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(54) **Suction hood**

Absaughaube

Hotte aspirante

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Description

[0001] The invention relates to a suction hood, in particular of the type applied to laboratory workbenches, for example, for chemical analyses.

[0002] In chemical laboratories, the use of suction hoods is known, which are associated with workbenches, to protect operators from the risk of inhaling toxic fumes released during chemical reactions between substances handled by the operators. These suction hoods are suitable for extracting the fumes from the work environment and for conveying these fumes to the outside of the building in which the chemical laboratory is located.

[0003] Suction hoods of known type comprise a booth provided with frontal sash that acts as a protective screen for the operator. The booth is further provided with a exhaust conduit downstream of which a motor-driven electric fan is arranged.

[0004] In order to maintain the speed constant of the air sucked on the suction front of the booth, it is necessary that the suction flow of the electric fan may vary according to the flow variations of the air to be sucked on the suction front of the booth, this suction front being defined by the height at which the frontal sash is positioned on the workbench. The suction flow decreases and/or increases according to the closure and/or opening of the frontal sash according to the following equation (1):

$$P = V \times S \qquad (1)$$

where:

P = flow of the air to be sucked;
V = speed of the air on the suction front;
S = area of the suction front, bounded by the position of the frontal sash, by the work surface and laterally by the side walls of the booth.

[0005] In order to adjust the flow of the suction hood on the basis of the flow of the air to be sucked two alternative systems are usually provided.

[0006] The first system provides an electronic controller that regulates the flow of the suction hood by varying the rotation speed of the motor of the electric fan by means of an inverter mounted on the motor. The rotation speed of the motor, set at a constant value, is changed on the basis of the position of the frontal sash by means of a sensor that sends a signal to the inverter through the electronic controller.

[0007] This system presents a certain reaction time that is necessary to the inverter to vary the motor speeds and thus the electric fan to reach the speed at which the suction hood can suck the flow of the air corresponding to the desired suction front on the front of the booth.

[0008] This means that the moment of opening the frontal sash is rather dangerous for the operator. In fact, during the reaction time, in which the aforesaid system is not yet able to suck the flow of air increased by the opening of the frontal sash, there is the risk that the toxic fumes in the booth exit the booth towards the work environment in which the operator is present.

[0009] The second system, which is usually applied to a plurality of suction hoods in which a sole electric fan is provided on a manifold in which the respective exhaust conduits of each booth converge, provides an electronic controller that regulates the flow of the suction hood through a butterfly valve arranged in each exhaust conduit, driven by a respective electric motor, for example a stepping motor. The position of the butterfly valve determines the flow of the suction hood.

[0010] The electronic controller regulates the flow of the suction hood by sending a signal to the motor of the butterfly valve, which will open and/or close the corresponding exhaust conduit in function of the speed of the incoming air, i.e. the air measured on the suction front. The speed of the incoming air varies according to the position of the frontal sash and is detected by a suitable sensor connected to the electronic controller.

[0011] Also in this system, the moment of opening the frontal sash is particularly critical. The reaction time of the electronic controller and of the electric motor of the butterfly valve is not instantaneous and thus there is a high risk of toxic fumes escaping from the booth.

[0012] US 4,377,969 discloses a laboratory fume hood with open hood face closed by door sash. The fume hood is provided with an automatic airflow control regulating the quantity of air drawn into the hood in response to movement of the door sash for maintaining a controlled velocity of air through the hood face to keep fumes within the hood while reducing energy requirements for either heating or cooling the air to maintain safe operation. The open hood face is controlled by a vertically slidable sash or window counterbalanced by a weight that is connected to the sash by a cable which moves directly proportional to the movement of the sash. This cable actuates mechanism for opening and closing a damper in the exhaust system for the fume hood. In one embodiment, the cable drives a pressure regulator which controls an air motor to rotate the damper. In other embodiments the cable may drive reduction gear to the damper or control a servo motor which drives the damper.

[0013] One object of the invention is to improve suction hoods of known type.

[0014] A further object is to obtain a suction hood that enables the speed of the sucked air to be maintained constant.

[0015] Yet another object is to produce a suction hood in which regulation of the flow is substantially instantaneous, thus avoiding the risk that a part of the air to be sucked returns to the environment from which it was taken.

[0016] Still another object of the invention is to produce a suction hood in which the flow can be regulated by a relatively simple and effective system.

[0017] According to the invention, a suction hood is provided, as defined by claim 1.

[0018] Owing to the invention, when a person drives the panel, the position of the valve is adjusted directly in a mechanical manner.

[0019] Owing to the mechanical device, the panel is "coupled" with the valve and the position of the latter is variable without delay when the operator drives the panel, for example raises or lowers the panel.

[0020] As the reaction of the mechanical device is instantaneous, the suction hood according to the invention does not have downtime when the volume of air to be sucked is regulated. Consequently, the risk of dangerous fumes escaping during opening of the panel and being inhaled by the operator and by the persons who work in the external environment external to the booth, such as for example a laboratory is thus avoided.

[0021] Further, owing to the invention it is possible to maintain constant the suction speed at the front opening of the booth.

[0022] The suction hood according to the invention is thus safer for the operator and as there are no electrically supplied devices for regulating the flow, it enables more energy to be saved than with known suction hoods.

[0023] The invention can be better understood and implemented with reference to the attached drawings that illustrate an embodiment thereof by way of non-limiting example, in which:

Figure 1 illustrates a perspective view of a suction hood;

Figures 2, 4 and 6 are frontal views of the suction hood in Figure 1 illustrating different positions of a panel provided in the suction hood;

Figures 3, 5 and 7 are longitudinal sections of the suction hood of Figure 1 illustrating a mechanical device providing for regulating the flow of the suction hood, this mechanical device being in different configurations corresponding to the different positions of the panel illustrated in Figures 2, 4 and 6.

[0024] Figure 1 shows a suction hood 1, in particular of the type applied to workbenches 2 of laboratories, for example for chemical analyses.

[0025] The suction hood 1 comprises a booth 3, provided internally with a chamber 4, in which containers and laboratory equipment can be housed that are handled by a person or operator P.

[0026] The suction hood 1 is further provided with a suction device, not shown, such as, for example, an electric fan, that is suitable for removing a fluid from the chamber 4, in particular gas or fumes, that can be released by a chemical reaction that occurs in the chamber 4.

[0027] The booth 3 is provided with a front opening 5 connecting the chamber 4 with an external environment outside the booth 3 in which the person P can transit.

[0028] The booth 3 is further provided with a sliding panel 6 in such a manner as to open or close the front opening 5. In particular, the panel 6 is movable between a closed position A, illustrated in Figure 2, in which the panel 6 substantially closes the front opening 5 to separate the chamber 4 from the external environment, and an open position C, illustrated in Figure 1 and in Figure 6, in which the panel 6 substantially does not shut the front opening 5.

[0029] The panel 6 can be locked in different positions interposed between the closed position A and the open position C, as Figure 4 illustrates, in which the panel 6 is in an intermediate position B.

[0030] The panel 6, that acts as a protection screen for the operator P to protect the operator from the risk of inhaling toxic fumes released during chemical reactions that occur in the chamber 4, is, for example, of transparent glass to enable the operator P to view the chamber 4 even when the panel 6 is in the closed position A, i.e. closes the front opening 5.

[0031] In the illustrated embodiments, the panel 6 is slidable vertically and the closed position A of the panel 6 corresponds to a height from the floor in which a lower edge of the panel 6 reaches the level of an upper edge of the workbench 2. In an embodiment that is not shown, the workbench 2 may also not be present. In this embodiment, the closed position A of the panel 6 corresponds to a position in which the panel 6 reaches a lower front edge of the booth 3 or the floor level.

[0032] A pair of up-and-down systems of known type are fixed to the panel 6 and enable the latter panel to slide vertically with great facility and low friction. With reference to Figure 3, each up-and-down system comprises a cable 14, having a first end fixed in a known manner and not shown to the panel 6, a pulley 13, and a counterweight 15, fixed in a known manner to a second end of the cable 14 opposite the first end. The two up-and-down systems are placed near opposite sides of the panel 6 and the respective pulleys 13, indicated by the same reference number in Figure 3, are mounted on side walls opposite one another internally of the booth 3.

[0033] The booth 3 comprises an exhaust conduit 7 suitable for exhausting externally of the booth 3 the gas or fumes coming from the chamber 4. The exhaust conduit 7 is, in particular, made in an upper wall or ceiling 8 of the booth 3 and is connected in a known manner to the suction device, which sucks smoke, gas or fumes, removing the smoke, gas or fumes from the chamber 4 through the exhaust conduit 7.

[0034] With reference to Figures 3, 5 and 7, to the exhaust conduit 7 a valve 9 is connected that is suitable for varying a passage section of the exhaust conduit 7 according to the volume of fluid to be removed from the chamber 4.

[0035] The volume of fluid to be removed from the chamber 4 increases when the panel 6, arranged at a certain initial height, is raised to a higher height, thus freeing a portion increased by the front opening 5.

[0036] The portion of front opening 5 that is free, i.e. not occupied by the panel 6, defines the suction front.

[0037] By increasing the suction front, the quantity of air that enters the chamber 4 from the external environment increases through the effect of the vacuum created in the chamber 4 by the suction device.

[0038] On the other hand, the volume of fluid to be removed from the chamber 4 decreases when the panel 6, arranged at a certain initial height, is moved to a lower height, thus freeing a reduced portion of the front opening 5 and reducing the suction front.

[0039] In order to maintain constant the speed of the air on the suction front, it is necessary to vary the flow of the suction device according to the volume of fluid to be removed from the chamber 4.

[0040] In the suction hood 1, the flow of the sucking device is modifiable by a mechanical device 10 that acts on the valve 9.

[0041] The mechanical device 10 connects the valve 9 and the panel 6 thus enabling mechanical driving of the valve 9.

[0042] The mechanical device 10 comprises an up-and-down mechanism provided with a cable 16 having an end fixed to one of the two counterweights 15 of one of the two up-and-down systems of the panel 6 and an opposite end fixed to a further counterweight 17. the cable 16 runs on a pair of pulleys, a first pulley 19 and a second pulley 18, fixed to the upper wall 8 inside the booth 3 in such a manner that the respective rotation axes are substantially orthogonal to the plane containing the front opening 5.

[0043] The first pulley 19 and the second pulley 19 are arranged at a certain distance from one another in such a manner that the further counterweight 17 moves parallel to and near the counterweight 15 that is not connected to the up and-down mechanism.

[0044] The mechanical device 10 further comprises a thrust member 20 fixed to a portion of the cable 16 interposed between the first pulley 19 and the second pulley 18. The thrust member 20 is arranged for interacting with a first end portion of a driving rod 11 for driving the valve 9.

[0045] The valve 9, in particular a butterfly valve, comprises a rotation shaft R on which a closing element of the valve 9 is fitted, for example a disc 12, that enables the valve 9 and therefore the exhaust conduit 7 to be opened or closed.

[0046] A second end portion of the driving rod 11, opposite the first end portion, is fixed to the rotation shaft R of the valve 9, in such a manner that a rotation of the rotation shaft R is matched by a rotation of the driving rod 11, and vice versa.

[0047] The driving rod 11 forms a preset angle α with the disc plane 12, as shown in Figure 3.

[0048] In a first position V1, shown in Figure 3, the valve 9 is closed, i.e. the disc 12 is arranged in such a manner as to close the section of the exhaust conduit 7. In this first position V1, the driving rod 11 is pressed against the thrust member 20 by a spring, which is not shown, acting on the second end portion of the driving rod 11 with a certain preloading force.

[0049] The first position V1 of the valve 9 corresponds to the closed position A of the panel 6. When the panel 6 is lifted from the closed position A to an intermediate position B, shown in Figure 4, in which the lower edge of the panel 6 reaches a height K from the workbench 2, the counterweights 15 of the two up-and-down systems of the panel 6 are lowered, as shown in Figure 5. The counterweight 15 to which the cable 16 is fixed, on the right with reference to Figure 5, drags the cable 16 downwards. Consequently, the thrust member 20 is moved to the right - in Figure 5 - and the first end portion of the driving rod 11, which the spring maintains pressed against the thrust member 20, rotates around the axis of the rotation shaft R rotating also the disc 12 of the valve 9, which reaches a second position V2.

[0050] In the position V2 the section of the exhaust conduit 7 is partially opened.

[0051] Naturally, the movement of the cable 16 means that the further counterweight 17 is moved upwards.

[0052] The further counterweight 17 weighs less than the counterweight 15 in such a manner as to maintain the cable 16 sufficiently taut without excessively increasing the force that the operator P has to apply to open or close the front opening 5 by the panel 6.

[0053] By increasing still further the suction front, i.e. by raising further the panel 6 to the open position C, shown in Figure 6, in which the lower edge of the panel 6 reaches a height H from the workbench 2, greater than the height K, the counterweights 15 of the two up-and-down systems of the panel 6 are lowered further, as shown in Figure 6. The counterweight 15 to which the cable 16 is fixed, on the right with reference to Figure 5, drags the cable 16 further down. Consequently, the thrust member 20 is moved again to the right - in Figure 7 - and the first end portion of the driving rod 11 rotates around the axis of the rotation shaft R, rotating also the disc 12 of the valve 9, which reaches a third position V3.

[0054] In the third position V3 the valve 9 is completely open and the section of the exhaust conduit 7 is maximum.

[0055] The thrust member 20 is removably fixed to the cable 16, in such a manner that the position thereof can be registered along the cable 16 between the first pulley 19 and the second pulley 18. For example, the thrust member 20 can be a clamp that is clamped onto the cable 16 by screws.

[0056] If it is necessary to open the panel 6 beyond the height H, which can correspond to the maximum safety opening of generally 40 cm, to perform maintenance or insert an instrument inside the suction volume, the mechanical device 10 is shaped in such a manner as to stop regulation of the flow of the valve 9 and maintain the valve 9 in the third maximum opening position V3 of the valve 9.

[0057] In fact, by raising the panel beyond the height H, the counterweight 15, to the right in Figure 7, continues to descend and the thrust member 20 moves further to the right. The thrust member 20 on the cable 16 is positioned in such a manner that by moving further to the

right than the position adopted by the thrust member 20 in the third position V3, the spring acting on the rotation rod 11 comes to rest and no longer presses the driving rod 11 against the thrust member 20, which no longer acts as an abutment for the first end of the adjusting rod 11. The latter thus remains in the third position V3 of maximum opening of the valve 9 and the flow of the air to be sucked is no longer regulated and remains at maximum.

[0058] By proceeding to the closure of the panel 6, the counterweight 15 rises whilst the further counterweight 17 descends.

[0059] By reaching the open position C, corresponding to the third position V3 of maximum opening of the valve, the thrust member 20 is moved to the left until it comes to reach and press on the first end portion of the driving rod 11. By overcoming the force of the spring, the thrust member 20 induces a rotation of the driving rod 11 that makes the disc 12 reduce the passage section of the exhaust conduit 7.

[0060] The valve 9, from the maximum opening position, i.e. the third position V3, thus goes on to assume a partial opening position, as the second position V2.

[0061] Similarly, by continuing to lower the panel 6 to the closed position A, the disc 12 reaches the first position V1, in which the valve 9 is closed.

[0062] From the above, it is clear that by raising or lowering the panel 6 the cable 16 of the up-and-down mechanism is dragged by the counterweight 15 to which the cable 16 is connected and the thrust member 20 is moved to the first pulley 19 or to the second pulley 18 together with a movement of said cable 16. The thrust member 20, by interacting with the further end portion of the driving rod 11 rotates the driving rod 11 and thus rotates the disc 12 of the valve 9 to open the valve 9 or close the valve 9. Owing to the mechanical device 10, it is possible to adjust the flow of the fluid extracted from the chamber 4 on the basis of variations in the suction front on the front opening 5 of the suction hood 1.

[0063] The mechanical device 10 thus enables the speed of the air on the suction front to be maintained constant.

[0064] The mechanical device 10 enables the flow to be adjusted substantially instantaneously by opening or closing the panel 6.

[0065] The suction hood 1 is thus safer for the operator, because the reaction time, located in the suction hoods of known type, having adjusting devices of the flow supplied electrically, is substantially reduced or even eliminated by the mechanical device 10.

[0066] Further, the mechanical device 10 enables the risk to be limited that the suction hood does not operate correctly following malfunctions of electrically parts, as occurs in suction hoods of known type.

[0067] Further, maintenance of the mechanical device 10 is very simple and can be performed alongside routine maintenance of the suction hood.

[0068] If the electric current supply should be interrupted suddenly, the suction device ceases to suck, nevertheless, with the panel 6 in the open position A, the open valve 9 still permits slight suction through the "flue effect".

[0069] A further advantage of the mechanical device is that, as it has no electric parts, it can be installed in so-called "ATEX" fire-risk zones combined with a "measuring cross" flowrate alarm.

Claims

1. Suction hood comprising a booth (3), inside which a chamber (4) is defined, and a suction device for removing a fluid from said chamber (4), said booth (3) being provided with a front opening (5) connecting said chamber (4) with an external environment in which a person (P) can stay externally of said booth (3), with a panel (6) mobile between a close position (A), in which said panel (6) substantially closes said front opening (5) for separating said chamber (4) from said external environment, and an open position (B; C), in which said panel (6) opens at least partially said front opening (5), with an exhaust conduit (7) suitable for exhausting externally of said booth (3) said fluid coming from said chamber (4), with a valve (9) for varying a section of said exhaust conduit (7) as a function of the volume of said fluid to be sucked, said valve (9) being driven by a mechanical device (10) connecting said valve (9) and said panel (6), **characterized in that** said mechanical device (10) comprises an up-and-down mechanism connected to a further up-and-down system of said panel (6), this latter being arranged for enabling said panel (6) to slide from said close position (A) to said open position (B; C), and vice versa; said up-and-down mechanism comprising a cable (16) having a first end fixed to a counterweight (15) of said up-and-down system and a second end fixed to a further counterweight (17) of said up-and-down mechanism; said up-and-down mechanism further comprising a first pulley (19) and a second pulley (18) on which said cable (16) is at least partially wrapped around; said mechanical device (10) further comprises a driving rod (11) having one end fixed to a rotating shaft (R) of said valve (9); said driving rod (11) comprising a further end opposite said end and arranged for interacting with a thrust member (20) provided in said mechanical device (10) and fixed to said cable (16).

2. Suction hood according to claim 1, wherein when said panel (6) is in said close position (A) said further end is pushed against said thrust member (20) by a spring acting on said driving rod (11) with a certain preload force.

3. Suction hood according to claim 1, or 2, wherein said thrust member (20) is fixed to an intermediate portion

of said cable (16) between said first pulley (19) and said second pulley (18) and is moved towards said first pulley (19) or towards said second pulley (18) in compliance with a movement of said cable (16).

4. Suction hood according to claim 3, wherein the position of said thrust element (20) on said intermediate portion is adjustable.

5. Suction hood according to any one of claims 2 to 4, wherein when said panel (6) is in said open position (C), corresponding to a maximum safety opening (H), said spring is in a rest position and said further end is not pushed against said thrust member (20).

6. Suction hood according to claim 5, wherein when said panel (6) is opened over said maximum safety opening (H), said thrust member (20) does not interact with said further end of said driving rod (11).

Patentansprüche

1. Absaughaube, die Folgendes aufweist, nämlich eine Zelle (3), in deren Inneren eine Kammer (4) definiert ist, und eine Saugvorrichtung zum Entfernen eines Fluids aus der Kammer (4), wobei die Zelle (3) mit Folgendem versehen ist, nämlich einer vorderen Öffnung (5), die die Kammer (4) mit einer äußeren Umgebung verbindet, in der sich eine Person (P) außerhalb der Zelle (3) aufhalten kann, mit einer Platte (6), die zwischen einer geschlossenen Position (A), in der die Platte (6) die vordere Öffnung (5) im Wesentlichen verschließt, um die Kammer (4) von der äußeren Umgebung abzutrennen, und einer geöffneten Position (B; C), in der die Platte (6) die vordere Öffnung (5) zumindest teilweise öffnet, beweglich ist, mit einem Auslasskanal (7), der geeignet ist, um außerhalb der Zelle (3) das Fluid, das aus der Kammer (4) kommt, auszuscheiden, mit einem Ventil (9), um einen Teil des Auslasskanals (7) als Funktion des Volumens des zu saugenden Fluids zu variieren, wobei das Ventil (9) von einer mechanischer Vorrichtung (10) betrieben wird, die das Ventil (9) mit der Platte (6) verbindet, **dadurch gekennzeichnet, dass** die mechanische Vorrichtung (10) einen Hoch-und-Runter-Mechanismus aufweist, der mit einem weiteren Hoch-und-Runter-System der Platte (6) verbunden ist, wobei das Letztere dazu eingerichtet ist, es der Platte (6) zu ermöglichen, von der geschlossenen Position (A) in die geöffnete Position (B; C) und umgekehrt zu gleiten; wobei der Hoch-und-Runter-Mechanismus ein Kabel (16) aufweist, das ein erstes Ende aufweist, das an ein Gegengewicht (15) des Hoch-und-Runter-Systems befestigt ist, und ein zweites Ende aufweist, das an ein weiteres Gegengewicht (17) des Hoch-und-Runter-Mechanismus befestigt ist; wobei der Hoch-und-Runter-Mechanismus ferner eine erste Laufrolle (19) und eine zweite Laufrolle (18) aufweist, um die das Kabel (16) zumindest teilweise herumgewickelt ist; wobei die mechanische Vorrichtung (10) ferner eine Antriebsstange (11) aufweist, bei der ein Ende an einer rotierende Welle (R) des Ventils (9) befestigt ist; wobei die Antriebsstange (11) ein weiteres Ende gegenüber jenem Ende aufweist und dazu eingerichtet ist, um mit einem Schubelement (20) zu interagieren, das in der mechanischen Vorrichtung (10) vorgesehen ist und an das Kabel (16) befestigt ist.

2. Absaughaube gemäß Anspruch 1, wobei, wenn sich die Platte (6) in der geschlossenen Position (A) befindet, das weitere Ende gegen das Schubelement (20) durch eine Feder gedrückt wird, die auf die Antriebsstange (11) mit einer bestimmten Vorspannkraft einwirkt.

3. Absaughaube gemäß Anspruch 1 oder 2, wobei das Schubelement (20) an einem Zwischenteil des Kabels (16) zwischen der ersten Laufrolle (19) und der zweiten Laufrolle (18) befestigt ist und in Richtung der ersten Laufrolle (19) oder in Richtung der zweiten Laufrolle (18) entsprechend einer Bewegung des Kabels (16) bewegt wird.

4. Absaughaube gemäß Anspruch 3, wobei die Position des Schubelements (20) auf dem Zwischenteil einstellbar ist.

5. Absaughaube gemäß einem der Ansprüche 2 bis 4, wobei, wenn sich die Platte (6) in der geöffneten Position (C) befindet, entsprechend einer maximalen Sicherheitsöffnung (H), die Feder in einer Ruheposition ist und das weitere Ende nicht gegen das Schubelement (20) gedrückt ist.

6. Absaughaube gemäß Anspruch 5, wobei, wenn die Platte (6) über die maximale Sicherheitsöffnung (H) geöffnet wird, das Schubelement (20) nicht mit dem weiteren Ende der Antriebsstange (11) interagiert.

Revendications

1. Hotte aspirante comprenant une cabine (3), dans laquelle une chambre (4) est définie, et un dispositif d'aspiration destiné à évacuer un fluide de ladite chambre (4), ladite cabine (3) étant pourvue d'une ouverture frontale (5) reliant ladite chambre (4) à un environnement externe dans lequel une personne (P) peut rester à l'extérieur de ladite cabine (3), d'un panneau (6) mobile entre une position de fermeture (A), dans laquelle ledit panneau (6) ferme sensiblement ladite ouverture frontale (5) pour séparer ladite chambre (4) dudit environnement externe, et une position d'ouverture (B ; C), dans laquelle ledit panneau

(6) ouvre au moins partiellement ladite ouverture frontale (5), d'un conduit d'évacuation (7) apte à évacuer vers l'extérieur de ladite cabine (3) ledit fluide provenant de ladite chambre (4), d'un clapet (9) pour faire varier une section dudit conduit d'évacuation (7) en fonction du volume dudit fluide à aspirer, ledit clapet (9) étant entraîné par un dispositif mécanique (10) qui relie ledit clapet (9) et ledit panneau (6), **caractérisée en ce que** ledit dispositif mécanique (10) comprend un mécanisme de montée-descente relié à un autre système de montée-descente dudit panneau (6), ce dernier étant agencé pour permettre audit panneau (6) de coulisser de ladite position de fermeture (A) à ladite position d'ouverture (B ; C), et vice versa ; ledit mécanisme de montée-descente comprenant un câble (16) ayant une première extrémité fixée à un contrepoids (15) dudit système de montée-descente et une seconde extrémité fixée à un autre contrepoids (17) dudit mécanisme de montée-descente ; ledit mécanisme de montée-descente comprenant en outre une première poulie (19) et une seconde poulie (18) autour desquelles ledit câble (16) est au moins partiellement enroulé ; ledit dispositif mécanique (10) comprend en outre une tige d'entraînement (11) ayant une extrémité fixée à un arbre tournant (R) dudit clapet (9) ; ladite tige d'entraînement (11) comprenant une autre extrémité à l'opposé de ladite extrémité et agencée pour interagir avec un organe de poussée (20) prévu dans ledit dispositif mécanique (10) et fixé audit câble (16).

2. Hotte aspirante selon la revendication 1, dans laquelle lorsque ledit panneau (6) est dans ladite position de fermeture (A) ladite autre extrémité est poussée contre ledit organe de poussée (20) par un ressort agissant sur ladite tige d'entraînement (11) avec une certaine force de précontrainte.

3. Hotte aspirante selon la revendication 1, ou 2, dans laquelle ledit organe de poussée (20) est fixé à une portion intermédiaire dudit câble (16) entre ladite première poulie (19) et ladite seconde poulie (18) et est déplacé vers ladite première poulie (19) ou vers ladite seconde poulie (18) en compliance avec un mouvement dudit câble (16).

4. Hotte aspirante selon la revendication 3, dans laquelle la position dudit organe de poussée (20) sur ladite portion intermédiaire est réglable.

5. Hotte aspirante selon l'une quelconque des revendications 2 à 4, dans laquelle lorsque ledit panneau (6) est dans ladite position d'ouverture (C), correspondant à une ouverture maximale de sécurité (H), ledit ressort est dans une position de repos et ladite autre extrémité n'est pas poussée contre ledit organe de poussée (20).

6. Hotte aspirante selon la revendication 5, dans laquelle lorsque ledit panneau (6) est ouvert au-dessus de ladite ouverture maximale de sécurité (H), ledit organe de poussée (20) n'interagit pas avec ladite autre extrémité de ladite tige d'entraînement (11).

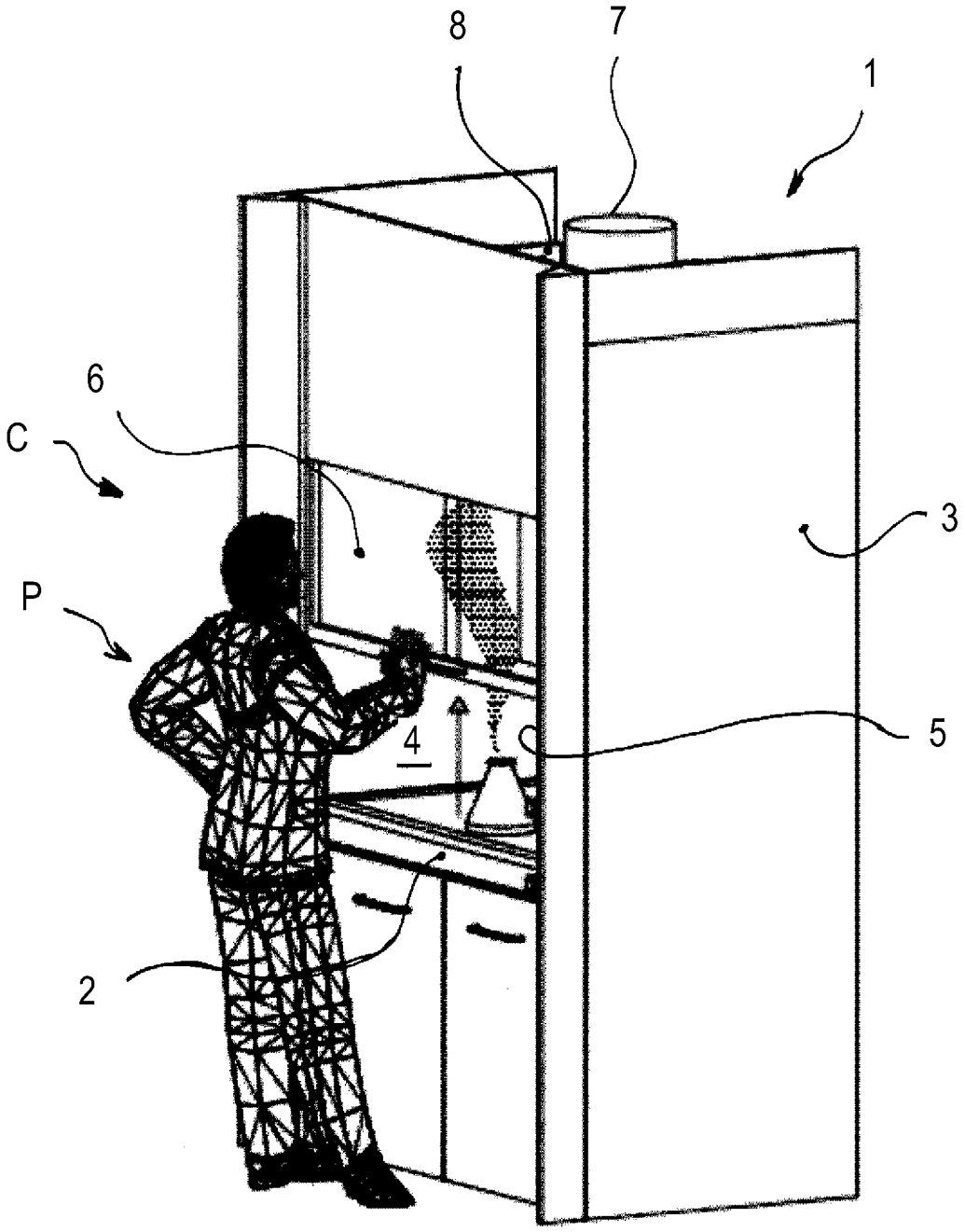

Fig. 1

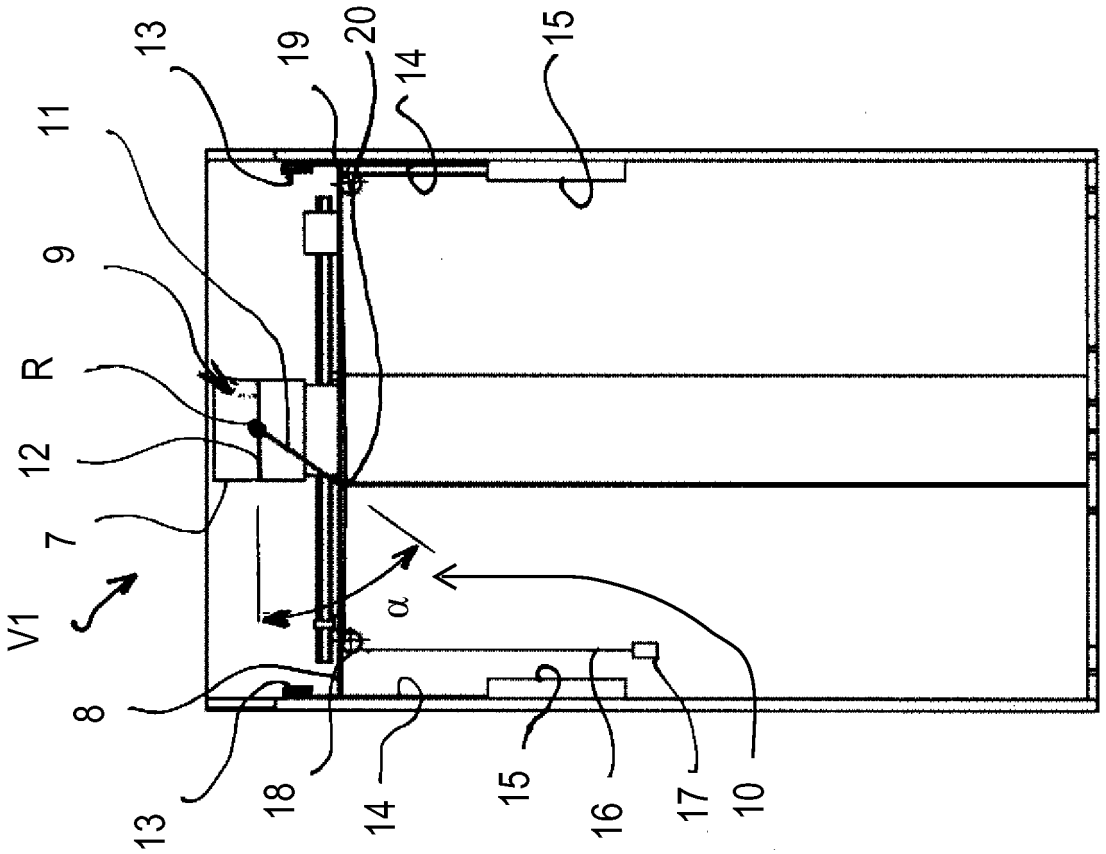

Fig. 3

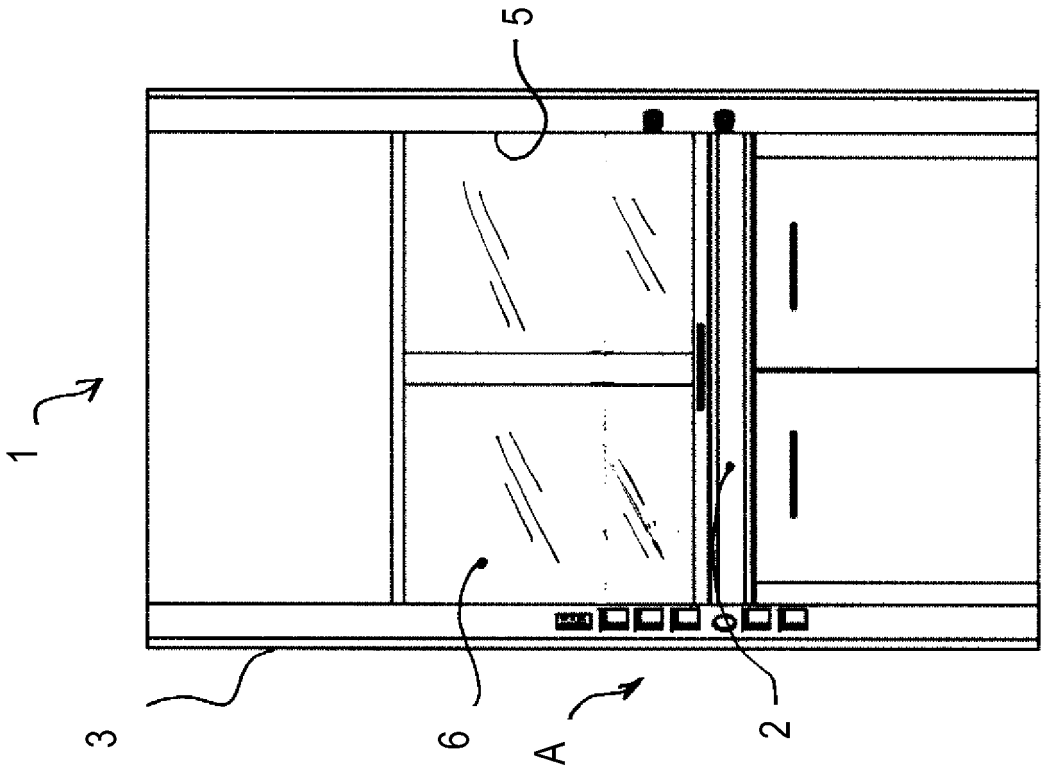

Fig. 2

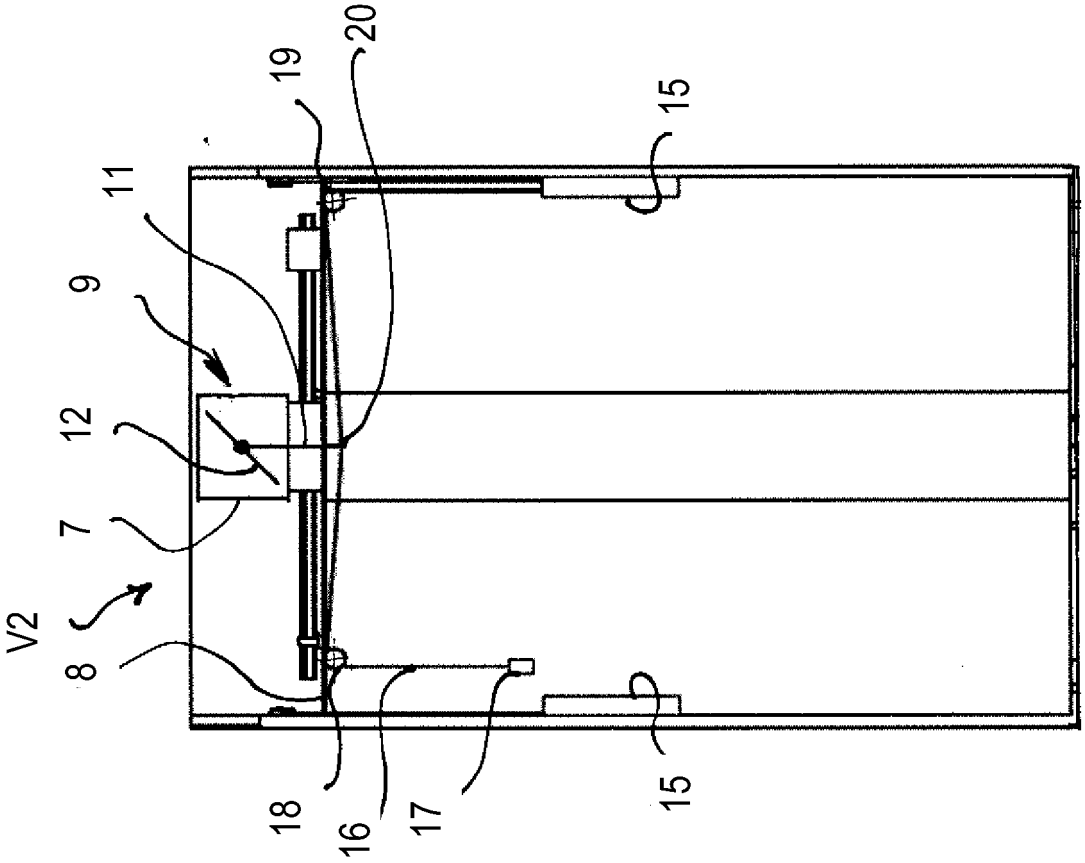

Fig. 5

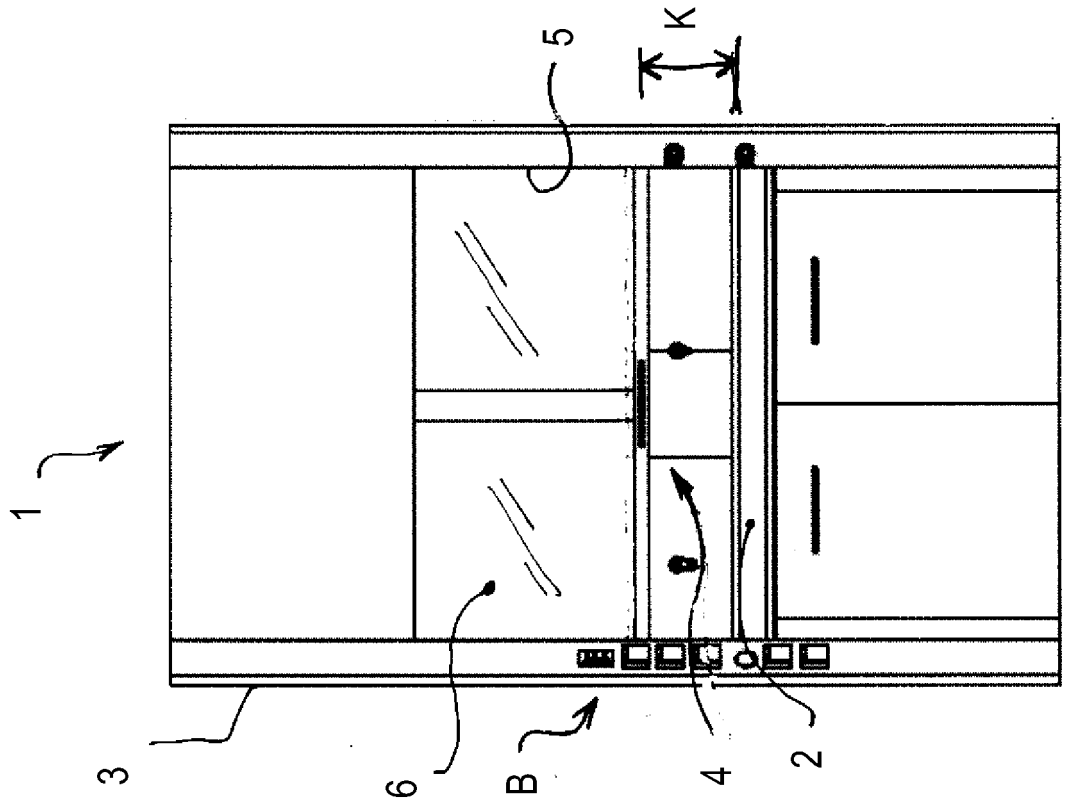

Fig. 4

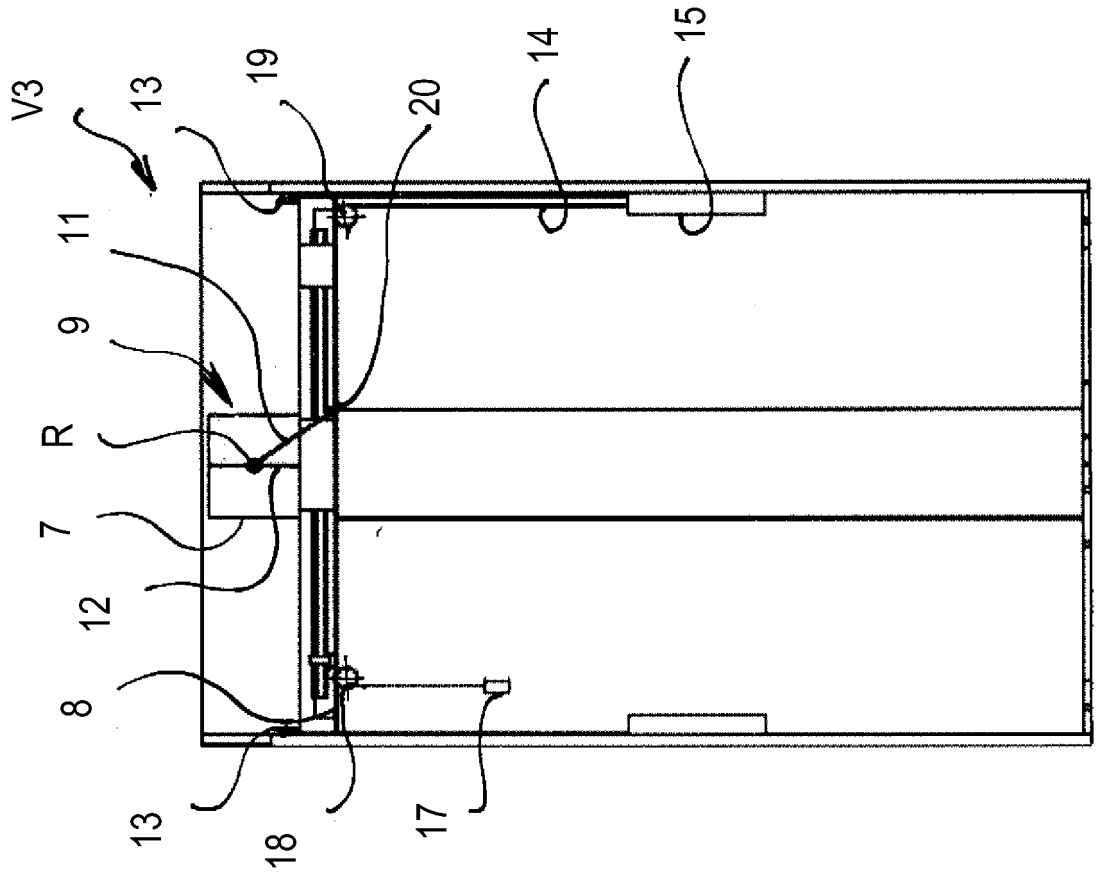

Fig. 7

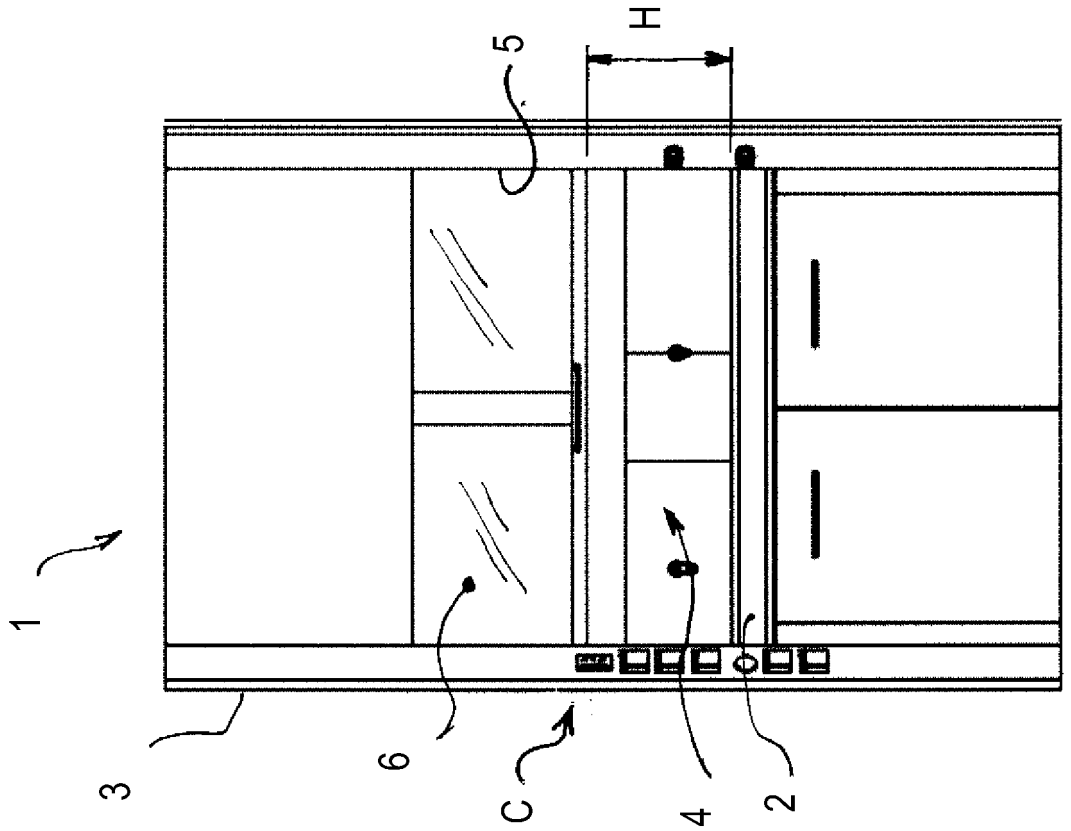

Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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