



(11)

EP 2 878 746 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
03.06.2015 Bulletin 2015/23

(51) Int Cl.:
E04H 5/06 (2006.01)

(21) Application number: **14193037.0**

(22) Date of filing: **13.11.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventors:
• **Pesci, Giuseppe**
25135 Brescia (IT)
• **Scolari, Giovanni Battista**
25045 Castegnato BS (IT)

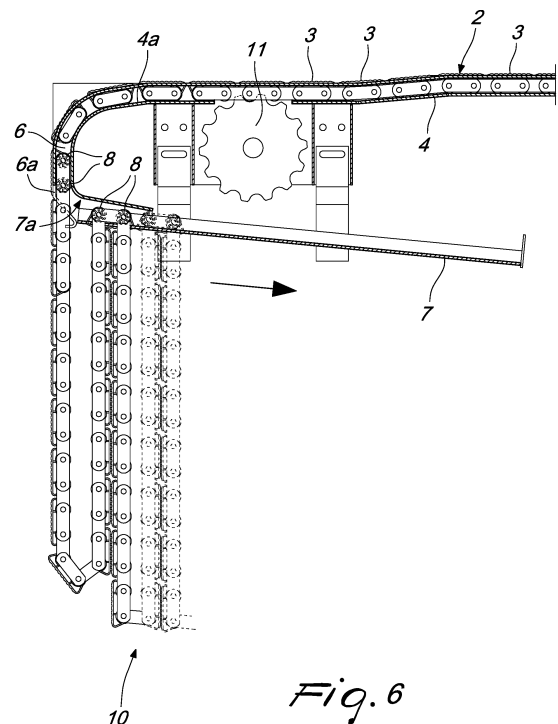
(30) Priority: **28.11.2013 IT VR20130054 U**

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners (IT)
Via Meravigli, 16
20123 Milano (IT)

(71) Applicant: **Truck Training Center Italy S.R.L.**
25018 Montichiari (BS) (IT)

(54) **Covering element for pits of automotive workshops or the like**

(57) A covering element (1) for pits of automotive workshops or the like, which comprises a shutter covering (2) that can be arranged in a gathering region (10) and which has a plurality of bars (3) that can slide along a pair of lateral sliding guides (4) that are arranged at the longitudinal edges of a pit (5); at the gathering region (10) and proximate to the ends (4a) of the lateral sliding guides (4) respective guide portions (6) are provided that are substantially vertical and open downwardly; the covering element (1) comprises, further, a pair of gathering guides (7) that are arranged at the lateral sides of the gathering region (10) below the open ends (6a) of the substantially vertical guides (6) and which extend substantially parallel to the longitudinal ends of the lateral sliding guides (4), a plurality of gathering bodies (8) being provided that are associated with some of the sliding bars (3) which are mutually spaced apart along the longitudinal extension of the shutter covering (2), the gathering guides (7) being capable of being engaged only by the gathering bodies (8), with the bars (3) that are not associated with the gathering bodies (8) being arrangeable in laterally adjacent swags.



Description

[0001] The present invention relates to a covering element for pits of automotive workshops or the like.

[0002] As is known, safety regulations require that, at pits of automotive workshops or the like, a covering element be provided which is constituted substantially by a plurality of bars that are arranged mutually side by side and are made to slide by way of motor means that execute the movement thereof.

[0003] EP1849935 discloses a solution that involves using a shutter covering that is actuated by way of motor means that move the shutter, which is constituted by a plurality of bars that slide within guides that must be positioned on the longitudinal edges.

[0004] At preset intervals, some of the bars have engagement rollers that couple with auxiliary guides so as to enable the gathering of the shutter, with the pit in the open position, thus arranging the bars in laterally adjacent swags.

[0005] This implementation solution, which has been shown to be valid under various aspects, has been particularly suitable for use with newly-constructed pits, but its installation has been found to be more complex at existing pits.

[0006] EPA 2258913 discloses a covering element for pits of automotive workshops or the like which comprises a shutter covering made from a plurality of bars that are arranged mutually side by side and are joined by chain links that support pins and have a bracket for supporting the bars; the chain links are further mutually connected by way of link plates.

[0007] In this case too the covering element is slideably guided in longitudinal guides that are arranged at the longitudinal edges of the pit.

[0008] At regular intervals, elongated pins are connected to the bars which support respective supporting rollers, which can also slide in the longitudinal guides.

[0009] In order to execute the gathering of the shutter covering in the gathering region of the pit, at the end of the longitudinal guides which is facing toward the gathering region, there are supporting guides that are capable of engaging only with the sliding rollers.

[0010] In essence, the supporting guides have a narrower width than the longitudinal guides so that they do not offer support for the sliding rollers, and thus they allow the respective bars to fall downwardly so as to allow the gathering of the shutter covering below the closing surface that covers the gathering region.

[0011] Such implementation solution has been found to be extremely practical and effective to use and install on existing pits.

[0012] However, the method of storing the shutter in swags reduces, in some cases excessively, the useful length of the pit.

[0013] The aim of the present invention is to solve the above mentioned problems, by providing a covering element for pits of automotive workshops or the like which

can be easily installed on existing pits.

[0014] Within this aim, an object of the invention is to provide a covering element that requires a limited provision of additional elements that in practice are constituted solely by sliding guides to be positioned at the longitudinal edges of the pit.

[0015] Another object of the present invention is to provide a covering element that, owing to its distinctive implementation characteristics, is capable of offering the widest guarantees of reliability and safety in use.

[0016] Another object of the invention is to make available a covering element that makes it possible for the pit, in the condition for use, to have an increased useful longitudinal extension.

[0017] This aim and these and other objects which will become better apparent hereinafter are achieved by a covering element for pits of automotive workshops or the like according to claim 1.

[0018] Further characteristics and advantages of the invention will become better apparent from the detailed description of a preferred, but not exclusive, embodiment of a covering element for pits of automotive workshops or the like, which is illustrated for the purpose of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of a pit;

Figure 2 is a cross-sectional view of the pit, taken along a horizontal plane;

Figure 3 and Figure 4 are two perspective views, from two different viewpoints, of the covering element at the gathering region;

Figures 5 to 7 are cross-sectional views of the gathering region during the re-entry sequence of the shutter covering.

[0019] With reference to the figures, the present invention relates to a covering element, generally indicated with the reference numeral 1, for pits 5 of automotive workshops or the like.

[0020] The covering element 1 comprises a shutter covering, generally indicated with the reference numeral 2, which can be arranged in a gathering region 10.

[0021] The shutter covering 2 has a plurality of transverse bars or slats 3 which can slide, conveniently at their ends, along a pair of lateral sliding guides 4.

[0022] The lateral sliding guides 4 are, specifically, arranged at the longitudinal edges of a pit 5.

[0023] At the gathering region 10 and proximate to the ends 4a of the lateral sliding guides 4 respective guide portions 6 are provided that are substantially vertical and open downwardly 6a.

[0024] According to the present invention, the closure element 1 has a pair of gathering guides 7, which are arranged at the lateral sides of the gathering region 10 below the open ends 6a of the substantially vertical guide portions.

[0025] The gathering guides 7 extend substantially parallel to the longitudinal ends of the lateral sliding

guides 4.

[0026] The shutter covering 2 further comprises a plurality of gathering bodies 8, which are associated with some of the sliding bars 3 and are mutually spaced apart along the longitudinal extension of the shutter covering 2.

[0027] The gathering guides 7 can, in particular, engage only with the gathering bodies 8, with the bars 3 that are not associated with gathering bodies 8 being arrangeable in laterally adjacent swags.

[0028] Preferably, at least the bars 3 that are not associated with gathering bodies 8 have supporting bodies 9 for sliding along the lateral sliding guides 4.

[0029] Advantageously, at the ends 7a of the gathering guides 7 which are facing toward the respective vertical guide portion 6, there is a section of guiding portion folded upwardly in order to engage with the gathering bodies 8 during the step of entry of the shutter covering 2.

[0030] Conveniently, the bars 3 are connected, at the respective ends, to pins 9a and to elongated pins 8a, which support, respectively, the sliding bodies 9 and the gathering bodies 8.

[0031] According to a preferred embodiment, the sliding bodies 9 and the gathering bodies 8 comprise, respectively, sliding rollers and gathering rollers.

[0032] With reference to the embodiment shown in the figures, the covering element 1 comprises motor means 12 for the movement of the shutter covering 2.

[0033] Conveniently, as shown in Figures 5-7, each gathering guide 7 has a sub-horizontal progression with the lowest level at the opposite end from the vertical guide portion 6.

[0034] Preferably, the longitudinal ends of the bars 3 are connected to chain link elements.

[0035] By way of example, the motor means 12 comprise a motor that actuates a pair of pinions 11 that mesh between the rollers of the chain links.

[0036] According to a particularly important aspect of the present invention, the distance between the free edges of the mutually opposite lateral sliding guides 4 is less than the distance between the free edges of the mutually opposite gathering guides 7.

[0037] Conveniently, the gathering bodies 8 are positioned at regular intervals.

[0038] Advantageously, the shutter covering 2 comprises chain links and link plates that mutually join the pins 9a and the elongated pins 8a for a connection in the manner of a chain.

[0039] In essence, the gathering guides 7 have a narrower width than that of the longitudinal sliding guides 4, such that they do not offer support to the sliding rollers 9, such that the respective bars 3 fall downwardly when they are brought to the gathering region 10 and, in particular, at the gathering guides 7.

[0040] The gathering toward the end of the gathering guides 7 arranged at the opposite end with respect to the substantially vertical portion 6 is facilitated by the inclination of the gathering guides 7 themselves.

[0041] In substance, by having gathering rollers 8 at

regular intervals which support the respective bar 3, then when the shutter covering 2 is pushed toward the gathering region 10, only some of the bars 3 remain held in the gathering guides 7 while the other bars 3 fall freely by gravity, arranging themselves in swags which are arranged mutually side by side, allowing an easy gathering of shutter covers 2 including those of considerable length.

[0042] In substance, therefore, the particular structure with gathering rollers 8 that are positioned with a broader width than that of the sliding rollers 9 ensures that arranging the gathering guides 7 at a lower height than the extension of the longitudinal sliding guides 4 which engage only with the gathering rollers 8 automatically leads to the free descent of the bars 3 that are provided with sliding rollers 9 at the gathering region 10.

[0043] From the foregoing explanation, it can be seen that the invention fully achieves the set aim and objects.

[0044] In particular, specifying that the gathering guides 7 are arranged below the end portions of one of the supporting guides 4 has made it possible to increase the useful length of the pit 5 thus making it possible, among other things, to have the motor means 12 positioned above the gathering guides 7.

[0045] The embodiment that is the subject matter of the present invention further makes it possible to provide the individual components such as the sliding guides 4, the gathering guides 7, the substantially vertical portions 6 and the assembly that supports the motor means 12 and the toothed racks 11 in a modular manner, associating them, without any difficulty, with pits 5, including existing pits, of dimensions, both transverse and longitudinal, that are mutually different.

[0046] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0047] Moreover, all the details may be substituted by other, technically equivalent elements.

[0048] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements.

[0049] The disclosures in Italian Utility Model Application No. VR2013U000054 from which this application claims priority are incorporated herein by reference.

[0050] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A covering element (1) for pits of automotive workshops or the like, which comprises a shutter covering (2) that can be arranged in a gathering region (10)

- and which has a plurality of bars (3) that can slide along a pair of lateral sliding guides (4) that are arranged at the longitudinal edges of a pit (5), at said gathering region (10) and proximate to the ends (4a) of said lateral sliding guides (4) there being respective guide portions (6) that are substantially vertical and open downwardly, **characterized in that** it comprises a pair of gathering guides (7) that are arranged at the lateral sides of said gathering region (10) below the open ends (6a) of said substantially vertical guides (6) and which extend substantially parallel to the longitudinal ends of said lateral sliding guides (4), there being a plurality of gathering bodies (8) that are associated with some of said sliding bars (3) which are mutually spaced apart along the longitudinal extension of said shutter covering (2), said gathering guides (7) being capable of being engaged only by said gathering bodies (8), with the bars (3) that are not associated with said gathering bodies (8) being arrangeable in laterally adjacent swags.
2. The covering element (1) according to claim 1, **characterized in that** at least the bars (3) that are not associated with said gathering bodies (8) have supporting bodies (9) for the sliding of said bars (3) along said lateral sliding guides (4).
 3. The covering element (1) according to one or more of the preceding claims, **characterized in that**, at the ends (7a) of said gathering guides (7) which are facing toward the respective vertical guide portion (6), there is a section of guiding portion folded upwardly in order to engage with said gathering bodies (8) during the step of entry of the shutter covering (2).
 4. The covering element (1) according to one or more of the preceding claims, **characterized in that** it comprises, connected to said bars (3), pins (9a) and elongated pins (8a) which support, respectively, said sliding bodies (9) and said gathering bodies (8).
 5. The covering element (1) according to one or more of the preceding claims, **characterized in that** said sliding bodies (9) and said gathering bodies (8) comprise, respectively, sliding rollers and gathering rollers.
 6. The covering element (1) according to one or more of the preceding claims, **characterized in that** it comprises motor means (12) for moving said shutter covering (2).
 7. The covering element (1) according to one or more of the preceding claims, **characterized in that** said gathering guide (7) has a sub-horizontal progression with the lowest level at the opposite end from said vertical guide portion (6).
 8. The covering element (1) according to one or more of the preceding claims, **characterized in that** the longitudinal ends of said bars (3) are connected to chain link elements.
 9. The covering element (1) according to one or more of the preceding claims, **characterized in that** said motor means (12) comprise a motor that actuates a pair of pinions (11) that enmesh between the rollers of said chain links.
 10. The covering element (1) according to one or more of the preceding claims, **characterized in that** the distance between the free edges of said mutually opposite lateral sliding guides (4) is less than the distance between the free edges of said mutually opposite gathering guides (7).
 11. The covering element (1) according to one or more of the preceding claims, **characterized in that** said gathering bodies (8) are positioned at regular intervals.
 12. The covering element (1) according to one or more of the preceding claims, **characterized in that** it comprises chain links and link plates that mutually join said pins (9a) and said elongated pins (8a) for a connection in the manner of a chain.

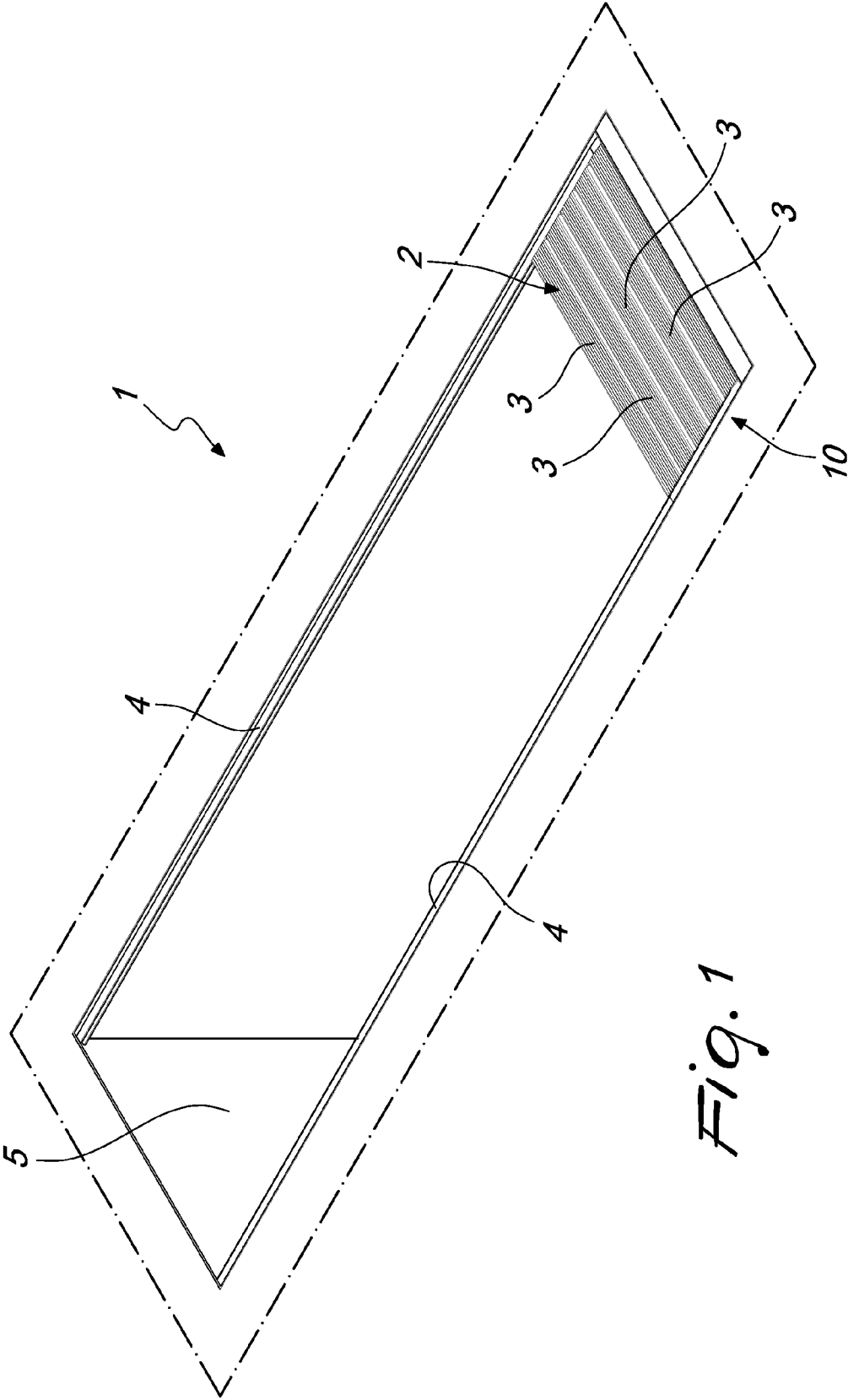
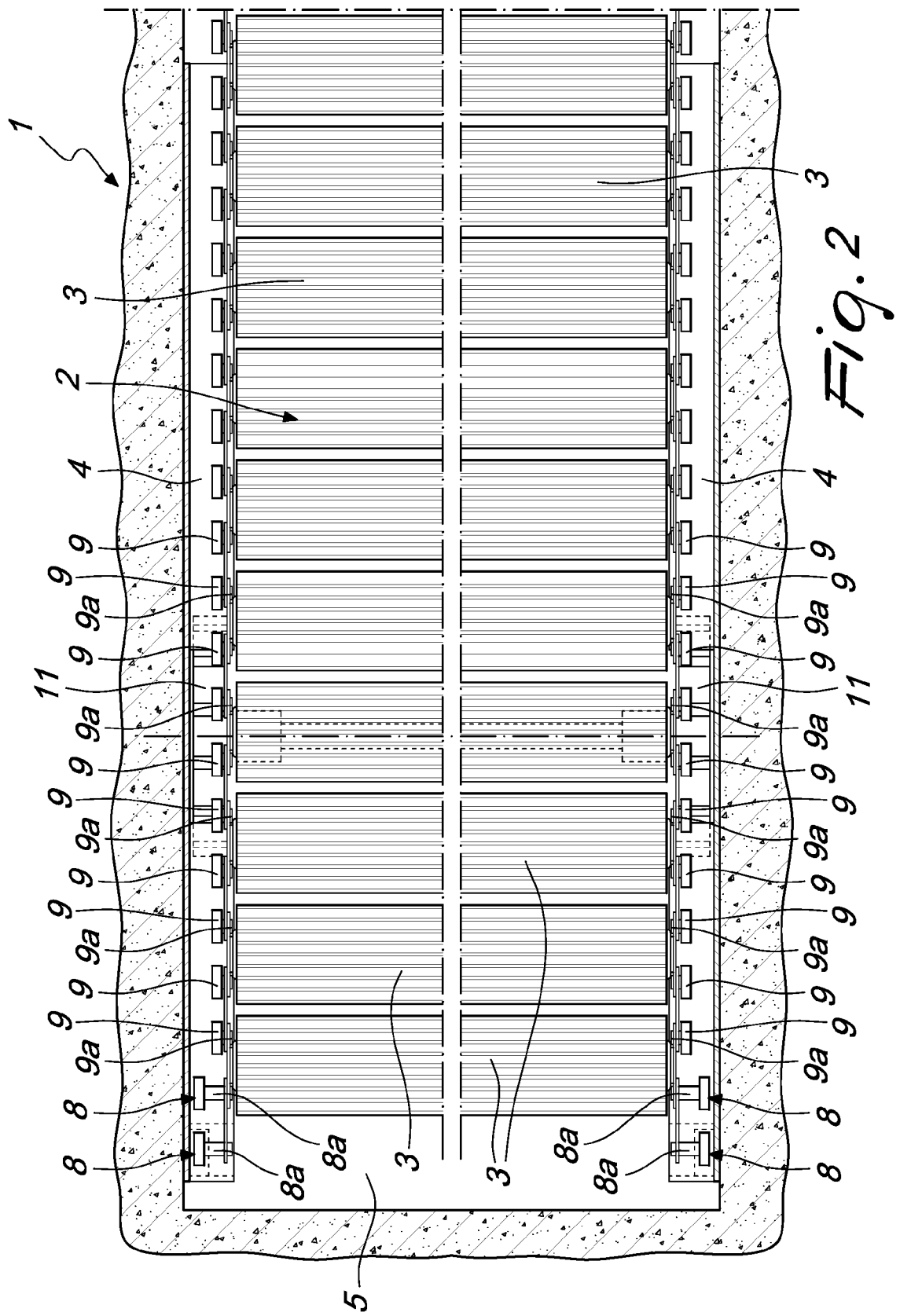


Fig. 1



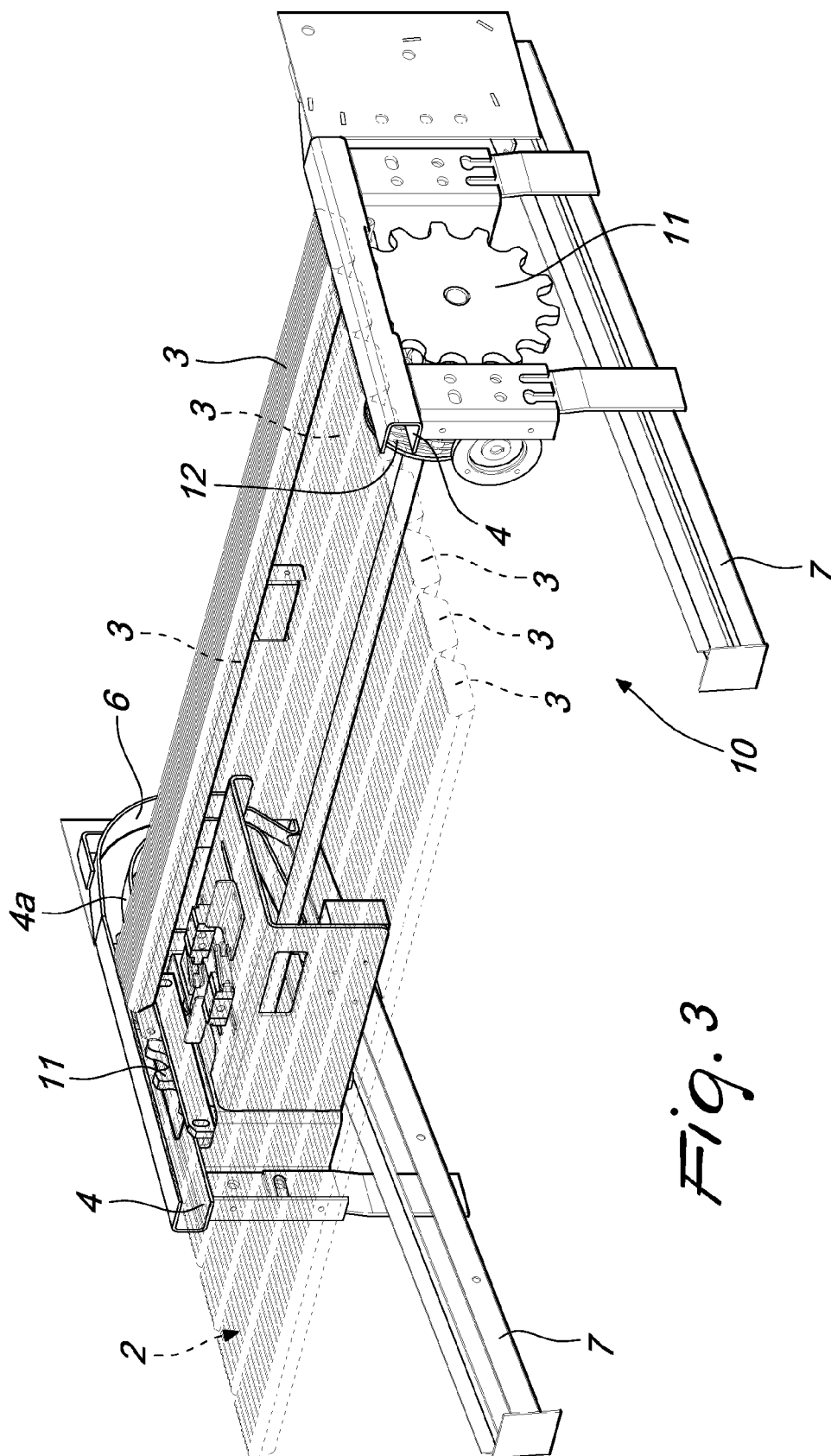


Fig. 3

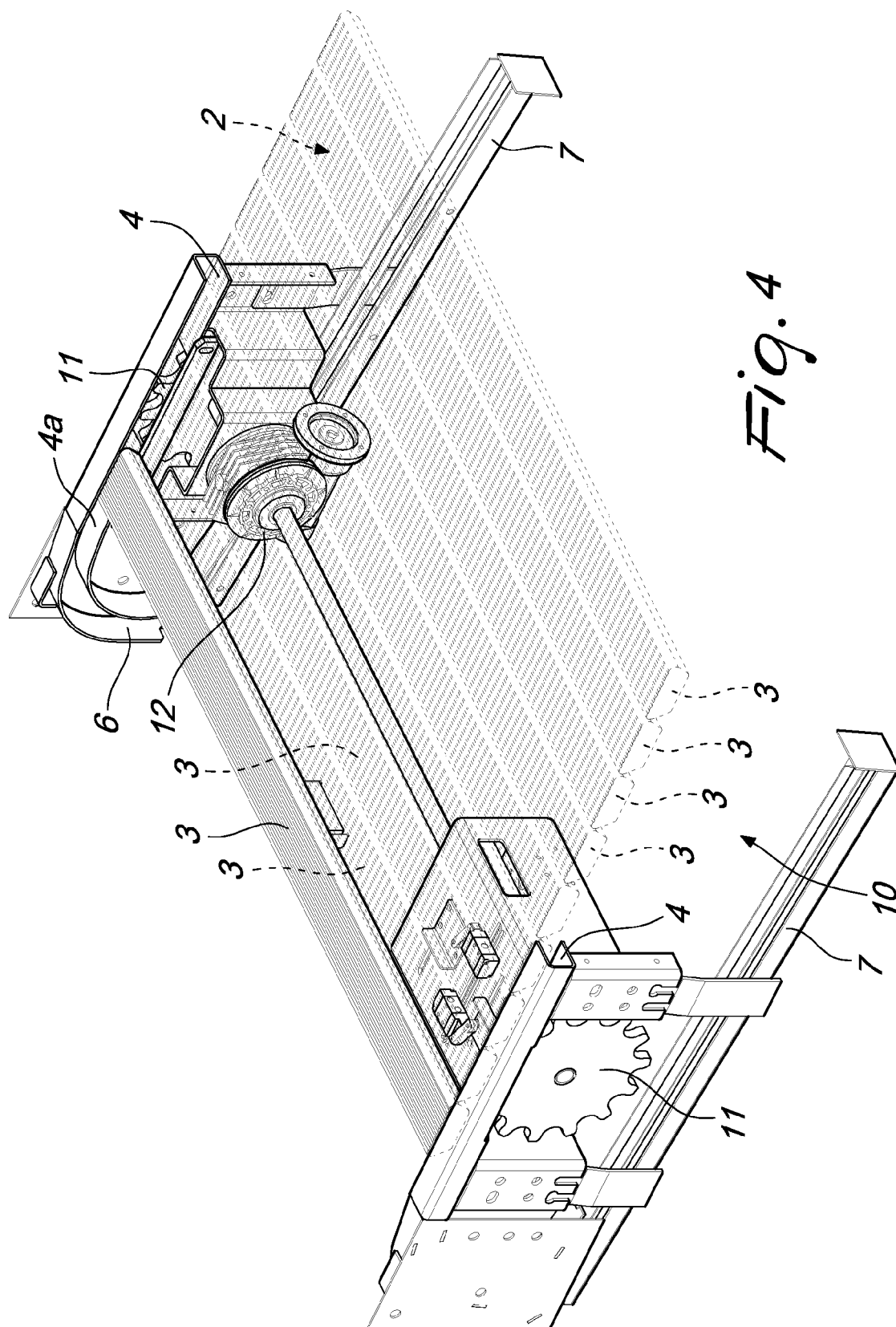


Fig. 4

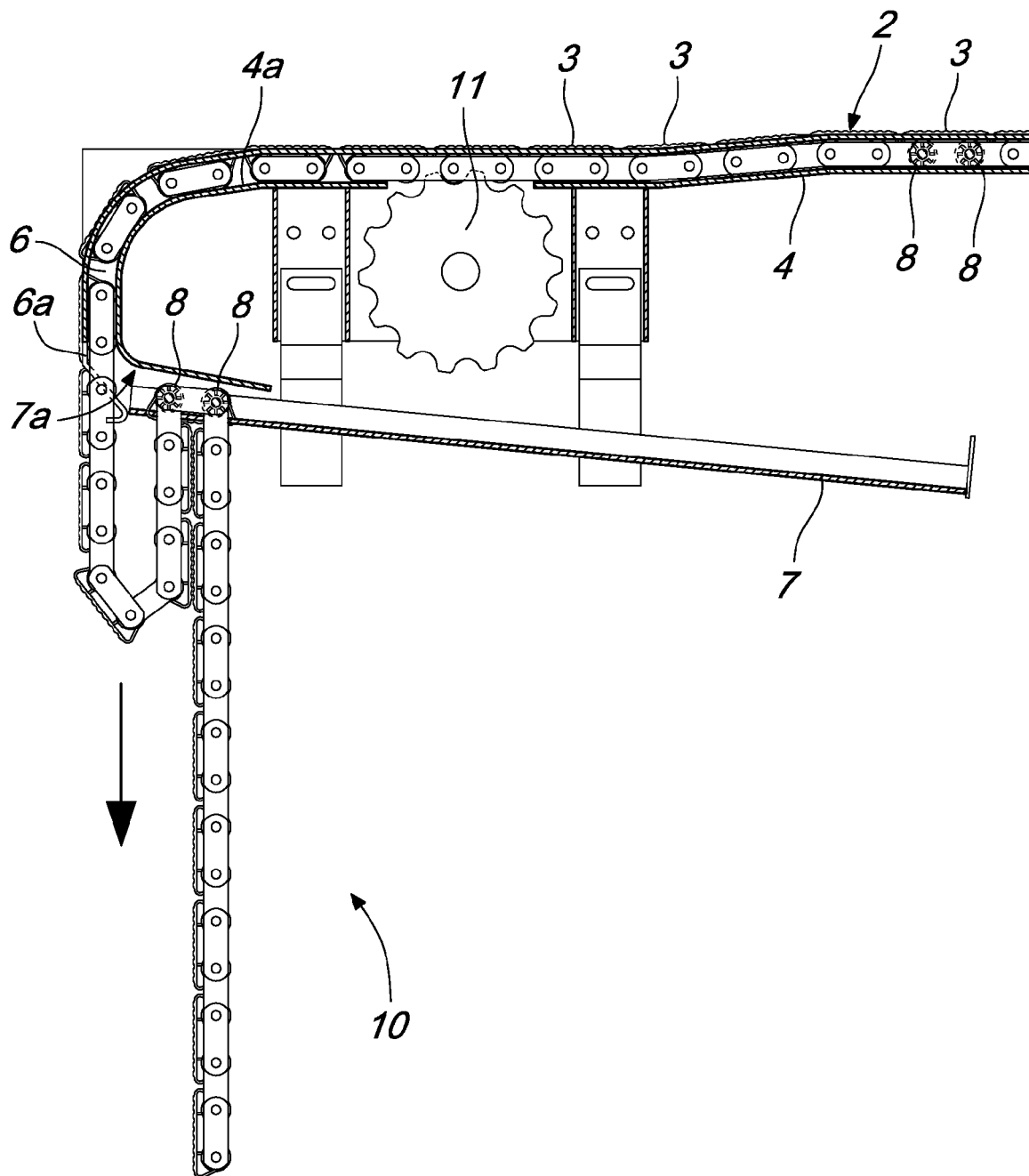


Fig. 5

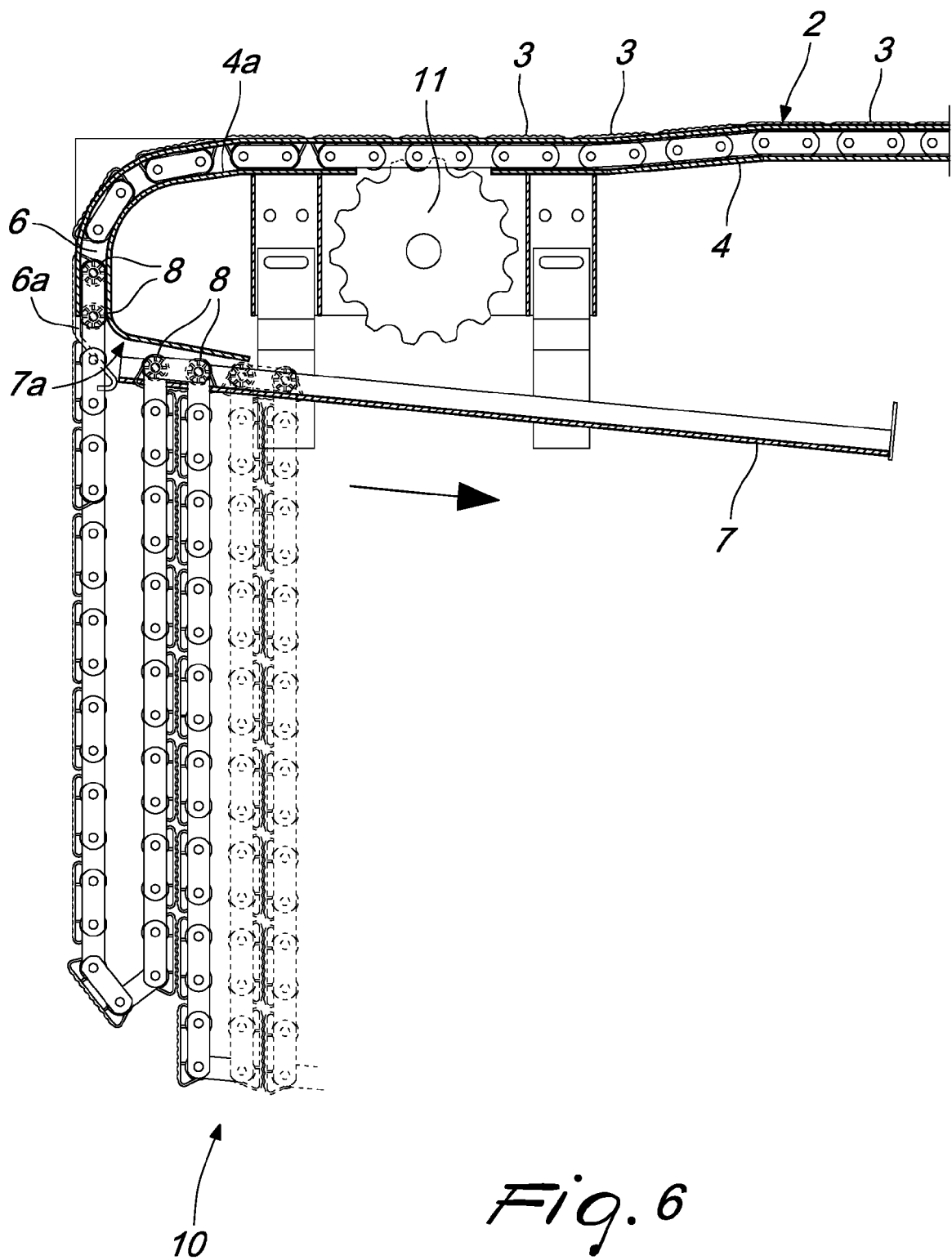


Fig. 6

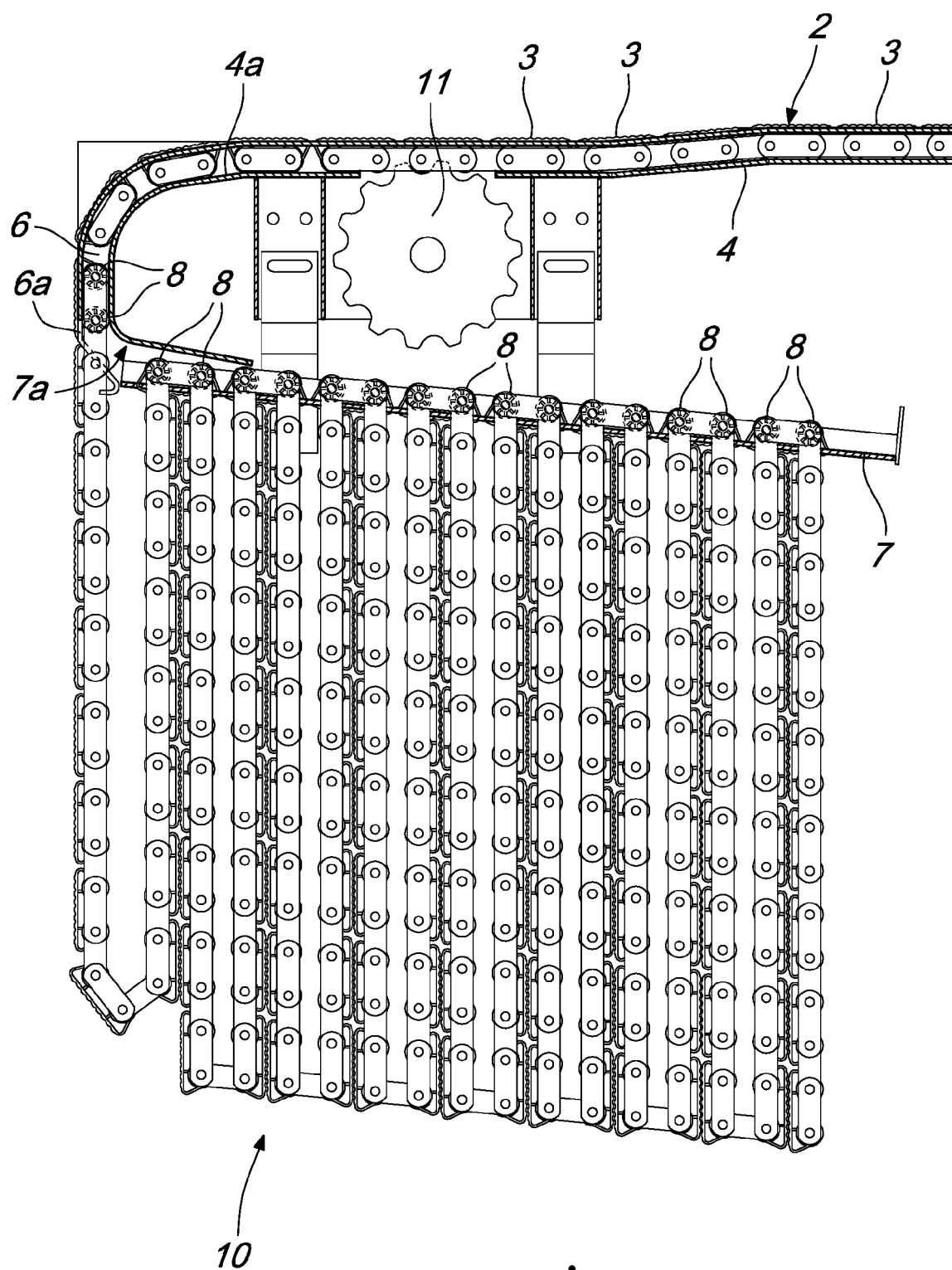


Fig. 7



EUROPEAN SEARCH REPORT

 Application Number
EP 14 19 3037

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	EP 1 849 935 A2 (TRUCK TRAINING CT ITALY S R L [IT] BALZER HANS [DE]) 31 October 2007 (2007-10-31)	1-9,11	INV. E04H5/06
Y	* figures 1, 3-6 * * paragraphs [0013], [0017], [0019] *	10,12	
Y,D	EP 2 258 913 A2 (TRUCK TRAINING CT ITALY S R L [IT]) 8 December 2010 (2010-12-08) * figures 3,5 *	10,12	
A	EP 2 530 222 A2 (BALZER HANS [DE]) 5 December 2012 (2012-12-05) * figure 2 *	1-12	
A	JP S63 247488 A (SWAN SHOJI KK) 14 October 1988 (1988-10-14) * figure 1 *	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04H E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 March 2015	Examiner Brucksch, Carola
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 19 3037

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-03-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1849935 A2	31-10-2007	AT 534782 T DK 1849935 T3 EP 1849935 A2	15-12-2011 19-03-2012 31-10-2007
EP 2258913 A2	08-12-2010	NONE	
EP 2530222 A2	05-12-2012	DE 102011050828 A1 EP 2530222 A2	06-12-2012 05-12-2012
JP S63247488 A	14-10-1988	JP 2556321 B2 JP S63247488 A	20-11-1996 14-10-1988

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1849935 A [0003]
- IT VR20130054 U [0049]