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Description

[0001] The invention relates to a thermally insulating component of the type referred to in the preamble of claim 1 for arrangement between two load-bearing building parts.

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[0002] From EP 1 564 336 A1, a thermally insulating component is known which is used in kerfs between load-bearing building parts, for example between a building ceiling and a balcony base plate. This component comprises an insulating body consisting of an upper layer and a lower layer as well as reinforcement elements located in the upper layer for tensile
10 reinforcement and axial bearings and thrust bearings located in the lower layer.

[0003] CH 685 252 A5 discloses a cantilever plate connecting element with integrated tension and compression members. In this, the tension and compression members are accommodated in base elements consisting of sandwich-type profiled supports made of plastic.
15 The base elements are joined together with the interposition of an auxiliary element made of foamed plastic.

[0004] From EP1 892 344 1 A, a thermally insulating component for use in kerfs between two building parts adjoining each other in a longitudinal direction, in particular
20 between a building ceiling and a balcony base plate, is known. The component comprises two approximately cuboid insulating bodies placed on top of each other with tie rods located therein and extending transversely to their longitudinal axis as well as with axial and thrust bearings. Each of the insulating bodies is represented by a box filled with an insulating material such as mineral wool.

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[0005] The invention is based on the problem of creating a thermally insulating component of the type referred to above which is designed for simple and universal adaptation to the respective operating conditions.

30 **[0006]** This problem is solved by a thermally insulating component with the features of claim 1.

[0007] By designing the insulating body from three or more boxes, it is possible to assemble the component adapted to the respective conditions in a simple way, wherein the
35 individual boxes are selected for reaching a predetermined height and for fitting with reinforcement bars. This modular principle provides a simple opportunity for designing a

multitude of individual end products from the various boxes. In this way, the component can be adapted to the prevailing requirements in terms of its load-bearing level and the height of the insulating body required.

5 **[0008]** Mineral wool is particularly suitable for use as an insulating material for at least one further box. In a further development, it may also be advantageous to arrange two central boxes between the upper box and the lower box. In this, it is expedient that the two central boxes are designed such that they have the same height. As an alternative, it is possible to design the two central boxes with different heights, which offers the advantage of a larger
10 selection of variants.

[0009] It is furthermore expedient that all plastic boxes are made of the same plastic material with at least approximately the same wall thickness. This makes for a particularly good load-bearing capacity of the individual boxes. According to a further variant of the
15 invention, each box is a completely enclosed unit, with adjacent boxes of the insulating body lying flat on top of one another. This design offers the advantage that the cavities filled with insulating material are completely tight and no moisture or even concrete can enter during the casting of the building components. In addition, large-surface contact is particularly suitable for joining by means of an adhesive. It is furthermore deemed advantageous that the boxes have at
20 their facing sides longitudinal edges which are shaped such that they engage with one another in a positive and non-positive way during the assembly of the boxes. As a result, it is possible to close even boxes which are open on a side facing the adjacent box in the assembly process and to seal them against the outside. Clips or latching devices can be used for joining the boxes to one another.

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[0010] Embodiments of the invention are explained in greater detail below with reference to the drawing.

[0011] Of the drawing:

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Fig. 1 is an exploded view of a thermally insulating component made of an insulating body and reinforcement elements,

Fig. 2 is a view of the long side of the individual parts forming the component according to
35 Fig. 1 before their assembly,

- Fig. 3 shows the end face of the arrangement according to Fig. 2,
- Fig 4. shows the arrangement according to Fig. 2 in the assembled state,
- 5 Fig. 5 illustrates the component installed between building parts,
- Fig. 6 shows an alternative variant of the component in Fig. 1,
- Fig. 7 is a view of the long side of the component according to Fig. 6 before the assembly
10 of the individual parts,
- Fig. 8 is a view of the end face of the arrangement according to Fig. 7,
- Fig. 9 shows the arrangement according to Fig. 7 in the assembled state, and
15 Fig. 10 is a view of the end face of the arrangement according to Fig. 9.

[0012] Fig. 1 shows a thermally insulating component 1 consisting of three oblong boxes 2, 3, 4 and reinforcement bars 7 for tensile reinforcement as well as bearings 6 for
20 absorbing compressive and thrust forces. The boxes 2, 3, 4 together form an insulating body 5 (cf. Fig. 4). The reinforcement bars 7 extend orthogonally to the longitudinal axis of the topmost box 2 through the latter. The bearings 6 are arranged in the lowermost box 4 in such a way that their narrow sides projects from side walls of the box 4 for support on the respectively adjoining building part. Instead of the axial and thrust bearings shown in the illustrated
25 embodiment, the box 4 can be fitted with bearings of metal, concrete or mortar as well as with transverse force bars. The boxes 2, 3, 4 preferably consist of a dimensionally stable plastic material and are filled with an insulating material, in particular mineral wool. It can be advantageous that the wall thickness of the plastic material of all boxes is at least
30 approximately the same. At their facing sides, the boxes 2, 3, 4 are provided with longitudinal edges which engage with one another positively and non-positively and which can serve as latching means at the same time. It is also possible to join the boxes 2, 3, 4 by means of an adhesive. The boxes 2, 3, 4 are joined in such a way that the concrete cannot enter them in the casting process. A preferred material for the boxes 2, 3, 4 is PVC; this material is very stable and resistant to ageing.

[0013] Fig. 2 is a view of the long side of the boxes 2, 3, 4 forming the insulating body 5 (cf. Fig. 4) for the component 1. The reinforcement bars 7 are located in the upper box 2 and the bearings 6 in the lower box 4. In Fig. 2, the boxes 2, 3, 4 are still shown individually, i.e. before assembly. The box 2 has a height H_2 , the box 3 a height H_3 and the box 4 a height H_4 .
5 The length and the width the of boxes 2, 3, 4 are the same, but the heights H_2 , H_3 , H_4 can be different as Fig. 2 shows. The number and thickness of the bearings 6 in the box 4 and of the reinforcement bars 7 in the box 2 can also be different. It is therefore possible to produce components 1 which are adapted to current conditions in terms of overall height, forces to be absorbed and the like. For this purpose, it is only necessary to select and assemble the
10 respectively suitable boxes 2, 3 and 4.

[0014] Fig. 3 shows the end face of the arrangement according to Fig. 2, with the three boxes 2,3, 4, which are assembled to form the insulating body 5 shown in Fig. 4. The insulating body 5 with the reinforcement bars 7 and the bearings 6 located in the boxes 2 and 4 forms the
15 component 1 for thermal insulation. The insulating body 5 assembled from the boxes 2, 3, 4 has the overall height H_1 resulting from the individual heights H_2 , H_3 , H_4 specified in Fig. 2. Fig 5 shows the component 1 according to Fig. 4 at right angles to the longitudinal direction, with the reference numbers of Figs. 1 to 4 being identical for identical parts. Fig. 5 shows that the component 1 is located between a ceiling 10 and a balcony base plate 11.

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[0015] Fig. 6 shows a thermally insulating component 1 in which two central boxes 8 and 9 are provided between the upper box 2 and the lower box 4. In this embodiment, too, all boxes together form an insulating body 5' as shown in the assembled state in Figs. 9 and 10. In Fig. 6, the reinforcement bars 7 are provided in the upper box 2 and the bearings 6 are located
25 in the lower box 4; this variant corresponding to that of Figs. 1 to 5. The boxes 2, 4, 8 and 9 are preferably made of a dimensionally stable plastic material and filled with an insulating material. The longitudinal edges of the boxes 2, 4, 8, 9 are designed such that the boxes can be joined in a suitable way, wherein the insulating body 5' as a whole is closed and the entry of concrete is prevented.

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[0016] Fig. 7 shows the long side of the boxes 2, 4, 8, 9 forming the insulating body 5' (Figs. 9 and 10) for the component 1'. The boxes 2, 4 with the reinforcement bars 7 and the bearings 6 are identical to those shown in Fig. 2, as are their heights H_2 and H_4 . The box 8 has a height H_8 and the box 9 has a height H_9 , which are identical in the illustrated embodiment, but
35 they can also be different.

[0017] Fig. 8 shows the end face of the arrangement according to Fig. 7, with the boxes 2, 4, 8 and 9 not yet assembled. The boxes 2, 8, 9 and 4, which are oriented on top of one another in Figs. 7 and 8, are permanently joined to produce the insulating body 5' in Fig. 9, which, together with the reinforcement bars 7 and the bearings 6, forms the thermally insulating component 1'. The assembled component 1' has the overall height H_1 resulting from the addition of the heights H_2 , H_8 , H_9 and H_4 of the boxes 2, 8, 9, 4. Fig. 10 shows the end face of the component 1' according to Fig. 9, the reference numbers for identical parts corresponding.

[0018] Owing to the modular principle according to the invention, many variants of different overall height H_1 can be realised in a simple way. If we assume that the heights H_2 and H_4 of the boxes 2 and 4 are constant and together amount to a height of 16 cm, for example, the central boxes 3, 8, 9 can provide various combinations with a height H_3 , H_8 , H_9 of 2 cm and 3 cm, for example:

	16 cm + 2 cm	= 18 cm
15	16 cm + 3 cm	= 19 cm
	16 cm + 2 cm + 2 cm	= 20 cm
	16 cm + 3 cm + 2 cm	= 21 cm
	16 cm + 3 cm + 3 cm	= 22 cm

or greater overall heights H_1 by adding further central boxes.

20

PATENTKRAV

1. Termisk isolerende konstruktionselement (1, 1') til anbringelse imellem to lastbærende bygningsdele, især imellem et bygningsdæk (10) og en balkongulvplade (11),
5 med et aflangt isolerende legeme (5, 5') samt på tværs af dets længderetning igennem dette forløbende armeringsstænger (7) og fra sidevæggene i isolationslegemet (5, 5') fremstående lejer (6) til optagelse af tryk- og forskydningskræfter, idet det isolerende legeme (5, 5') omfatter en øvre, med isolationsmateriale fyldt, kvaderformer, formstabil kasse (2), igennem hvilken armeringsstængerne (7) forløber, og en nedre, med iso-
10 lationsmateriale fyldt, kvaderformet, formstabil kasse (4), i hvilken lejerne (6) er anbragt, **kendetegnet ved, at** det isolerende legeme (5, 5') omfatter i det mindste én yderligere formstabil kasse (3, 8, 9), som er fyldt med et isolerende materiale og som er anbragt som central kasse imellem den øvre kasse (2) og den nedre kasse (4), og som er fast forbundet med henholdsvis den øvre kasse (2) og den nedre kasse (4), at hver kasse
15 (2, 3, 4, 8, 9) for sig er udformet helt lukkede, således at respektive tilstødende kasser i det isolerende legeme (5, 5') ligger plant an imod hinanden, og at kasserne (2, 3, 4, 8, 9) ved deres respektive imod hinanden rettede sider har således udformede langsgående kanter, at disse ved sammenføjning af kasserne (2, 3, 4, 8, 9) indgriber formbetinget og kraftbetinget med hinanden, idet der på kasserne (2, 3, 4, 8, 9) er anbragt
20 clips eller låseindretninger, ved hjælp af hvilke kasserne (2, 3, 4, 8, 9) er indbyrdes forbundet.

2. Konstruktionselement ifølge krav 1,
kendetegnet ved, at der som isolerende materiale for den i det mindste ene yderligere
25 kasse (3, 8, 9) er tilvejebragt mineraluld.

3. Konstruktionselement ifølge krav 1 eller 2,
kendetegnet ved, at der imellem den øvre kasse (2) og den nedre kasse (4) er anbragt
30 to centrale kasser (8, 9).

4. Konstruktionselement ifølge krav 3,
kendetegnet ved, at de to centrale kasser (8, 9) er udformede således, at de har
samme højde (H_8 , H_9).

35 5. Konstruktionselement ifølge krav 3,
kendetegnet ved, at de to centrale kasser (8, 9) har forskellige højder (H_8 , H_9).

6. Konstruktionselement ifølge krav 5,
kendetegnet ved, at én af de centrale kasser (8, 9) har en højde (H_8 , H_9) på 2 cm og den anden har en højde på 3 cm.
- 5
7. Konstruktionselement ifølge ethvert af kravene 1 til 6,
kendetegnet ved, at alle kasser (2, 3, 4, 8, 9) er fremstillede af det samme plastmateriale med i det mindste tilnærmelsesvis ens vægtykkelse.
- 10 8. Konstruktionselement ifølge ethvert af kravene 1 til 7,
kendetegnet ved, at kasserne (2, 3, 4, 8, 9) er indbyrdes forbundet ved hjælp af en klæber.

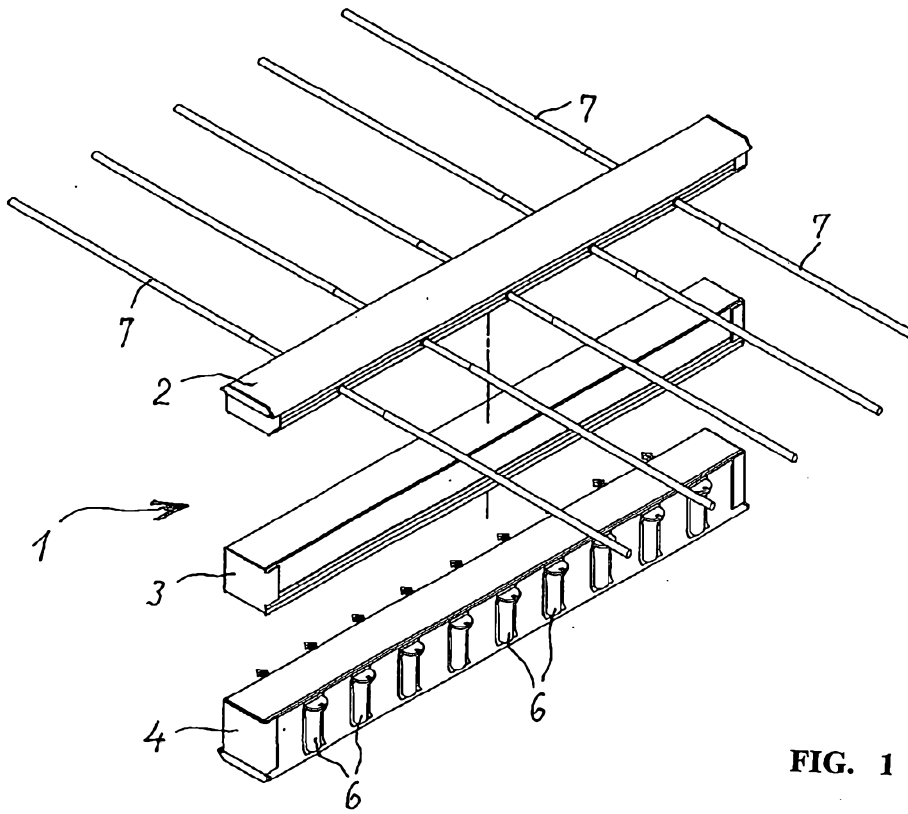


FIG. 1

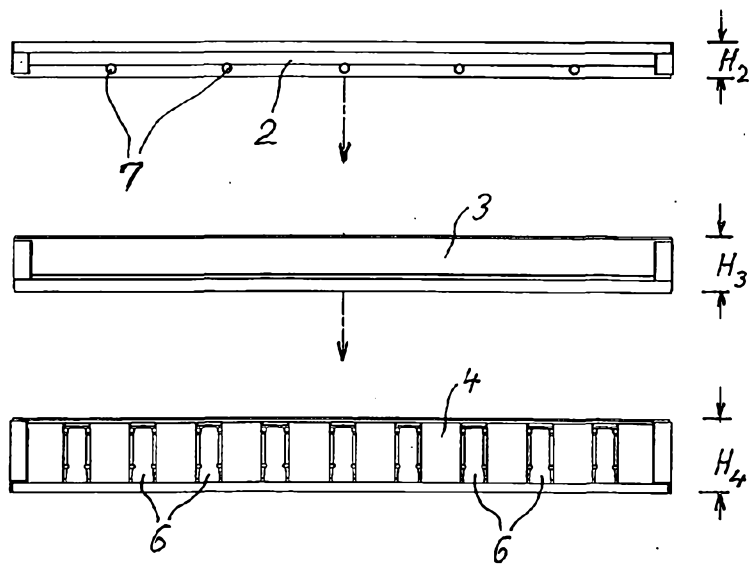


FIG. 2

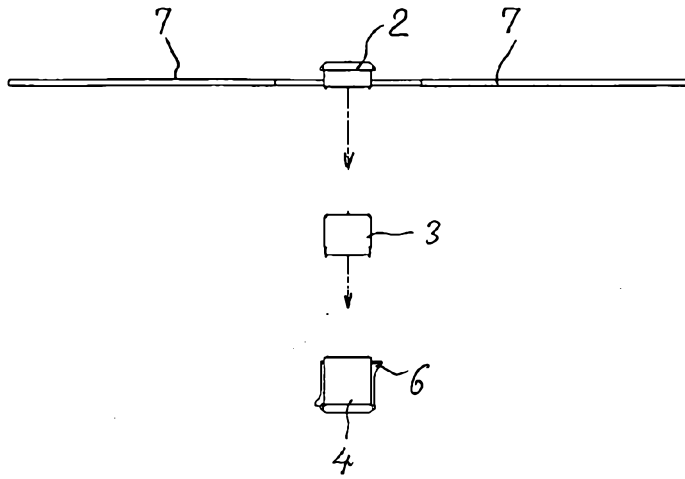


FIG. 3

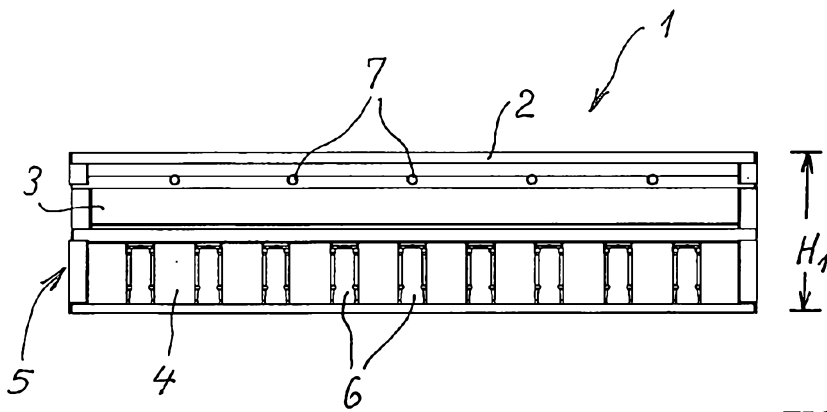


FIG. 4

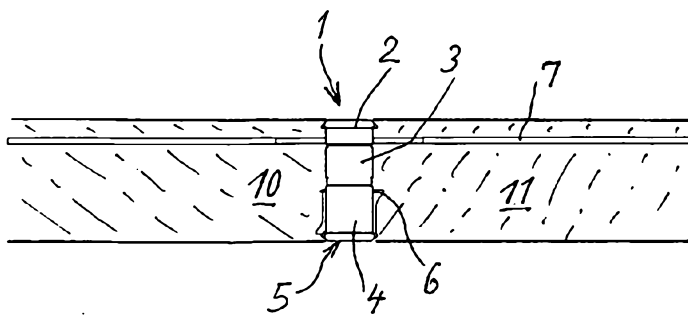


FIG. 5

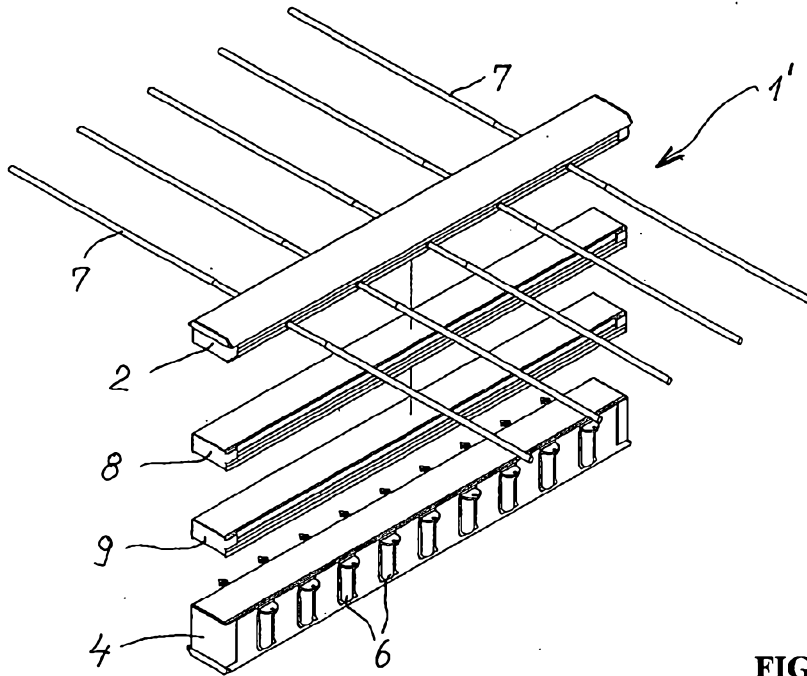


FIG. 6

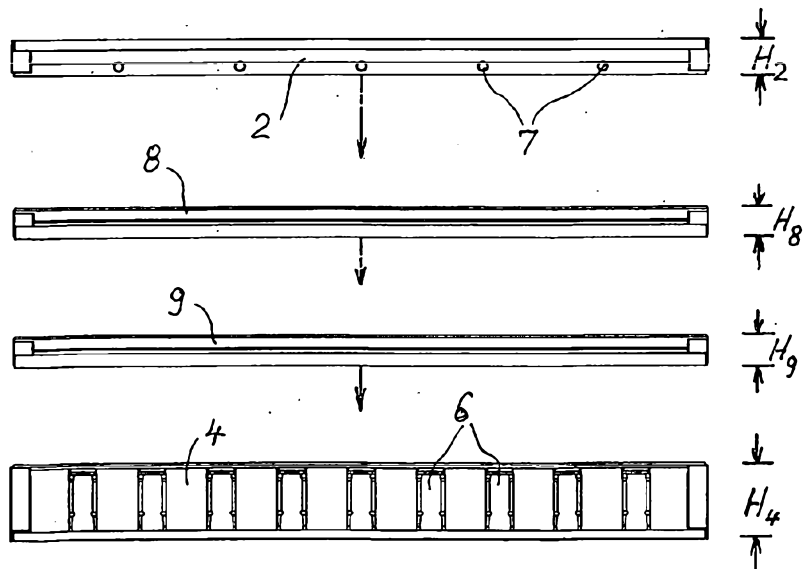


FIG. 7

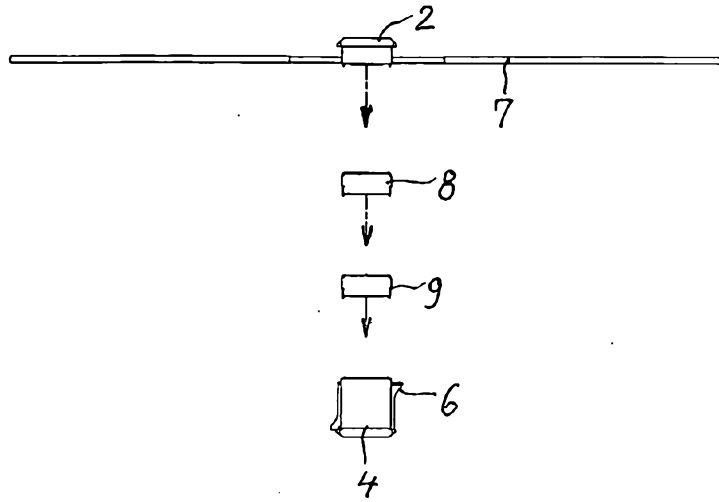


FIG. 8

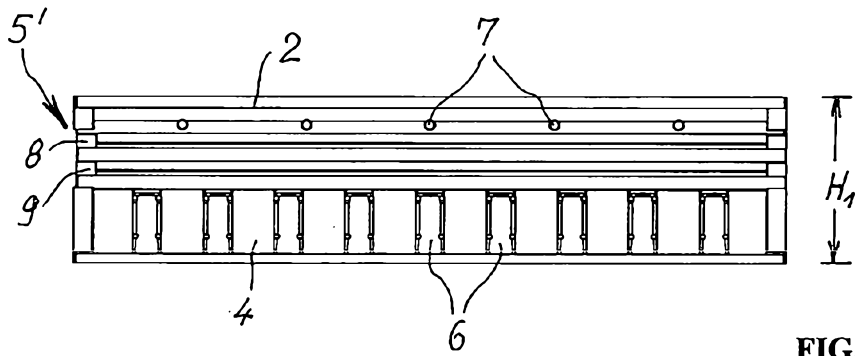


FIG. 9

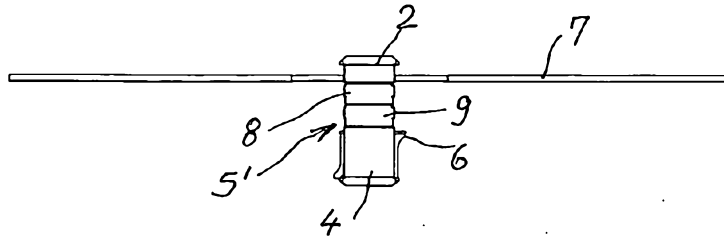


FIG. 10