This invention relates to new and useful improvements in escalator step treads and guides thereof.

One object of the invention is to provide an improved escalator step having a novel tread which includes a body of rubber reinforced by a metallic plate embedded therein.

Another object of the invention is to provide improved means for guiding escalator step treads into alinement with a comb plate without interfering with the normal travel of the steps.

A particular object of the invention is to provide improved guide means having a plurality of adjustably mounted rollers for engaging the vertical edges of escalator step treads and arranged to guide and maintain the treads in alinement with a comb plate.

An important object of the invention is to provide an improved tread guide, of the character described, wherein the rollers are eccentrically supported so as to be readily adjustable toward and away from the treads, the eccentric support being preferably in the form of a cam element or pin upon which each roller is mounted.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, wherein an example of the Invention is shown, and wherein:

Fig. 1 is a plan view of one of the landings of an escalator having step tread guides constructed in accordance with the invention.

Fig. 2 is a perspective view, partly in section, showing the construction and relation of the step tread and guide.

Fig. 3 is a vertical, sectional view of an escalator step, showing its tread and the guide.

Fig. 4 is a perspective view of the bracket for supporting the comb plate.

Fig. 5 is a perspective view of one of the cam elements for supporting the guide rollers.

Fig. 6 is a horizontal, cross-sectional view of one of the rollers, and

Fig. 7 is a transverse, vertical, sectional view, taken on the line 1—1 of Fig. 1.

In the drawings, the numeral 10 designates one of the landings or end portions of an escalator frame which includes upright supports 11 having longitudinal angle bars or members connected thereto by cross-arms 13. Each member 12 preferably has a horizontal leg or flange 14 and a vertical or depending leg or flange 15. The end portions of the escalator side panels 16 may rest upon the horizontal flanges 14. An endless series of steps 17 travels between the longitudinal members and beneath a comb plate 18 which is inclined downwardly toward the steps. The comb plate 18 is supported by suitable angular brackets 19, which are bolted or otherwise secured to the flanges 14 of the members, and has downwardly-directed, equally-spaced fingers or teeth 20 formed on its lower edge portion.

Each step 17 includes a tread 21, preferably formed of hard rubber or other suitable material, having a plurality of equally-spaced grooves or channels 22 in its upper surface for meshing with the fingers 20, whereby trash and debris are removed from the grooves. The tread 21 preferably has a flat, metallic plate or element 23 molded or embedded therein adjacent its lower surface and below its grooves 22. It is noted that the dimensions of the plate are slightly less than those of the tread so as to be spaced inwardly of the edges of said tread. In addition to reinforcing the tread, the plate limits or restricts shrinking of said tread upon molding thereof so as to maintain the desired dimensions.

For guiding the steps so as to align and maintain the tread grooves 22 in alignment with the comb plate fingers 20, guide or alining means is provided and includes a plurality of adjustable, horizontal rollers 24. Elongated openings or slots 25 (Figs. 2 and 3) are cut longitudinally in the vertical flanges 15 for accommodating the rollers 25 which are preferably suspended by vertical pins or studs 26 from the horizontal flanges 14 adjacent the cross-arms. Thus, a pair of rollers is provided for each lateral side or edge of the tread 21 and are preferably arranged in opposed, alined relation. The rollers coast to align the tread grooves with the comb plate teeth and maintain such alinement immediately before, during and after meshing of the same.

Each roller includes an internal bearing or bushing 27, of bronze or other suitable material, surrounded by a metallic hub 28 which is preferably flanged. An annular rim or tire 29, of rubber or other suitable non-metallic material, is vulcanized or otherwise attached to the flanged hub 28. The pin or stud 26 has an enlarged, cylindrical cam or eccentric portion 30 intermediate its ends for receiving the bushing 27 (Figs. 5, 6 and 7). Although the ends of the stud are axially aligned with each other, the same are offset relative to the axis of the eccentric portion 30. Suitable nuts 31 are threaded upon the ends of the stud for retaining the roller thereupon and
spacers or washers 32 may be interposed between the nuts and said roller. The upper end of each stud extends through an opening 33 in the flange 14 with its nut overlying the opening and its washer 32 between said flange and the roller.

Upon turning the stud, the eccentric portion 30 is turned toward or away from the tread edge to vary the projection of the roller through the slot 25. Thus, the tread may be moved laterally to adjust its grooves relative to the fingers of the comb plate. Since each roller is adjustable, rather fine adjustments may be made and the grooves may be accurately aligned with the fingers. This alignment may be maintained irrespective of wear by readjustment of the rollers.

The foregoing description of the invention is explanatory thereof and various changes in the size, shape and materials, as well as in the details of the illustrated construction may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A guide for aligning an escalator step having a grooved tread of rubber with a toothed comb plate including, a pair of horizontal rollers mounted on opposite sides of the step tread, an upright pin for rotatably supporting each roller in engagement with the lateral edge of the rubber tread, each roller having a peripheral rim of rubber to provide a silent rubber-to-rubber contact with the tread, each pin having axially aligned ends and an eccentric intermediate portion upon which its roller is journaled, and means for supporting each pin by one of its ends, whereby each roller may be adjusted relative to the tread by rotating its pin and may be reversed by turning its pin end for end.

2. A guide for aligning the grooved tread of an escalator step with a toothed comb plate including, a pair of horizontal rollers mounted on opposite sides of the step tread, an upright pin for rotatably supporting each roller with its periphery in engagement with the lateral edge of the tread, each pin having axially aligned ends and an eccentric intermediate portion upon which its roller is journaled, and means for supporting each pin by one of its ends, whereby each roller may be adjusted relative to the tread by rotating its pin and may be reversed by turning its pin end for end.

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