

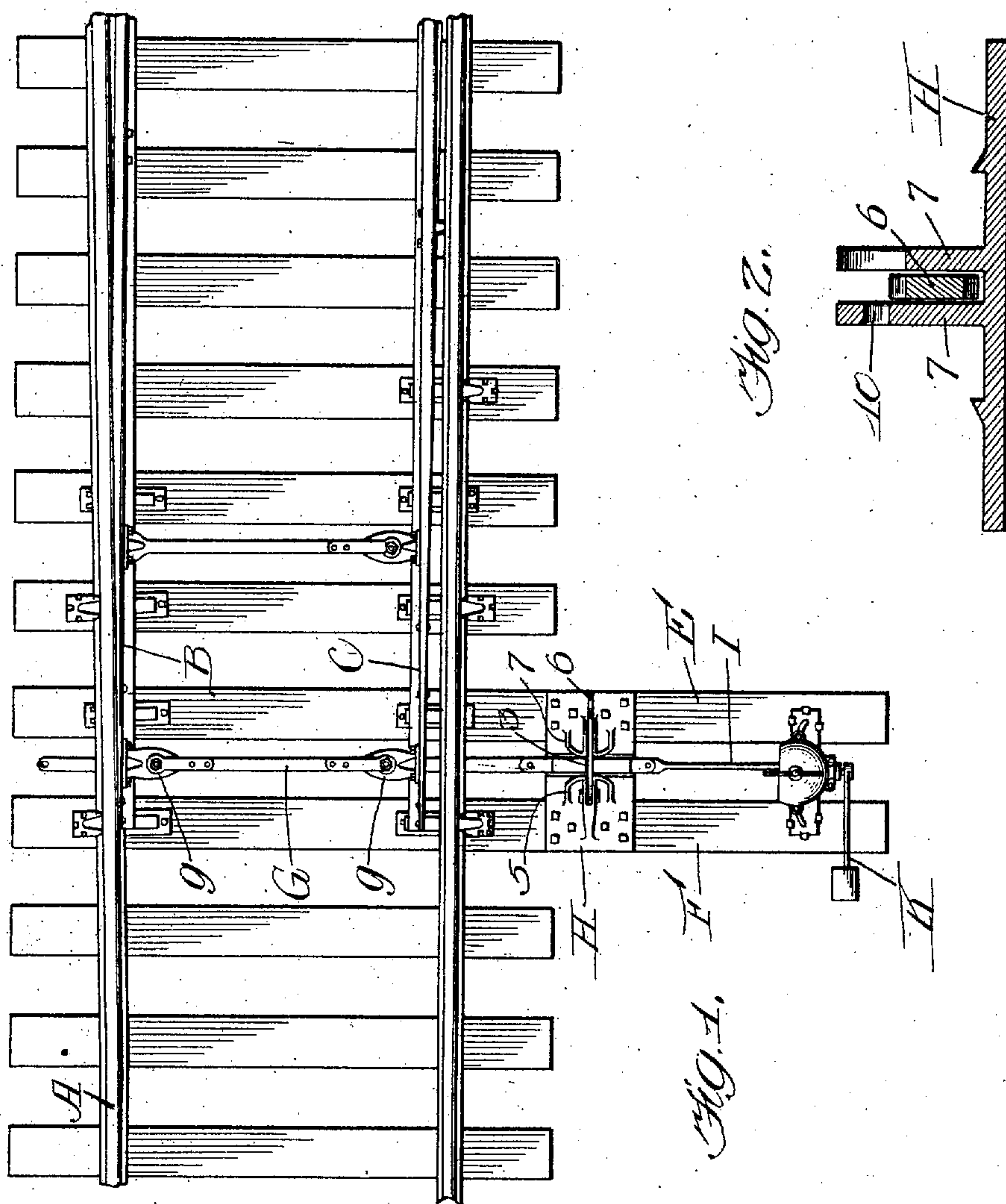
No. 850,207.

PATENTED APR. 16, 1907.

F. B. BRADLEY.  
SWITCH LOCK.

APPLICATION FILED SEPT. 4, 1906.

2 SHEETS—SHEET 1.



Witnesses:  
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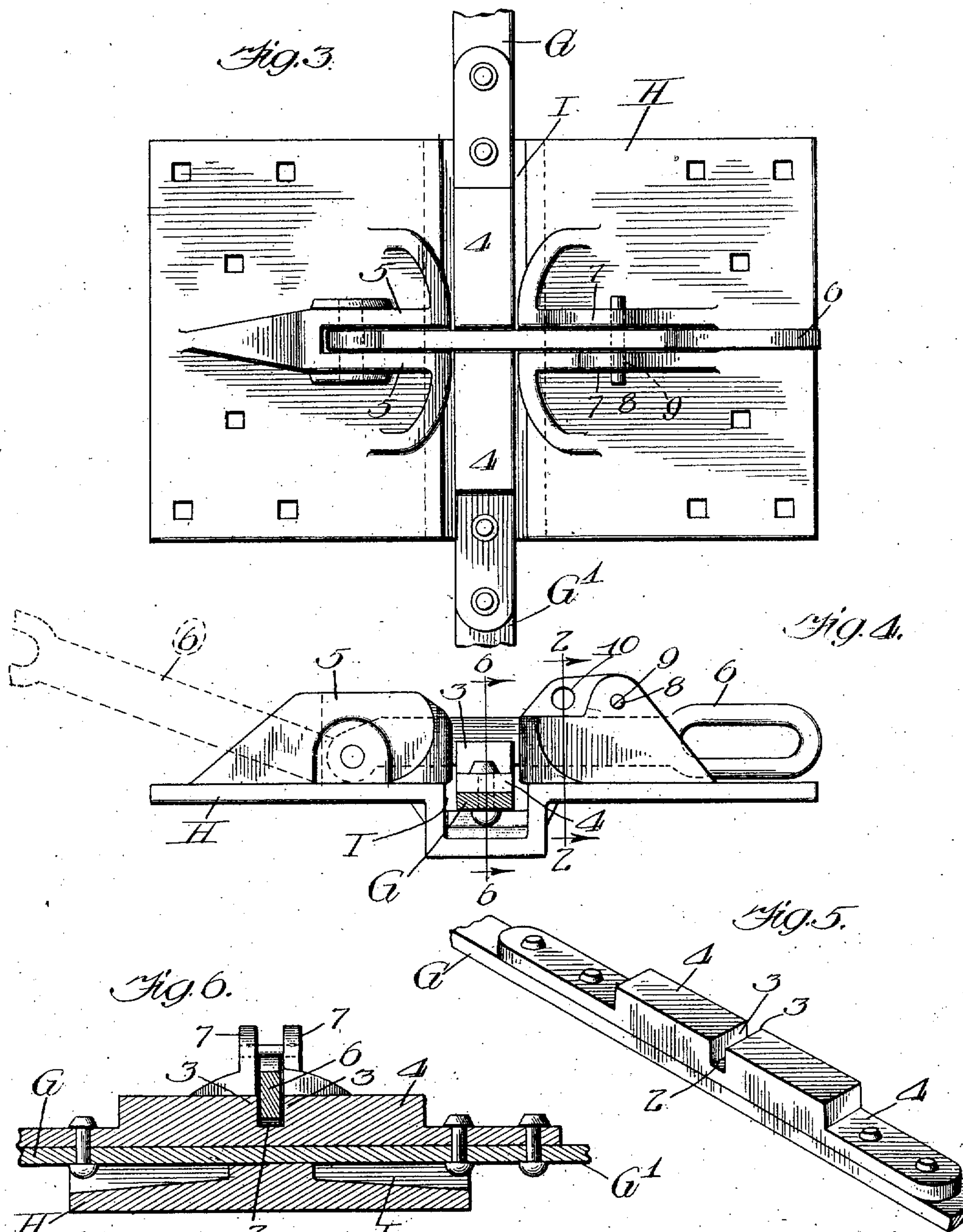
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# UNITED STATES PATENT OFFICE.

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## SWITCH-LOCK.

No. 850,207.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed September 4, 1906. Serial No. 333,220.

*To all whom it may concern:*

Be it known that I, FRANK B. BRADLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Switch-Locks, of which the following is a specification.

My invention relates to improvements in locking devices for railway-switches

It is well known that the movable rails of a railway-switch are a constant source of danger and a frequent cause of accident in the operation of railways. One of the most fruitful cause for accidents in this connection is the character and quality of the switch-stands used and the weakness of the connections between the switch-stand and the movable switch-rails. As ordinarily constructed the movable rails are thrown manually by means of a lever mounted on a switch-stand and connected with a connecting-rod which in turn connects with the head-rod, which is securely attached to the movable switch-rails. When the switch is set in either position—for example, with the main-track point-rail held snugly against the switch-rail—there must be no lost motion or play between the main-track point-rail and the main-track rail, and as the locking of the movable rail in this position is dependent on devices connected with the switch-stand it is obvious that the pins or other connecting members between the locking means on the switch-stand and the point-rail must be under constant tension, resulting in a direct strain on the connecting-bolts. If therefore either the pivot-bolts or any of the members connecting the head-rod with the switch-stand shall give way, or if the switch-stand shall be broken, the movable rail is unlocked, and a wreck will result unless the defect is discovered in time. Inasmuch, however, as the greatest strain occurs when a train is passing over the switch the failure of the switch-stand or of any members connecting the switch-stand with the head-rod must almost certainly result in an accident. Indeed, it sometimes has happened that an animal struck by a train has been thrown against the switch-stand, thereby wrecking the switch-stand, unlocking the point-rail, and wrecking the train.

To overcome these dangers and to render railroad operation to that extent safer and life and property more secure, it is the object

of my invention to provide an inexpensive, reliable, and simply applied and operated lock, whereby either or both of the movable switch-rails may be positively locked in a given position without reliance upon the switch-stand or the members connecting the switch-stand with the head-rod for any service other than the mere throwing of the switch-rails. To attain these ends, I provide a manually-operated positive lock which directly engages the head-rod of the switch.

A convenient embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a plan view of a split switch provided with one form of my invention. Fig. 2 is a sectional detail on the line 2 2 of Fig. 4 looking in the direction indicated by the arrows. Fig. 3 is an enlarged plan view of the switch-locking device. Fig. 4 is an elevational view of Fig. 3. Fig. 5 is a perspective view of the locking portion of the head-rod. Fig. 6 is a sectional view on the line 6 6 of Fig. 4 looking in the direction indicated by the arrows.

Like letters of reference indicate the same parts in the several figures of the drawings.

A A indicate the main-track rails.

B is the movable main-track rail or, as shown, main-track point-rail.

C is the switch point-rail.

D is the switch-rail.

E and F indicate ties; G, the head-rod indicating the switch point-rail with the main-track point-rail; H, the locking device; I, the connecting-rod; J, the switch-stand; K, the switch-stand lever, and g indicates diagrammatically the adjusting device for adjusting the gage distance between the point-rails B and C—such, for example, as that shown in my Patent No. 649,267, May 8, 1900.

The head-rod G, it will be noted, which connects the point-rails with each other and which is either directly secured thereto or is connected therewith by means of a clip in a familiar manner, is preferably made to project a considerable distance at one side of the track, as shown at G'.

The locking device is shown more in detail in Figs. 3, 4, and 5 and consists in the form shown in the drawings of a saddle H, which is securely spiked to the ties E and F. This saddle is provided with a groove I, extending lengthwise of the ties and lengthwise of the



head-rod G. The head-rod G is provided with a transverse abutment. In the drawings this is shown as a double abutment 3 3, formed by the opposite walls of a groove 2, formed across the head-rod G. This abutment can be provided in any convenient manner either by forming this portion of the head-rod of a sufficient thickness to permit of a shoulder being cut upon it, or, as shown in the drawings, by firmly securing to the head-rod a reinforcing-piece 4. Pivoted to the saddle H, at one side of the head-rod G and between the ribs or abutments 5, is a bar or lever 6, adapted to be swung across the head-rod G in engagement with the abutment 3. When the bar 6 is so swung into engagement with the abutment on the head-rod G, I prefer that its free end shall also be brought into engagement with the ribs or abutments 7 7 on the saddle H, although, obviously, it is only necessary, so far as the strain incident to the locking of the point-rails are concerned, that there shall be one abutment 3 on the rod G and one abutment 5 or 5 and 7 on the saddle H. When the bar 6 is locked across the head-rod G, it may be held in position either by a pin 8 extending through holes 9 in the ribs 7 7, or a pad-lock may be inserted and locked through a larger hole 10 in one of the ribs 7. If it is desired to lock the switch in both open and closed position by this same means, it is obvious that the abutment of the head-rod against one of the middle abutments 3 3 will lock the switch in one position, while the abutment of the head-rod against one of the end abutments of the reinforcing-piece 4 will lock the switch in the opposite position, it only being necessary to have the space between said abutments correspond to the distance to be traveled by the rail. It will thus be seen that whether the familiar form of switch-stand or other device be used for manually throwing the switch, as soon as the switch is thrown—say with the main-track point-rail locked against the main-track rail—the bar 6 will be locked across the head-rod G, thus providing a positive lock for holding the switch-rail in the adjusted position, which lock is entirely independent of the connections between the head-rod G and the switch-stand. There is no tension on the connecting-pins otherwise than that incident to throwing the rail, and after the rail has been thrown and blocked the switch-stand and all parts connecting the head-rod with the switch-stand may be disconnected or wrecked without any possibility of unlocking the switch-rail.

In its simpler form my lock will be applied to locking but one of the switch-rails, preferably the main-track point-rail, the usual locking means being relied upon to lock the rails in the opposite position when the switch is open; but by providing either two abut-

ments on the head-rod G, spaced apart a distance equivalent to the throw of the switch, or by providing two of the bars 6 similarly spaced apart, the switch may be locked either in open or closed position, in which event all locking devices on the switch-stand will be dispensed with; but in that event practical conditions of service require that some adjusting means—such, for example, as that shown in my aforesaid patent, No. 649,267—shall be provided for adjusting the effective length of the head-rod G or the distance between movable point-rails to compensate for wear and to permit of the ready assembling and installation of the switch. Such variations are obvious from the description and drawings which have preceded, and while I have shown my invention embodied in one form which I consider preferable, because it combines with an absolutely safe and positive lock a minimum weight of material, a simplicity of construction permitting of ready installation and operation, and a shape and size which will permit the device to be attached to the ties immediately adjacent to and at one side of the track-rails, nevertheless neither such size, precise construction, or location are essential to my invention, which covers, broadly, the combination, with means for manually throwing a switch, of a positive lock directly engaging the head-rod of the switch.

While in the drawings I have shown the locking-bar squarely engaging the abutment on the saddle, my invention contemplates that, if desired, either the locking-bar or the abutment, or both, may be so tapered as to produce a wedging action when the locking-bar is forced into engagement with the abutment, so that the locking of the locking-bar in position may at the same time serve to tightly wedge the point-rail in locked position and to hold it under tension in that position.

I claim—

1. The combination with a pair of switch-rails, of a continuous head-rod connecting said rails and projecting beyond one side of the main track and provided with a transverse abutment on said projecting end, a stationary support, and a bar arranged to be manually brought into and out of engagement with said abutment on the head-rod and arranged to be secured to said support so as to prevent the longitudinal movement of said head-rod.

2. The combination with a pair of movable switch-rails, of the head-rod connected therewith, means on said head-rod for adjusting the distance between said movable rails, a switch-stand arranged to throw the rails and a lock arranged to engage said head-rod at either of two points whereby the switch-rails may be positively locked at either extreme position.



3. The combination with a pair of movable switch-rails, of a head-rod connected therewith and projecting at one side of the track and provided with a transverse abutment, of  
5 a saddle secured across a pair of adjacent ties and provided with a slot within which said head-rod travels, a bar pivoted to said saddle at one side of said head-rod and adapted to be swung transversely of said head-rod  
10 and into engagement with abutment upon said head-rod, and means upon said saddle for anchoring said bar when said bar is in engagement with the abutment on said head-rod.

15 4. The combination with a main-track point-rail of a switch, of the head-rod connected therewith and extending beyond one side of the track, a switch-stand, a connecting-bar between the switch-bar and the head-rod, means on the switch-stand for throwing  
20 the point-rail, and a lock for the point-rail comprising means connected with the road-bed and adapted to directly and positively engage the head-rod whereby the point-rail  
25 will be positively locked in position adjacent to the main-track rail.

5. The combination with a pair of movable switch-rails, of a head-rod connected therewith and provided with an abutment, a  
30 saddle secured to a stationary support, a bar arranged to be manually placed in engagement with said abutment on the head-rod,

and means for anchoring said bar to said saddle when said bar is in engagement with said abutment.

35 6. The combination with a pair of movable switch-rails, of a head-rod connected therewith and provided with an abutment, a stationary support, a bar pivoted thereto and arranged to be manually swung across  
40 said head-rod and into engagement with said abutment, and means for securing said bar, when in engagement with said abutment, so as to prevent longitudinal movement of said head-rod.

45 7. The combination with a switch-rail, of a head-rod connected therewith, a switch-stand, means on the switch-stand for moving the switch-rail, a bar connecting the head-rod with said switch-operating means, where-  
50 by said switch-operating means and said head-rod will at all times move simultaneously, and a lock for the switch-rail, said lock comprising a stationary support and means  
55 arranged to be manually brought into and out of positive engagement with said head-rod and with said stationary support, so as to prevent longitudinal movement of said head-rod.

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