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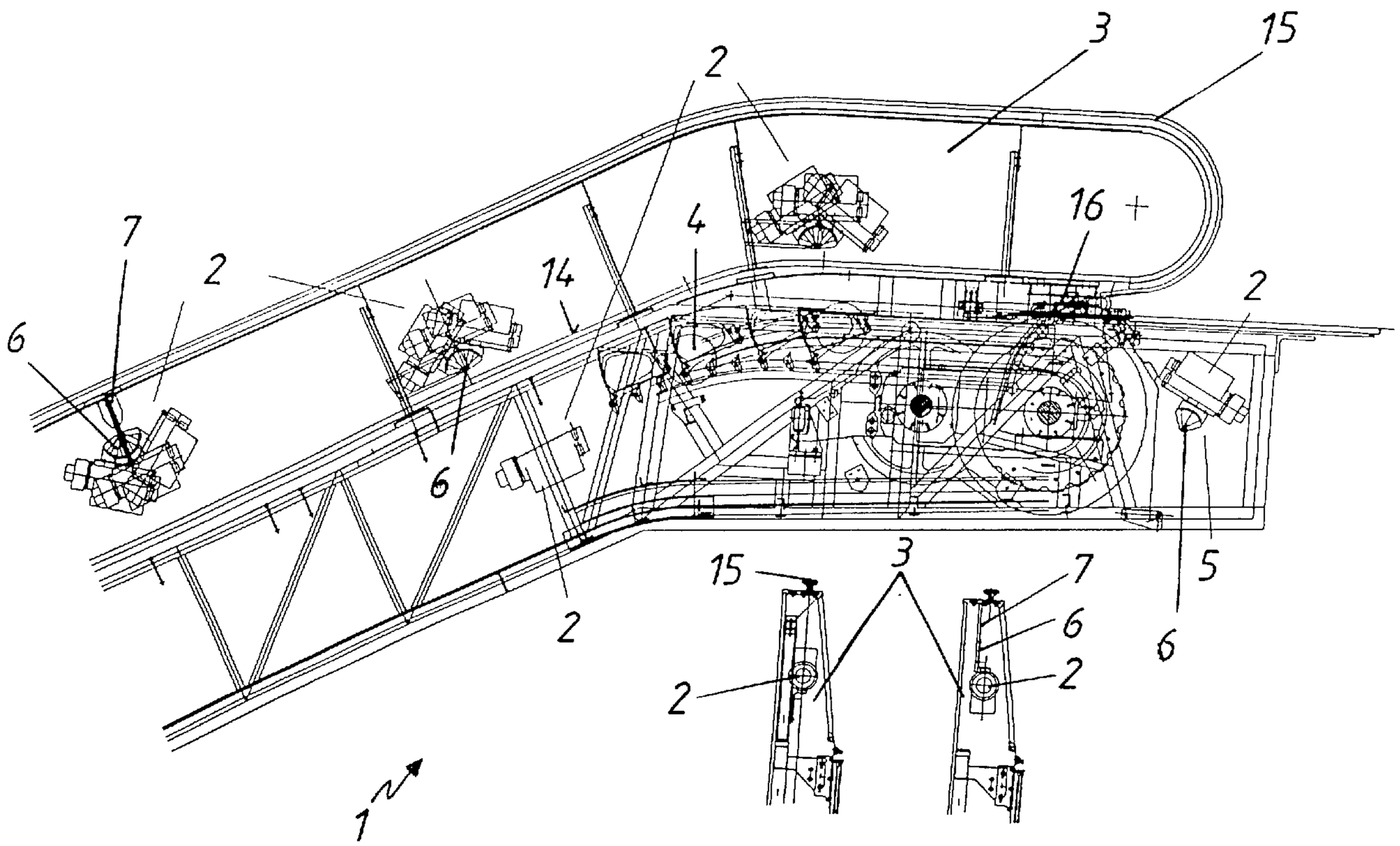
(54) Titre : DISPOSITIF POUR CHAUFFER DES ESCALIERS ROULANTS OU DES TROTTOIRS ROULANTS
(54) Title: DEVICE FOR HEATING ESCALATORS OR MOVING SIDEWALKS



(57) Abrégé/Abstract:
The invention relates to a device for heating especially the mobile components of an escalator or a moving sidewalk, comprising at least one heating element. The hot air emerging from said heating element is directed onto the respective component in a substantially precise manner.

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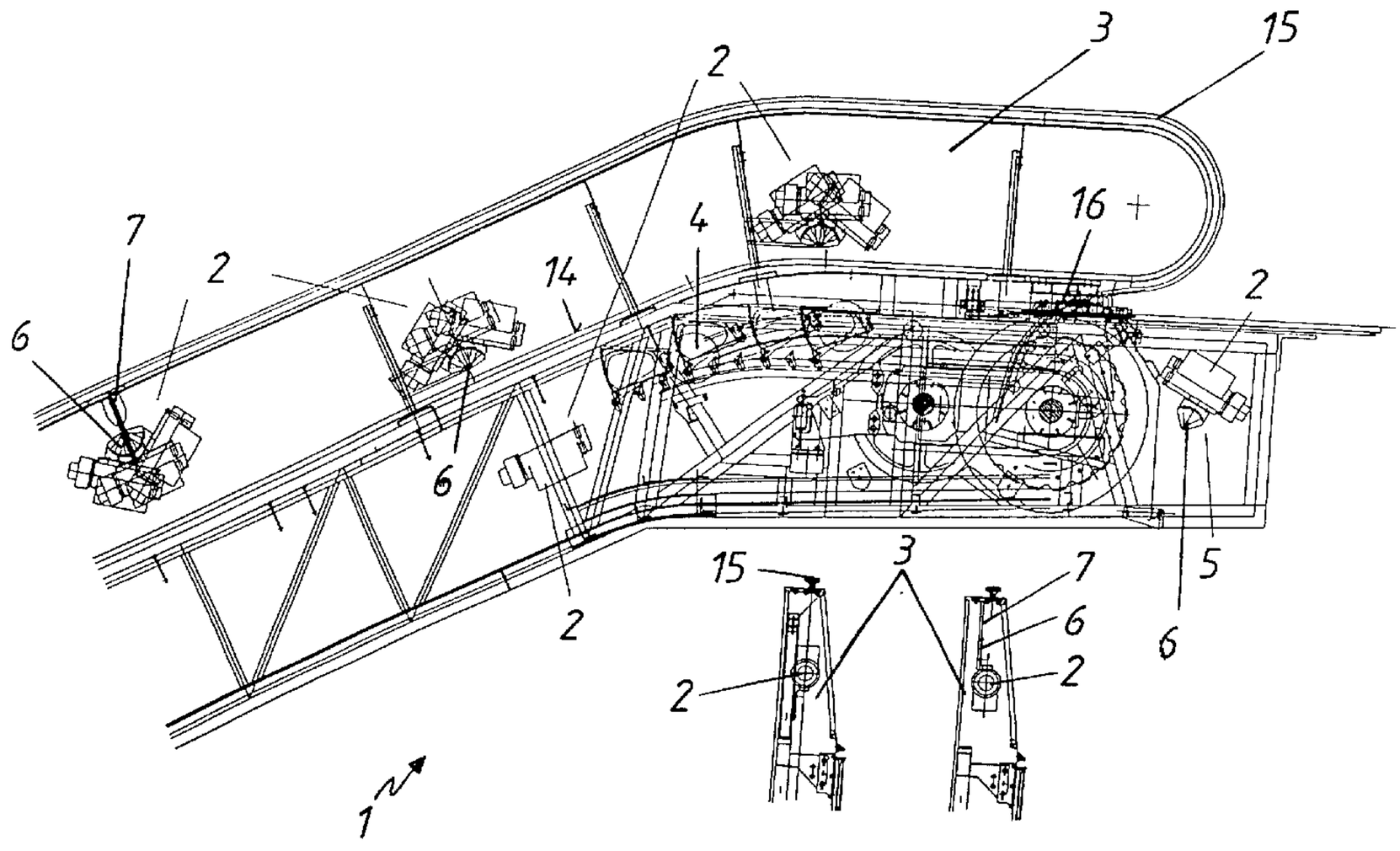
[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR HEATING ESCALATORS OR MOVING SIDEWALKS

(54) Bezeichnung: EINRICHTUNG ZUM BEHEIZEN VON ROLLTREPPEN ODER ROLLSTEIGEN



(57) Abstract: The invention relates to a device for heating especially the mobile components of an escalator or a moving sidewalk, comprising at least one heating element. The hot air emerging from said heating element is directed onto the respective component in a substantially precise manner.

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Veröffentlicht:

— *mit internationalem Recherchenbericht*

Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(57) Zusammenfassung: Einrichtung zur Beheizung von insbesondere beweglichen Komponenten einer Rolltreppe oder eines Rollsteiges, beinhaltend mindestens ein Heizelement, dessen Warmluftaustritt im wesentlichen punktgenau auf die jeweilige Komponente ausgerichtet ist.

DEVICE FOR HEATING ESCALATORS OR MOVING SIDEWALKS

The invention relates to a device for heating especially the mobile components of an escalator or a moving walkway according to the generic part of the first claim.

For heating escalators and moving walkways, it is generally known to provide a central fan heating in form of a fan register, which is in particular placed between the step or pallet band, and from which the hot air, which is generated there, is guided through hoses to the corresponding sites of the escalator or the moving walkway. Herein, it is a drawback that the installed plurality of hoses, which are guided towards the endangered sites (handrail, step or pallet band, comb plate or the like), entail high heat losses, which reduce the efficiency of the central fan heating to a minimum. Furthermore, this system is expensive both with respect to acquisition and installation and with respect to maintenance. In particular at lower temperatures it can happen that the escalator or the moving walkway can no more be operated in a correct way in spite of an integrated heating. Furthermore, due to the dimensioning of the central fan heating, there is no possibility to use the same one in the relatively narrow balustrade area, in particular with balustrades of small construction.

From GB-A 1,109,976 an escalator having a heating is known, which heating is placed in the region of the accessible parts of the escalator. A heating device is provided in the maintenance space of the escalator, which heating leads several hot air streams both to the comb plates and to the step band, wherein branch conduits are necessary in the latter case. This measure requires a considerable installation effort, wherein the originally heated air is simultaneously subject to a continuous heat loss, depending on the length of the ducts.

JP-A 02 231391 describes a device for heating handrails. If humidity is present, the same one will be detected by sensors. A drying device for the handrail, which is fixedly directed to the inner face of the handrail, and which is activated after detection of humidity, is arranged in the return strand of the handrail.

It is the object of the invention to provide a device for heating especially the mobile components of an escalator or a moving walkway, which does not require long flow

distances to be travelled by the heated air, which has a low cost of acquisition, installation and maintenance, and which however has a higher efficiency. A retrofitting of existing installations shall also be possible.

This aim is achieved in that the respective heating element is fixed in a swinging manner within the balustrade and/or within the step or pallet band at housing parts of the escalator or moving walkway and is directed onto the respective handrail and/or the step or pallet band.

Advantageous embodiments of the subject of invention are disclosed in the associated sub-claims.

Preferably a register heating is used, which is composed of a radial or axial fan with a downstream heating cartridge of pre-determinable power (for example 1000 W). The small size of the unit(s) also enables an installation within the balustrade. Furthermore it is also possible to provide the device according to the invention within the step band or the maintenance area of the escalator or moving walkway. The simplified installation and the small size of the unit(s) thus enable a flexible and precise installation for heating the handrail, the step/pallet band, the comb plate or the like.

Due to this device, which is directly provided on site, the heat losses associated with the state of the art are reduced to a minimum.

A flexible holding of the respective heating element allows a precise orientation and heating of the especially mobile components of the escalator or moving walkway, which are endangered by frost and humidity.

In comparison to the state of the art, the use of the device(s) according to the invention considerably increases the functional safety of the escalator or the moving walkway.

Temperature sensors monitor a maximum cartridge temperature in the respective heating cartridge, in order to avoid any dangerous condition in case of breakdown of the fan. A flow control unit, which is installed in front of the fan exit, additionally monitors the function of the fan and switches the system off in case of non-functioning of the fan.

Contacts, which are additionally installed within the heating cartridge, allow the transmission of a trouble message.

The subject of invention is represented in the drawing by means of an exemplary embodiment and described as follows. In the drawing:

Figure 1 is a schematic diagram of the arrangement of a heating device in different areas of an escalator;

Figure 2 shows the principal structure of the heating device according to figure 1.

Figure 1 shows several devices 2 (heating elements), which are positioned at different points of an escalator for heating special components. Some of the devices 2 are provided in the area of the balustrade 3, another device 2 is respectively provided between the circulating step band 4 or within the maintenance area 5 of the escalator 1. The respective device 2 is fixed at corresponding components 7 of the escalator 1 via flexible holdings 6, such that a swinging movement of the respective device 2 is possible. Thus, a precise orientation of the respective device 2 can be obtained, such that the generated hot air can be directly guided to the area to be heated without high energy losses.

The devices 2, which are positioned within the balustrade 3, are directed towards the return strand 14 of the handrail 15. The device 2, which is placed between the step band 4, is directed towards the lower part of the upper step band 4, whereas the device 2, which is arranged in the maintenance area 5, is directed towards the entry area 16 of the step band 4.

Figure 2 shows the principal structure of the device 2. A fan 8, which is configured as radial fan, including a power supply 9, a heating cartridge 10 including a power supply 11 as well as a flexible holding 12 are visible. The swinging area of the device 2 is defined by an elongated hole 13.

Claims

1. A device for heating especially the mobile components (4, 15, 16) of an escalator (1) or a moving walkway, comprising at least a heating element (2), the emerging hot air of which is directed onto the respective component (4, 15, 16), characterized in that the respective heating element is fixed in a swinging manner within the balustrade and/or within the step or pallet band at housing parts of the escalator or moving walkway and is directed onto the respective handrail and/or the step or pallet band.

2. A device according to claim 1, characterized in that the heating element (2) is placed in the area of one of the balustrade heads of the escalator (1) or moving walkway.

3. A device according to claim 1 or 2, characterized in that the flow of hot air from the heating element (2) is directed onto the return strand (14) of the handrail (15), in particular in the direction of movement thereof.

4. A device according to one of the claims 1 through 3, characterized in that the hot air emerging from the heating element (2) is directed onto the step or pallet entry (16) of the escalator (1) or the moving walkway.

5. A device according to one of the claims 1 through 4, characterized in that the respective heating element (2) is formed by a register heating composed of an axial fan (8) having a downstream heating cartridge (10) with pre-determinable power and that the respective heating element (2) is positioned by means of a flexible holding (12) in an adaptable, especially swinging way with respect to the respective area to be heated.

6. A device according to one of the claims 1 through 5, characterized in that the respective heating element (2) comprises temperature sensors, by means of which the respective heating element (2) can be switched off in case of a malfunction.

7. A device according to one of the claims 1 through 6, characterized in that the respective heating element (2) comprises a flow sensor, by means of which the respective heating element (2) can be switched off in case of a malfunction.

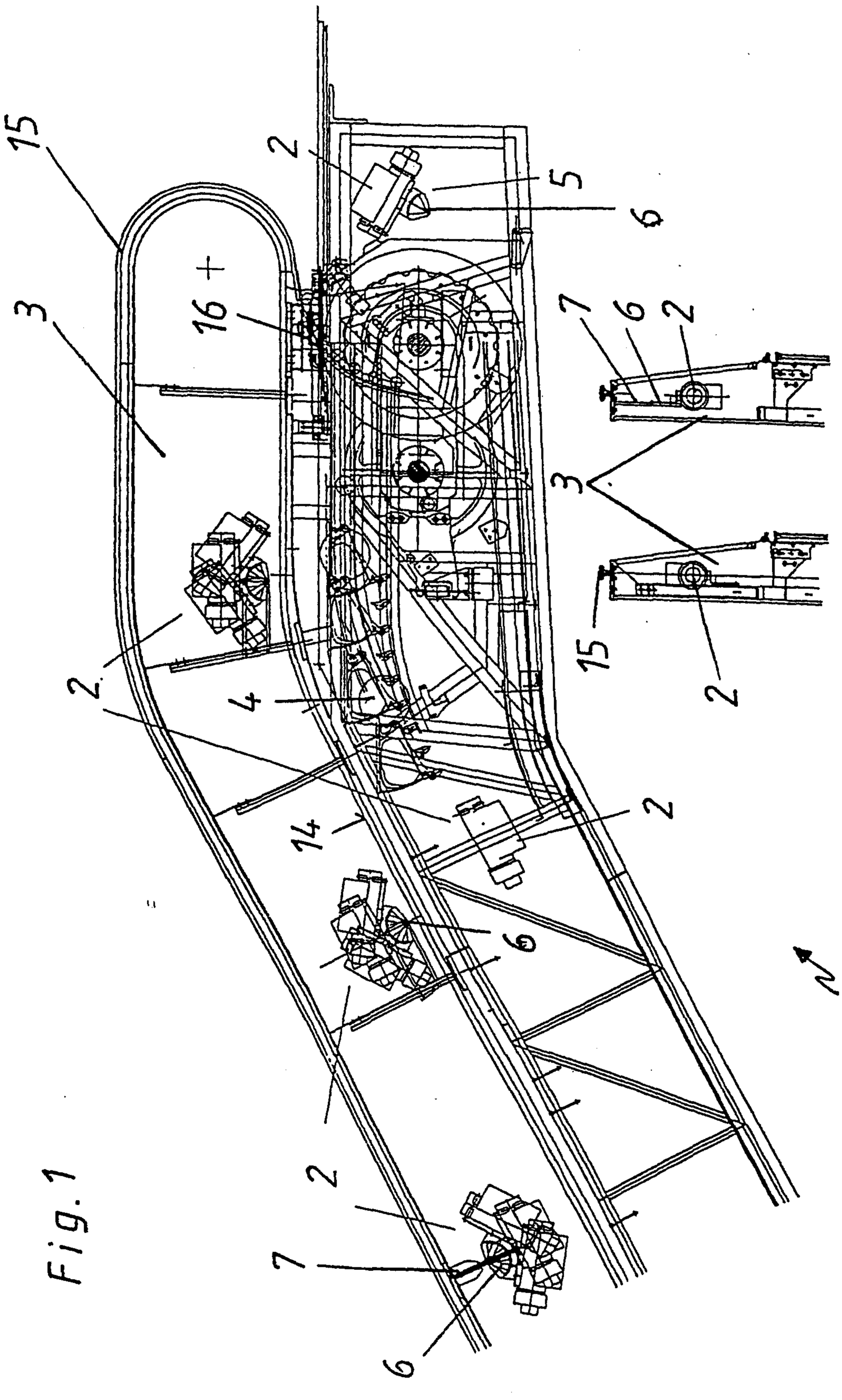


Fig. 1

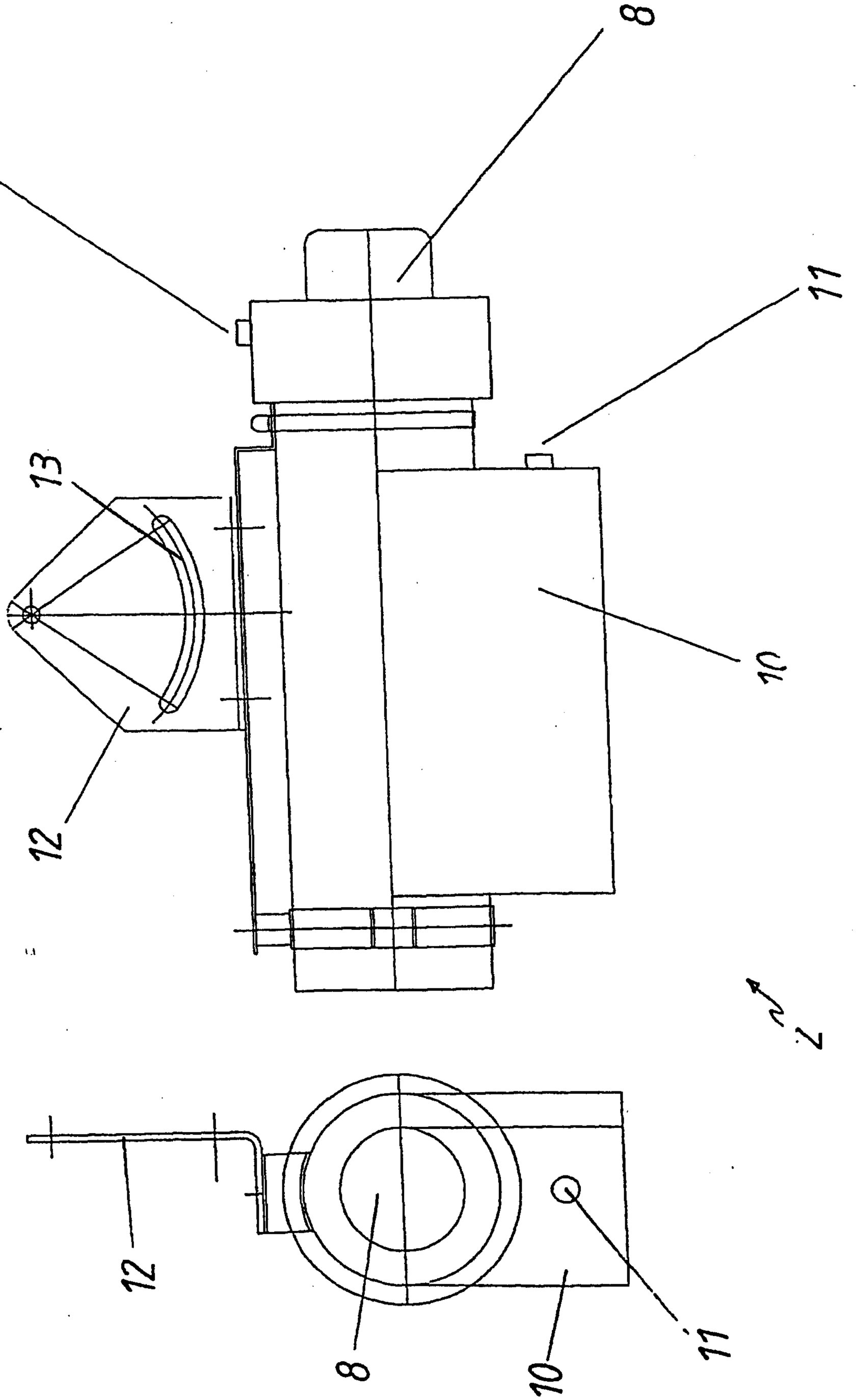
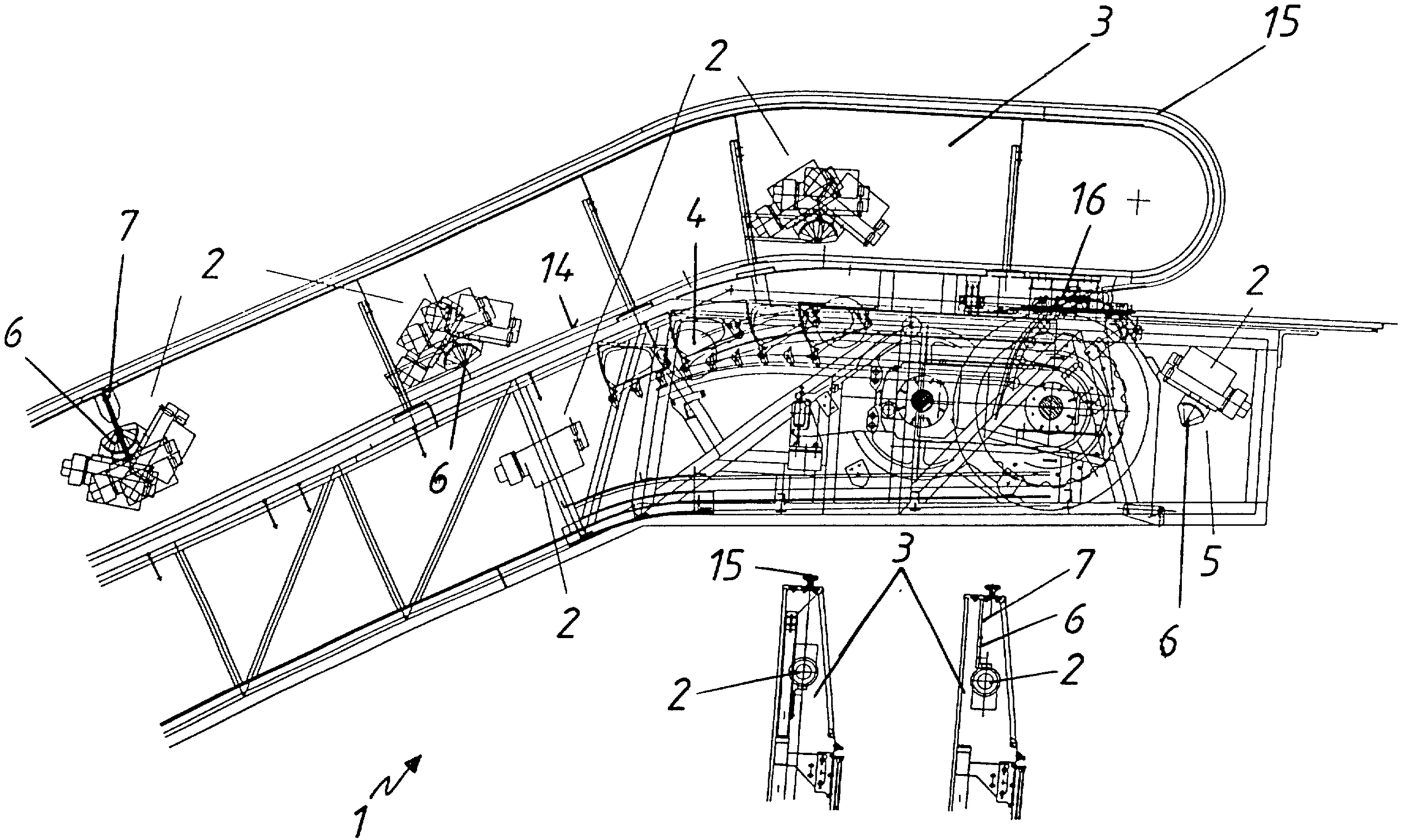


Fig. 2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