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[TIDE] Aerosol protection device and Aerosol protection arrangement

[AB_DE] The invention relates to an aerosol protection device, having a base body, a surface element and an air guide unit, the base body carrying the surface element, which has a support frame and a Cutting disk unit with a first and a second cutting disk, which are spaced apart and arranged vertically and essentially plane-parallel to one another and form a space between the panes that is open upwards and downwards and a first and second room air zone on the outside, wherein the air guide unit, a first and a second air extraction unit, one Blower unit, an air treatment unit and an air output unit, each of the air extraction units being assigned to one of the room air zones and designed to extract return air separately from there , the air treatment unit being designed to reduce microbiological contamination of the return air and to provide clean air therefrom , wherein the air dispensing unit has an outlet air duct and an air outlet, wherein the space between the panes forms a section of the outlet air duct and an upper opening in the space between the panes forms the air outlet and the air output unit above the air outlet forms a vertical, flat air shield using the clean air trains, the the both Room air zones from each other separates. The invention regards further an aerosol protection arrangement with multiple aerosol protection devices.

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Description

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[0001] The invention regards one contraption and one arrangement for the Protection before Aerosols.

Various devices for separating areas in rooms to protect against microbiologically contaminated air and thus against infections are known from the prior art.

[0003] Thus, some prior art solutions relate to shielding infectious patients. These solutions are intended to prevent the transmission and spread of bacteria or viruses that enter the ambient air as aerosols.

[0004] In CN 111 735 136 A is for example one Solution described, the firmly installed Partitions having. These are tightly sealed from floor to ceiling. To contain the spread of aerosols, the indoor air is sucked out, creating a negative pressure. A disadvantage of this solution is the highly stationary character and the high installation effort. Interaction with patients or people in the protected area is also only possible to a very limited extent.

[0005] More mobile and flexible solutions consist of foil walls or curtains. Here too there is air circulation in the protected area by means of Ventilation technology forced and a negative pressure generated. With it the Protection effective is, must this one too Protective cells with dem Floor, the walls and the ceiling sealing appropriate become. Also here is an interaction and communication under Currency of Protection levels only very restricted possible and requires other technical solutions.

[0006] Further describes US 2004 0221554 A1 one Solution, at the through a diffuse Air intake above of a sick bed and one diagonal opposite at the foot end of sickbed arranged Suction unit a descending air flow in the patient room is forced, so that medical staff who are standing in the patient room stops, fewer burdened Air absorbs. The reverse current for the Close of air circuit becomes through a return air duct through one cave mobile vertical Cabin wall at the foot side and one on this subsequent hollow mobile horizontal Cabin wall under the Ceiling created. Disadvantageous is also here the comparatively size structural effort.

In addition, with the help of the separation devices described, only certain areas in rooms can be separated in one direction of action, but rooms cannot be divided. The air circulation and the protective negative pressure only protect against the passage of air from the demarcated area. Conversely, the delimited area is not protected against the transfer of air from the surrounding area.

The object of the invention is to provide a device for dividing a room into several protective areas, which minimizes the transfer of microbiologically contaminated air between the protective areas, which enables communication and interaction between the people using the room and which is easy to install and inexpensive to produce.

The object is achieved by a device according to a first aspect of the invention with the features listed in claim 1 and according to a further aspect of the invention with the features listed in claim 2. Furthermore, the task is solved by an arrangement with the features listed in claim 6. Preferred further developments result from the respective subclaims.

The aerosol protection device has as basic elements a base body, a surface element and an air guide unit.

[0011] The Basic body carries the surface element and points thus the function one Tripods for the surface element on. In addition is the Basic body preferably as a Housing educated and can so in particular Components of the air duct unit.

The surface element has a cutting disk unit and a support frame. The cutting wheel unit sets According to the invention, it is composed of a first and a second cutting disk. The separating disks are preferably transparent and thus advantageously enable a visual reference between those separated by the surface element Space zones. The cutting discs can in particular be made of glass or a transparent plastic such as polycarbonate.

The cutting discs are arranged vertically and essentially plane-parallel to one another. According to the invention, they are spaced apart and thus form a space between the panes. The distance determines the width of the space between the panes. This is a space between the panes that is open at the top and bottom.

The support frame accommodates the cutting disks. It is the holder for the two separating letters and determines their described plane-parallel and spaced positional relationship to one another. Preferential

For this purpose, the support frame has two vertically arranged longitudinal profiles with guides for the cutting disks, so that in such a design the cutting disks can be inserted from above, preferably without tools, and removed again for cleaning purposes or, if necessary, for replacement. It is also possible to keep replacement lenses with special optical properties. For example, they can be translucent or opaque panes. The panes can also optionally be information or advertising media or have backlighting .

The surface element forms a first and second room air zone delimited by a respective outside of the cutting disk. The partitions create a physical separation of space. This separates the room into at least two zones. Air exchange is physically blocked between the two sides in the area of the surface element. In addition, unwanted attacks into the neighboring protected area are effectively prevented.
This prevents the spread of contamination and subsequent smear infections in workplaces, even where people move around a lot. According to the invention, the physical separation of rooms only needs to be kept to a limited extent become, so that ever after Requirement and more spatial situation despite it one Movement from Objects or people between the room air zones can be made possible. However, harmful aerosols cannot be transferred from one side to the other.

The air guidance unit has a first and a second air extraction unit, a blower unit, an air treatment unit and an air output unit.

An air extraction unit is assigned to each room air zone. The structure and function will be discussed in more detail using the example of the first aerial recording unit, with the following description content being discussed in a corresponding manner apply to the second air sampling unit.

[0018] In the senses the present invention becomes the Air in one Room air zone as room air, the Air away dem entry in an air extraction unit until to Air purification unit as return air , the Air after dem exit out of the Air purification unit until _ exit dem Air shield as clean air , the Air after dem crossing in one Room air zone as cleaned room air and after a possible Recording from impurities as burdened room air designated.

[0019] One first Air sampling unit is the first Room air zone assigned and points a first Air intake and a first Inlet air duct on. The first Air intake is educated, one burdened room air as return air out of the first room air zone to remove. The Air intake is preferably multi-part, so through several distributed n openings formed. Preferably points the Support frame hollow trained vertical Longitudinal profiles on, the one Variety of openings exhibit, through the Air out of the first Room air zone recorded and through the inner space the hollow longitudinal profiles can be continued. The longitudinal profiles thus form a first section of the inlet air duct. Through

The arrangement of the openings on the edge of the surface element particularly effectively prevents room air from passing from the first room air zone into the second room air zone, as could arise in particular through natural convection. Particularly preferably, further openings are located in a horizontal distribution under the lower end of the cutting disks, whereby these openings can be arranged both in a horizontal profile of the support frame and directly in the base body.

The first inlet air duct connects the first air inlet to the air treatment unit. The inlet air duct is included educated, one return air out of the first Room air zone the Air purification unit to be supplied.

[0021] Through the separate ones suction the Return air flows by means of one own Air sampling unit ever Space zone The spatial zones also have separate flow fields. There is no mixing of the return air flows from the separate rough air zones and thus no Air transfer between the Room air zones instead of. Therefore can no mixture through unwanted turbulences and no comprehensive contamination of the room zones take place. The people are hermetically separated. The Return air flows become first in the Air guidance unit mixed and further treated.

[0022] Therefor is the Air treatment unit according to the invention educated, one microbiological Burden the Return air closed to reduce and out of the return air one Clean air to provide. The Air treatment can as Particle retention using filters, physically through germicidal Radiation or also chemical or combined take place. In each case becomes through the Air treatment unit one Clean air provided, the microbiological harmless and preferably is completely germ-free.

[0023] The Air dispensing unit points a Exhaust air duct and a Air outlet on, where the Exhaust air duct the air treatment unit with dem Air outlet connects. The Exhaust air duct is educated is, the Clean air dem To supply air outlet.

[0024] The inventive Aerosol protection device is in particular through this marked,

that the space between the panes forms a section of the exhaust air duct. Furthermore, the upper opening of the space between the panes forms the air outlet.

The air output unit is designed in this way to form a vertically arranged flat air shield above the air outlet using the clean air . The air shield, sometimes also referred to below as the air barrier, aerodynamically separates the first and second room air zones from each other.

The flat air stream released flows through the room like an air barrier. The air leaves the air output unit at the air outlet as an approximately lamellar air flow in the vertical direction. When it hits the ceiling or a room wall or after reaching a height sufficient to separate the room air zones, the air flow is separated or succumbed - due to the negative pressure on both sides as a result of the suction in both room air zones the Turbulence and falls in the both Space zones away. Then flows through the Airflow the Cleaned room air covers the contaminated area around the person and collects any aerosols released. The contaminated room air is then sucked in again separately.

The blower unit is designed to provide a return air flow and a clean air flow. The blower unit can be arranged both before and after the air treatment unit, viewed in the direction of flow. Furthermore, the blower unit can also be designed in several parts, for example by means of several fans. In any case, the blower unit provides an overpressure on the air output side and a negative pressure on the air extraction side.

In summary, the air guidance unit serves for the separate removal of polluted air from the two room air zones, for guiding and treating the air, and for creating an air barrier as part of the separation of the room air zones using the extension of the separating panes into the space between the panes to provide an effective laminar air flow .

[0029] The inventive contraption points in particular below described Advantages on.

[0030] The separating disk unit firstly provides a sectional physical separation between the room air zones. Secondly, the same component is used to create a homogenization zone in the outlet air duct by means of the space between the panes, which allows the turbulent flow of air to subside and the formation of a largely laminar flow. This laminar flow enables the creation of a particularly effective air barrier, which achieves a particularly long range before undesirable disintegration due to turbulence. Furthermore, thirdly, as a particular advantage, the long installation space of the homogenization zone can also be used to maintain visual contact by using transparent separating disks. Fourthly, the long homogenization zone and the dissipation of the turbulence can provide a particularly low noise level, so that the aerosol protection device according to the invention can also be used in critical fields of application.

The people in the separate room zones are effectively separated from each other by the advantageous combination of physical and ventilation components, but can communicate with one another visually and acoustically. An exchange of microbiologically contaminated air, especially aerosols, is excluded.

[0032] Advantageously, the device according to the invention can make an effective contribution to infection protection, in particular against respiratory viruses such as SARS-CoV-2.

Another advantage of the vertically emitted and largely laminar air flow is that there is no feeling of draft is minimized. This also means that occupational safety requirements can be met.

A particular advantage is the small size compared to the shielding extent. This has the advantage that the aerosol protection device according to the invention is designed as a mobile device and can therefore be positioned in a room at any time in accordance with a specific spatial zone formation request.

[0035] A further Advantage consists in the double-acting Room zone separation. As Double-acting room zone separation means that each of the room air zones is protected from the entry of polluted air from the other room air zone in the sense of immission protection and, conversely, the escape of polluted room air from one of the room air zones is prevented or significantly reduced in the sense of emission protection. This means that each of the room zones is designed to prevent airborne pathogens potentially emanating from a person staying there from escaping from the room air zone and to render them ineffective, as well as being trained to be one

there retarding person before one microbiological burdened Breathing air to protect.

The device in this embodiment can, for example, be operated as a stand-alone variant. This is preferably done in small offices or sales outlets in which a maximum of two people or two groups of people should be separated from one another for infection.

[0037] It is also advantageous that more than two room air zones can be formed. For example, you can: through two inventive Aerosol protection devices three Room air zones (outside the first

Device - between the first and the second device - on the outside of the second device). The number of room air zones can also be expanded as desired, which can be useful in a long switch room, for example.

Furthermore, in large rooms, two or more devices according to the invention can be arranged next to one another in a longitudinal axis and thus acting in parallel, so that together they produce a particularly large shielding area.

To the extent that directional information in the sense of above and below is used to describe positional relationships of components of the device according to the invention, this refers to a positioning in space in which the device with the base body stands on a horizontal surface. These directional information should not be understood as contradicting a different positioning in space. In particular, it is also possible to mount the device in an inverted position, for example with the base body on a ceiling, so that the space between the panes with the air outlet is directed downwards and an air barrier directed vertically from top to bottom in the manner of an air curtain is provided. Such positioning can be particularly advantageous, for example, over a sales counter, so that goods or money can be passed through the air curtain, while the separating disks at the same time reliably protect against the transfer of droplets.

In an advantageous development of the aerosol protection device according to claim 1, the air treatment unit is designed as a HEPA filter. Since HEPA filters have a high level of efficiency and are evaluated with test aerosols according to their filtering effect, a high standard of protection can be achieved. In this way, the filter effect can be specifically demonstrated and documented. Also the needed Design and the from it resulting Space requirement let itself through the height Optimize filter efficiency.

[0041] According to one others advantageous Continuing education the Aerosol protection device is the Air treatment unit designed as a UV radiation source. As an alternative or cumulative to retention, pathogens contained in the return air can be deactivated and rendered harmless by filtering the suspended particles as aerosols. This reduces the risk that active germs are still present in the clean air despite mechanical cleaning of the air .

According to another aspect of the invention, the aerosol protection device has the same basic structure, with a modification of the air guide unit compared to the aerosol protection device according to claim 1.

All description contents for the aerosol protection device according to claim 1 also apply to the aerosol protection device according to claim 2, unless differences arise from the following description sections.

[0044] The Air guidance unit points also one first and one second Air sampling unit on. [0045] One

Blower unit and one Air treatment unit omitted however.

[0046] The first Air sampling unit is the first Room air zone assigned, points a first Air intake and a first inlet air duct and an additional return air connection. The first air inlet is designed to contain polluted room air out of the first Room air zone to remove and as return air to lead. The Special feature the Continuing education is that so the first Inlet air duct the first Air intake with dem Return air connection connects and educated is, a return air out of the first Room air zone dem Return air connection to be supplied.

[0047] The second Air guidance unit points the same Construction and the same Function, How the first aerial photography unit on. The second Aerial photography unit is the second Room air zone assigned and points a second air inlet with a second Inlet air duct as well as different from the contraption after Claim 1 the

Return air connection. The second air inlet is designed to take return air from the second room air zone. In addition, the second inlet air duct connects the second air inlet to the return air connection and is designed to supply return air from the second room air zone to the return air connection. Also different from the device in the claim 1, the air output unit has an outlet air duct with an air outlet and a clean air connection

on. The outlet air duct connects the clean air connection to the air outlet and is designed to direct the clean air to the air outlet.

[0048] The device according to claim 2 provides for intended use that, for example, the return air is sucked out of the device via the return air connection via air hose connections via an external blower and air cleaning unit and the clean air is blown into the device via the clean air connection.

[0049] The Solution after Claim 2 offers the Advantage, that on the active elements the Air guidance unit is waived. Through this arises one passive variant the Contraption. Therefore becomes in the senses the present invention the device after Claim 1 also as active contraption and the contraption after Claim 2 also as passive Device referred to.

[0050] This variant provides the cheaper variant represents. One such variant can thus cost-effective Solutions for size rooms, How Open plan offices or workshops create. It becomes only one powerful central Fan- and air purification unit needed, with the one Variety this passive Devices operated become can.

In a particularly advantageous development, the return air connection and the clean air connection each have two parallel connection openings, so that two air hoses can each be connected. In this way, several passive devices can be operated in parallel in a chain with little effort. In the device at the end of the chain, the second, unused connection opening is then closed.

In another advantageous development of the aerosol protection device, the surface element has an extension surface element arranged on the longitudinal side. The expansion surface element can preferably be an expansion cutting disk. This allows the fixed physical protection area of the device to be extended. Over This measure can increase the area of protection against unintentional reaching or stepping over and thus the spread of contamination across the room air zones. This is particularly useful for workplaces in assembly or sales, where there are many hand movements that require a high degree of movement by the person. This advantageous development can concern both an active and a passive device.

[0053] A further aspect the invention regards one Aerosol protection arrangement.

The aerosol protection arrangement has a plurality of aerosol protection devices according to one of the preceding claims.

The devices can be cascaded. The separation of large rooms, such as conference rooms or open-plan offices, into several indoor air zones can be implemented quickly and easily. The devices can be arranged to act in parallel or to form additional room air zones. Parallel action means that several aerosol protection devices work together to separate the same room air zones and are preferably arranged in line. This is particularly advantageous when large room air zones are formed with long separation paths . It is also possible to provide an island-like separation in a large room by an annular arrangement of several aerosol protection devices, so that a first room air zone is then surrounded by a second room air zone.

[0056] Furthermore, such an arrangement can have both one or more aerosol protection devices according to claim 1 and one or more aerosol protection devices according to claim 4 or a combination.

[0057] In an advantageous development of the aerosol protection arrangement according to claim 6, it has an aerosol protection device according to claim 1 as an active device and at least one aerosol protection device according to claim 2 as a passive device. According to this development, the devices work together in a cascaded manner.

[0058] In this case, the aerosol protection device according to claim 1, i.e. the active device, is designed in a special way. It also has a return air expansion connection that is assigned to the air extraction units. It also has a clean air expansion connection that is assigned to the air output unit.

According to the present aerosol protection arrangement , the return air expansion connection of the active device is connected to the Return air connection the Aerosol device the passive contraption as well as the Clean air expansion connection the active device is connected to the clean air connection of the passive device to carry air flow.

[0060] The active contraption provides with it her Air treatment unit and her Blower unit at the same time for one passive device to Disposal. In the senses the passive contraption acts it itself then around one external air treatment and blower unit.

[0061]

This creates an advantageous cascade solution in the sense of a master-slave arrangement, with the active device forming the master and the at least one passive device forming the slave. The aerosol protection arrangement can also have several passive devices and thus several slaves.

[0062] It gives one Aerosol separation device as active Master, whose Air guidance unit fully with Blower unit and filter is equipped. Additional passive slave elements can be connected to this via hoses. Their air duct unit is only designed as a piping system. This solution is significantly more cost-effective and uses less energy for large rooms with a large number of required devices. The noise pollution can also be minimized and distributed in a targeted manner.

[0063] The invention becomes as Example embodiment based from

Fig. 1 schematic oblique view of the aerosol protection device as an active stand-alone arrangement in an external view

Fig. 2 schematic oblique view of the aerosol protection device as an extended active stand-alone arrangement

Fig. 3 schematic Oblique image representation the Aerosol protection device as expanded, passive Slave module

Fig. 4 Functional scheme in vertical partially cut Side view

closer explained.

The same reference numbers in the different figures refer to the same features or components. The reference numbers are used in the description even if they are not shown in the relevant figure.

1 shows a schematic oblique **view** of an exemplary embodiment of the aerosol protection device in an outside view.

The base body 1 carries the surface element 2. The surface element 2 contains the cutting disk unit 4, which is accommodated in the support frame 5. The first room air zone 6a is located on a first side of the surface element 2 and the room air zone 6b is located opposite.

[0067] In the Basic body 1 located itself - here in the Exterior view not closer shown - the Air guidance unit 3.

[0068] The multi-part design and in the support frame 5 vertically and additionally under the cutting disk unit 4 Horizontally arranged first air inlet 7a.1 as part of the first air intake unit 7a takes polluted room air from the first room air zone 6a. Separately, on the other side of the surface element 2, which is not visible in **FIG. 1,** the second air inlet 7b.1, as part of the second air extraction unit, separately removes the polluted room air from the second room air zone 6b. After the air treatment has taken place, the clean air is output via the air outlet 10.1 and an air shield 13 is created, which is symbolized by the ascending arrows shown at the air outlet 10.1. The room is thus divided into two room air zones 6a, 6b beyond the extent of the surface element 2.

2 shows a schematic oblique view of the aerosol protection device in a further exemplary embodiment with an expanded representation of the air duct unit from the perspective of the second room air zone 6b.

The surface element 2 is arranged on the base body 1. An extension surface element 2.1 is coupled to the surface element on both sides, so that there are three coupled surface elements 2, 2.1. The surface element 2 consists of the cutting disk unit 4, which is accommodated in the support frame 5. The surface elements 2 are cascaded via a connection on the support frame 5. Alternatively, they can be simple panes without taking over the functions of the air guide unit 3.

[0071] In the Basic body 1 located itself the Air guidance unit 3, the also the the Blower unit 8th having, the the air circulation caused. Further is in the Basic body 1 the Air treatment unit 9 arranged, in the the Air cleaned and sterilized becomes. On both pages are at the Foot the Cutting disc unit 4 and at the vertical sections of the support frame 5 the Air intakes 7a.1, 7b.1 the Air sampling units 7a, 7b appropriate. She remove out of the first room air zone 6a with the first Air sampling unit 7a on the a Page of surface element 2 and out of the second room air zone 6b above the second Air sampling unit 7b on the others Page of surface element respectively separately the air. The required negative pressure generated the Blower unit 8th and directs the sucked in return air to cleaning in the only schematically shown Air treatment unit 9. The Clean air becomes so again above the Air dispensing unit 10 issued. In addition flows through the Air the Surface elements 2 and occurs at whose open End faces out of. So becomes above the partition out the Space in two Room air zones 6a, 6b divided.

[0072]

Page 8th

3 shows a schematic oblique view of the aerosol protection device in an exemplary embodiment as a passive device.

[0073] Construction and function voices with the in **Fig. 2** described contraption dem Reasons after agree, so far not the below described particularities the Air guidance unit 3 hold true.

The air guidance unit 3 is designed without a blower unit 8 and without an air treatment unit 9, i.e. without active elements. There are permanently installed pipes from the air inlets 7a.1, 7b.1 of the air extraction units 7a, 7b to the return air connection 11. A remote active unit is connected via a hose line, from which the return air is supplied sucked off and above one external Furnishings cleaned becomes. The Clean air becomes then again above a hose line is routed to the clean air connection 12. The clean air flow then passes through pipes Air output unit 10 in the base body 1 to the air outlet 10.1. The flow directions at the return air connection 11 and at the clean air connection 12 are shown by the arrows. The room separation function is then again as in the active aerosol protection device in **Fig. 1** or **Fig. 2** .

[0075] **Fig. 4** shows one schematic Opinion to Depiction to the air currents and the through this caused Education the two separate room air zones 6a, 6b.

[0076] Both sides of surface element 2 becomes the burdened room air through the Air sampling units 7a, 7b taken, as return air guided and in the Air treatment unit 9 cleaned. Driven through the Blower unit 8th becomes the from The clean air provided to the air treatment unit 9 is guided through the outlet air duct, with the space between the panes 4.3 Part of Exhaust air duct forms. There becomes one at the Blower unit 8th exiting turbulent flow the Clean air dissipative in one largely laminar flow transferred. At dem Air outlet 10.1 leaves the Clean air the Device and forms the Air shield 13 out of, that a transfer from Air out of one Room air zone 6a, 6b in the respectively other room air zone 6b, 6a prevented. In the Room air zones 6a, 6b sinks the with dem Air shield 13 supplied room air away and stands as cleaned room air for one itself retarding person as Breathing air to Disposal and takes included possibly microbiological charges on. The room air lies so as burdened room air before, the from the respective air extraction unit 7a, 7b recorded becomes, by which the Circulation closed is.

Reference symbol list

1 Basic body
2 surface element
2.1 Expansion surface element
3 Air guidance unit
4 Cutting disc unit
4.1 first cutting disc
4.2 second cutting disc
4.3 space between panes
5 Support frame
6a first room air zone 6b
second Room air
zone
7a first air extraction unit 7a. 1
first air intake
7b second air extraction unit
7b.1 second air inlet

8 Blower unit

9 Air treatment unit

10 Air dispensing unit

10.1 Air outlet

11 Return air connection

12 Clean air connection

13 Air shield

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QUOTES CONTAIN IN THE DESCRIPTION

[0000] This list of documents listed by the applicant was generated automatically and is included solely for the better information of the reader. The list is not part of the German patent or
Utility model registration. The DPMA takes over none whatsoever Liability for any Mistake or Omissions.

Quoted Patent literature

[0000]

CN 111735136 A [0004]

US 20040221554 A1 [0006]

Patent claims

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1. aerosol protection device,
having a Basic body (1), a surface element (2) and one Air guidance unit (3), wherein the base body (1) carries the surface element (2),
where the surface element (2) one Cutting disc unit (4) and a Support frame (5) having,
wherein the cutting disk unit (4) has a first and a second cutting disk (4.1, 4.2), which are spaced apart and arranged vertically and essentially plane-parallel to one another and form an intermediate space (4.3) that is open at the top and bottom,
wherein the support frame (5) accommodates the cutting disks (4.1, 4.2) and determines their positional relationship to one another and the surface element (2) forms a first (6a) and second room air zone (6b) delimited by a respective outside of the cutting disk,
wherein the air guidance unit (3) has a first (7a) and a second air extraction unit (7b), a blower unit (8), an air treatment unit (9) and an air output unit (10),
where the first Air sampling unit (7a) the first Room air zone (6a) assigned is and a first Air intake and one first Inlet air duct having and where the first Air intake (7a.1) educated is, one return air out of the first room air zone (6a) to remove and
where the first Inlet air duct the first Air intake with the air treatment unit (9) connects and educated is, one return air out of the first Room air zone (6a) the

Air purification unit to supply,
where the second Air sampling unit (7b) the second Room air zone (6b) assigned is and a second Air intake (7b. 1) and a second Inlet air duct having and where the second Air intake educated is, one return air out of The second Room air zone (6b) to remove and where the second Inlet air duct the second Air intake with the air treatment unit (9) connects and educated is, one return air out of the second Room air zone (6a) to the air purification unit,
to reduce microbiological contamination of the return air and to provide clean air from the return air ,
wherein the air output unit (10) has an outlet air duct and an air outlet (10.1), the outlet air duct being the Air treatment unit (9) with dem Air outlet connects and educated is, the Clean air dem Air outlet to be supplied, whereby the space between panes (4.3) a Section of Exhaust air duct trains and one upper opening the space between the panes (4.3) forms the air outlet, with the air output unit (10) being formed above the air outlet by means of the Clean air a vertical arranged flat Air shield (13) to train, the the first room air zone (6a) and the second Room air zone (6b) from each other separates and where the Blower unit (8th) educated is, a Return air flow and a Clean air flow to provide.

2. Aerosol protection device according to claim 1, characterized in that the air treatment unit (9) is designed as a HEPA filter.

3. Aerosol protection device according to one of the preceding claims, characterized in that the air treatment unit (9) is designed as a UV radiation source.

4. aerosol protection device,
having a Basic body (1), a surface element (2) and one Air guidance unit (3), wherein the base body (1) carries the surface element (2),
where the surface element (2) one Cutting disc unit (4) and a Support frame (5) having,
wherein the cutting disk unit (4) has a first and a second cutting disk (4.1, 4.2), which are spaced apart and arranged vertically and essentially plane-parallel to one another and form an intermediate space (4.3) that is open at the top and bottom,
wherein the support frame (5) accommodates the cutting disks (4.1, 4.2) and determines their positional relationship to one another and the surface element (2) forms a first (6a) and second room air zone (6b) delimited by a respective outside of the cutting disk,
where the Air guidance unit (3) one first (7a) and one second Air sampling unit (7b) and one Air dispensing unit (10) having,
where the first Air sampling unit (7a) the first Room air zone (6a) assigned is and a first air inlet, a first Inlet air duct and a Return air connection (11) having, where the first Air intake educated is, one Return air out the first Room air zone (6a) to remove and where the first Inlet air duct the first Air intake with the return air connection (11) connects and is formed, a return air from the first room air zone (6a) to the return air connection (11) to supply,
where the second Air sampling unit (7b) the second Room air zone (6b) assigned is and a second Air inlet, a second inlet air duct and a return air connection (11), wherein the second air inlet is formed, a return air out of the second Room air zone (6b) to remove and where the second Inlet air duct the second Air inlet with dem Return air connection (11) connects and is educated, one return air out of the second Room air zone (6b) the return air connection (11) to supply, the Air treatment unit (9) is educated, one microbiological Burden the return air to to reduce and out of the return air one Clean air to provide,

wherein the air output unit (10) has an outlet air duct, an air outlet and a clean air connection (12), wherein the outlet air duct connects the clean air connection (12) to the air outlet and is designed to supply the clean air to the air outlet, the space between the panes (4.3) forming a section of the Outlet air duct forms and an upper opening in the space between the panes (4.3) forms the air outlet and the air output unit (10) is designed to form a vertically arranged flat air shield (13) above the air outlet using the clean air , which forms the first room air zone (6a) and the second Room air zone (6b) separates, with the return air connection (11) and the clean air connection (12) is designed for connection to an external air treatment unit (9) arranged outside the base body (1) and to an external blower unit (8), wherein the air treatment unit (9) is designed to cause microbiological contamination of the return air reduce and the return air becomes clean air to provide and the external blower unit (8) is designed to provide a return air flow and a clean air flow

5. Aerosol protection device according to one of the preceding claims, characterized in that the surface element (2) has an extension surface element (2.1) arranged on the longitudinal side.

6. Aerosol protection arrangement comprising a plurality of aerosol protection devices according to one of the preceding claims.

7. Aerosol protection arrangement after Claim
6, characterized in
that it has an aerosol protection device according to claim 1 and at least one aerosol protection device according to claim 2 , wherein the aerosol protection device according to claim 1 has a return air expansion port associated with the air extraction units (7a, 7b), a clean air expansion port associated with the air output unit
(10) is assigned and wherein the return air expansion connection is connected to the return air connection (11) of the aerosol device according to claim 2 and the clean air expansion connection is connected to the clean air connection (12) of the aerosol device according to claim 2 in an airflow-conducting manner.

drawings

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