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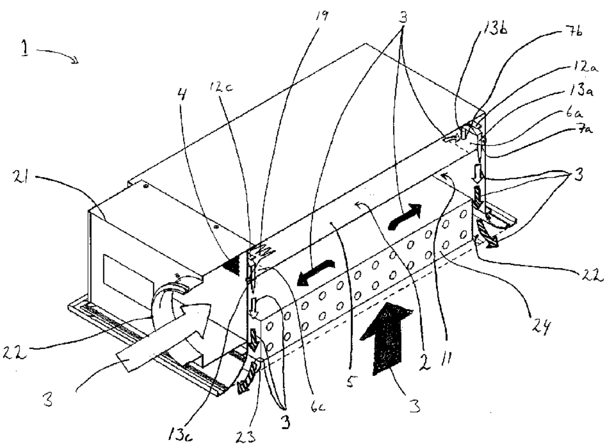
(54) Title: SUPPLY AIR TERMINAL DEVICE

Fig 1



(57) Abstract: A supply air terminal device (1) with a main chamber (2) configured to have air (3) flowing through it. The main chamber (2) comprises an inlet (4) for inflow of air (3) from a source disposed outside the supply air terminal device (1), and a bottom plate (5), which bottom plate (5) comprises air flow passages (7a, 7b) running through it for throughflow of at least part of the air (3) from an inside to an outside of the main chamber (2). An adjustable regulating element (10) is disposed in the supply air terminal device (1). The regulating element (10) comprises inside the main chamber (2) and at a distance from the airflow passages (7a, 7b) at least one beam element (12a, 12c). The beam element (12a, 12c) is connected to means (13a, 13b, 13c) with a respective direction from the beam element (12a, 12c) towards and through a respective airflow passage (7a, 7b). Each means (13a, 13b, 13c) has in its direction per unit length a narrowing cross-sectional area and is adjustable in the respective air flow passage (7a, 7b) so that a throughflow cross-section for the respective air flow passage (7a, 7b) can be adjusted between at least a first size of throughflow cross-section and at least a second size of throughflow cross-section.

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SUPPLY AIR TERMINAL DEVICE

Field of the invention

The present invention relates to a supply air terminal device configured for application to a ventilation system in order to convey air from the system into a space or room in which the supply air terminal device is situated.

Background to the invention

Supply air terminal devices are commonly used in ventilation systems for spreading and distributing air in a room. Supply air terminal devices are usually provided with a damper for regulating the inflow of air to the supply air terminal device. Such dampers are usually situated at an air intake to the supply air terminal device for an airflow from the ventilation system. Endeavours are therefore made to ensure that air dampers are so constructed or configured that the occurrence of noise may be as little as possible, but in most cases noise still arises from airflow through a valve. To reduce the risk of this and other noise being conveyed or propagated into the room where the supply air terminal device is situated, supply air terminal devices are therefore usually insulated, but the insulation reduces such noise only partly.

In supply air terminal devices as above with dampers, the damper regulates the velocity of the air leaving the flow passages provided in the supply air terminal device. In the case of supply air terminal devices which draw air up by induction from a room, this is a problem. The air leaving the airflow passages in a supply air terminal device causes negative pressure in the supply air terminal device. This negative pressure contributes to the creation of an induction effect whereby air may be drawn into the supply air terminal device from a room. There is a problem in that achieving as great an induction effect as possible requires a high negative pressure, which negative pressure depends on the velocity of the air leaving the air flow passages in the supply air terminal device. In such known configurations a large airflow is therefore necessary for achieving good induction in such supply air terminal devices. This may result not only in noise due to the high airflow but also in draughts in a room where such a supply air terminal device is situated.

In rooms where a supply air terminal device is situated, it is desirable that the air in the room be mixed with new incoming air from the supply air terminal device if good ventilation is to be achieved. A usual arrangement is therefore that the air leaves the supply air terminal device at a reasonably high velocity, so that all of the air in a room may be mixed with the incoming air from the supply air terminal device. With known supply air terminal devices, this is achieved by injecting a large volume of air into the room where the supply air terminal device is situated, but this may result, when a large air volume is blown into the room from the supply air terminal device, in a feeling of discomfort due to blowing or draughts in the room. Another known way of ventilating the air of a room with a supply air terminal device is, as mentioned above, that part of the air in a room is drawn by induction through a temperature battery situated in the supply air terminal device. The room air passing through the battery is thereafter caused to mix in the supply air terminal device with cooler new air from a ventilation system. The mixed air is thereafter led out into the adjacent room. For effective ventilation this requires the supply air terminal device to be of high induction power. To be able to have the necessary induction power, the state of the art therefore requires a large volume flow of so-called new air so that this air may thereby be at a higher velocity in order thereby to mix and carry with it the temperature-affected air from the temperature battery leaving the supply air terminal device. For high induction effect and consequently good mixing of the air in a room by such known configurations in a manner corresponding to what is described above, however, there may here again be a feeling of discomfort due to the occurrence of blowing or draughts in the room when the mixed air is injected into it from the supply air terminal device.

Summary of the invention

An object of the present invention is to overcome the aforesaid problems.

A further object of the present invention is to be able to regulate the volume and velocity of air passing through a supply air terminal device without involving any noise.

A further object of the present invention is to create a supply air terminal device whereby even small amounts of air entering a room from the supply air terminal device may be at a high velocity compared with conventional supply air terminal devices.

A further object of the present invention is that the supply air terminal device should be compact and of greater effectiveness and efficiency compared with conventional devices.

A further object of the present invention is that the velocity and passage of air through the airflow passages in the supply air terminal device should not be affected when a throughflow cross-section through the respective airflow passages is reduced.

A further object of the present invention is that it should be easy, as compared with previously known supply air devices, to regulate a flow of air leaving the supply air terminal device both in different directions and with varying volume flows.

The aforesaid and other objects are achieved according to the invention by the supply air terminal device described in the introduction being provided with the features indicated in claim 1.

An advantage achieved with a device comprising features according to claim 1 is that small air volumes can flow out from the supply air terminal device at higher velocities compared with previously known supply air terminal devices. At the same time, the occurrence of noise is reduced.

A further advantage achieved with a device comprising features according to claim 1 is that the flow of air leaving the supply air terminal device is easy to regulate. This applies both with regard to the direction of the air flow into the room and with regard to the air volume entering the room from the supply air terminal device.

A further advantage achieved with a device comprising features according to claim 1 is that the air flows from the respective sides of the supply air terminal device can be regulated as desired.

A further advantage achieved with a device comprising features according to claim 1 is that the velocity of the air flow leaving the air flow passages in the supply air terminal device is high, or unchanged, when there is reduction of the throughflow cross-section of the respective air flow passages. This makes it possible to achieve a high degree of induction or induction effect and high efficiency in the supply air terminal device.

Preferred embodiments of the device further have the features indicated in subclaims 2 – 13.

According to an embodiment of the invention, the airflow passages are of convergent spray nozzle shape. An effect of this is that the velocity of the air passing through the respective airflow passages is therefore accelerated out from the main chamber. The air is thus also provided with good guidance and stability as it travels through the supply air terminal device out from the airflow passage towards an outlet in the supply air terminal device. Inter alia, an advantage of this is that even small airflows may thus have high velocity for further movement into the room which is to be ventilated.

According to an embodiment of the invention, the bottom plate comprises edge portions and the airflow passages are provided in at least one edge portion. An effect of the air flow passages being situated in the edge portions is that a larger temperature battery as compared with the state of the art can therefore be used in the supply air terminal device, without affecting the external dimensions of the supply air terminal device.

According to an embodiment of the invention, each means has a convex outer side. An effect of this is the possibility of linear variation of the volume of the air passing through an airflow passage when the means is adjusted into and through the airflow passage. The linear increase or decrease in the air flow through the air flow passage takes place upon movement of the means into an air flow passage in and along the direction of the means through the air flow passage. When the means is moved out from the airflow passage away from the bottom plate, there is a linear increase in the airflow through the airflow passage. When the means is moved into the airflow passage towards and through the bottom plate, there is a linear decrease in the airflow through the airflow passage. This linear increase and decrease may be regulated manually by level control means provided with a graduated scale to make it possible to see visually what air flow the supply air terminal unit is set at.

According to an embodiment of the invention, each means has a free end disposed opposite to the beam element which is rounded. An effect of this is that there is constant endeavour to ensure that at least part of the means is in the airflow passage. The purpose of this is to prevent the occurrence of noise.

According to an embodiment of the invention, each means is disposed in the respective airflow passage in such a way that the means is not necessarily centred in the airflow passage. An effect of this is that manufacturing tolerances need not be so exact, thereby reducing the device's manufacturing costs, inter alia because of there being no need to spend time on checking any said tolerances. The throughflow cross-section through an airflow passage does not depend on whether the means is centred or not.

According to an embodiment of the invention, the air flows into an outlet chamber as it passes through the airflow passages. An effect of this is that the air undergoes a pressure drop by passing through the airflow passages. As the air passes through the airflow passages into the outlet chamber, the result is therefore negative pressure in the outlet chamber. A further effect is that the velocity of the air is accelerated as it passes through, because of the spray nozzle shape of the airflow passages.

According to an embodiment of the invention, an air spreader is provided in the outlet chamber. An effect of an air spreader being provided in the supply air terminal device is that the air can thus be angled from the terminal device as it enters a room. A further result is a Coanda effect on the air flowing out into the room from the supply air terminal device. The Coanda effect causes the air to flow along the ceiling and not straight down into the room. The result is better spread of the air entering the room from the supply air terminal device.

According to an embodiment of the invention, at least one temperature battery is provided in the outlet chamber. By induction effect, airflow from the room, so-called room air, flows into and through the temperature battery to the supply air terminal device. This is due inter alia to the aforesaid negative pressure in the outlet chamber. A result of using induction effect in the supply air terminal device is that the room air can thus be effectively mixed and temperated with new air before being reintroduced into the room together with the new air. A further consequence is that the new air, which is most commonly at a lower temperature than the room air at the time of mixing with the room air, is thereby prevented, by its weight when leaving the supply air terminal device, from dropping down to the floor of the room. This is because cold air is heavier than warm air, causing cold air to move downwards.

According to an embodiment of the invention, the regulating element comprises level control means. One effect of the level control means is that they are provided with a graduated scale. The scale indicates, inter alia at the time of adjustment, the magnitude of the volume of air flowing through the respective airflow passages. Adjusting the level control means will cause linear variation in the flow of air from the respective airflow passages. The scale is so arranged that when the level control means are set at a distance along their scale the air flow through the respective air flow passage or the whole supply air terminal device can be read off. The scale also makes it possible to read off the airflow leaving the supply air terminal device in a chosen direction.

According to an embodiment of the invention, the level control means are connected to at least an end portion of the respective beam elements. An effect of this is that the end portions of a beam element can therefore be set at different heights above the airflow passages. This makes it possible to set so that the air throughflow is greater, or smaller, through different parts of the bottom plate. This is because the respective means provided on the beam element thus become disposed at varying levels inside the respective airflow passages.

According to an embodiment of the invention, each level control means extends from the respective connected end portion, through a recess in the bottom plate, to at least one fixing element disposed on the supply air terminal device. An effect of this is that it is possible to fix each means at a desired position in the respective airflow passage.

According to an embodiment of the invention, the air passing through the supply air terminal device during operation undergoes a first main pressure drop when the air passes through the air flow passages from the main chamber to the outlet chamber. An effect of this is that the pressure drop takes place just before the air is to be led out into the room, which means that a smaller air volume at high velocity can be led into the room. The high air velocity means that a smaller air volume as compared with previous configurations will be sufficient for effectively mixing and ventilating a room which contains unmixed air.

Brief description of the drawings

Preferred embodiments of the device according to the invention are described below in more detail with reference to the attached schematic drawings, which only show the parts which are necessary for understanding the invention.

Fig. 1 depicts a partly cutaway view of a supply air terminal device with airflows indicated.

Fig. 2 depicts a view of a supply air terminal device with part of the outer casing removed.

Fig. 3 depicts part of a beam element together with means for airflow passages disposed in part of a bottom plate.

Figs. 4 – 6 depict means disposed at various levels through an airflow passage.

Fig. 7 depicts a cross-section through an alternative embodiment of a supply air terminal device with airflows indicated.

Detailed description of preferred embodiments of the invention

Fig. 1 depicts part of a supply air terminal device (1) via a cross-section through the supply air terminal device (1). The supply air terminal device (1) according to the diagram is adapted to being situated in a ceiling of a room (the ceiling is not depicted). The supply air terminal device (1) is adapted to having air (3) flowing through it. The air (3) reaches the supply air terminal device (1) from a source, e.g. a ventilation system, via ducts or pipes (not depicted). After the air (3) has passed through the supply air terminal device (1), the supply air terminal device (1) is adapted to leading the air (3) into the room adjacent to the supply air terminal device (1). The air in the room will thus be ventilated by the air (3) from the supply air terminal device (1) and mixed with "new" air. The supply air terminal device (1) comprises an inlet chamber (21) which the air (3) primarily reaches before it passes through the remainder of the supply air terminal device (1). The inlet chamber (21) is disposed against a wall element which is adjacent to a main chamber (2) in the supply air terminal device (1). The inlet chamber (21) is provided with a main aperture (22). The main aperture (22) has the air (3) from the source flowing through it. An inlet (4) to the main chamber (2) is provided inside the inlet chamber (21). The air (3) from the source is led through the supply air terminal device (1) into the inlet chamber (21) via the main aperture (22). The air (3) is led into the supply air terminal device (1) from the inlet chamber (21) via the inlet (4).

In the drawings which have arrows representing air, air which reaches the supply air terminal device from the source and has not been mixed with other air from, for example, a room is represented by white arrows. Air which enters the supply air terminal device from a room and has not been mixed with air from the source is represented by black arrows. Air which in the supply air terminal device is a mixture of air from the source and air from the room is represented by black-and-white striped arrows.

The inlet (4) is provided with a perforated plate through which the air (3) passes. The wall element comprising the inlet (4) divides the inlet chamber (21) from the main chamber (2). A turbulence-creating means (19) is disposed inside the main chamber (2) along said wall element. When the air (3) passes the turbulence-creating means (19), turbulence is created in the incoming air (3) inside the main chamber (2). The turbulence imparts to the air (3) a substantially uniform spread inside the main chamber (2). In the preferred embodiment, the shape of the turbulence-creating means (19) may be likened to a saw-tooth pattern.

A bottom plate (5) is disposed inside the main chamber (2). The bottom plate (5) divides the main chamber (2) from an outlet chamber (11). The bottom plate (5) comprises edge portions (6a, 6b, 6c, 6d) which extend round the peripheral region of the bottom plate (5) (the drawing shows only 6a and 6c). The edge portions (6a, 6b, 6c, 6d) are adjacent to, and preferably connected to, wall elements of the supply air terminal device (1). Airflow passages (7a, 7b, 7c) are provided in the edge portions (6a, 6b, 6c, 6d) (the drawing shows only 7a and 7b). In this specification, only three of the airflow passages (7a, 7b, 7c) are given reference notations. This does not mean that there are only three airflow passages. The drawings (see Figs. 2 and 3) show that a plurality of air flow passages, more than three, are provided in the edge portions (6a, 6b, 6c, 6d). The width of each edge portion (6a, 6b, 6c, 6d) is defined by the diameter of the respective airflow passage (7a, 7b, 7c). This means that each edge portion (6a, 6b, 6c, 6d) has to have a width, as seen in a perpendicular direction from the adjacent wall element towards the edge portion (6a, 6b, 6c, 6d), which is larger than the diameter of the respective air flow passage (7a, 7b, 7c) disposed in the respective edge portion (6a, 6b, 6c, 6d). The purpose of this is that there should be space for an airflow passage (7a, 7b, 7c) in the edge portion (6a, 6b, 6c, 6d).

A regulating element (10) is disposed adjustably inside the supply air terminal device (1). The regulating element (10) comprises at least one beam element (12a, 12b, 12c, 12d). In the preferred embodiment, four beam elements (12a, 12b, 12c, 12d) (the drawing shows only 12a and 12c) are mutually disposed to form a framelike structure in the shape of a quadrilateral. Each beam element (12a, 12b, 12c, 12d) comprises an end portion (not depicted), and in the preferred embodiment these end portions are connected to one another to form said framelike structure. The beam element is disposed inside the main chamber at a distance from the airflow passages (7a, 7b, 7c) in the edge portions (6a, 6b, 6c, 6d).

The regulating element (1) comprises not only the respective beam elements (12a, 12b, 12c, 12d) but also means (13a, 13b, 13c). Said means (13a, 13b, 13c) have one end disposed against the beam element (12a, 12b, 12c, 12d) and point away from the beam element (12a, 12b, 12c, 12d) towards and through an airflow passage (7a, 7b, 7c). The direction of each means (13a, 13b, 13c) from the beam element is perpendicular to the beam element (12a, 12b, 12c, 12d) and perpendicular to a plane in which the edge portion of the bottom plate is disposed. Another end of the means is free. The means has in the direction per unit length a narrowing cross-sectional area. The direction of each means (13a, 13b, 13c) is defined from the beam element (12a, 12b, 12c, 12d) with which the means (13a, 13b, 13c) is associated and in the extension through the free end of the means (13a, 13b, 13c).

At least one temperature battery (24) is disposed in the outlet chamber (11). The temperature battery (24) cools or warms room air which is drawn up from the room into the supply air terminal device (1) by induction. Inside the outlet chamber (11), the temperature-affected air which has passed through the temperature battery (24) is led out from the room towards the wall elements of the supply air terminal device (1). The air (3) which has passed through the airflow passages (7a, 7b, 7c) in the bottom plate (5) flows adjacent to the wall elements. The temperature-affected air from the temperature battery (24) will here mix with the air (3) from the air flow passages (7a, 7b, 7c) and be carried out into the adjacent room with it through a main aperture (22) of the supply air terminal device (1).

An air spreader (23) is provided in or at the main aperture (22). The air spreader (23) diverts the air (3) out into the room from the supply air terminal device (1). Using an air spreader (23) makes it possible for the size of a temperature battery (24) to be optimised to provide as large a throughflow cross-section as possible. In the supply air terminal device (1), the air (3) from the air flow passages (7a, 7b, 7c) and air from the room flow through the temperature battery (24) along wall portions of the outlet chamber (11), in a substantially vertical direction, down towards the air spreader (23) which diverts the air (3) into the room (see striped arrows). As the flow of air in the supply air terminal device (1) inside the outlet chamber (11) takes place along said wall portions of the outlet chamber (11), the size of a temperature battery (24) may be such that it leaves a passage between it and said wall elements inside the outlet chamber (11).

Fig. 2 depicts a supply air terminal device according to Fig. 1 with two wall elements and an upper portion removed to make the inside of the supply air terminal device (1) clearer.

Fig. 2 shows the regulating element (10) adapted to being adjustable by level control means (16a, 16b, 16c, 16d) (16d is not depicted). Each level control means (16a, 16b, 16c, 16d) extends from an end portion of the respective beam element (12a, 12b, 12c, 12d). In the preferred embodiment, a level control means (16a, 16b, 16c, 16d) is disposed at each corner of the framelike structure composed of connected beam elements (12a, 12b, 12c, 12d). The respective level control means (16a, 16b, 16c, 16d) extend from said beam elements (12a, 12b, 12c, 12d) in a direction parallel to the respective means (13a, 13b, 13c) from the beam elements (12a, 12b, 12c, 12d), through an aperture in the bottom plate (5), to a fixing element (18a, 18b, 18c, 18d) disposed in the outlet chamber (11) (18d is not depicted). Each corner region of the bottom plate (5) is provided with a respective recess for leading the respective level control means through (16a, 16b, 16c, 16d). An alternative to installing the fixing elements (18a, 18b, 18c, 18d) may also be to provide at least one fixing element in or below the main aperture (22) of the supply air terminal device (1) (not depicted). Each level control means (16a, 16b, 16c, 16d) may extend a short distance out into the room from the main aperture (22) to facilitate adjustment of the supply air terminal device.

Fig. 3 depicts part of a beam element (12a, 12b, 12c, 12d) according to the invention provided with a number of the previously mentioned means (13a, 13b, 13c). Each means (13a, 13b, 13c) is firmly connected to the beam element (12a, 12b, 12c, 12d). In the preferred embodiment, the beam element (12a, 12b, 12c, 12d) and the means (13a, 13b, 13c) are made of the same material. The means (13a, 13b, 13c) has a direction from the beam element (12a, 12b, 12c, 12d) towards and through the respective airflow passage (7a, 7b, 7c) provided in the bottom plate (5). The direction of each means (13a, 13b, 13c) from the beam element is perpendicular to the beam element (12a, 12b, 12c, 12d) and perpendicular to the plane in which the bottom plate is disposed. The beam element (12a, 12b, 12c, 12d) has a web in the form of a truss. This makes it possible for the weight and amount of material of the beam elements (12a, 12b, 12c, 12d) to be reduced to a minimum during manufacture, while at the same time their flexural and strength characteristics can be maintained, making it possible inter alia to minimise material costs. Each means (13a, 13b, 13c) has a cross-sectional area which narrows per unit length in said direction for the respective means (13a, 13b, 13c). The outside of each means (13a, 13b, 13c) is convex on the narrowing portion. Said cross-sectional area through the respective means is to be seen as situated in a plane parallel with the bottom plate.

The airflow passages (7a, 7b, 7c) in the bottom plate (5) according to the preferred embodiment are of convergent spray nozzle shape. This makes it possible for the air (3) passing through the airflow passages from the main chamber (2) to be accelerated to a higher velocity inside the underlying outlet chamber (11).

Fig. 3 has arrows showing what the airflow through an airflow passage looks like. After passing through the airflow passage, the air flows straight along a central axis through the respective airflow passage.

Figs. 4a and 4b depict the means (13a) in a first position in which the throughflow cross-section (9a) is at maximum open. Part of the narrowing free end of the means (13a) is situated in the airflow passage (7a). The fact that a small portion of the means (13a) is situated in the airflow passage (7a) reduces the risk of noise when the air passes through the airflow passage (7a).

Figs. 5a and 5b depict the means (13a) in a position adjusted from the position in Figs. 4a and 4b so that the throughflow cross-section (9a) is approximately 60% open. A larger portion of the narrowing free end of the means (13a) is situated in the airflow passage (7a). In this position the means (13a) has a larger cross-sectional area and therefore fills more of the throughflow cross-section (9a) of the airflow passage (7a).

Figs. 6a and 6b depict the means (13a) in a position further adjusted from the position in Figs. 5a and 5b so that the throughflow cross-section (9a) is approximately 30% open.

In Fig. 6a the lower portion of the means is ringed by a broken circle (25). This is to show that the free end of the respective means (13a, 13b, 13c) takes the form of a spigotlike element, a so-called spigot, pointing in the direction of the means (13a, 13b, 13c). This spigot is a concave elongation from the means. In other words, the transition from the means to this spigot is concave. When the air flows passage (7a, 7b, 7c) is at maximum open, the means is so disposed that relative to the airflow passage (7a, 7b, 7c) the spigot extends through the airflow passage or substantially through the airflow passage (7a, 7b, 7c), as clearly illustrated in Fig. 4a. Noise is thus prevented when air flows through the air flow passage (7a, 7b, 7c).

When the position of the respective means (13a, 13b, 13c) is adjusted inside the respective airflow passage (7a, 7b, 7c) there is a relationship between the length of the respective level control means (16a, 16b, 16c, 16d) and the convex outside of the respective means (13a, 13b, 13c). The relationship is such that adjusting the position of a means (13a, 13b, 13c) in the direction inside an airflow passage (7a, 7b, 7c) results in linear change in the volume of air passing through the airflow passage (7a, 7b, 7c).

The level control means (16a, 16b, 16c, 16d) are provided with a scale to render them progressively adjustable to a desired level relative to the fixing element (18a, 18b, 18c, 18d). This adjustment is effected manually. An alternative is to provide an automatic device which makes it possible for the adjustment to be automated.

Fig. 7 depicts an alternative embodiment of a supply air terminal device (101). Fig. 7 shows a cross-section through an alternative supply air terminal device (101). Air (103) flows into the main chamber (102) from an external source as above. Inside the main chamber (102), the air (103) passes through airflow passages (107a, 107b) provided in a bottom plate (105) inside the main chamber (102). Regulating elements (110) are disposed inside the main chamber (102) and comprise beam elements (112a, 112b). Means (113a, 131b) are disposed from each beam element (112a, 112b). In the same way as previously described, each means (113a, 113b) is disposed adjustably in the respective airflow passage (107a, 107b). The main chamber (102) is adjacent, on the other side of the bottom plate (105), to an outlet chamber (111). A temperature battery (124) as previously described is disposed in the outlet chamber (111). The air (103) is led through the supply air terminal device (101) from a source (represented by white arrows in Fig. 7), passes through the bottom plate and enters the outlet chamber (111). Inside the outlet chamber (111), air (represented by black arrows in Fig. 7) from an adjacent room which is to be ventilated is drawn by induction effect into the outlet chamber (111) through the temperature battery (124). The air from the room (black arrows) which has passed through the temperature battery (124) is thereafter led towards the wall portions of the supply air terminal device. The air from the temperature battery mixes at and along the wall portions with the air which sprays out from the air flow passages (107a, 107b, 107c) to constitute mixed air (represented by striped arrows in Fig. 7). The mixed air (striped arrows) is thereafter led out into an adjacent room via a main aperture (122) for ventilation of that room. The main aperture (122) is situated in the outlet chamber (111). An air spreader (123) is provided in the outlet chamber (111).

The invention is not limited to the embodiments depicted but may be varied and modified within the scope of the claims set out below, as partly described above.

CLAIMS

1. A supply air terminal device (1, 101) with a main chamber (2, 102) configured for air (3, 103) to flow through, which main chamber (2, 102) comprises an inlet (4, 104) for inflow of air (3, 103) from a source disposed outside the supply air terminal device (1, 101), a bottom plate (5, 105), which bottom plate (5, 105) has air flow passages (7a, 7b, 7c, 107a, 107b) passing through it for throughflow of at least part of the air from an inside to an outside of the main chamber (2, 102), which supply air terminal device comprises (1, 101) an adjustable regulating element (10, 110), which regulating element (10, 110) comprises inside the main chamber (2, 102) and at a distance from the air flow passages (7a, 7b, 7c, 107a, 107b) at least one beam element (12a, 12b, 12c, 12d, 112a, 112b), which beam element (12a, 12b, 12c, 12d, 112a, 112b) is connected to means (13a, 13b, 13c, 113a, 113b) with a respective direction from the beam element (12a, 12b, 12c, 12d, 112a, 112b) towards and through a respective air flow passage (7a, 7b, 7c, 107a, 107b), each of which means (13a, 13b, 13c, 113a, 113b) has in its direction per unit length a narrowing cross-section area and is adjustable in the respective air flow passage (7a, 7b, 7c, 107a, 107b), whereby a throughflow cross-section (9a, 9b, 9c) for each air flow passage (7a, 7b, 7c, 107a, 107b) can be adjusted between at least a first size of throughflow cross-section and at least a second size of throughflow cross-section.

2. A supply air terminal device (1) according to claim 1, in which the airflow passages (7a, 7b, 7c) are of convergent spray nozzle shape.

3. A supply air terminal device (1) according to either of claims 1 and 2, in which the bottom plate (5) comprises edge portions (6a, 6b, 6c, 6d), at least one of which has airflow passages (7a, 7b, 7c) in it.

4. A supply air terminal device (1) according to any one of claims 1 – 3, in which each means (13a, 13b, 13c) has a convex outer side.

5. A supply air terminal device (1) according to any one of claims 1 – 4, in which each means (13a, 13b, 13c) has a free end disposed opposite to the beam element which is rounded.

6. A supply air terminal device (1) according to any one of claims 1 – 5, in which the air (3) flows into an outlet chamber (11) as it passes through the airflow passages (7a, 7b, 7c).

7. A supply air terminal device (1) according to claim 6, in which an air spreader (23) is disposed in the outlet chamber (11).

8. A supply air terminal device (1) according to either of claims 6 and 7, in which at least one temperature battery (24) is provided in the outlet chamber (11).

9. A supply air terminal device (1) according to claim 8, in which room air flows from the room into and through the temperature battery (24) to the supply air terminal device (1) by induction effect.

10. A supply air terminal device (1) according to any one of claims 1 – 9, in which the regulating element (10) comprises level control means (16a, 16b, 16c, 16d).

11. A supply air terminal device (1) according to claim 10, in which the level control means (16a, 16b, 16c, 16d) are connected to at least one end portion of the respective beam elements (12a, 12b, 12c, 12d).

12. A supply air terminal device (1) according to either of claims 10 and 11, in which each level control means (16a, 16b, 16c, 16d) extends from the respective connected end portion, through a recess in the bottom plate (5), to at

least one fixing element (18a, 18b, 18c, 18d) disposed on the supply air terminal device (1).

13. A supply air terminal device (1) according to any one of claims 1 – 12, in which the air (3) passing through the supply air terminal device (1) during operation undergoes a first substantial pressure drop when the air (3) passes through the air flow passages (7a, 7b, 7c) from the main chamber (2) to the outlet chamber (11).

Fig 1

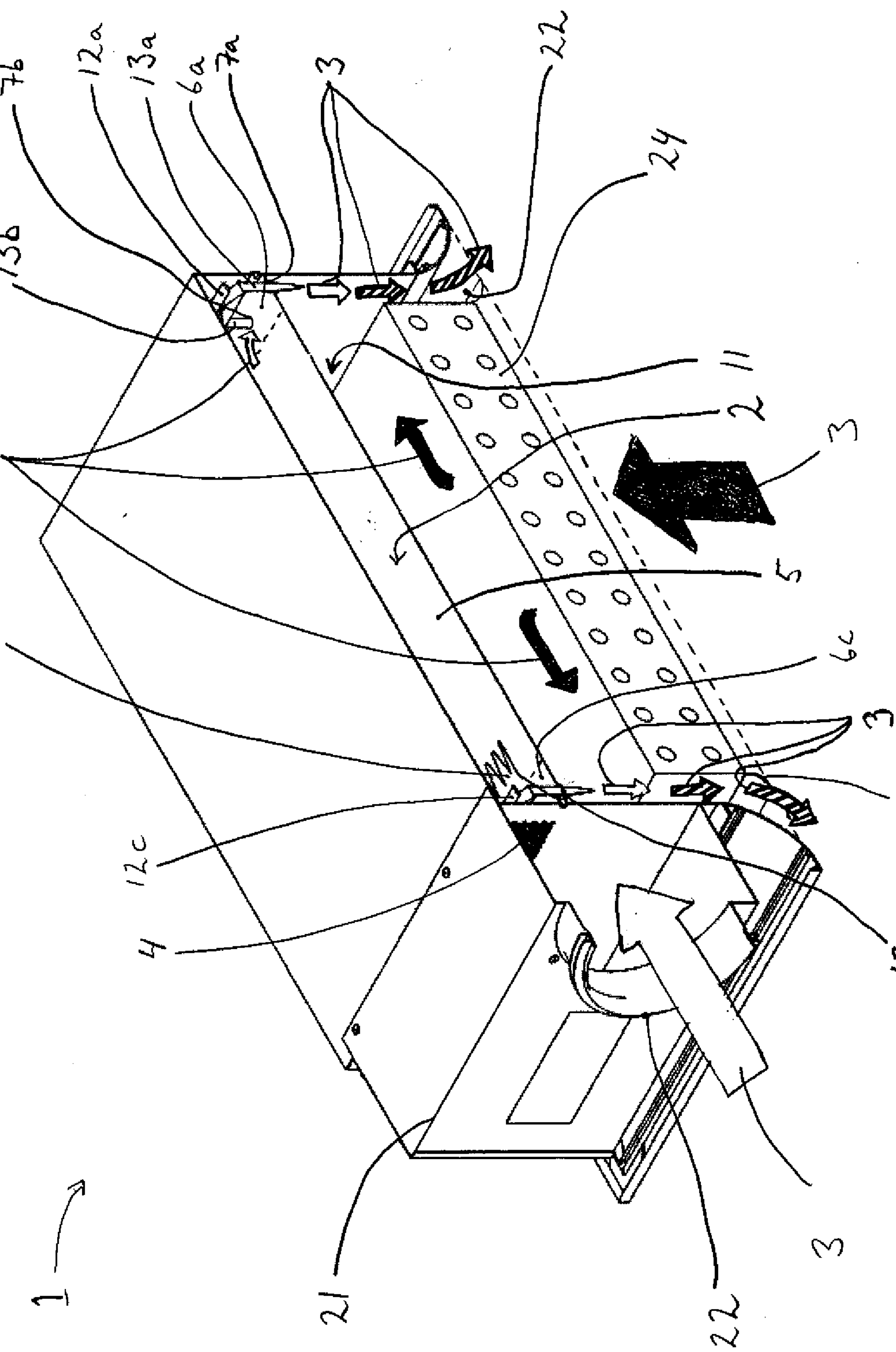
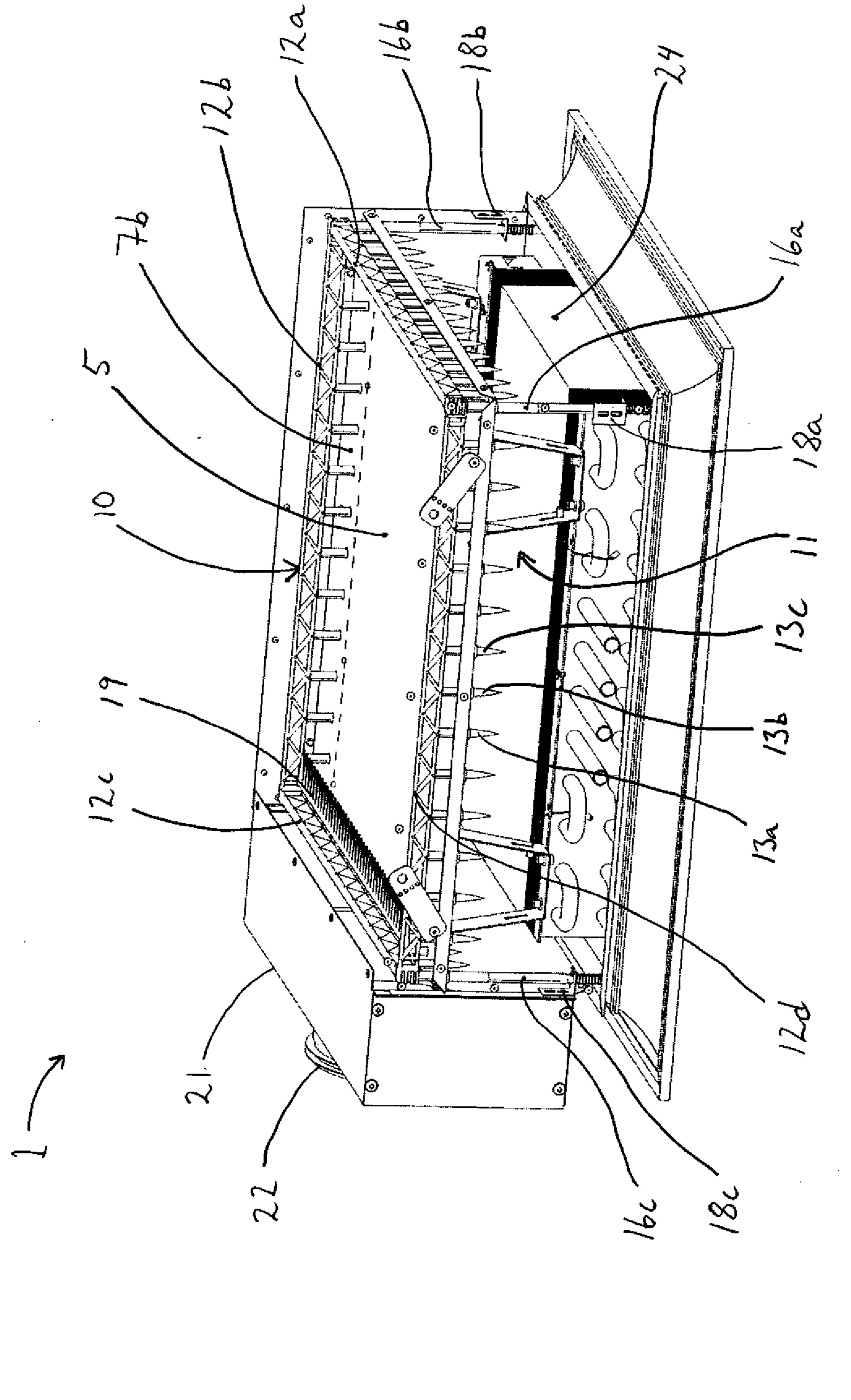


Fig 2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21
16c
18c
12c
19
10
5
7b
12b
12a
16b
18b
24
16a
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11
13c
13b
13a
12d

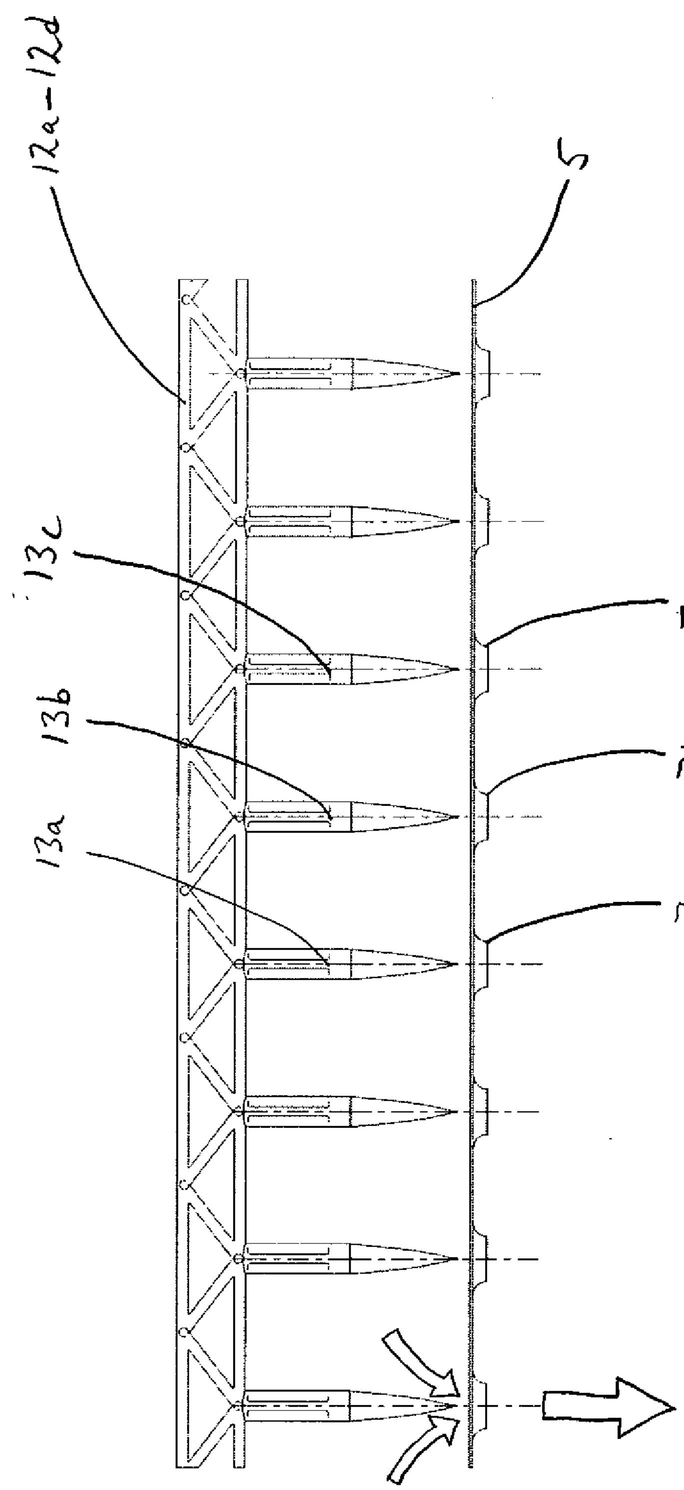


Fig 3

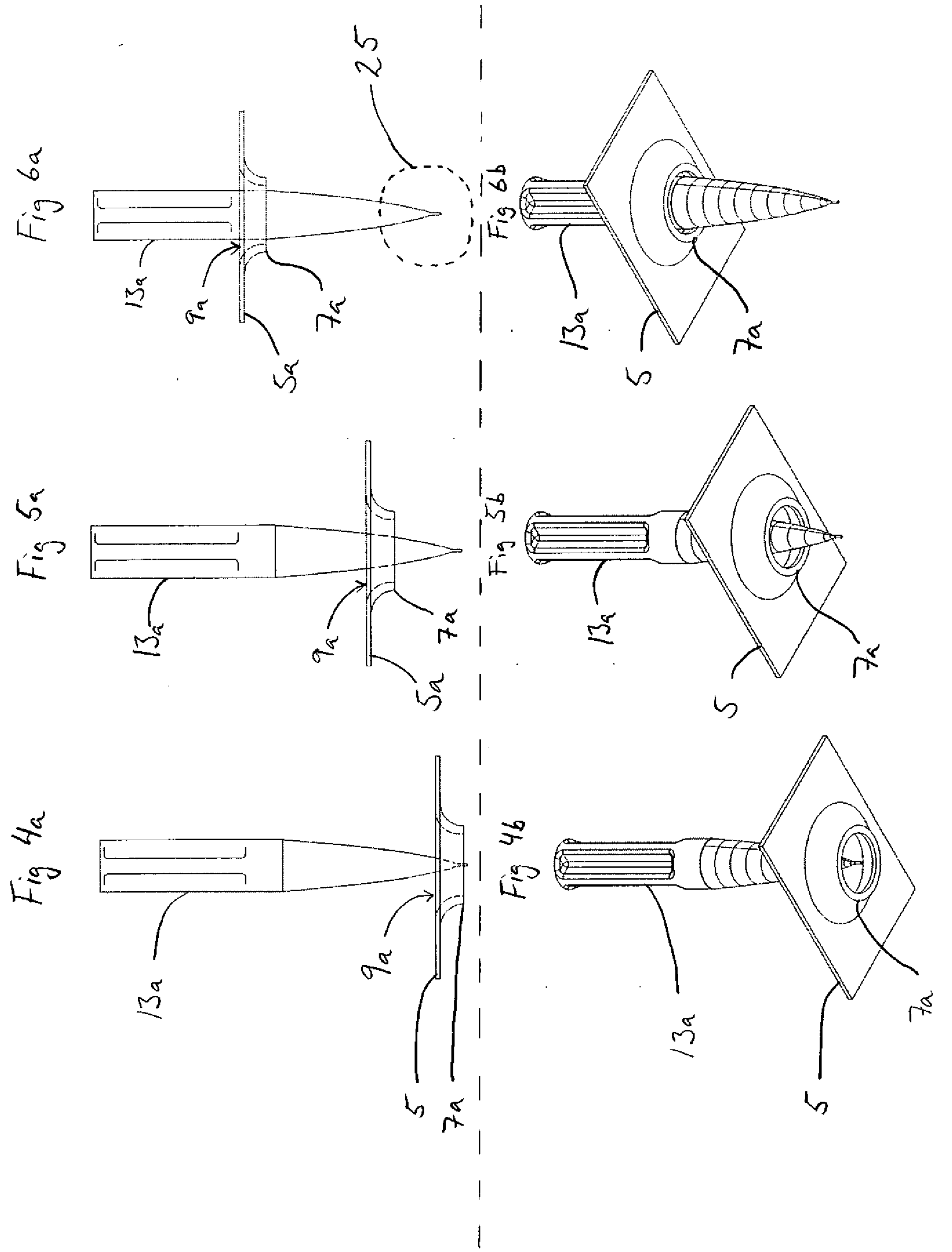
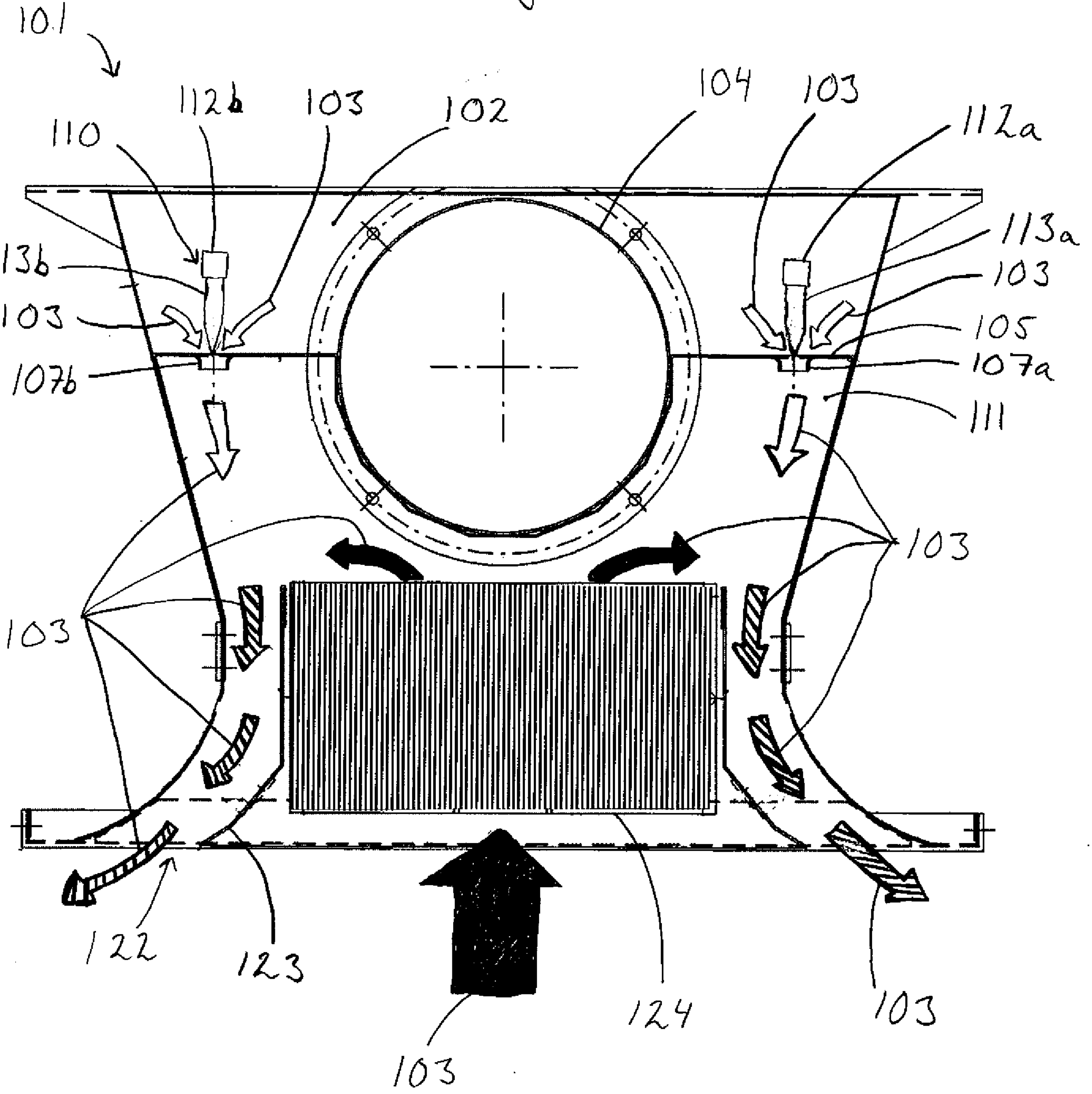


Fig 6a
25
13a
9a
7a
5a
Fig 6b
13a
5
7a
Fig 5a
13a
9a
7a
5a
Fig 5b
13a
5
7a
Fig 4a
13a
9a
5
7a
Fig 4b
13a
5
7a

Fig 7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123
124
103
103