Feb. 28, 1933. J. DUNLOP 1,899,751

ELEVATOR GUIDE

Filed Dec. 20, 1929

Fig. 1.

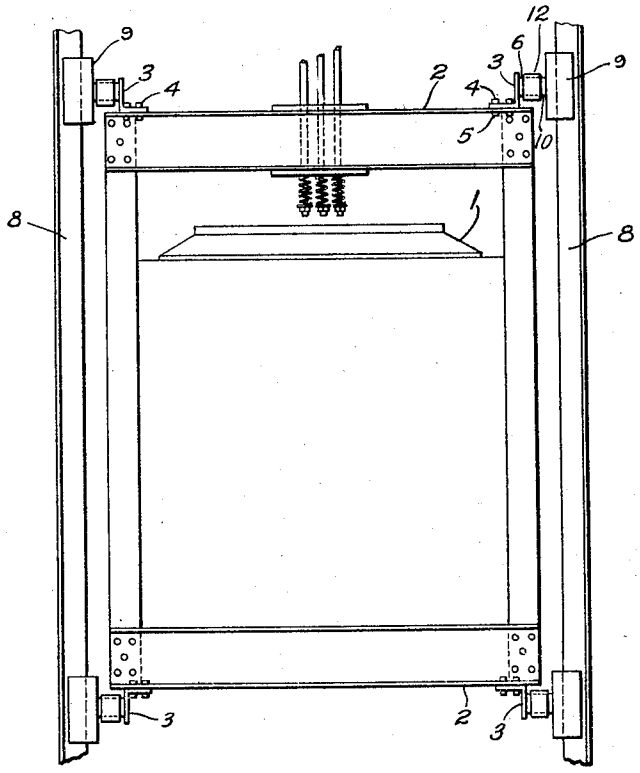


Fig. 2.

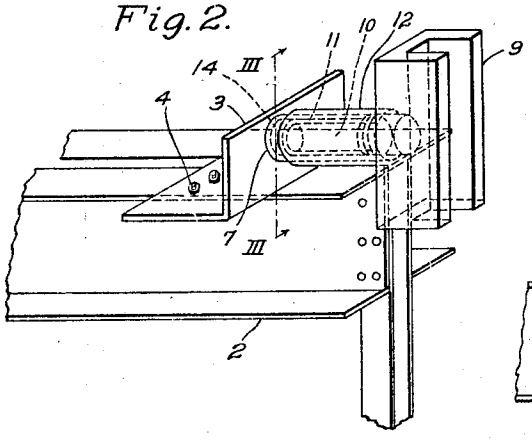
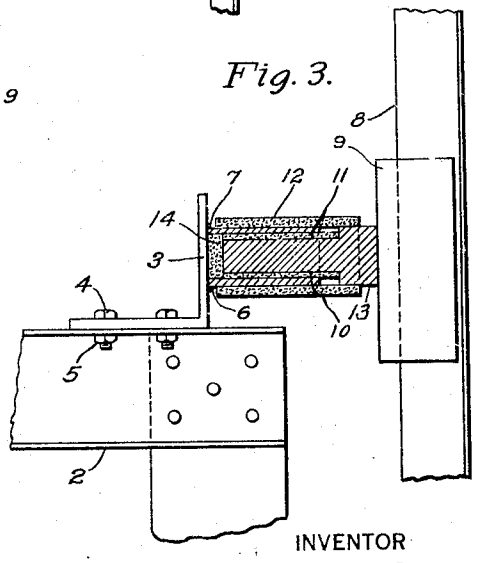


Fig. 3.



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UNITED STATES PATENT OFFICE

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ELEVATOR GUIDE

Application filed December 20, 1929. Serial No. 415,457.

My invention relates to fastening means for guide shoes and has particular reference to guide-shoe mountings for elevators.

At the present time, elevator guide shoes are rigidly fastened to the elevator in such manner that any shocks or vibration, caused by inaccuracies in, or misalignment of, the guide rails is readily transmitted to the elevator cab, to the annoyance of the operator and passengers. The rails may become misaligned at the joints between the sections, causing a slight jolt as the shoes pass from one section to another or they may warp, causing the car to sway while in motion, thus narrowing the distance between the car and fixed objects, such as door treads, rigidly fastened in the hatchway, making it possible for the car to strike these objects while in motion.

Instances are known where the distance between the respective rails becomes narrower at some points in the hatchway than at others, due to the settling of the building, causing the car to slacken its speed while passing these points or become wedged altogether between the rails.

No provision is now made for absorption of shock and vibrations or misalignment of the rails due to any of the above enumerated causes.

An object of my invention is the provision of means for preventing vibration being transmitted to the elevator car.

Another object of my invention is to prevent unnecessary wear upon the elevator guide shoes and guide rails due to misalignment of the rails.

A still further object of my invention is the provision of a non-metallic connection between the car and the guide shoes.

My invention will be described with reference to the accompanying drawing wherein

Fig. 1 is an elevational view of a conventional-type elevator cab and sling showing the guide shoes attached to the car by means of my guide-shoe fastening device.

Fig. 2 is a detail perspective view of one of the guide shoes embodying my fastening device.

Fig. 3 is a side view, partly in cross-section, of my fastening device, taken on the line III—III of Fig. 2.

Referring now to the drawing in detail, I have illustrated, in Fig. 1, an elevator cab 1 attached to a conventional-type sling having, at the top and bottom thereof, channel-iron cross heads 2. To the channel-iron cross-heads are affixed brackets 3, securely fastened thereto by means of bolts 4 and nuts 5, these brackets having, in turn, a projecting boss 6, such as a hollow tube or pipe rigidly fastened in a suitable manner as by welding 7, and extending toward the guide rails 8.

Guide-rail shoes 9 have lateral extensions 10, which, when a shoe is in its operative position, engages the projecting boss 6 upon the car. The cross-sectional diameter of the shoe projection being smaller than the internal diameter of the tube like boss 6, it fits loosely within the tube. Between this projection on the shoe and the projecting boss, I provide shock-absorbing acoustic insulating material 11, such as a rubber tube or hose, to prevent contact between the metal parts of the shoe and boss and to make the connection between them flexible. It will be understood that the shoe extension, after being surrounded by the shock-absorbing material, snugly fits within the projecting boss.

In order to strengthen the connection, a similar shock-absorbing means 12, or rubber tube, is disposed snugly over the outside of the projecting boss and an enlargement 13 formed upon the shoe projection. A cushion 14 of shock-absorbing material may be disposed within the hollow boss 6 and the end of the extension 10 upon the guide shoe 9 to cushion the lateral movement of the guide shoe. With this construction, there is no contact between the metal parts of the elevator cab and the guide shoe.

The operation of my device is as follows; if the car 1 is in motion and there should be a misalignment between the sections of the rails 8 or manufacturing defects in the rail itself, this would cause a horizontal movement of the guide rail shoes 9 in passing from one section of the rail to the other, thus causing the rubber hoses 11 and 12 to

flex horizontally and absorb the "click" and any vibration attending the movement of the shoe over the joints of the rail sections.

If the rails should move with relation to each other, in such manner that they would no longer be parallel, thus causing the distance between them to be narrower at some point in the hatchway than at others, the shoes would tend to flex vertically, as well as slightly compress the rubber tube as the car passes this point, thus compensating for the variance in the distance between the rails without affecting the speed of the car in any manner. The same operation of the shoes would ensue should the rails become "warped" as the shoes would flex, thus reducing the swaying effect of the cab when passing over the warped sections of the rails.

All vibration, caused by faulty rails being thus absorbed or compensated for, will necessarily not be transmitted to the elevator cab. It may also be seen that the flexing of the shoes, causing them to follow the alignment or contour of the rails, will prevent irregular wear at any point on both the rails and shoes. By using a vibration-absorbing means for connecting the shoes to the car, a quietly running elevator will result, no vibrations due to faulty rails within the hatchway being transmitted to the car.

From the foregoing, it will be understood that I have provided a flexible, non-metallic connection between the guide-rail shoes and the elevator cab which will enable the shoes to follow the rails under all conditions, which acts as a shock absorber and provides a quietly-running elevator car.

Although I have shown the preferred form of my invention, I do not wish to be limited to the specific structure illustrated, as various modifications may be made within the spirit and scope of my invention, as set forth in the appended claims.

I claim as my invention:

1. In an elevator system, a hatchway, an elevator operable in said hatchway, guide rails for said elevator, guide-rail shoes therefor, a lateral extension on each of said shoes, a lateral extension on said elevator opposite each of said first named extensions, the adjacent ends of said extensions being telescoped the one within the other and a vibration-absorbing non-metallic member interposed between the adjacent lateral extensions, whereby they are maintained in spaced concentric relations.

2. An elevator car, a guide rail, a guide shoe for engaging said rail, lateral extensions on said car and on said shoes, the adjacent ends of said extensions being spaced and overlapping, and vibration-absorbing means of yieldable acoustic insulating material between said overlapping extensions to provide a connection therebetween.

3. A car, guide rails for said car, guide shoes for engaging said rails, lateral extensions on said car and on said shoes, one of said extensions being telescoped within the other extension and spaced therefrom, and yieldable acoustic insulating means between said extensions.

4. In combination, an elevator guide shoe having a laterally extending portion, a support therefor comprising a bracket, a tubular portion extending laterally therefrom and adapted to telescopically receive the projection extending from the guide shoe, a non-metallic cushion member within the tubular extension, and a yieldable non-metallic tubular member slidably received on the guide-shoe extension to support the extensions in spaced relation, whereby there is no direct metallic connection between the guide shoe and the bracket.

In testimony whereof, I have hereunto subscribed my name this 4th day of Dec., 1929.

JAMES DUNLOP.