Feb. 16, 1960 M. FREI 2,925,049

INTERCOMMUNICATION PASSAGE FOR RAILWAY COACHES

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Fig. 1

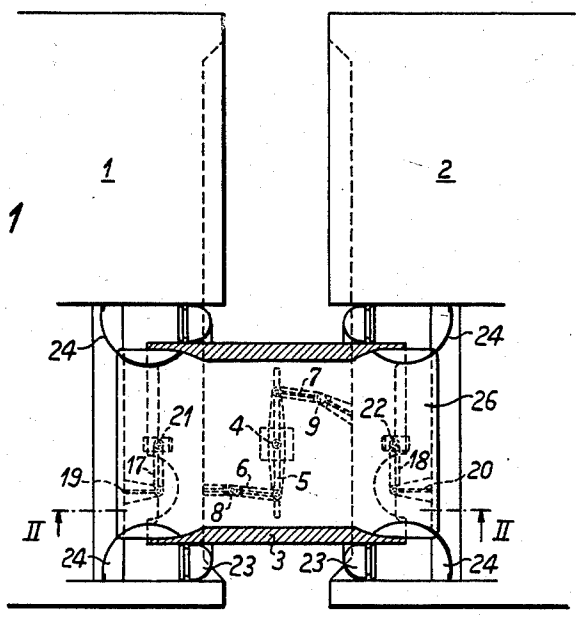
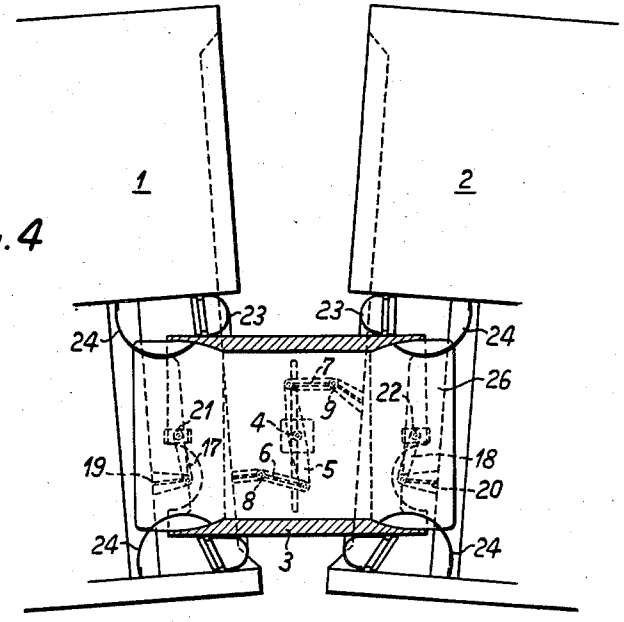


Fig. 4



Inventor
Max Frei
By
Singer, Stern & Carlberg
attys

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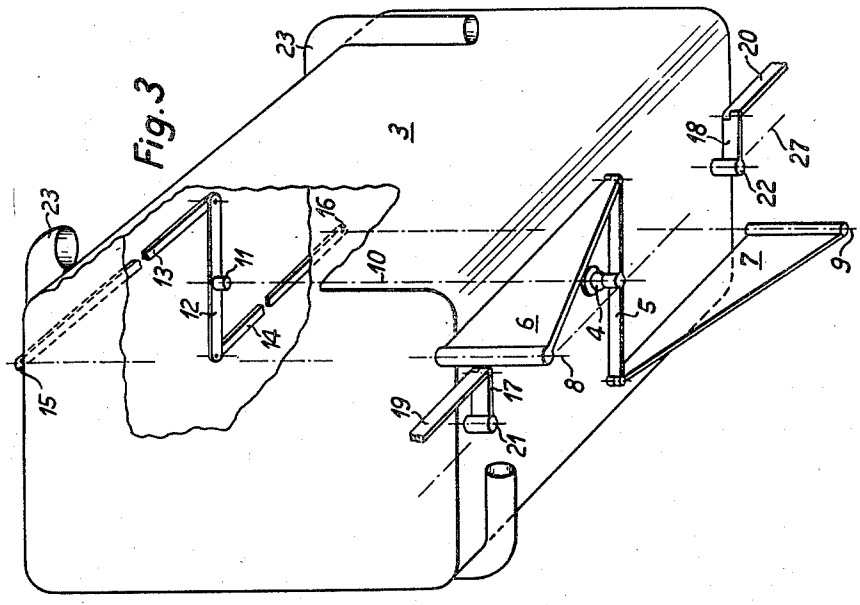
Fig. 3



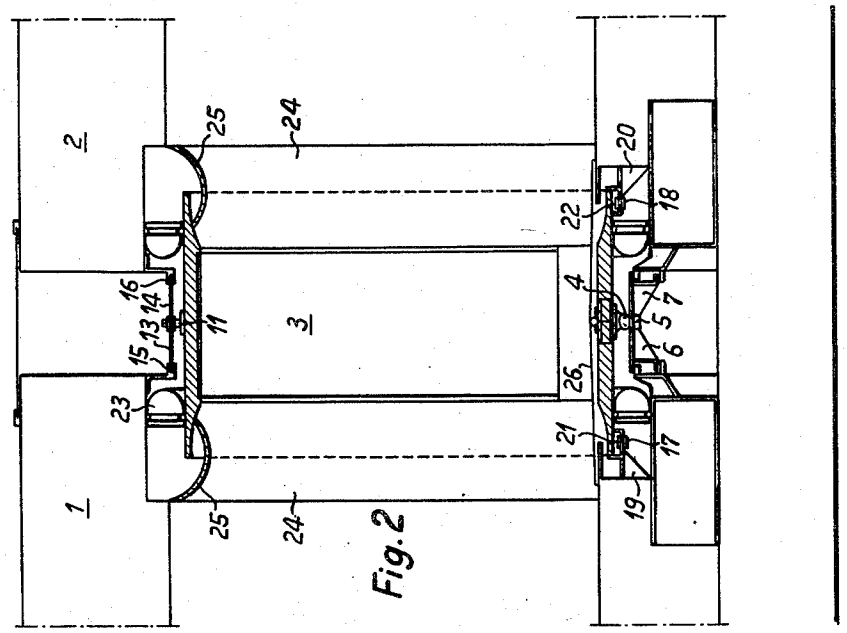


Fig. 2

Inventor
Max Frei
By
Singer, Stern & Carlberg
attys.

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Fig. 5

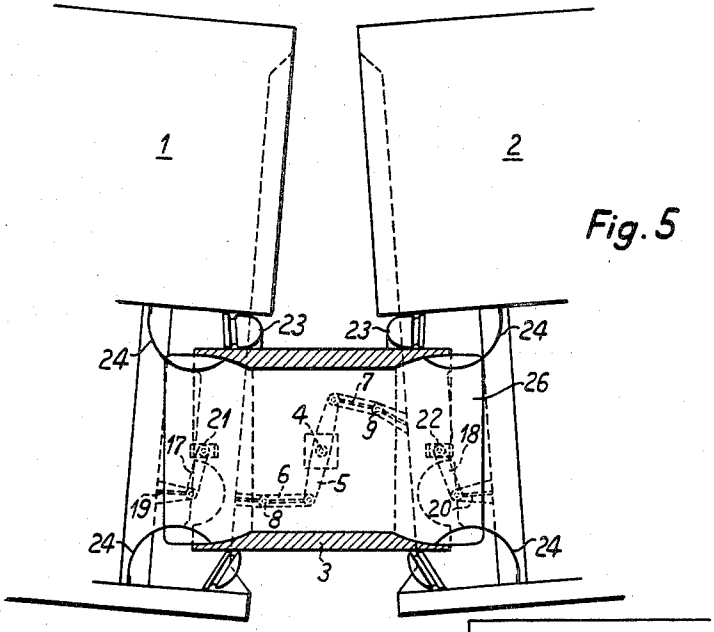
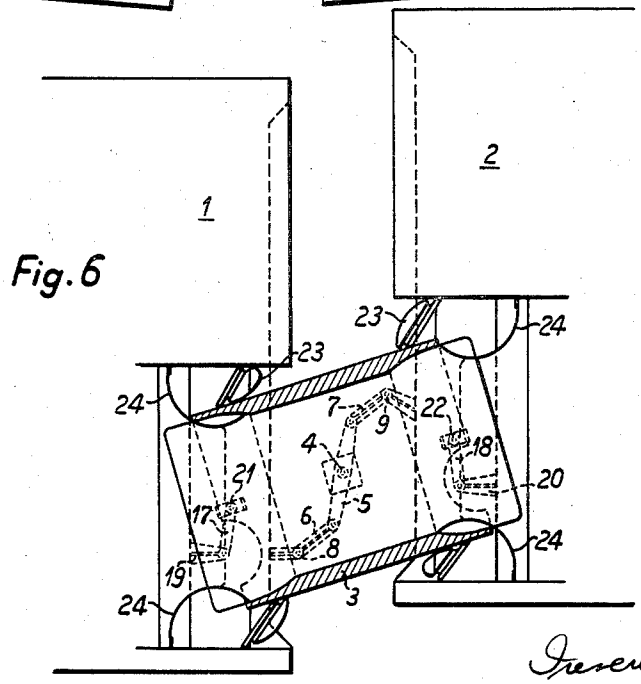


Fig. 6



Inventor
Max Frei
By
Singer, Stern & Carlberg
attys.

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INTERCOMMUNICATION PASSAGE FOR RAILWAY COACHES

Max Frei, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

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Claims priority, application Switzerland June 7, 1956

4 Claims. (Cl. 105—8)

The intercommunication devices for railway coaches are arranged on the end faces thereof and consist in general of passage bridges, the holder devices and bellows which latter are made of leather, fabric, rubber or similar materials. The complicated movements to which these bellows are subject involve heavy wear thereof. In general they are so constructed that they protect in the first instance the passengers against accidents but in consequence cannot satisfy the requirements in sealing and freedom from drafts. In trains with air conditioning equipment the demand for sealing of the intercommunication passages is compulsory or devices must be provided which take care of automatically closing the transition doors.

In train combinations which operationally are to be used as units, the individual vehicles of which are consequently not separated from one another or are separated only for maintenance purposes, devices as mentioned hereinabove are inconvenient. In such trains the possibility of passage between the individual coaches with as little hindrance as possible and without having to operate doors is desired. Moreover with such trains there is the requirement of an absolute seal of the transition portion. The present invention relates to an intercommunication passage which complies with these requirements in that it consists of a rigid tubular portion which is attached between the railway coaches through a lever system in such a manner that membrane-like sealing elements arranged between the tubular portion and the railway coaches are loaded only by forces deriving from the movements of the tubular portion relative to the railway coaches, but not by the guiding forces proper.

The invention relates to an intercommunication rigid passageway member arranged between passenger railroad cars of a train that operates as a unit in which the individual cars remain coupled together in service and only disconnected for the purpose of making repairs.

One object of the invention is to provide a passageway enclosure between railway cars which will exclude snow, dust, cinders and the like and to provide for the airtight connection of the passenger vestibule such that the usual doors or panels may be eliminated and enabling the passengers to move freely throughout the entire length of the train without opening or closing doors and panel members.

Another object is to provide a passageway device comprising a solid and yieldable part in which the solid part is so designed that it will take up all the forces placed thereon by passenger movement thereover while the yieldable part effectively seals the passenger compartment in an airtight manner without receiving various stresses and strains imposed by the passageway structure.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings.

In the accompanying drawing an embodiment of the invention is illustrated by way of example, in which:

Fig. 1 is a plan view of the intercommunication passage with the center lines of the coaches in alignment,

Fig. 2 is a section on the line II—II of Fig. 1,

Fig. 3 is a perspective view of the intercommunication passage device looking in a direction from below,

Fig. 4 is a plan view in the position of a right hand curve,

Fig. 5 is a plan view of the intercommunication passage member with the parts in the position of a left hand curve, and

Fig. 6 is a plan view of the intercommunication device with the linkage in the position when passing over a short S-shaped cross-over between adjacent parallel tracks.

The diagrammatically indicated railway coaches 1 and 2 have each an eccentrically disposed aperture for receiving the rigid intercommunication passage member 3. This passage member 3 has a square cross section with rounded corners. It carries on its underside a ball joint 4 which rests on a correspondingly designed yoke 5. This yoke 5 is supported by two triangular levers 6, 7 which in turn are mounted pivotally about vertical axes 8 and 9, respectively, on the coaches 1 and 2, respectively. The vertical position of the center line 10 of the passage passing through the ball joint 4 is secured by a pin 11 which is mounted on the passage 3 and carries a two-armed lever 12. The arms of this lever 12 are each connected by means of a link 13 and 14, respectively to the coaches 1 and 2, respectively. The links 13, 14 are pivotally mounted at 15 and 16 respectively, to the coaches 1 and 2, respectively.

Moreover on the coaches 1, 2 short links 17 and 18 are pivotally mounted in brackets 19 and 20, respectively, which links carry a pin 21 and 22, respectively, on their free ends, which pins are fixed to the passage 3.

Between the outer wall surface of the passage and the wall at the apertures of the coaches sealing elements 23 are inserted. These sealing elements are preferably diaphragm-like, e.g. made of rubber, or may consist of a cushion-like foam rubber composition which is covered with a compact rubber membrane. Moreover flexible side-wall closure devices are provided. Along the vertical edges of the pagge 3 there is one side wall 24 arranged on each side, and along the upper edge a top wall 25 is inserted.

A flexible bottom plate 26 is superimposed across the passage 3 between the coaches 1 and 2. This plate 26 may either be attached at its center on the passage 3, or it may be mounted pivotally about a transverse axis.

In the Figs. 4–6 the various elements are illustrated in their actual positions in a right hand curve, a left hand curve and on points of the track, respectively.

The links 17, 18 always hold the longitudinal axis 27 of the passage with great approximation parallel to the tracks, or in bends of the track parallel to the tangents thereof. The lever system 5, 6, 7 and 12, 13, 14 has the effect that the line perpendicular to this axis 4 through the joint 4 at least approximately coincides with the bisecting line of the angle included between the center lines of the coaches. When the axis 27 is in alignment with the center lines of the coaches, this perpendicular line coincides with the said bisecting line of the angle.

The construction illustrated has numerous advantages. The movements of the sealing elements can be accurately determined, and consequently their stresses can be controlled and reduced, and their life span can be increased. Moreover a very effective sealing can be attained, which on the one hand is very important for air-conditioned train combinations, and on the other hand affords a draft-free passage.

Accordingly no transition doors are required which is

important for the unimpeded passage of the passengers. The mounting of the whole passage and of the various levers and links is particularly simple. The passage can be constructed as a unit in such a manner that it is provided with two frames which carry all the moving and sealing elements and can be inserted into the corresponding apertures of the railway coaches. It has moreover no lubrication points with which persons could come into contact. The inertia forces are unequivocally taken by the lever system only, and not as hitherto partly by the sealing elements.

While I have described herein and illustrated in the accompanying drawings what may be considered a typical and particularly useful embodiment of my said invention, I wish it to be understood that I do not limit myself to the particular details and dimensions described and illustrated for obvious modifications will occur to a person skilled in the art.

What I claim as my invention and desire to secure by Letters Patent, is:

1. An intercommunication passageway for railroad passenger cars having passageway apertures at the ends thereof, comprising a rigid tubular member arranged with its ends extending into the passageway apertures between adjacent passenger cars, brackets on the ends of said passenger cars adjacent said passageway apertures, a yoke member, a ball and socket joint connecting said rigid tubular passageway member to said yoke, and reinforced link members pivotally connecting the ends of the yoke to said brackets.

2. An intercommunication passageway for railroad passenger cars as set forth in claim 1 in which said yoke and reinforced link members extend beneath the tubular passageway member with the yoke pivotally connected to the underside of the rigid tubular passageway member to permit pivotal movement of the passageway member on a vertical axis, but prevent vertical movement so that said

passageway tubular member will be supported to accommodate the weight of passengers walking thereover.

3. An intercommunication passageway for railroad passenger cars as set forth in claim 1 in which sealing elements are fitted between the rigid tubular passageway member and the passageway apertures in such a manner as to extend all around the ends of the tubular passageway member to form an airtight closure and thus eliminate the use of vestibule passageway doors.

4. An intercommunication passageway between the ends of railroad passenger cars having passageway openings, comprising a rigid tubular passageway member arranged between the ends of adjacent passenger cars with the ends projecting into said passageway openings to provide a through passage, a yoke member extending transversely of said tubular passageway member on the underside thereof, pivot means connecting said yoke member intermediate its ends to the underside of said tubular passageway member, brackets attached to the ends of said railway cars adjacent said openings and offset from the pivot point of said yoke arm to extend in a direction away from the car and on opposite sides of the pivot axis of said yoke arm, link members pivotally connecting said brackets to the ends of said yoke arm, a similar yoke arm pivoted to the upper portion of said tubular passageway with its axis extending co-axially with the pivot axis of said first yoke arm, and links connecting the ends of said second mentioned yoke arm to pivot members on the ends of the railroad passenger cars with their pivot axes extending co-axially with the pivot axes of the links connecting the first mentioned yoke member to said brackets.

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