(19) DANMARK

Patent- og Varemærkestyrelsen

(10) **DK/EP 3647010 T3**

(12) Oversættelse af europæisk patentskrift

(51) Int.Cl.: ***B 28 B 3/02 (2006.01)*** ***A 01 K 1/015 (2006.01)*** ***B 28 B 7/18 (2006.01)*** ***B 28 B 23/00 (2006.01)*** ***E 04 C 2/42 (2006.01)***

(45) Oversættelsen bekendtgjort den: **2021-04-12**

(80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2021-03-03**

(86) Europæisk ansøgning nr.: **18203245.8**

(86) Europæisk indleveringsdag: **2018-10-30**

(87) Den europæiske ansøgnings publiceringsdag: **2020-05-06**

(84) Designerede stater: **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**

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(54) Benævnelse: **Fremgangsmåde til fremstilling af et staldgulvselement**

(56) Fremdragne publikationer:
EP-A1- 2 138 289
EP-A1- 2 181 585
EP-A2- 2 742 798

Method for producing a stable floor element

The invention relates to stable floor elements for animal stables. Specifically, a method for producing a stable floor element is described.

Background

Premade concrete stable floor elements which are laid in an animal stable (for example a shed for cows) in order to create a floor are well known. Such stable floor elements generally consist of two or more mutually spaced longitudinal beams arranged in a plane, and two or more mutually spaced transverse beams arranged in the plane of the longitudinal beams. A longitudinal gap which is provided to dispose of animal faeces and animal urine is defined by two adjacent longitudinal beams and transverse beams in each case. Due to the longitudinal gaps formed in the stable floor elements, such elements are also called longitudinal gap grid elements.

Stable floor elements made of pure concrete have some disadvantages. For example, it is known that concrete surfaces can become slippery due to the accumulation of faeces and urine. The animals can slip and hurt themselves. In order to improve the grip of the floor, a method for producing premade longitudinal gap grid elements is proposed, for example, in EP 1 563 728 B1; in the method, grooves are cut or milled into the concrete surface of the longitudinal gap grid elements. The structuring of the concrete surface makes it possible for the animals to have better grip.

A further disadvantage is that concrete surfaces age quickly. It is known that animal urine can disintegrate concrete and therefore accelerates the ageing process. In order to protect the concrete surfaces, a stable floor element is proposed in EP 2 936 977 B1 in which the surfaces of the longitudinal beams (and transverse beams) are protected by elastic protection elements. The elastic protection elements protect the concrete core of the beam elements (i.e. longitudinal beams, transverse beams) from the penetration of urine and manure. The grooved surface of the protection elements further makes it possible to quickly separate urine and manure, as a result of which the grip of the floor is improved. In addition, the elastic protection elements increase comfort for the animals.

In order to prevent the elastic protection elements from sliding with respect to the concrete beam elements, EP 2 936 977 B1 proposes the following technique. Each elastic protection element is provided with at least one opening. Furthermore, the underlying concrete beam elements are provided with concrete blocks at corresponding points, which concrete blocks already have the shape of the recesses of the elastic protection elements. The concrete blocks are fastened (e.g. stuck or screwed) to the concrete surface of the beam elements. The elastic protection elements are laid along the gap elements of the stable floor element, wherein the concrete blocks of the gap elements engage form-fittingly in the openings of the protection elements. The result is a stable floor element having a surface which consists of the elastic protection elements and the concrete blocks.

A disadvantage of the technique described consists in the production of the floor elements. The subsequent application of the separately formed concrete blocks along the gap elements is complex and labour-intensive. It has also been shown that due to the high load on the floors, the applied concrete blocks can detach from the underlying concrete beam elements. This is especially true when the concrete blocks are stuck to the underlying core structure.

EP 2 138 289 A1 discloses a method for producing a longitudinal gap grid element which has a plurality of longitudinal beams spaced apart from one another and arranged in a plane and a plurality of transverse beams spaced apart from one another and arranged in the plane of the longitudinal beams, wherein the method comprises the following steps:

(a) providing a casting mould, wherein the casting mould has upwardly open casting chambers and predetermines the shape of the at least two mutually spaced longitudinal beams of the stable floor element;

(b) filling the open casting chambers with concrete up to a predetermined filling level in order to form the concrete cores of the at least two longitudinal beams;

(c) placing rubber coverings on the surface of the respective concrete cores;

(d) pressing the rubber coverings placed on the surface into the respective concrete cores until a desired overall height of the stable floor element is achieved.

The problem addressed by the invention is that of providing a production technique which eliminates the disadvantages described in connection with EP 2 936 977 B1.

Brief outline

In order to solve the above-mentioned problems and further problems, a method for producing a stable floor element is provided according to a first aspect, wherein the stable floor element has at least two mutually spaced longitudinal beams arranged in a plane, each of which has a concrete core and at least one rubber covering at least partially covering the concrete core, wherein adjacent longitudinal beams of the stable floor element are each separated from one another by a longitudinal gap. The method comprises the following steps: providing a casting mould, wherein the casting mould has upwardly open casting chambers and predetermines the shape of the at least two mutually spaced longitudinal beams of the stable floor element; filling the open casting chambers with concrete up to a predetermined filling level in order to form the concrete cores of the at least two longitudinal beams; placing rubber coverings on the surface of the respective concrete cores, wherein each rubber covering has at least one opening into which the concrete of the underlying concrete cores can penetrate; pressing the rubber coverings placed on the surface into the respective concrete cores until a desired overall height of the stable floor element is achieved, wherein the concrete volume of the underlying concrete cores that is displaced by the pressing process penetrates into the respective openings and fills them; removing excess concrete emerging from the surfaces of the openings; and smoothing the concrete on the surface of the openings such that a stable floor element having a uniform surface is produced.

The steps of providing a casting mould, filling the open casting chambers of the casting mould, placing rubber coverings on the surface of the respective concrete cores, pressing the rubber coverings placed on the surface, removing excess concrete emerging from the surfaces of the openings and smoothing the concrete on the surface of the openings can be carried out while the concrete in the casting mould is fresh. Fresh concrete can mean concrete in an earth-moist state. Excess fresh concrete can therefore penetrate into the underlying openings in the placed rubber coverings when the rubber coverings are pressed in and fill said openings completely. In order to give the concrete better formability, the fresh concrete can be mixed with plastics material fibres.

The height (e.g. the thickness) of the stable floor element is composed of the height (thickness) of each of the concrete cores of the longitudinal beams and the height (thickness) of the rubber coverings used. The filling level of the fresh concrete can be selected depending on the height of the rubber coverings such that, when the rubber coverings are pressed in, each opening in the rubber coverings is completely filled with concrete and the desired height (total height) of the stable floor element is achieved. The filling level for the casting chambers is therefore selected to be higher than the actual height of the concrete cores so as to correspond to the concrete volume that is displaced by the pressing process.

For better distribution of the concrete filled into the casting mould, the casting mould can be provided on a vibrating device. Furthermore, the casting mould can be vibrated using the vibrating device while the open casting chambers are filled such that the concrete is uniformly distributed over the entire casting mould in a short time.

The rubber coverings placed on the concrete surfaces can be subjected to a predetermined (constant or linearly increasing) pressure during the pressing process. The applied pressure causes the underlying fresh concrete to be displaced and pressed into the openings in the rubber coverings. This pressurised pressing process can additionally be used to homogeneously distribute and compress the underlying fresh concrete in the casting mould. In particular, the above-described vibrating process can also be carried out during the pressing process in order to improve the pressing process and the concrete distribution (also within the openings).

The method can further comprise the step of releasing the stable floor element from the casting mould. Releasing the stable floor element from the casting mould can comprise the following sub-steps: rotating the casting mould so that the exposed surface of the stable floor element faces downwards, and then demoulding the stable floor element downwards out of the casting mould. The stable floor element can be demoulded as long as the concrete of the stable floor element (i.e. the concrete cores) is not yet cured (i.e. are still in the earth-moist state). The concrete cores can be cured after demoulding. The concrete cores can be cured when the rubber coverings are pressed in.

The rubber coverings can be dimensioned such that the width thereof substantially corresponds to the width of the concrete cores of the longitudinal beams that are to be covered. Furthermore, the rubber coverings can be dimensioned in the longitudinal direction of the longitudinal beams such that said coverings only cover part or cover the entire length of the longitudinal beams. If the rubber coverings only cover part of the longitudinal beams, the rubber coverings can therefore be placed in the longitudinal direction of the longitudinal beams such that adjacent rubber coverings are arranged flush with one another in the longitudinal direction. In this way, the placed rubber coverings create a flat rubber surface which is only interrupted by the concrete received in the openings.

The surface of the rubber coverings to be pressed in can be profiled. The profile of the rubber coverings can comprise longitudinal and/or transverse grooves in order to drain urine away into the adjacent gaps of the stable floor element. The rear side of the rubber coverings (i.e. the side of the rubber coverings that faces the concrete) can be smooth or profiled. Additional mechanical anchoring of the rubber coverings to the underlying concrete can be achieved by means of a profiled design. In this way, it can be ensured that the rubber coverings cannot be detached from the underlying concrete core. As a result, the mechanical stability of the rubber coverings is further improved. However, as a result, the rubber coverings cannot be manually removed and replaced. According to an alternative variant, it is also conceivable that the rear side is smooth. In this case, the rubber coverings can be removed again after the concrete has partially cured or completely cured and, if necessary (after a long period of time and wear), can be replaced with new rubber coverings.

The stable floor element can further comprise at least two mutually spaced transverse beams crossing the at least two longitudinal beams. The transverse beams can also be covered with rubber coverings like the longitudinal beams. For this, the same method can be used as described above in conjunction with creating the longitudinal beams. This means that a casting mould can be provided which predetermines the shape of the transverse beams together with the shape of the longitudinal beams. Then the open casting chambers of the casting mould are filled with concrete until a predetermined filling level is achieved. Then, the rubber coverings are not only placed and pressed along the longitudinal beams but also along the transverse beams, as described above. Finally, the excess concrete emerging from the openings is removed and the concrete is smoothed on the openings such that a uniform surface is produced.

A uniform surface is understood to mean that the smoothed concrete surface of the concrete which penetrated into the openings is flush with the surface of the rubber coverings. The floor surface produced in this way is smooth at the transitions between the rubber coverings and the openings filled with concrete and does not have steps (elevations or depressions).

According to a further aspect, a stable floor element is provided which has at least two mutually spaced longitudinal beams arranged in a plane, each of which has a concrete core and rubber coverings at least partially covering the concrete core, wherein adjacent longitudinal beams of the stable floor element are each separated from one another by a longitudinal gap. The stable floor element is produced according to the method described above.

The surface of the rubber coverings can have a predetermined surface profile (grooves). Furthermore, the pressing surface of the rubber coverings facing the concrete can be smooth or profiled.

The stable floor element can further comprise at least two mutually spaced transverse beams crossing the at least two longitudinal beams. The transverse beams can also be covered with rubber coverings like the longitudinal beams. For this, the same method can be used as described above in conjunction with creating the longitudinal beams.

Short description of the drawings

Aspects of the present invention are described in more detail with reference to the drawings, in which:

Fig. 1a/1b show views of a stable floor element according to the present invention;

Fig. 2 shows a schematic view of a device for producing a stable floor element according to the present invention;

Fig. 3 shows a flowchart of a method for producing a stable floor element according to the present invention;

Fig. 4a-4c show schematic views which show the method being carried out using the device according to Fig. 2 in different method steps.

Detailed description

In Fig. 1a and 1b, a stable floor element 100 according to the present invention is first described. Fig. 1a shows a plan view of the stable floor element 100, as it can be used for producing a stable floor. Fig. 1b shows a cross-sectional view of the stable floor element 100 along the line A-A in Fig. 1a.

The stable floor element 100 comprises a plurality of longitudinal beams 120a, 120b, 120c which are separated from one another by longitudinal gaps 130a, 130b. In the schematic view shown in Fig. 1a, the stable floor element 100 comprises three longitudinal beams 120a, 120b, 120c which are each separated from one another by a longitudinal gap 130a, 130b. It goes without saying that the depiction is given by way of example and the stable floor element 100 can also have only two longitudinal beams or more than three longitudinal beams. The present invention does not depend on the number of the longitudinal beams 120a, 120b, 120c. Furthermore, as is apparent from Fig. 1a, the stable floor element 100 comprises a plurality of transverse beams 140a, 140b. The transverse beams 140a, 140b constitute a mechanical connection between the longitudinal beams 120a, 120b, 120c which are separated from one another by longitudinal gaps 130a, 130b.

The structural design of the stable floor element 100 is described in further detail in conjunction with Fig. 1b. Fig. 1b shows a cross-sectional view along the cross section A-A. Each of the longitudinal beams 120a, 120b, 120c comprises a concrete core 122a, 122b, 122c which is covered on the surface thereof by corresponding rubber coverings 124a, 124b, 124c. In other words, each longitudinal beam 120a, 120b, 120c consists of a concrete core 122a, 122b, 122c and at least one rubber covering 124a, 124b, 124c arranged on the surface of the stable floor element 100 and covering the concrete core 122a, 122b, 122c.

The concrete core 122a, 122b, 122c of each longitudinal beam 120a, 120b, 120c has a trapezoidal cross section in the embodiment of the stable floor element 100 shown in Fig. 1b. Starting from the surface of the stable floor element 100, the cross section of the concrete core 122a, 122b, 122 of each longitudinal beam 120a, 120b, 120c tapers toward the rear of the stable floor element 100. Accordingly, the width of the longitudinal gaps 130a, 130b separating the longitudinal beams 120a, 120b, 120c increases toward the rear of the stable floor element 100. The widening of the longitudinal gaps 130a, 130b makes it possible to drain manure and urine away smoothly via the longitudinal gaps 130a, 130b. It goes without saying that the longitudinal beams 120a, 120b, 120c of the stable floor element 100 can also have a different cross-sectional shape which deviates from the trapezoidal cross-sectional shape described here.

The concrete core 122a, 122b, 122c of each longitudinal beam 120a, 120b, 120c can be constructed from a conventional concrete or concrete mix. Alternatively, fibre-reinforced concrete can be used. The admixture of fibres (e.g. plastics fibres) in fresh concrete can improve the consistency and formability thereof such that concrete cores 122a, 122b, 122c can be produced/formed with clear boundaries.

The rubber coverings 124a, 124b, 124c arranged on the surface of the stable floor element 100 and covering the longitudinal beams 120a, 120b, 120c are planar. The coverings have a predetermined width b, length l and thickness (or height) d, wherein the width b of each rubber covering 124a, 124b, 124c substantially corresponds to the width of the concrete cores 122a, 122b, 122c to be covered. The length l of each rubber covering 124a, 124b, 124c can correspond to the length of the longitudinal beams 120a, 120b, 120c. The length l of each rubber covering 124a, 124b, 124c can however also be shorter than the length of the longitudinal beams 120a, 120b, 120c. In this case, a plurality of rubber coverings 124a, 124b, 124c are arranged in rows in the longitudinal direction of the longitudinal beams so as to be flush with one another in order to fully cover each longitudinal beam 120a, 120b, 120c.

Each rubber covering 124a, 124b, 124c also has at least one opening 125a, 125b, 125c (see also Fig. 1a). Each opening 125a, 125b, 125c is provided for receiving concrete. The concrete received in each opening 125a, 125b, 125c creates a projection 123a, 123b, 123c which projects from the relevant concrete core 122a, 122b, 122. According to the present invention, the projections 123a, 123b, 123c are formed integrally with the underlying concrete cores. The projections 123a, 123b, 123c are created by pressing the rubber coverings 124a, 124b, 124c into the fresh concrete of the concrete cores 122a, 122b, 122c, as will be described in more detail below in conjunction with Fig. 3.

Each projection 123a, 123b, 123c engages (precisely) in a corresponding opening 125a, 125b, 125c of a rubber covering 124a, 124b, 124c. Due to the engagement of the projections 123a, 123b, 123c in corresponding openings 125a, 125b, 125c, the rubber coverings 124a, 124b, 124c are prevented from sliding in the plane and relative to the concrete cores 122a, 122b, 122c.

Furthermore, as is clear from Fig. 1a, the surface of the rubber coverings 124a, 124b, 124c facing away from the concrete cores 122a, 122b, 122c can have a structure. The structure can comprise corrugations. The corrugations can be designed to drain urine away quickly in the direction of the longitudinal gaps 130a, 130b. According to one embodiment, the corrugations can comprise a groove pattern which is arranged substantially transversely with respect to the longitudinal direction of the rubber coverings 124a, 124b, 124c. The rubber coverings 124a, 124b, 124c arranged transversely with respect to the longitudinal direction of the grooves point in the direction of the longitudinal gaps 140a, 140b. They can therefore drain away urine in the direction of the longitudinal gaps 130a, 130b.

Furthermore, as is clear from Fig.1a, the surface of the rubber coverings 124a, 124b, 124c facing the concrete cores 122a, 122b, 122c can be smooth (i.e. have no structure). Due to the smooth design, the rubber coverings 124a, 124b, 124c can be manually removed from the surface of the concrete cores 122a, 122b, 122c. In other words, the rubber coverings 124a, 124b, 124c are detachably in contact with the surface of the concrete cores 122a, 122b, 122c. However, they are not rigidly connected to the surface of the concrete cores 122a, 122b, 122c. Therefore, the rubber coverings 124a, 124b, 124c can be easily replaced with new rubber coverings 124a, 124b, 124c when worn.

The transverse beams 140a, 140b can be significantly thinner in comparison with the longitudinal beams 120a, 120b, 120c. The transverse beams 140a, 140b can consist of (fibre-reinforced) concrete. In particular, the transverse beams 140a, 140b can be formed integrally together with the concrete cores 122a, 122b, 122c of the longitudinal beams 120a, 120b, 120c.

In conjunction with Fig. 2, a device 1 for producing the stable floor element 100 shown in Fig. 1a and 1b is described in more detail. The device 1 comprises a vibrating table 10 having a vibrating motor 15, a casting mould 20 and a pressure apparatus 30. The vibrating motor 15 is provided to transmit a vibrating movement to the vibrating table 10. The casting mould 20 has a plurality of casting chambers 22a, 22b, 22c which are provided for receiving fresh concrete. The casting chambers 22a, 22b, 22c reproduce the shape of the longitudinal beams 120a, 120b, 120c (and transverse beams 140a, 140b) to be created. In the present case, the casting chambers 22a, 22b, 22c have trapezoidal cross sections in order to reproduce the longitudinal beams 120a, 120b, 120c which are trapezoidal in cross section (cf. Fig. 1a and 1b). The casting mould 20 is arranged on the vibrating table 10 and can be vibrated by actuating the vibrating motor 15. The pressure apparatus 30 is designed to press the rubber coverings 124a, 124b, 124c on the surface of the casting chambers 22a, 22b, 22c into the fresh concrete received in the casting chambers 22a, 22b, 22c.

In conjunction with Fig. 3 and 4a to 4c, a method according to the invention for producing the stable floor element 100 is now described in more detail.

In a first step S10, the casting mould 20 is provided (see Fig. 3). For this, the casting mould 20 is arranged on the vibrating table 10 which is provided for creating a vibrating movement. The casting mould 20 has upwardly open casting chambers 22a, 22b, 22c which have the shape of the longitudinal beams 120a, 120b, 120c. Insofar as the stable floor element 100 has transverse beams 140a, 140b, the casting mould 20 can also have corresponding casting chambers for the transverse beams 140a, 140b. These casting chambers are not shown in the drawings in Fig. 2 and Fig. 4.

In a further step S20, the open casting chambers 22a, 22b, 22c are filled with concrete (fresh concrete) up to a predetermined filling level h (see Fig. 4a, filling level h). The filling level h can be smaller than the height H of the casting chambers 22a, 22b, 22c. The casting mould 20 is vibrated using the vibrating motor 15 and the vibrating table 10. The casting moulds 22a, 22b, 22c are thus filled uniformly with fresh concrete. In this way, the concrete cores 122a, 122b, 122c of each longitudinal beam 120a, 120b, 120c are created.

In a further step S30, rubber coverings 124a, 124b, 124c are placed on the surface of each of the concrete cores 122a, 122b, 122c. This happens as long as the concrete of the concrete cores 122a, 122b, 122c is still in the fresh state (i.e. not yet cured). The rubber coverings 124a, 124b, 124c have corresponding openings 125a, 125b, 125c, as described above.

In a further step S40, the rubber coverings 124a, 124b, 124c placed on the surface of each of the concrete cores 122a, 122b, 122c are pressed using the pressure apparatus 30. The rubber coverings 124a, 124b, 124c are pressed into the concrete cores 122a, 122b, 122c until the desired overall height of the stable floor element 100 is achieved. The concrete (fresh concrete) of each of the concrete cores 122a, 122b, 122c that is displaced by the pressing process penetrates into the openings 125a, 125b, 125c and fills them. In particular, excess concrete can reach the surface via the openings 125a, 125b, 125c and leak (see Fig. 4b → excess concrete 127).

The excess concrete 127 emerging from the surface of the rubber coverings 124a, 124b, 124c is removed in a further step S50. Furthermore, the surface is smoothed on the openings 125a, 125b, 125c (step S60). In this way, a uniform surface is produced between the concrete pressed into the openings 125a, 125b, 125c and the surface of the rubber coverings 124a, 124b, 124c (see Fig. 4c).

The stable floor element 100 created in this way is still located in the casting mould 20 and must be released from the casting mould 20 in a further step. The step of releasing the stable floor element 100 from the casting mould 20 can take place as long as the concrete of the concrete cores 122a, 122b, 122c is still fresh (i.e. not yet cured). Releasing the stable floor element 100 from the casting mould 20 can comprise the following sub-steps: rotating the casting mould 20 so that the exposed surface of the stable floor element 100 faces downwards with the rubber coverings thereof. Then the stable floor element 100 can be demoulded.

The method which has been described for producing a stable floor element 100 has a number of advantages. In contrast to conventional techniques, the rubber coverings are placed and pressed in while the concrete cores of the stable floor element are being formed. The rubber coverings are therefore not only part of the stable floor element, but they also act as a type of casing for the concrete cores of the stable floor element. In particular, by pressing the rubber coverings into the fresh concrete of the underlying concrete cores, projections are created which project precisely into the openings of the rubber coverings and stabilise them against sliding in the cured state. Subsequent application of the concrete projections by sticking them or screwing them to the underlying concrete cores is not necessary as a result of the production method according to the invention. The production method according to the invention therefore makes it possible to produce stable floor elements more quickly and more cost-effectively in comparison with known production methods.

PATENTKRAV

1. Fremgangsmåde til fremstilling af et staldgulvselement (100), hvor staldgulvselementet (100) indeholder i det mindste to længdebjælker (120a, 120b, 120c), som har en indbyrdes afstand og er placeret i samme plan, og som hver især indeholder en betonkerne (122a, 122b, 122c) og gummibelægninger (124a, 124b, 124c), der i det mindste delvist overdækker betonkernen (122a, 122b, 122c), hvor ved siden af hinanden liggende længdebjælker (120a, 120b, 120c) i staldgulvselementet (100) hver især er adskilt fra hinanden ved hjælp af en længdespalte (130a, 130b), hvilken fremgangsmåde omfatter følgende trin:

(a) tilvejebringelse af en støbeform (20), hvilken støbeform (20) indeholder støberum (22a, 22b, 22c), som er åbne opadtil, og som definerer formen af de i det mindste to længdebjælker (120a, 120b, 120c), der er placeret i en indbyrdes afstand, i staldgulvselementet (100);

(b) fyldning af de åbne støberum (22a, 22b, 22c) med beton op til en på forhånd fastlagt påfyldingshøjde til formning af betonkernerne (122a, 122b, 122c) i de i det mindste to længdebjælker (120a, 120b, 120c);

(c) anbringelse af gummibelægninger (124a, 124b, 124c) på overfladen af de respektive betonkerner (122a, 122b, 122c), hvor hver gummibelægning (124a, 124b, 124c) er forsynet med mindst én gennembrydning (125a, 125b, 125c), som beton fra den derunder liggende betonkerne (122a, 122b, 122c) kan trænge ind i;

(d) indpresning af gummibelægningerne (124a, 124b, 124c), der er anbragt på overfladen, i de respektive betonkerner (122a, 122b, 122c), indtil der nås en ønsket samlet højde af staldgulvselementet (100), hvor betonvolumenet af de derunder liggende betonkerner (122a, 122b, 122c), der fortrænges ved indpresningsprocessen, trænger ind i de respektive gennembrydninger (125a, 125b, 125c) og udfylder disse;

(e) fjernelse af overskydende beton, der slipper ud ved gennembrydningernes (125a, 125b, 125c) overflader; og

(f) glatstrygning af betonen ved gennembrydningernes (125a, 125b, 125c) overflade på en sådan måde, at der opstår et staldgulvselement (100) med en ensartet overflade.

2. Fremgangsmåde ifølge krav 1, ved hvilken trinnene (b) til (f) gennemføres, så længe betonen i støbeformen (20) er frisk.

3. Fremgangsmåde ifølge krav 1 eller 2, ved hvilken den på forhånd fastlagte påfyldninghøjde af den friske beton vælges afhængigt af tykkelsen af gummibelægningerne (124a, 124b, 124c), der skal indpresses, på en sådan måde, at hver gennembrydning (125a, 125b, 125c) i gummibelægningerne (124a, 124b, 124c) er udfyldt fuldstændigt med beton, når gummibelægningerne (124a, 124b, 124c) er presset ind.

4. Fremgangsmåde ifølge et af de foregående krav, der desuden omfatter tilvejebringelse af en vibrationsanordning (10), hvor støbeformen (20) anbringes på en vibrationsanordning (10) og vibreres under gennemførelsen af trin (b) og/eller trin (d).

5. Fremgangsmåde ifølge et af de foregående krav, ved hvilken gummibelægningerne (124a, 124b, 124c) i forbindelse med procestrin (d) belastes med et på forhånd fastlagt tryk.

6. Fremgangsmåde ifølge et af de foregående krav, der desuden omfatter følgende fremgangsmådetrin:

   (g) frigørelse af staldgulvselementet (100) fra støbeformen (20).

7. Fremgangsmåde ifølge krav 6, ved hvilken trinnet, der består i frigørelsen, omfatter:

   drejning af støbeformen (20), således at den fritliggende overflade af staldgulvselementet (100) peger nedad; og

   efterfølgende afforskalling af staldgulvselementet (100) nedadtil fra støbeformen (20).

8. Fremgangsmåde ifølge et af de foregående krav, ved hvilken gummibelægningerne (124a, 124b, 124c) er dimensioneret på en sådan måde, at deres bredde i det væsentlige svarer til bredden af betonkernerne (122a, 122b, 122c), der skal overdækkes, i længdebjælkerne (120a, 120b, 120c).

9. Fremgangsmåde ifølge et af de foregående krav, ved hvilken gummibelægningerne (124a, 124b, 124c) anbringes på en sådan måde i længdebjælkernes (120a, 120b, 120c) længderetning, at ved siden af hinanden liggende gummibelægninger (124a, 124b, 124c) er placeret i niveau med hinanden i længderetningen.

10. Fremgangsmåde ifølge et af de foregående krav, ved hvilken de indpressede gummibelægninger (124a, 124b, 124c) kan tages af igen efter fuldstændig hærdning af betonkernerne (122a, 122b, 122c).

11. Fremgangsmåde ifølge et af de foregående krav, ved hvilken staldgulvselementet (100) desuden omfatter i det mindste to tværbjælker (140a, 140b, 140c), der er placeret i en indbyrdes afstand og krydser de i det mindste to længdebjælker (120a, 120b, 120c), hvor tværbjælkerne (140a, 140b, 140c) kan være overdækket med gummibelægninger (124a, 124b, 124c), og hvor tværbjælkerne (140a, 140b, 140c) fremstilles samtidigt med længdebjælkerne (120a, 120b, 120c) i henhold til fremgangsmåden ifølge et af kravene 1 til 12.

12. Staldgulvselement (100), der omfatter i det mindste to længdebjælker (120a, 120b, 120c), som har en indbyrdes afstand og er placeret i samme plan, og som hver især indeholder en betonkerne (122a, 122b, 122c) og gummibelægninger (124a, 124b, 124c), der i det mindste delvist overdækker betonkernen (122a, 122b, 122c), hvor ved siden af hinanden liggende længdebjælker (120a, 120b, 120c) i staldgulvselementet (100) hver især er adskilt fra hinanden ved hjælp af en længdespalte (130a, 130b), kendetegnet ved, at hver gummibelægning er forsynet med mindst én gennembrydning, som beton fra den derunder liggende betonkerne er fyldt ind i, og at betonoverfladen af betonen, der er fyldt ind i den i det mindste ene gennembrydning, er i niveau med gummibelægningernes overflade.

13. Staldgulvselement (100) ifølge krav 12, ved hvilket gummibelægningernes (124a, 124b, 124c) overflade har en på forhånd fastlagt overfladeprofil.

14. Staldgulvselement (100) ifølge krav 12 eller 13, ved hvilket indpresningsfladen, der vender mod betonen, er glat eller profileret.

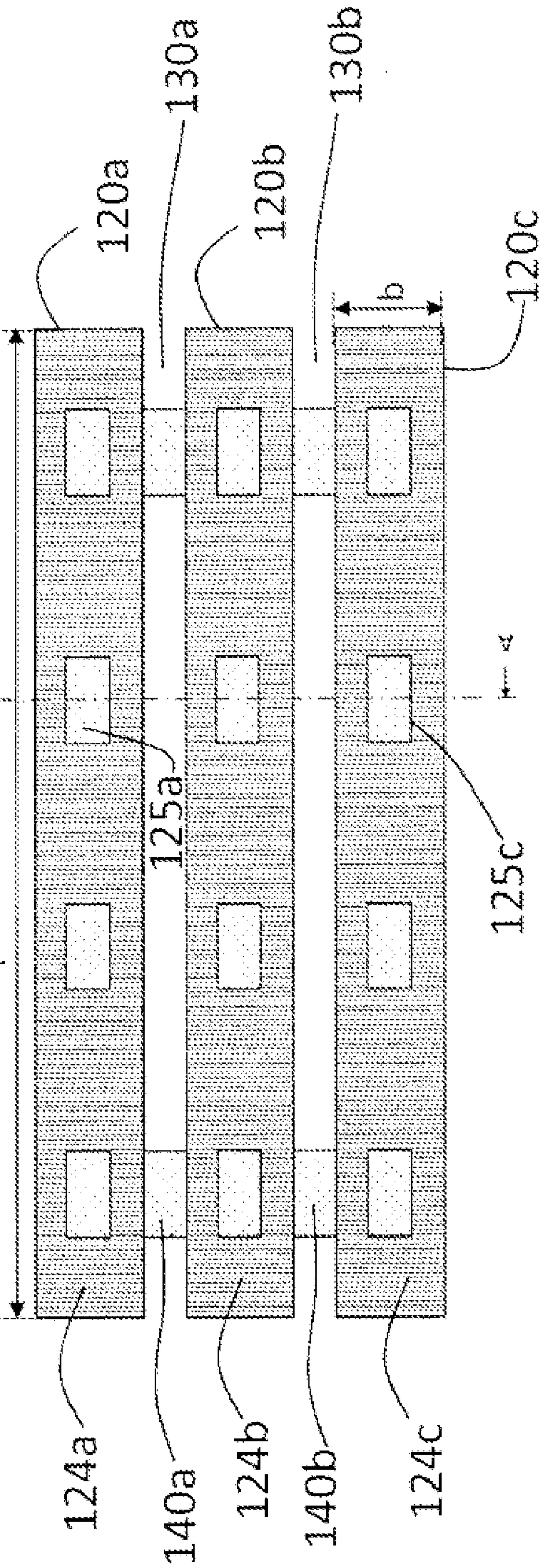
100
120a
130a
120b
130b
120c
b
l
A
A
125a
125c
124a
140a
124b
140b
124c

Fig. 1a

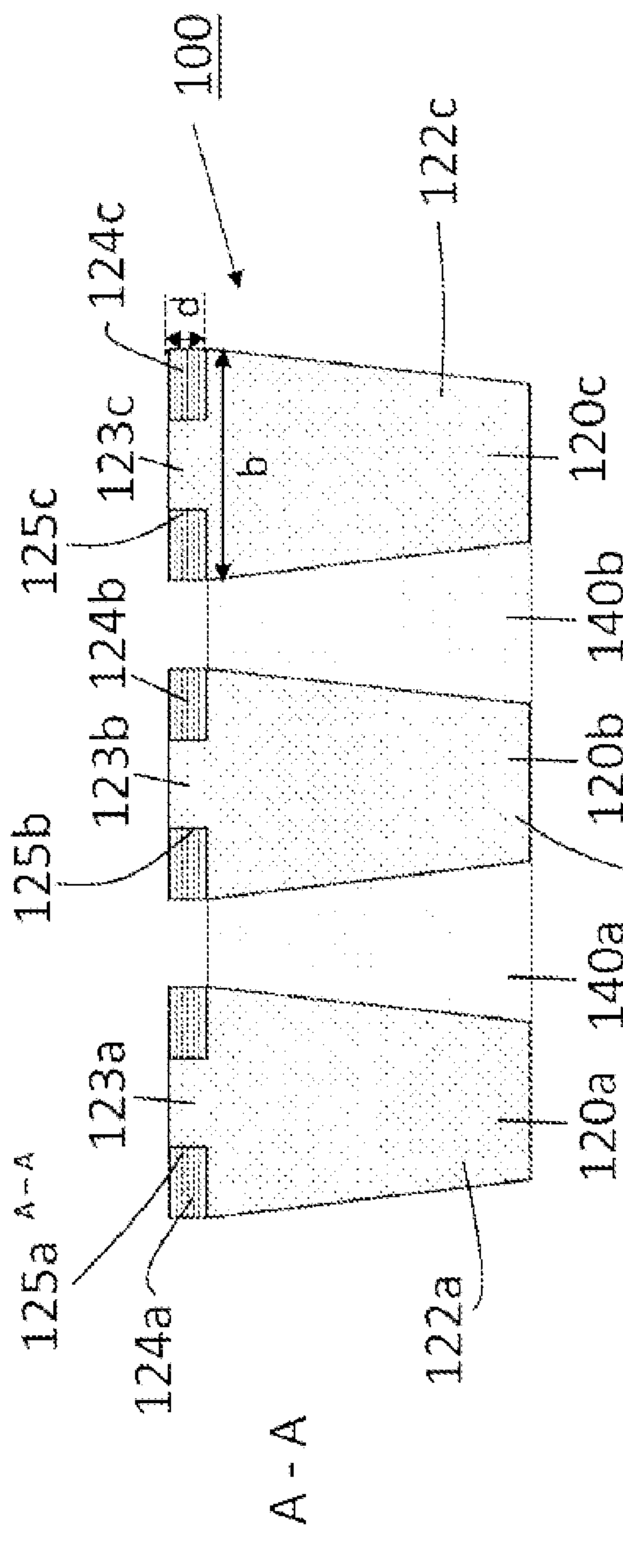
100
124c
d
122c
123c
b
120c
125c
124b
140b
123b
120b
125b
122b
140a
123a
120a
125a
A - A
124a
122a
A - A

Fig. 1b

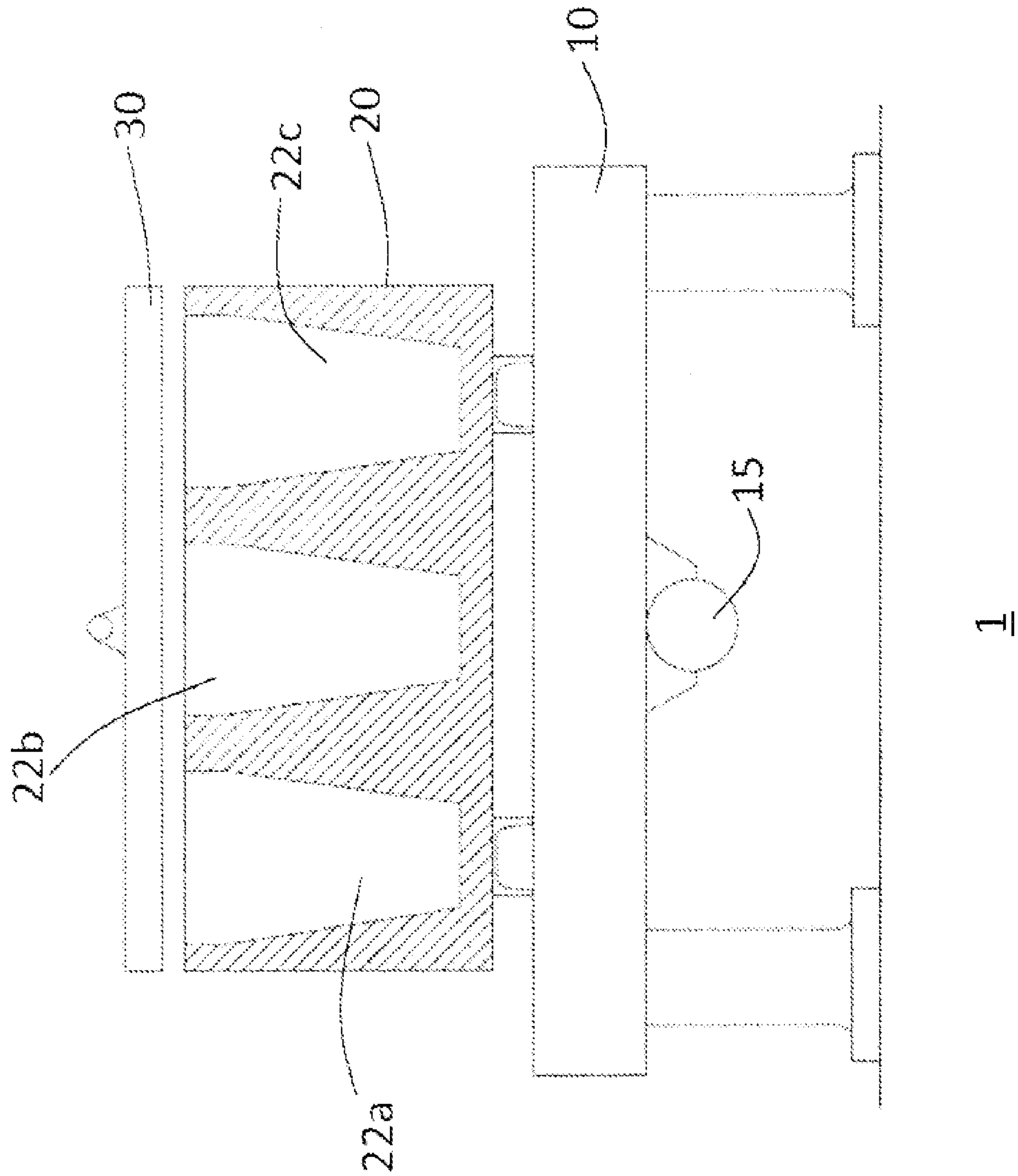

Fig. 2

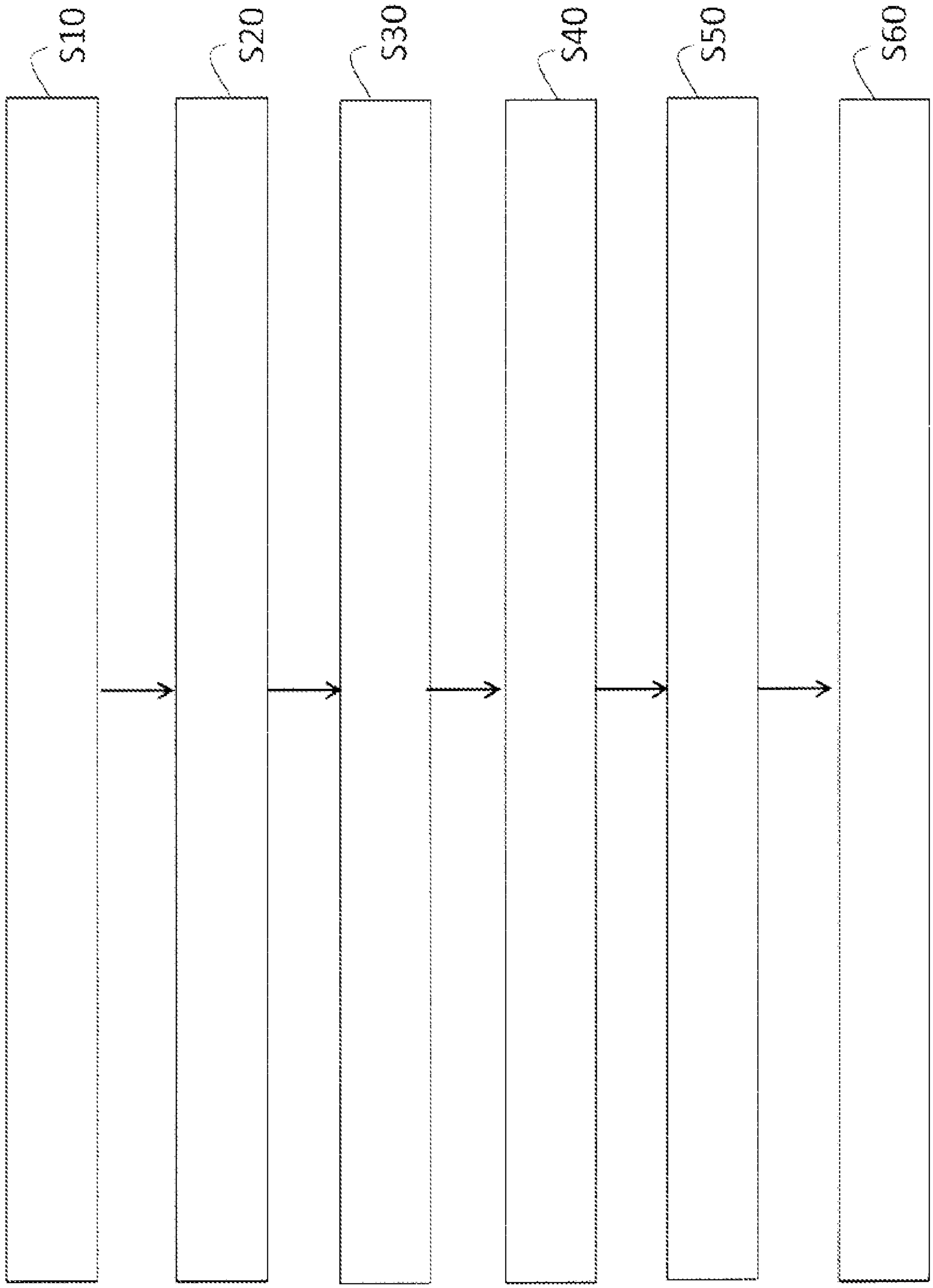

Fig. 3

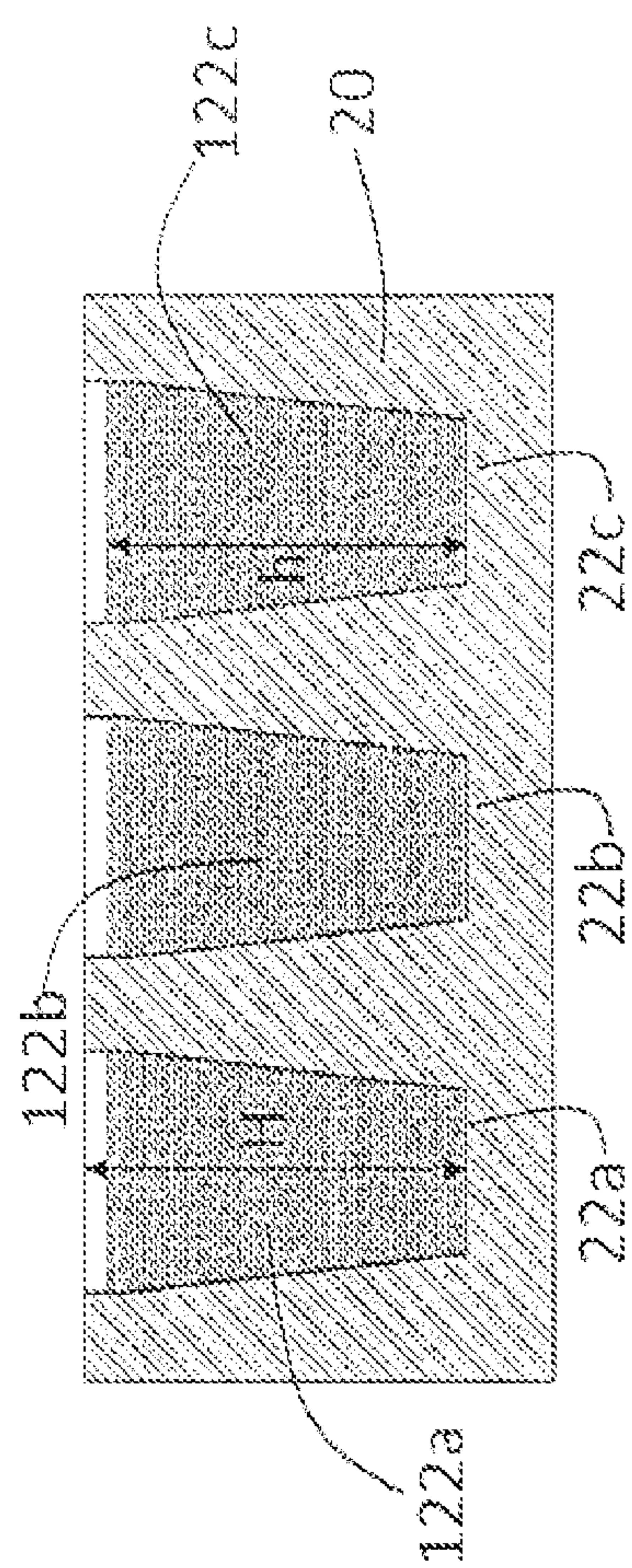

Fig. 4a

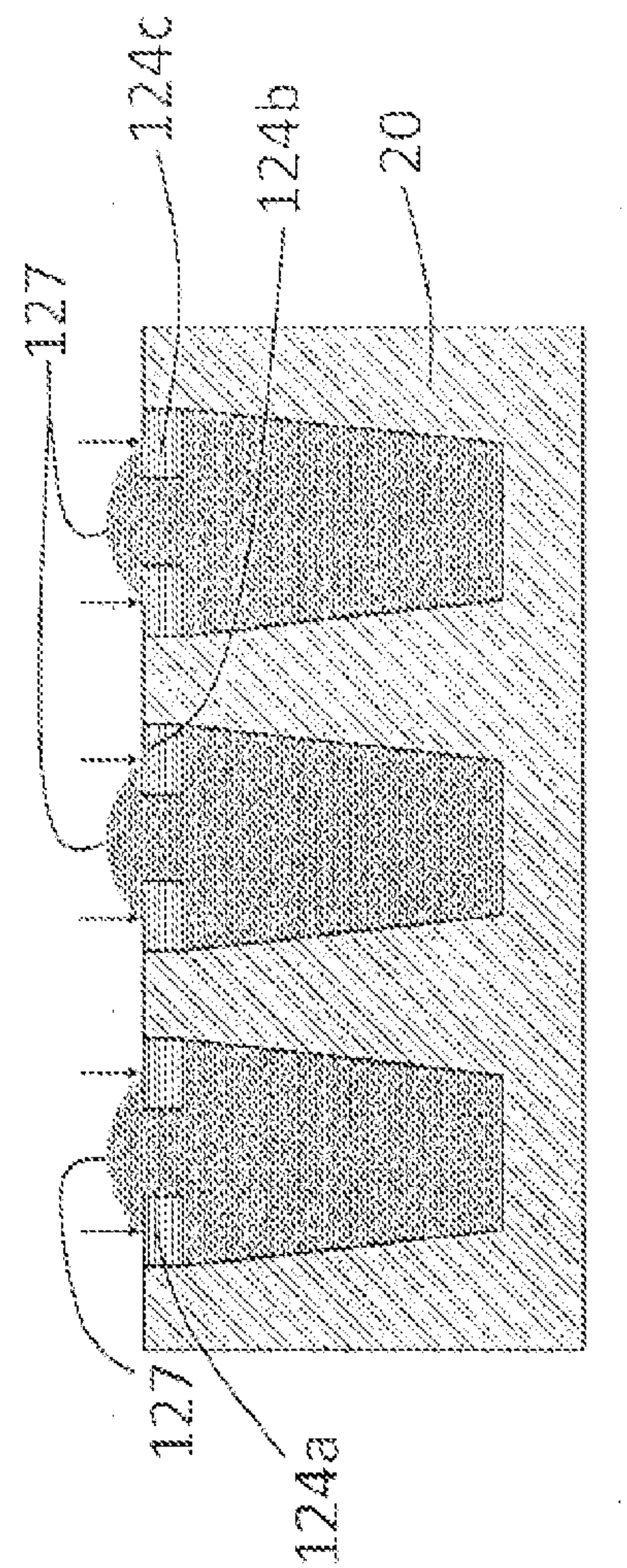

Fig. 4b

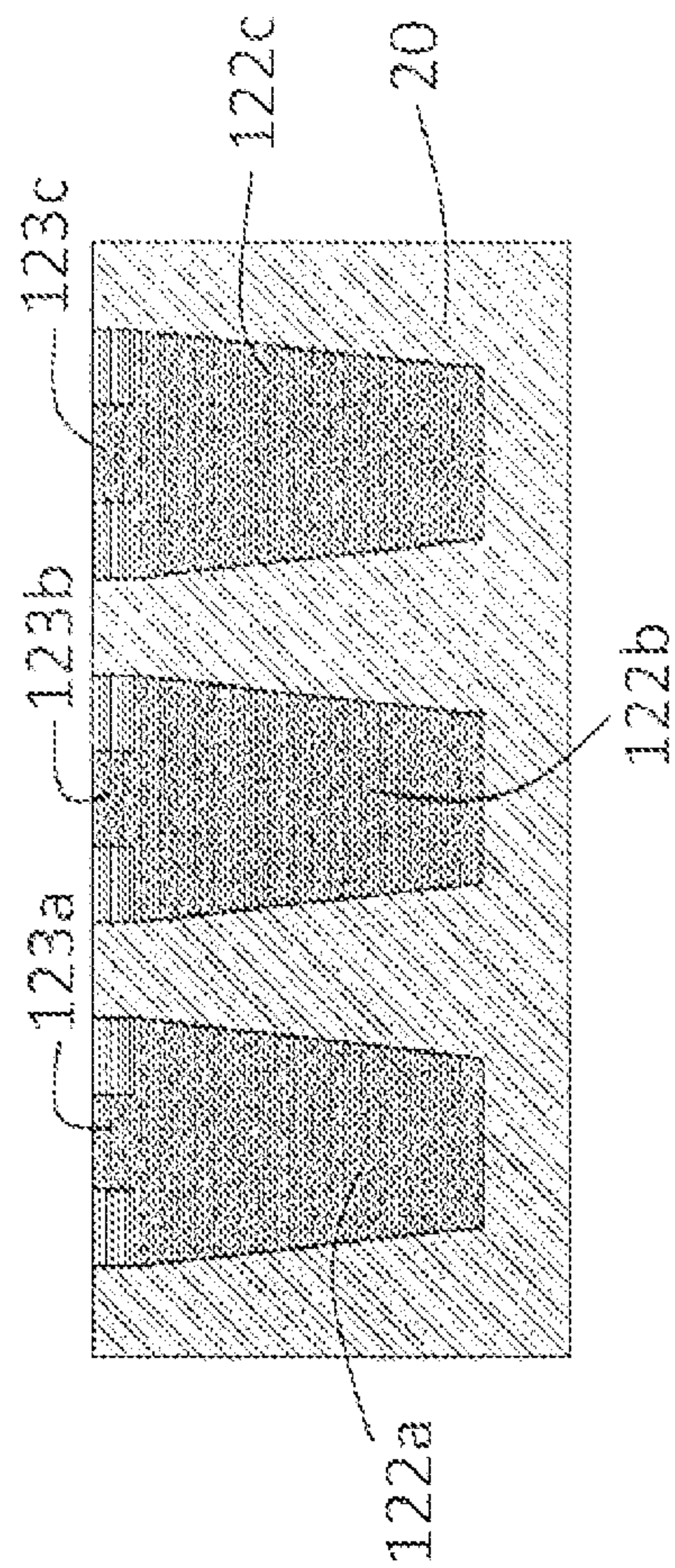

Fig. 4c