

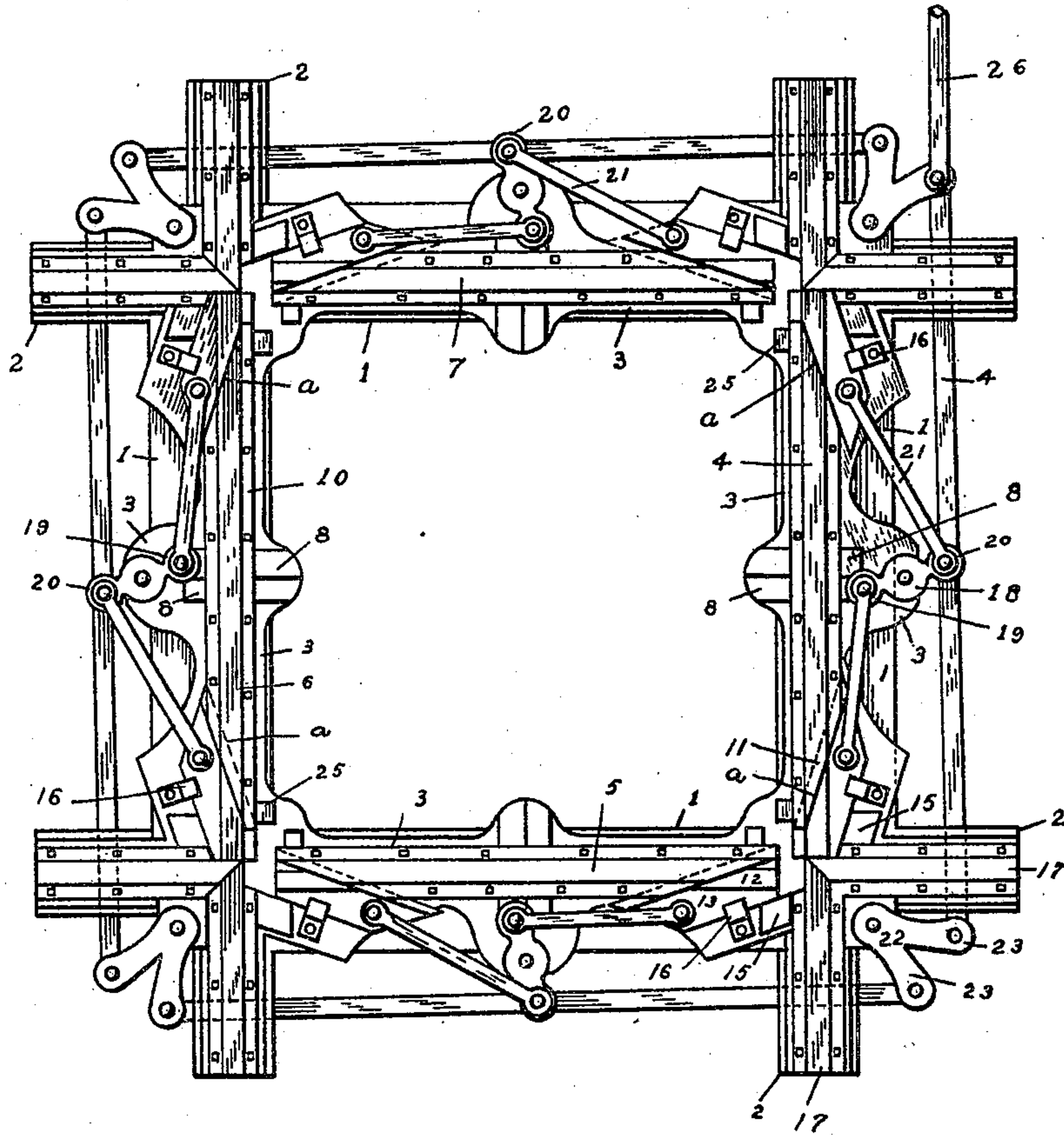
No. 819,992.

PATENTED MAY 8, 1906.

C. C. HARDMAN.  
FROG OR CROSSING.  
APPLICATION FILED DEC. 27, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor

Charles C. Hardman.

Witnesses

Fred A. Schlosser  
Calvin Keith

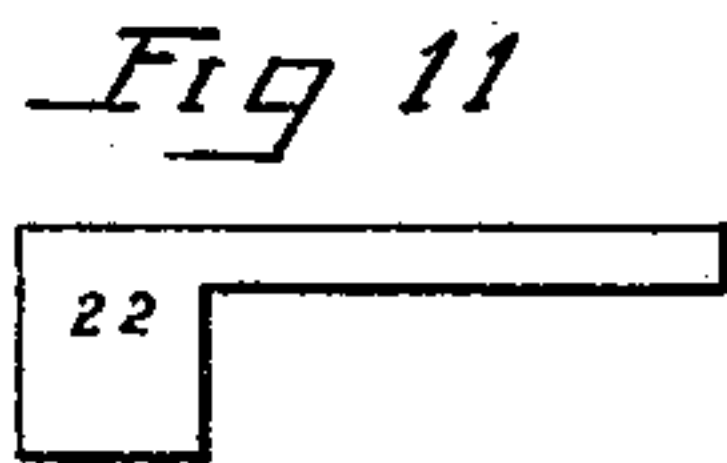
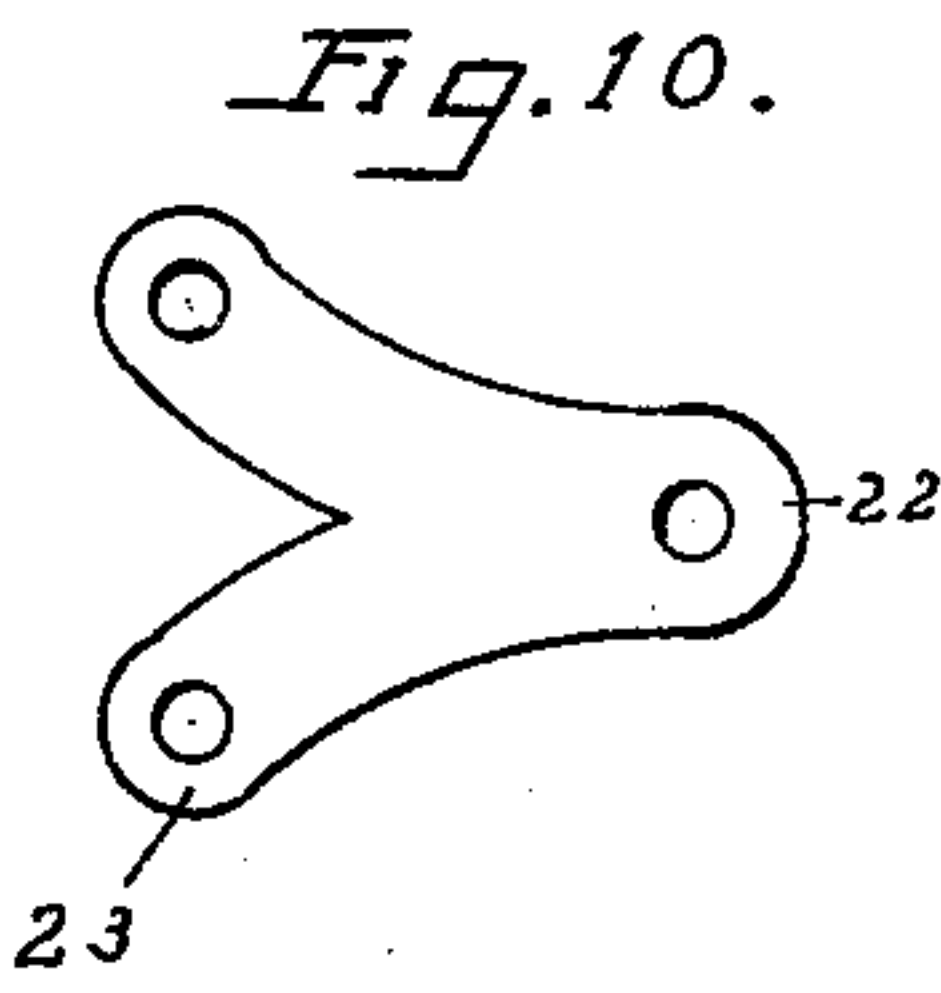
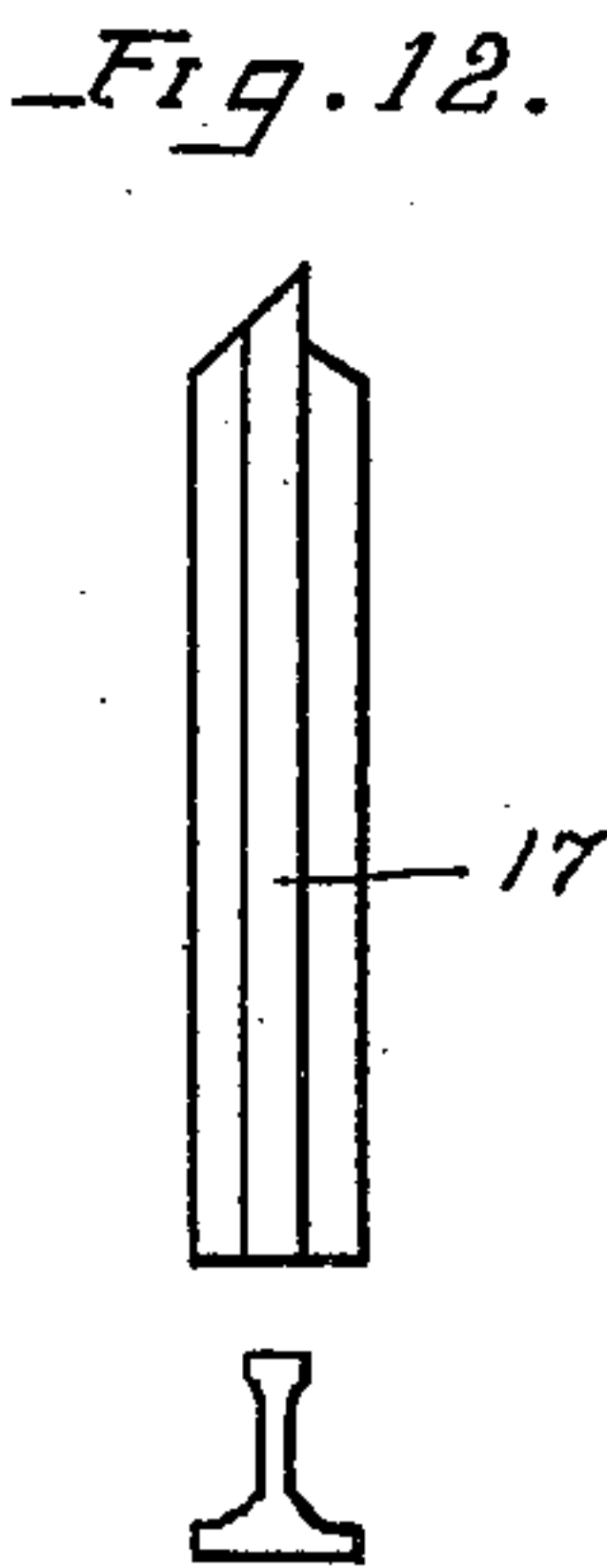
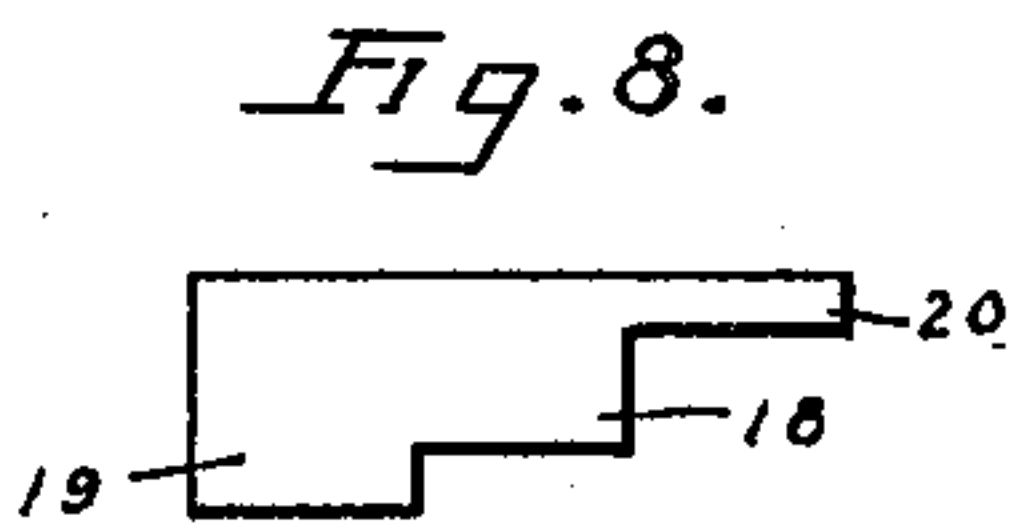
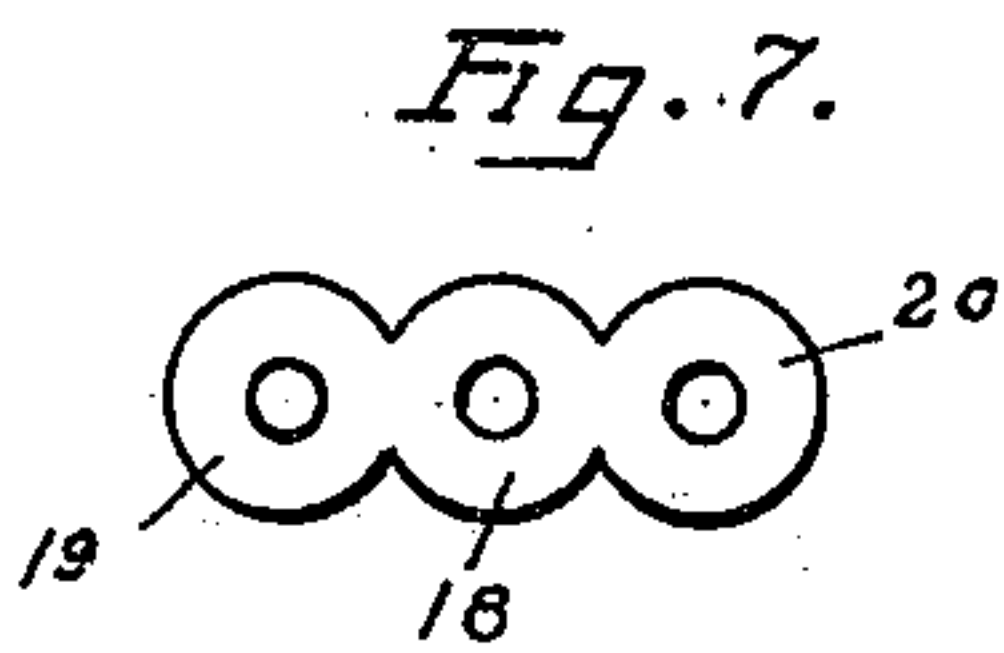
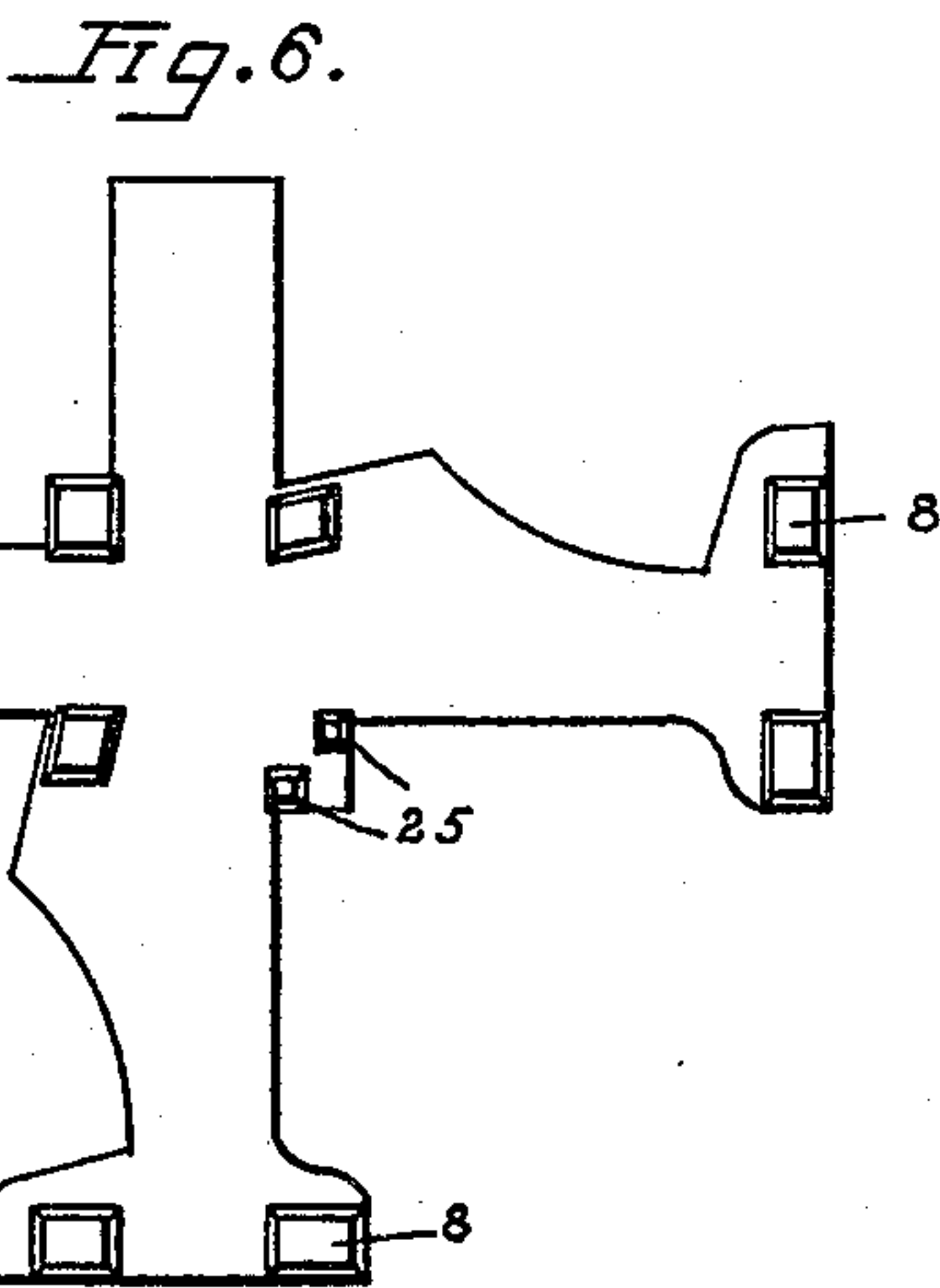
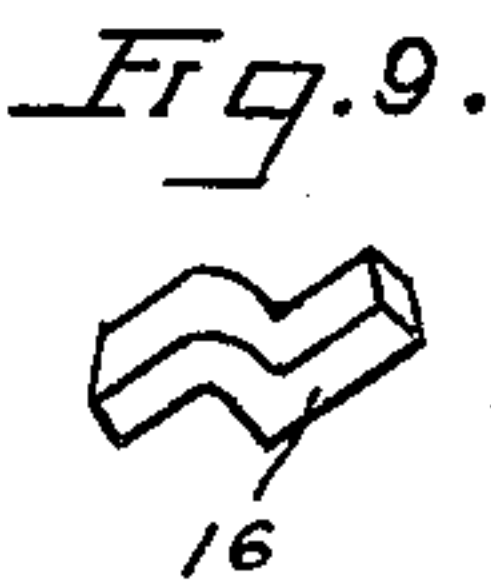
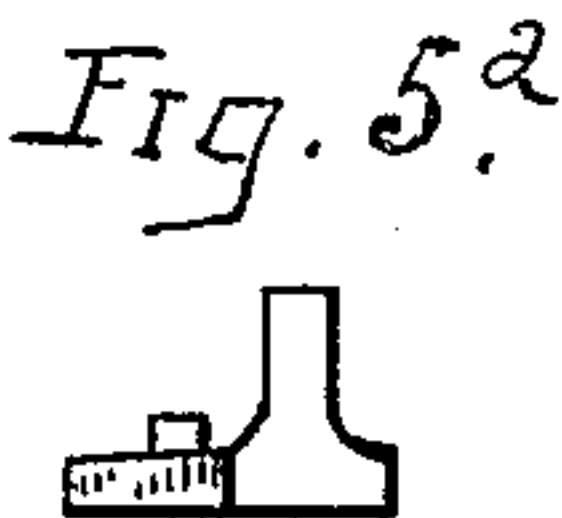
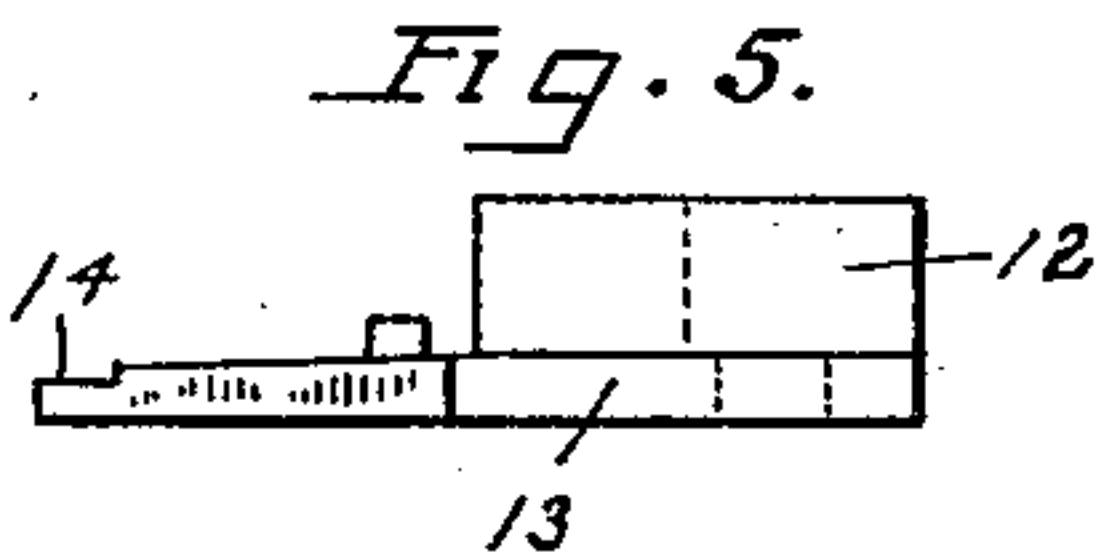
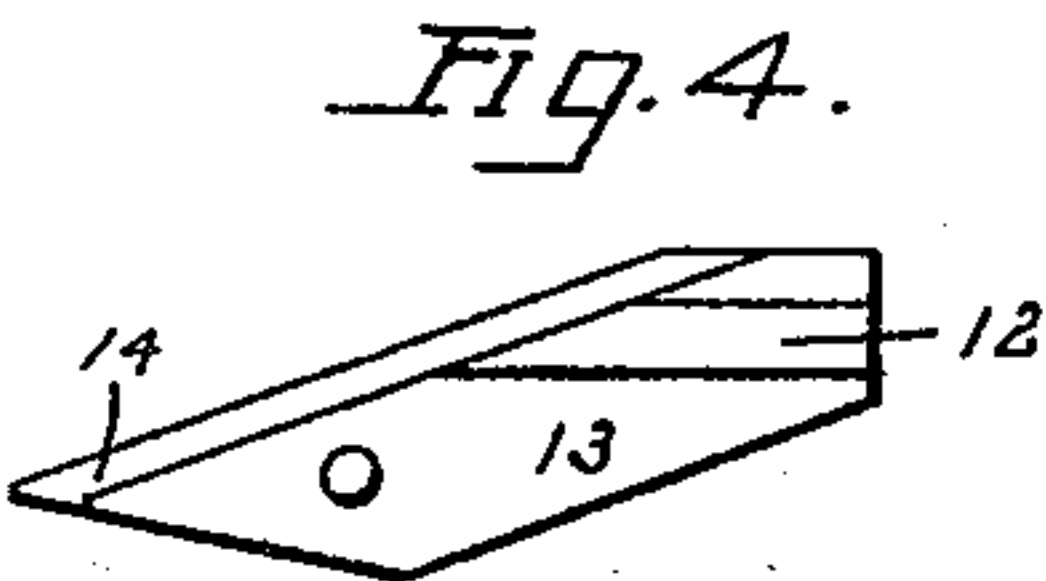
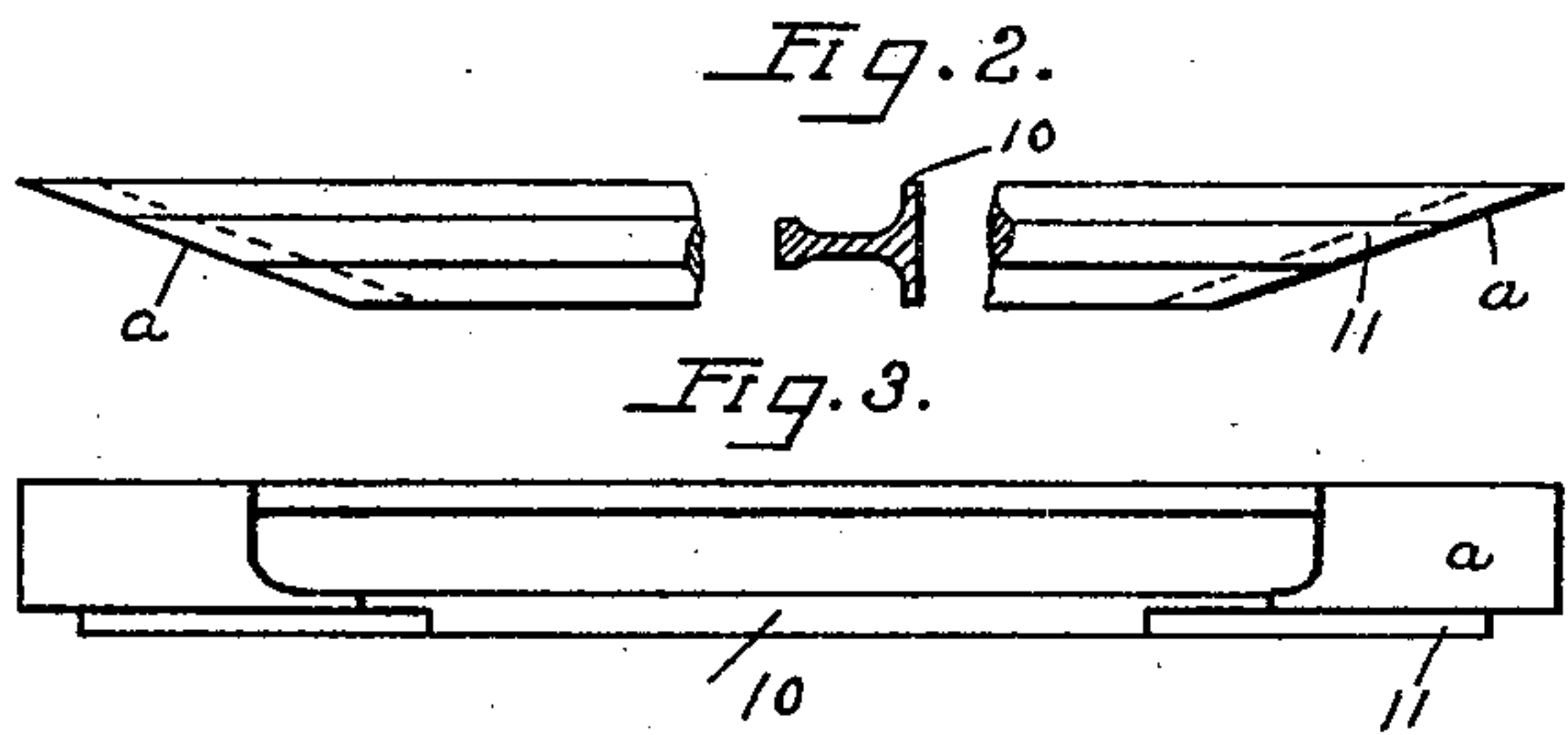
By

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

CHARLES C. HARDMAN, OF MANSFIELD, OHIO.

## FROG OR CROSSING.

No. 819,992.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed December 27, 1905. Serial No. 293,491.

*To all whom it may concern:*

Be it known that I, CHARLES C. HARDMAN, a citizen of the United States of America, and a resident of Mansfield, Richland county, Ohio, have invented certain new and useful Improvements in Frogs or Crossings, of which the following is a specification.

My invention relates to frogs or crossings.

In the use of the ordinary frog or crossing on account of the gap or opening between the rails of the frog and track the rolling-stock is subjected to a constant jar or vibration as the wheels pass over the gap, causing undue wear, strain, and crystallization of the parts composing the rolling-stock and frog. It is apparent that if means are provided to close the gap the rolling-stock will pass over the crossing at the same speed without the jar, noise, and vibration of the parts caused by the frogs now in use and which add greatly to the expense of maintenance and the liability of accident.

The essential feature of my improvements is to afford facilities for closing up the gap or opening between the rails of the frog and the rails of the track at any intersection or crossing of a railway or railroad, thereby providing continuous rail-crossing for the rolling-stock in either direction.

Another object is to provide means to operate the closing-rail mechanism from either side or end manually or automatically.

I attain these and other objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my device mounted on a frame. Fig. 2 is a top view of one of the beveled rails with central portion broken away and cross-sectional end view thereof. Fig. 3 is a side view of Fig. 2, showing a portion cut away under both ends of the rail. Figs. 4 and 5 are top and side views, respectively, of the movable shoe. Fig. 5<sup>a</sup> is a cross-sectional end view of Figs. 4 and 5. Fig. 6 is a top view of one of the standard rails or plates upon which the operating mechanism of the frog is mounted. Figs. 7 and 8 are top and side views, respectively, of the reversing-bar. Fig. 9 is a perspective view of the clamp or guide for the movable rail. Figs. 10 and 11 are top and side views, respectively, of one of the angular levers. Figs. 12 and 13 are top and cross-sectional end views, respectively, of one of the short rails forming the corner-rails of the frog, which abut against the track-rails.

In the construction of my frog I prefer to mount it upon a rectangular wooden frame 1, leaving the ends 2 of the beams or sills forming the frame projecting from each corner, as shown in the drawings. A standard or rail-plate 3, preferably made in four pieces for convenience in construction, (see Fig. 6,) is provided and securely attached to the frame by any well-known fastening means. When the plates 3 are secured to the frame, they form a plate or steel support for the rails and operating mechanism of the frog. Four rails 4, 5, 6, and 7, having their ends *a* beveled, are secured to the plate and frame at points diametrically opposed to each other and adapted to aline with the tracks crossing each other. Lugs 8 are secured to or made integral with the plates 3, contacting with and extending on both sides of the flange of the rails to prevent the rails from spreading. A portion of the bottom of the rails 4, 5, 6, and 7, following the beveled ends, is cut away, forming a shoulder or kerf 11. Movable rails 12, having their ends beveled to correspond with the beveled ends of the stationary rails, are mounted on or made integral with a shoe 13. The shoes are provided with a flange 14, which extends underneath the beveled end of the rail into the shoulder or kerf for the purpose of preventing the shoe and rail from lifting up. Lugs 15 and clamps 16 contact with one side and the top of the shoe, forming a way in conjunction with the kerf for the shoe, which guides and retains it in place when movement is imparted to the shoe to close or open the gap for the purpose intended.

Corner-rails 17 are secured to the plates 3 and the frame 1 in direct alinement with the stationary rails 4, 5, 6, and 7. A reversing-bar 18, having two arms 19 and 20 extending therefrom, is pivotally secured to the plates outside the stationary rails. Connecting-bars 21 are pivotally secured on one end to the shoe of the movable rails with the opposite end pivotally connected to one end of the reversing-bar 18.

It will be noted that all of the shoes carrying the movable rail are linked together, and when movement is imparted to one it operates all of the shoes, closing or opening the gap alternately, forming a continuous rail with either of the intersecting tracks at the will of the operator.

In order to operate the movable rail simultaneously, four angular pivotal levers 22 are



secured to the plates 3. The arms 23 extend and diverge outward at an angle with each other from the angular corner of the frame. Link-bars 24 are pivotally connected to each of the arms, forming a rectangular linked connection. The arms 20 of the reversing-bar are pivotally connected to the center of the link-bars, thereby connecting all of the movable shoes together and providing a means of simultaneously reciprocating the shoes in the ways from any point or part of the linked-bar connection. An elongated slot is formed in the projecting end 2 of the frame for the passage and movement of the link-bars. The lugs 25 keep the ends of the stationary rails from spreading. The bar 26 can be connected to the usual switch-lever and operated manually, or appropriate mechanism can be attached to the wheels of the rolling-stock, actuating the frog mechanism automatically.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a frog for crossings, a frame, a standard mounted on said frame, rails having beveled ends secured to the frame, reversing-levers pivotally secured to the standard or plate, movable rails having inclined ends adapted to close the opening between the intersecting track-rails, link-bars pivotally secured to the reversing-bars and means to impart movement to said bars simultaneously.

2. In a frog for crossings, a frame, a plate mounted thereon, beveled rails secured to said plate, movable rails having their ends beveled slidably secured to the plate, connecting mechanism adapted to actuate said movable rails, link-bars pivotally secured to the reversing-bars, reversing-bars pivotally secured to the frame.

3. A frog for railways comprising a frame, a plate mounted thereon, stationary rails having their ends secured to the plate and frame, a shoulder formed underneath the beveled portion of the rails, a shoe having a flange extending into said shoulder, a rail made integral with said shoe having a beveled portion adapted to contact with the beveled portion of the stationary rails, lugs and a clamp adapted to form a way for said shoe, and means to reciprocate said shoe.

4. In a railway-frog, a frame, a plate mounted thereon, stationary beveled rails, movable beveled rails adapted to reciprocate in ways, a reversing-lever, connecting mechanism connecting said movable rails and reversing-levers, angular levers secured to the frame having divergent arms made integral therewith, link-bars connected to said levers and the reversing-bar.

5. A crossing for railways, a frame, a plate mounted thereon, stationary rails secured to the plate and frame, shoes having a beveled portion of a rail secured thereto, means to impart a slidable movement to the shoes closing opening or gap to form a continuous rail, connecting-bars secured to the reversing-bars, link-bars pivotally secured to the connecting-bars.

6. A crossing for intersecting tracks, a frame, a standard mounted thereon, stationary beveled rails secured to the plate, reversing-bars pivotally secured to the plate at diametric points, movable rails having a shoe fitted to suitable ways, connecting-bars adapted to pivotally connect the reversing-bar and shoes carrying the movable rails, angular levers pivotally secured to each corner of the frame having arms diverging therefrom, link-bars connected to angular levers whereby the shoes carrying the movable rail can be actuated simultaneously.

7. In a frog or crossing for intersecting tracks, a frame, a plate or standard mounted thereon for the purpose of supporting an operating mechanism, stationary rails secured to the plate having their ends beveled, movable beveled rails adapted to slidably contact with the beveled ends of the stationary rails to close or provide an opening between intersecting rails, means to operate said movable rails simultaneously.

8. In a frog or crossing for intersecting tracks, a frame, a plate mounted thereon, rails having beveled ends secured to the plate, movable rails mounted on a shoe slidably secured to the plate, reversing-bars pivotally secured to the frame, connecting-bars secured to said bars, and means to actuate the movable rods simultaneously as described.

9. In a frog or crossing for intersecting tracks, a frame, a plate mounted thereon, beveled rails secured to said plate, movable rails having their ends beveled slidably secured to said plate, link-bars pivotally attached to one end of said movable rails, reversing-bars pivotally secured to the frame and link-bars.

10. In a frog or crossing, a frame, a standard, stationary rail-sections, movable rail-sections, reversing-bars secured to the standard, link-bars connecting the reversing-bars and movable rail-sections, and means to simultaneously actuate said movable rail-sections as described.

Signed at Mansfield, Ohio, this 23d day of December, 1905.

CHARLES C. HARDMAN.

Witnesses:

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H. E. BELL.