

No. 656,974.

Patented Aug. 28, 1900.

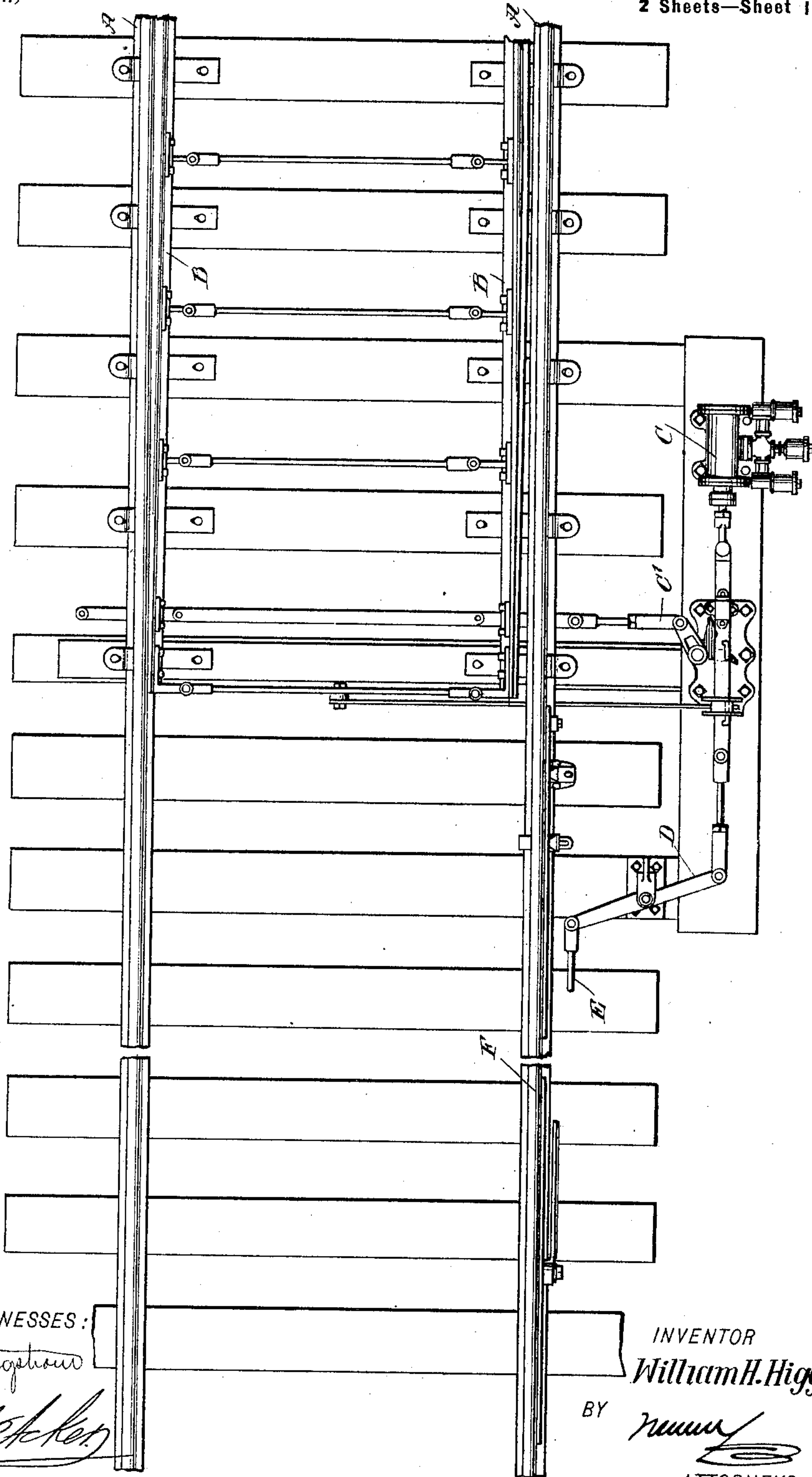
W. H. HIGGINS.  
DETECTOR BAR.

(Application filed Apr. 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



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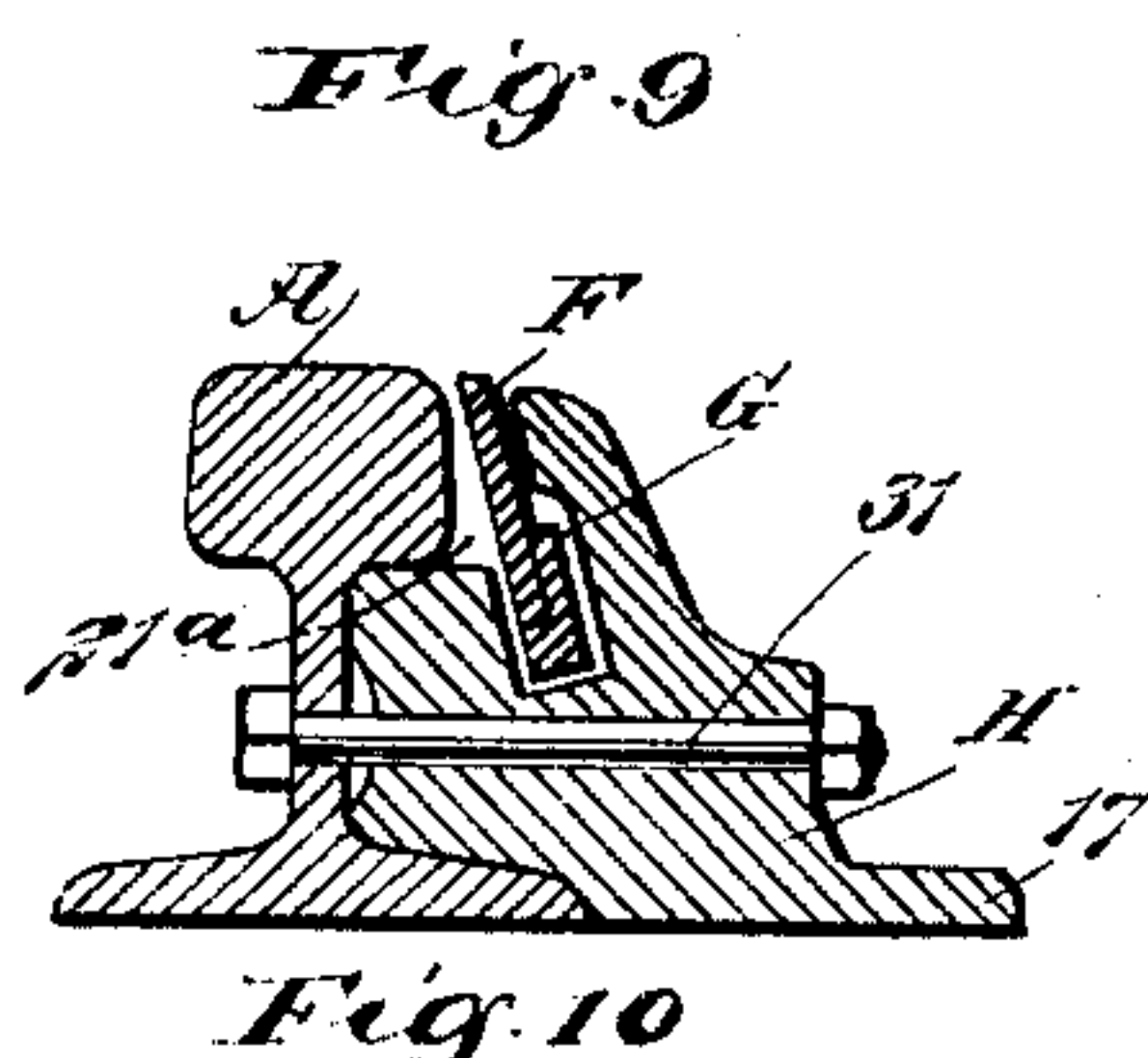
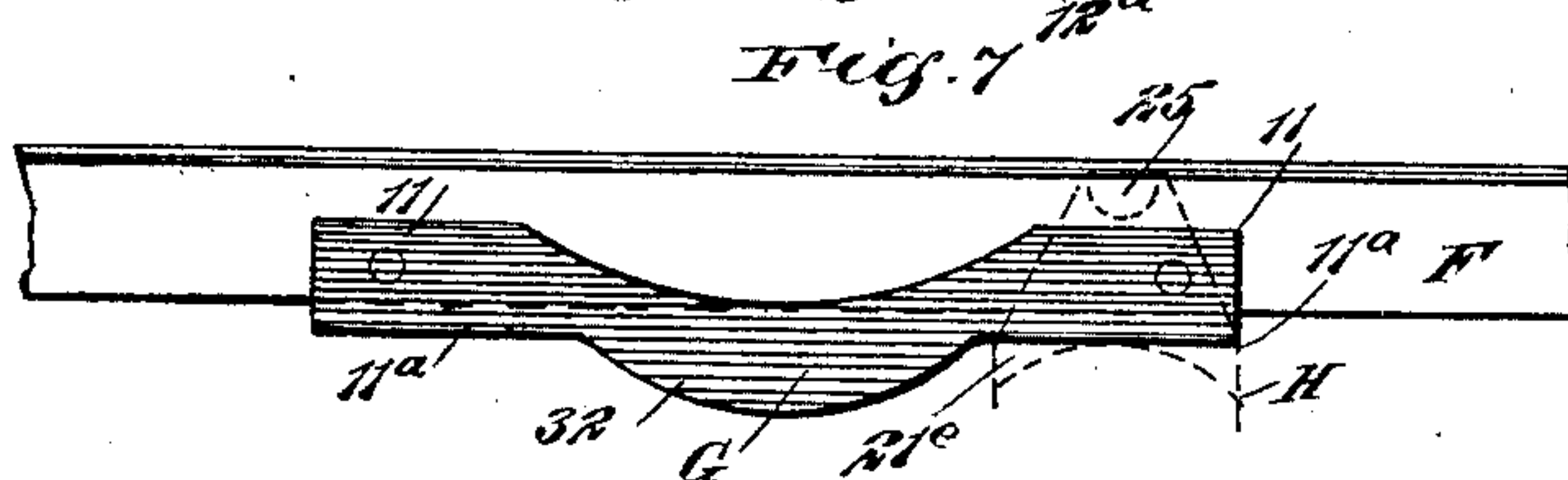
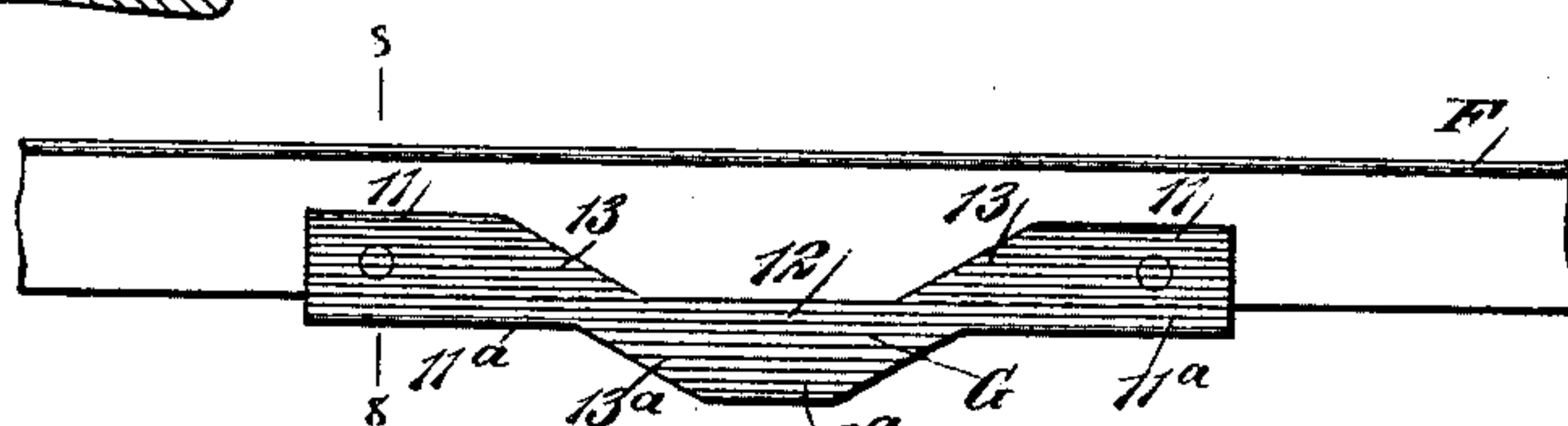
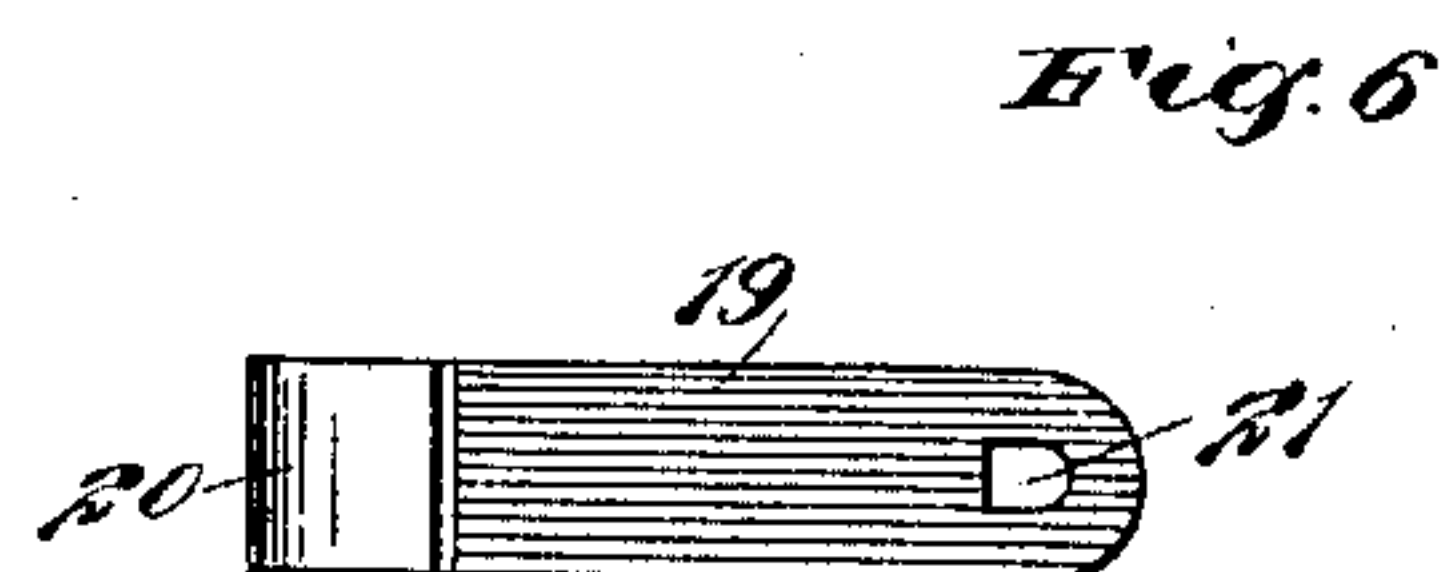
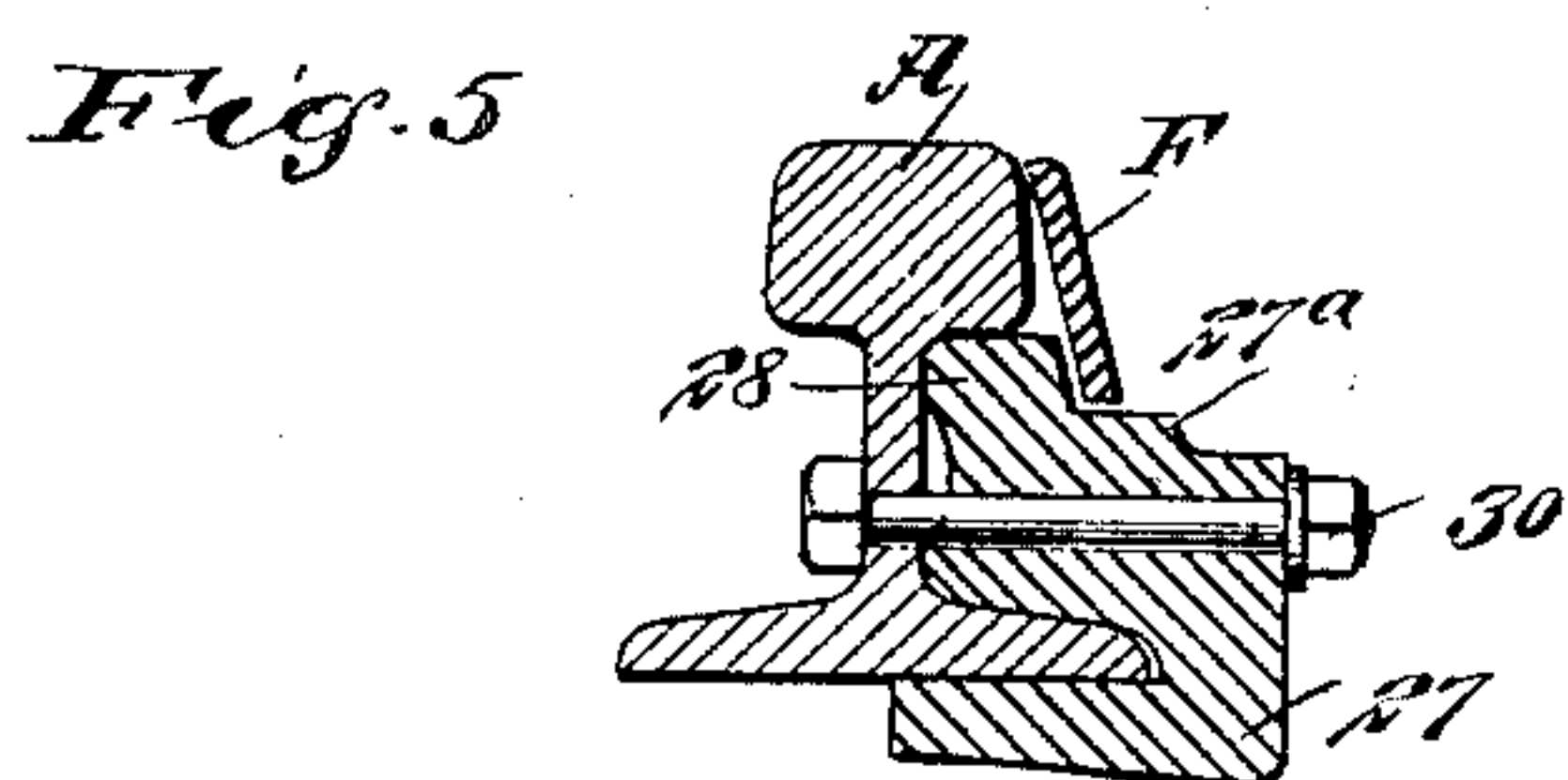
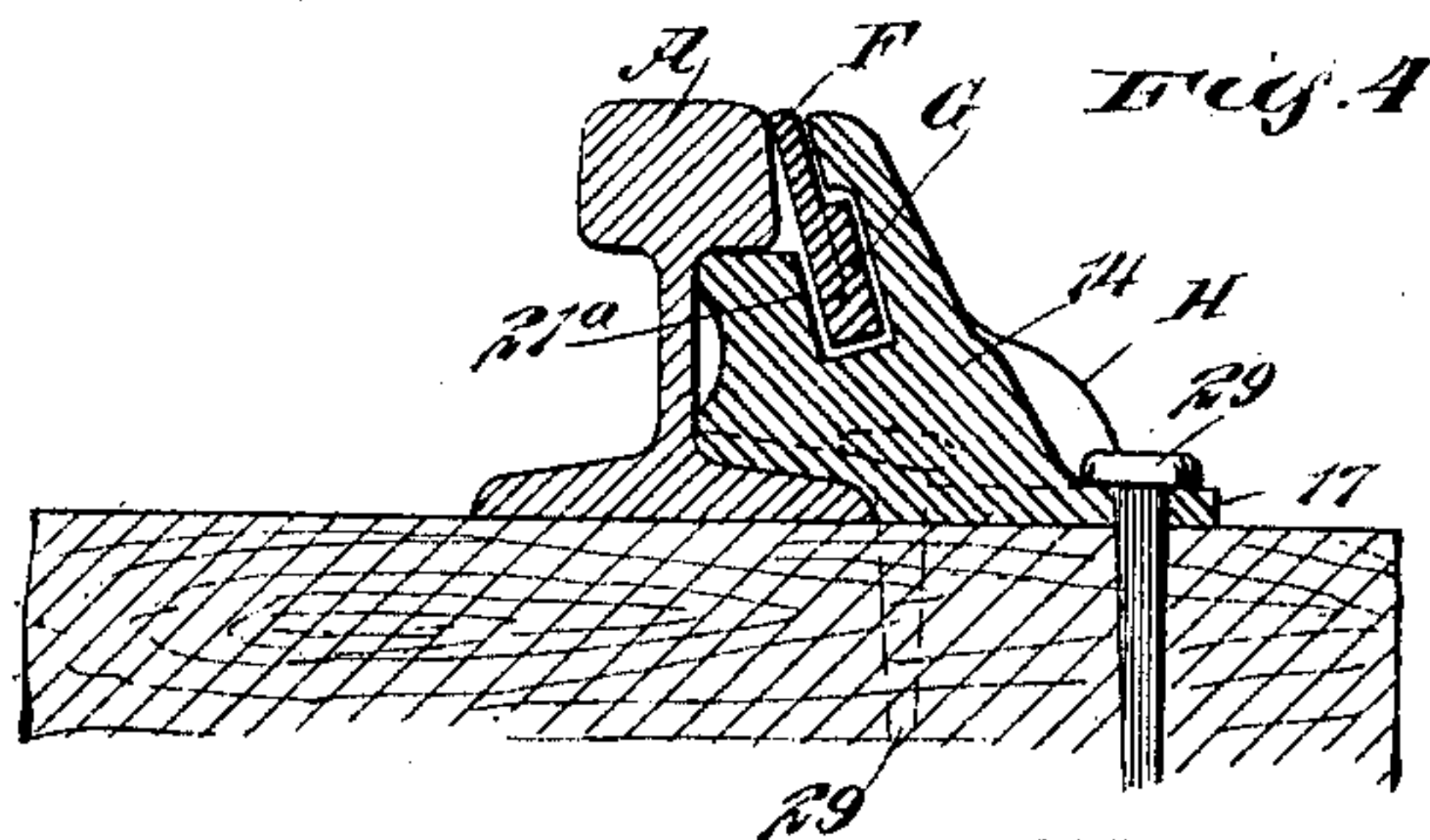
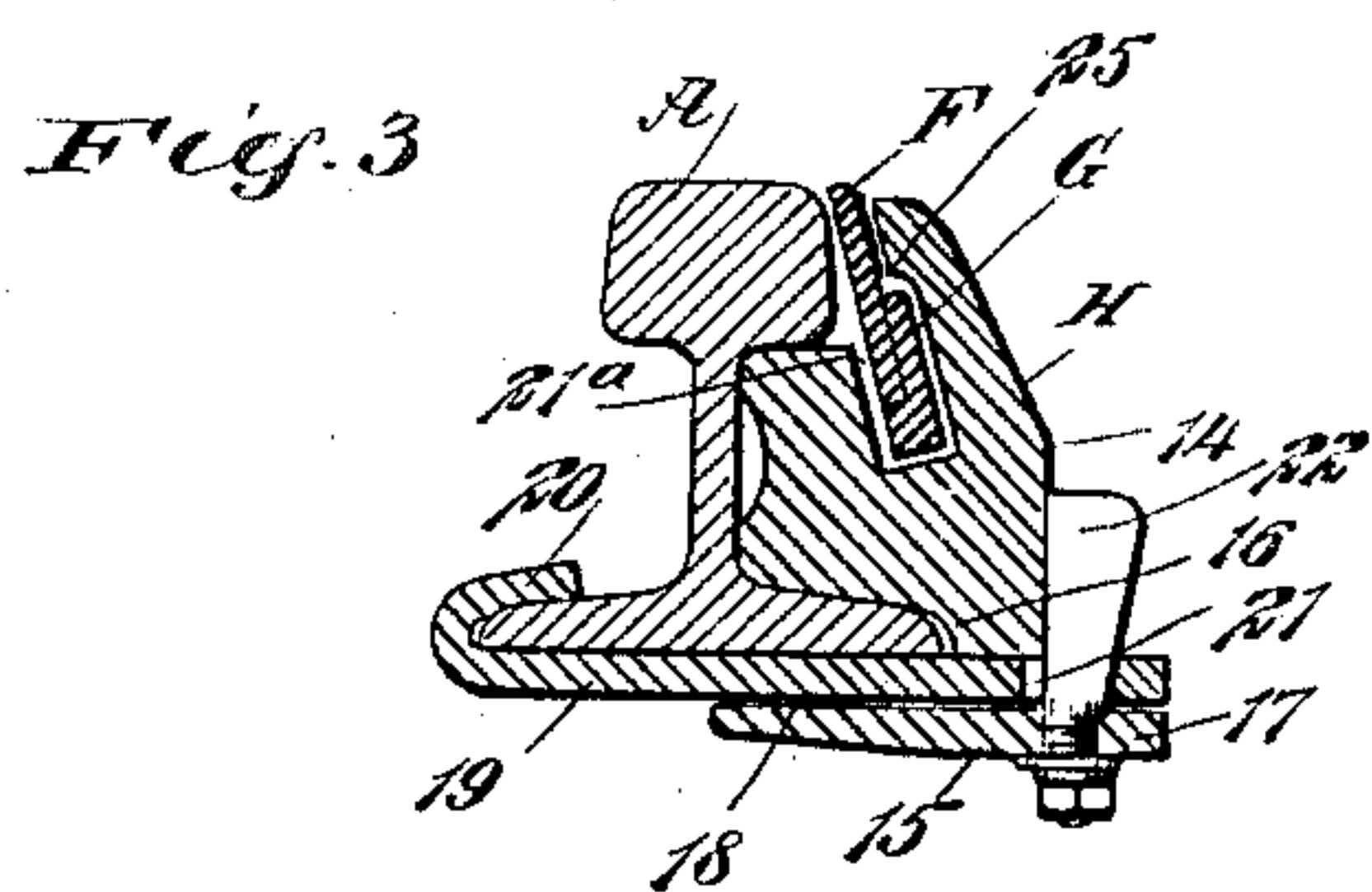
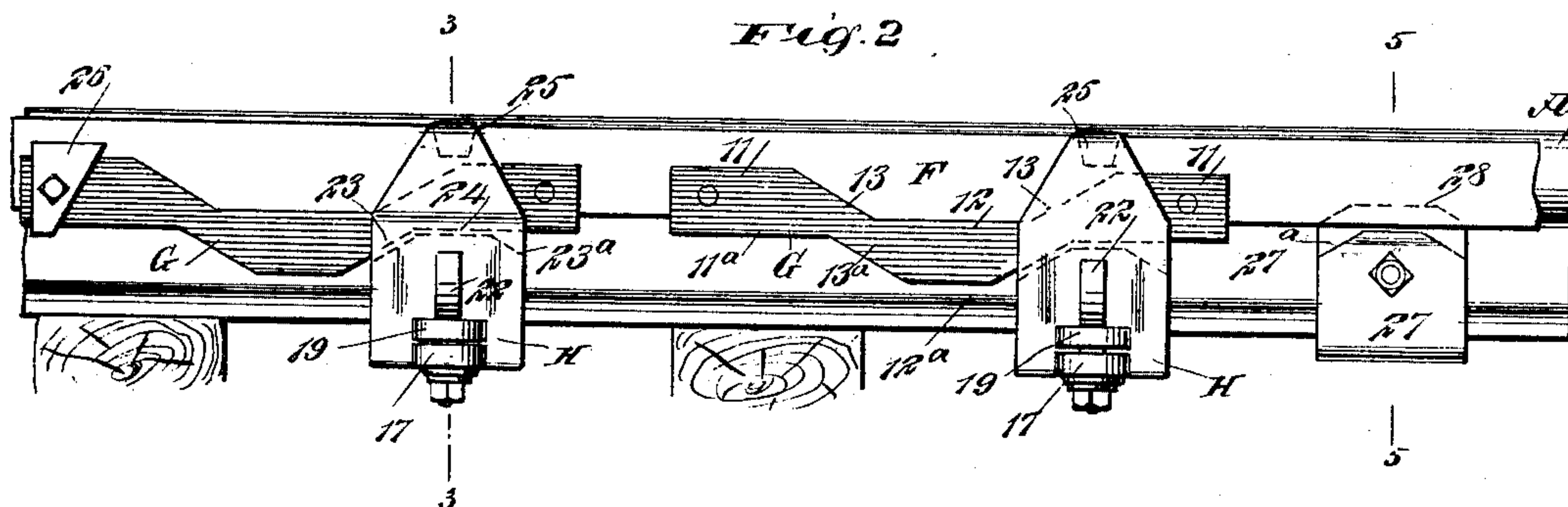
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(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. HIGGINS, OF JERSEY CITY, NEW JERSEY.

## DETECTOR-BAR.

SPECIFICATION forming part of Letters Patent No. 656,974, dated August 28, 1900.

Application filed April 13, 1900. Serial No. 12,705. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. HIGGINS, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Detector-Bar, of which the following is a full, clear, and exact description.

My invention relates to improvements in detector-bars which are employed in connection with railways to detect the presence of engines or cars upon a railway-track and to prevent the movement of a switch under the engine and cars. The purpose of the invention is to construct such a detector-bar of any desired length and to provide for the bar moving longitudinally in the usual or in any desired manner parallel with a track and to so construct the detector-bar that its lower portion will be provided with any desired number of motion-plates the lower surfaces of which have movement in guides or clips to impart the desired motion to the detector-bar, while the upper surfaces of the motion-plates serve as guides for the bar, acting in conjunction with guide-surfaces carried by the clips in which the detector-bar has movement.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a portion of a track and a switch, illustrating the detector-bar in connection with the switch. Fig. 2 is a side elevation of a portion of a rail, clips connected with the rail, and the improved detector-bar in operative connection with the clips. Fig. 3 is a section taken substantially on the line 3 3 of Fig. 2. Fig. 4 is a similar section to Fig. 3, illustrating the manner, however, in which a clip may be attached to a sleeper. Fig. 5 is a transverse section taken practically on the line 5 5 of Fig. 2, illustrating the manner in which one form of stop for the detector-bar may be applied to the rail. Fig. 6 is a plan view of a shoe which is used in connection with a clip when the clip is attached to a rail. Fig. 7 is a detail side elevation of a portion of the detector-bar. Fig. 8

is a transverse section on the line 8 8 of Fig. 7. Fig. 9 is a partial side elevation of the detector-bar, illustrating a slight modification in the form of the motion-plate; and Fig. 10 is a section through the rail, detector-bar, and clip, illustrating another means of attaching the clip to the rail.

A represents the rails of a track; B, a switch; C and C', the actuating mechanisms for the switch, which may be of any desired construction or of the usual type, and D represents a lever which is connected with the switch-operating mechanism and is likewise adapted for connection with the detector-bar through the medium of a link E. Under such an arrangement the throw of the detector-bar is positive, and the length of the throw may be varied without raising the detector-bar too high in its movement above the rail in connection with which it is used, which latter defect is apparent in most constructions of this character.

The detector-bar F consists of a bar of suitable length which is parallel with a rail and is located at the outer face of the head portion of the rail, and said detector-bar has end movement, as usual, and likewise a vertical movement. The vertical movement of the detector-bar is controlled mainly through the medium of motion-plates G, and these motion-plates are riveted or are otherwise secured to the opposite face of the detector-bar at suitable intervals, and the central portions of the motion-plates extend below the lower edge of the detector-bar, as shown in Figs. 2, 7, and 9. The preferred form of motion-plate is that illustrated in Figs. 2 and 7, in which it will be observed that the motion-plate is provided at each end with an upper horizontal surface 11, a depressed central upper surface 12, and oblique or inclined surfaces 13, which connect the depressed central surface with the straight or horizontal upper end surfaces 11, the walls 13 being inclined in opposite directions. The central portion or section of each motion-plate extends below the detector-bar for a greater or a less distance, and the under edge of the preferred form of motion-plate is provided with horizontal end surfaces 11<sup>a</sup>, corresponding to the upper surfaces 11, a central horizontal surface 12<sup>a</sup>, corresponding to the upper surface 12, and diag-



onal oblique end surfaces 13<sup>a</sup> for the central section of the motion-plate. Thus it will be observed that each motion-plate is provided with a central more-or-less-triangular-shaped section, which extends below the under edge of the detector-bar F.

Clips H are used in connection with the detector-bar and motion-plates. These clips are attached to the sleepers or to the rails, as may be found desirable; but preferably they are secured to the rails. These clips consist of a body 14, which is provided with a base 15, adapted to extend beneath the flange of the rail, and an opening 18 is provided in the clip above the base, extending from its inner to its outer face. The base 15 is also provided with a projection or lug 17 at its front having an aperture made therein, and the inner face of the body of the clip is made to conform more or less to the under face of the head of a rail, the web, and the upper portion of the flange of the rail, as shown in Fig. 3. A shoe 19 is passed beneath the rail and through the opening 18 in the base portion of a clip, the inner end of the shoe being upturned, as shown at 20, and shaped to fit over the upper surface of the inner section of the web of a rail, as shown in Fig. 3. This shoe is provided with an opening 21 near its outer end adapted to register with the opening in the lug 17 of the base, and after a shoe has been fitted to a rail and has been passed through an opening 18 in the base of a clip H a wedge or a key 22 is passed through the opening or aperture in the shoe and corresponding opening or aperture in the extension-lug 17 of the base of the clip, and the key or wedge 22 is held in position by a nut or the equivalent of the same. The upper outer portion of each clip H extends upward practically flush with the tread of a rail, but does not extend to the head portion of the rail, and this upper portion of the body 14 of a clip is provided with a transverse slot 21<sup>a</sup> of such dimensions and character that said slot will receive a detector-bar and likewise a motion-plate attached to the said bar. The base of each slot 21<sup>a</sup> in a clip is provided with oppositely-inclined side surfaces 23 and 23<sup>a</sup> and a central horizontal surface 24, and each clip at the upper portion of its body is provided at its inner face, when the motion-plate is constructed as shown in Figs. 2 and 7, with a keystone projection 25, adapted to engage with the upper horizontal and oblique surfaces of a motion-plate, while the lower horizontal and oblique surfaces of the motion-plate are received by the corresponding surfaces at the bottom of the slot 21<sup>a</sup> in the clip through which the detector-bar F is passed. The projections 25 prevent the detector-bar from being pushed from the head of the rail or the clips at any time. Thus it will be observed that when the detector-bar is given end movement it will always rise and fall the same distance, although the end throw of the detector-bar may vary, if desired, and when corresponding horizontal and oblique surfaces

on the bottom of a motion-plate mate with corresponding surfaces on the bottom of a slot 21<sup>a</sup> in a clip the detector-bar will either be raised above the surface of the rail adjacent to which it is placed or will be just below the tread of the rail and will remain in such position, the motion-plates when in their lower position preventing the detector-bar from being raised or pressed out from the head of the rail while the wheels of a truck are on the rail above the detector-bar.

The end throw of a detector-bar may be limited by placing stops 26 in a detachable manner at the ends of the said bar or intermediate of the ends, which stops when the detector-bar is thrown in one direction to its full extent will engage with the upper-edge surface of an end clip H, such surfaces being inclined in opposite directions, or the stop shown at the right in Fig. 2 or shown in section in Fig. 5 may be employed, which latter stop 27 is provided with an extension-surface 28, adapted to fit beneath the head of a rail at the back of the detector-bar and with a lower surface 27<sup>a</sup>, the side walls of which are inclined in opposite directions, and the central surface of the upper edge between the said inclined surfaces is straight, so that when the detector-bar has been thrown in direction of the stop 27 and a horizontal and oblique surface on the bottom portion of the detector-bar meets corresponding surfaces on the stop 27 the detector-bar can be thrown no farther. It will be observed that the projections 25 on the clips engage with the upper surfaces of the motion-plates as the detector-bar is given end movement, and the motion-plates are thus guided during such operation.

The clips H may be attached to the sleepers instead of to the rails, if so desired, in which event spikes 29 or their equivalents are employed, driven down through apertures in the base of the clip; but, if desired, as shown in Fig. 10, the clips may be attached to the web of the rail by horizontal bolts 31, and corresponding bolts 30 are usually employed to secure the stops 27 to the rail, which stops are provided with recesses in their inner faces adapted to receive the outer section of the flange of a rail.

In Fig. 9 I have illustrated a slight departure in the construction of the motion-plates to the extent that the upper and lower and central portions of the plate instead of being formed with horizontal and oblique intersecting walls or surfaces have surfaces that are curved, and under such a construction of motion-plate the guide-tongue 25 of the clips instead of being of keystone shape, as shown in Fig. 2, are given a semicylindrical shape, as illustrated in dotted lines in Fig. 9, and it will be understood that under such a construction the bottom walls of the slots 21<sup>a</sup> in the clips are curved.

The construction above described is simple, safe, durable, and economic. No studs are turned or cotter-pins or rollers are employed,



which are vital features in other bars and cause lost motion. The bar cannot be forced from the rail by the car-wheels or otherwise and can be thrown any desired distance, thus insuring a better lock for the switch. The bar can be lifted from its seat at any time by simply disconnecting the driving-rod.

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

1. A detector-bar for switches, motion-plates secured at intervals to the detector-bar, which motion-plates have central sections that extend below the lower edge of the detector-bar, the upper and lower edges of the depressed sections of the motion-plates having horizontal and inclined surfaces, and clips each provided with a recess having its bottom formed with oppositely-inclined side surfaces and at its top with a projection, for the purpose specified.

2. A detector-bar, motion-plates attached to the detector-bar, which motion-plates have central sections extending below the lower edge of the detector-bar, the upper and lower edges of the central sections of the motion-plates being formed with intersecting horizontal and oblique surfaces, and clips through which the detector-bar and motion-plates pass, the clips serving as guides for said parts, each clip having at its bottom horizontal and

oblique intersecting surfaces adapted for engagement with the bottom edges of the motion-plates, and a guide-surface at its top adapted for engagement with the upper edges of the motion-plates, as and for the purpose specified.

3. A clip recessed to receive and guide a detector-bar, and provided with a base having an apertured lug and with a horizontal opening above the base, a shoe having one end bent up to fit over the base of a rail and its other end apertured and projecting into the opening of the clip, and a key fitting in the apertures of the lug of the base and the shoe, substantially as described.

4. The combination with a detector-bar, motion-plates secured to the detector-bar and having horizontal and oblique surfaces, and guide-clips for the motion-plates, of stops adapted to be secured to the rail and each having its side walls inclined in opposite directions from a central straight surface, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. HIGGINS.

Witnesses:

J. FRED. ACKER,  
JNO. M. RITTER.