

May 20, 1930.

D. B. REPLOGLE

1,759,276

AIRWAY DUST FILTER AND CONNECTIONS THEREFOR

Filed May 14, 1928

2 Sheets-Sheet 1

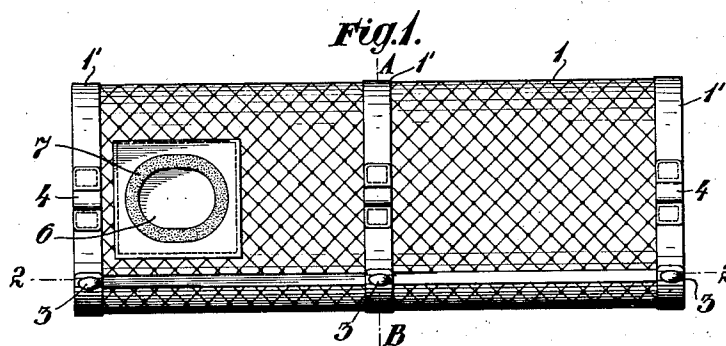
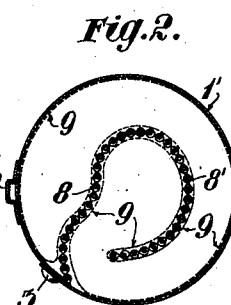
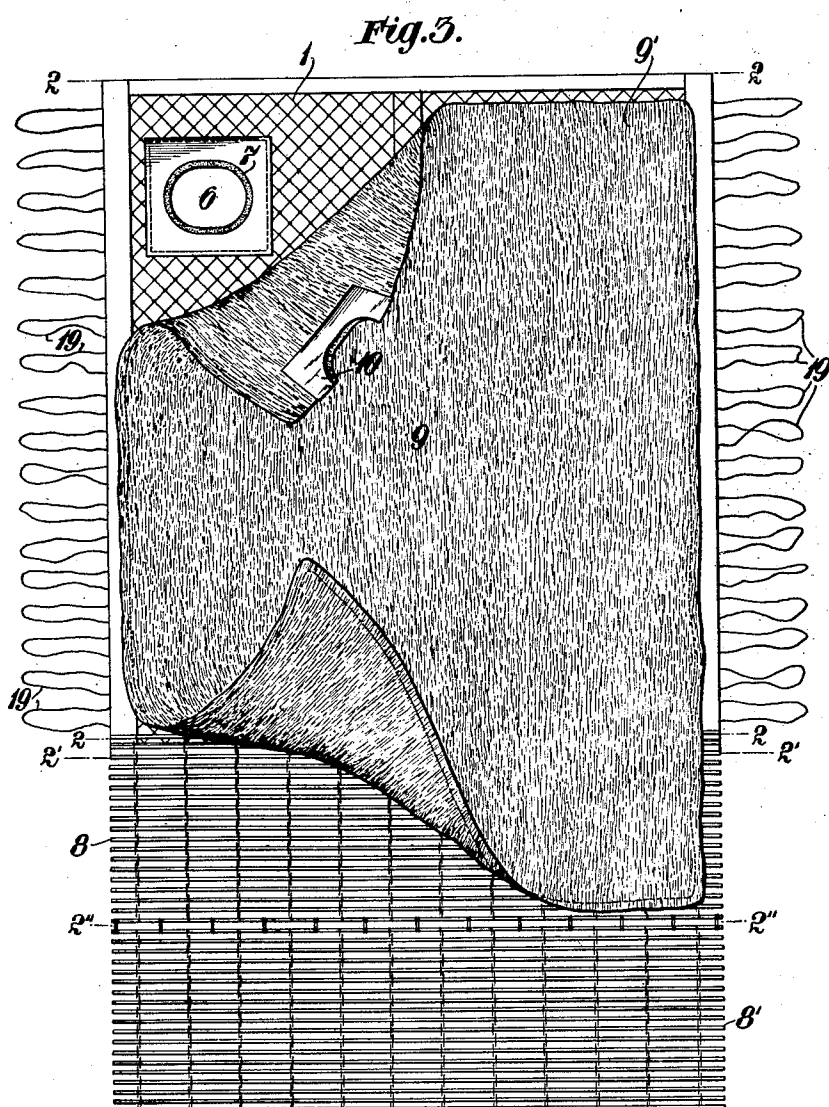


Fig. 4.



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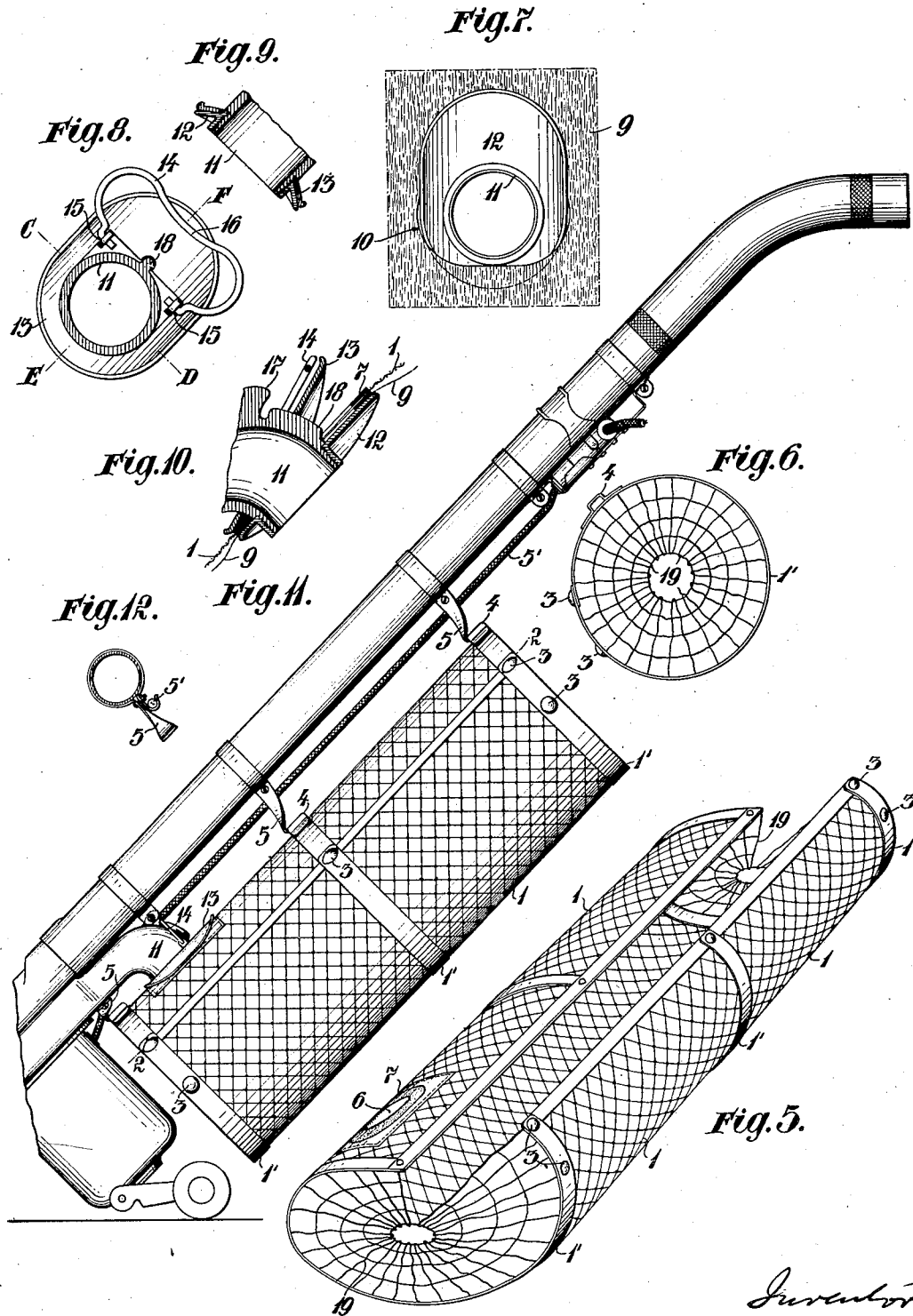
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AIRWAY DUST FILTER AND CONNECTIONS THEREFOR

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

DANIEL BENSON REPLOGLE, OF BERKELEY, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE COMMERCE GUARDIAN TRUST & SAVINGS BANK, OF TOLEDO, OHIO, AS TRUSTEE

AIR-WAY DUST FILTER AND CONNECTIONS THEREFOR

Application filed May 14, 1928, Serial No. 277,708, and in Germany April 9, 1928.

This invention relates to dust filtering devices and connections thereto for operatively attaching the same to the exhaust of an air-way or suction cleaner.

Heretofore paper envelopes have been folded and connected to the exhaust of such cleaners by means of tying or banding the mouths of the paper receptacles to the exhaust pipe; but in the method used, the inflation of the dust receptacle near the exhaust has baffled the total availability of the filtering surface, by reason of the air pressure inflating parts immediate to the exhaust and closing access to the remainder of the filter, by the faults in folding the envelope into sharp obstructing folds whereby access for dust laden air is choked off from farther parts of the envelope.

The folding heretofore attempted to limit extension without limiting filtering area was a flat folding; but inflation tends to reduce the inflated parts to a globular or cylindrical form, therefore,

The objects of the present invention are to provide an efficient cylindrical folding of a dust filtering paper envelope, to equalize the availability of its filtering surface, to provide improved means for retaining the same in efficient cylindrical form, to provide simplified means for suspending the same in position for attaching, and to provide means for readily attaching and detaching the same to the exhaust nozzle of the cleaner. Further objects will be pointed out and referred to in the claims.

To these ends the invention consists of the design, construction and the arrangement of parts as set forth in the specifications and as are illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of one of the present filters, complete, and detached from the cleaner.

Figure 2 is a cross-section taken on the line A—B of Figure 1.

Figure 3 shows a filter unrolled and open, with the interior dust filter and mat exposed to view.

Figure 4 shows a portion of the bands of

the filter and mat cut in cross-section when lying out straight.

Figure 5 is a view of the mesh retaining receptacle in perspective and partly open.

Figure 6 is an end view of the same when closed.

Figure 7 is a detail underside view of the shielded end of the exhaust pipe, suggesting in part the procedure for attaching the filter thereto.

Figure 8 is a detail looking downward on the shielded end of the exhaust pipe, the same being cut off from the cleaner.

Figure 9 shows a section taken on the line C—D of Figure 8.

Figure 10 is a section taken on the line E—F of Figure 8.

Figure 11 shows a portion of an air-way cleaner with the filter attached in position.

Figure 12 is a view partly in section of the handle showing a detail of the bag connecting and cord connecting element.

Referring to the drawings, 1 denotes a rectangular mesh cover preferably made of netting or coarse mesh material which is to be secured to bands 1', 1', 1', adapted to shape it into cylindrical form by closing two of its edges along the line 2, 2, clasped together by clasps 3, 3, 3. The bands are provided with lugs 4, 4, 4, adapting the cover and contents to be hooked to the handle by means of hooks 5, 5, 5. An elliptical opening or mouth 6 is provided for attachment to the exhaust and is surrounded by a gasket 7, which may be of rubber vulcanized to the fabric of the mesh. Appended to an edge of the cover 1 is a mat 8 connected along the line 2', 2', and a duplicate 8' of said mat 8 is further appended to the first mat along the line 2'', 2'', along which line it is more easily foldable for the purpose of lying against the flat sides of the paper filtering envelope 9, and infolded before it is rolled with the cover 1, which infolding aids escape of filtered air. The paper filtering envelope is provided with an elliptical mouth 10, corresponding with the opening or mouth 6 of the cover and is adapted to register therewith when attachment is effected to the exhaust 11 of the cleaner.

The exhaust 11 which turns a right angle

from the handle, is provided with a shield member 12, which may be screwed to or rigidly attached to the lower end of the exhaust and has also, sliding thereon, a corresponding shield 13, which shield is provided also with a wire bail or detent 14, pivoted to lugs 15, 15 of the shield, and recurved at 16, so as to hook under the projection 17 and firmly hold the sliding shield down on the attached cover and filter. The sliding shield is prevented from turning or getting out of position by a ridge 18 extending into a notch thereof but allowing the shield to slide upward or downward in a longitudinal manner as suggested in the cross-section, Figure 10, wherein the fabric of the cover 1 and of the bag envelope 9, are shown ready to be clasped between the upper and lower shields of the exhaust nozzle. When the filter is enclosed within the cover, the loops 19, 19, etc., are drawn together centrally by an elastic cord, lacing or other suitable means to provide for end protection and retaining the enclosed filtering envelope. The filtering envelope is preferably made of creped porous paper, and the fine creping folds should extend circumferentially of the roll when the envelope is rolled up; this better provides against obstructive folds which may prevent dust laden air from reaching the farther parts of the envelope.

The operation of the device is now readily explained. The width of the shield 12 corresponds to the oval openings 6 and 10 of the covering and filtering envelope respectively. When these openings are brought together, registered, they are slipped over this shield, or as it were, the shield is slipped diagonally through this opening, as suggested in Figure 7, while held in the transverse position. The bag and cover are then turned quarter round and the clamp 13 is brought downward to firmly hold them gasketed in such position that the covering and the filter mouths are held in an air-tight manner around the in-leading mouth of the exhaust by the pressure of the detent 14 which is pressed under the hook 17 on the exhaust nozzle.

When the filter is fouled, the detent is pressed out from its engagement with the hook 17, the shield lifted, the parts removed and a new filtering envelope replaced in the manner suggested.

Having now described the invention and the manner of its operation, what I claim and desire to secure by Letters Patent is:

1. In combination with the discharge pipe of an air-way cleaner, a dust filtering envelope, having an air inlet, a mesh container having a corresponding air inlet, adapted to register with the envelope inlet, together with means permanently attached to the discharge pipe for clamping the registered inlets around the opening of the discharge pipe.

2. A dust filtering element for air-way

cleaners comprising a flat filtering envelope, a mesh cover of equal width with the envelope, a mat appendage to said mesh cover adapted to infold an edge of said envelope; and the envelope and appendage adapted to be wound spirally within the cover, and the whole adapted to be retained in operating relation with such cleaner, and conform by inflation to cylindrical form.

3. In a device of the kind described, comprising an inner filtering receptacle, and an outer sustaining mesh cover, a mat appendage to the outer receptacle adapted to be folded with the inner receptacle so that folds of the filtering receptacle and folds of the mat appendage alternate with each other within the cover.

4. In combination with the discharge pipe of an air-way cleaner and a dust filtering envelope having an inlet opening; of means for operatively connecting the inlet opening of said envelope to said pipe, said means comprising a rigidly attached shield surrounding the opening in said pipe and attached thereto and located in the interior of said envelope, a sliding shield concentric with the rigidly attached shield and means for operating said sliding shield to clasp the inlet of the envelope concentric of the pipe opening between the rigid and slidable shields.

5. The herein described means for attaching a dust filtering element to the discharge pipe of an air-way or suction cleaner comprising a pair of clamping shields concentric of the pipe opening, and means operating one of said shields to clamp the inlet of the filtering element between said shields for operatively clamping a mouth of the filtering element between said shields.

In testimony whereof I affix my signature.
DANIEL BENSON REPLOGLE.