

A FLAME-RETARDANT PRIMARY FILTER

Utility Model Patent — English Translation

English translation prepared for reference only. In case of any discrepancy, the original Chinese patent publication (CN 208493605 U) shall prevail.

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(57) ABSTRACT

The present utility model provides a flame-retardant primary filter, comprising an outer frame, wherein a first mesh layer, a glass fiber layer, a filter element layer, a protective cushion layer and a second mesh layer are sequentially stacked in the outer frame; three grooves are formed in a side of the filter element layer facing the protective cushion layer; strip bags are placed in the grooves; and the strip bags are filled with fire-retardant liquid. The primary filter of the present utility model can be installed at a ventilation opening of an air conditioning device; compared with a traditional primary filter, a glass fiber layer is added at a lower side of the filter element layer, and the melting point of glass fiber is relatively high, so that the filter can be effectively slowed down from being burned; three strip bags filled with fire-retardant liquid are added on the back of the lower side of the filter element layer, and when encountering fire, the strip bags melt and the fire-retardant liquid rapidly permeates into the filter element layer to prevent the spread of fire, with a good flame-retardant effect.

CLAIMS

1. A flame-retardant primary filter, characterized by comprising an outer frame (1), wherein a first mesh layer (2), a glass fiber layer (3), a filter element layer (4), a protective cushion layer (5) and a second mesh layer (6) are sequentially stacked in the outer frame (1); three grooves (41) are formed in a side of the filter element layer (4) facing the protective cushion layer (5); strip bags (42) are placed in the grooves (41); the strip bags (42) are filled with fire-retardant liquid.
2. The flame-retardant primary filter according to claim 1, characterized in that fire-proof rock wool (11) is disposed on each of four inner side surfaces of the outer frame (1).
3. The flame-retardant primary filter according to claim 1, characterized in that the filter element layer (4) is honeycomb sponge.
4. The flame-retardant primary filter according to claim 1, characterized in that the protective cushion layer (5) is made of perforated folded nylon cloth.
5. The flame-retardant primary filter according to claim 1, characterized in that the strip bags (42) are PP bags.

DESCRIPTION

A Flame-retardant Primary Filter

TECHNICAL FIELD

[0001] The present utility model relates to the technical field of filters, and specifically relates to a flame-retardant primary filter.

BACKGROUND ART

[0002] An air filter is generally composed of filter layers and a frame, and air filters can be classified into multiple grades such as primary, intermediate and HEPA grades according to filtering effects. A primary air filter is mainly used for capturing particulate dust with a diameter of 5 to 10 micrometers and various suspended matters, is widely applied to various air conditioning equipment and air conditioning systems, and is also used for primary protection of multi-stage filter systems.

[0003] At present, most primary filters on the market have poor fire-proof performance; since primary filters are mostly installed in indoor air conditioning equipment, and the materials in the primary filters are mostly flammable materials, in case of a fire, the primary filter is easily ignited, which allows the communication between internal and external air and accelerates the spread of fire, thus presenting a relatively great potential safety hazard.

SUMMARY OF THE UTILITY MODEL

[0004] In view of the above problems, the present utility model provides a flame-retardant primary filter which has good dust removal and flame-retardant effects.

[0005] To achieve the above objective, the present utility model solves the problems through the following technical solutions:

[0006] A flame-retardant primary filter comprises an outer frame, wherein a first mesh layer, a glass fiber layer, a filter element layer, a protective cushion layer and a second mesh layer are sequentially stacked in the outer frame; three grooves are formed in a side of the filter element layer facing the protective cushion layer; strip bags are placed in the grooves; and the strip

bags are filled with fire-retardant liquid.

[0007] Specifically, fire-proof rock wool is disposed on each of four inner side surfaces of the outer frame.

[0008] Specifically, the filter element layer is honeycomb sponge.

[0009] Specifically, the protective cushion layer is made of perforated folded nylon cloth.

[0010] Specifically, the strip bags are PP bags. The present utility model has the following beneficial effects:

[0011] The primary filter of the present utility model can be installed at a ventilation opening of an air conditioning device; compared with a traditional primary filter, a glass fiber layer is added at a lower side of the filter element layer, and the melting point of glass fiber is relatively high, so that the filter can be effectively slowed down from being burned; three strip bags filled with fire-retardant liquid are added on the back of the lower side of the filter element layer, and when encountering fire, the strip bags melt and the fire-retardant liquid rapidly permeates into the filter element layer to prevent the spread of fire, with a good flame-retardant effect.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a structural schematic view of a flame-retardant primary filter of the present utility model.

[0013] FIG. 2 is an enlarged view of part A in FIG. 1.

[0014] FIG. 3 is an enlarged view of part B in FIG. 1.

[0015] The reference numerals are as follows: outer frame 1, fire-proof rock wool 11, first mesh layer 2, glass fiber layer 3, filter element layer 4, groove 41, strip bag 42, protective cushion layer 5, and second mesh layer 6.

DETAILED DESCRIPTION OF EMBODIMENTS

[0016] The present utility model is described in further detail below in combination with the embodiments and the accompanying drawings, but the embodiments of the present utility model are not limited thereto.

[0017] As shown in FIG. 1 to FIG. 3:

[0018] A flame-retardant primary filter comprises an outer frame 1, wherein a first mesh layer 2, a glass fiber layer 3, a filter element layer 4, a protective cushion layer 5 and a second mesh layer 6 are sequentially stacked in the outer frame 1; three grooves 41 are formed in a side of the filter element layer 4 facing the protective cushion layer 5; strip bags 42 are placed in the grooves 41; and the strip bags 42 are filled with fire-retardant liquid.

[0019] Preferably, fire-proof rock wool 11 is disposed on each of four inner side surfaces of the outer frame 1; when a fire breaks out, flames melt and break the outer frame 1, while the melting point of the fire-proof rock wool 11 is relatively high and the rock wool is not easily burned, which can improve the flame retardancy of the outer frame 1.

[0020] Preferably, in order to enable the filter element layer 4 to have good air circulation and dust adsorption performance, the filter element layer 4 is honeycomb sponge.

[0021] Preferably, the protective cushion layer 5 is made of perforated folded nylon cloth; the protective cushion layer 5 is used for protecting the strip bags 42, and at the same time the protective cushion layer 5 can also prevent fine-particle dust from passing through.

[0022] Preferably, the strip bags 42 are PP bags; the PP bags melt immediately upon encountering fire, and after melting, the fire-retardant liquid leaks out.

[0023] The above-mentioned embodiments only describe one embodiment of the present utility model, and the description thereof is relatively specific and detailed, but should not be construed as limiting the patent scope of the present utility model. It should be noted that, for a person of ordinary skill in the art, several variations and improvements can be made without departing from the concept of the present utility model, and all of these fall within the protection scope of the present utility model. Therefore, the protection scope of the present utility model patent shall be subject to the appended claims.

DRAWINGS

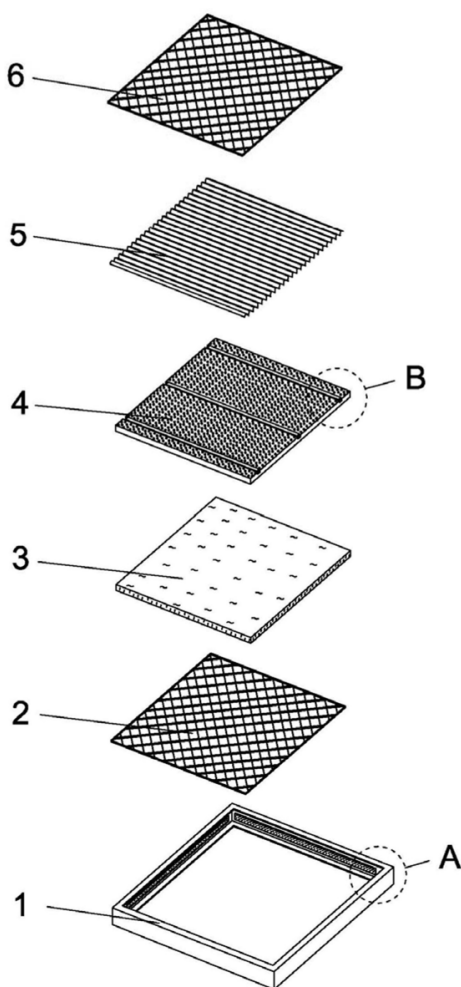


FIG. 1 — structural schematic view of the flame-retardant primary filter

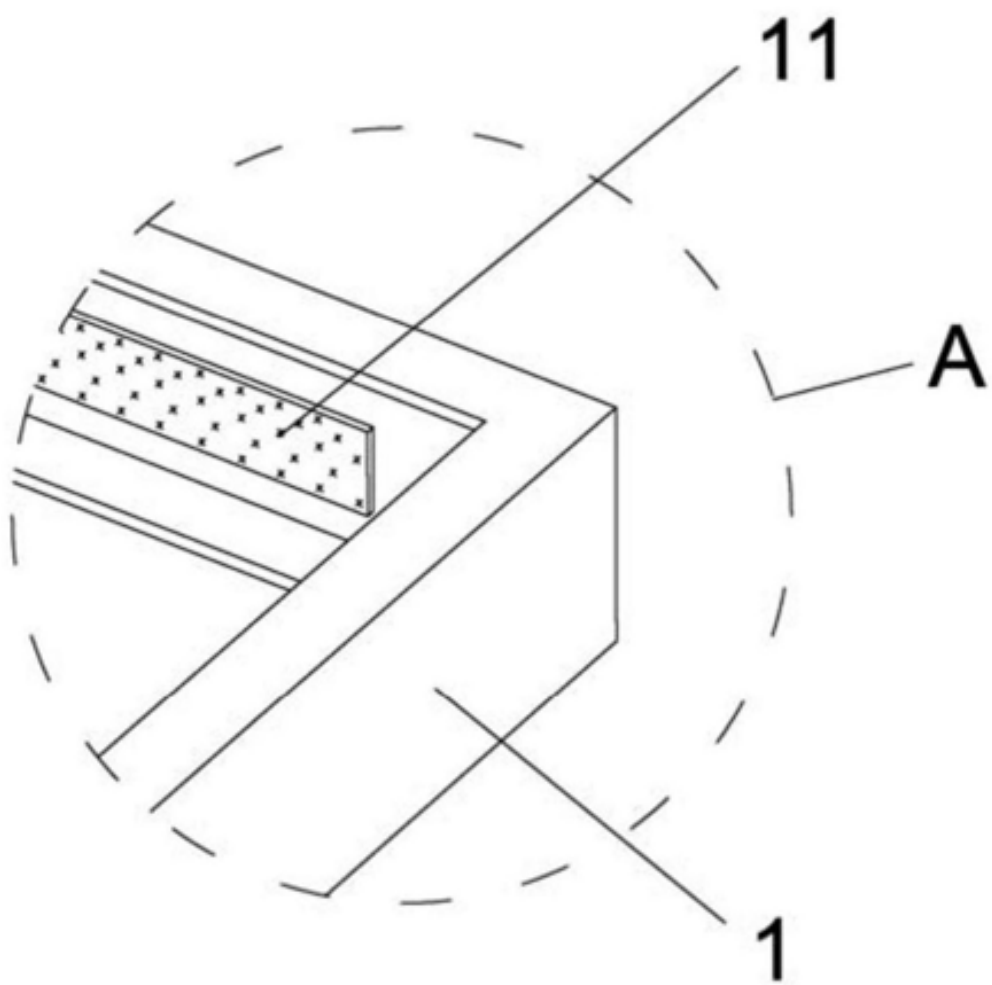


FIG. 2 — enlarged view of part A in FIG. 1

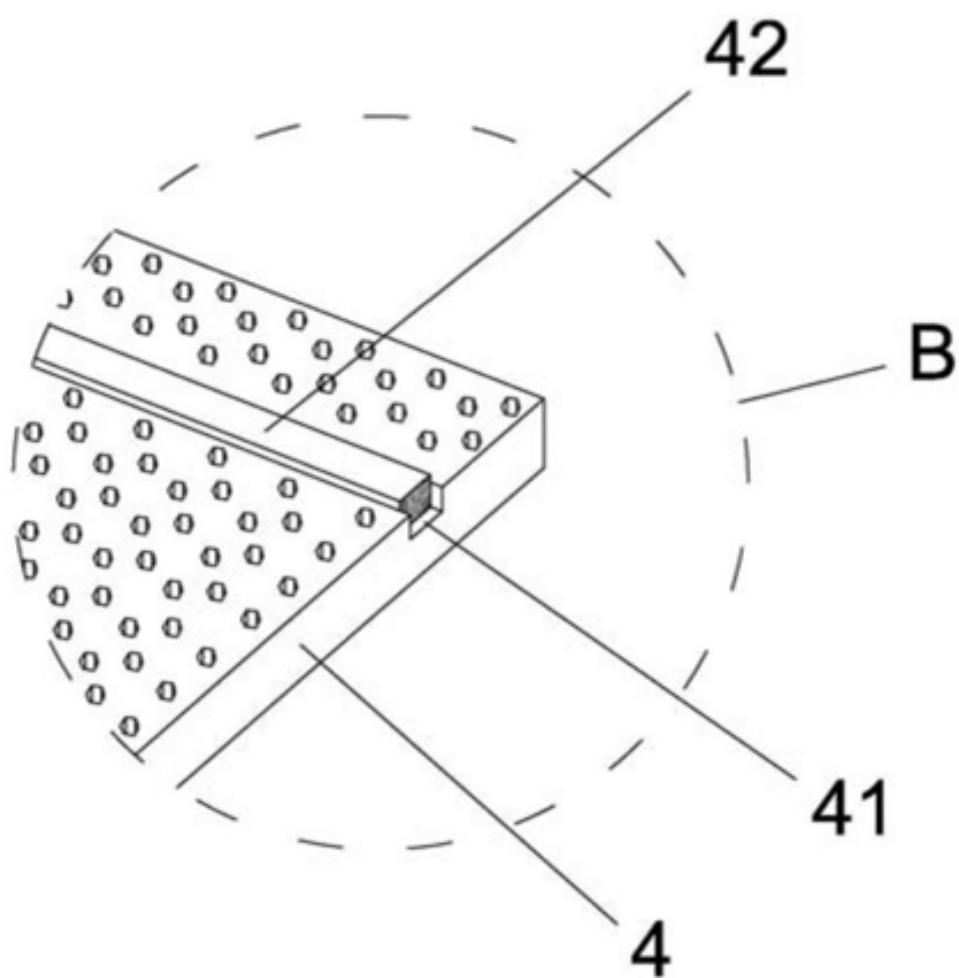


FIG. 3 — enlarged view of part B in FIG. 1