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VACUUM CLEANER

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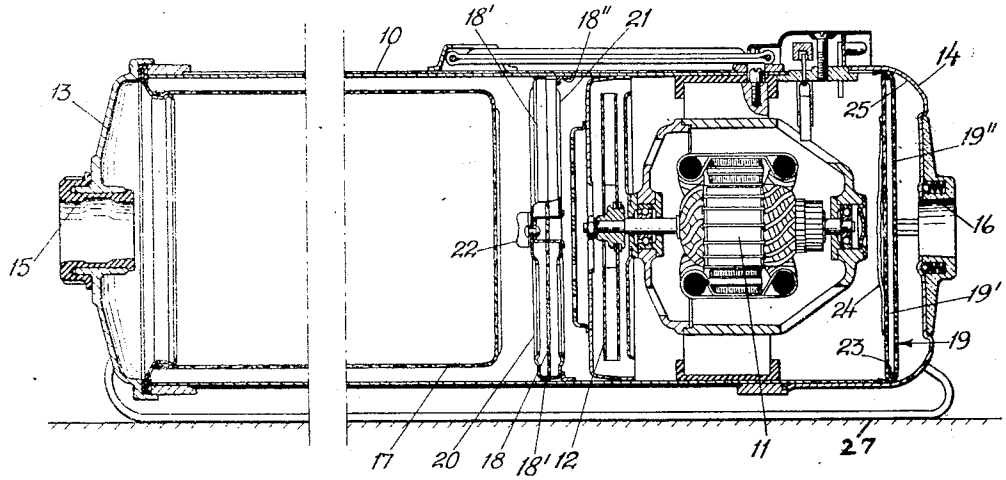

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VACUUM CLEANER

Application filed November 30, 1929, Serial No. 410,673, and in Germany December 3, 1928.

My invention relates to the vacuum cleaner art and has particular reference to vacuum cleaners of the portable type.

One object of the invention consists in the provision of three or more filters in the air stream produced by the vacuum cleaner.

Another object of the invention is to provide a vacuum cleaner with three or more filters, each being individually separable from the cleaner casing.

A further object of the invention is to provide an electrically operated vacuum cleaner with two or more filters besides the common dust separator, which filters enclose the motor chamber in a dust tight manner.

Further objects and advantages of my invention will be apparent from the following specification considered in connection with the accompanying drawing which forms a part thereof and in which a longitudinal cross-section of a vacuum cleaner embodying a preferred form of my invention is shown.

In the drawing, numeral 10 denotes the cylindrical barrel portion of a vacuum cleaner casing in which, as usual, an electric motor 11 and a fan 12 are mounted. Member 10 is, at both its ends, provided with covers 13 and 14 in which suction and blowing openings 15 and 16 respectively are provided. The casing formed by barrel portion 10 and the end covers 13 and 14 provides a straight cylindrical chamber of substantially uniform diameter extending between the air inlet 15 and the air outlet 16. The casing is horizontally mounted in known manner as by runners 27.

According to the invention, the cleaner casing includes at least three filters. In the embodiment shown, two filters 17 and 18 are located within the member 10 whereas a third filter 19 is arranged in cover 14 between motor 11 and blowing opening 16. Filter 17 forms the ordinary dust separating member or dust bag.

All filters mentioned are arranged to be individually separable from the cleaner in an easy manner. The first filter counted in the direction of the air stream produced by fan 12 (from left to right, as shown) i. e. the dust bag 17, may in known manner be removed after removal of cover 13. The second filter which consists of one or more filter layers 18 of flannel or the like is interposed between two perforated plates 20 and 21 which are held together by means of a locking member 22. As soon as cover 13 and dust bag 17 have been removed, filter 18 may be removed from the casing and exchanged. The filter layer 18 has a larger diameter than plates 20 and 21 whereby the outstanding edge of the filter layer 18 forms a packing between plate 20 and member 10 as shown at 18'. Plate 21 abuts against a flange 18'' secured to member 10 and the whole filter unit 18, 20, 21 is kept in position by means of friction between parts 18 and 10.

The third filter 19 consists of two layers 19' and 19'' of fibrous material, such as felt, flannel or the like, which layers are stretched over a ring-shaped member 23 which may be resilient. The filter layers 19', 19'' are sewn together over said member 23 whereby the outstanding edge formed thereby will serve as a packing when the filter is arranged in cover 14. As shown in the drawing, cover 14 has at its rear end a curved shape as at 25 and the filter is forced by the air stream flowing through the cleaner against this curved surface, which aids in holding the filter in place. In order to remove the last filter 19, cover or cap 14 is removed and the filter taken out of the cap by pulling a handle 24 fixed to the filter layer 19'.

From the drawing it will be evident that the chamber in which the motor 11 is enclosed is made dust tight by means of filters 18 and 19.

One of the filters, preferably the last one, may be manufactured of germ catching material, or such material may be provided between the filter layers 19' and 19''. The last filter may be arranged within or outside the outlet opening of the cleaner.

I do not claim as my invention what is disclosed and claimed in Patent No. 1,847,233, granted March 1, 1932 to T. E. D. Bilde.

What I claim is:

1. A vacuum cleaner comprising a casing

including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a plurality of spaced layers of cloth stretched on said frame and in frictional contact with the inside surface of the casing, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of cloth held on said frame and in frictional contact with the inside surface of said casing.

2. A vacuum cleaner comprising a casing including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a plurality of spaced layers of cloth stretched on said frame and in frictional contact with the inside surface of one of said covers, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of cloth held on said frame and in frictional contact with the inside surface of said casing.

3. A vacuum cleaner comprising a casing including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a filter on the outlet side of said suction means extending tranversely across the full width of said chamber and including a frame and a plurality of spaced layers of cloth stretched on said frame and in frictional contact with the inside surface of the casing, said filter being held in position between said barrel portion and one of said end covers, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of cloth held on said frame and in frictional contact with the inside surface of said casing.

4. A vacuum cleaner comprising a casing including a horizontally supported cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a disc-shaped filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a plurality of layers of fabric mounted on said frame and held thereby in vertical position, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of fabric mounted on said frame and held thereby in vertical position.

5. A vacuum cleaner comprising a casing including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a disc-shaped filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a layer of fabric mounted on said frame and held thereby in vertical position, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and in-

cluding a frame and a layer of fabric mounted on said frame and held thereby in vertical position.

6. A vacuum cleaner comprising a casing including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a disc-shaped filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a plurality of layers of fabric mounted on said frame and held thereby in vertical position and in frictional contact with the inside surface of the casing, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of fabric mounted on said frame and held thereby in vertical position and in frictional contact with the inside surface of said casing.

7. A vacuum cleaner comprising a casing including a cylindrical barrel portion of substantially uniform diameter, end covers on said barrel portion having air inlet and air outlet openings therein, said casing providing a straight cylindrical chamber of substantially uniform diameter extending substantially between the air inlet and the air outlet, air suction means in said chamber including a fan and a motor for driving said fan, a dust bag in said chamber on the inlet side of said suction means and mounted therein so that all air passing through said chamber is forced to pass through said dust bag, a disc-shaped filter on the outlet side of said suction means extending transversely across the full width of said chamber and including a frame and a layer of fabric mounted on said frame and held thereby in vertical position and in frictional contact with the inside surface of the casing, and a second disc-shaped filter between said dust bag and said suction means extending across the full width of said chamber and including a frame and a layer of fabric mounted on said frame and held thereby in vertical position and in frictional contact with the inside surface of said casing.

In testimony whereof I affix my signature.

SVEN ERIC LAMBERT.