

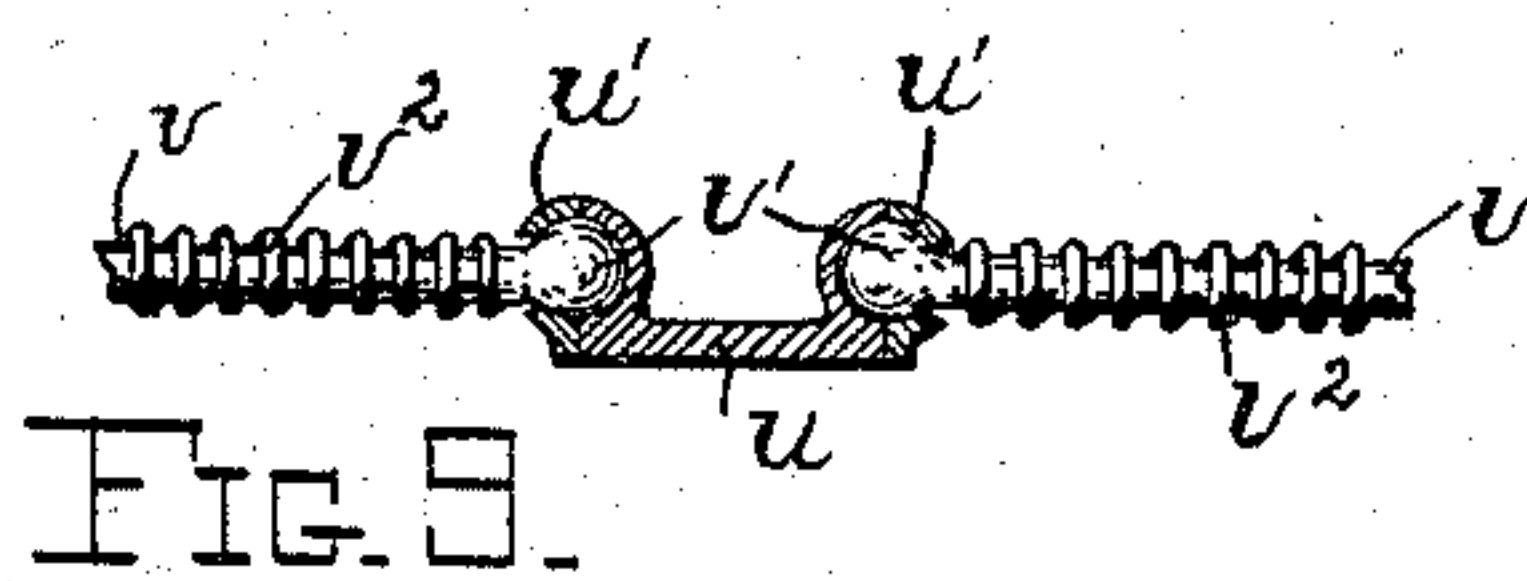
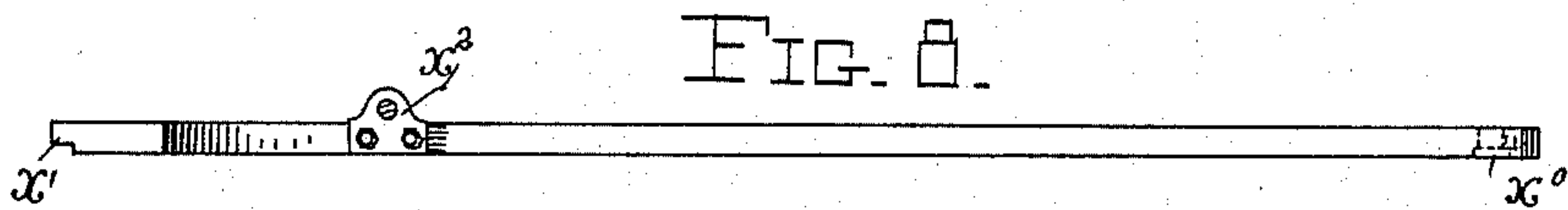
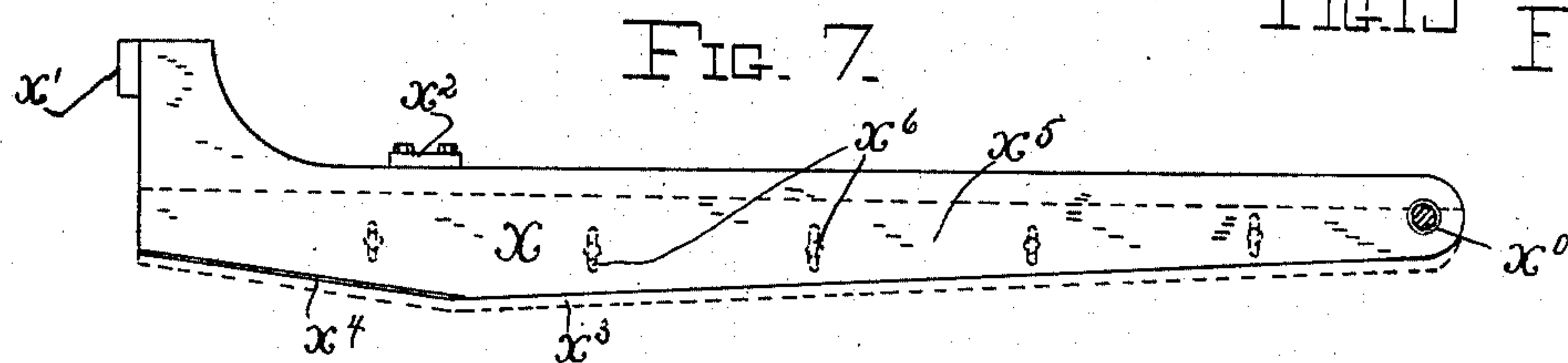
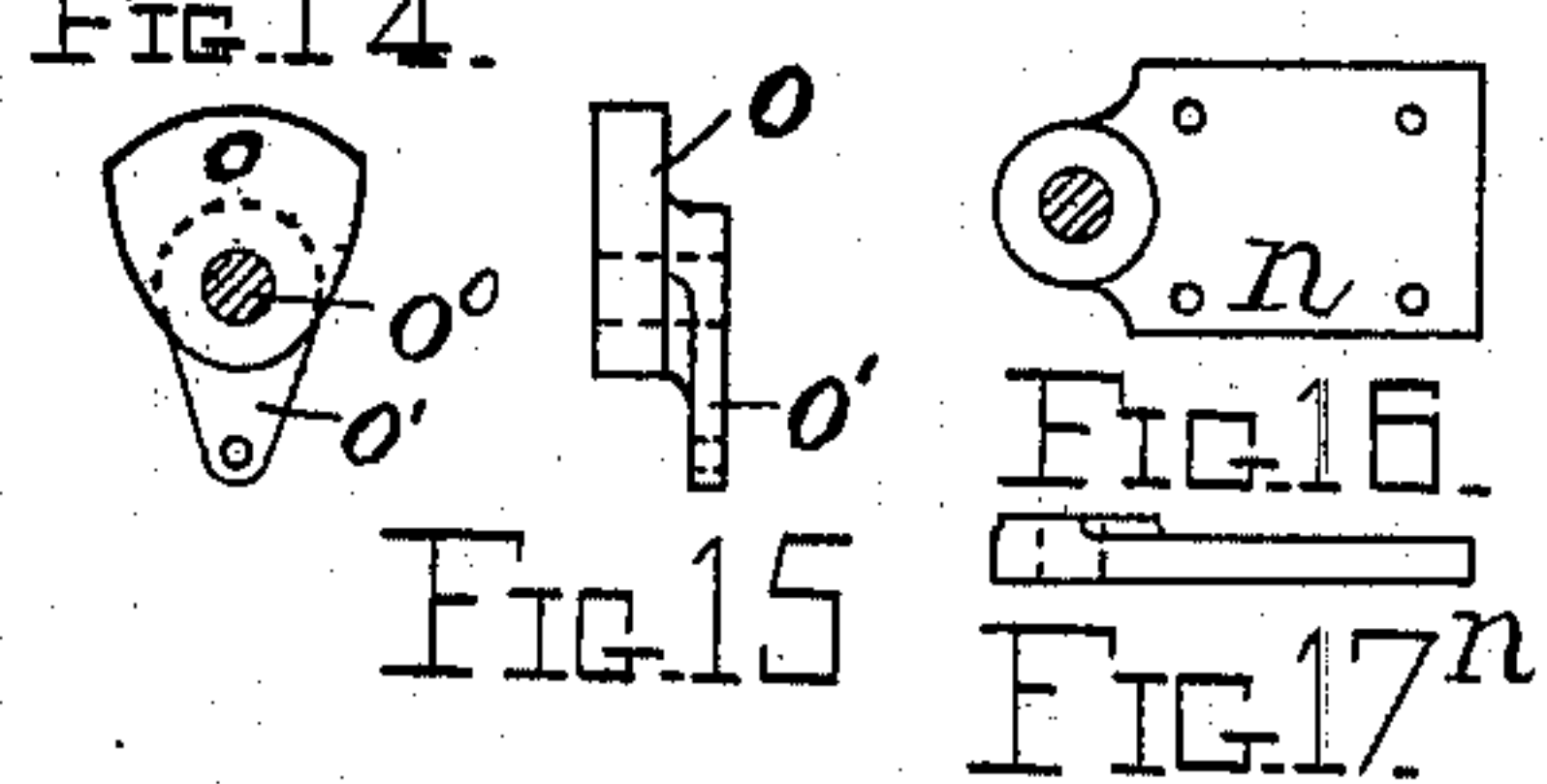
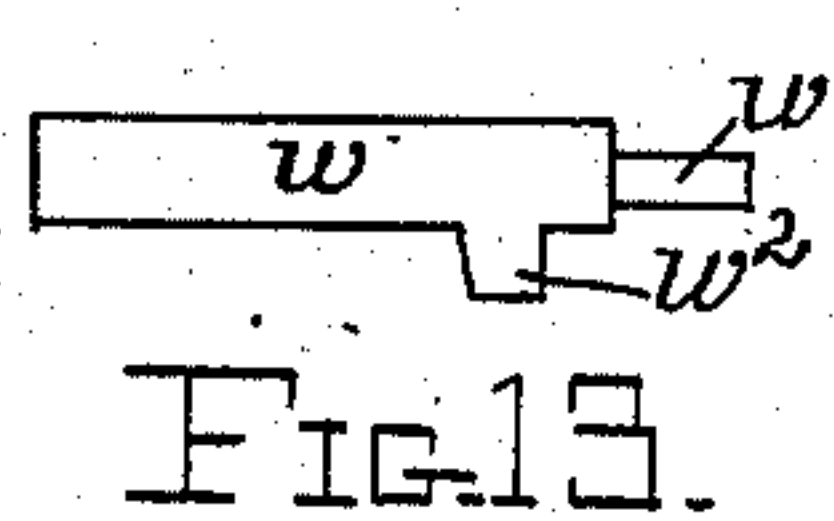
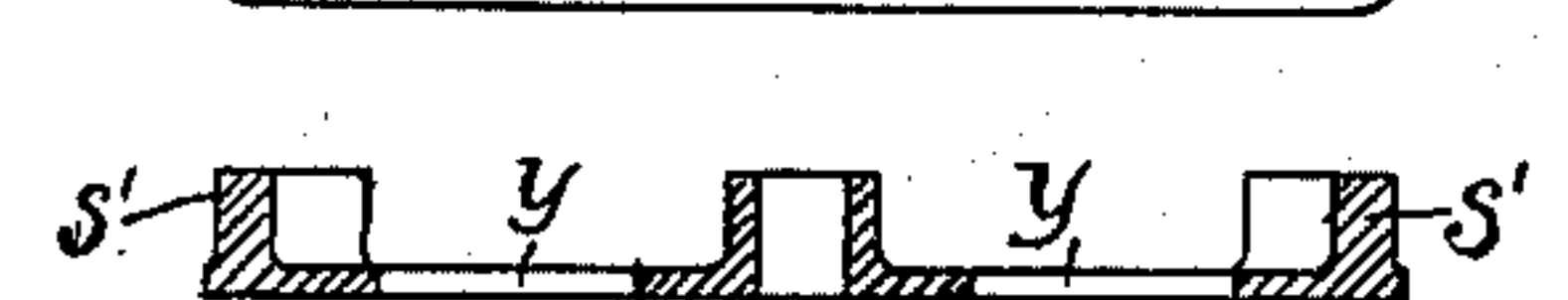
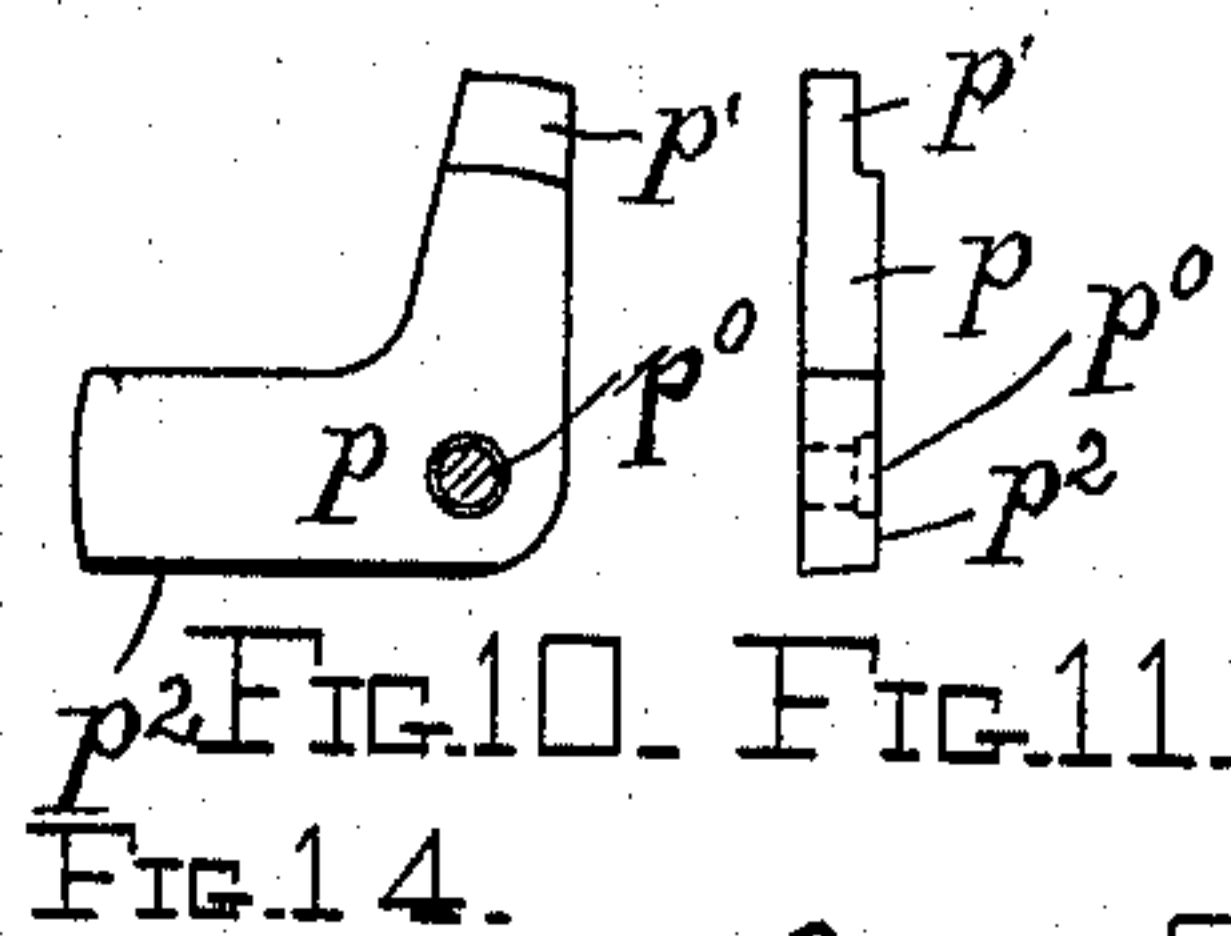
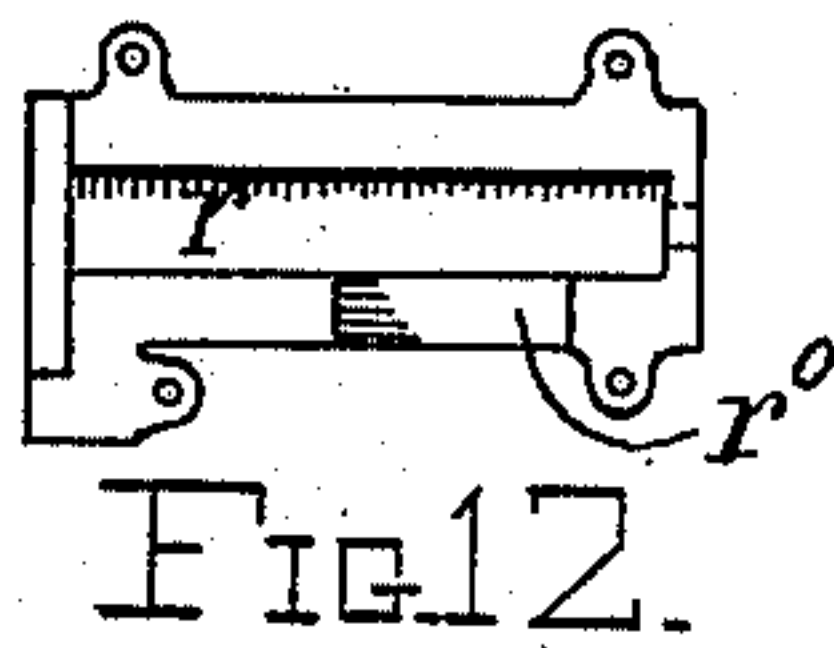
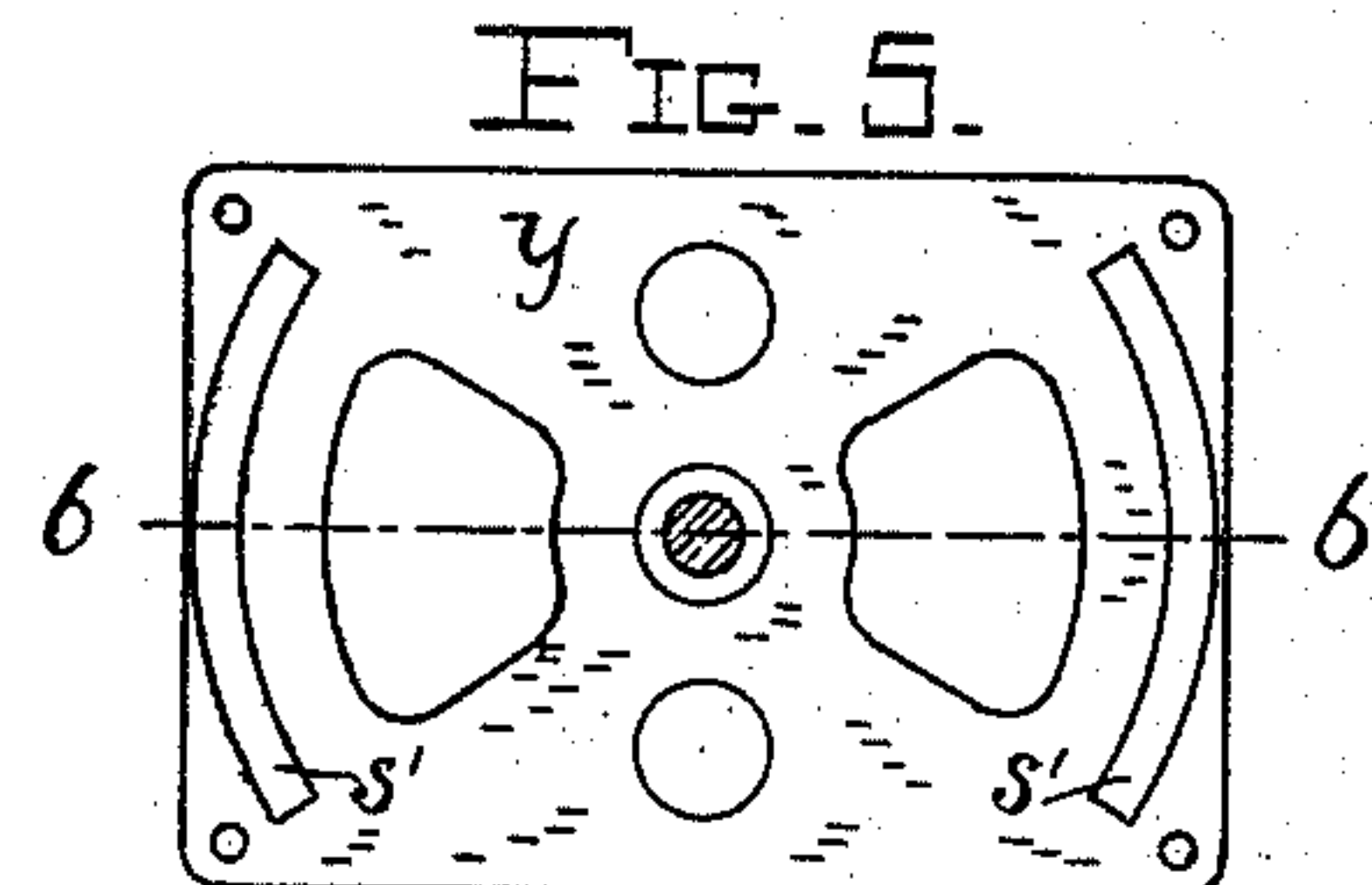
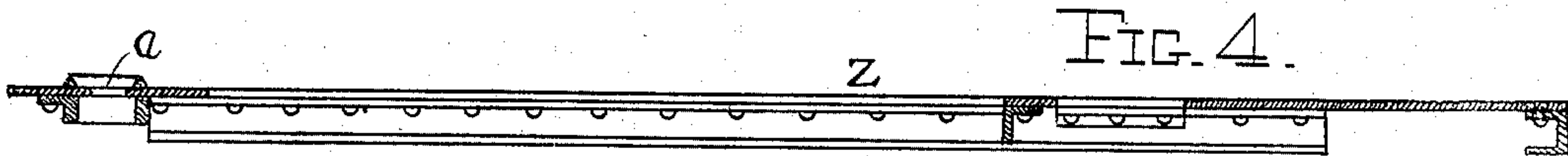
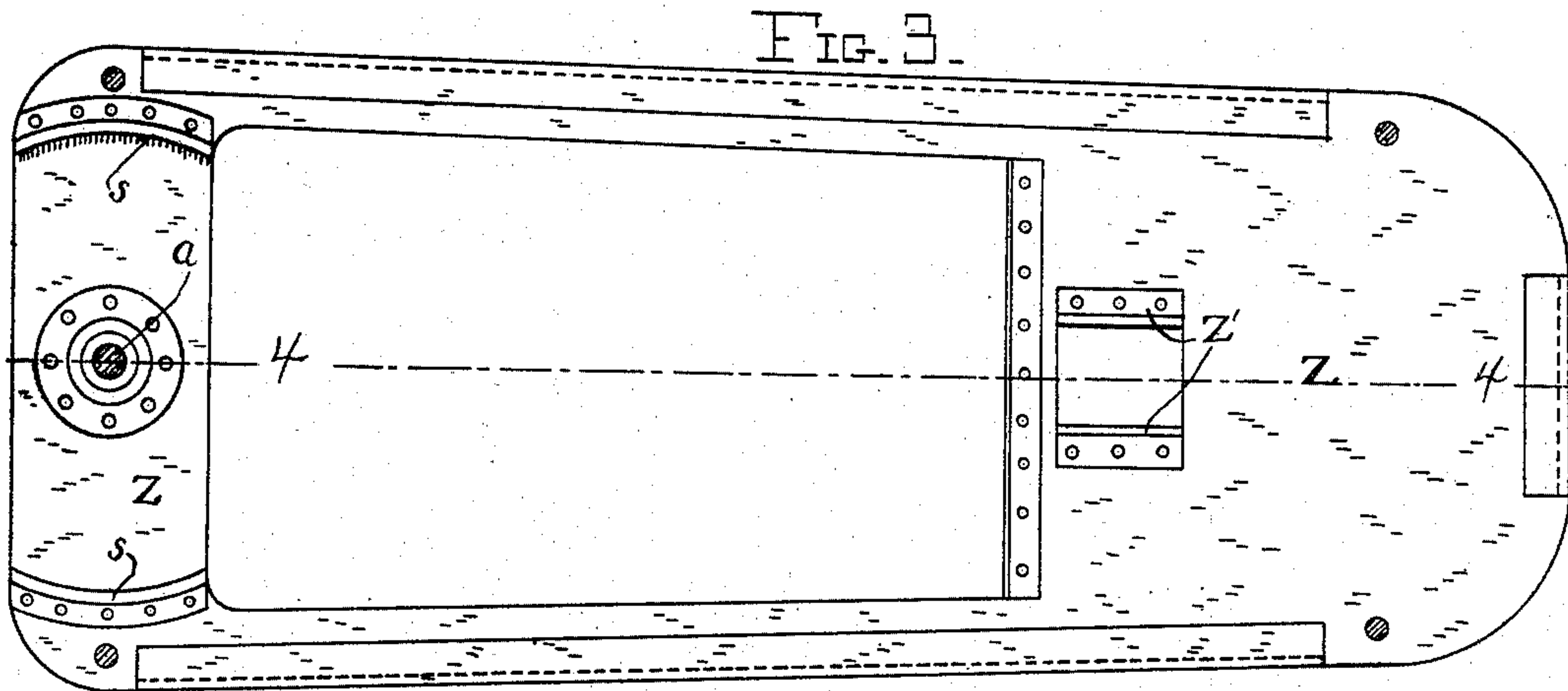
(No Model.)

2 Sheets—Sheet 2.

E. L. KERN.
RAILWAY SWITCH.

No. 565,754.

Patented Aug. 11, 1896.



Witnesses
Henry Schmucker
James H. Thomas

Inventor
E. L. Kern.

UNITED STATES PATENT OFFICE.

ETHELBERT L. KERN, OF DENVER, COLORADO.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 565,754, dated August 11, 1896.

Application filed December 21, 1895. Serial No. 572,874. (No model.)

To all whom it may concern:

Be it known that I, ETHELBERT L. KERN, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Railway-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in railroad-switches, and especially in those switches intended for use on yard-tracks; and the said invention consists in certain novel features hereinafter described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a plan view of my improved switch as applied to a main track and siding, the switch being thrown for the main track and parts being broken away. Fig. 2 represents a section along the line 2 2 of Fig. 1 and looking in the direction of the arrows 2. Fig. 3 is an inverted plan view of the main frame on which the various operating parts are mounted. Fig. 4 represents a section along the line 4 4 of Fig. 3. Fig. 5 is a plan view on a reduced scale of the bed-plate on which the inner end of the main frame is pivoted. Fig. 6 represents a section along the line 6 6 of Fig. 5. Fig. 7 is a detail plan view of one of the switch-arms detached from the main frame. Fig. 8 is a side view of the arm shown in Fig. 7 and looking toward the bottom of the sheet of drawings. Fig. 9 is a detail view showing the guide-rods and springs for keeping the arms shown in Figs. 6 and 7 normally distended or swung outward. Fig. 10 is a detail plan view of the locking-lever, and Fig. 11 is an end view of the same as seen from the left of Fig. 10. Fig. 12 is a plan view of the latch-case mounted on the main frame. Fig. 13 is a plan view of the sliding latch mounted in the latch-case. Fig. 14 is a plan view, and Fig. 15 is an end view, of the operating-cam by means of which the main frame is swung about its pivot. Fig. 16 is a plan view, and Fig. 17 is a side elevation, of the fixed plate on which the cam is pivoted.

The rails M and M' represent the main track, and the rails S and S' the siding. At the point C a V-crossing is formed by the junction of the pointed main-track rail M and the siding rail S, and a second V-crossing C' is similarly formed on the opposite side, the pointed rail S' in this instance being on the side track. These V-crossings are nearly opposite to each other. Both main and siding rails are securely fastened to the sleepers and do not move. For a track branching to the left from the main track this arrangement of the rails is reversed.

z represents the main frame of the switch pivoted near one end, as at a, upon the bed-plate y, which latter is securely fastened to the sleepers m.

x represents arms which are pivoted at x⁰ and project beyond the sides of the main frame z. These arms have two inclined faces x³ and x⁴, adapted to form an unbroken and absolute guide (in the same way as guard-rails do) for the train, locomotive, or car, to the pointed rail at C, when the switch is thrown for the side-track, and correspondingly to the pointed rail at C', when thrown for the main line, without leaving an open space. These arms have on the other end a projection x', by which the latch-bolt w holds the arms firmly against any side pressure from cars running through the switch in direction indicated by the arrow B. Each of the arms x is also provided with a guide-case x² for the rod v, which is provided with a ball-head v', engaging in a socket-plate u, having caps u' holding said ball-heads in place. This plate u is securely fastened to the main frame z, as shown in Fig. 1. These arms x are pressed outward by the spiral springs v², encircling the rods v.

r represents a latch-case fastened to the surface of the main frame, and provided with a longitudinal recess to hold the latch-bolt w and a lateral opening r⁰, to allow a free side movement to the same as well as to the end projection x' of the arm x. There are two of these latch-cases, one on each side, to hold the latches for the two arms x.

w represents the flat latch-bolt terminating at one end in the rod w', which rod bears against a spiral spring q, held in the casing r' fast to the latch-casing r, by which spring

the latch is normally pressed forward. The latch-casing r is also provided with a recess r^2 between the wall r^3 and the end of the latch when the same is pushed forward to the position shown to the right in Fig. 1, and into this recess the lug or projection x' of the arm x enters, and in which it is held against lateral movement in either direction, except when the latch is drawn backward, as will be hereinafter described. The latch w is also provided with a lug w^2 to engage the locking-lever p , which lever is made in the bell-crank form, with pivot at p^0 , the end p' extending into the latch-case r and engaging the lug w^2 of the latch w . The outer edge p^2 of said lever normally projects beyond the edge of the frame z , and is struck by the wheels of the locomotive or car coming in the direction indicated by the arrow D, for the purposes hereinafter described.

o represents a cam pivoted at o^0 to the bed-plate n , which is securely fastened on the sleeper m' . The said cam o moves between two cross-bars z' of the main frame and is provided with an arm o' connected with the switch-stand by means of a rod o^2 , which rod runs between two sleepers underneath the main frame and the rails. By means of this cam the switch is thrown for main or side track.

The curved segments s of the frame z overlap the segments s' of the bed-plate y and steady and guide the main frame as it swings about the pivot a .

To prevent wear and tear upon the arms x and the bell-crank levers p , steel wear-plates x^5 , as shown in dotted lines in Fig. 7, may be secured to the upper surface of these parts in such a way (as by bolts in the elongated slots x^6) that they allow adjustment by moving them out as soon as the friction of the passing wheels has worn out a part of the said wear-plates.

The V-crossings are preferably placed at or about the center of the ordinary thirty-foot rails M' and S , and are nearly opposite each other. All the rails are securely fastened to the sleepers and do not move. The gage at the end of the rails is preferably the standard gage of four feet 8.5 inches, widening, in the direction of the arrow B, to about four feet 10.75 inches between the points G and G' , allowing consequently a normal gage of four feet 8.5 inches for the main track C G' , as well as for the siding G C' . For tracks of different gages these dimensions can be changed correspondingly.

For a train moving in the direction of the arrow B the switch should be thrown for the main line or for the side track, according to the destination of the train, the arms x forming an absolute, unbroken, and safe guide for the wheel-flanges on the side to which it is brought in proper relation to the rails to lead into the main track or into the siding, while on the opposite side the wheel-flanges are forced to clear the point C or C' (according

to how thrown) on account of the wheel-gage being less than the standard-track gage, as is the case here between the points G C' or C G' ; but a train, locomotive, or car moving in the direction of the arrow D on the main track, or on the side track, intending to run through the switch, can do so without necessitating the adjustment of the same, no matter how the switch is thrown, either for main line or siding.

Fig. 1 represents the switch thrown for the side track. Supposing a train is moving on the main line M M' toward the switch in the direction indicated by the arrow D, the flanges of the wheels will press against the side p^2 of the bell-crank lever p and turn the same on its fulcrum, forcing the other lever-arm p' to bear against the lip w^2 of the latch-bolt w , forcing the latter back and compressing the spiral spring q until the latch-bolt w no longer holds the projection x' of the arm x . The rotating wheel-flanges will hold the bell-crank lever p in this position, and also press almost at the same time against the inclined side x^4 of the arm x , now unlocked at x' , forcing the same back, making room for the flanges of the wheels and allowing them to pass. As soon as the wheels have passed and the side pressure from the wheel-flanges is taken away the compressed spiral spring v will force the arm x back to its original position, as shown in Fig. 1. This will release the latch-bolt w , and the compressed spiral spring q will force it forward, the bolt not being held by the arm p' any longer, and will lock and secure the arms x again at x' between the end of the latch-bolt and the wall r^2 , thus holding and locking the arm x firmly against any lateral pressure. At the same time the bell-crank lever p is brought back to its original position by means of the lug w^2 , which presses against the arm p' . A corresponding succession of movements takes place on the other side of the switch should the same be thrown for the main track and should a train moving on the siding S and S' be running in the direction of the arrow D through the switch.

It will be understood that the principal objects of my invention is to provide absolutely against switches being left open and to prevent accidents from derailment due to trains running into and out of the switch.

It will be seen that no adjustment of the switch is necessary to enable a train to run out of the siding onto the main line.

It will be obvious that various modifications of the herein-described invention might be made which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a track provided with fixed points, of a main frame adapted to swing between said points, and pivoted switch-arms mounted on said frame, and

adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, substantially as and for the purposes described.

2. The combination with a track provided with fixed points, of a main frame adapted to swing between said points, a cam for moving said frame, and pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the track, according to the position of the main frame, substantially as described.

3. The combination with a track, provided with fixed points, of a main frame adapted to swing between said points, pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, and means for locking the said switch-arms when a train passes in one direction and for releasing said pivoted arms when the train comes in the opposite direction, substantially as described.

4. The combination with a track provided with fixed points, pivoted switch-arms mounted on said frame, and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, and springs normally pressing said arms outward, substantially as and for the purposes described.

5. The combination with a track provided with fixed points, of a main frame adapted to swing between said points, a cam for moving said frame, pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the track, according to the position of the main frame, and springs normally pressing said arms outward, substantially as described.

6. The combination with a track, provided with fixed points, of a main frame adapted to swing between said points, pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, springs normally pressing said arms outward, and means for locking the said switch-arms when a train passes in one direction and for releasing said pivoted arms when the train comes in the opposite direction, substantially as described.

7. The combination with a track provided with fixed points, of a main frame adapted to swing between said points, with pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, means for locking the said switch-arms when a train passes in one direction, and for releasing the said switch-arms when the train passes in the opposite direction, and a cam, for swinging said frame on its pivot, with means for operating said cam, substantially as described.

8. The combination with a track provided

with fixed points, of a pivoted main frame adapted to swing between said points, a cam for moving said frame in either direction, and means for operating said cam, pivoted switch-arms having double inclined faces mounted on said frame and adapted to form a continuous guide into the siding or along the track according to the position of the main frame, with means for locking said switch-arms against the lateral pressure of car-wheels coming from one direction and for releasing said switch-arms by the lateral pressure of car-wheels coming from the opposite direction, substantially as described.

9. The combination with a track provided with fixed points, of a swinging frame pivoted switch-arms carried by said frame and adapted to form a continuous guide into the siding or along the main track according to the position in which the switch is thrown, a socket-plate mounted on said frame between said switch-arms, rods with ball-heads pivoted in said socket-plate and entering guides in said switch-arms, coil-springs inclosing said rods and normally pressing said switch-arms outward, and means for locking said switch-arms against the pressure due to a train coming from one direction, and for releasing them by means of the pressure of a train coming from the opposite direction, substantially as described.

10. The combination with a track provided with fixed points, of a frame pivoted between the tracks, pivoted switch-arms mounted on said frame, and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, springs normally pressing said switch-arms outward, spring-operated latches adapted to lock said switch-arms, and levers adapted to be struck by the wheels of a car and to release said latches, substantially as described.

11. The combination with a track provided with fixed points, of a main frame adapted to swing between said points, a cam for moving said frame, pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the track, according to the position of the main frame, springs normally pressing said switch-arms outward, spring-operated latches adapted to lock said switch-arms, and levers adapted to be struck by the wheels of a car and to release said latches, substantially as described.

12. The combination with a track, provided with fixed points, of a main frame adapted to swing between said points, with pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the main track according to the position of the main frame, springs normally pressing said switch-arms outward, latches for locking the said switch-arms and bell-crank levers adapted to hold said latches when a train passes in one direction and to release one of said latch-arms when the train

passes in the opposite direction, substantially as described.

13. The combination with a track provided with fixed points, of a pivoted frame adapted to swing between said points, cam mechanism for swinging said frame about its pivot, pivoted switch-arms mounted on said frame and adapted to form a continuous guide into the siding or along the main track according to the position of the said frame, springs normally pressing said switch-arms outward, means for limiting the outward travel of said switch-arms, means for locking said switch-arms when a train passes in one direction, and means for releasing one of said switch-arms when the train passes in the opposite direction, substantially as described.

14. The combination with a track provided with fixed points, of a pivoted frame adapted to swing between said points, a cam for moving said frame in either direction, and means for operating said cam, pivoted switch-arms having double inclined faces mounted on said frame and adapted to form a continuous guide into the siding or along the track according to the position of the main frame, springs normally pressing said switch-arms outward, with means for locking said switch-arms against the lateral pressure of car-

wheels coming from one direction and for releasing one of said switch-arms by the lateral pressure of car-wheels coming from the opposite direction, substantially as described.

15. The combination with a track provided with fixed points, of a swinging frame, pivoted switch-arms carried by said frame and adapted to form a continuous guide into the siding or along the main track according to the position in which the switch is thrown, springs normally pressing said switch-arms outward, a socket-plate mounted on said frame between said switch-arms, rods with ball-heads pivoted in said socket-plate and entering guides in said switch-arms, coil-springs inclosing said rods and normally pressing said switch-arms outward, and means for locking said switch-arms against the pressure due to a train coming from one direction, and for releasing them by means of the pressure of a train coming from the opposite direction, substantially as described.

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

ETHELBERT L. KERN.

Witnesses:

HENRY SCHUMACHER,
JAMES H. THOMAS.