Dec. 23, 1930. C. H. PARTINGTON 1,786,260

SWITCH STAND

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Fig. 1.

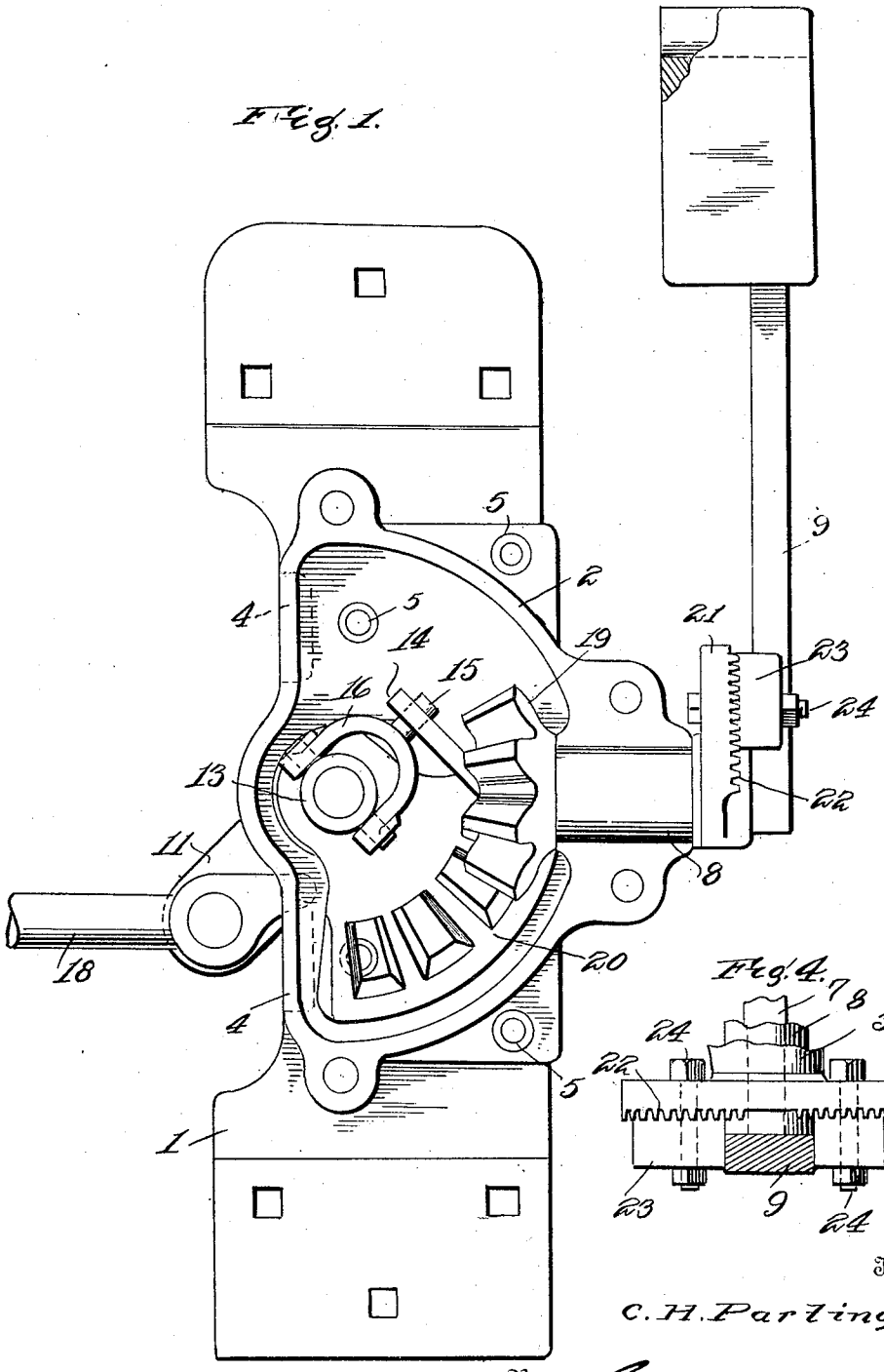


Fig. 4.

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Fig. 4.

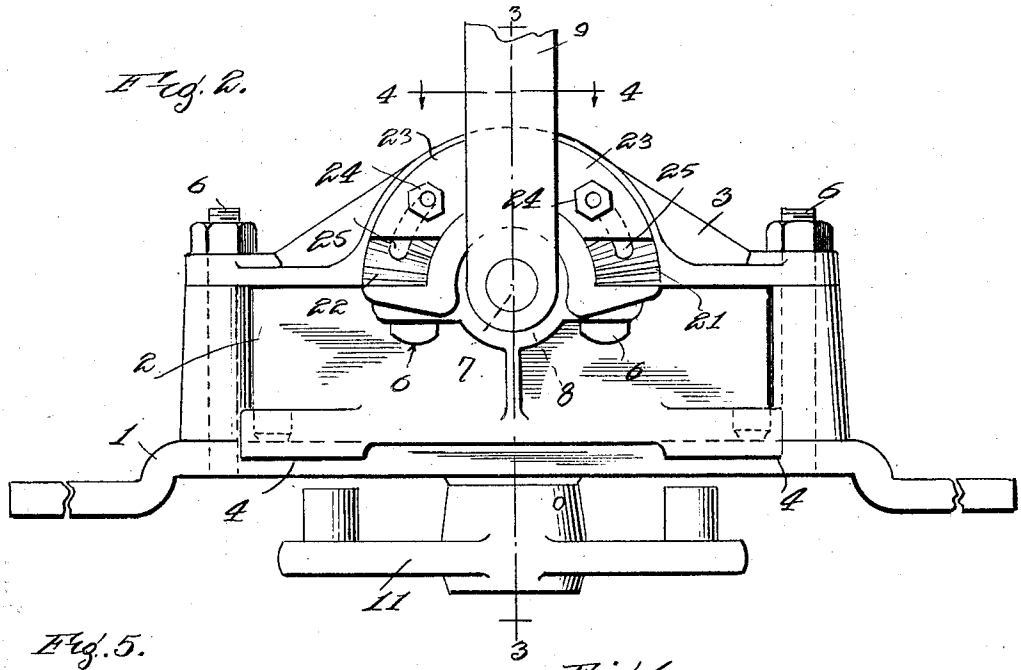


Fig. 5.

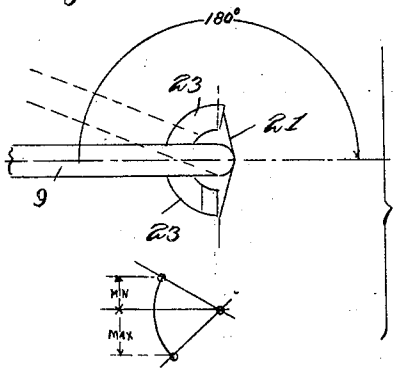


Fig. 6.

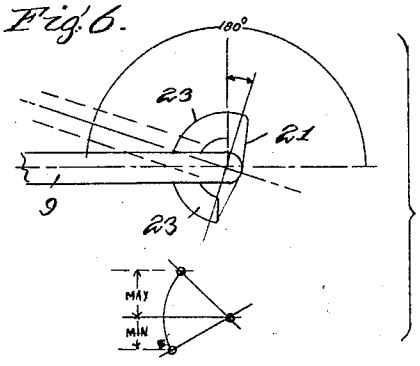


Fig. 7.

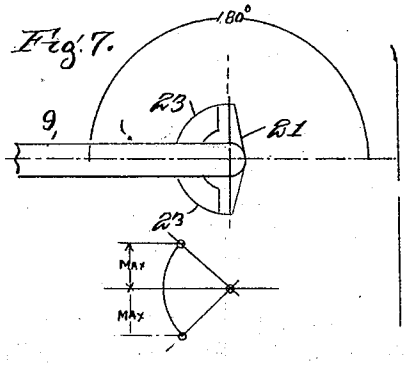
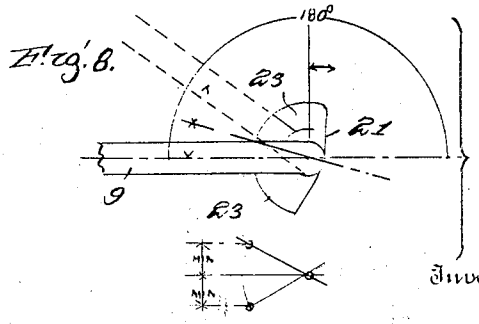


Fig. 8.



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Fig. 3.

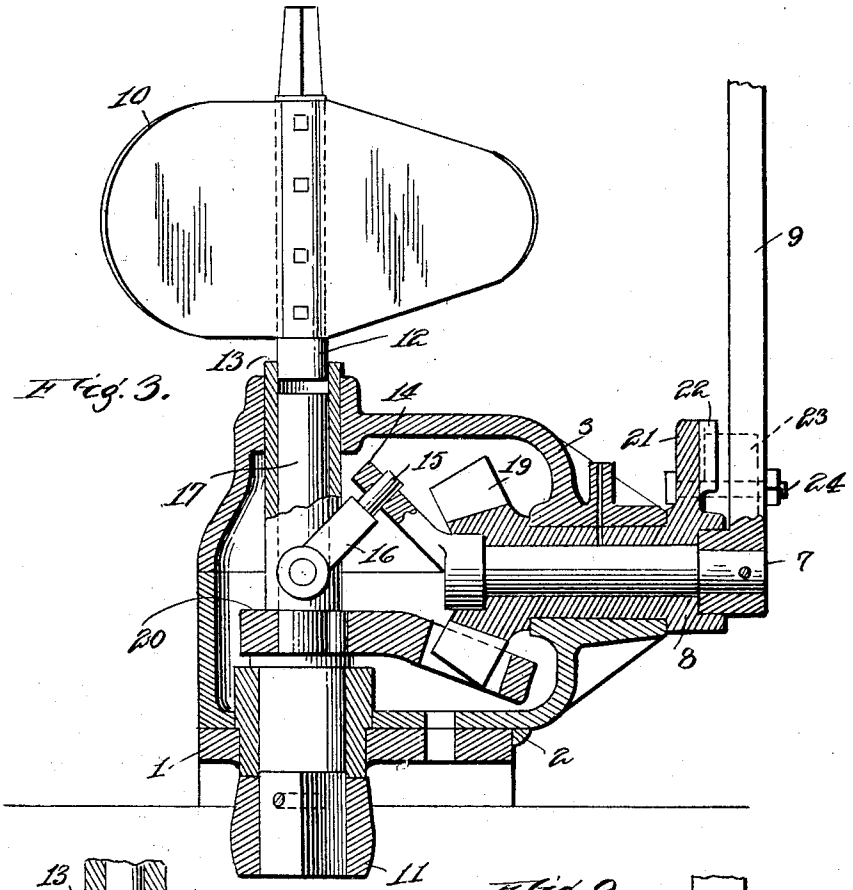
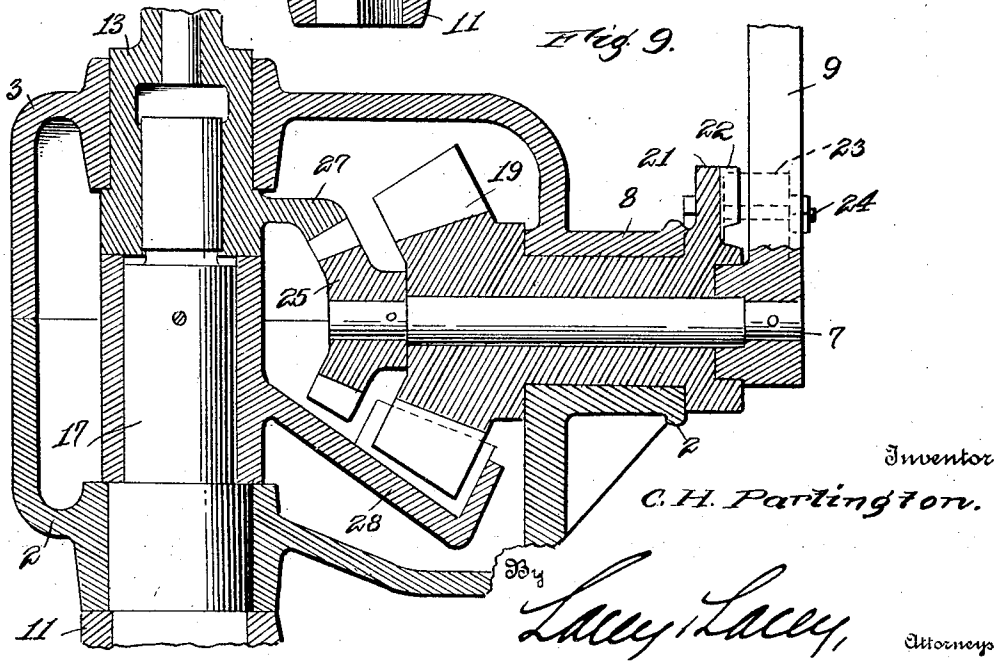


Fig. 9.



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UNITED STATES PATENT OFFICE

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SWITCH STAND

Application filed April 16, 1930. Serial No. 444,798.

Railway switches usually include a target to indicate the position of the switch. This target receives a definite throw whereas the throw of the switch varies from wear and differences due to variations in design and construction.

This invention, therefore, provides a novel mechanism whereby adjustment may be had to allow for wear and differences in the throw of various switches, both in the installation and maintenance of the switch operating mechanism after installation.

The invention contemplates a mechanism wherein the usual operating lever has a positive connection with the target and an adjustable connection with the switch, the adjusting means being readily accessible at all times without necessitating displacement of parts to expose the same for manipulation.

The invention comprises a mechanism including concentric shafts, the inner shaft being connected to the target and the outer shaft having connection with the switch, an operating lever positively connected to the inner or target actuating shaft, and means adjustably connecting the operating lever with the outer or switch throwing shaft.

While the drawings illustrate a preferred embodiment of the invention, it is to be understood that in adapting the means to meet specific needs and requirements, the design may be varied and changes in the minor details of construction may be resorted to within the scope of the invention as claimed without departing from the spirit thereof.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and the drawings hereto attached, in which:

Figure 1 is a top plan view of a switch stand embodying the invention, the target and cover of the gear housing being removed.

Figure 2 is an elevational view of the stand, parts being broken away.

Figure 3 is a detail sectional view on the line 3—3 of Figure 2.

Figure 4 is a fragmentary sectional view on the line 4—4 of Figure 2.

Figures 5 to 8 inclusive are diagrammatic views illustrating various adjustments of the operating lever with reference to the throw of the target and switch.

Figure 9 is a view similar to Figure 3, of a modification illustrating gears forming the connecting means between the concentric shafts and elements of the target and switch mechanism.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

The switch stand includes an elongated base plate 1 which is adapted to be arranged between adjacent ties and secured thereto. The middle portion of the base plate 1 is raised and receives a gear housing including a bottom section 2 and a top section 3. The bottom section 2 of the gear housing is centered upon the base plate 1 by means of lugs 4 depending from said section and fitting in notches formed in the base plate. The gear housing may be secured to the base plate by spot welding 5 or in any desired manner. The top section 3 is detachable and secured in place by bolts 6. Concentric shafts 7 and 8 are mounted in the gear housing and form part of the connecting means between the operating lever 9 and the target 10 and arm 11 of the switch throwing mechanism. The target shaft 12 includes a sleeve 13 which obtains a bearing in the top section 3 of the gear housing. The inner shaft 7 is positively connected to the target shaft and the operating lever 9 is rigidly connected to the outer end of the shaft 7. Movement of the operating lever 9 effects a corresponding movement of the target without any appreciable lost motion. In the preferred construction, as indicated most clearly in Figures 1 and 3 of the drawings, an arm 14 projects obliquely from the inner end of the shaft 7 and engages a journal 15 at the outer end of a yoke 16 which embraces and is pivoted to the lower end of the sleeve 13. Rotation of the shaft 7 effects a corresponding movement of the arm 14 and a like movement of the yoke 16, whereby the target 10 is turned to indicate the position of the switch in a manner well understood.

A vertical shaft 17 is mounted at its upper

end in the sleeve 13 and at its lower end in the base plate 1 and bottom section 2 of the gear housing. The arm 11 is secured to the lower projecting end of the shaft 17 and is connected to the switch point (not shown) by means of a rod 18 in any accustomed or preferred manner. The shaft 17 is connected by gearing, or in any manner, to the shaft 8 to rotate therewith. A gear wheel 19 at the inner end of the shaft 8 is in mesh with a gear element secured to the shaft 17. The gear element consists of a segment 20 provided with teeth in mesh with the teeth of the gear wheel 19. The segment 20 preferably consists of a plate having portions cut therefrom to form the teeth coacting with the teeth of the gear wheel 19. A segment 21 is disposed at the outer end of the shaft 8 and preferably forms a part thereof. The outer face of the segment 21 is toothed, as indicated at 22. Blocks 23 are secured to the outer face of the segment 21 at opposite sides of the operating lever 9. The inner faces of the blocks 23 adjacent the segment 21 are toothed to match the teeth 22, thereby precluding any possible displacement of the blocks when secured in an adjusted position. Bolts 24 pass through openings formed in the blocks 23 and through arcuate slots 25 formed in the toothed portion of the segment 21 and serve to secure said blocks to the segment in an adjusted position. Obviously, when the blocks 23 occupy a position to engage opposite sides of the lever 9, as indicated most clearly in Figure 2 of the drawings, the lever, segment, shaft 8 and shaft 17 move together, since there is no provision for lost motion. The right hand or the left hand block 23 may be independently adjusted, or both blocks may be adjusted whereby to provide for an independent movement of the operating lever 9 either to the right or to the left, or both, as may be required, to allow for wear or variation in the throw of the switch point.

Figures 2, 4 and 7 indicate a normal position of the operating lever 9 so that movement thereof either to the right or to the left, effects a corresponding movement of the segment 21 and connected parts, without any lost motion. Figures 5 and 6 indicate adjustment of the right hand block 23 so that the operating lever 9 may move a distance, as indicated by the dotted lines in said figures, before engaging the block and effecting a movement of the segment 21 and connected parts in the continued throw of the lever to the right. Obviously, the left hand block 23 may be similarly adjusted to admit of a limited movement of the lever 9 to the left before engaging said block and effecting movement of the segment 21 in a continued throw of the lever to the left. Outward adjustment of both blocks 23 admits of a limited movement of the lever 9 in each direction before engaging one or the other of the blocks to effect a movement of the segment and connected parts in a continued throw of the lever.

In the modification shown in Figure 9, the arm 14 and yoke 16 are replaced by a gear wheel 26 and a gear segment 27, the latter forming a part of the sleeve 13. The gear wheel 26 is secured to the inner end of the shaft 7. A gear segment 28, secured to the shaft 17, is in mesh with the gear wheel 19. While the arm 14 and yoke 16 of the preferred construction is more simple than the arrangement disclosed in Figure 9, nevertheless, under some conditions the construction illustrated in Figure 9 may be advantageously employed and is referred to since it comes within the scope of the invention.

It is observed that the several shafts and the connecting gearing are enclosed and protected by the housing and that the means adjustably connecting the operating lever to one of the concentric shafts are readily accessible at all times without necessitating opening of the housing or displacement of any parts when it is required to make an adjustment to compensate for wear or for any variation in mechanical construction or assemblage of the parts.

What is claimed is:

1. A switch stand comprising target and switch actuating mechanism including concentric shafts, an operating lever rigidly connected to one of said shafts, and means adjustably connecting the operating lever to the other shaft.

2. A switch stand comprising target and switch actuating mechanism including concentric shafts, an operating lever rigidly connected to the inner shaft, and means adjustably connecting the operating lever to the outer shaft.

3. A switch stand comprising target and switch actuating mechanism including concentric shafts, the outer shaft having a segment, an operating lever rigidly connected to the inner shaft, and means projecting from said segment to engage opposite sides of the operating lever, one of said means being adjustable.

4. A switch stand comprising target and switch actuating mechanism including concentric shafts, the outer shaft having a segment, an operating lever rigidly connected with the inner shaft, and blocks adjustably connected with said segment and disposed upon opposite sides of the operating lever to admit of a limited movement thereof preliminary to throwing the switch.

5. A switch stand comprising target and switch actuating mechanism including concentric shafts, the outer shaft having a segment toothed upon its outer face and provided with arcuate slots, an operating lever rigidly connected to the inner shaft, blocks

applied to the outer face of the segment and toothed to match the teeth thereof, and bolts passing through said blocks and engaging the slots of the segment to secure the blocks in adjusted position.

6. A switch stand comprising vertically alined shafts and horizontally disposed concentric shafts, one of the vertical shafts having connection with a target and the other vertical shaft being adapted to be connected to the switch, connecting means between the respective vertical and concentric shafts, an operating lever rigidly connected to the horizontal shaft having connection with the target shaft, and means adjustably connecting the operating lever with the horizontal shaft having connection with the switch operating shaft.

7. A switch stand comprising a housing, vertically alined and horizontal concentric shafts mounted in the housing connecting means between the respective shafts enclosed by the housing, an operating lever rigidly connected to one of the concentric shafts, and means exterior to the housing for adjustably connecting the operating lever to the other concentric shaft.

8. A switch stand comprising a housing, a vertically disposed target shaft mounted in the upper portion of the housing, a vertically disposed switch throwing shaft mounted in the housing and engaging the target shaft, horizontally disposed concentric shafts, connecting means between the switch throwing shaft and the outer concentric shaft, an oblique arm at the inner end of the inner concentric shaft, a yoke pivoted to the target shaft and engaging the said oblique arm, an operating lever rigidly connected to the inner concentric shaft, and means adjustably connecting said operating lever with the outer concentric shaft.

9. A switch stand comprising a base plate, a separable housing thereon, vertically alined and horizontally disposed concentric shafts mounted in the housing, connecting means between the respective shafts, an operating lever rigidly connected to the inner concentric shaft, and means adjustably connecting the operating lever to the outer concentric shaft and disposed exterior to the housing for ready access at all times.

In testimony whereof I affix my signature.

CHARLES H. PARTINGTON. [L. S.]