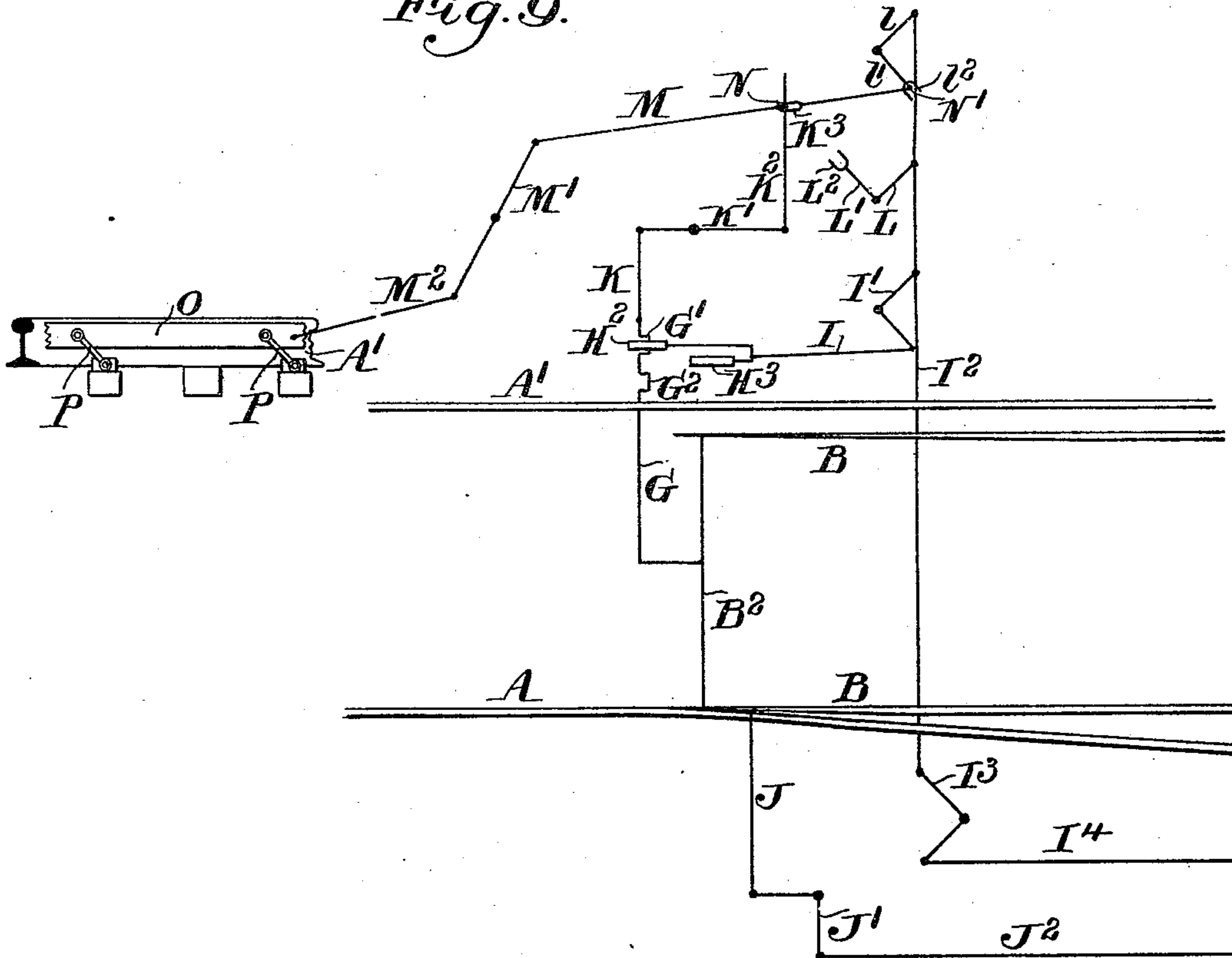
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Fig. 9.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES JEWETT TURNER, OF PITTSBURG, PENNSYLVANIA.

SWITCH INTERLOCKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 536,668, dated April 2, 1895.

Application filed December 27, 1894. Serial No. 533,059. (No model.)

To all whom it may concern:

Be it known that I, JAMES JEWETT TURNER, a citizen of the United States, residing in the city of Pittsburg, county of Allegheny, State of Pennsylvania, have invented a certain new and useful Improvement in Switch Interlocking Mechanism, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the interlocking system used on railroads in connection with switches, and particularly to the interlocking and combination of the switch-lock and detector-bar whereby the detector-bar is actuated at the same time that the switch is locked in position, the essential idea of my invention being to improve the combination between the lock and detector-bar and particularly to provide and arrange actuating mechanism by which each movement of the bar will be from and to positions beneath the rail, so that the bar never remains in a fixed position above the rail.

The nature of my invention will be best understood as described in connection with the drawings in which it is illustrated, and in which—

Figure 1, is a plan view of a switch, switch-lock, and detector-bar combined in accordance with my invention. Fig. 2, is a plan view on an enlarged scale showing the special construction of the switch-lock. Fig. 3, is a cross section on the line $x-x$ of Fig. 2. Fig. 4, is a longitudinal section on the line $y-y$ of Fig. 2. Fig. 5, is a perspective view of the end of the locking bar actuated by the switch; Fig. 6, a perspective view of the bolts operating to lock the bar which the switch actuates. Fig. 7, is a diagrammatic view illustrating the relative position of the parts in the position shown in Fig. 1, and while the switch is yet unlocked. Fig. 8, is a similar diagrammatic view showing the position of the parts when the switch is moved and locked in its new position, and Fig. 9, is a similar diagrammatic view showing the position of the parts, the switch being in the position indicated in Figs. 1 and 7, but the lock being in operation.

A and A' indicate the fixed or stock rails

of the switch, B B being the movable rails or switch points bound together at the ends by the transverse rods B' and B².

C C C, &c., are the railroad ties, C' indicating that tie which supports the switch iron indicated at D, and C² being a prolonged tie to which in addition to the rails other parts of the mechanism are secured.

E is what I may call the lock-box of the switch lock, it serving as a support and guide for the movable parts of the lock. It is provided with a longitudinal groove E³ in which moves the bolt carrying plate H, and with a transverse groove E² through which moves a locking bar G attached to and moved by the switch point. In the construction shown, a plate F is secured beneath the lock box E having in it a slot F² which connects and registers with the slot E², the said plate F serving to support and guide the bar G. It will also be noticed that the lock box E is provided with braces or extensions E' which abut against the stock rail A or A' and are secured to the said rail by bolts. This is a very advantageous construction, principally for the reason that it insures that the lock box will move with any movement of the stock rail, and thus will effectually prevent the engagement of the switch lock. This particular feature of construction, however, forms the subject matter of another application for Letters Patent filed by me on the 27th day of December, 1894, and bearing Serial No. 533,061.

It will be noticed that in the construction shown the lock bar G is provided with notches G' and G² on its upper face, and that the bolt carrying plate H is provided with downwardly extending lugs or bolts H² and H³, the arrangement being such that when the switch is in one position, the notch G' in the bar G will register with the bolt H² so that by a movement of the plate H the said bolt will enter the notch and lock the switch in position. In the other position of the switch the notch G² will register with the bolt H³ so that a movement of the plate H in the opposite direction will force the bolt into the said notch, and lock the switch in this position, the arrangement being such that each bolt can only enter its appropriate notch.

J J' and J² indicate portions of the switch actuating connection.

I is a rod connected with the plate H through the perforated lug H' and through the bell-crank lever I' with the connection I² I³ I⁴ by which motion is given to the switch lock.

Besides moving the switch lock I cause the switch lock connection to give motion also to a device which may be generally described as consisting of two clutches so connected with the actuating line that with each movement of the said line connection they are moved in opposite directions. As shown these clutches consist of the forked ends L² l² of the bell-crank levers L' L and l' l, the arms L and l of which are pivotally secured to the rod I². The clutch carrying arms L' and l' are arranged opposite to each other and so that the clutches will register in the position they occupy when the switch is unlocked. It will be readily seen that by this construction each movement of the connection I² will cause the clutches to move in opposite directions.

In another application filed by me on the 27th day of December, 1894, and bearing Serial No. 533,060, I have described and claimed broadly the combination in the switch interlocking mechanism of the two clutches arranged to move in opposite directions in accordance with each movement of one of the interlocking elements, and operating upon another element of the system in one direction or another, as determined by a third element of the system. My present invention is limited to the use of those devices in combination with a detector bar which is shown in the drawings at O and which is provided with an operating connection indicated at M M' M². This connection is made engageable with either of the clutches by means of an adjustable clutch engaging device which, as shown, consists of a pin N' fastened to the end of rod M and engaged by the forked ends of the lever arms L' and l', the said pin being readily moved from one clutch to the other when the clutches register as indicated in Figs. 1 and 7, the position of the clutch engaging device being regulated by the position of the switch lock bar G by means of a connection K K' K², the rod K having connected with it a slot K³ into which extends a pin N secured to the rod M.

In the diagram Fig. 7 the detector bar is shown in the position which it occupies when the switch is unlocked, the other parts of the system being shown in the same relative positions they occupy in Fig. 1 of the drawings.

The diagram Fig. 9 illustrates the result effected by locking the switch in the position shown in Figs. 1 and 7. The rod I² to effect this locking is thrust upward, this movement drawing the bolt H² into the notch G' and forcing the clamp l² with which the rod M is engaged to the right, the result of which is to throw the detector bar over to the posi-

tion indicated in Fig. 9, the bar being, of course, as is usually the case, secured on the ends of rocking levers P P.

It will be readily seen that the movement of the switch from the position shown in Fig. 7 to that shown in Fig. 8 will have the effect of drawing down the rod M until its terminal pin N' engages with the clutch l². To lock the switch in this new position the rod I² is drawn downward as shown in Fig. 8, and at the same time by reason of the action of clutch L² the rod M is drawn to the right as before, and the detector bar again forced from the position shown in Fig. 7 to that shown in Fig. 8.

It will be noticed that no matter which way the switch lock is moved the detector bar is always moved in the same direction, and always from the position below the rail to a position also below the rail, there being no position of rest in which the detector bar is left standing above the rail.

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

1. In a switch interlocking system a detector bar in combination with an actuating connection including a clutch engaging device, two clutches arranged to move simultaneously in opposite directions and actuated in a fixed relation to one of the interlocked elements of the system, and mechanism for operating the clutch engaging device operating in a fixed relation to another element of the system to engage the said device with one or the other of said clutches.

2. The combination with a railroad switch of switch locking mechanism the bolts of which are actuated by an element other than the connection to throw the switch and moved in opposite directions to lock the switch in its alternate positions, clutches actuated simultaneously in opposite directions by each movement of the mechanism which actuates the lock bolts, a detector bar, connections for actuating said detector bar including a clutch engaging device which is adapted to engage either clutch at will, a connection from the switch to the clutch engaging device whereby with each movement of the switch the said device is shifted from one clutch to the other, and means whereby the switch locking bolts and the clutches are simultaneously operated, all substantially as and for the purpose specified.

3. In combination with the movable rails of a switch a locking bar G moved by said rails, a bolt or bolts as H² H³ adapted to lock the bar G in either correct position of the switch, a pair of oppositely disposed levers L' l' having clutches as L² l² at their ends which clutches register with each other when the switch is unlocked, power transmitting mechanism whereby the lock bolt or bolts are moved and whereby, also, the levers L' l' are simul-

taneously moved in relatively opposite directions, a detector bar, a power transmitting connection having a device adapted to engage the clutches and arranged so that it can be
5 shifted from one to the other while they register and a connection from bar G whereby said clutch engaging device is shifted from

one clutch to the other at each shift of the switch rails.

JAMES JEWETT TURNER.

Witnesses:

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CHARLES A. GEEGAN.