

Sept. 9, 1941.

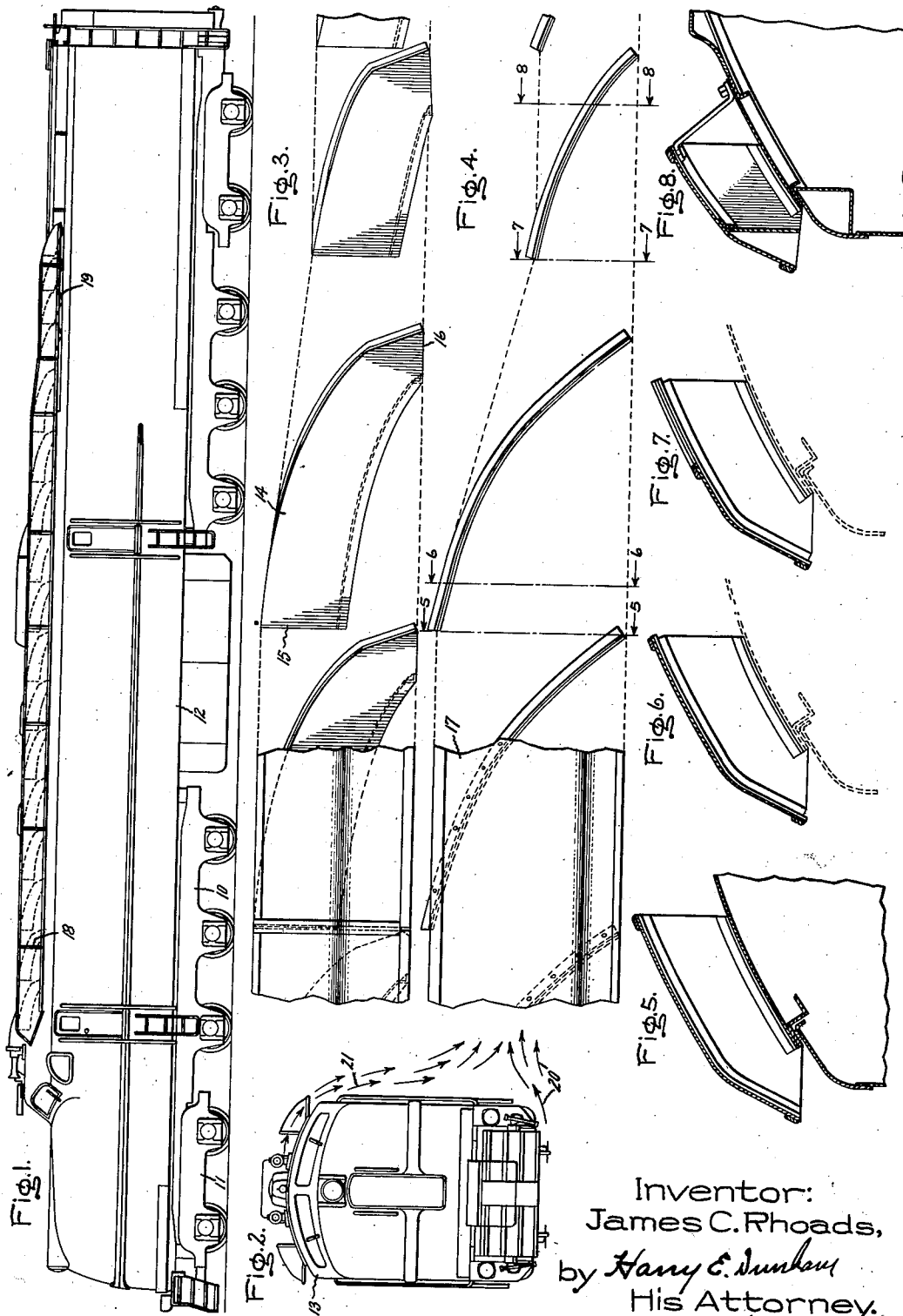
J. C. RHOADS

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RAILWAY VEHICLE STRUCTURE

Filed Nov. 14, 1939

2 Sheets-Sheet 1



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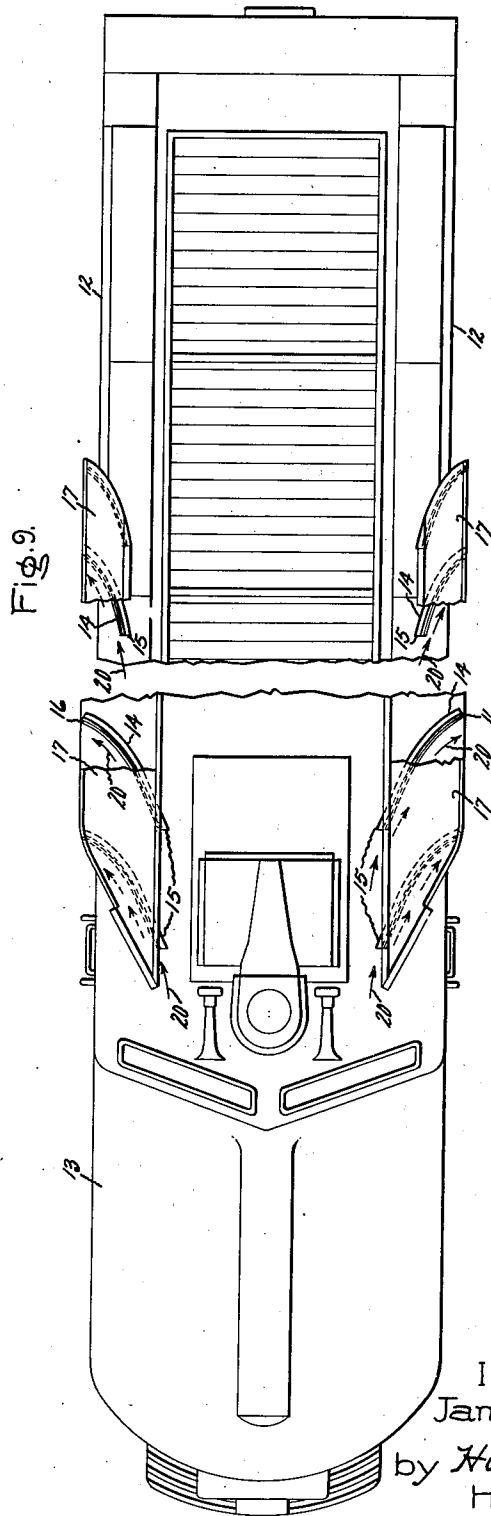
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RAILWAY VEHICLE STRUCTURE

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UNITED STATES PATENT OFFICE

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RAILWAY VEHICLE STRUCTURE

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6 Claims. (Cl. 105—2)

This invention relates to a railway vehicle structure construction for controlling the currents of air flowing about the sides of the vehicle to prevent the rise of dust and foreign matter about the sides of the vehicle.

In modern high speed trains, considerable difficulty has been encountered by the rise of air currents about the sides of the train which carry dust and particles of sand and stone upwardly about the sides of the train. These rising air currents make it difficult to provide clean air intakes into the train for air conditioning purposes and also for cooling of the driving machinery. Elaborate sealing arrangements also are required in order to prevent the entrance of dust and dirt between the different cars forming a train. These rising currents of air laden with small particles of ballast and other foreign matter also have been found to provide a sand blasting effect which requires the repainting of certain parts of the trains after each run, and in addition, has been found to wear away the heads of rivets which secure together the outer sheets forming the sides of the train vehicles.

An object of my invention is to provide an improved railway vehicle structure for preventing the rise of currents of air about the sides of the vehicle.

Another object of my invention is to provide a longitudinally extending louver structure adjacent the top of a railway vehicle for deflecting air currents downwardly over the sides of the vehicle.

A further object of my invention is to provide an improved louver structure having a plurality of vanes arranged to deflect air from a direction substantially longitudinally of the top of the vehicle to a direction downwardly over the sides of the vehicle.

Further objects and advantages of my invention will become apparent and my invention will be better understood from the following description referring to the accompanying drawings, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

In the drawings, Fig. 1 is a side elevational view of a locomotive embodying my invention; Fig. 2 is an end view of the locomotive shown in Fig. 1; Fig. 3 is an enlarged side elevational view, partly broken away, of a part of the louver construction shown in Fig. 1; Fig. 4 is a plan view of the part of the louver construction shown in Fig. 3; Fig. 5 is a sectional view taken along

line 5—5 of Fig. 4; Fig. 6 is a sectional view taken along line 6—6 of Fig. 4; Fig. 7 is a sectional view taken along line 7—7 of Fig. 4; Fig. 8 is a sectional view taken along line 8—8 of Fig. 4; and Fig. 9 is a plan view, partly broken away, of the locomotive shown in Fig. 1.

Referring to the drawings, I have shown a railway locomotive having a superstructure supported on main trucks 10 and auxiliary trucks 11, which is provided with upwardly extending sides 12 connected together by a top 13 extending transversely between the two sides 12. As has been stated, it is desirable to prevent currents of air from rising about the sides of a railway vehicle from the road bed over which the vehicle travels in order to prevent the rise of dust and other foreign particles into and about the vehicle. It has been found that rapidly moving trains will not generally cause currents of air to rise about the vehicles forming the train if there are substantially no currents of air moving angularly with respect to the sides of the train; that is, if the air is substantially still, or if the currents of air move parallel to the track or motion of the train. Such conditions are very rare, and even a very slight side wind will produce a considerable low pressure area on the leeward side of a high speed train. In order to prevent the rise of air currents about the sides 12 of the locomotive, I provide a longitudinally extending louver arrangement on each side of the train adjacent the top extending substantially the entire length thereof, which includes a plurality of curved deflector vanes 14 arranged in longitudinally and transversely spaced apart relation. As shown in the drawings, vanes extend upwardly relatively to the top of the vehicle and are formed so that the leading edges 15 thereof extend substantially longitudinally of the top of the vehicle, while the trailing edges 16 thereof extend substantially transversely of the vehicle, as shown in Fig. 9. Thus different portions of the vane surfaces extend from substantially longitudinally to substantially transversely of the vehicle. A louver cover 17 extends over the outer periphery of these vanes in upwardly spaced relationship to the vehicle top and downwardly relatively thereto and projects slightly over the sides as shown in Figs. 2 and 5 to 9, inclusive, so as to assist the vanes in directing air from a direction substantially longitudinally and parallel to the top of the vehicle to a direction substantially transversely downwardly parallel over the exterior of the sides 12. This louver structure is reinforced by a plurality of struts

or section plates 18, and in the illustrated arrangement, a relatively narrow louver arrangement is provided at 19 adjacent the rear end of the locomotive. In Figs. 2 and 9, I have shown by arrows 20 the direction in which air currents will tend to flow transversely of the vehicle and will tend to rise on the leeward side thereof. As shown in the upper part of Fig. 2, relatively clean air will be drawn from adjacent the top of the vehicle 13, and will be directed transversely and downwardly over the sides 12 of the vehicle, as indicated by the arrows 21 feeding the low pressure area adjacent the sides of the vehicle, thus deflecting the dust-laden air which otherwise might rise into this low pressure area and tends to prevent the formation of such low pressure areas, thereby reducing the depth of the boundary layer of air. Furthermore, this arrangement supplies more downwardly deflected air for higher crosswinds and thereby provides a self-regulating system. In order to obtain the best results with this type louver construction, it is desirable that all of the vehicles in a train should be provided with this longitudinally extending louver arrangement, as the downwardly deflected currents of air have very little effect in deflecting the upward currents of air on vehicles other than that provided with the louvers.

While I have illustrated and described a particular embodiment of my invention, modifications thereof will occur to those skilled in the art. I desire it to be understood, therefore, that my invention is not to be limited to the particular arrangement disclosed, and I intend in the appended claims to cover all modifications which do not depart from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a railway vehicle having a main body provided with sides and a top extending transversely between said sides, a longitudinally extending louver structure arranged in transversely spaced apart relationship along each side of said vehicle adjacent said top provided with a plurality of deflector vanes extending upwardly relatively to said top and having surfaces with different portions extending from substantially longitudinally of said vehicle to substantially transversely thereof.

2. A railway vehicle having a main body provided with upwardly extending sides and a top extending transversely between said sides, and a longitudinally extending louver structure having deflector vanes arranged along substantially the entire length of said vehicle adjacent said top and arranged in transversely spaced apart relationship along each side of said vehicle provided with surfaces constructed and arranged to deflect air from along said top to a direction substantially transversely thereto, said louver struc-

ture including a cover over the outer edges of said vanes and projecting transversely over said vehicle sides for directing air downwardly over the exterior of said sides for a substantial longitudinal portion thereof.

3. A railway vehicle having a main body provided with upwardly extending sides and a top extending transversely between said sides, and longitudinally extending louvers having deflector vanes arranged in transversely spaced apart relationship along each side of said vehicle for substantially the entire length of said vehicle, said louver structure including a cover upwardly spaced from said top and projecting transversely over said vehicle sides and downwardly relatively to said top adapted to deflect air from along said top to a direction substantially downwardly over the exterior of said sides for substantial longitudinal portion thereof for deflecting rising air currents away from said sides.

4. A railway vehicle having a main body provided with upwardly extending sides and a transversely extending top between said sides, and longitudinally extending louvers arranged in transversely spaced apart relationship along each side of said vehicle and having curved vanes, and a cover over the outer edges of said vanes extending transversely over said vehicle sides and downwardly relatively to said top arranged to deflect air from a direction substantially longitudinally along said top to a direction substantially downwardly over the exterior of said sides for deflecting rising currents of air away from said sides.

5. A railway vehicle having a main body provided with upwardly extending sides and a top extending transversely between said sides, a longitudinally extending louver structure having longitudinally curved vanes arranged in transversely spaced apart relationship along substantially the entire length of each side of said vehicle, said vanes extending from a direction substantially longitudinally along said top to a direction substantially transversely thereto, and a louver cover over said vanes extending from a direction substantially parallel to said top to a direction substantially parallel to said sides.

6. In a railway vehicle having a main body provided with sides and a top extending transversely between said sides, a longitudinally extending louver structure arranged in transversely spaced apart relationship along both sides of said vehicle for substantially the entire length thereof adjacent said top provided with a plurality of vanes having surfaces extending from substantially longitudinally of said vehicle to a direction substantially transversely thereof, and a cover over said vanes extending from substantially parallel to said top to a direction substantially parallel to said side.

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