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(71) Applicant: **Giovanni, Torrisi Alfio**
95039 Trecastagni (CT) (IT)

(72) Inventor: **Giovanni, Torrisi Alfio**
95039 Trecastagni (CT) (IT)

(74) Representative: **Scarfone, Maria Adelaide**
Studio Rubino S.A.S.
Via Lucrezia della Valle, 84
88100 Catanzaro (CZ) (IT)

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(54) **Integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations**

(57) Integrated modular prefabricated structure for the height adjustment of the piers (11) floor of railway

stations comprising at least two modules (10) comprising a panel (14) having structural characteristics and being coated on top with anti-slip lining elements (15).

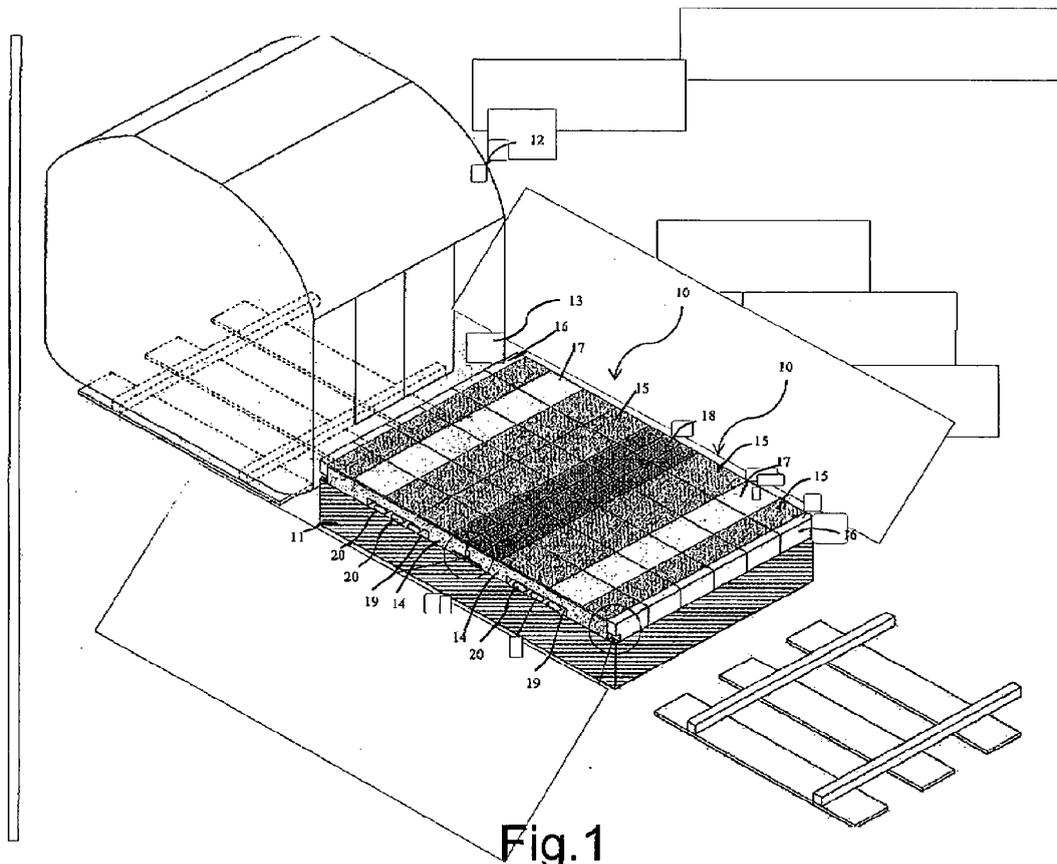


Fig. 1

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Description

[0001] The present invention relates to an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations.

[0002] Currently, the problem of raising the platforms of railway stations and of allowing the adjustment of the height of the floor, removing architectural barriers to access to trains and in particular the new trains at high speed is solved with traditional systems and methods, such as performing masonry operations, with have very high costs and request very long time, consequently leading to the closure of the piers for long periods.

[0003] Aim of the present invention is to provide an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations which is rapid and low cost to carry out; in particular reducing the work to a single installation of the structure previously fabricated in factories.

[0004] According to the present invention an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations is realized, as defined in the claim 1.

[0005] For a better understanding of the present invention a preferred embodiment is described, by way of not limitative example, referring to the accompanying drawings, in which:

- Figure 1 shows a perspective view of a section of a railway platform on which two modules of an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations are installed, according to the present invention;
- Figures 2a-2c shows respectively a plan view and sectional views, along a section line AA and along a section line BB, of the two modules of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations, according to the invention;
- Figures 3a-3c shows respectively a plan view and sectional views, along the section line AA and along the section line. BB, of three modules of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations, according to the invention;
- Figures 4a-4c shows respectively a plan view of an assembly scheme and side views of a detail A and of a detail B of four modules of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations, according to the invention;
- Figures 5a-5b shows a plan view of an assembly scheme and of a side view of a detail A of a plurality of modules of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations, according to the invention.

[0006] Referring to the figures, and in particular to fig-

ure 1, two modules 10 of an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations are provided according to the present innovation. The modules 10 are directly installed on the floor of an existing railway pier 11, where also a railway train 12 and a traveler 13 are represented in transparency.

[0007] According to an aspect of the invention, the modules 10 have a width equal to 180 cm, namely equal to the width of the railway piers.

[0008] According to another aspect of the invention, the width of the modules may vary in function of the actual size of the piers on which the structure must be installed.

[0009] According to an aspect of the invention, the length of the modules 10 is equal to 240 cm, allowing the module can be easily transported by road or rail. According to another aspect of the invention, the length of the modules 10 may be varied according to actual needs.

[0010] According to an aspect of the invention, the height of the modules 10 is equal to 30cm, thus equal to the height required by the railways companies for passengers to pass from the piers to the carriages being at the same altitude. According to another aspect of the invention, the width of the modules may vary in function of the actual size of the piers on which the structure must be installed.

[0011] As shown in figures 1 and 2, each module 10 comprises a panel 14, which is appropriately sized for sustaining the standard loads of the railways, and is covered with tiles 15.

[0012] According to an aspect of the invention, the tiles 15 are in stone material, such as granite or lava basalt.

[0013] According to another aspect of the invention, the tiles 15 are made of non-slip type by means of a chisel work.

[0014] Moreover, at the edge of the pier 11 and on the sides of each module 10, a perimetric ridge 16 is provided, made with parallelepiped blocks, preferably, but not necessarily, in white stone material.

[0015] According to an aspect of the invention, on the floor of each module a yellow band 17 for security and a path 18 for the visually impaired can be further present, also made of tiles, preferably but not necessarily, in stone material, and color such as to make it visible even for the visually impaired in the LOGES system or an equivalent system.

[0016] The panel 14 comprises a space 19 arranged between the bottom of the panel 14 and the underlying pier 11, the space 19 allowing the passage of cables and guide tubes of cables or conduits 20 necessary for the railway station services. Figure 3 shows an integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations comprising three modules 10 of the type above described.

[0017] According to an aspect of the invention, the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations comprises a number of modules 10 variable between 2 and n, a new

module being appendable to the modules yet installed.

[0018] Figures 4 and 5 show respectively an assembly scheme of four modules and of a plurality of modules of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations, according to the invention. The modular assembled structure can be realized in a very fast and simple manner simply assembling the panels 14 directly on the existing pier 11.

[0019] According to an aspect of the invention, the integrated modular prefabricated structure may be provided with a leveling system used for the assembly.

[0020] As shown in the particular A zoomed in figure 4b, the modules 10 can be anchored to the pier 11 by means of L-shaped plates, or clamps, 21, preferably but not necessarily made of galvanized steel, comprising adequate slots 22. In particular, the slots 22 allow the anchorage of a perimeter portion of each module 10 on the edge of the pier 11, by means of bolts 23. Moreover, as shown in the particular B zoomed in figure 4b, in correspondence of the central part of the pier 11, a plate 24, preferably but not necessarily made of galvanized steel, provided with suitable slots 25, allows to join two adjacent modules 10 by bolts 26 which are screwed directly into the modular structure made by adjacent panels 14.

[0021] According to an aspect of the invention, for a structure comprising a certain amount of modules 10 interspaced between them from the other modules 10, such an example a module 10 every five modules 10, as shown in figure 5, the panel 14 are anchored to the pier 11 only through the outer part of the panel 14. This assembly scheme allows to raise a module 10 and to control the services network in the underlying conduits 20, thus eliminating inspection hatches from the pier 11.

[0022] According to another aspect of the invention, inspection hatches for maintenance can be realized directly on the modules 10.

[0023] The integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations according to the invention allows to level the altitude of a railway pier reducing the time of closure the railways piers and the related costs.

[0024] Another advantage of the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations according to the invention consists in the fact that it is designed completely with all the finishing accessories.

[0025] At the end, the integrated modular prefabricated structure for the height adjustment of the piers floor of railway stations according to the invention makes easy the operation of assembly of the structure reducing the work to a single installation of the structure previously fabricated in factories.

[0026] The present invention has been described for illustrative but not limitative purposes, according to its preferred embodiments, but it is to be understood that variations and/or modifications can be made by those skilled in the art without departing from the relevant scope

of protection, as defined by the appended claims

Claims

1. Integrated modular prefabricated structure for the height adjustment of the piers (11) floor of railway stations, **characterized in** comprising at least two modules (10) comprising a panel (14) having structural characteristics and being coated on top with anti-slip lining elements (15).
2. Integrated modular prefabricated structure according to claim 1 **characterized in that** said anti-slip lining elements (15) comprise means (17) for signaling the proximity of the pier (11) edge and means (18) for signaling a path for the blind and/or visually impaired.
3. Integrated modular prefabricated structure according to any of preceding claims, **characterized in** comprising a perimetric ridge (16).
4. Integrated modular prefabricated structure according to any one of the preceding claims **characterized in that** the lining elements (15) are tiles in stone material.
5. Integrated modular prefabricated structure according to any one of the preceding claims **characterized in that** the panel (14) comprises in an inferior portion a space (19), the space (19) of each panel (14) being in communication with the space (19) of adjacent panels (14).
6. Integrated modular prefabricated structure according to any one of the preceding claims **characterized in that** the module (10) comprises means (21) for anchoring the module (10) to the pier (11) and means (24) for coupling to the adjacent modules (10).

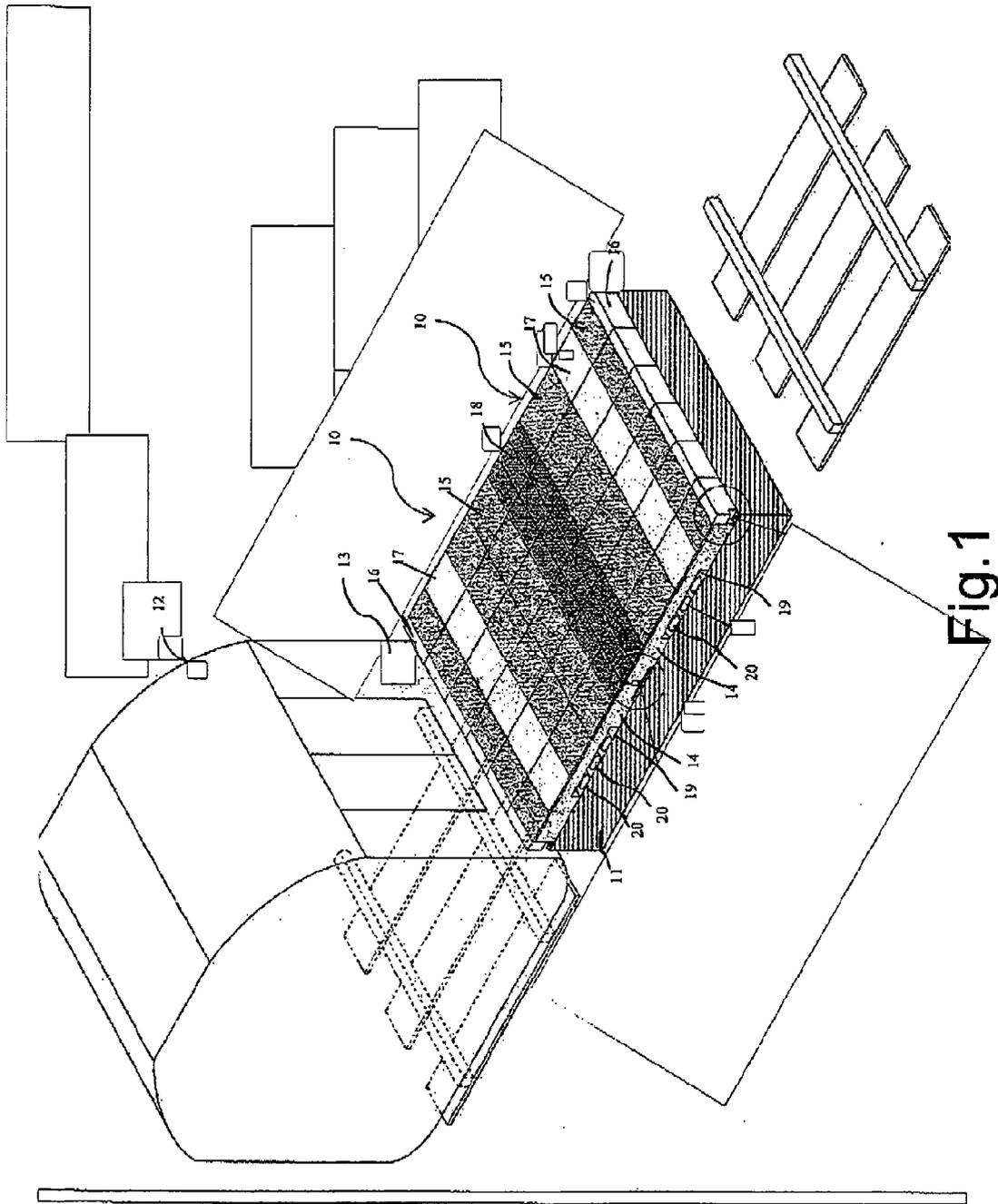


Fig.1

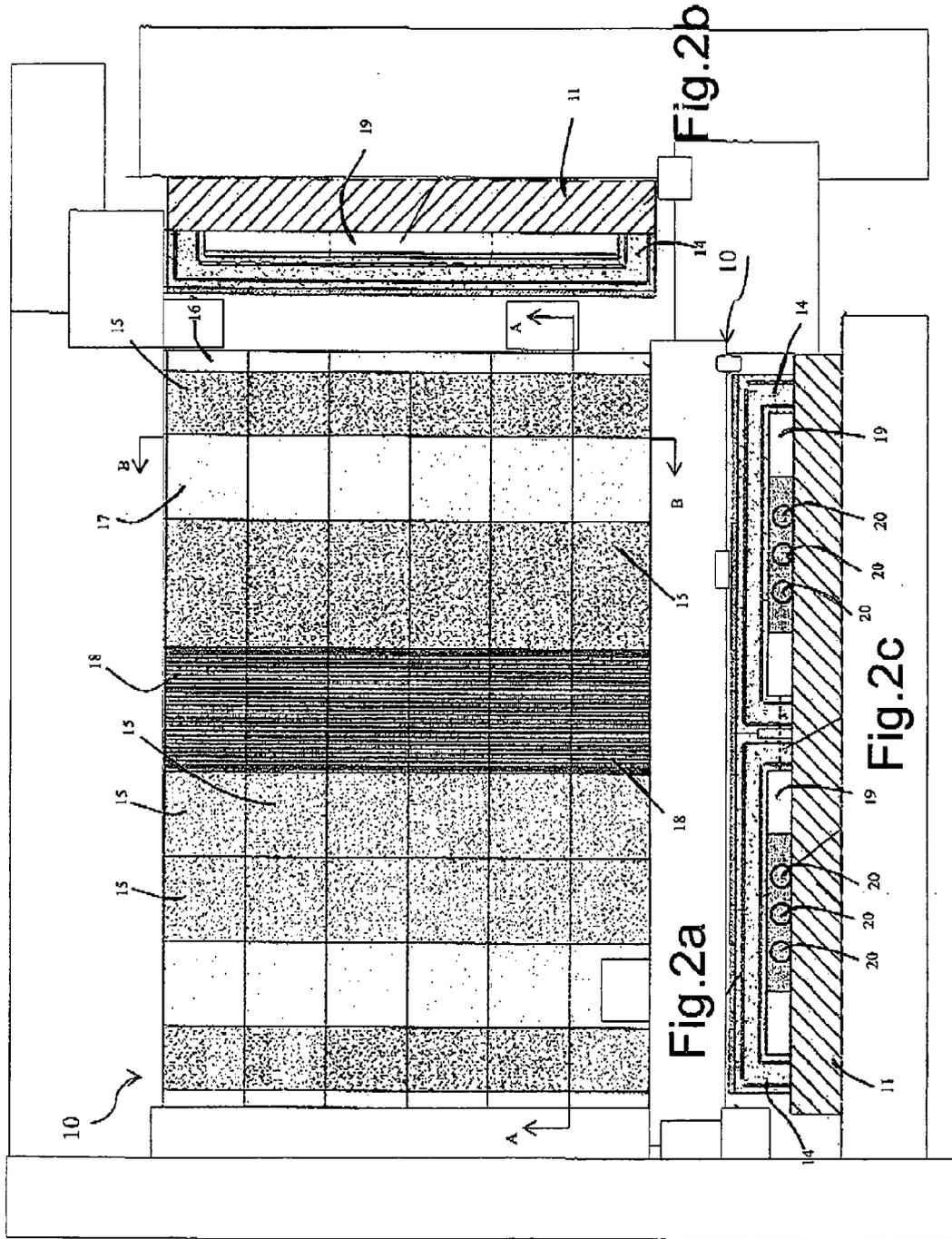


Fig. 2

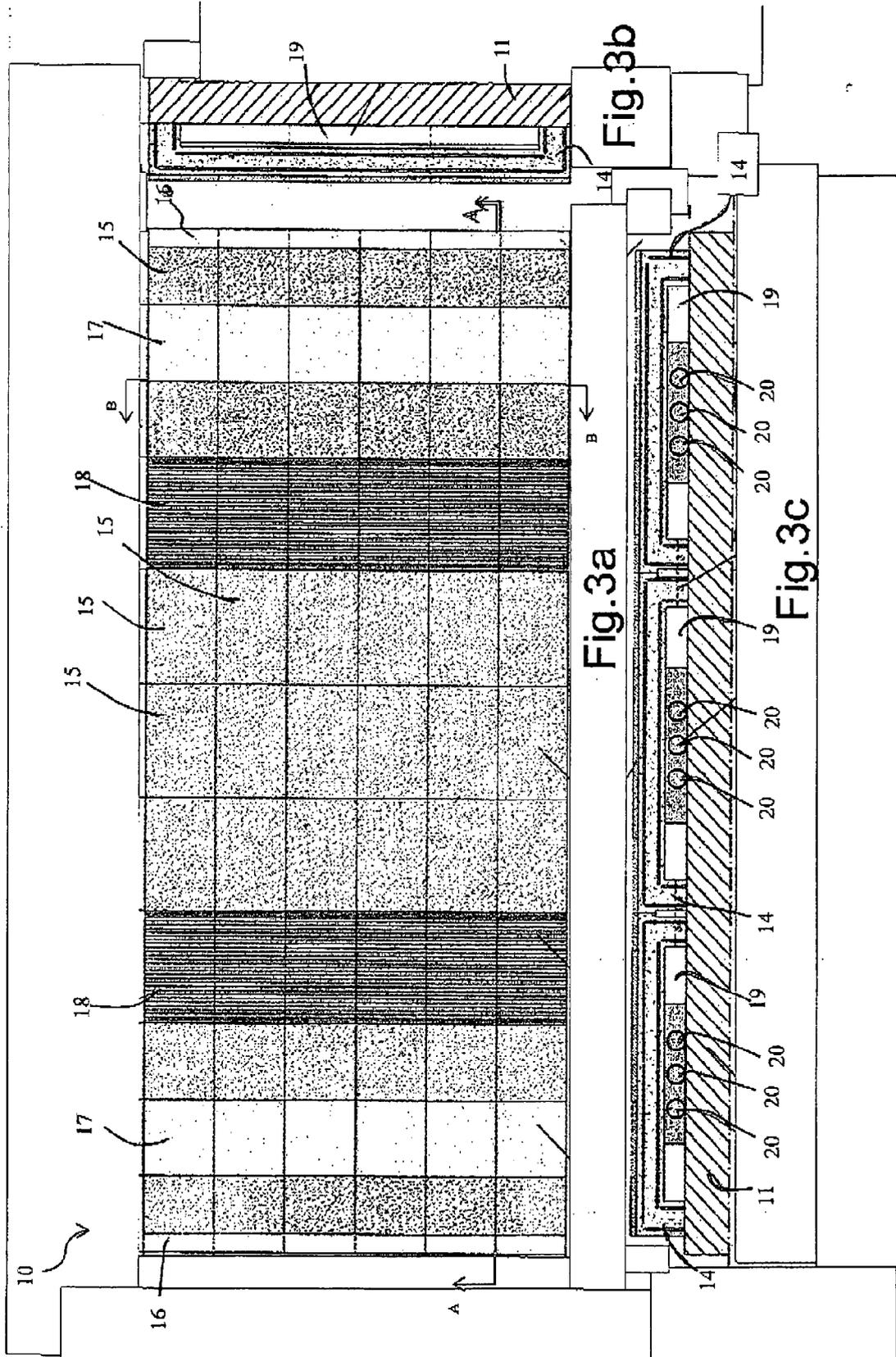


Fig. 3

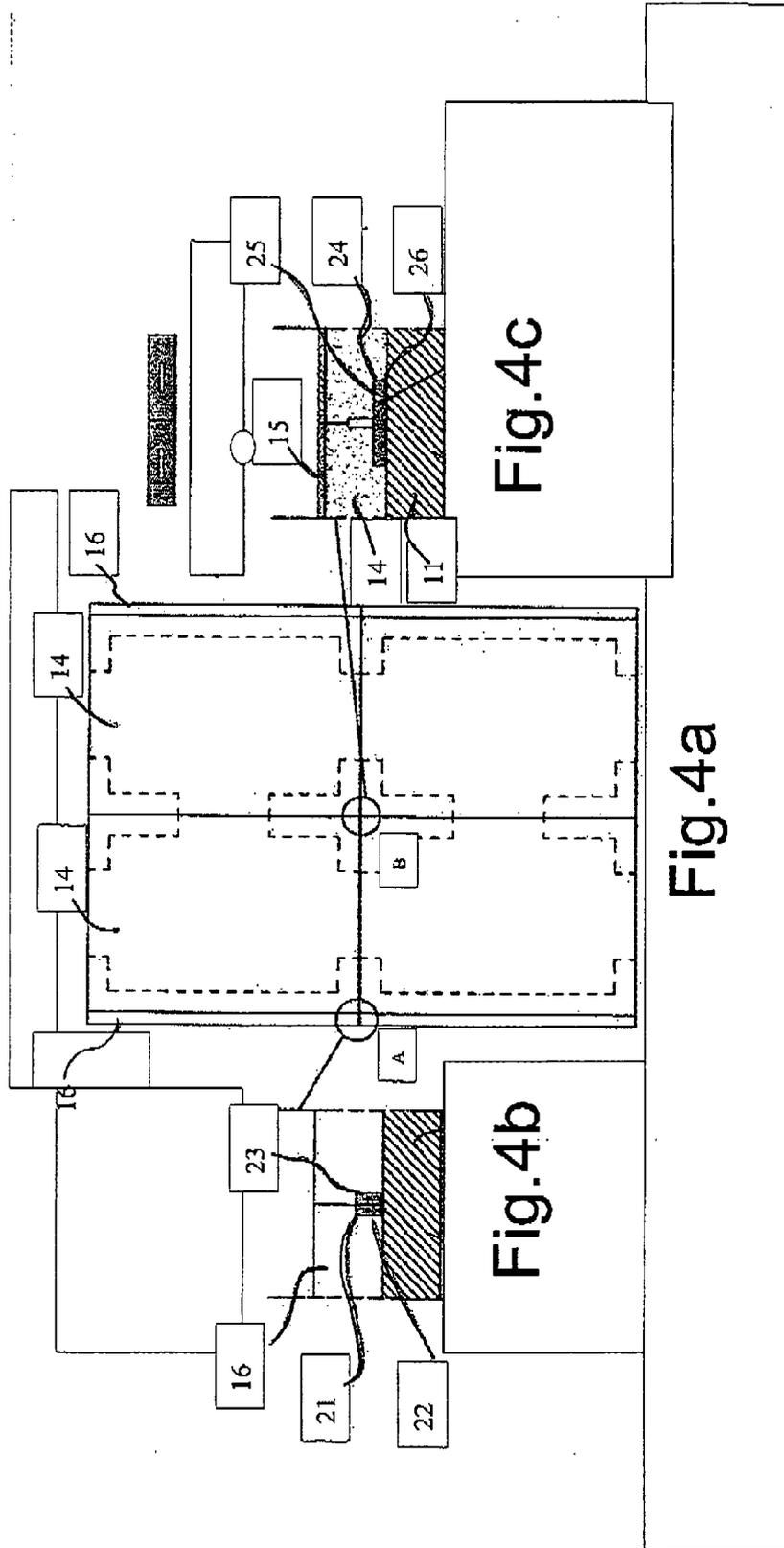


Fig. 4

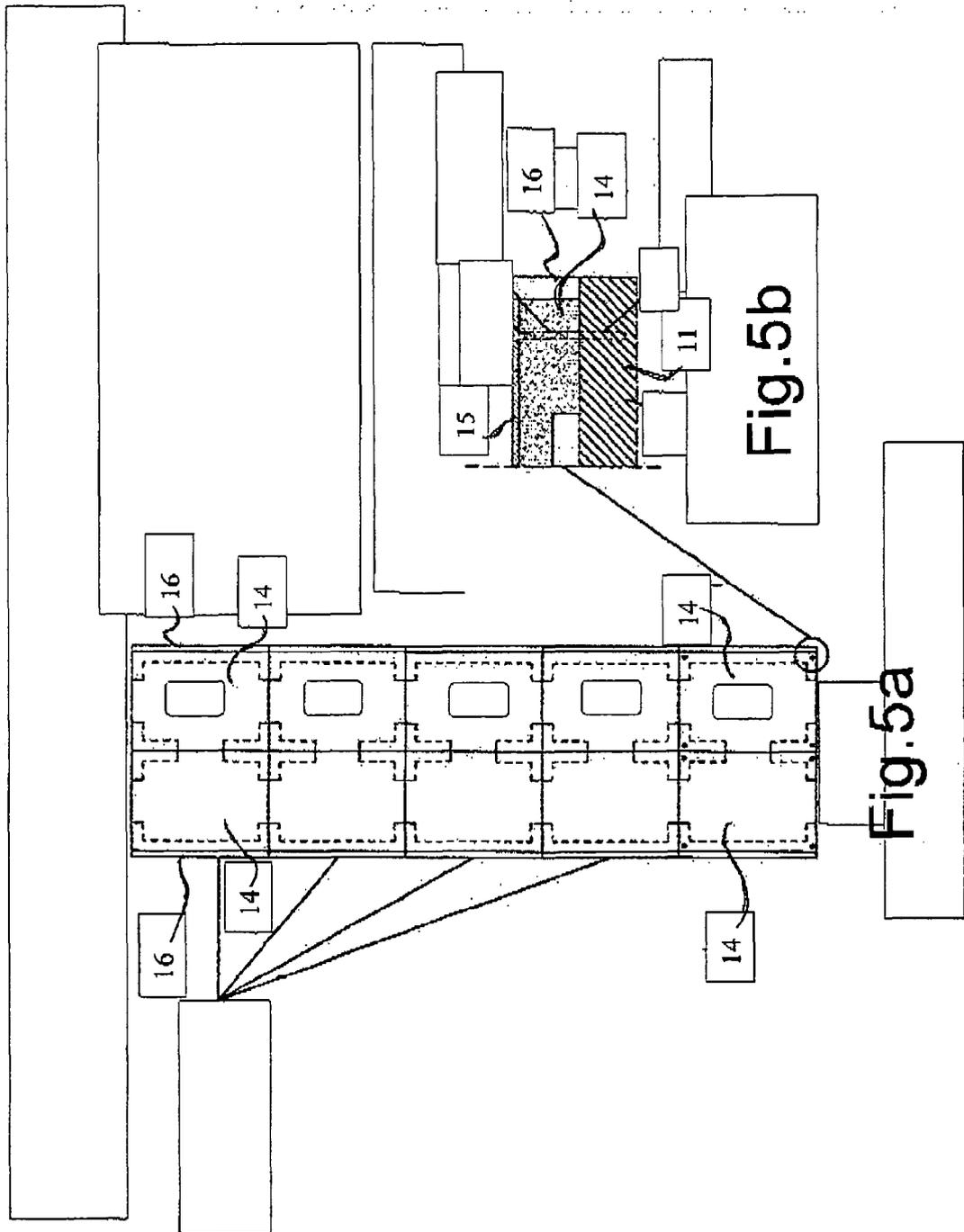


Fig. 5a

Fig. 5b

Fig. 5