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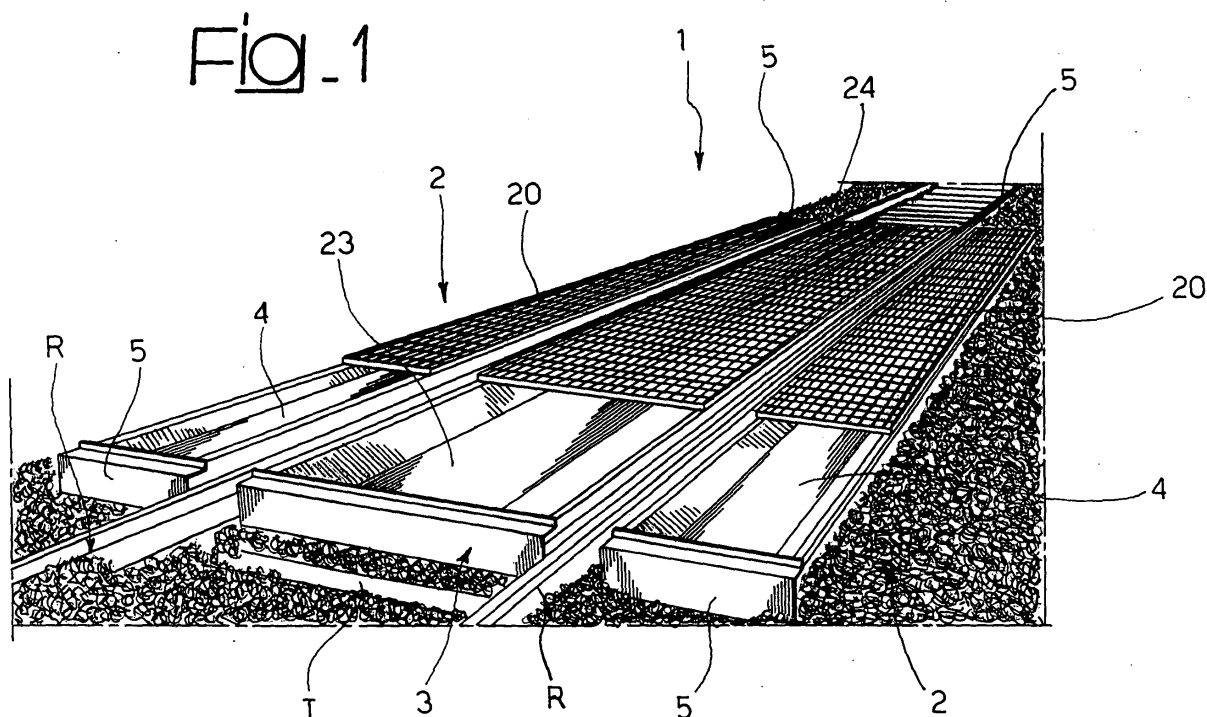
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(54) Collecting and evacuating bed for liquids along a railway track

(57) A system for providing a bed (1) for collecting and evacuating liquids along a railway track comprises tanks (4, 23) carried by cantilever supports (6, 26) arranged along the outer sides and between the inner sides of the rails (R). Set between the cantilever sup-

ports (6, 26) and the tanks (4, 23) are intermediate longitudinal elements (7, 25), and on top of the tanks (4, 23) there is provided a treading surface formed by grid-dled plates (20, 24). The tanks (4, 23) are insulated from the iron surface.



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Description

[0001] The present invention relates in general to railway lines (and tram lines), and proposes providing, for a certain length along a track, a bed for collecting and evacuating liquids such as water for washing or sprinkling, as well as disinfectants and the like.

[0002] Known from the European patent application EP-A-1081286 is a supporting device that can be applied to the rails of railway or tram lines including sleepers set at intervals apart for fixing the flanges of the rails, said device comprising a cantilever support provided with attachments, which can be connected in an articulated way to vice members, which are in turn fixed to the flanges of the rails. The cantilever supports are provided with rests on the sleepers of the track, and are prearranged for application of service devices of various kinds, amongst which also tanks for liquids for washing/disinfecting and the like.

[0003] The present invention aims at improving the solution known from the aforesaid document EP-A-1081286 and, more in particular, its purpose is to propose a system for providing a bed for collecting and evacuating liquids that is sturdy and versatile, as well as being applicable in a simple and convenient way also to tracks of already existing lines.

[0004] A further purpose of the invention is to propose a system for providing a bed for collecting and evacuating liquids along a railway track which can be laid in a short time and without any need for building works.

[0005] A further purpose of the invention is to make available a system for providing a bed for collecting and evacuating liquids along a railway track that is designed to guarantee the maximum safety as regards dead and live loads during use.

[0006] With a view to achieving the above purposes, the system according to the invention is basically characterized in that the aforesaid tank means are supported by said cantilever supports by means of intermediate longitudinal elements extending in use parallel to the track, and in that said cantilever supports moreover support griddled plates defining a treading surface on top of said tank means.

[0007] Conveniently, the system further comprises insulation means between the aforesaid tank means and the rails of the track, and said insulation means are provided both between the attachments of the cantilever supports and the flanges of the rails and between longitudinal edges of the tank means and the railheads.

[0008] The tank means advantageously consist of sectional modular elements, and are provided with drain pipes conveniently connected to a common collecting header, which can be connected to a coalescence or hydrocarbon oil separator.

[0009] Further characteristics and advantages of the invention will emerge clearly in the course of the ensuing detailed description with reference to the annexed plate of drawings, provided purely by way of non-limiting ex-

ample, in which:

- Figure 1 is a schematic perspective view of a track of a railway line equipped with a system according to the invention for providing a bed for collecting and evacuating liquids;
- Figure 2 is a partial plan view of the track Figure 1, at an enlarged scale and partially cut away;
- Figure 3 is a cross-sectional view according to the line III-III of Figure 2;
- Figure 4 shows a part of Figure 3 at an enlarged scale;
- Figure 5 is a partial and partially cut-away perspective view of the part shown in Figure 4;
- Figure 6 is an exploded perspective view, at an enlarged scale, of the part of Figure 5;
- Figure 7 is a schematic and partial view of a circuit for liquids associated to the system according to the invention; and
- Figure 8 shows a variant of Figure 1.

[0010] In the plate of drawings, and with particular reference to Figures 1-3, the reference number 1 designates as a whole a system according to the invention for providing a bed for collecting and evacuating liquids along a section of a pre-set length of a railway line, the track of which includes, in an altogether conventional way, a pair of parallel rails R, each of which has a flange S and a railhead F. The flange S of the each rail R is fixed, also in an altogether conventional way, to sleepers T arranged, at regular intervals, in a direction orthogonal to the direction of the track.

[0011] The system 1 according to the invention makes available, alongside the outer sides of the two rails R and within the space comprised between the corresponding inner sides, a basin for collecting washing water or residues of sprinkling liquids, disinfectants and the like, said basin being connected to a circuit for evacuation and possible treatment thereof. In practice, therefore, the system is made up of two lateral collecting beds 2 and a third central collecting bed 3.

[0012] Each of the lateral beds 2, which are specularly symmetrical, comprises a set of modular shaped tanks 4, normally formed by thin plates of stainless steel having, for example, a length in the region of six metres, with endpieces 5.

[0013] The tanks 4 are carried by a set of cantilever supports 6 projecting in a direction orthogonal to that of the respective rail R, with the interposition of intermediate longitudinal elements 7 extending parallel to the rails R. In greater detail, the tanks 4 are supported underneath by the cantilever supports 6 and laterally on the side where there is the rail R by the intermediate longitudinal elements 7.

[0014] Said longitudinal elements 7 may be seen in greater detail in Figures 4 and 5 and conveniently have a C section. They are fixed to platforms 9 of the cantilever supports 6, for example by means of screwed

plates 17 in the way that is more clearly visible in Figure 5.

[0015] As is represented more clearly in Figures 5 and 6, each cantilever support 6 comprises a pair of arms 8, each joined at one end by the platform 9 and provided at the opposite end with respective brackets 10. The brackets 10 are connected, via articulation pins 11 and with the interposition of spacer bushings 12, conveniently made of vibration-damping and insulating material, to respective blocks 13 for vicing to the flange S of the corresponding rail R. As described in the aforementioned document EP-A-1081286, the blocks 13 are substantially L-shaped and are fixed, normally by means of screws 14, to respective base plates 15 arranged against the bottom surface of the flange S of the rail R. The pairs of vicing blocks 13 and the corresponding plates 15 are arranged on opposite sides with respect to the sleepers T so as not to interfere therewith. Furthermore, set between the area of vicing of each block 13 and the flange S of the corresponding rail R is a pad 16 made of insulating and vibration-damping material, typically an elastomeric material.

[0016] Starting from the platform 9, each cantilever support 6 has a bar or arm 18, which projects in cantilever fashion beyond the respective sleeper T and carries at its free end a longitudinal element made of channel section 19, which closes the external side of the tank 4 and functions as rest for a griddled plate 20. Also the griddled plates 20 are conveniently modular, extend on top of the tanks 4, and define a treading surface. Said griddled plates 20, which are conveniently made of zinc-plated steel, are normally formed with an indented anti-slip treadable surface.

[0017] On the side opposite to the supporting elements made of channel section 19, the griddled plates 20 rest also on the intermediate longitudinal elements 7.

[0018] Each cantilever support 6 is provided with height-adjustable feet 21, which rest on the corresponding sleeper T.

[0019] As may be seen more clearly in Figures 4 and 5, the tanks 4 have internal longitudinal edges 21 extending until they are immediate adjacent to the outer sides of the rails R, underneath the corresponding railheads F. Said longitudinal edges 21 are coated with respective insulating strips 22, typically made of elastomeric material or the like.

[0020] The arrangement of the central collecting bed 3 is substantially similar to the one described previously with reference to the two lateral beds 2. Also in this case, modular tanks 23 are envisaged with overlying griddled plates 24, which are arranged, on either side, so that they rest on intermediate longitudinal elements 25, which are substantially identical to the intermediate longitudinal elements 7 and are carried by corresponding cantilever supports 26, the configuration of which is similar to that of the cantilever supports 6.

[0021] As may be seen in greater detail in Figures 4 and 6, also each cantilever support 26 comprises a pair

of arms 27 connected at one end by a platform 28 and provided at the opposite end with respective brackets 29 for articulated connection, through corresponding pins 30 and vibration-damping bushings 31, to corresponding vicing blocks 32, which are in turn fixed by means of screws 33 to the respective plates 15 and are tightened against the flange S of the rails R with the interposition of vibration-damping and insulating pads 34.

[0022] The platforms 28, to which the longitudinal elements 25 are fixed for example via screwed plates 35, bear underneath feet 36, which rest on the sleepers T and are height-adjustable.

[0023] Also the longitudinal edges 40 of the tanks 23 are set immediately underneath the railheads F of the rails R, in the proximity of the inner sides thereof, and are coated by respective insulating strips 37, typically made of elastomeric material.

[0024] The lateral collecting beds 2, defined by the corresponding tanks 4, and the central collecting bed 3, defined by the tanks 23, are in this way insulated from the surface of the iron and can be perfectly aligned therewith, as a result of adjustment of the feet 21 and 36 of the cantilever supports 6 and 26. Said tanks 4 and 23 are provided with drain pipes 38 (Figure 7) conveniently connected to a common collecting header 39, which in turn comes under an assembly for treatment of the waste liquids, which can for example comprise a coalescence or hydrocarbon oil separator.

[0025] The embodiment shown in Figure 8 differs from the one previously disclosed solely in that the tanks 4 and 23 are equipped with runners 41 which can be employed to sprinkle from below a liquid for washing the body of a railway vehicle located over the bed system 1, as well as with nozzles 42 for the self-washing of the bed system 1 itself. Runners 41 and nozzles 42 are connected, through respective nipples 43, to a hydraulic supply circuit of a liquid under pressure.

[0026] From the foregoing description, it is evident that the invention makes available an extremely practical, functional and sturdy system for collecting and evacuating liquids along a railway track, it being possible for said system to be assembled and applied also to already existing lines, without requiring any modification and in an extremely short time.

[0027] Of course, the details of construction and the embodiments may vary widely with respect to what is described and illustrated herein, without thereby departing from the scope of the present invention as defined in the ensuing claims.

Claims

1. A system for providing a bed (1) for collecting and evacuating liquids along a railway track, including cantilever supports (6, 26) provided with respective attachments (13, 32, 15), which can be connected to the flanges (S) of the rails (R) of the track in po-

sitions corresponding to respective sleepers (T), and tank means (4, 23) carried by said cantilever means (6, 26) respectively along the outer sides and between the inner sides of the rails (R), said system being **characterized in that** said tank means (4, 23) are supported by said cantilever supports (6, 26) by means of respective intermediate longitudinal elements (7, 25) extending in use parallel to the track, and **in that** said cantilever supports (6, 26) moreover support griddled plates (20, 24) defining a treading surface on top of said tank means (4, 23).

2. The system according to Claim 1, **characterized in that** it further comprises insulation means (16, 34, 22, 37) between said tank means (4, 23) and the rails (R) of the track. 15
3. The system according to Claim 2, **characterized in that** said insulation means (16, 34) are provided between said attachments (13, 32, 15) of said cantilever supports (6, 26) and the flanges (S) of the rails (R). 20
4. The system according to Claim 2 or Claim 3, **characterized in that** said tank means (4, 23) have longitudinal edges (21, 40) that can be positioned immediately underneath the railheads (F) of the rails (R) and are provided with respective insulating coating strips (22, 37). 25 30
5. The system according to any one of the preceding claims, **characterized in that** said tank means (4, 23) consist of sectional modular elements. 35
6. The system according to one or more of the preceding claims, **characterized in that** said tank means (4, 23) are provided with respective drain pipes (38) connected to a common collecting header (39). 40
7. The system according to Claim 6, **characterized in that** said collecting header (39) is connected to a coalescence or hydrocarbon oil separator.
8. The system according to one or more of the preceding claims, **characterized in that** each cantilever support (6, 26) comprises a pair of arms (8, 27) formed with end brackets (10, 29) connected to the respective attachments (13, 15) to the flanges (S) of the rails (R) by means of articulation pins (11, 30) parallel to the track. 45 50
9. The system according to any one of the preceding claims, **characterized in that** each cantilever support (6, 26) is provided with feet (21, 36) for resting on the respective height-adjustable sleeper (T). 55
10. The system according to one or more of the preced-

ing claims, **characterized in that** the cantilever supports (6), which are to be positioned along the outer sides of the rails (R), each bear a respective cantilever supporting bar (18).

11. The system according to one or more of the preceding claims, **characterized in that** said tank means (4, 23) are equipped with runners (41) to sprinkle a liquid under pressure.
12. The system according to one or more of the preceding claims, **characterized in that** said tank means (4, 23) are equipped with nozzles (42) supplying a self-washing liquid under pressure.

Fig. 1

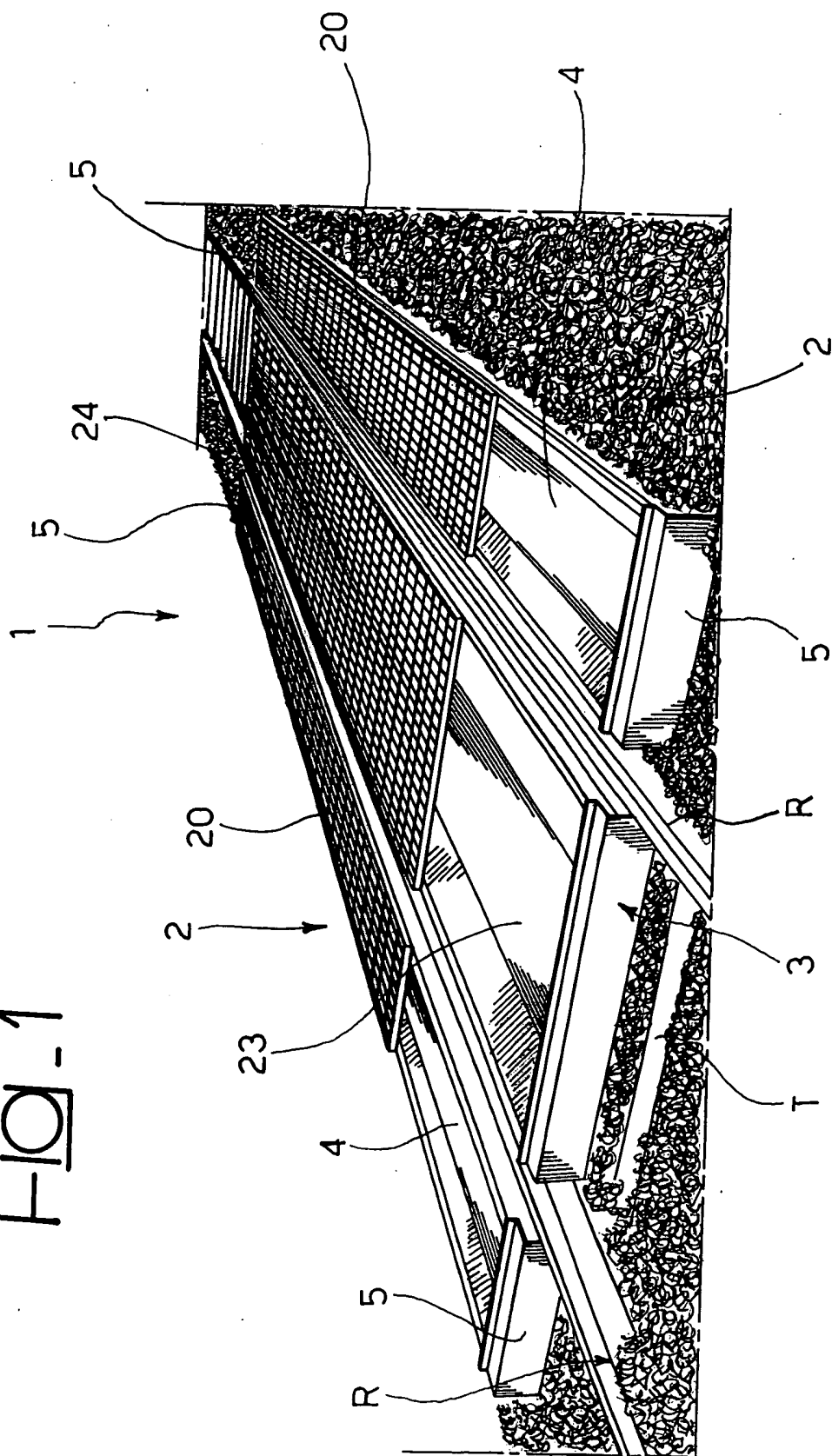


Fig. 7

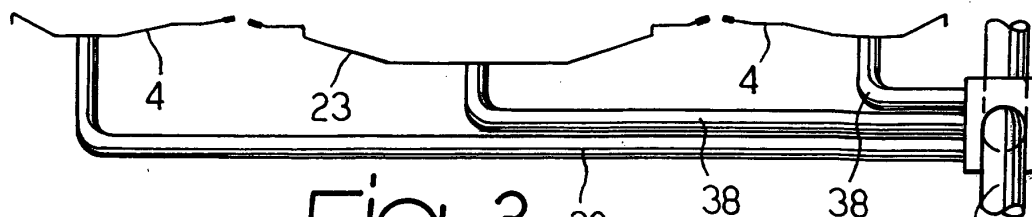


Fig. 3

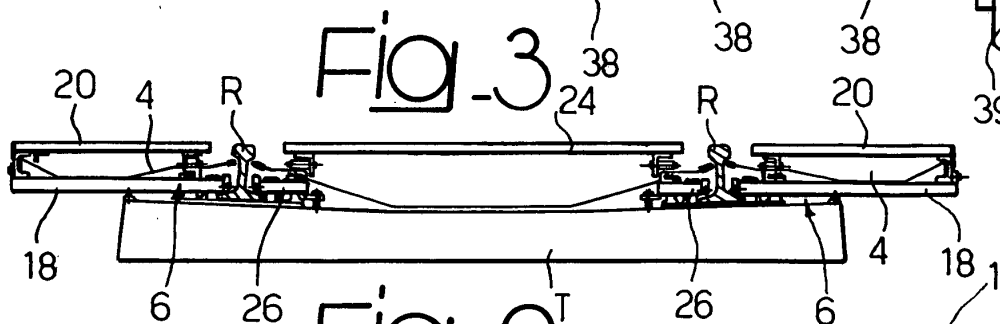


Fig. 2

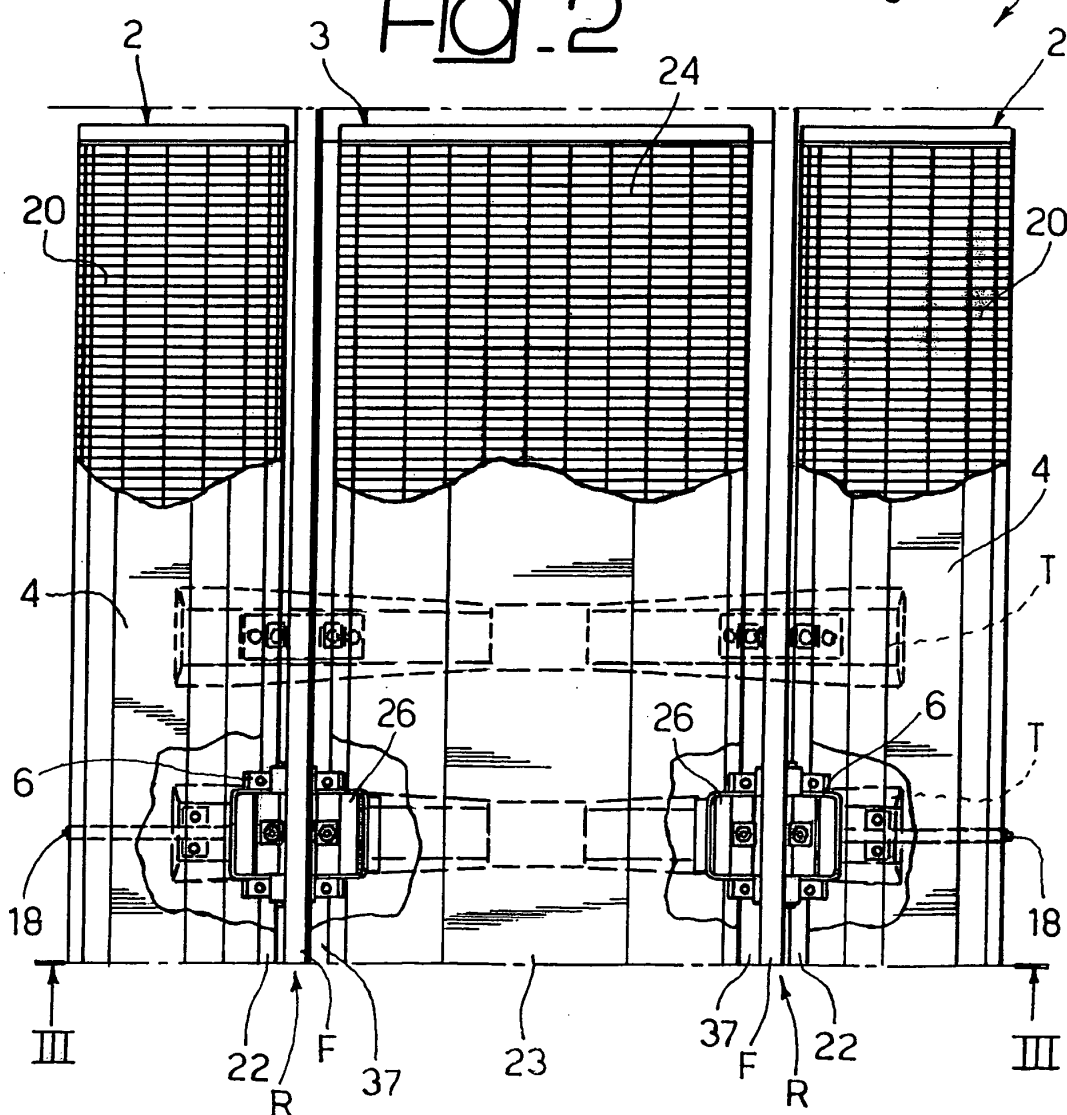


Fig. 4

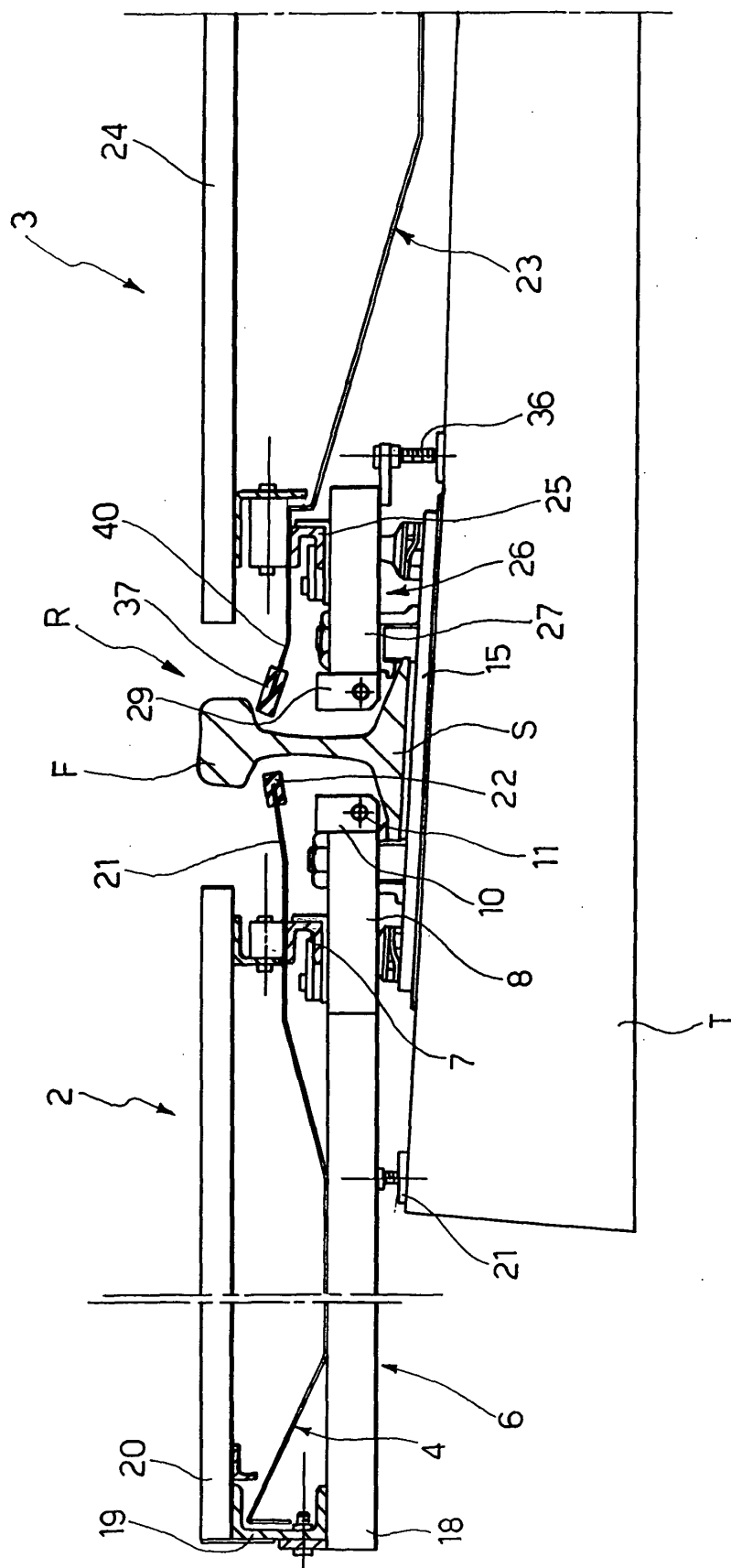


Fig. 5

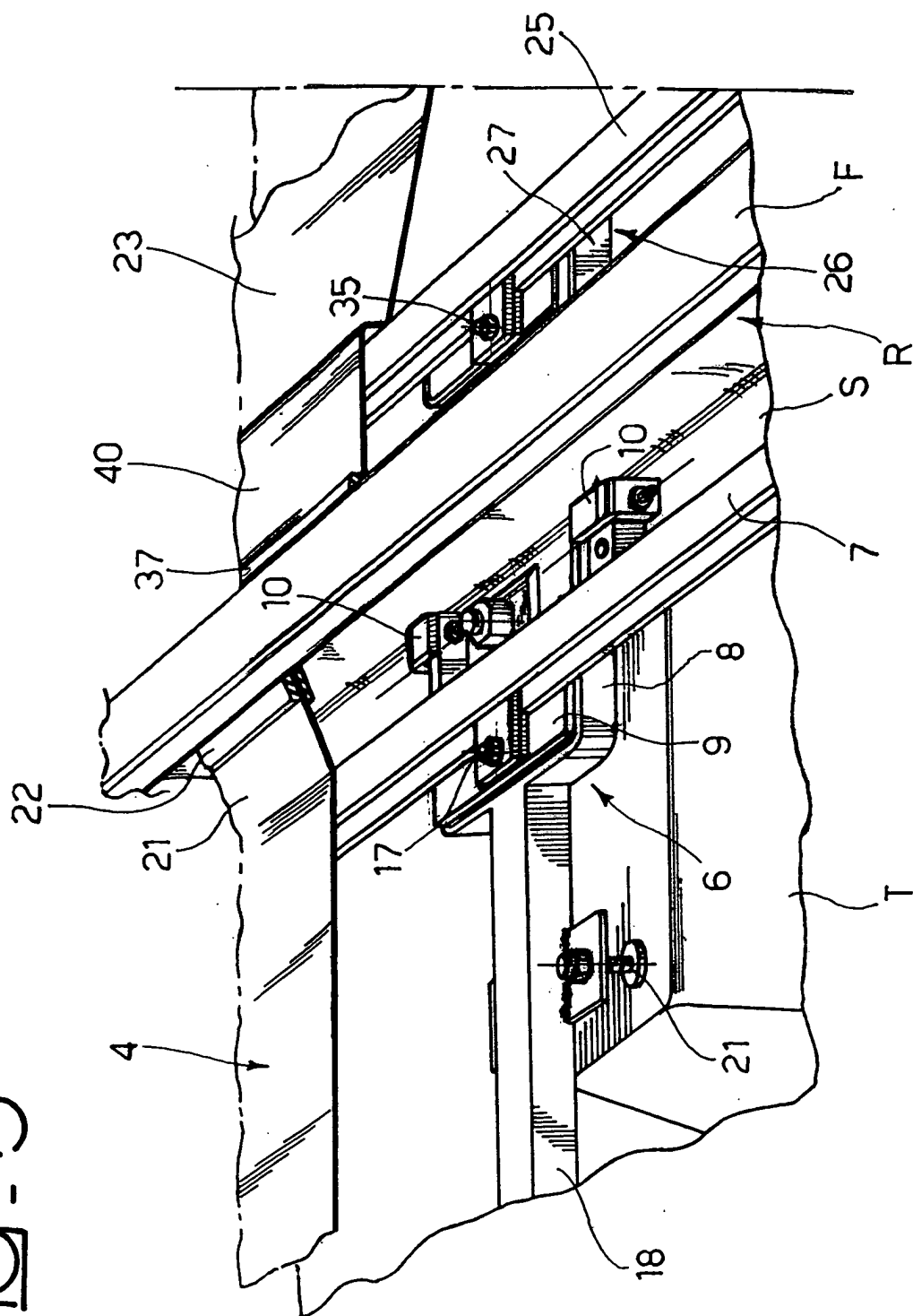


Fig. 6

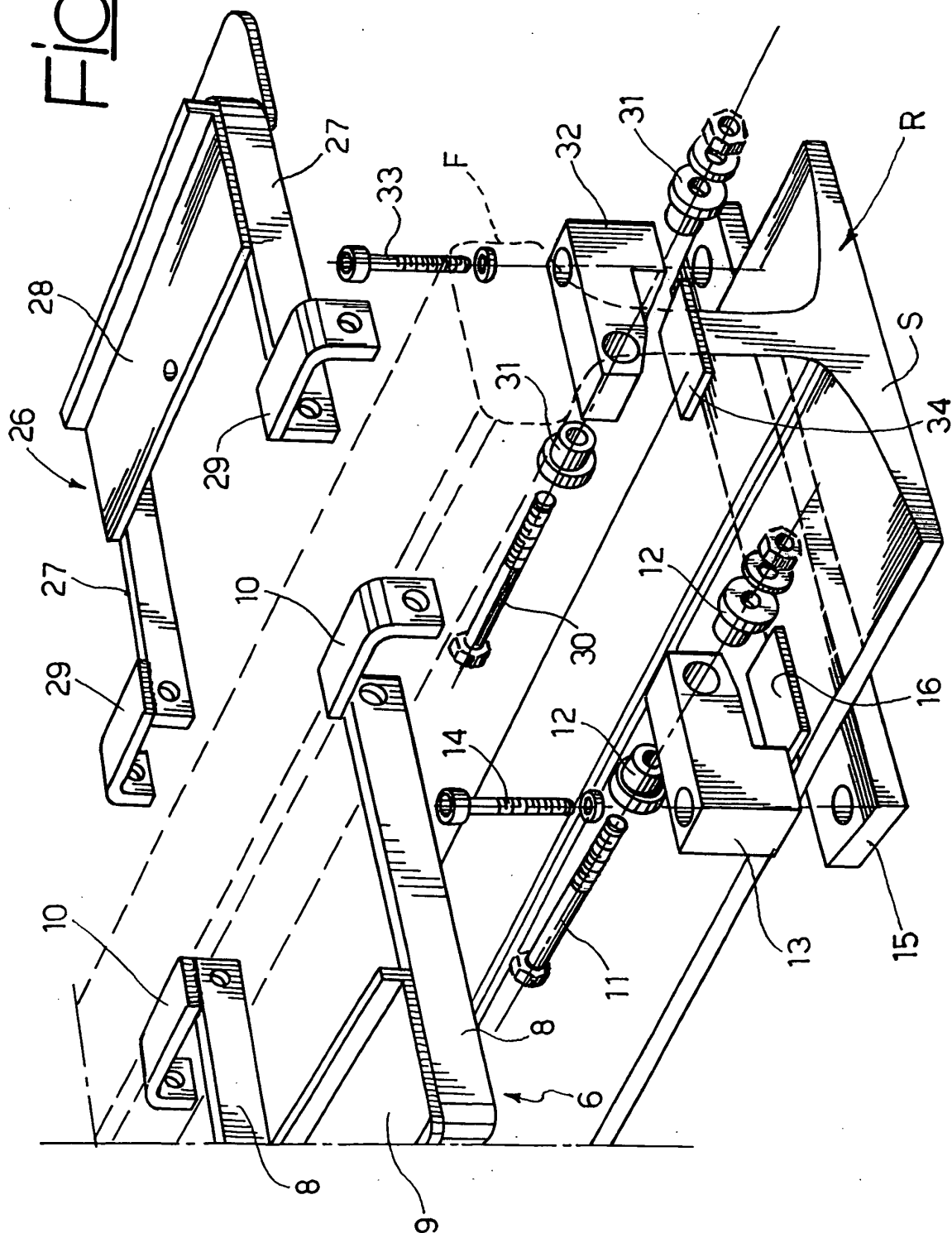


Fig. 8

