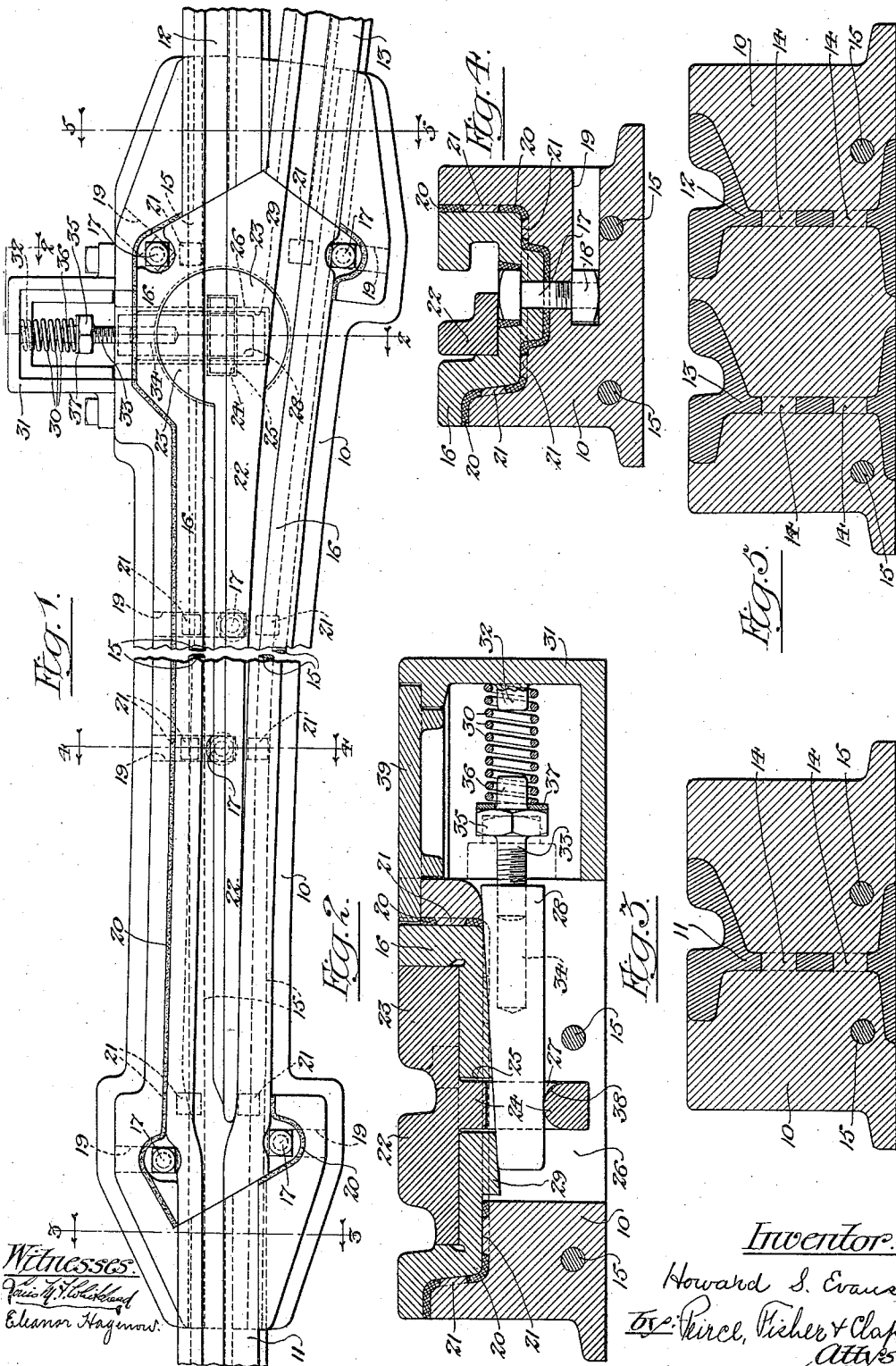


H. S. EVANS.
SWITCH STRUCTURE.
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UNITED STATES PATENT OFFICE.

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SWITCH STRUCTURE.

1,059,721.

Specification of Letters Patent.

Patented Apr. 22, 1913.

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To all whom it may concern:

Be it known that I, HOWARD S. EVANS, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Switch Structures, of which the following is a full, clear, and exact description.

The invention relates to switch structures and seeks to provide a simple and effective hold-down device for the heel of the switch tongue which, while applicable to different forms of switch tongue, is more particularly adapted to switch structures in which the heel of the tongue is enlarged and pivotally mounted in the recess in the body part of the switch structure, thereby obviating the necessity of a pivot pin or pintle for the tongue.

The invention also seeks to otherwise improve the switch structure, as hereinafter set forth, and consists in the features of improvement herein described, illustrated in the preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of the improved switch structure. Fig. 2 is a transverse section thereof on the line 2—2 of Fig. 1 through the center of motion of the tongue. Figs. 3, 4 and 5 are transverse sections on the lines 3—3, 4—4 and 5—5, respectively, of Fig. 1.

The switch structure, in the preferred form of the invention, comprises a casting 10 extending from end to end thereof and to which the rails of the main and branch track are connected. Preferably, sections 11 and 12 of the main track rail and a section 13 of the branch track rail are connected to the metal body 10 of the switch structure in the casting operation, the rail sections 12 and 13 being embedded in the heel end of the body part and the rail section 11 in its opposite end. To secure a firm union between the body of the switch structure and the rail sections, the latter are preferably provided with perforations 14 (see Figs. 3 and 5) through which the metal of the body part flows in the casting operation. The union between the rail sections and the cast body of the switch structure is strengthened by means of two rods 15 of tough metal embedded in the metal body 10 in the casting operation, and extending from end to end

thereof. One of these rods extends in line with the track sections 11 and 12 and the other in line with the track sections 11 and 13.

The cast metal portion 10 of the switch structure is cut away to receive an insert block 16 of manganese steel. This block preferably extends from end to end of the switch structure and abuts against the beveled ends of the rail sections 11, 12 and 13, as shown. The block 16 is held in position by a series of bolts 17 which extend downwardly through openings therein and in the cast portion 10 and the lower ends of the bolts engage nuts 18. These nuts are inserted into the pockets 19 formed in the cast portion 10 and opening through the side walls thereof. The walls of the pockets engage the nuts and prevent them from turning. The heads of the bolts set within recesses formed in the block 16 and after the bolts are placed in position, zinc is run into these recesses about the heads of the bolts. Preferably, also, a layer 20 of zinc is cast in place between the body of the block 16 and the cast metal portion 10. To preserve a space for the zinc layer, the cast portion 10 is provided with a series of projecting lugs 21 cast thereon and arranged to engage the block 16. In assembling the parts, the block 16 and cast metal portion 10 are first secured together by bolts 17, the lugs 21 holding these parts separated to form a space into which the molten zinc is run to form the layer 20.

The block 16 of manganese steel is recessed to form a seat for the switch tongue 22. In the preferred form of the invention, the tongue is provided with an enlarged offset, circular heel 23 which is arranged within a correspondingly shaped recess in the hardened steel block 16 and forming therewith a pivot bearing for the tongue. This enlarged bearing serves to hold the tongue against both lateral and longitudinal movement and also reduces the wear at the heel. The enlarged heel 23 and the heel end of the block 16 are provided with grooves in line with the grooves of the rail sections 12 and 13.

At its heel and in line with the axis of its bearing, the tongue is provided with a depending lug 24 which extends downwardly through an opening 25 in the floor of the block 16 and into a recess 26 in the cast portion 10. The lug 24 and opening 25

are preferably elongated in the direction of the tongue and, in the form shown, are rectangular in outline as indicated in dotted lines in Fig. 1. The lug is recessed or provided with a transverse slot 27 and is to be engaged by a spring actuated hold-down device that automatically takes up the wear upon the bearing at the tongue heel. In the preferred form of this invention, this hold-down device comprises a spring pressed wedge 28. This wedge is preferably formed of hardened steel, is arranged transversely within the recess 26 of the cast metal portion and extends within the transverse slot 27 of the lug 24. The upper edge of the wedge is beveled and bears upon a correspondingly inclined seat at the upper portion of the switch structure. Preferably, the block 16 of hardened steel is provided with a depending lug 29 which extends within the upper portion of the recess 26 and is provided with a finished beveled seat for the upper inclined edge of the wedge 28.

The wedge 28 is forced to position by a heavy spring 30 arranged within the chambered casting 31 that is bolted to the side of the cast metal portion 10 of the switch structure. The spring is preferably arranged with its outer end engaging a lug 32 on the inner face of the outer wall of the casting 31 and with its inner end engaging a bolt 33 which is threaded into a longitudinally extending socket 34 in the outer portion of the wedge 28. The bolt is provided near its outer end with an enlarged hexagonal flange 35 by which it may be turned to adjust the pressure exerted by the spring 30 and with a projecting stud 36 which extends within the inner end of the spring. The inner end of the spring preferably bears upon a washer 37 mounted on the stud 36 and bearing against the hexagonal flange 35.

In order that the pressure exerted by the wedge 28 shall be applied at a point in line with the center of motion of the tongue, the transverse slot or recess 27 in the lug 24 is provided with a rounded or cylindrical lower wall 38. The spring actuated wedge or hold-down device 28 securely holds the heel of the tongue down to the seat and also serves to automatically take up wear upon the seat. The pressure exerted by the spring 30 can be adjusted as desired by turning the bolt 33. The casting 31, within which the spring and bolt are arranged at one side of the switch structure, is preferably provided with a suitable cover 39.

It is obvious that changes may be made in the details set forth without departure from the essentials of the invention, as defined in the claims.

I claim as my invention:

1. In a switch structure, the combination of a body part having a circular recess pro-

vided with a horizontal floor, a switch tongue having a correspondingly shaped heel journaled in said recess and bearing upon the horizontal floor thereof, said tongue heel having a reduced lug extending downwardly through an opening in the bearing floor of said recess, a wedge extending beneath the floor of said recess and interposed between said floor and a shoulder on said lug and arranged to act in vertical direction upon said lug, a spring for forcing the said wedge endwise to hold down the tongue heel and to automatically take up wear between the tongue heel and the horizontal bearing floor of said recess, and means for adjusting the tension of said spring, substantially as described.

2. In a switch structure, the combination of a body part having a circular recess provided with a horizontal floor, a switch tongue having a correspondingly shaped heel journaled in said recess and bearing upon the horizontal floor thereof, said tongue heel having a reduced lug extending downwardly through an opening in the bearing floor of said recess and in line with the center of motion of the tongue, a spring actuated hold-down device arranged beneath the bearing floor of said recess and engaging and operating in vertical direction upon said lug to automatically take up wear between the tongue heel and the bearing floor of said recess, and means accessible at the side of the switch structure for adjusting the vertical pressure exerted by said hold-down device upon said lug, substantially as described.

3. In a switch structure, the combination with the body part, of a switch tongue having an enlarged circular heel, said body part having a correspondingly shaped recess or bearing wherein said heel is journaled and said tongue having a lug extending downwardly through an opening in the floor of said recess, a wedge extending transversely below the floor of said recess and through an opening in said lug, said wedge having an inclined upper edge engaging a correspondingly shaped seat on said body part, a spring engaging said wedge for forcing the same endwise, and means for adjusting the tension of said spring, substantially as described.

4. In a switch structure, the combination with the body part, of a switch tongue having an enlarged circular heel journaled in a correspondingly shaped recess or bearing in said body part, said tongue having a lug extending downwardly through an opening in the floor of said recess in line with the center of movement of the tongue, a spring actuated device engaging said lug to hold down the tongue heel and automatically take up the wear between the same and its bearing, and means for adjusting the pres-

sure exerted by said hold-down device, substantially as described.

5 5. In a switch structure, the combination of a body part having a circular recess provided with a horizontal floor, a switch tongue having a correspondingly shaped heel journaled in said recess and bearing upon the horizontal floor thereof, said tongue heel having a reduced lug extending
10 downwardly through an opening in the bearing floor of said recess and in line with the center of motion of said tongue, said lug having an opening provided with a

rounded lower wall, a wedge extending beneath said floor and through said recess and 15 having an inclined upper edge engaging a correspondingly shaped seat on the lower side of said floor, and said wedge having its lower edge bearing upon the rounded lower wall of the opening in said lug, and means 20 for forcing said wedge to position, substantially as described.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."