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(54) **A VACUUM CLEANER HAVING AN INTERFERENCE CREATING ARRANGEMENT FOR SOUND DAMPING**

STAUBSAUGER MIT STÖRANORDNUNG ZUR SCHALLDÄMPFUNG

ASPIRATEUR POUR VU D'UN ENSEMBLE GENERATEUR D'INTERFERENCE POUR
L'INSONORISATION

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Description

Field of the invention

[0001] The invention relates to a vacuum cleaner having an interference creating arrangement, said interference creating arrangement comprising at least one first channel having an inlet opening, which is positioned towards the exhaust or intake air of a vacuum cleaner motor, and being terminated at its other end by a wall and an outlet opening, said wall being disposed perpendicularly to the main propagation direction of the air and the sound with a height which is equal to or smaller than the length of the first channel, and at least one second channel is provided in extension of the outlet opening.

The prior art

[0002] US Patent No. 4,970,753 discloses a vacuum cleaner having an interference creating arrangement of the type defined in the introductory portion of claim 1. According to the US patent, the interference creating arrangement is composed as a two-part housing having two inlet openings which are connected with their respective channels, through which exhaust air from the motor and the fan blade of a vacuum cleaner is conveyed toward its respective wall and labyrinth in the two-part housing before reaching the outlet opening. The labyrinth comprises a series of parallel interconnected channels, which are placed on top of each other and extend in opposite directions. The exhaust air is let through one channel in one direction and via a wall into the next channel, through which it will pass in the opposite direction.

[0003] This structure is rather expensive to manufacture, since the housing must necessarily be made of two parts for manufacturing reasons.

[0004] Accordingly, an object of the invention is to provide a vacuum cleaner having an interference creating arrangement which is easier to manufacture.

The object of the invention

[0005] The object of the invention is achieved by a vacuum cleaner of the type defined in the introductory portion of claim 1, which is characterized in that the second channel extends in a direction parallel with the first channel and that air let through the first and second channel flows in the same direction.

[0006] Hereby, it is possible to provide the interference creating arrangement by the moulding of just one piece.

[0007] Expedient embodiments of the vacuum cleaner having the interference creating arrangement according to the invention are defined in claims 2 - 4.

The drawings

[0008] The invention will now be explained more fully with reference to the drawing, in which

fig. 1 shows the principle underlying the invention,

fig. 2 shows a vacuum cleaner motor in a housing, where the interference creating arrangement according to the invention is incorporated in the housing, while

fig. 3 schematically shows a lattice for a vacuum cleaner which is constructed according to the principles of the invention.

Description of an exemplary embodiment

[0009] In fig. 1, the numeral 1 designates a channel to which exhaust air or intake air, e.g. from a vacuum cleaner, is conveyed in the direction of the arrow 2.

[0010] At its remote end, the channel is terminated by a smooth wall 4 from which the exhaust air or the intake air is reflected as shown by the arrow 3, which means that the exhaust air or the intake air passing through an opening 5, which is disposed perpendicularly to the first channel 1, is damped.

[0011] To achieve the best damping, the length of the channel L must be 10 mm or more, so as to achieve destructive interference between the reflecting wave from the wall and the wave which is sent into the channel of the length L.

[0012] As will additionally be seen in fig. 1, a second channel 6 is provided, said second channel being disposed in parallel with the first channel 1 and connected with the opening 5.

[0013] According to the invention, the wall 4 has a height B which is equal to or smaller than the length L of the channel 1. Hereby, the channels 1, 6 may be moulded in one piece, which means lower manufacturing costs.

[0014] In fig. 2, the numeral 8 designates a vacuum cleaner motor which drives a fan blade (not shown), which is disposed inside a housing having openings 9 through which exhaust air originating from a vacuum cleaner hose (not shown) arrives, as shown by the arrow 7, and is driven into the motor compartment of the vacuum cleaner, where the air is conveyed from openings 9 to channels 12, 13 in the directions of the arrows 10, 11.

[0015] These channels are configured as shown in fig 1 and will affect the interference of the exhaust air, which arrives from the motor 8 and the fan blade, quite considerably.

[0016] Fig. 3 shows a cross-section of a lattice (14) which is configured using the principles of the invention.

[0017] As will be seen, the lattice consists of a number of parallel channels 15, 16, said first channels 15 being terminated by walls 17.

[0018] Such a lattice is relatively inexpensive to manufacture and is easy to adapt to several types of vacuum cleaners as a loose part which may be inserted into the vacuum cleaner.

[0019] Although the invention has been explained by specific exemplary embodiments, nothing prevents the

embodiments from being modified within the scope of the claims.

[0020] It is conceivable, e.g., that the lattice in fig. 3 was provided with channels which have a varying length so that it may be adapted to the spectral composition of a source of sound.

Claims

1. A vacuum cleaner having an interference creating arrangement, said interference creating arrangement comprising at least one first channel (1) having an inlet opening, which is positioned towards the exhaust or intake air of a vacuum cleaner motor (8), and being terminated at its other end by a wall (4) and an outlet opening (5), said wall (4) being disposed perpendicularly to the main propagation direction (2) of the air and the sound, with a height (B) which is equal to or smaller than the length (L) of the channel (1), and at least one second channel (6) is provided in extension of the outlet opening (5), **characterized in that**, the second channel (6) extends in a direction parallel with the first channel (1) and **in that** air let through the first and second channel flows in the same direction.
2. A vacuum cleaner according to claim 1, **characterized in that**, the wall (4) is disposed perpendicularly relative to the sound propagation direction (2) in the first channel.
3. A vacuum cleaner according to claim 2, **characterized in that**, the length (L) of the first channel is 10 mm or more.
4. A vacuum cleaner according to claim 1, **characterized in that**, the interference arrangement is composed as a lattice (14) having a plurality of parallel first channels (15) and second channels (16).

Patentansprüche

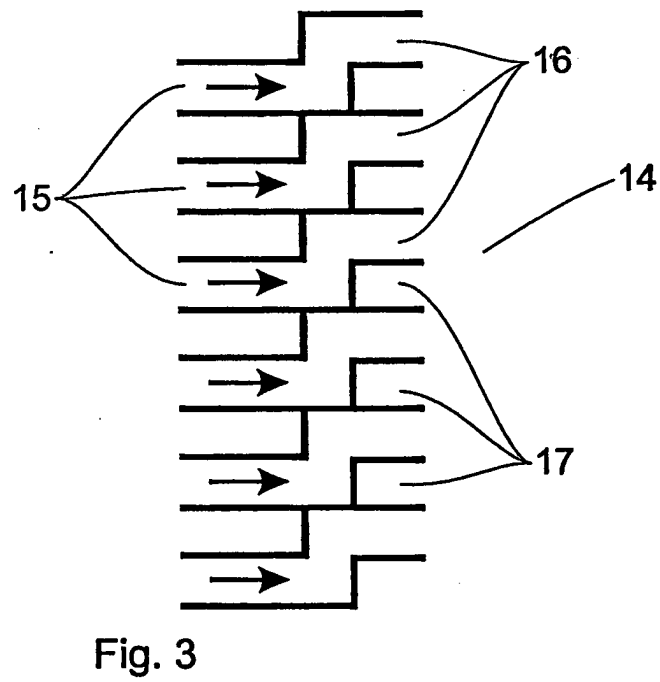
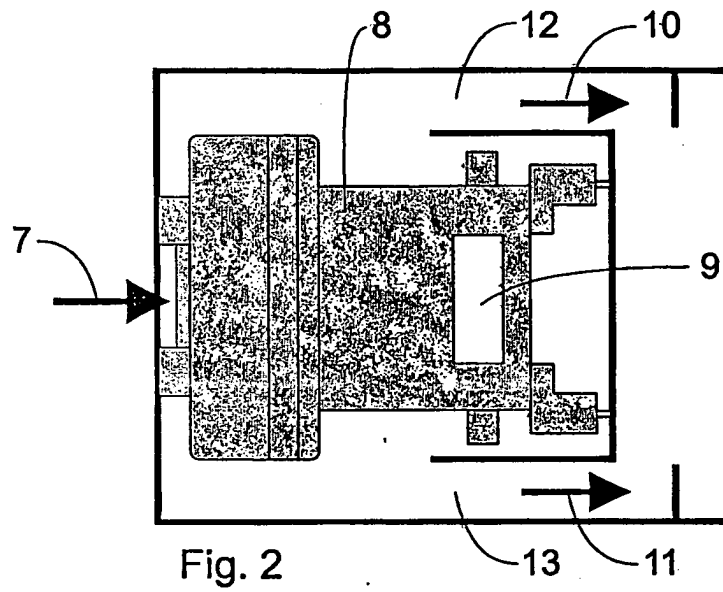
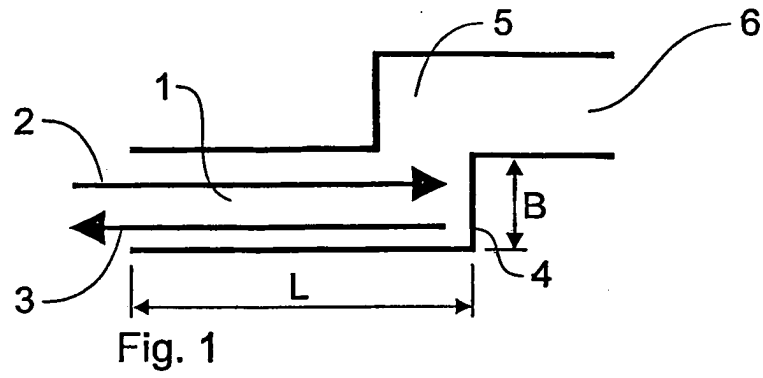
1. Staubsauger mit Störanordnung, wobei die Störanordnung enthält: wenigstens einen ersten Kanal (1) der eine Einlassöffnung hat, die der Auslass- oder Einlassluft eines Staubsaugermotors (8) zugewandt angeordnet ist, und an seinem anderen Ende in einer Wand (4) und einer Auslassöffnung (5) endet, wobei die Wand (4) senkrecht zur Hauptausbreitungsrichtung (2) der Luft und des Schalls mit einer Höhe (B) angeordnet ist, die gleich oder kleiner der Länge (L) des Kanals (1) ist, und wenigstens einen zweiten Kanal (6) der in Verlängerung der Auslassöffnung (5) vorgesehen ist, **dadurch gekennzeichnet, dass** sich der zweite Kanal (6) in einer Richtung parallel zum ersten Kanal (1) erstreckt und Luft, die den

ersten und den zweiten Kanal durchläuft, in dieselbe Richtung strömt.

2. Staubsauger nach Anspruch 1, **dadurch gekennzeichnet, dass** die Wand (4) senkrecht im Bezug auf die Schallausbreitungsrichtung (2) im ersten Kanal angeordnet ist.
3. Staubsauger nach Anspruch 2, **dadurch gekennzeichnet, dass** die Länge (L) des ersten Kanals wenigstens 10 mm beträgt.
4. Staubsauger nach Anspruch 1, **dadurch gekennzeichnet, dass** die Störanordnung aus einem Gitter (14) besteht, das über eine Vielzahl paralleler erster Kanäle (15) und zweiter Kanäle (16) verfügt.

Revendications

1. Aspirateur comportant un agencement de génération d'interférence, ledit agencement de génération d'interférence comprenant au moins un premier canal (1) comportant une ouverture d'entrée, qui est positionnée vers l'air d'échappement ou d'admission d'un moteur d'aspirateur (8), et se terminant à son autre extrémité par une paroi (4) et une ouverture de sortie (5), ladite paroi (4) étant disposée perpendiculairement à la direction de propagation principale (2) de l'air et du son, avec une hauteur (B) qui est égale ou inférieure à la longueur (L) du canal (1), et au moins un deuxième canal (6) étant prévu dans le prolongement de l'ouverture de sortie (5), **caractérisé en ce que** le deuxième canal (6) s'étend dans une direction parallèle au premier canal (1), et **en ce que** l'air qui passe dans le premier canal et l'air qui passe dans le deuxième canal circulent dans la même direction.
2. Aspirateur selon la revendication 1, **caractérisé en ce que** la paroi (4) est disposée perpendiculairement par rapport à la direction de propagation du son (2) dans le premier canal.
3. Aspirateur selon la revendication 2, **caractérisé en ce que** la longueur (L) du premier canal est de 10 mm ou plus.
4. Aspirateur selon la revendication 1, **caractérisé en ce que** l'agencement d'interférence est composé d'un réseau (14) comportant une pluralité de premiers canaux (15) et de deuxièmes canaux (16) parallèles.



REFERENCES CITED IN THE DESCRIPTION

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