

Feb. 21, 1939.

R. KEARNEY

2,147,979

ESCALATOR CONTROL

Filed Jan. 15, 1938

3 Sheets-Sheet 1

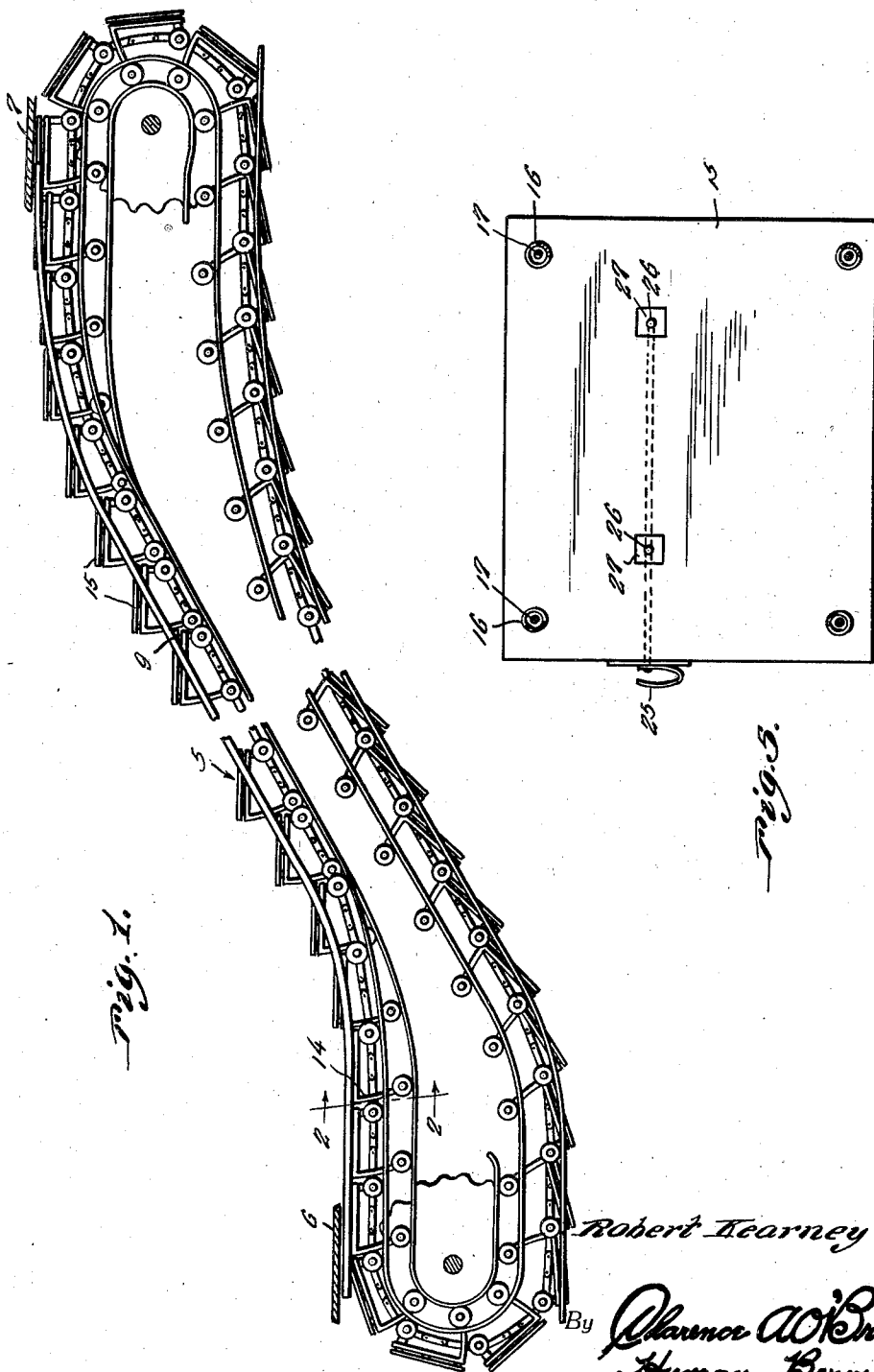


Fig. 1.

Fig. 3.

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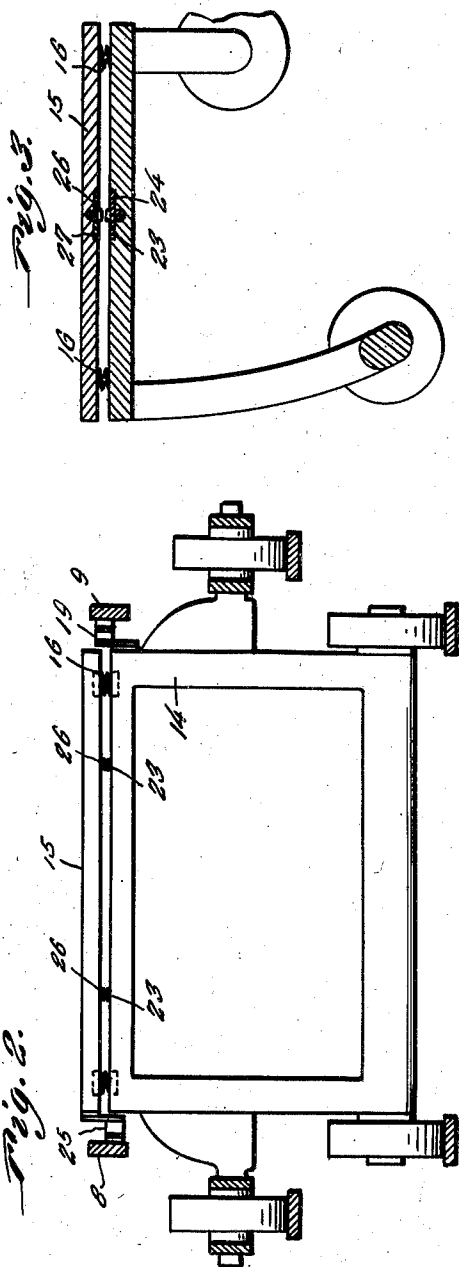
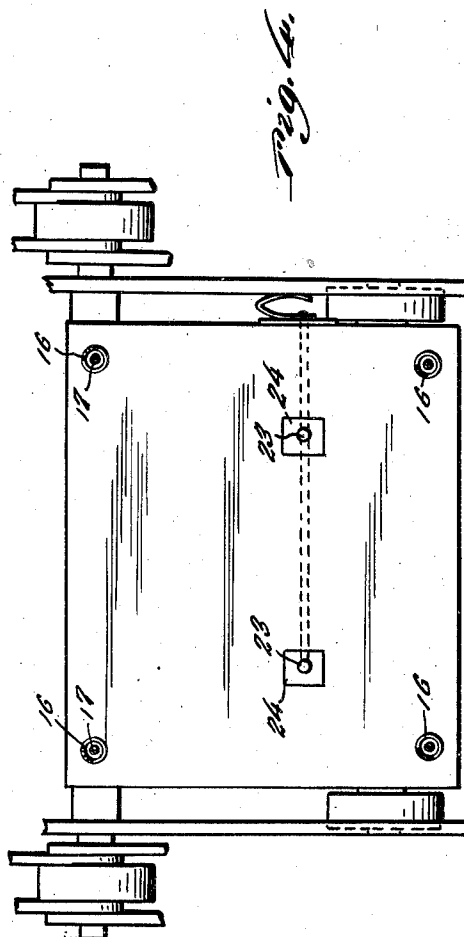
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

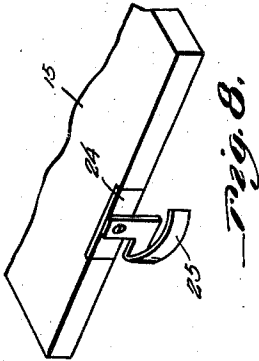


Fig. 8.

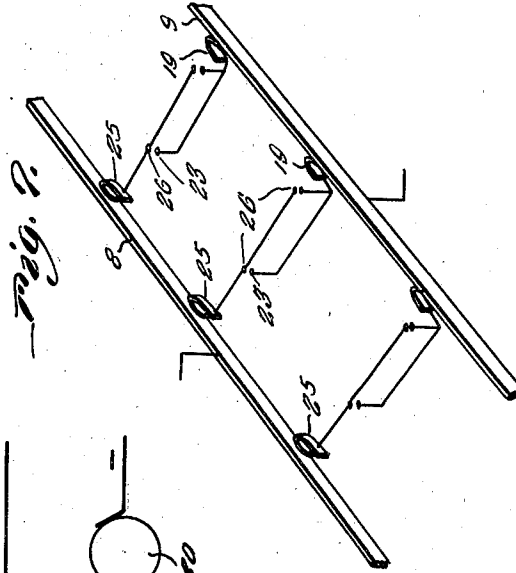


Fig. 7.

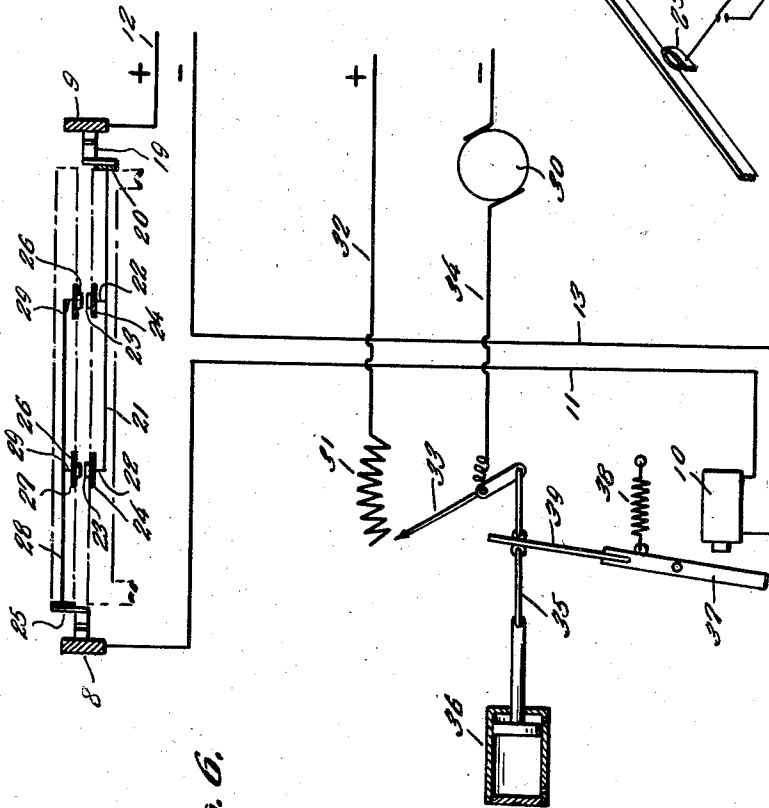


Fig. 6.

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UNITED STATES PATENT OFFICE

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ESCALATOR CONTROL

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Application January 15, 1938, Serial No. 185,204

1 Claim. (Cl. 198—16)

This invention relates broadly to Escalators, travelling stairs, conveyors, and the like and an object of the invention is to provide means for substantially controlling such Escalator, travelling stair, conveyor, and the like, to the end that such will be in operation only when occupied.

As is well-known, generally Escalators are permitted to run continuously with a resultant high cost of maintenance. An object of the present invention is to provide means whereby when unoccupied the Escalator will be at rest, such means operating upon one stepping on a tread of the Escalator to set the latter in operation, the object, intent and purpose of the invention being to provide for the Escalator to be in operation only when occupied.

The invention, together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is a detail view partly in section and partly in elevation showing two landings and an Escalator movable therebetween, and illustrating the application of the invention thereto.

Figure 2 is a detail sectional view taken substantially on the line 2—2 of Figure 1.

Figure 3 is a fragmentary detail sectional view through one of the treads of the Escalator showing a depressible treadle mounted thereon.

Figure 4 is a top plan view of a tread with the treadle removed.

Figure 5 is a bottom plan view of a treadle.

Figure 6 is a wiring diagram.

Figure 7 is a detail perspective view illustrating the invention somewhat diagrammatically, and

Figure 8 is a perspective view of one end edge portion of a depressible treadle plate.

Referring to the drawings by reference numerals it will be seen that 5 indicates generally a more or less conventional and well-known type of Escalator while 6 indicates a lower landing and 7 indicates an upper landing between which landings 6 and 7 the Escalator 5 operates.

In accordance with the present invention there are provided at opposite sides of the upper run of the Escalator conductor plates 8, 9, and as shown in Figure 6, the contact bar 8 is connected in circuit with an electro-magnet 10 through the medium of a wire 11 while the contact bar 9 is connected with the positive side of the circuit through the medium of a wire 12. The opposite side of the magnet 10 is connected to the negative side of the circuit through the medium of a wire 13.

Also each tread member 14 has supported on the tread flange thereof a treadle plate 15 through the medium of expansible coil springs 16 and pins 17 as will be clear from a study of Figures 3, 4 and 5. Thus the treadle plates 15 are supported in a raised position relative to the tread members through the medium of the coil springs 16.

Also each tread member 14 is provided on one side thereof with a spring contact member 19 that has wiping engagement with the contact bar 9, the contact member 19 being insulated from the tread through the medium of a block 20 of insulating material. Also each contact member 19 is wired in circuit through the medium of wires 21, 22 with contact buttons 23 mounted in pairs on the tread and insulated therefrom as at 24.

Also each treadle plate 15 has suitably secured to one end edge thereof and insulated therefrom as at 24 a resilient contact element 25 that is in wiping engagement with the contact rail 8.

Also, each treadle member 15 is provided with a pair of contact buttons 26 mounted thereon and insulated therefrom as at 27. The contact buttons 26 are complementary to the contact buttons 23 and are wired in circuit with a contact 25 through the medium of wires 28 and 29.

From the description thus far it will be seen that when a treadle plate 15 is depressed by the weight of a person standing thereon, and against the action of springs 16 the contact buttons 26 on said treadle plate will move downwardly into engagement with the contact buttons 23 thus completing the circuit through the operating motor 30 forming part of the Escalator mechanism whereby to set the Escalator in operation. Obviously the Escalator will continue to run as long as a treadle plate 15 is depressed. As the occupant moves from the treadle plate 15 onto the landing, in the present instance the landing 7, plate 15 will move upwardly disengaging contact buttons 26 from contact buttons 23 thus interrupting the circuit through the motor 30 causing the Escalator to stop.

To cause a slow and gradual stopping and/or starting of the Escalator 5 there is arranged in the operating circuit a rheostat 31 one side of which is connected in the positive side of the circuit through the medium of a wire 32. The movable arm 33 of the rheostat is connected with one side of the motor 30 through the medium of a wire 34. Also the movable arm 33 of the rheo-

stat is connected through the medium of linkage 35 with the plunger rod of a dash pot 36.

Complemental to the magnet 10 is an armature 37 that is biased away from the magnet 10 through the medium of a spring 38, and at one end thereof the armature 37 is connected through the medium of a flexible element 39 with the linkage 35 so that movement of the armature 37 is transmitted to the plunger of the dashpot 36 and the movable arm 33 of the rheostat.

The operation of the device is thought to be evident but may be briefly described as follows:

Normally the Escalator 5 is at rest. It will thus be seen that as one steps from the platform 6 onto the treadle 15 nearest to the platform 6 said treadle will be depressed for completing the circuit through the electro-magnet 10. Magnet 10 thus energized will attract the armature 37 causing the latter to swing in a counter-clockwise direction against the action of spring 38 with the result that the rheostat arm 33 will move slowly, and against the action of the dashpot 36 over the rheostat coil 31 so that the flow of current to the motor 30 will be gradual and consequently the starting, or placing in motion of the Escalator 5 will be gradual.

As the occupant of the Escalator steps therefrom onto the platform 7 the treadle 15 previously occupied will move upwardly in response to the action of the associated springs 16 thus separating contacts 26 carried by said treadle from the contacts 23 carried by the associated tread 14 with the result that the circuit through the magnet 10 will be interrupted. Upon interruption of the circuit through the magnet 10 spring 38 will act on the armature 37 to swing the latter to the position shown in Figure 6, and this movement of the armature 37 will be transmitted through the connections 39, 35 to the rheostat arm 33 for moving the latter slowly to the position shown in Figure 6. Thus there will be a gradual slowing down of the Escalator until the latter finally comes to a stop.

It will thus be seen that in accordance with the present invention the Escalator will be in operation only when actually occupied and that its movement will begin only upon one stepping onto the Escalator, and the stopping of the Escalator will take place gradually and within a very short period of time following the unoccupancy of the Escalator.

It is thought that a clear understanding of the construction, utility and advantages of an invention of this character will be had without a more detailed description.

Having thus described the invention what is claimed as new is:

An Escalator comprising an endless member, 15 tread members connected with the endless member, a treadle member carried by each tread member, spring means for normally holding the treadle member out of contact with the tread member, a contact rail located at each side of the upper run of the Escalator, spring contacts 20 carried by the tread members and engaging one contact rail, spring contacts carried by the treadle members and engaging the other contact rail, an upwardly projecting contact carried by each tread member and electrically connected with the spring contact of said member, a downwardly projecting contact carried by each treadle member and electrically connected with the spring 30 contact of said treadle member, a conductor connecting one rail with a source of supply, a magnet, a conductor connecting the other rail with the magnet, a conductor connecting the magnet with the source of supply, a motor for operating the Escalator, a circuit for the motor, a rheostat 35 in the circuit, an armature for the magnet and connected with the arm of the rheostat and spring means for normally holding the armature out of engagement with the magnet and the arm of the rheostat out of engagement with the coil thereof. 40

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