UNITED STATES PATENT OFFICE.

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SAFETY APPLIANCE FOR RAILWAY-PLATFORMS.

1,216,560.

To all whom it may concern:

Be it known that I, RAPHAEL C. GALLINANT, a citizen of the United States, residing at Ridgefield Park, county of Bergen, in the State of New Jersey, have invented certain new and useful Improvements in Safety Appliances for Railway-Platforms, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

In Patent No. 1,000,937 issued to the present applicant on January 21, 1913, there is shown and described a safety appliance for railway platforms which was designed to meet many objections found in all similar devices known at the time of the making of the invention covered by said patent. The guard platform in which the invention of the applicant was illustrated as embodied in said patent, while entirely adequate to accomplish the advantageous results sought for, was merely illustrative of the principle on which the broad idea was based and, as was recognized in said patent, might find many equivalents which would be equally effective and particularly advantageous under some conditions of use. The present invention is concerned with a platform which shall satisfy all of the requirements stated in said patent and which shall possess some advantages peculiar to its construction and not found in the embodiment shown in said patent. More particularly, the invention seeks to improve a known type of guard platform which has been widely tested, but has been found to possess many objections fatal to its general adoption. This known guard platform consists of a rigid grate member intended to lie normally in a nested position within the edge of the station platform on which is arranged a fixed grate to receive the sliding grate bars of the guard platform. The movable grating is intended to slide outwardly from the edge of the station platform and assume a position in engagement with the side of the car so as to bridge the space between the car and the platform. The most important objection to this construction resides in the great loss of time involved in bringing the car to a dead stop in predetermined position with respect to the guard platform so that the latter, when extended, will bear snugly against the side of the car throughout its length. If the car is not brought to rest at its intended position the guard platform when extended does not bear throughout its length against the side of the car, but, by reason of its rigidity, is brought to rest with one point in engagement with the edge of the car and the remainder of its edge spaced from the car, thereby permitting a dangerous space to remain which is the very object of the guard platform to eliminate. In accordance with the invention covered by the patent and the present invention, it is sought to eliminate what is known as a "tongue" stop, so that no matter in what position the car is brought to rest, the guard platform, when extended, will bear snugly against the side of the car throughout its length both at points beneath the center door and at the end doors. The improved platform, considered as a section, is formed of a series of grate bars intended to rest slidably between stationary grate bars mounted along the edge of the station platform and each connected pivotally at its outer end to a single transverse bar which forms the outer frame member of the platform and is intended to bear against the side of the car. The section is extended and contracted by suitable yielding means so that the movement of the section is limited by contact with the body of the car. By reason of the pivotal connection of the several grate bars to the outer transverse frame member and the yielding character of the actuating devices, the guard platform adapts itself to the position of the car with respect to the edge of the station platform and the space between the car and platform is bridged completely whether the car happens to stop in one position or another and whether the curve be concave or convex. Practically, the improved platform will be formed as a series of the improved sections which are pivotally interconnected, in some instances through a slot and stud engagement, so that any desired length of platform may be created and, by reason of the relative flexibility between the sections and the character of each section, the entire space between the car or cars and the platform may be bridged; each section adapting itself, in the manner described, to the extent of the space and the outline thereof. The invention will be described more particularly with reference to the accompanying drawings, in which—

Figure 1 is a top view illustrating somewhat diagrammatically the application of
the invention to a station platform on a concave curve.

Fig. 2 is a similar view illustrating the application of the invention to a station platform on a convex curve.

Fig. 3 is a view in vertical transverse section showing the relation of the guard platform to the station platform and a car, portions of the station platform and the car being shown, while the guard platform is represented as withdrawn to its nested position.

Fig. 4 is a partial view similar to Fig. 3, but showing the guard platform projected toward the car to close the space between the edge of the platform and the car.

Fig. 5 is a view in plan of one section of the platform shown in Fig. 4, in its extended position.

Fig. 6 is a fragmentary detail view showing the connection of one of the grate bars of the improved sliding platform.

Fig. 7 is a detail view of one of the end grate bars of the improved sliding platform.

Fig. 8 is a fragmentary view in plan of a guard platform made up of a series of the improved sections and showing a convenient way of actuating the entire platform.

In the drawings, the station platform, indicated at a in Figs. 3 and 4, is represented as supported at approximately the same level as the floors b of the car bodies c, the latter being mounted, as usual, upon trucks which comprise through axles and wheels e which travel upon rails f. Before describing a complete guard platform made up of a series of the improved sections, it will facilitate the understanding of the invention to describe one such section when its flexibility and the flexibility of the entire platform will better appear.

Referring then particularly to Figs. 3-7, it will be observed that the edge of the station platform a, or so much thereof as is intended to receive the improved platform, is formed with fixed grate bars a' spaced from one another and forming virtually a portion of the platform itself. Between these fixed grate bars a' are slidably disposed a series of grate bars g, the upper edges of which fall preferably slightly below the level of the upper edges of the fixed grate bars a', so that movement of the slidable bars g within the spaces between the fixed grate bars a' may be freely effected without such resistance as would be offered by contact of the feet of persons standing over the grating and without such resulting annoyance as might be occasioned to such persons. The bars g may be supported in any convenient manner, as by transverse frame members h securely to the platform and extending under the bars. Likewise, the bars g may be held against vertical displacement with respect to their plane of movement by either extend-

ing the station platform directly over them, in which case the fixed grate bars a' might have substituted therefor any suitable guiding and spacing members for the movable bars g, such as studs, blocks, etc., or the stationary grate bars a', illustrated in the drawings, might have extended transversely thereof suitable frame members similar to the lower members h. The invention is not limited to any details thus far described inasmuch as it will be quite evident to one skilled in the art that a series of slidable grate bars, such as are indicated by the character g, may be mounted for extension and retraction from a relatively fixed surface in many different ways. Each grate bar g, at its outer end, is connected to a transversely extending frame member i in such manner that this frame member may have a free swinging movement about the edge of each one of the grate bars, but not a bodily movement with respect thereto. One convenient way of forming this connection, where the general construction is similar to that shown in the drawings, is by making the frame member i at least partially channelled, as shown in Fig. 6, so that it has a longitudinally extending flange i' with which may engage slots g formed in each of the grate bars, with, perhaps, the exception of the two end bars of each section. The flange i' rests loosely within the slots g, so that a limited relative play between each bar and the transverse frame member i is permitted, although bodily movement of the frame member with respect to the bars is positively prevented. To prevent this bodily movement, however, it will be evident that it is desirable for at least one, if not more, of the grate bars g to be secured positively to the transverse frame member i and, in the illustrated embodiment, it is preferred to secure the two end grate bars g of each section pivotally to the frame, as by studs g'. It will now be evident that when the improved section shown in Fig. 5 is extended, as under the influence of any suitable actuating device, shown in the drawings as a piston rod k pivotally connected to one of the grate bars g, as at k', and intended to be moved in one direction or the other by means of fluid or spring pressure, the frame member i when it engages the side of the car will assume a position in snug engagement therewith throughout the length of the frame member. The grate bars g being extended to a greater or less extent depending entirely upon the distance between the station platform and that portion of the car to which the particular grate bar extends. For instance, as shown in Fig. 5, it may be assumed that the car body is inclined along a line parallel to the inclination of the frame member i in which case the frame member i will lie snugly alongside the car and the grate bars
by reason of their loose pivotal connection with the member \( i \) will permit this ready accommodation of the member to the side of the car and be extended to a greater or less extent according to the distance to be spanned by each bar between the edge of the platform and the end doors.

Having now described the improved form of the sectional guard platform, the description will take up a complete platform formed of a series of such improved sections as will usually be employed. Such a platform will consist of a series of short guard platforms or sections which are flexibly connected as through pivot pins \( l \) which, in some cases, may ride loosely in slots \( l' \) of short spanning sections \( j \), as shown in Fig. 8, so as to permit the several sections to have slight relative longitudinal movement in order that they may accommodate themselves to different positions on a curve. In practice, it may be desirable to place lamps \( m \) under the movable gratings to shine up through the guard platforms and warn passengers to step from the station platform to the car platform, or vice versa, rather than to remain standing on the guard platform.

It is not necessary that means for moving the guard platform shall be applied to each section thereof, nor will such means be applied to any particular number of the grate bars of each section. In Fig. 5, a practical method has been shown in which the piston rod \( k \) is pivoted to only one such grate bar. This permits free accommodation of the other members to the distance which is spanned. However, where desired, two such grate bars \( a \) at distances from one another may be pivotally interconnected by a transversely extending equalizer rod \( w \), as shown in Fig. 6. This equalizer rod is pivotally connected adjacent its mids section to the actuating piston \( k \) (Fig. 8). The actuating devices will be designed, however, in each instance to suit the particular conditions of use. Again, where desired, the means for moving the platform may be applied to each alternate section, since the intermediate sections are carried by and moved with the alternate sections and adapt themselves to the positions of the alternate sections. For instance, in Fig. 8 is shown, what may be termed a spanning section, formed by a transverse frame member \( i \) to which are pivotally united grate bars \( G \) in much the same manner as described with respect to the section shown in Fig. 5, this spanning section being especially useful on sharp curves where parallel movement of all of the grate bars of all of the sections is not feasible. The spanning section shown may have its sliding bars \( G \) guided by means of studs \( e \) carried by the platform \( a \). This spanning section is actuated by the adjacent sections to which it is joined and will accommodate itself to special advantage to
movement of the pistons and prevent the sections of the guard platform from being thrown violently against the sides of the cars, while they also constitute yielding means to move the sections in the opposite direction when the air pressure is relieved. The devices for throwing the sections forward are also yielding, so that, as before explained, one portion of the guard platform has only a slight movement until it is stopped by contact with the car, while other sections have a greater movement, and one end of each section may have a greater movement than the other end of the same section, as explained, so that all of the spaces are entirely closed throughout the length of the platform.

Various changes in details of construction and arrangement may be made to suit different conditions of use and the invention is not limited to the particular construction shown and described herein.

I claim as my invention:

1. A guard platform for railway platforms formed of a series of grate bars, each engaged pivotally at its outer end to a single transverse frame member which bears against the car when the guard platform is extended.

2. The combination with a station platform of a guard platform comprising a series of bars mounted slidably on the station platform, and a frame member adapted to bear against the car when the guard platform is extended and pivotally engaged with each of said bars.

3. The combination with a station platform of a sectional guard platform mounted slidably thereon, the several sections being connected together, and each comprising a series of bars and a frame member adapted to bear against the car when the guard platform is extended and pivotally engaged with each of the bars of the section.

4. The combination with a station platform of a sectional guard platform mounted movably thereon, the several sections being connected together and each comprising a series of bars and a frame member adapted to bear against the car when the guard platform is extended and pivotally engaged with each of the bars, means to throw the several sections forward simultaneously but to varying extents determined by contact with a relatively fixed stop at varying distances, and yielding means to move the several sections in the opposite direction.

5. The combination with a station platform of a guard platform comprising a series of bars mounted slidably on the station platform, means carried by the station platform to guide the bars in their travel and a frame member adapted to bear against the car when the guard platform is extended and pivotally engaged with each of said bars.

6. The combination with a station platform of a guard platform comprising a series of bars mounted slidably on the station platform, fixed grate bars mounted on the edge of the station platform and between which the first named bars are disposed, respectively, and a frame member adapted to bear against the car when the guard platform is extended, and a longitudinally extending flange on the frame member with which slots in the bars are pivotally engaged.

7. The combination with a station platform of a guard platform comprising a series of bars mounted slidably on the station platform, fixed grate bars mounted on the edge of the station platform and between which the first named bars are disposed, respectively, a frame member adapted to bear against the car when the guard platform is extended, a longitudinally extending flange on the frame member with which slots in certain of the bars are pivotally engaged and a positive pivotal engagement between said frame member and one of said bars.

8. The combination with a station platform of a sectional guard platform mounted movably thereon, a spanning section pivotally connected between two of the sections of the guard platform and comprising a series of grate bars each engaged pivotally at its outer end with a single transverse frame member.

This specification signed this 4th day of March, A. D. 1916.

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