LATCH FOR A FILTER APPARATUS

Inventor: George W. Young, Fern Creek, Ky.

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Primary Examiner—Bernard Nozick
Attorney—Ralph B. Brick

ABSTRACT

A filter apparatus having a removable door or panel member and a latch member pivotally mounted to a filter housing which is adaptable for engagement with the removable door member, the latch member including a base portion pivotally attached to the housing and arm portions extending generally at right angles to the base portion and being adaptable for engaging relationship with the door.

7 Claims, 3 Drawing Figures
1 LATCH FOR A FILTER APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to air filters. In one aspect it relates to a filter of the replaceable type. In another aspect the invention relates to a latch for latching a removable door to a housing containing a replaceable type filter.

In air filtration systems which are installed in office buildings, industrial plants, and the like, replaceable type filters have been utilized. These filters are generally in a housing or air duct with door or panel means being utilized as the means for entering the housing or air duct for replacing the filters when they become clogged. Many different latches have been utilized for latching and unlatching these panels from the panel frames in the housings but none have been found to be inexpensive, sturdy, easy and quickly operable, while providing a fluid tight seal between the panel frame and the panel which is removably attached.

SUMMARY OF THE INVENTION

In the present invention, it is recognized that it is desirable to provide a latch for a filter housing which is inexpensive, but yet in combination with a door or panel member provides for a fluid tight seal in an air filtering system. Furthermore, it is recognized that it is desirable to provide a latch for a filter apparatus which is easily constructed, and easy and quickly operable.

The present invention advantageously provides a straightforward arrangement for a latch for a filter housing which may be utilized with filters of the replaceable type. The present invention further provides a filter apparatus including a latch that is inexpensive, sturdy, easy and quickly operable, and yet in combination with the door or panel member provides a fluid tight seal.

Various other features of the present invention will become obvious to those skilled in the art upon reading the disclosure set forth hereinafter.

More particularly, the present invention provides a filter apparatus comprising a filter cell support housing having first and second flow-through apertures disposed therein, the housing being adapted to receive flow-through filter media, the media being positioned in alignment with and disposed between the first and second flow-through apertures, the housing having an access opening therein; a removable panel member adaptable for sealing relationship with the access opening; and a latch means mounted on the housing for latching the removable panel member over the access opening, the latch means including a latch member having a base portion pivotally mounted to the housing and arm portions extending generally at right angles to the base portion and adaptable for engagement with the panel member.

It is to be understood that the description of the examples of the present invention given hereinafter are not by way of limitation and various modifications within the scope of the present invention will occur to those skilled in the art upon reading the disclosure set forth hereinafter.

Referring to the drawings:

FIG. 1 is a perspective view, partially cutaway, of a filter apparatus of the present invention;

FIG. 2 is an enlarged cross-sectional view taken in a plane passing through line 2—2 of FIG. 1;

FIG. 3 is a perspective view looking toward the underside of a filter apparatus of FIG. 1.

FIG. 1 of the drawings illustrates a structure of a filter apparatus of the present invention. The filter apparatus of the present invention includes housing 1 having a first flow-through aperture 5 (FIG. 3) and a second flow-through aperture 11 therein with the filter assembly 6 including filter media 30 disposed within housing 1 in flow-through alignment with apertures 5 and aperture 11. The filter apparatus further includes removable door or panel member 3 adapted to cover an access opening (not shown) in housing 1 with latch means being provided for latching removable panel member 3 fluid tight over the opening (not shown) in housing 1.

One latch means of the present invention includes a U-shaped latch member 4 which can be formed from a suitable flexible metallic rod stock. Latch member 4 includes a base portion 22 pivotally attached to the housing 1 by mounting brackets 21 and arm portions or members 23 having outwardly turned tabs 24 at their extremities. It is to be noted that the tabs 24 are adaptable for engagement with panel member 3 in a manner described hereinafter. The arm members 23 extend generally at right angles to base portion 22 and are flexible for movement relative the axis of base portion 22.

Panel member 3 includes a fixedly attached centrally disposed handle 7, the panel being turned along its periphery to provide a periphery channel of U-shaped cross section 8 adapted to receive the interlocking tabs 24 in nesting engagement therewith.

FIG. 2 is an enlarged cross-sectional view of the filter apparatus of FIG. 1 illustrating the sealing relationship between the panel member 3 and the housing 1. The access opening in housing 1 is determined by an offset flange portion 10 of Z-shaped cross-section which is adaptable for receiving panel member 3 in seated engagement therewith with gasket or sealant 9 bonded to the flange portion 10 providing a fluid tight seal between panel member 3 and the flange portion 10. The U-shaped portion 8 of panel member 3 includes lips or flanges 25 extending along opposing sides of the periphery of the panel member 3, lips 25 being adaptable for receiving in engagement against the inside faces thereof the nesting tabs 24. U-shaped portion 8 further includes lip or flange 12 extending along one end of the panel member 3 generally at right angles to lips 25 and communicating therewith. Arm members 23, in engaging position, are in contact with and extend over the outside face of the lip 26.

In the operation of the latch of the present invention, panel member 3 is placed in sealing relationship with flange portion 10 of housing 1 and the flexible arm members 23 of the pivotally attached latch member 4 are brought in contact with the outwardly extending lip 26 of U-shaped portion 8. Arm members 23 are adapted to extend over the edge of the lip 26 and within the lips 25, the interlocking tabs 24 of arm members 23 engaging against the inner faces of lips 25. The pressure exerted by the outer face of lip 26 on arm member 23 forces the interlocking tabs 24 against the inner face of lips 25 thereby holding the panel member 3 securely in position.

It will be realized that various changes may be made to the specific embodiment shown and described without departing from the principles of the present invention.
What is claimed is:

1. A filter apparatus comprising a filter cell support housing having first and second flow-through apertures disposed therein, said housing being adapted to receive flow-through filter media, said media being positioned in alignment with and disposed between said first and second flow-through apertures, said housing having an access opening therein; said access opening having panel receiving means along one end thereof; a removable panel member positioned in sealing relationship with said access opening and held by said receiving means; and a latch means mounted on said housing for latching said removable panel member into said access opening, said latch means including a latch member having a base portion pivotally mounted to said housing and arm portions extending generally at right angles to said base portion, said arm portions including means thereon for engaging with latch receiving means on said panel member to secure said panel member to said panel receiving means.

2. The filter apparatus of claim 1, said latch member being U-shaped.

3. The filter apparatus of claim 1, said access opening of said housing being defined by an offset flange portion of Z-shaped cross-section, said flange portion adapted to receive said panel member.

4. The filter apparatus of claim 1, said arm portions having outwardly extending nesting tabs at their extremity, said tabs adapted to engage with said removable door.

5. The filter apparatus of claim 1, said removable panel member having a peripheral channel of U-shaped cross-section extending from the surface of said panel member adaptable for engaging with said arm portions.

6. The filter apparatus of claim 5, said U-shaped portion having first and second lips extending along opposing sides of the periphery of said panel member and a third lip extending along one end of said panel member generally at right angles to said first and said second lips and communicating therewith.

7. The filter apparatus of claim 6, said arm portions having outwardly extending interlock tabs at their extremity, said tabs adapted to engage with said first and said second lips.