

(No Model.)

2 Sheets—Sheet 1.

H. TRACY & H. NOBLE.  
SELF CLOSING AND SELF LOCKING SWITCH.

No. 507,187.

Patented Oct. 24, 1893.

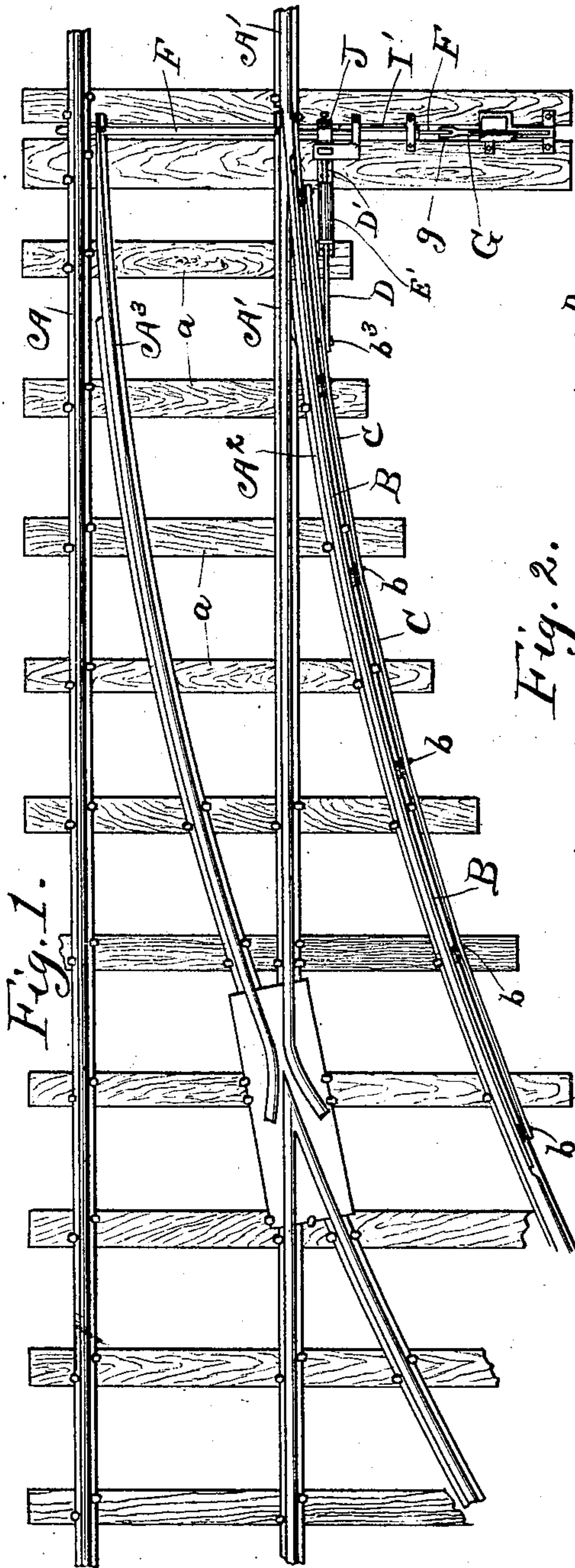


Fig. 1.

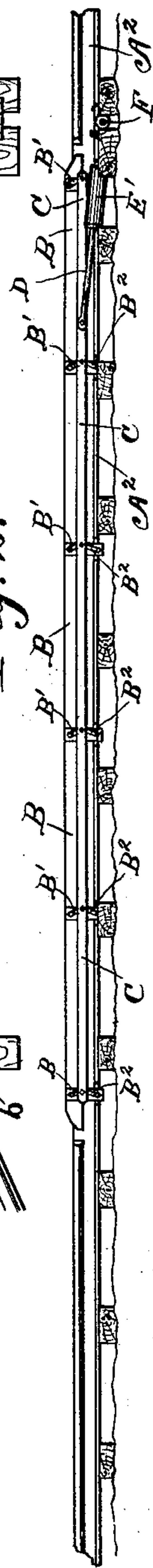


Fig. 2.

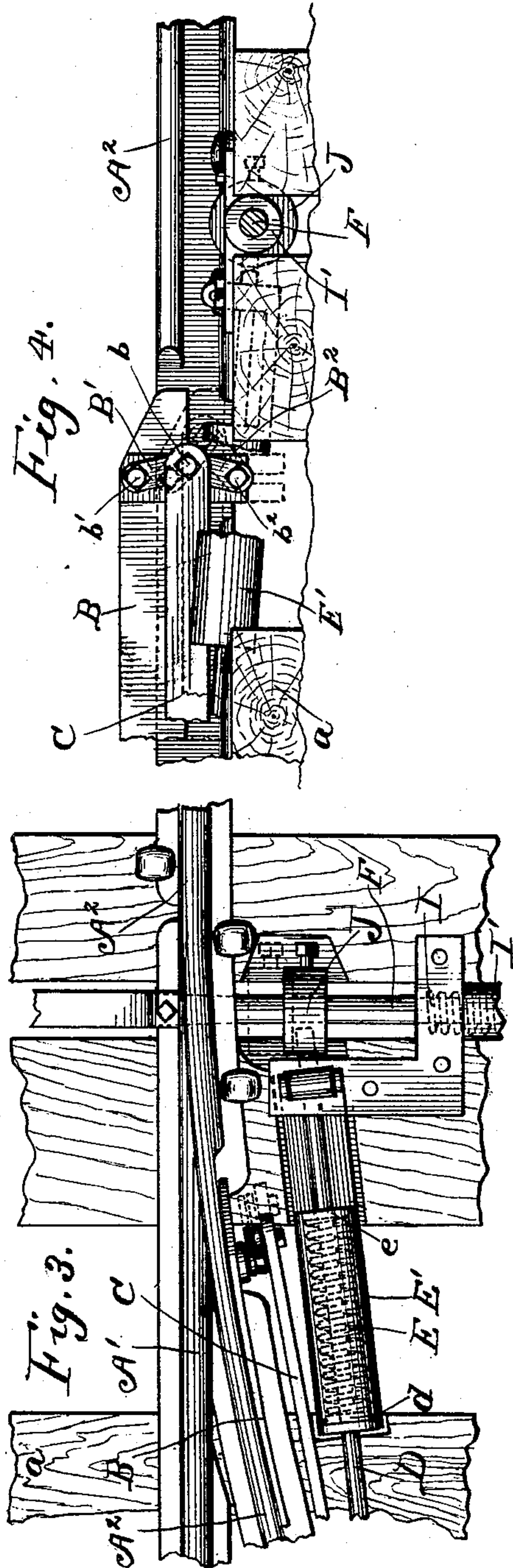


Fig. 3.

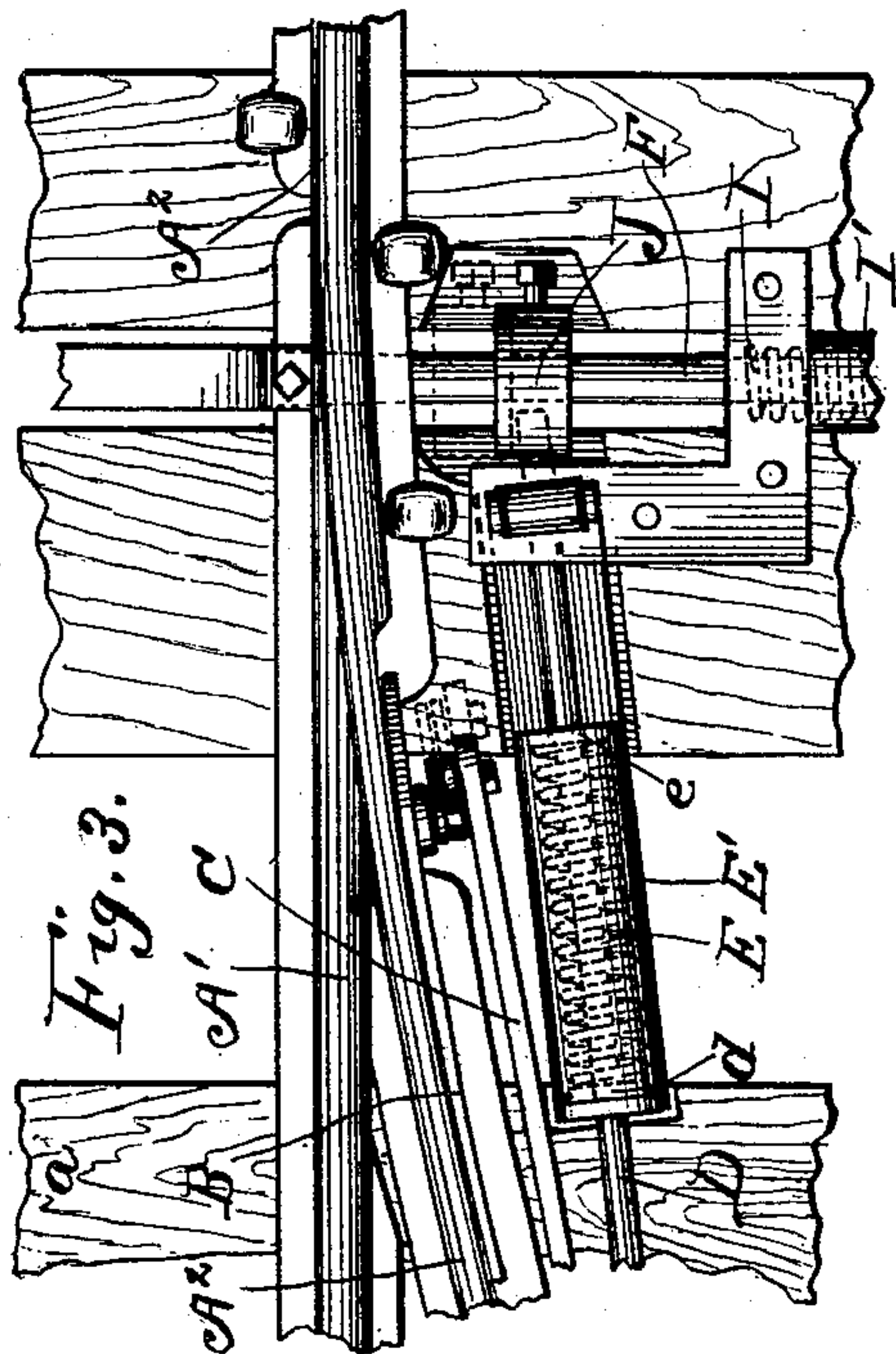


Fig. 4.

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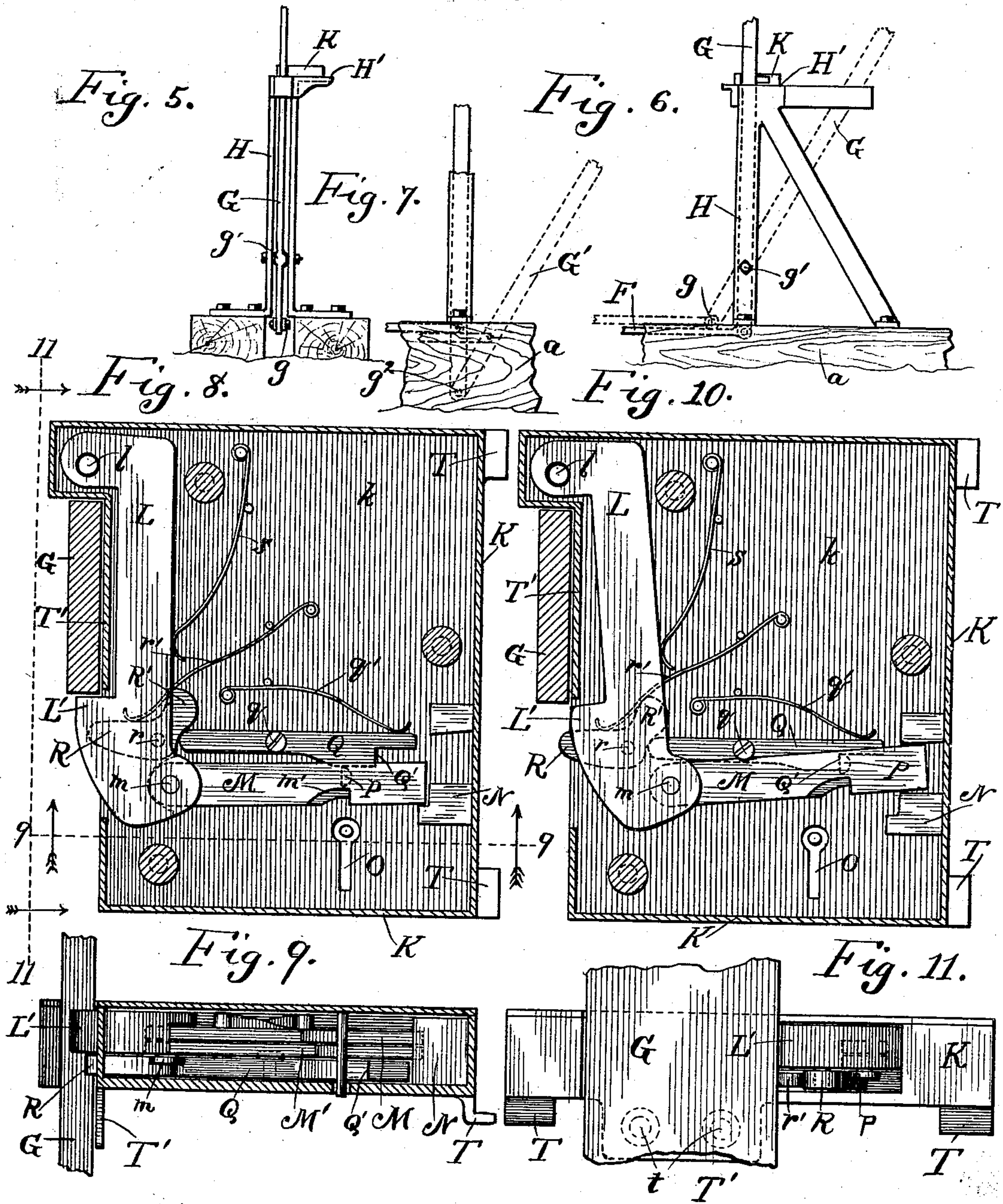
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R. J. Jacker,  
Flora L. Brown.

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Henry Tracy and  
Hiram Noble,  
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# UNITED STATES PATENT OFFICE.

HENRY TRACY, OF CHICAGO, AND HIRAM NOBLE, OF FULTON, ILLINOIS.

## SELF-CLOSING AND SELF-LOCKING SWITCH.

SPECIFICATION forming part of Letters Patent No. 507,187, dated October 24, 1893.

Application filed August 20, 1892. Serial No. 443,631. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY TRACY, a resident of the city of Chicago, in the county of Cook, and HIRAM NOBLE, a resident of Fulton, in the county of Whiteside, State of Illinois, have jointly invented certain new and useful Improvements in Self-Closing and Self-Locking Switches, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description, sufficient to enable those skilled in the art to which it appertains to make, understand, and use the same.

Our invention relates to railroad switches; and the purpose of the invention is to obtain a railroad switch which, when properly unlocked, can be opened to admit the passage of a train of cars from the main track, as it is termed, to a siding, or to another main track, and which will remain open while the train is passing over or through it and will, as soon as the train has passed over or through it automatically close, and lock in a closed position, so that the main track will again be open, or in condition for the passage of trains thereon.

A further purpose of our invention is to obtain a switch of the kind named which will be simple in design, not liable to get out of repair, and economical in construction.

In the drawings referred to as forming a part of this specification Figure 1, is a plan view of a portion of a main track and siding or switch track extending therefrom, and a plan view of our device attached to such switch; Fig. 2, a side elevation of the several parts illustrated in Fig. 1; Fig. 3, a plan view on an enlarged scale of a portion of one rail of the main and switch track and of that portion of the self-locking switch embodying our invention which is attached to the ties and rail of the track; Fig. 4, a side elevation of the several parts illustrated in Fig. 3; Fig. 5, a rear elevation of a switch stand adapted to be used in the construction of the self-locking switch embodying our invention; Fig. 6, a side elevation of such switch-stand; Fig. 7, a side elevation of a modification of such switch-stand; the modification being equally well adapted to be used in the construction

embodying our invention as is the switch-stand illustrated in Figs. 5 and 6; Fig. 8, a plan view with the top of the casing removed of a self-locking lock well adapted to form an element of the construction embodying our invention; the lock holding the lever of the switch-stand closed and locked in such closed position; Fig. 9, a cross-section on line 9—9 of Fig. 8, viewed in the direction indicated by the arrows; Fig. 10, a plan view, with the top of the casing of the lock removed, of the lock illustrated in Figs. 9 and 10, the lock being opened; and Fig. 11, an elevation of such lock viewed from line marked 11—11, in Fig. 8.

The ordinary or normal position of the several parts of the self-locking switch embodying our invention is illustrated in Fig. 1, with the main road open for the passage of trains in either direction, and the lever of the switch-stand locked so that such switch cannot be changed by others than those having the proper key therefor. When the switch-stand is placed on the side of the track as illustrated in Fig. 1, the switch-stand shown in Figs. 5 and 6 is used; and if placed on the opposite side of the track the switch-stand shown in Fig. 7 is used. The rails being in the position shown in Fig. 1 the switch-stand lever will be the left hand one of the two positions indicated in Fig. 6 of the drawings, the several parts attached to the ties in the position illustrated in Figs. 3 and 4, and the lock in the position illustrated in Figs. 8, 9, and 11. To open the switch, the lock is brought preferably by a removable key into the position illustrated in Fig. 10, when the switch lever is released and the switch may be opened thereby. When opened by the switch lever the switch must be held open by such lever until the train passing over the rails of the switch to or from the main track is well on the switch rails, when the lever can be released and such train will hold the switch rails open until the train has passed entirely over the switch when the switch will automatically close and lock in such closed position.

In the description of the several devices and constructions whereby we obtain the self-locking switch sought by us, working as described,



the same letter of reference is used to indicate the same part where more than one view thereof is shown.

A, A', are the rails of the main track; and  
5 A<sup>2</sup>, A<sup>3</sup>, are the switch rails of the siding.

a, a, are ties or sleepers.

B, is a rail extending parallel with switch rail A<sup>2</sup> and mounted on a series of levers B', B<sup>2</sup>, so that it is above the rail A<sup>2</sup> and can and  
10 will be depressed by the wheels of an engine or car running over such rail A<sup>2</sup>. The rail B is made of sufficient length so that some one of the several wheels underneath any car of the train will rest thereon, while the train is  
15 passing thereover, so that when a train is passing over the switch the rail B is depressed during the entire passage of such train thereover. Each pair of the series of levers B' B<sup>2</sup> on which rail B is mounted is joined together  
20 by a pivot lettered b. Lever B' is fulcrumed to the rail B by pivot b', and lever B<sup>2</sup> is fulcrumed to the rail A<sup>2</sup> by pivot b<sup>2</sup>, which extends to and is secured on the base of such rail A<sup>2</sup>. By this means, what is known in the  
25 art as a toggle joint is obtained in each couple of the levers B', B<sup>2</sup>, forming the series supporting the rail B, and by the depression of the rail B from a car wheel resting thereon on any part thereof a horizontal movement is  
30 obtained in the pivot b, connecting levers B', B<sup>2</sup>.

C, is a longitudinally movable bar mounted on such pivots b, b. By this means when the rail B is depressed, longitudinal bar C is  
35 moved longitudinally.

D, is a link connecting the longitudinally movable bar C with the longitudinally movable locking-bar D'.

d, is an abutment on locking-bar D'; and  
40 E, is a spring one end of which abuts against abutment d, the other end thereof abutting against end e of casing E'. The spring E tends to hold the longitudinally movable locking-bar D' in a retracted position and when such  
45 locking-bar D' is in a retracted position the rail B is held above the rail A<sup>2</sup> by means of link D connecting such locking-bar D' with the longitudinally movable bar C, as above described; bar C being mounted, as stated, on  
50 levers B', B<sup>2</sup>, fulcrumed on pivots b, b, b, respectively.

The point of switch rail A<sup>3</sup> is connected to the point of rail A' forming part of the main track, in the ordinary manner, by tie F. Tie  
55 F extends at one side of the tracks underneath switch rail A<sup>2</sup>, (but not connected therewith,) to switch lever G and is connected to such switch lever by pin g. Where the switch lever G is fulcrumed to the switch stand H  
60 between the handle of such switch lever G and the pivot g, (as on pivot g', Figs. 5 and 6,) such switch lever G need extend but little below the surface of the ties a, a; but where the switch lever is fulcrumed to the switch  
65 stand by pivot g<sup>2</sup> as in Fig. 7, such switch lever (lettered G' in Fig. 7), extends consider-

ably below the upper surface of the tie a, and for this reason, I prefer the construction illustrated in Figs. 5 and 6. On the connecting rod F there is placed spring I, one end whereof  
70 abuts against a stop on such rod F, and the other end against a rigid stop. Spring I tends to hold tie-rod F and rails A', A<sup>3</sup>, in the position illustrated in Fig. 1, and such spring I is made sufficiently strong to insure its return-  
75 ing such rails A', A<sup>3</sup>, to the position in which they are illustrated in Fig. 1, when such tie-rod F and rails A', A<sup>3</sup> are moved from the position there shown and then released.

J, is an abutment secured rigidly on tie-rod  
80 F so that the longitudinally movable locking-bar D' will, when forced forward, by the depression of the rail B in the manner hereinbefore described, abut against the face there-  
85 of, and such abutment J is so placed on the tie-rods F, F', that when rail A<sup>3</sup> is forced against rail A, and rail A' is forced away from rail A<sup>2</sup> by the movement of the switch lever G, from the position in which it is illustrated in  
90 Fig. 6 by full lines, to the inclined position in which it is illustrated in said figure by broken lines, the longitudinally movable locking-bar D' will extend to one side of such abutment J when the rail B is depressed and will thereby  
95 lock such tie-rod F and rails A' A<sup>3</sup>, in the position last described and thereby maintain an open switch so that an engine or train moving toward the left, (Fig. 1,) on the main  
100 track, will pass from such main track to the siding.

In the operation of this switch, the switch lever G must be held by the switchman or other person operating it, in about the position illustrated by the broken lines in Fig. 6,  
105 until some one wheel, either of the engine or of a car forming part of the train is upon rail B, when, by the pressing down of such rail by such wheel, the longitudinally movable locking-bar D', will extend forward to one side of the abutment J on tie-rod F, (as indicated by  
110 dotted lines in Fig. 3,) and thereby maintain the switch open with the point of rail A' away from rail A<sup>2</sup> and the point of rail A<sup>3</sup> in contact with rail A. When the last wheel of the train passing over the switch has passed be-  
115 yond the rail B such rail will be elevated and the longitudinally movable locking-bar D' retracted by spring E, and then spring I will automatically force rails A', A<sup>3</sup>, into the position illustrated in Fig. 1, by such spring I  
120 moving such tie-rod F.

I', is a casing covering spring I and protecting it from the weather and dirt.

A self-closing switch is obtained in the manner hereinbefore described.  
125

In order to lock the switch in position when closed by the spring I, as described, the switch lever G may be locked by an ordinary pad-  
130 lock as is now done, but, in order to obtain a self-locking, as well as self-closing switch, we prefer to employ with the above described constructions a lock constructed as illustrated



in Figs. 8, 9, 10 and 11 of the drawings, such lock being properly attached to table H' of the switch stand H, either on the upper face of the table or on the under side thereof, as preferred. We have shown the lock as attached to the upper face of such table H' in Figs. 5 and 6 where such lock is lettered K. The essential features of this lock, so far as the same relate to this application will be hereinafter described; but such inventions as enter into the lock form the subject matter of application Serial No. 463,525, filed February 24, 1893, as a division of this application. The essential features referred to consist of locking bolt L, having hook end L', adapted to engage with switch lever G when such switch lever is in position to open the main track and the locking bolt is in an extended position; retracting bar M, M', respectively pivoted, at one end, on locking bolt L by pin m, and abutting at the other end against abutment N; notch m' in bar M and abutment P on such bar; lever Q yieldingly held against abutment P; stop Q' on lever Q, adapted to engage with abutment P; spring S tending to force locking bolt L into an extended position; tripping lever R, fulcrumed on pivot r and yieldingly held by spring r' in the position illustrated in Figs. 8 and 10, whereby when the locking bolt L is retracted by a key it will be retained or held in a retracted position until the switch lever G, in returning to its initial position, (with main track open for trains to pass,) turns pivoted lever R so that the end R' trips lever Q from abutment P and the locking bolt L is automatically forced into an extended position by the spring S.

The lock K, is, of course, by us attached to the table H' of the switch stand H in such manner as not to be removable therefrom, when the switch is closed, without breaking such lock or such switch stand, or the casing thereof. We have shown the lock K attached to the horizontal table H' by lugs T, T, forming part of the casing of the lock extending into holes therefor in the horizontal table H', and projection T' extending downward into the slot in the horizontal table H' in which the switch lever G moves; and screws t, t, extending through projection T' into the switch table H'. We do not, however, confine ourselves to this method of attaching the lock to the switch stand, as any suitable means may be employed.

Where no lock is used, it will be evident that a self-closing switch is obtained by us. Where a lock is used, other than the lock illustrated in Figs. 8, 9, 10 and 11, that is, where an ordinary lock, as a pad-lock, is used a self-closing switch is obtained, which can be locked, and where the lock illustrated in such Figs. 8, 9, 10, and 11 is used, a self-closing and self-locking switch is obtained, and the complete object or purpose of our invention is thereby attained, that is, a self-closing and self-locking switch is secured. It will

be evident however, that where the switch is used in localities in which it is not liable to be tampered with, a self-closing switch will serve the purposes of preventing the switch from being accidentally left open by a switchman, and a self-locking switch will not be required, but ordinarily we prefer to use both a self-closing and self-locking switch.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a self closing switch, a switch lever, a tie rod connecting it with the switch rails, a spring one end whereof abuts against such tie-rod and the other end against a stationary stop, whereby such spring will tend to hold the switch rails in a closed position, so that the main track is open for the passage of trains thereon, a stop on such tie-rod, a movable locking bar yieldingly held away from the stop on the tie-rod but adapted to be forced into position behind such stop and hold the switch rails open, a horizontal bar parallel with one of the switch rails and yieldingly held above the tread of the switch rail by a toggle-joint, and a link connecting such toggle-joint with the locking bar yieldingly held from the stop on the tie-rod connecting the switch lever with the switch rails; substantially as described.

2. In a self closing and self locking switch, a switch lever, a tie rod connecting it with the switch rails, a spring one end whereof abuts against such tie rod and the other end against a stationary abutment, whereby such spring will tend to hold the switch rails in a closed position so the main track is open for trains, a stop on such tie-rod, a movable locking bar yieldingly held away from the stop on the tie-rod but adapted to be forced into position behind such stop and hold the switch rails open, a horizontal bar parallel with one of the switch rails and yieldingly held above the tread of the switch rails by a toggle joint, a link connecting such toggle joint with the locking bar yieldingly held from the stop on the tie rod connecting the switch lever with the switch rails, and means for automatically locking the switch lever in its initial position as it returns thereto, consisting of a locking bar maintained in a retracted position by a lever and a tripping device engaging with the switch lever and with the locking lever; substantially as described.

3. The combination, in a switch stand having a bearing for the shaft of the switch lever, of a switch lever connected to the switch rails journaled in the bearing, means for automatically returning the lever to position so that the main line is open for trains, a lock case fixed in the switch stand, a locking bolt therein longitudinally movable in a plane transversely to the plane of movement of the switch lever and adapted to be retracted by a key, and only by a key, and to be held in a retracted position by a lever act-

ing as a tumbler, and to be held in like manner in an extended position, and a pivotal lever fitted to turn in a plane transversely to the plane of movement of the switch lever  
5 and to engage therewith, and adapted to move the tumbler lever and so release the locking bolt from its retracted position when

turned in one direction by the switch lever; substantially as described.

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