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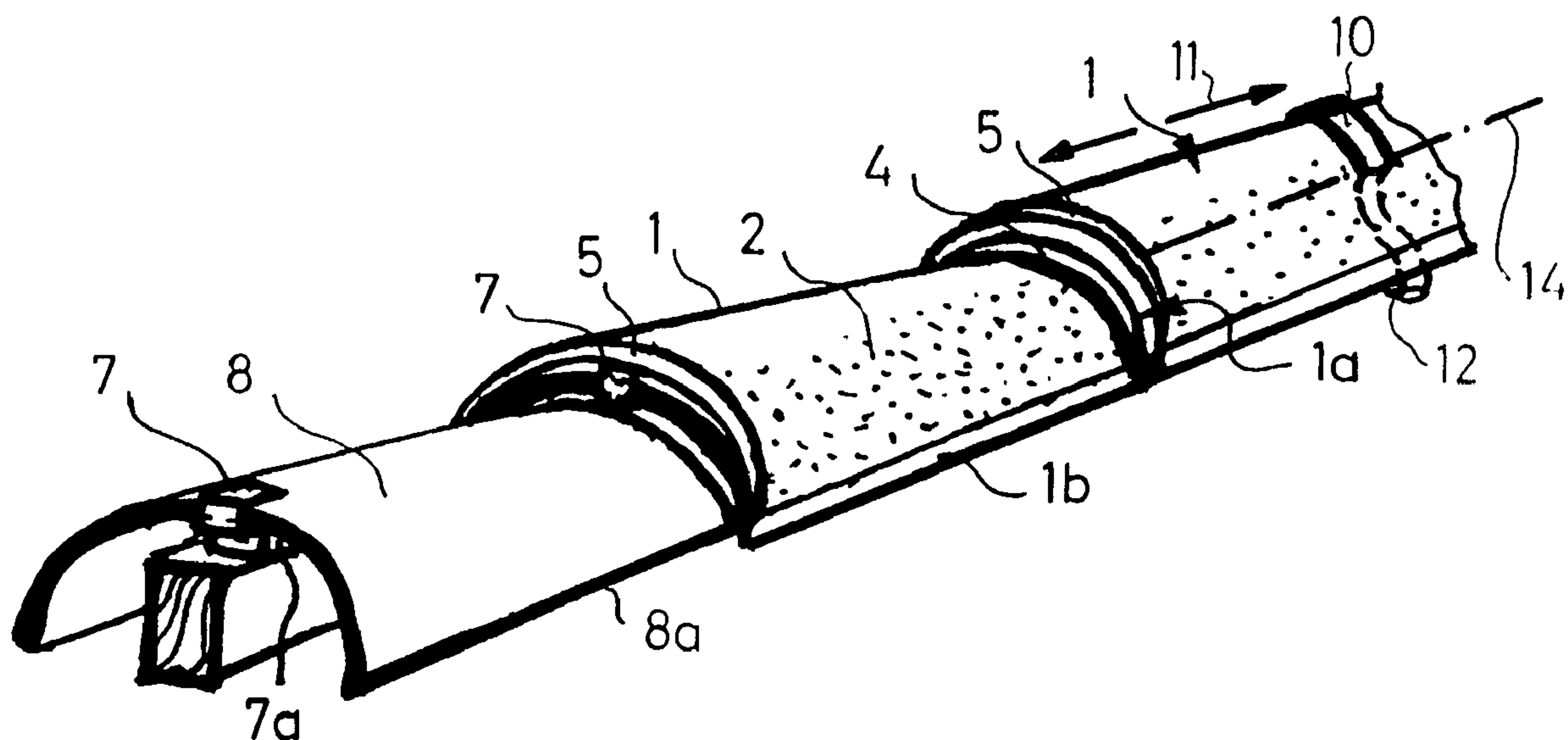
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(54) Title: ROOF COVER



(57) Abrégé/Abstract:

The aim of the invention is to improve the assembly, solidity and efficiency of a roof cover (1) for cleaning and maintaining the clean state of building roofs, particularly with respect to plant growth or environmental pollution. The inventive cover (1) consists of a metal that reacts with moisture, is produced by punching and bending plate-shaped material and is provided with a structured reaction surface (2). A raised part (4) is provided along at least one front face (1a) of the roof cover (1). The raised part can be designed in the form of a bow (10) which allows for a secure and easy assembly by means of hooks (12) and additionally inhibits water from draining off, especially in connection with bulb edges.

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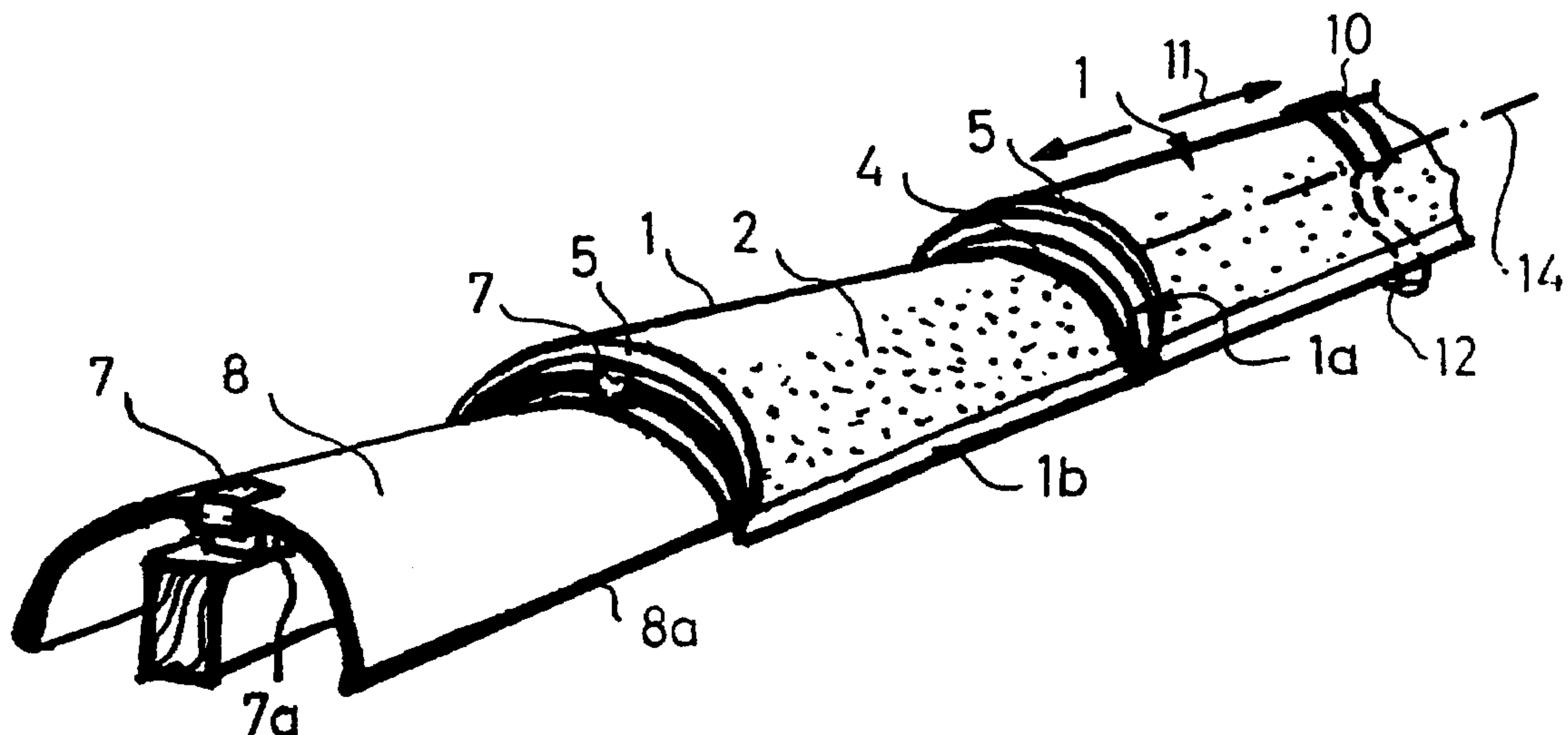
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(54) Title: ROOF COVER

(54) Bezeichnung: DACHBEDECKUNG



(57) Abstract: The aim of the invention is to improve the assembly, solidity and efficiency of a roof cover (1) for cleaning and maintaining the clean state of building roofs, particularly with respect to plant growth or environmental pollution. The inventive cover (1) consists of a metal that reacts with moisture, is produced by punching and bending plate-shaped material and is provided with a structured reaction surface (2). A raised part (4) is provided along at least one front face (1a) of the roof cover (1). The raised part can be designed in the form of a bow (10) which allows for a secure and easy assembly by means of hooks (12) and additionally inhibits water from draining off, especially in connection with bulb edges.

(57) Zusammenfassung: Zur verbesserten Haltbarkeit, Wirksamkeit und Montage einer Dachbedeckung (1) zum Reinigen und Sauberhalten von Gebäudedächern, insbesondere von pflanzlichem Bewuchs oder Umweltschmutz, bestehend aus einem in Verbindung mit Feuchtigkeit reagierenden Metall, wobei die Dachbedeckung (1) aus plattenförmigem Material durch Stanzen und Biegen hergestellt ist und eine strukturierte Reaktionsfläche (2) aufweist, wird vorgeschlagen, daß entlang wenigstens einer Stirnseite (1a) der Dachbedeckung (1) eine Erhöhung (4) vorgesehen ist. Diese kann auch in Form eines Bügels (10) ausgebildet sein, der mittels Haken (12) eine sichere und einfache Montage erlaubt sowie den Wasserablauf zusätzlich hemmt, insbesondere in Verbindung mit Wulstumrandungen.

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ENGLISH TRANSLATION**of the International Patent Application WO 01/33009 A1**

Description**Roof Cover**

The invention relates to a roof cover for cleaning the roofs of buildings and keeping them clean, particularly of plant growth or environmental pollution, consisting of a metal reacting in combination with moisture, the roof cover being manufactured from a plate-shaped material by punching and bending, and having a structured reaction surface.

Such a device for protecting the roofs of buildings against the growth of plants, particularly against the growth of moss and lichen is known from the applicant's document WO 98/01637. The manufacture of the roof cover from a plate-shaped material by means of punching and bending offers the possibility of adapting the roof cover in a simple way to the shape of the roofing tiles and ridge tiles used for the roofing. In particular, the curve can be formed simultaneously with the punching process, so that this results in a design that is optically attractive when compared to simple sheet copper and the reaction surface, in particular, is utilized for the moisture draining away. Furthermore, this makes the assembly of the roof cover easier for the roofer because the outer shape of the roof cover corresponding to the roofing tile and the ridge tile,

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respectively, can be inserted or mounted, respectively in a simple way.

Moreover, the manufacture of the individual roof cover by punching makes it easy to imprint knobs or raised parts in the reaction surface, so that the moisture draining away has to go the longest possible way while, at the same time, a good distribution of the moisture on the roof surface is guaranteed. Besides, when the punching takes place, slit-shaped openings can be provided simultaneously, which allows liquid to react with the metal bottom on the bottom of the roof cover, as well. This makes it possible to achieve substantially a doubling of the reaction surface, so that a considerable reduction of the number of rows to be covered can be achieved while a high efficiency is obtained. Thus, under certain circumstances, already one row of such a roof cover near the ridge or also on the ridge of the roof might be sufficient.

Furthermore, in the case of the DE-A-41 30 365, the roof cover is protected against moss growing in the course of the years by copper sheets being mounted in the visual range of the roof surface such that they come into contact with rain water and that the draining rain water flows over the largest possible surface of the roof cover below the copper sheets. When doing so, the rain water dissolves components, particularly ions, from the copper sheets, which counteract a plant growth, particularly a growth of moss and lichen on the concrete or tile roofing plates. Preferably, the copper sheets are shaped in the form of ridge cappings and are arranged along the ridge, so that the moisture draining away may flow off over the whole surface of the roof. These curved ridge cappings are fastened at the front face by bracket- or strip-shaped clamps (in general, made of aluminum) in the area of the

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ridge in order to be secured against taking off in the case of gusts of wind.

It is, however, disadvantageous in this connection that, particularly when the copper ridge capping is designed such as to be inclined, the copper-sulfate solution draining away may flow at the lower-lying front-face edge at the contact area of two ridge cappings towards the aluminum fixing strap, destroying the same in this way. Thus, the mounting of the whole ridge in the area of the roof saddle is endangered in the long run.

Accordingly, it is the object of the invention to improve such a roof cover for cleaning building roofs and keeping them clean regarding its durability and efficiency as well as its mountability/handling properties and stability.

This problem is solved by a roof cover having two ends, for cleaning the roof of a building and keeping it clean, in particular of plant growth or environmental pollution, which is produced by punching and bending a metal in plate form which reacts in conjunction with moisture and has a textured reaction surface, a first fold, which is directed upwardly in a use position, being formed in the reaction surface, along one end of the roof cover, wherein longitudinal edges of the roof cover are lower edges, and the first fold is formed with a continuous taper towards the longitudinal edges.

By the raised part at the lower-lying front face, it is safely avoided that water enters towards the fixing strap, a simple, sickle-shaped fold being preferred as raised part. In this way, efficiency, too, is improved because

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moisture is fed to the reaction field. Besides, by the preferred overlapping, a more even look of the roof cover is obtained. Furthermore, by the raised parts, particularly folds, burrs at the lateral edges are largely avoided, so that this reduces the danger of injuries even without any intensive finishing being required and, thus, improves the handling properties/mountability for the roofer as well as the dimensional stability.

At least a bow having hook-shaped ends, which extends transversally over the roof capping, is of major importance

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for the mountability, since hereby the roof cover can simply be secured on the mortar joint or on the lower end of the ridge capping. Likewise, an annular bulb extending around the raised parts and the depressions of the reaction surface has an importance of its own, particularly for increasing the efficiency, because this causes an increase in the water retention and, thus, in the duration of dwell on the reaction surface.

Further advantageous embodiments form the subject-matter of subclaims. In this connection, it is also of major importance that the fold on the edge of the front face and, as the case may be, of the horizontally extending longitudinal edge can be imprinted and bent simultaneously with the punching on the upper side of the roof cover. This analogously applies to an opposite fold directed downwards, which is formed at the other front face edge. The overlapping created in this way leads to an optically attractive point of contact for the brick or concrete ridge plates of the building roof and an increased dimensional stability.

In the following, a preferred embodiment is explained and described in greater detail by means of the drawing:

Fig. 1 shows a perspective view of a roof cover in the ridge area;

Fig. 2 shows an enlarged partial longitudinal cross-sectional view through the roof cover according to Fig. 1; and

Fig. 3 shows a semi-sectional view through a particularly preferred embodiment.

Fig. 1 shows a roof cover 1 which is set onto a conventional ridge tile 8 disposed below, respectively. As

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is shown on the left-hand side, the ridge tiles 8 are conventionally fixed on the face end to an intermediate lathing 7a or the roof truss, respectively, by means of one fixing strap 7 each. Then the roof cover 1 made of a plate-shaped material, particularly sheet copper, is put thereon. When this is manufactured, it is first punched out while simultaneously, within the course of the punching, the curving in the kind of a quarter or third cylinder can be worked in by bending. Besides, a reaction surface 2 marked by means of dotting and pointing from the roof surface outwards is formed by a plurality of raised parts or knobs 3 (suggested by circles in Fig. 2) and/or depressions or breakthroughs 3' (see Fig. 3) being imprinted or pressed out of the reaction surface 2, respectively.

It is new in this connection that a raised part 4, particularly in the form of a fold turned upwards and directed upwards, is provided on the front face 1a of the reaction surface 2, said front face pointing to the right-hand side, and lying lower due to the inclination of the capping, as this will be described below in greater detail in combination with Fig. 2. By the structuring of the reaction surface 2 in the form of raised, pressed out knobs 3, the drainage of the liquid is hampered, on the one hand, so that the moisture draining away (rain water, snow water, and the like) has to cover the longest possible way between and along the knobs 3 and, on the other hand, an even distribution on the reaction surface 2 is guaranteed. This is further supported by annular bulbs 16 (see Figs. 2 and 3) around the knobs 3 and the depressions 3'. To prevent water from reaching the fixing strap 7 at the respective contact point, a sickle-shaped raised part 4 is provided on the lower-lying end 1a of the roof cover, respectively, so that it is achieved, particularly in the event of wind or

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gusts of wind, that the moisture draining away cannot reach the fixing strap 7 of the adjacent ridge tile 8.

This is additionally supported by a clamp 10 shown in Fig. 1 on the right-hand side, said clamp embracing the ridge tile 8 and dividing the reaction surface 2 into several fields 11 (indicated by an arrow). In this way, the lateral drifting off of water is largely prevented. The ends of the clamp 10 are formed in a particular, independent way, namely in the form of a hook 12 which engages behind the bottom side 8a, more specifically a mortar joint existing there (see also Fig. 3) of the ridge tile 8. This ensures a safe and stable anchoring of the roof cover 1, particularly if the clamp 10 consists of spring-hard copper. By means of this bias, the capping element can be put onto the ridge tile 8, which simplifies the assembly and makes it particularly safe. Preferably, the clamp 10 (in general, two per capping element, see also Fig. 2) is passed approximately halfway up in the area of the fold 14 from the outside towards the inside under the reaction surface 2, so that a simple mounting is achieved. Alternatively, the clamp 10 may also be riveted on, glued, or screwed.

In Fig. 2, the preferred embodiment of the raised part 4 bent upwards towards the upper side is shown in the form of a fold in a lateral view, said fold being formed in a tool during the punching and bending process. Here the barrier-like shape of the raised part 4 can be seen at the front face 1a pointing to the right side here, which safely prevents water from entering along the ridge towards the fixing strap 7.

In Fig. 2, two cap-shaped roof covers 1 are shown in the inserted position on two ridge tiles 8; these may also consist of concrete slabs and respectively overlap at the

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contact point. Here, on the one hand, the arrangement of the structured reaction surface 2 being disposed on the roof cover 1, as well as the raised part 4 extending upwards at the front face 1a can be seen. On the raised part 4, which is bent upwards in the form of a web, a sealing cord, a hose, a sealing mass or the like could be applied additionally, or the raised part 4 itself could be formed by such materials. A similar effect as that by the raised part 4 is achieved by the clamps 10 which also prevent a lateral drifting of water. For this purpose, the clamps 10 can also be disposed at the front faces, particularly if two or three such clamps 10 per capping element are provided.

Further reference shall be made to the design of the hooks 12 of the clamps 10, namely here in the form of screws 13 (see also Fig. 3), whereby a particularly safe anchoring with adjustable bias is achieved at the mortar joint or the lower end 8a of the ridge tile 8. In addition, the design of the knobs or raised parts 3, shown in Fig. 2 on the left-hand side, with an annular bulb 16 each (see also Fig. 3) is of particular importance, as well, because, hereby, the water drainage from the reaction surface 2 is additionally inhibited. This also applies to the complementary alternative shown in Fig. 3, which has impressions 3', so that the period of dwell and, thus, the reaction efficiency is increased.

Furthermore, the fold 5 provided on the left front face edge 1c and directed downwards is of importance; it leads to an exact drip-tight overlapping at the contact point. Thus, in each case, a flat gap 9, through which the building roof is also aired, is formed between the raised part 4 and the fold 5. The raised part 4 may, however, also directly abut on the fold 5, possibly with a mounted hose

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section or a glued-on sealing in cord or strip form or at the clamp 10 being inserted. Also a foil or a sealing bead made of silicone material is useful for this in order to keep water safely away from the fixing strap 7. This is further supported by the horizontal alignment of the fold 14 and by the bulb edgings 16.

Thus, sufficient protection also against any moisture that might be driven by wind and gusts of wind during heavy storms is given by the overlapping at the contact point, possibly with the formation of the above-described gap 9 of several millimeters of width, in connection with the comparatively great length of the raised parts 4 from one longitudinal edge 1b of the roof cover 1 to the other longitudinal edge (non-designated) and the clamps 10 running in parallel thereto for the division into several fields 11.

In Fig. 3, a semi-section through the roof cover 1 is shown, which particularly discloses the extension of the clamp 10 through the fold 14 aligned preferably in the direction of the ridge and transversally thereto in the horizontal direction up to the end with a hook 12, as well as the embrace of this hook 12, formed unitarily with the clamp 10 in the simplest way, said hook engaging positively into the mortar joint at the lower end 8a of the ridge tile 8 (or of another roof element). However, the hook 12 may also be formed by a short screw 13 which is inserted in the clamp 10. Thereby, the anchoring is further stabilized towards the roof, particularly also by the increased bias of the clamp 10 when the screw 13 is screwed in.

A profiling 15 provided on the lower edge 1b (see also Fig. 2) is furthermore important; this as well as the annular bulbs 16 around the knobs 3 and the impressions 3' lead to

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a considerable delay of the water drainage. Also an opening 17 provided in the pocket-shaped impression 3', respectively, and being open opposite to the water drainage direction, i.e. towards the ridge, serves for this purpose. This leads to a specific, cascade-like water drainage also towards the lower side, with a rest volume of water respectively remaining in the reservoir-like impressions 3' and over the profiling 15 and also between the bulb edgings 16 in order to react with the metal, particularly copper of the reaction surface 2, when the period of dwell is thus particularly high.

Patent Claims

1. A roof cover having two ends, for cleaning the roof of a building and keeping it clean, in particular of plant growth or environmental pollution, which is produced by punching and bending a metal in plate form which reacts in conjunction with moisture and has a textured reaction surface, a first fold, which is directed upwardly in a use position, being formed in the reaction surface, along one end of the roof cover, wherein longitudinal edges of the roof cover are lower edges, and the first fold is formed with a continuous taper towards the longitudinal edges.
2. A roof cover according to claim 1, characterized in that the first fold is upwardly pointing and is crescent-shaped.
3. A roof cover according to claim 1 or claim 2, which has an inclination in the use position, with the result that, based on the inclination, a first of the two ends of the roof cover lies lower than the other end, and in which the first fold runs along the whole of the first end.
4. A roof cover according to claim 3, wherein an opposing fold lies opposite the first fold at a second of the two ends of the roof cover.
5. A roof cover according to any one of claims 1 to 4, which consists of copper sheet.
6. A roof cover according to any one of claims 1 to 5, in which the reaction surface has at least a multiplicity of elevations or a multiplicity of depressions which are each surrounded by an annular lip.
7. A roof cover according to any one of claims 1 to 6, the reaction surface of which, particularly an upper edge thereof,

being aligned with a second fold extending in a horizontal plane with respect to the longitudinal edges.

8. A roof cover according to any one of claims 1 to 7, comprising at least one clamp extending transversely with respect to the longitudinal edges.

9. A roof cover according to any one of claims 1 to 8, which has at least one strap with hook-shaped ends which runs transversely over the roof cover and by means of which the roof cover can be fastened to the roof of the building.

10. A roof cover according to claim 9, wherein the strap consists of spring-hard copper.

11. A roof cover according to claim 9 or claim 10, wherein the hook-shaped ends are formed by one screw each.

12. A roof cover according to any one of claims 1 to 11, wherein a multiplicity of perforations are provided in the reaction surface.

13. A use of a roof cover according to any one of claims 1 to 12 for covering a ridge tile which is fixed to a roof framework of the building by means of a fastening clip.

14. A use according to claim 13 wherein the fastening clip consists of aluminum and the roof cover of sheet copper.

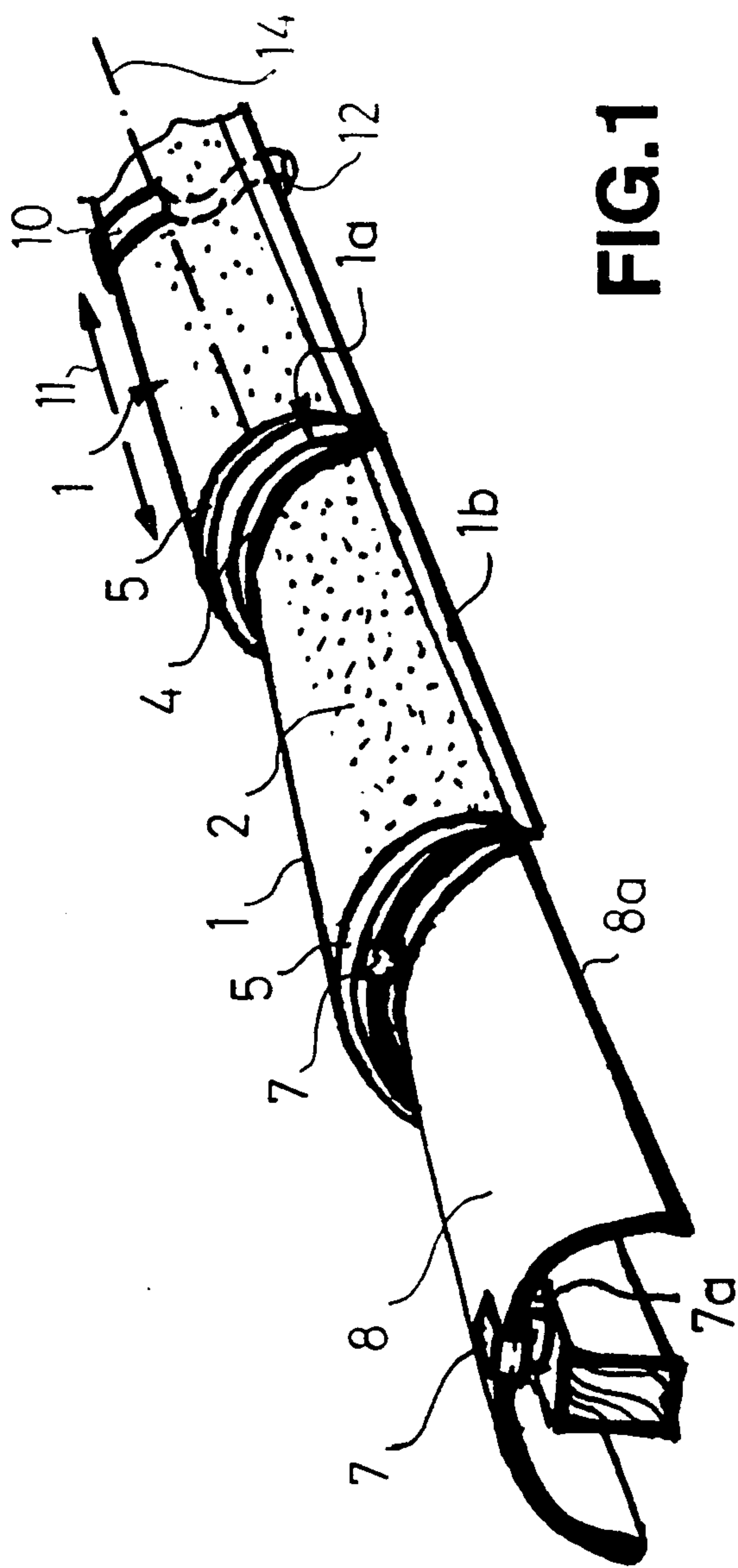


FIG.1

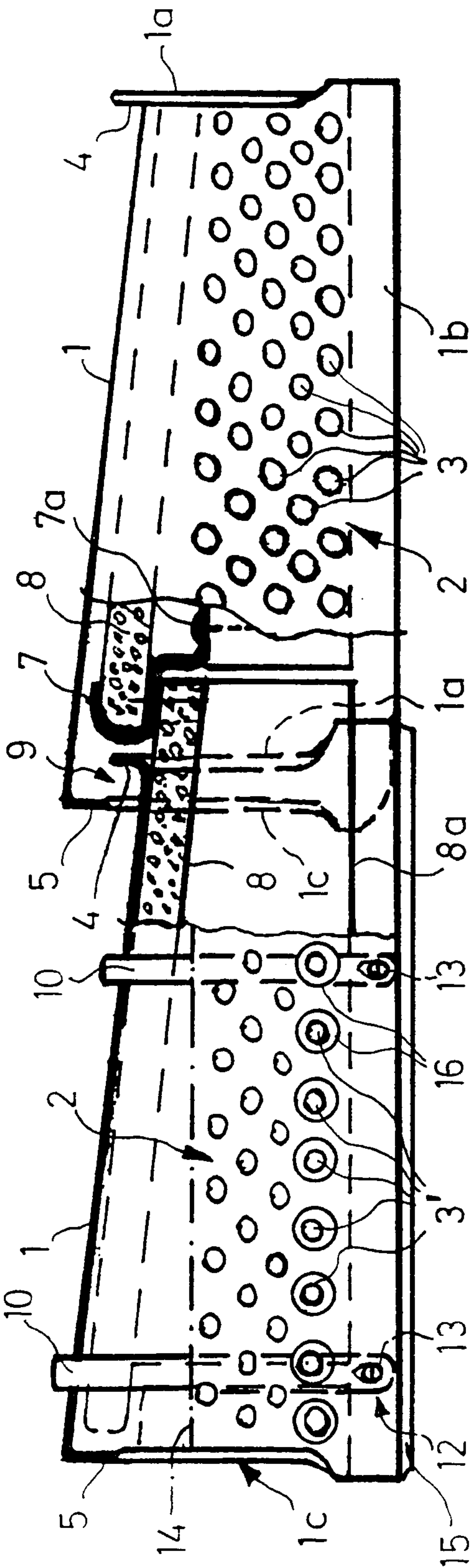


FIG.2

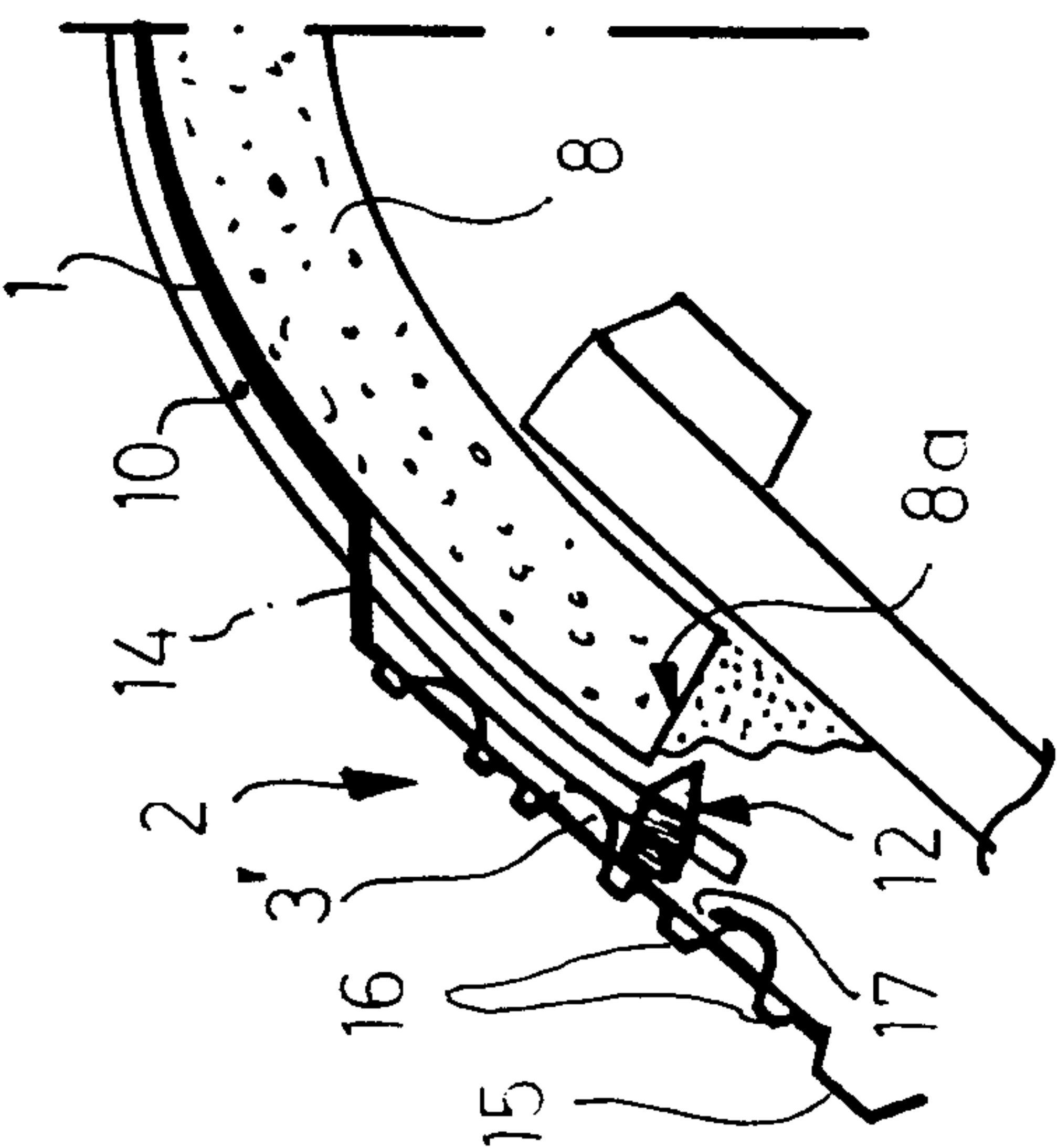


FIG.3

