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(54) **DUST CONTAINER**

STAUBBEHÄLTER

CONTENEUR DE POUSSIERE

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Description

[0001] This invention relates to a dust container for a vacuum cleaner.

[0002] Dust containers that consist of a bag provided with a stiff connection plate and a rubber connector membrane surrounding an opening in the connection plate are well known and common on the market. These connection plates as well as the plate openings have different geometrical shapes to fit into different vacuum cleaners. The plate openings usually are circular or oval. In order to connect the dust container safely to the inlet tube of a particular vacuum cleaner, it is necessary that the plate opening does not have too large a divergence with respect to the outer dimensions of the inlet tube since the arrangement would otherwise not operate satisfactorily.

[0003] U.S. Patent No. 3,933,451 and U.S. Patent No. 5,039,324 describe dust containers having plate openings which are provided with a tab in order to close the opening when the dust container is removed from the vacuum and are provided with several tongues to provide stiffen against the inlet tube. Since the arrangement according to U.S. Patent No. 3,933,451 does not include a rubber membrane, the sealing effect will not be good because air can leak between the tongues when they have been deflected by the inlet tube.

[0004] The arrangement described in U.S. Patent No. 5,039,324 is provided with a rubber membrane sealing around the inlet tube under the influence of the tongues. This arrangement would probably work well as long as the inlet tube is circular and the diameter of the inlet tube is within a narrow range and corresponds to the plate openings dimensions, but the arrangement is not optimized with regard to the different shapes and dimensions of the inlet tubes.

[0005] In WO 98/32365, there is disclosed a connector system for providing a connection between a tubular connector having external projections and a mounting collar having a hole with internal notches for receiving the projections and securing them upon rotation. The connector opening has a non-planar edge and the collar includes an elastic sealing diaphragm with an elongated hole. During installation onto a connector, the above mentioned elements permits less force to be used in bringing the components into full connection.

[0006] This invention provides a dust container having a connection plate which fits into a range of different vacuum cleaners having oval tubes as well as circular inlet tubes and also having different opening diameters at the same time as the plate is effectively sealed against the inlet tube.

[0007] The dust container comprises a bag of air-permeable filter material having a bag opening which is at least partially covered or closed by a plate made of comparatively stiff material. The plate has a plate opening which is at least partially covered by a rubber membrane or the like. The membrane has a membrane opening through which dust-laden air flows into the bag by means of an inlet tube belonging to the vacuum cleaner, which is sealingly surrounded by the membrane. The edge part of the plate surrounding the plate opening is shaped as one or several resilient portions, which can be folded away or be torn off when the dust container is inserted into the vacuum cleaner in order to adapt the shape of the plate opening to the shape of the inlet tube with the membrane simultaneously sealingly surrounding the inlet tube. The resilient portions are an integrated part of the plate.

[0008] A fuller understanding of the invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a dust container with a connection plate according to an embodiment of the invention;

Fig. 2 is a top plan view of a first piece forming a part of the connection plate; and

Fig. 3 is a top plan view of a second piece which together with the first piece forms the finished connection plate.

[0009] An embodiment of the invention will now be described with reference to the accompanying drawings. With reference to Figs. 1-3, the dust container 10 comprises a dust bag 11 made of an air permeable filter material and a connection plate 12 made of a comparably stiff material such as cardboard or plastic.

[0010] The connection plate 12 comprises several layers which are joined to one another by gluing or the like. The first layer 13 which forms the inner layer of the plate, i.e., the layer that faces toward the interior of the bag, has a circular opening 14 which is partially covered by a rubber membrane 15. The membrane 15 has an oval opening 16, and at its edge portions is glued at the area around the opening 14 of the layer 13. The opening 16 preferably has such a shape that its periphery, when not being deformed, is situated within an inner and an outer circle, whose diameters are within the range of 35-43 mm and with the relationship between the diameter of the inner and outer circle being greater than 0.75.

[0011] The connection plate 12 is provided with a second, intermediate layer 17 comprising three parts. A flat central part 18 is separated from two additional arranged side parts 20 by means of cuttings 19 at each side of the central part. The two side parts 20 are glued to the other layers of plate 12, while the central part 18 is not joined to these layers. The central part 18 further comprises a circular opening 21 and a handle part 22, which is accessible from the outside of the finished plate. Moreover, the central part 18 is provided with outwardly extending shoulders 23 cooperating with end stops 24 arranged at the parts 20. Thus, when the plate has been completed, the central part 18 can be moved in the plane of the plate until the shoulders 23 abut the end stops 24 with the side parts 20 serving as guides for the movement. The first

layer 13 and the intermediate layer 17 are, as appears from Fig 2, an integrated piece and are connected to one another by means of a weakened line portion 25 when the plate is manufactured. By folding along the line 25, and a following gluing operation, the two layers are joined to one another.

[0012] The connection plate 12 is further provided with a third additional outer layer 26, as shown in Fig. 3. This layer has a mainly oval opening 27 with several outwardly extending recesses 28 that are arranged at the edge portion of the opening 27. The edge portion of the plate surrounding the opening 27 also has a circular cutting 29 which partially extends through the layer 26, the diameter of the cuttings mainly corresponding to the maximum "diameter" of the opening 27. The edge portion is also broken apart by means of several radially directed "slots" 30 extending between the oval opening 27 and the cuttings 29 such that several foldable or removable tongues are formed. Further, the outer layer 26 has outwardly extending lugs 32 which are connected to the layer by means of tear-off portions 33.

[0013] When the connection plate 12 is manufactured, the pieces that are shown in Figs. 2 and 3 are produced, after which the layers 13 and 17 are folded together and are glued in the way described above, and then layer 26 is glued on the side parts 20 of the intermediate layer 17. The complete plate is then glued on the bag 11 in order to form the finished container.

[0014] When using the dust container in a vacuum cleaner having an oval inlet tube and with the outer dimensions of the inlet tube corresponding to the oval opening 27, the inner edge of the tongues 31 will abut the outer periphery of the inlet tube at the same time as the membrane 15 forms a sealing against the inlet tube. If the dust container is used for a vacuum cleaner with a circular inlet tube whose diameter corresponds to the diameter of the cuttings 29, the inlet tube will press away the tongues 31 and uncover a circular opening when the container is inserted into the vacuum cleaner. Thus, in this case, the membrane will also seal against the inlet opening.

[0015] When the dust container is to be removed from the vacuum cleaner, the handle 22 is pulled upwards (see Fig. 1), which means that the central part 18 will move with respect to the layers 13 and 26 and hence close the opening 16. When the central part has come to a position where the shoulders 23 engage the end stop 24, the complete plate 12 and consequently the complete dust container will be pulled out from the vacuum cleaner.

Claims

1. A dust container for a vacuum cleaner comprising:

a bag (11) having a bag opening which is at least partially covered by a connection plate (12) made of a comparatively stiff material;

the plate (12) having a plate opening (27) which is at least partially covered by a flexible membrane (15);

the membrane (15) having a membrane opening (16) through which air flows into the bag (11) by an inlet tube belonging to the vacuum cleaner, wherein the inlet tube is sealingly surrounded by the membrane (15);

the edge part of the plate (12) surrounding the plate opening (27) is shaped as at least one resilient portion(31) which can be folded away or be torn off in order to adapt the shape of the plate opening (27) to the shape of the inlet tube with the membrane (15) simultaneously sealingly surrounding the inlet tube when the plate (12) is attached to the vacuum cleaner; and

the resilient portion(31) is an integrated part of the plate (12) **characterized in that**

the plate opening (27), when not being influenced, is mainly shaped as an oval, whereas the plate opening (27), when the resilient portion (31) is deformed or torn off, is mainly circular, or the plate opening (27), when not being influenced, is mainly circular, whereas the plate opening (27), when the resilient portion (31) is deformed or torn off, is mainly shaped as an oval.

2. A dust container according to claim 1 **characterized in that** the plate (12) is manufactured from cardboard or plastic.

3. A dust container according to any of the preceding claims **characterized in that** the membrane opening (16) is mainly shaped as an oval.

4. A dust container according to claim 3 **characterized in that** the periphery of the membrane opening when not being deformed is situated within an inner and an outer circle, the relationship between the diameter of the inner and the outer circle being greater than 0.75.

5. A dust container according to claim 4 **characterized in that** the diameters for the two circles are approximately 35-43 mm.

6. A dust container according to any of the preceding claims **characterized in that** the plate also supports a flat element (18) intended to be moved mainly parallel to the plate between a first position where an element opening (21) belonging to the element is mainly coaxial with said plate opening (27) and a second position where the plate opening is covered by the element.

7. A dust container according to any of the preceding claims **characterized in that** the plate comprises two sections which are partially overlapping one an-

other, each having a plate opening (21,27) wherein the resilient portion, not influenced by the plate opening (27) of one of the layers, has a mainly oval shape, whereas the plate opening (21) of the other layer has a mainly circular shape.

8. A dust container according to claim 7 **characterized in that** the maximum diameter of the oval plate opening is substantially the same as the diameter of the circular plate opening (21).

9. A dust container according to claim 6 or 7 **characterized in that** the membrane (15) and/or the element (18) are placed between the two sections.

Patentansprüche

1. Staubbehälter für einen Staubsauger, umfassend:

einen Beutel (11), der eine Beutelöffnung aufweist, die mindestens teilweise von einer Verbindungsplatte (12) aus verhältnismäßig steifem Material bedeckt ist;

wobei die Platte (12) eine Plattenöffnung (27) aufweist, die mindestens teilweise von einer flexible Membran (15) bedeckt ist;
wobei die Membran (15) eine Membranöffnung (16) aufweist, durch die Luft in den Beutel (11) durch ein Einlassrohr, das zum Staubsauger gehört, strömt, wobei das Einlassrohr dichtend von der Membran (15) umgeben ist;
wobei der Kantenteil der Platte (12), der die Plattenöffnung (27) umgibt, als mindestens ein elastischer Abschnitt (31) geformt ist, der weggeklappt oder abgezogen werden kann, um die Form der Plattenöffnung (27) an die Form des Einlassrohrs anzupassen, wobei die Membran (15) gleichzeitig das Einlassrohr dichtend umgibt, wenn die Platte (12) an dem Staubsauger befestigt ist; und
der elastische Abschnitt (31) ein Bestandteil der Platte (12) ist, **dadurch gekennzeichnet, dass**
die Plattenöffnung (27), wenn sie nicht beeinflusst wird, hauptsächlich als Oval geformt ist, wobei die Plattenöffnung (27), wenn der elastische Abschnitt (31) verformt oder abgezogen wird, hauptsächlich kreisförmig ist oder
die Plattenöffnung (27), wenn sie nicht beeinflusst wird, hauptsächlich kreisförmig ist, wobei die Plattenöffnung (27) wenn der elastische Abschnitt (31) verformt oder abgezogen wird, hauptsächlich als Oval geformt ist.

2. Staubbehälter nach Anspruch 1, **dadurch gekennzeichnet, dass** die Platte (12) aus Pappe oder Kunststoff hergestellt ist.

3. Staubbehälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Membranöffnung (16) hauptsächlich als Oval geformt ist.

4. Staubbehälter nach Anspruch 3, **dadurch gekennzeichnet, dass** die Außenfläche der Membranöffnung, wenn sie nicht verformt ist, sich in einem inneren und einem äußeren Kreis befindet, wobei die Beziehung zwischen dem Durchmesser des inneren und des äußeren Kreises größer als 0,75 ist.

5. Staubbehälter nach Anspruch 4, **dadurch gekennzeichnet, dass** die Durchmesser für die zwei Kreise ungefähr 35 bis 43 mm betragen.

6. Staubbehälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Platte auch ein flaches Element (18) stützt, dass hauptsächlich parallel zur Platte zwischen einer ersten Position bewegt werden soll, in der eine Elementöffnung (21), die zu dem Element gehört, hauptsächlich koaxial zu der Plattenöffnung (27) ist, und einer zweiten Position, in der die Plattenöffnung von dem Element bedeckt ist.

7. Staubbehälter nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Platte zwei Abschnitte umfasst, die teilweise einander überlappen, die jeweils eine Plattenöffnung (21, 27) aufweisen, wobei der elastische Abschnitt, der nicht von der Plattenöffnung (27) einer der Schichten beeinflusst ist, eine hauptsächlich ovale Form aufweist, wobei die Plattenöffnung (21) der anderen Schicht eine hauptsächlich kreisförmige Form aufweist.

8. Staubbehälter nach Anspruch 7, **dadurch gekennzeichnet, dass** der maximale Durchmesser der ovalen Plattenöffnung im Wesentlichen gleich dem Durchmesser der kreisförmigen Plattenöffnung (21) ist.

9. Staubbehälter nach Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** die Membran (15) und/oder das Element (18) zwischen den zwei Abschnitten platziert sind.

Revendications

1. Conteneur de poussière pour un aspirateur comprenant :

un sac (11) présentant une ouverture de sac qui est au moins partiellement couverte par une plaque de raccordement (12) fabriquée en un matériau comparativement rigide ;
la plaque (12) présentant une ouverture de pla-

que (27) qui est au moins partiellement couverte par une membrane souple (15) ;
la membrane (15) présentant une ouverture de membrane (16) à travers laquelle de l'air circule dans le sac (11) par un tube d'entrée appartenant à l'aspirateur, dans lequel le tube d'entrée est entouré de manière étanche par la membrane (15) ;
la partie de bordure de la plaque (12) entourant l'ouverture de plaque (27) est formée en tant qu'au moins une portion résiliente (31) qui peut être repliée ou être arrachée afin d'adapter la forme de l'ouverture de plaque (27) à la forme du tube d'entrée, avec la membrane (15) entourant simultanément de manière étanche le tube d'entrée lorsque la plaque (12) est attachée à l'aspirateur ; et
la portion résiliente (31) est une partie intégrée de la plaque (12) **caractérisé en ce que**
l'ouverture de plaque (27), quand elle n'est pas influencée, est formée principalement en tant qu'ovale, tandis que l'ouverture de plaque (27), quand la portion résiliente (31) est déformée ou arrachée, est principalement circulaire, ou
l'ouverture de plaque (27), quand elle n'est pas influencée, est principalement circulaire, tandis que l'ouverture de plaque (27), quand la portion résiliente (31) est déformée ou arrachée, est principalement formée en tant qu'ovale.

2. Conteneur de poussière selon la revendication 1, **caractérisé en ce que** la plaque (12) est fabriquée à partir de carton ou de plastique.

3. Conteneur de poussière selon l'une quelconque des revendications précédentes **caractérisé en ce que** l'ouverture de membrane (16) est principalement formée en tant qu'ovale.

4. Conteneur de poussière selon la revendication 3, **caractérisé en ce que** la périphérie de l'ouverture de membrane quand elle n'est pas déformée est située à l'intérieur d'un cercle interne et un cercle externe, le rapport entre le diamètre du cercle interne et du cercle externe étant supérieur à 0,75.

5. Conteneur de poussière selon la revendication 4, **caractérisé en ce que** les diamètres pour les deux cercles sont d'environ 35-43 mm.

6. Conteneur de poussière selon l'une quelconque des revendications précédentes **caractérisé en ce que** la plaque supporte également un élément plat (18) destiné à être déplacé principalement parallèlement à la plaque entre une première position où une ouverture d'élément (21) appartenant à l'élément est principalement coaxiale avec ladite ouverture de plaque (27) et une seconde position où l'ouverture de plaque est couverte par l'élément.

7. Conteneur de poussière selon l'une quelconque des revendications précédentes **caractérisé en ce que** la plaque comprend deux sections qui se recouvrent partiellement l'une l'autre, chacune présentant une ouverture de plaque (21, 27), dans lequel la portion résiliente, non influencée par l'ouverture de plaque (27) de l'une des couches, présente une forme principalement ovale, tandis que l'ouverture de plaque (21) de l'autre couche présente une forme principalement circulaire.

8. Conteneur de poussière selon la revendication 7, **caractérisé en ce que** le diamètre maximum de l'ouverture de plaque ovale est essentiellement le même que le diamètre de l'ouverture de plaque circulaire (21).

9. Conteneur de poussière selon la revendication 6 ou 7, **caractérisée en ce que** la membrane (15) et/ou l'élément (18) sont placés entre les deux sections.

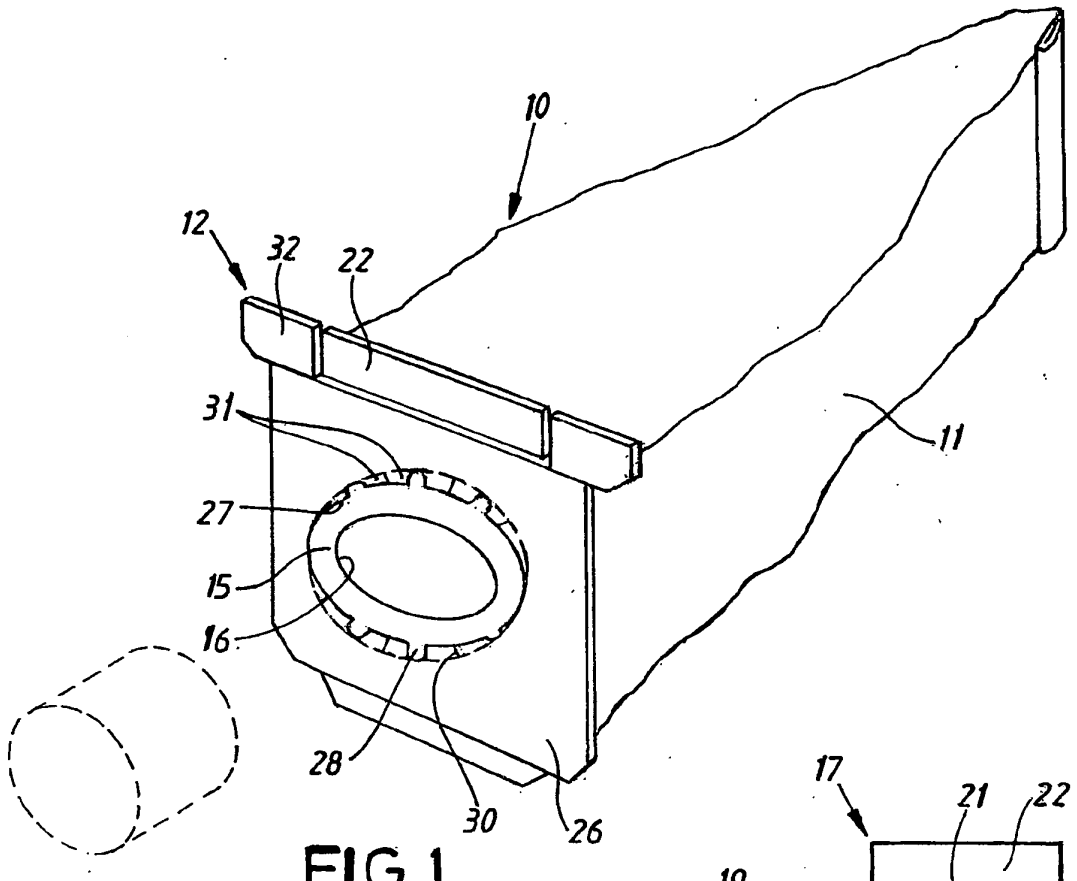


FIG.1

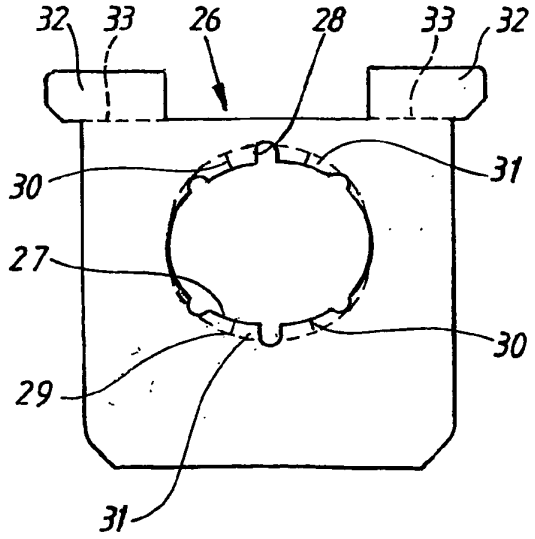


FIG. 3

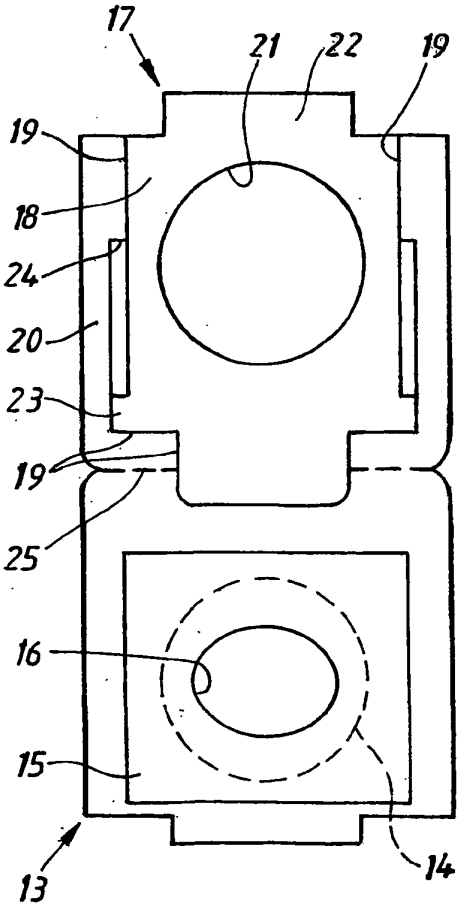


FIG. 2

REFERENCES CITED IN THE DESCRIPTION

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- WO 9832365 A **[0005]**