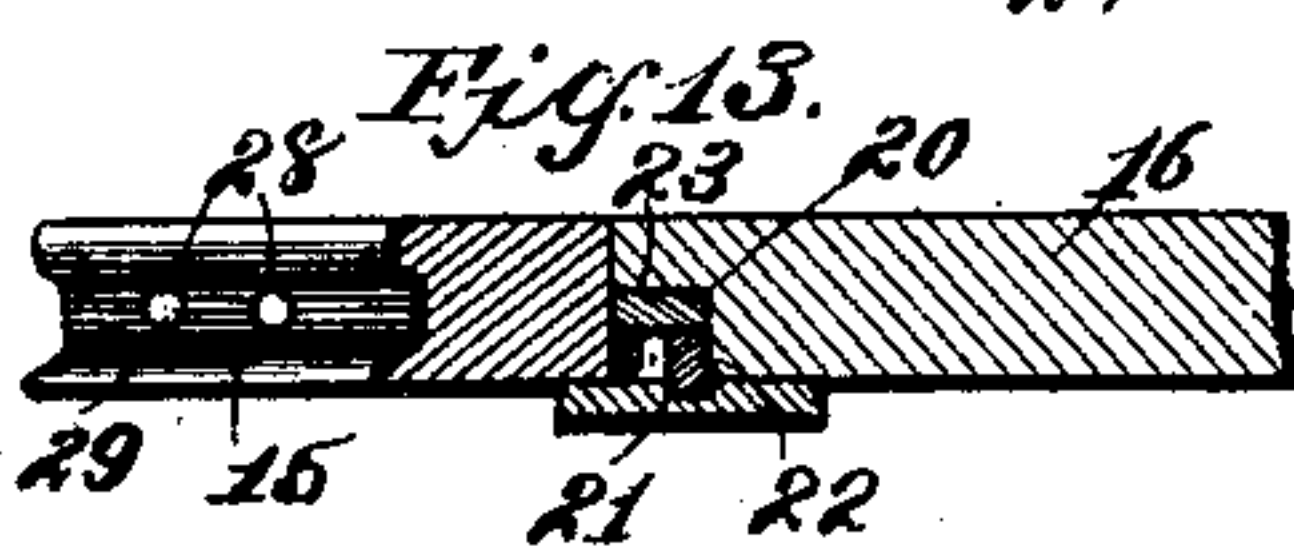
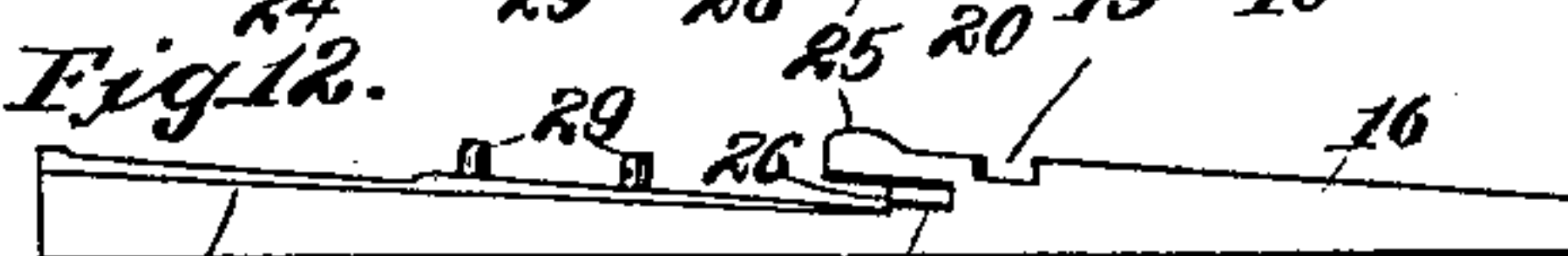
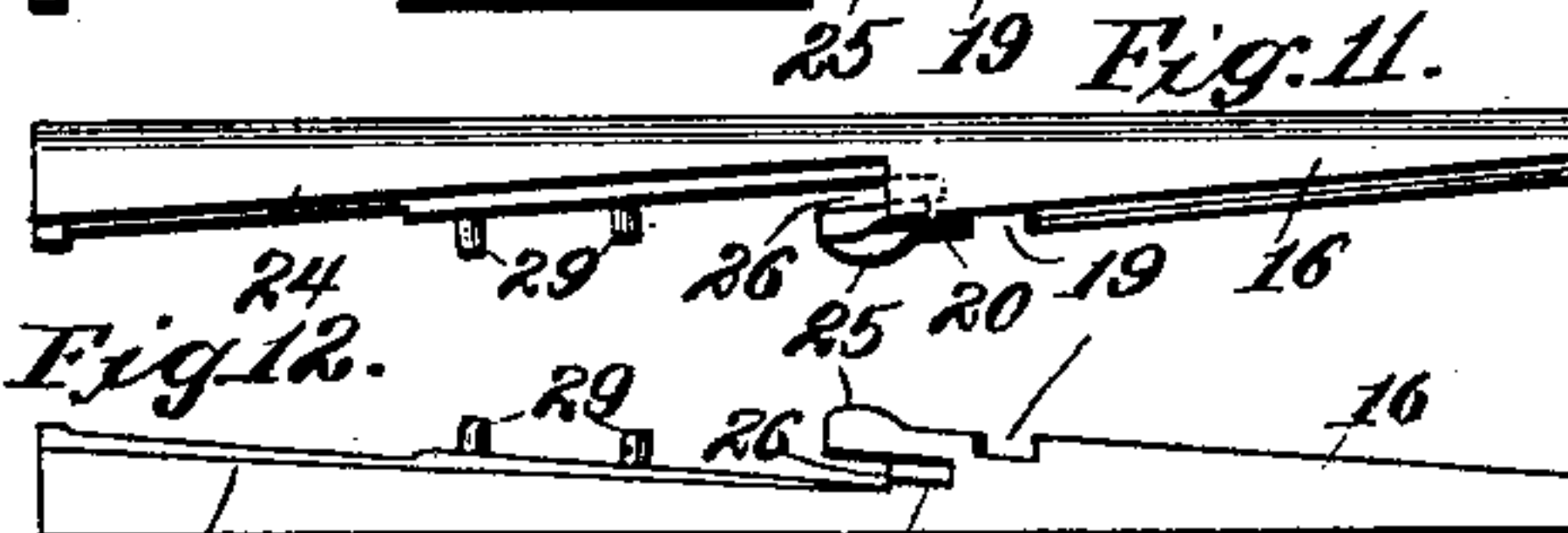
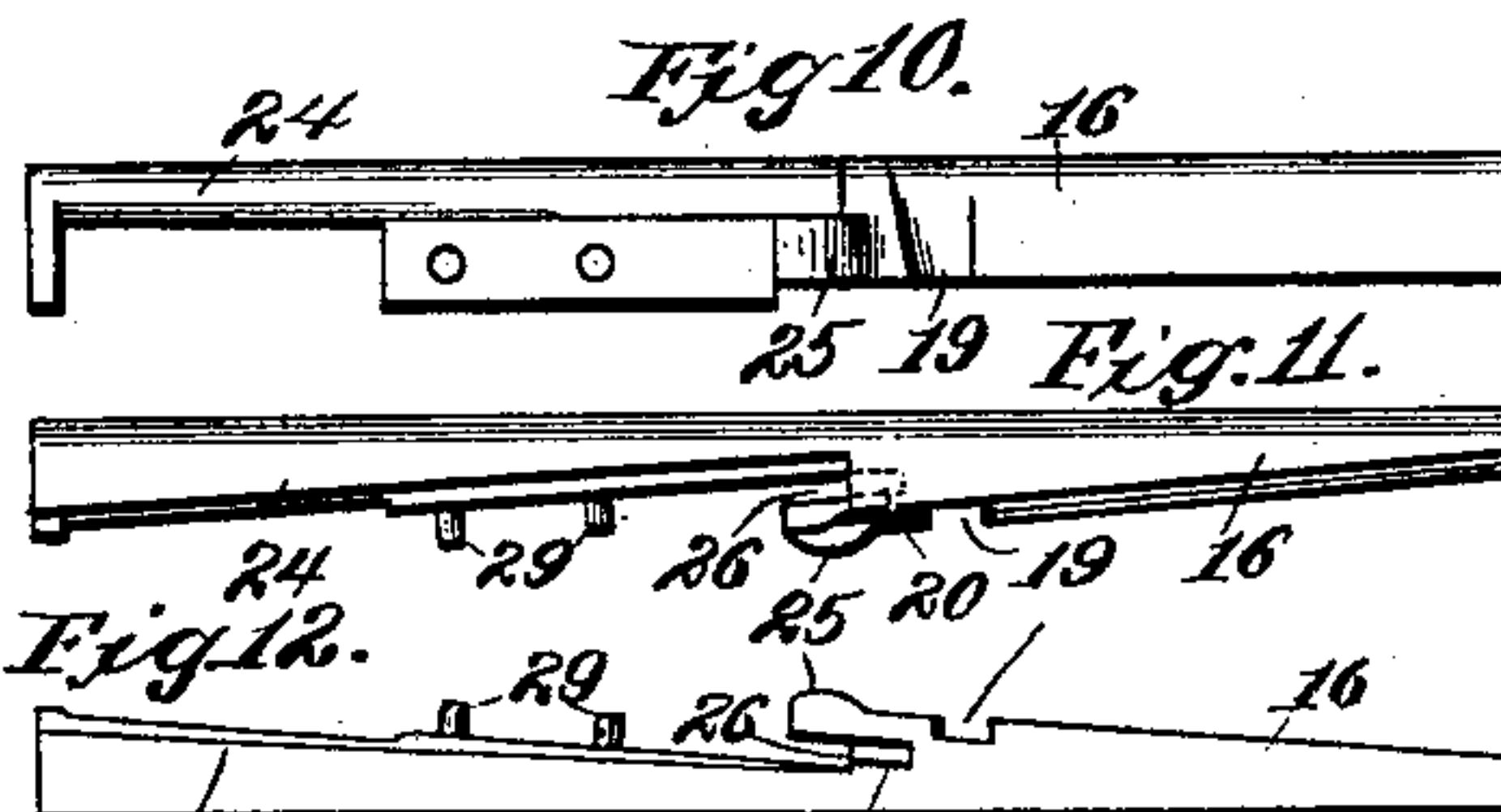
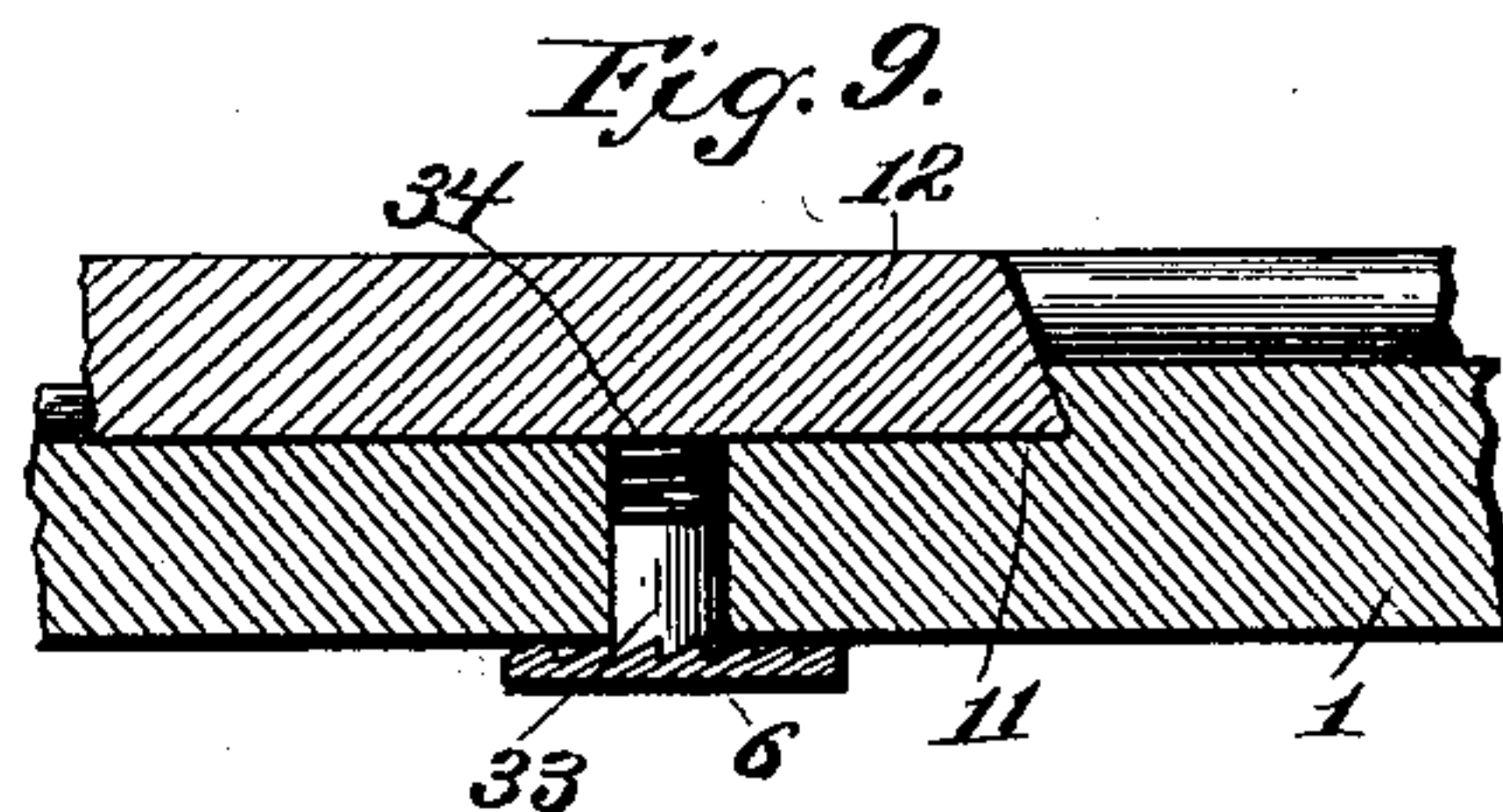
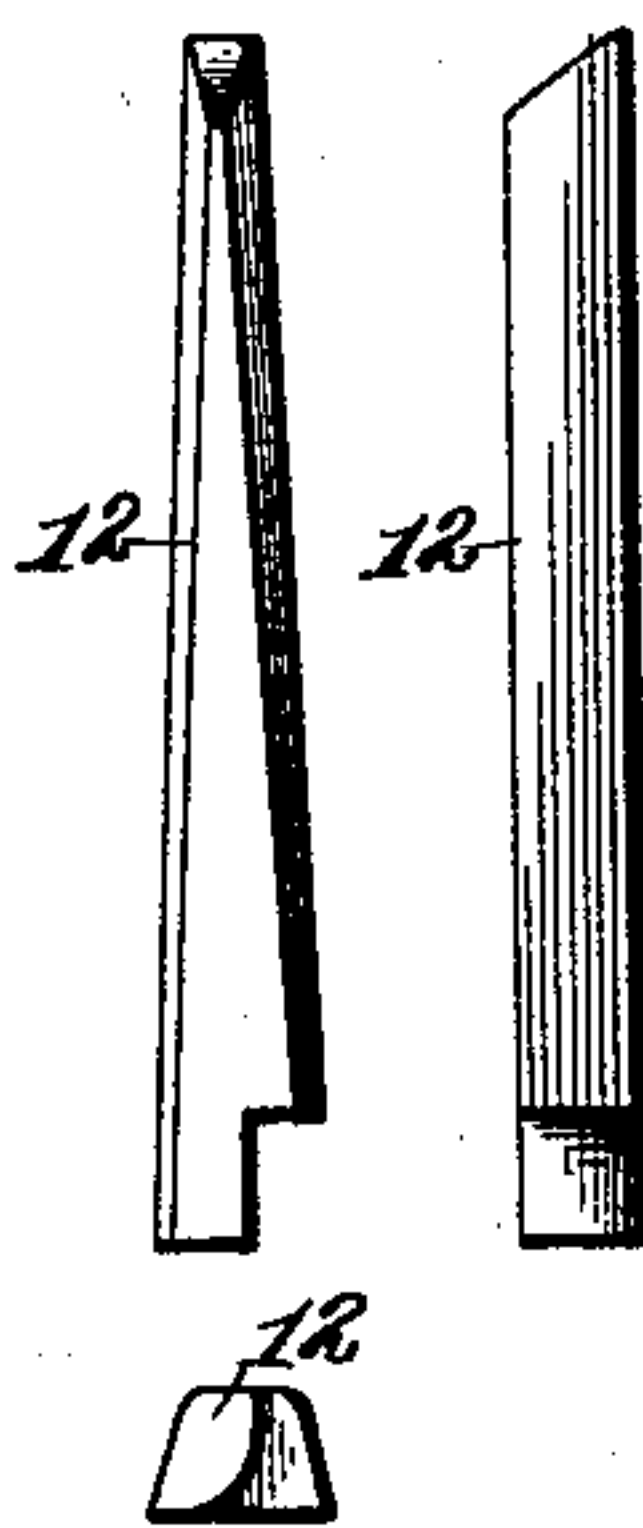
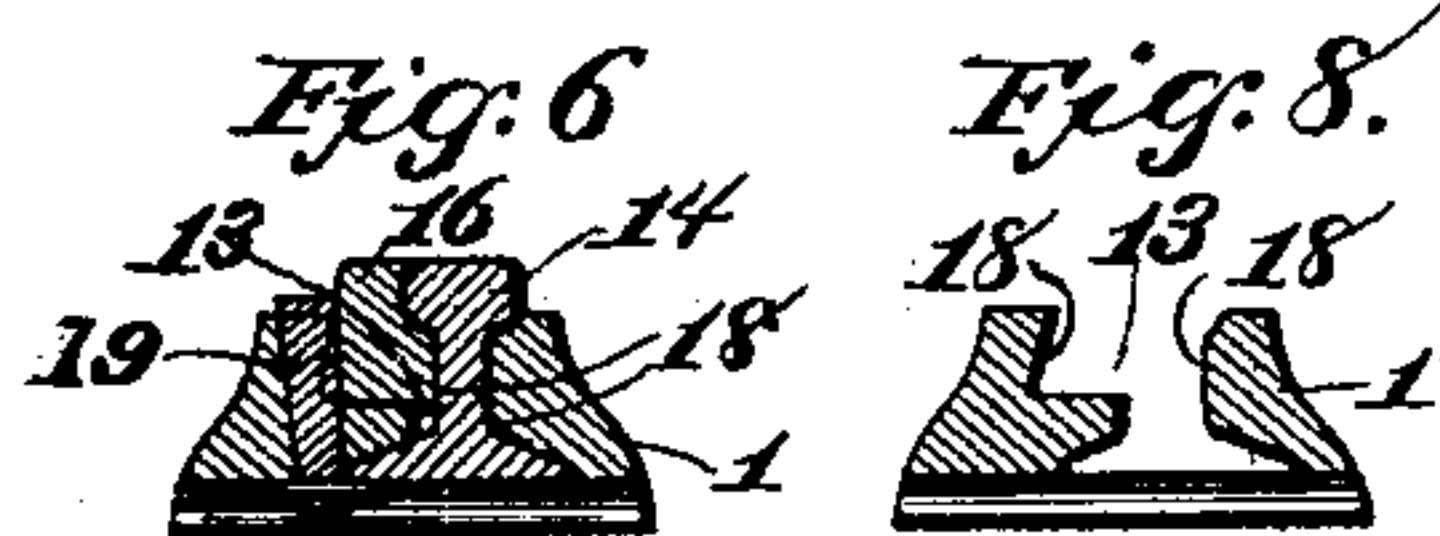
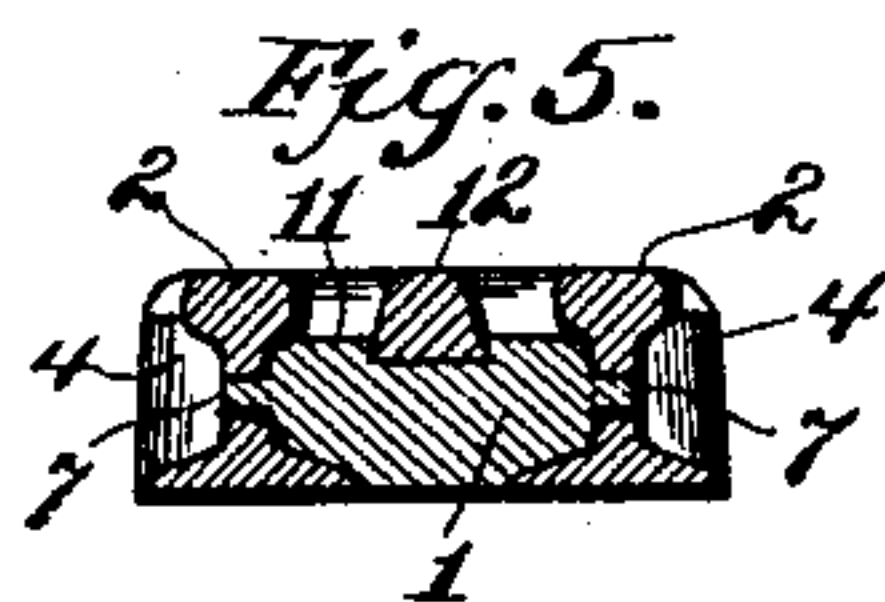
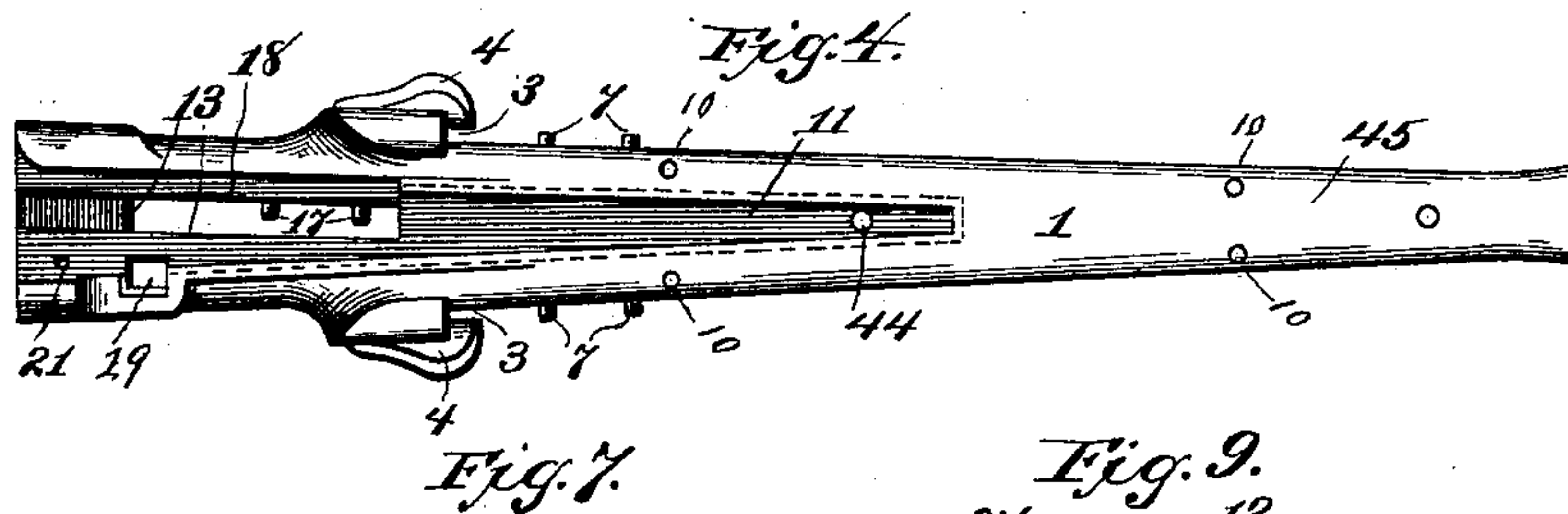
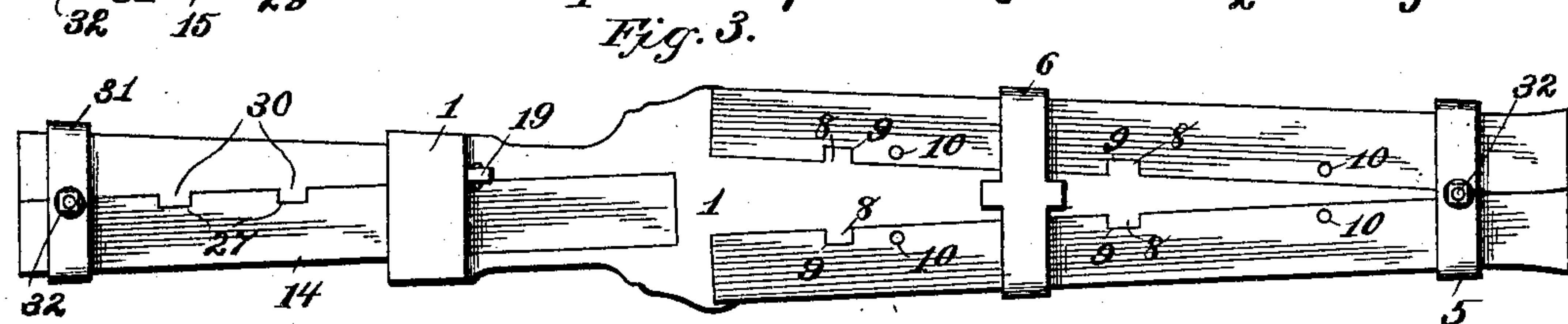
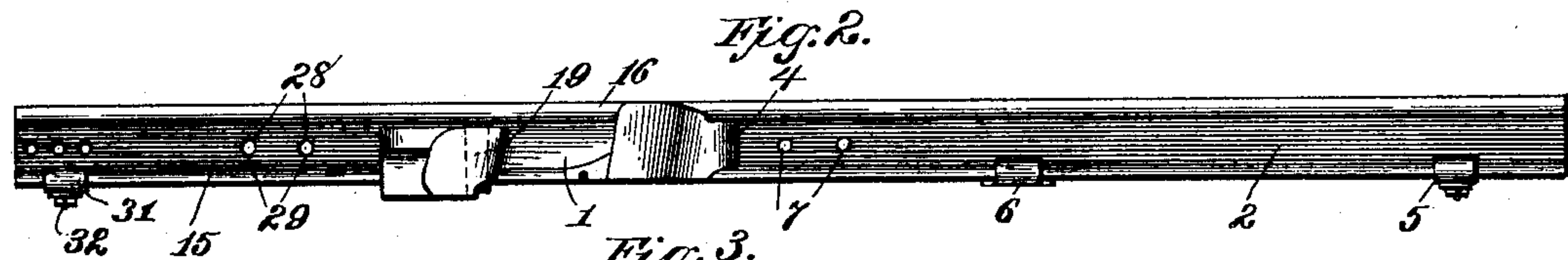
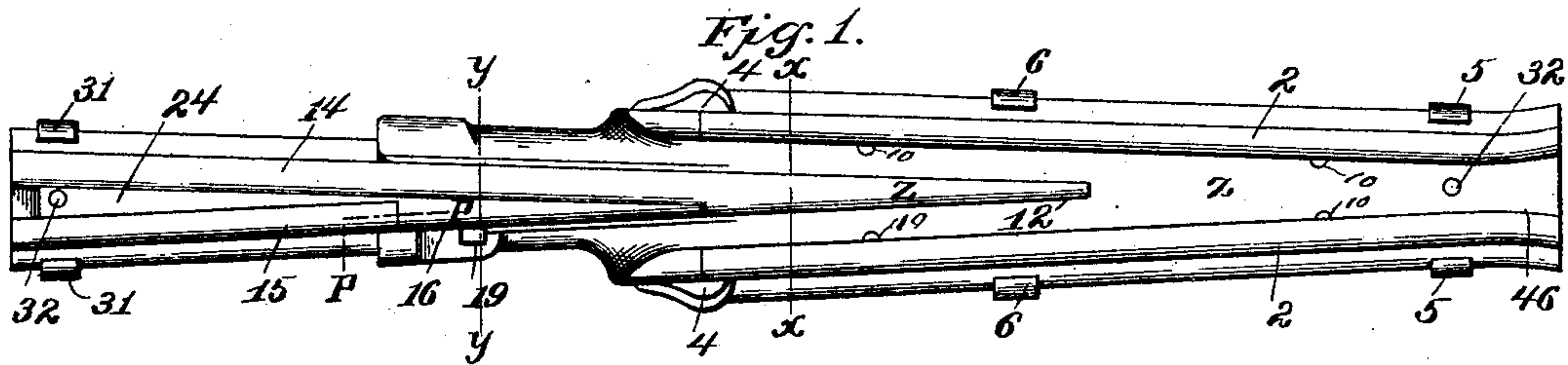


(No Model.)

J. W. CLOSE.
LOCK RAIL FROG.

No. 605,662.

Patented June 14, 1898.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN W. CLOSE, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO
GEORGE L. LOVEJOY, OF SAME PLACE.

LOCK-RAIL FROG.

SPECIFICATION forming part of Letters Patent No. 605,662, dated June 14, 1898.

Application filed March 16, 1896. Serial No. 583,482. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. CLOSE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York; have invented certain new and useful Improvements in Lock-Rail Frogs; 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; reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

The object which my present invention has in view is to improve by strengthening the weak parts and thereby secure additional safety and economy over my former patented inventions, which I fully accomplish with a very simple and exceedingly strong steel casting (it may also be cast or forged of any other suitable material desired) provided with recesses and receptacles, wherewith the frog-point and the ends of four thirty-foot frog-rails are interlocked into the rail-frog, and when these surface-wearing parts are substantially interlocked into the frog the combined mass of large parts produce a supplement of strength in the frog which far excels the original strength of the main track-rails, therewith securing the highest degree of safety and economy, all as hereinafter more specifically set forth, as may be seen by reference to the drawings, in which—

Figure 1 represents a top plan view of my lock-rail frog. Fig. 2 represents a side elevation of the same. Fig. 3 represents a bottom view of Fig. 1. Fig. 4 is a view of the lock-rail frog with the rails removed. Fig. 5 is a cross-section through the line X X of Fig. 1. Fig. 6 represents a section through the line Y Y of Fig. 1. Fig. 7 is a detached top, side, and end view of the point 12, Fig. 1. Fig. 8 is a cross-section through the line V V, Fig. 4. Fig. 9 is a sectional view through the line Z Z of Fig. 1. Fig. 10 is a detached side view. Fig. 11 is a top view. Fig. 12 is a bottom view of the combined wedge and foot-guard of Fig. 1. Fig. 13 is a sectional view taken through the line P P of Fig. 1.

The same figures indicate the several parts throughout the different drawings, in which—

1, Fig. 1, represents the lock-rail frog.
2 are the wing-rails of the frog, with the ends of the wing-rails secured in the recesses 3, formed by the lugs 4, Fig. 4, and the rails are doubly secured laterally with the clamps 5 6 31, Fig. 3, and are secured longitudinally with the pins 7, Fig. 4, which pins are integral with the frog; but, if desired, the pins may be substituted with bolts or studs, and to supplement longitudinal security I cast projections 8, Fig. 3, onto the underside of the frog, and the projections correspond to and interlock into notches and punctures 9 in the bases of the rails. I also anticipate bolting the rails to the frog through the holes 10, Figs. 1 and 4, provided in the bases of the rails and the frog. The frog I provide with the receptacle 11, Fig. 4, for securing the point 12, which I accomplish by dovetailing, as seen in cross-section, Fig. 5, which is a line through X X of Fig. 1, and the base of the receptacle I construct on an incline, as represented in Fig. 9, and as the lower surface of the point corresponds with the incline of the receptacle the weight and pounding of the car-wheels will force the point down the incline and thus maintain the point in a rigid safe position. If desired, the point may be riveted to the frog or secured with bolts or any other of the well-known devices formerly used for securing the point in the old plans of cast-iron frogs; but I prefer the incline plan, as described. I also provide the frog with the receptacle 13, Figs. 4, 6, and 8, for securing therein the point diverging rails 14 and 15, also the combined wedge and foot-guard 16 24, as seen in Figs. 1 and 11. I accomplish this result by placing the rail 14 onto the pins 17, Fig. 4. The wedge 16 is then driven, which operation forces both the rail and wedge into their proper positions up hard against the walls 18 of the receptacle, and therewith secure the rail 14 and the point 12 against longitudinal and vertical displacement. In the operation the wedge is therewith vertically and laterally secured under the head of the rail 14, Fig. 6, and the inclined dovetail wall 18 of the receptacle, and the wedge 16 is secured in the receptacle with the key 19, Figs. 1, 3, and 6, and, as seen at 19, Figs. 4 and 12, the keyway is cut into the wedge and into the wall of the receptacle.

The key I supplement with the quoin 22, Fig. 13, which is housed in the recess 20, Figs. 11 and 12, in the bottom of the wedge, and the quoin is provided with a corresponding recess 21 in the base of the receptacle 13, Fig. 4, which receives the lower half of the quoin. There-
 5 with both wedge and rail 14 are doubly secured longitudinally, and the rail 15 incloses the recess and fully incloses both the quoin and the
 10 wedge 23, Fig. 13, which holds the quoin down into the recess 21. As represented in Figs. 1, 10, 11, and 12, I construct a foot-guard 24 integral with the wedge 16 and provide the wedge with lug 25, which forms the recess 26,
 15 Figs. 11 and 12.

Now to place and secure the diverging point-rail 15 into its proper position, as seen in Figs. 1 and 3, I first cut off the (end) base of the rail to correspond with the angle and
 20 notches or punctures 27 of the rail 14, then place the web of the rail into the slot 26, and in the operation of closing the other end of the rail up into its proper position in line with the point 12 and wedge 16 the holes 28
 25 in the rail 15, Fig. 2, receive and engage the pins 29 on wedge 16, Figs. 11 and 12, and thus as the wedge 16 is doubly secured longitudinally and vertically so in like manner is the rail 15, with the pins 29 and the pro-
 30 jections 30 of the rail 15, which engage the corresponding notches or punctures 27 in the rail 14, Fig. 3. If desired, the wedge 16 may be forged or cast integral with the rail 15; but I prefer the plan as described. The
 35 clamp 31, Fig. 1, is then applied by driving it against the angle formed by the diverging rails 14 and 15 and secured in its proper position with the bolt 32, which passes through the bases of the rails and foot-guard 24 and
 40 secured under the clamp with a nut or its equivalent. Therewith, in combination with the receptacle 13 and lug 25, Figs. 11 and 12, the rail 15 is also doubly secured laterally, vertically, and longitudinally. The clamp 5
 45 is secured in the same manner and devices, and the clamp 6 is also applied in like manner, but secured with the ratchet-pin 33, which engages the separated surface of the clamp, and thereby permit the clamp to be
 50 tightened as occasion may require, and I provide the pin with the spring 34, Fig. 9, to press the pin down, and therewith prevent the clamp getting loose.

It is a well-known fact that Bessemer-steel
 55 rails do not contain sufficient carbon to receive a temper or be hardened any more than wrought-iron—that is, Bessemer steel is simply semisteel and semi-iron. Consequently the soft acute (Bessemer-steel rail) frog-
 60 points now universally in use readily yield, batter down, and afford but a frail weak support to the wing-rails. Therefore the entire frog is too rapidly destroyed. To overcome and remedy this dangerous weakness and
 65 great waste, ineffectual devices have been invented, one of which was to make rails con-

taining carbon sufficient to harden-temper the frog-point, which was all right for the frog-point; but the hard rails proved too brittle for service, dangerous, and were con-
 70 demned. The spring-rail (frog) partially alleviated the evil, but at the expense of a very weak and most dangerous frog, as the strength of the wing-rails are dangerously de-
 75 stroyed by cutting away the base of the rails in order to form a close connection-joint with the frog-point. Snow and ice increased the danger to the loose flopping sliding rails, with their machinery, to such an extent that the plan has been condemned wherever thor-
 80 oughly tested. Another equally dangerous device was that in which the frog-point was protected by the wheel-flanges passing the frog-point upon a hardened-steel throat or filling-plates, which destroyed the wheel-
 85 flanges, inviting accidents and wrecks, and therefore it was condemned. To remove and remedy this great waste and dangerous defect in the Bessemer-steel rail-frogs, I form the frog-point in the usual manner with two
 90 diverging rails of Bessemer steel, but extend the acute point with a short separate point made of fine high-grade hardened tempered cast-steel. The great value in safety and
 95 economy gained by this improvement is comparatively the difference of a tool tempered and one untempered or of a high-grade cast-steel cold-chisel and a chisel forged of a low-grade Bessemer-steel iron.

I am aware that the old plans of cast-iron
 100 frogs were provided with a receptacle in which a short point was secured, also that the entire wearing-surface of the frog was plated with high-grade cast-steel, and that the rails were only connected to the frog by
 105 resting or lapping upon a chair four or five inches in length, which chair was integral with the frog. I therefore do not broadly claim either a receptacle or a short point, neither do I claim in the same sense foot-
 110 guards; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a railway-frog, a metal bed bearing on the bases or flanges of the wing-rails, 2,
 115 and of the diverging rails, 14 15, having the form described and shown, provided with recesses, 3, for securing the wing-rails, 2, with the lugs, 4, and receptacle, 11, for securing the point, 12, also the receptacle, 13, for se-
 120 curing the diverging point-rail, 14, with keyway, 19, and recess, 21, all constructed and arranged substantially as shown and described.

2. In a railway-frog, the bed or base rest-
 125 ing on and supported by the lower flanges of the wing-rails, 2, and diverging rails, 14 15, and having a receptacle adapted to receive and closely conforming to the point, 12, and a point-rail resting in said receptacle, in com-
 130 bination with a combined wedge and foot-guard fitting into a recess between and se-

curing the diverging rails, 14 15, in place, all constructed and arranged substantially as shown and described.

3. In a railway-frog, a wedge, 16 having the
5 lug, 25, with the recesses, 20 26, keyway, 19, and pins, 29, all substantially as shown and described.

4. In a railway-frog, the wedge, 16, having the foot-guard, 24, integral with said wedge
10 and in line with one of its sides, all as shown and described.

5. In a railway-frog, the combination of a wedge with the frog-point, said wedge extending past the point, thereby protecting the
15 joint formed with the obtuse end of the point, and the diverging point-rail to which the point is conjoined, all as shown and described.

6. A railway-frog provided with an open-

ing or recess formed by diverging arms of 20 said frog, adapted to receive and secure the diverging rails, 14 15, and resting on the flanges of said diverging rails; together with the wedge, 16, and foot-guard, 24, integral with said wedge, which rest on and are sup- 25 ported by the flanges of said diverging rails, all constructed, arranged and secured to operate as shown and described.

7. The combination of pins, 17, in recess, 13, of the base-plate with the wedge, 16, as 30 shown and described.

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

JOHN W. CLOSE.

Witnesses:

H. R. BIRD,

F. P. KERSTEN.