

(No Model.)

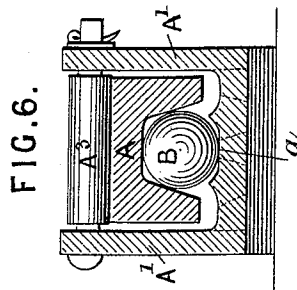
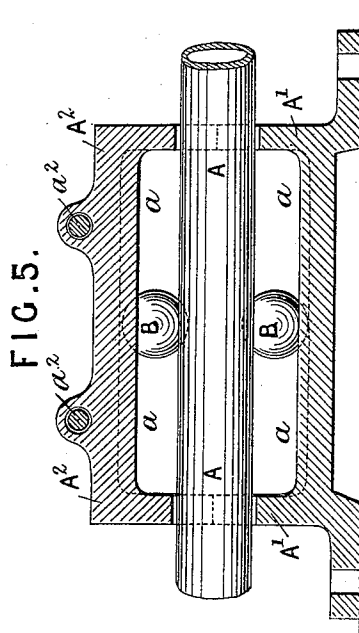
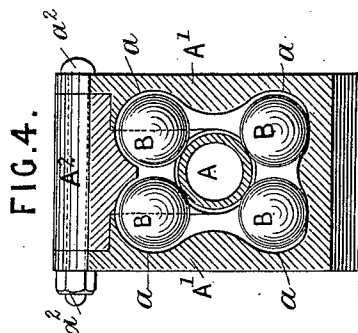
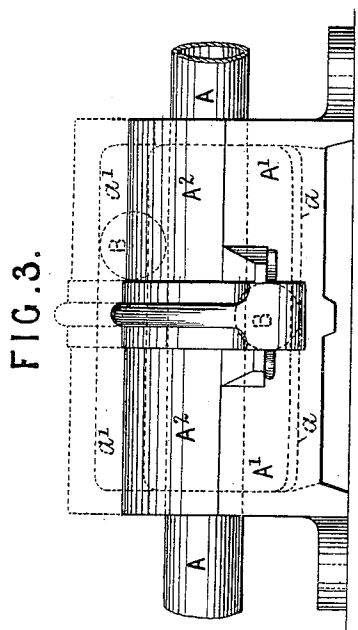
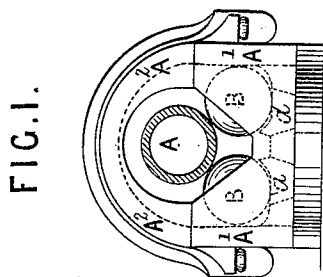
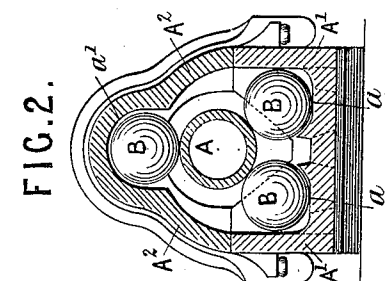
2 Sheets—Sheet 1.

H. WILLIAMS.

DEFLECTION STAND FOR SWITCH AND SIGNAL RODS.

No. 479,906.

Patented Aug. 2, 1892.



WITNESSES.
William M. Kenzie
Jm Boyet Clavel

INVENTOR.
Henry Williams

(No Model.)

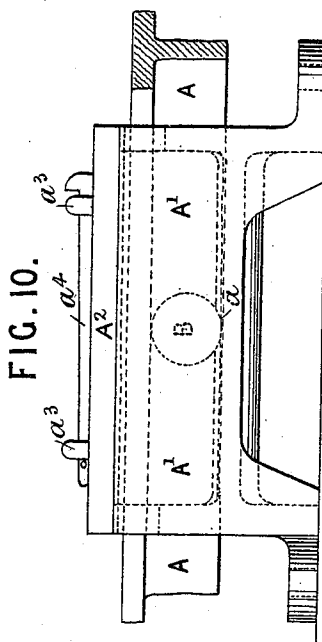
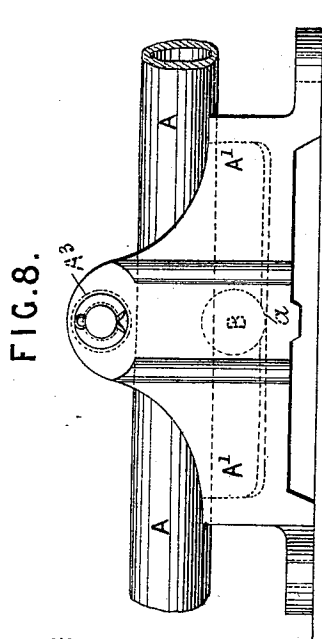
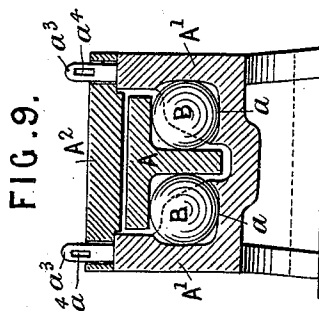
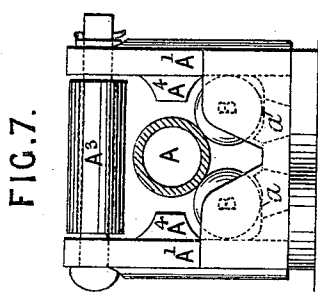
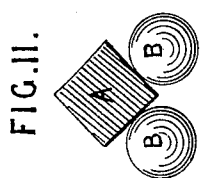
2 Sheets—Sheet 2.

H. WILLIAMS.

DEFLECTION STAND FOR SWITCH AND SIGNAL RODS.

No. 479,906.

Patented Aug. 2, 1892.



WITNESSES
William McKemie,
M. Boyd Cullen.

INVENTOR
Henry Williams

UNITED STATES PATENT OFFICE.

HENRY WILLIAMS, OF GLASGOW, SCOTLAND.

DEFLECTION-STAND FOR SWITCH AND SIGNAL RODS.

SPECIFICATION forming part of Letters Patent No. 479,906, dated August 2, 1892.

Application filed March 21, 1892. Serial No. 425,777. (No model.) Patented in England September 10, 1888, No. 13,028.

To all whom it may concern:

Be it known that I, HENRY WILLIAMS, a subject of the Queen of Great Britain and Ireland, residing at Gowanbrae, Crosshill, Glasgow, Scotland, have invented an Improved Method of and Appliances for Carrying and Directing the Rod Connections of Switch Points and Signals of Railways, of which the following is a specification.

A patent has been obtained for said invention in Great Britain, dated September 10, 1888, No. 13,028.

My invention has reference to an improved method and combinations of mechanism for carrying and directing with a minimum of friction the rod connections of switch points and signals of railways.

The improvements comprise new combinations of operating-rods, traveling spherical ball-bearings, and containing-housings; and in order to enable others skilled in the art to which my invention relates to understand how it may be carried into practice I have hereunto appended two explanatory sheets of drawings, in which the same reference-letters are used to indicate corresponding parts in all the figures where shown.

Figure 1 is an end elevation showing a point-rod A, of tubular cylindrical section, as inclosed within a box-housing A' A² and carried and directed by two rolling spherical balls B B. Fig. 2 is a transverse section corresponding to Fig. 1, but showing three spherical balls B B B, two below and one above the point-rod A. Fig. 3 is a longitudinal elevation corresponding to Fig. 1 and showing also in dotted lines the modified arrangement of Fig. 2. Figs. 4 and 5 are transverse and longitudinal sections, respectively, of point-rod A, spherical ball B, and housing A' in which four balls B are used, two below and two above the point-rod A. Fig. 6 shows a transverse section in which the point-rod A is made of inverted-U channel section and only one spherical ball B is used. Figs. 7 and 8 on Sheet 2 show end and longitudinal elevations corresponding to Figs. 1 and 2, but in which an open form of housing is used. Figs. 9 and 10 show a transverse section and longitudinal elevation in which a T form of point-

rod A is used, carried on two balls B, inclosed within a box-housing A' A². Fig. 11 is a transverse section showing a square form of point-rod A as carried on two balls B, and Fig. 12 a corresponding view of an angle-iron form of point-rod A as carried on one ball B.

Referring to Figs. 1 and 3, the balls B B run in groove-guides *a*, formed in the lower part A' of the box-housing, and carry the operating switch-rod A, which is covered in on top by the cap part A² of the housing. In Fig. 2 three balls B B B are used, the upper one being being situated above the point-rod A and guided within a groove *a'*, formed in the top cap A² of the housing. In Figs. 4 and 5 four balls B are used, guided within channel-grooves formed at *a* within the housing A' and covered in by a top cover A², secured by transverse bolts *a*². In Fig. 6 the point-rod A is made of channel-section and incloses the ball B, which runs on a bottom central guide *a*. In this arrangement no cap protecting part A² of housing is necessary, but a top guide-roller A³ is mounted for retaining the rod A in position. In Figs. 7 and 8 no top protecting-cap A² is used, the rod A being kept in position by a top roller A³, and projecting snugs A⁴ are formed on the cheeks of the housing A' for preventing lateral displacement of the rod A. In Figs. 9 and 10 the rod A, which is formed of T-section, is directed by balls B on each side of its vertical central web and is covered in by a top cap A², secured in position by slotted lugs *a*³ and removable keys *a*⁴. The spherical balls B may be made of cast-iron, steel, or other metal or of glass, stoneware, or other suitable material.

When the signal-man operates the point-rods A from his cabin or other part of the railway, the balls B within the housing A A' will enable these rods to travel and actuate the switches or signals with a minimum of friction and consequent small expenditure of energy by the operator.

What I claim is—

1. The combination comprising railway-switch and signal operating rods, traveling spherical balls, and containing-housings, substantially as and for the purposes set forth.

2. The combination comprising railway switch and signal operating rods A, traveling spherical balls B, and containing-housings formed of a lower casing A', with ball-guide
5 grooves *a*, and an upper inclosing cap A², substantially as and for the purposes set forth.

3. The combination comprising railway switch and signal operating rods A, formed of T-section, traveling spherical balls B on
10 each side of the central web of said rod A,

and containing-housings A' A², substantially as and for the purposes set forth.

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

HENRY WILLIAMS.

Witnesses:

LLEWELLYN WYNN WILLIAMS,

ELIZABETH DON,

Both of Gowanbrae, Crosshill, Glasgow.