My invention relates to railway track switch connecting mechanisms of the type employed to connect a switch circuit controller connecting rod to a switch point and to a switch circuit controller.

This application is a division of my copending application, Serial No. 305,861, filed on November 24, 1939, now Patent No. 2,245,427, dated June 10, 1941, for Railway switch track connecting mechanism.

Railway switch circuit controllers are employed in the railway signaling art to detect and register movements of switch points with respect to the associated track rails. To assure safe and reliable operation of trains over a switch, the connections between a switch point and its associated circuit controller must be such that relatively small movements of the point are detected, since otherwise a switch point might creep open without causing the signal controlling traffic to be disconnected from its associated apparatus in order to enable the connection to be effected.

My invention provides a novel and improved connecting mechanism wherein lost motion is taken up automatically as it occurs by resilient means arranged out of the plane of movement of the connected members. More particularly, my invention provides a connecting mechanism of the type arranged to be employed universally as either a right-hand or left-hand connector, and capable of being assembled to connect together the members to be joined by the connector without requiring such members to be disconnected from the associated apparatus. In addition, my invention is directed to providing a connection between a standard A.A.R. switch lug and a circuit controller connecting rod by means of a connector economical to construct, easily maintained and inspected, and involving relatively few parts.

I shall describe one form of a connecting mechanism embodying my invention, and shall then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a diagrammatic view, partially sectional, of a standard A.A.R. switch lug and a connecting mechanism embodying my invention for connecting the switch lug to a switch circuit controller connecting rod. Fig. 2 is a sectional view, taken on the line II—II of Fig. 1, of a connecting mechanism shown in Fig. 1. Fig. 3 is a diagrammatic view illustrating a modification of a portion of a connecting mechanism shown in Figs. 1 and 2. Similar reference characters have been employed to designate corresponding parts in each of the several views of the drawing.

Referring to the drawing, the reference character 1 designates a standard A.A.R. switch lug, the upper end (as viewed in Fig. 1) of which is preferably connected in any suitable manner, not shown, to a switch point of a railway track switch, and the other end of which is formed with a conical taper toward its free end. A connecting rod 26 is provided on its one end with an enlarged section (see Fig. 2) provided with a laterally extending bore or hole 5 formed or provided with a cupped surface. For example, as shown, bore 5 may be cylindrical and be provided with a cupped bushing 6 pressed into the opening. Bearing segments 8 divided into three
(see Fig. 2) or four (see segments 9 of Fig. 3) parts are provided and are formed with an external surface shaped to fit cupped bushing 6 and an internal surface curved to conform to the conical taper of lug 7 so that when the segments are in place as shown in the drawing, and lug 7 is inserted through the bore 5 of rod 26, the bearing segments engage both lug 7 and bushing 5 to connect lug 7 to rod 26. The segments 8 are held in engagement with lug 7 and bushing 5 by means of a washer 10 which engages one side of the segments and which is acted upon by a spring 11 surrounding lug 7 and interposed between washer 10 and another washer 12, the latter washer being backed up by a nut 13 threaded on the extreme free end of lug 7. Nut 13 is prevented from loosening by a cotter pin 14.

A pressure grease fitting 45 is shown in Fig. 2 threaded into a hole drilled in the side of the connecting rod 26, the hole communicating with the lateral opening 5 of the rod for permitting pressure lubrication of the connecting parts. If desired, however, the ball segment may be formed of oil impregnated bearing material, such for example, as the type commercially known as "Ollite." Ball segments of the latter type are represented in Fig. 3, and by virtue of the self-lubricating qualities of the material employed, no pressure grease fitting is required.

It is readily apparent from the foregoing description of the connecting mechanism embodying my invention that spring 11 urges segments 8 into intimate contact with both lug 7 and cupped bushing 6, thereby providing a connector wherein forces are transmitted directly from one member to the other and in which lost motion between the parts is taken up automatically due to the force of the spring 11. It is further apparent that my invention provides a universal connecting mechanism capable of establishing both right-hand and left-hand connections between the switch lug and connecting rod. That is to say, the connector may be employed as shown where lug 7 is inserted into opening 5 of rod 26 from the top, as viewed in the drawing, or if desired the lug may be inserted from the other side of the rod. Also, the connector may be assembled without requiring either lug 7 or rod 26 to be disconnected from the associated switch point or circuit controller, and the number of parts or elements of the connector is reduced to a minimum, thereby providing a connector economical to construct and readily assembled and maintained.

Although I have herein shown and described only one form of a connecting mechanism embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. In combination, a connecting rod having at one end thereof a laterally extending opening provided with a concave bearing surface conforming to the circumference of a sphere having its center at the center of said opening, a tapered force transmitting member adapted to be secured to an operative member and extending through said opening, bearing segments surrounding said member and shaped externally to conform to a said bearing surface and internally to conform to said tapered member, and a compression spring surrounding said force transmitting member and interposed between said bearing segments and the free end of said tapered member for urging said bearing segments into constant engagement with both said tapered member and the bearing surface of said rod, whereby a connection is effected between said rod and said tapered member which transmits forces directly from said tapered member to said rod, and lost motion between the parts of the connection is prevented by virtue of said biasing means.

2. In combination, a connecting rod provided at one end thereof with a laterally extending cylindrical opening, a tapered force transmitting member adapted to be secured to an operative member and extending from beyond one side of said opening entirely through the opening and terminating at a point beyond the other side of the opening, a bushing pressed into said opening provided with a concave bearing surface conforming to the circumference of a sphere having its center at the center of said opening, bearing segments surrounding said tapered member and shaped externally to conform to the concave bearing surface of said bushing and internally to conform to said tapered member, and biasing means for urging said bearing segments into constant engagement with both said tapered member and said bushing, whereby a connection is effected between said rod and said tapered member which transmits forces directly from said tapered member to said rod and lost motion between the parts of the connection is prevented by virtue of said biasing means.

3. In combination, a connecting rod provided at one end thereof with a laterally extending cylindrical opening, a tapered force transmitting member adapted to be secured to an operative member and extending through said opening, a bushing pressed into said opening provided with a concave bearing surface conforming to the circumference of a sphere having its center at the center of said opening, bearing segments surrounding said tapered member and shaped externally to conform to said bushing and internally to conform to said tapered member, and a compression spring surrounding said tapered member and interposed between said bearing segments and the free end of said tapered member for urging said bearing segments into constant engagement with both said tapered member and said bushing, whereby a connection is effected between said rod and said tapered member which transmits forces directly from said tapered member to said rod and lost motion between the parts of the connection is prevented by virtue of said biasing means.

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