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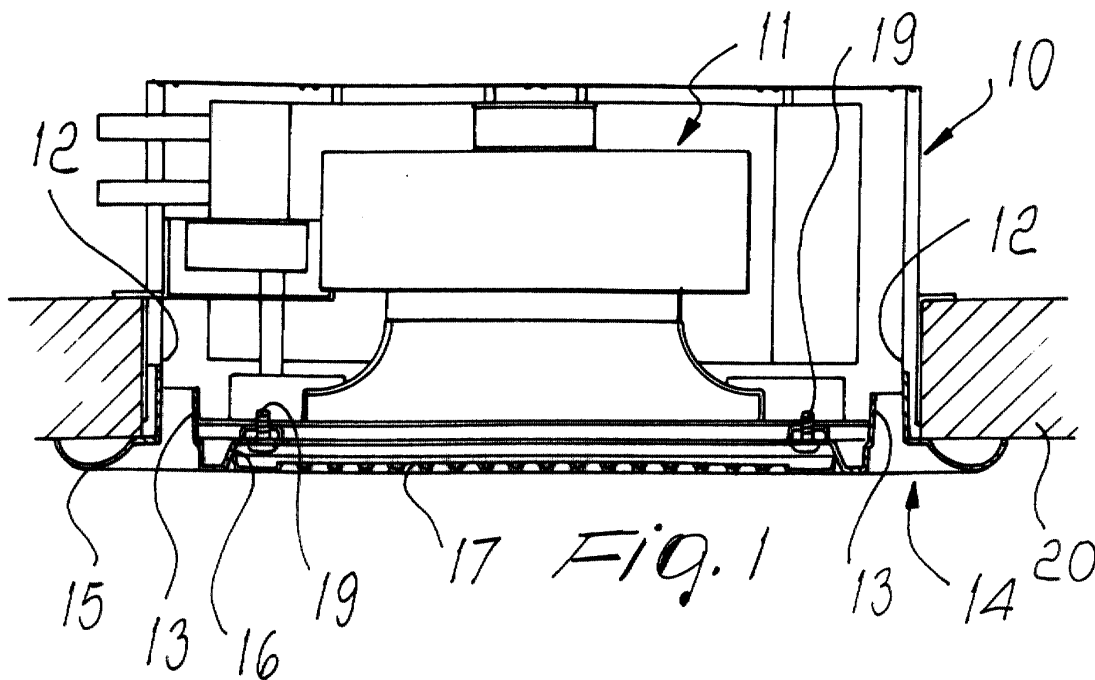
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(54) **Box for the internal flush-mounted unit of air conditioners**

(57) A box for the internal flush-mounted unit of air conditioners, comprising a box-like flush-mounting body (10) which accommodates the components that form the internal unit and is provided with treated air passage

channels, respective expulsion outlets (13), integrated in a covering base (14) to be installed in view and provided with an intake grille (17), being associated by insertion with the axially orientated exits (12) of the channels.



Description

[0001] The present invention relates to a box for the internal flush-mounted unit of air conditioners.

[0002] Air conditioners in which the internal unit, constituted by a finned heat exchanger, a condensate extraction pump and a fan, is flush-mounted in the ceiling are currently commercially available.

[0003] In practice, the components that form the internal unit are arranged in a box-like body which is inserted in a false ceiling and has a covering base which is fitted so as to be in view.

[0004] The base includes a grille for aspirating the air to be treated and outlets for expelling the treated air.

[0005] The base is constituted in practice by a plastic frame in which a seat for resting and fixing the intake grille is formed.

[0006] The plastic frame is usually manufactured by injection-molding, which while allowing to manufacture the product complete with all its components (supports for filter guides, receiver support, coupling hinges) has the drawback of requiring particularly complicated and accordingly expensive molds, and this has a negative effect on the final cost of the product.

[0007] The box-like flush-mounting body is instead usually made of metallic material.

[0008] The current structure of the above-cited flush-mounting boxes requires the metallic box-like body to be arranged inside the false ceiling so that the plastic supporting base, once fixed to said structure, rests perfectly against the ceiling and so that the treated air passage channels provided in the box-like body coincide with the outlets located on the base.

[0009] This requirement entails considerable installation problems, since precise adjustment of the position of the box-like body inside the false ceiling is required together with precise adjustment of the position of the plastic base, while also taking into account external visual appearance.

[0010] The aim of the present invention is to provide a box for the internal flush-mounted unit of air conditioners whose structure eliminates the drawbacks noted above of conventional boxes.

[0011] Within this aim, a consequent primary object of the invention is to achieve a considerable reduction in manufacturing costs and therefore in the costs of the final product, with a consequent increase in competitiveness as regards the retail price.

[0012] Another object of the invention is to provide a box whose structure has no negative effect on the aesthetics of the product.

[0013] This aim and these and other objects which will become better apparent hereinafter are achieved by a box for the internal flush-mounted unit of air conditioners, characterized in that it comprises a box-like flush-mounting body which accommodates the components that form said internal unit and is provided with treated air passage channels, respective expulsion outlets, in-

tegrated in a covering base to be installed in view and provided with an intake grille, being associated by insertion with the axially orientated exits of said channels.

[0014] Further characteristics and advantages of the invention will become better apparent from the following detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a sectional view of an internal flush-mounted unit of an air conditioner, with a box having the structure according to the invention;

Figure 2 is a front view of a base to be arranged in view, which is comprised within the structure according to the invention;

Figure 3 is a front view of a component of the base of Figure 2;

Figure 4 is a sectional view, taken along a transverse plane, of the component of Figure 3.

[0015] With reference to the figures, a box for the internal flush-mounted unit of air conditioners comprises a box-like flush-mounting body 10 which is conveniently made of plastics by thermoforming and accommodates the components, generally designated by the reference numeral 11, which are constituted by a finned heat exchanger, a condensate extraction pump and a fan.

[0016] The box-like body 10, which in this case has a square plan shape, has, proximate to its perimetric walls, corresponding treated air passage channels with exits 12 which have a rectangular profile and are arranged axially; respective expulsion outlets 13 are associated with said exits by insertion and are integrated in a covering base which is generally designated by the reference numeral 14 and is meant to be fitted in view.

[0017] The outlets 13 are shaped like a truncated pyramid (in practice, they taper from the base 14 toward the exits 12) so as to enter the exits 12 without difficulty.

[0018] The covering base 14 is constituted by an outer frame 15 which is also produced by thermoforming plastic material, with an internal recessed abutment edge 16 for accommodating an intake grille 17.

[0019] The grille 17 can be hinged with one side to the frame 15 and can have, on the opposite side, reversible means for fixing to the frame 15.

[0020] The frame 15 instead has, in regions covered by the grille 17, holes 18 for fixing to the box-like body 10 by means of screws 19.

[0021] As regards assembly, the box-like body 10 can be conveniently inserted in the false ceiling 20 without requiring exact placement with respect to the outer surface of the false ceiling 20.

[0022] The exact positioning of the covering base 14, which must rest against the outer surface of the false ceiling 20, is no longer constrained by the arrangement of the box-like body 10, since said positioning is ensured by the mating between the outlets 13 and the exits 12, the outlets being inserted in the exits.

[0023] The degree of insertion determines, in practice, the positioning tolerance of the box-like body 10 with respect to the outer surface of the false ceiling 20.

[0024] In practice, the base 14 is rendered independent of the positioning of the box-like body 10.

[0025] The fact that exact positioning of the box-like body 10 and exact mutual positioning of the base 14 are no longer necessary allows a considerable reduction in assembly times.

[0026] Moreover, the provision of the box-like body 10 and of the covering base 14 by using thermoformed materials allows a drastic reduction in manufacturing costs, since this process requires far cheaper molds than required by injection-molding.

[0027] In practice it has been observed that the intended aim and objects of the present invention have been achieved.

[0028] In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to requirements.

[0029] The disclosures in Italian Utility Model Application No. PD2000U000023 from which this application claims priority are incorporated herein by reference.

[0030] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

claims, **characterized in that** said outlets (13) taper from said base (14) toward said exits.

6. The box according to one or more of the preceding claims, **characterized in that** said box-like body (10) has a quadrangular plan shape with four treated air passage channels arranged adjacent to the corresponding outer walls.
7. The box according to one or more of the preceding claims, **characterized in that** said base (14) is composed of a frame (15) inside which said grille (17) is applied, said outlets (13) being arranged around said grille.

Claims

1. A box for the internal flush-mounted unit of air conditioners, **characterized in that** it comprises a box-like flush-mounting body (10) which accommodates the components that form said internal unit and is provided with treated air passage channels, respective expulsion outlets (13), integrated in a covering base (14) to be installed in view and provided with an intake grille (17), being associated by insertion with axially orientated exits (12) of said channels.
2. The box according to claim 1, **characterized in that** said box-like body (10) is made of thermoformed plastic material.
3. The box according to claim 1, **characterized in that** said base (14) is made of thermoformed plastic material.
4. The box according to one or more of the preceding claims, **characterized in that** the association of said exits (12) with said outlets (13) is provided by inserting said outlets in said exits.
5. The box according to one or more of the preceding

