

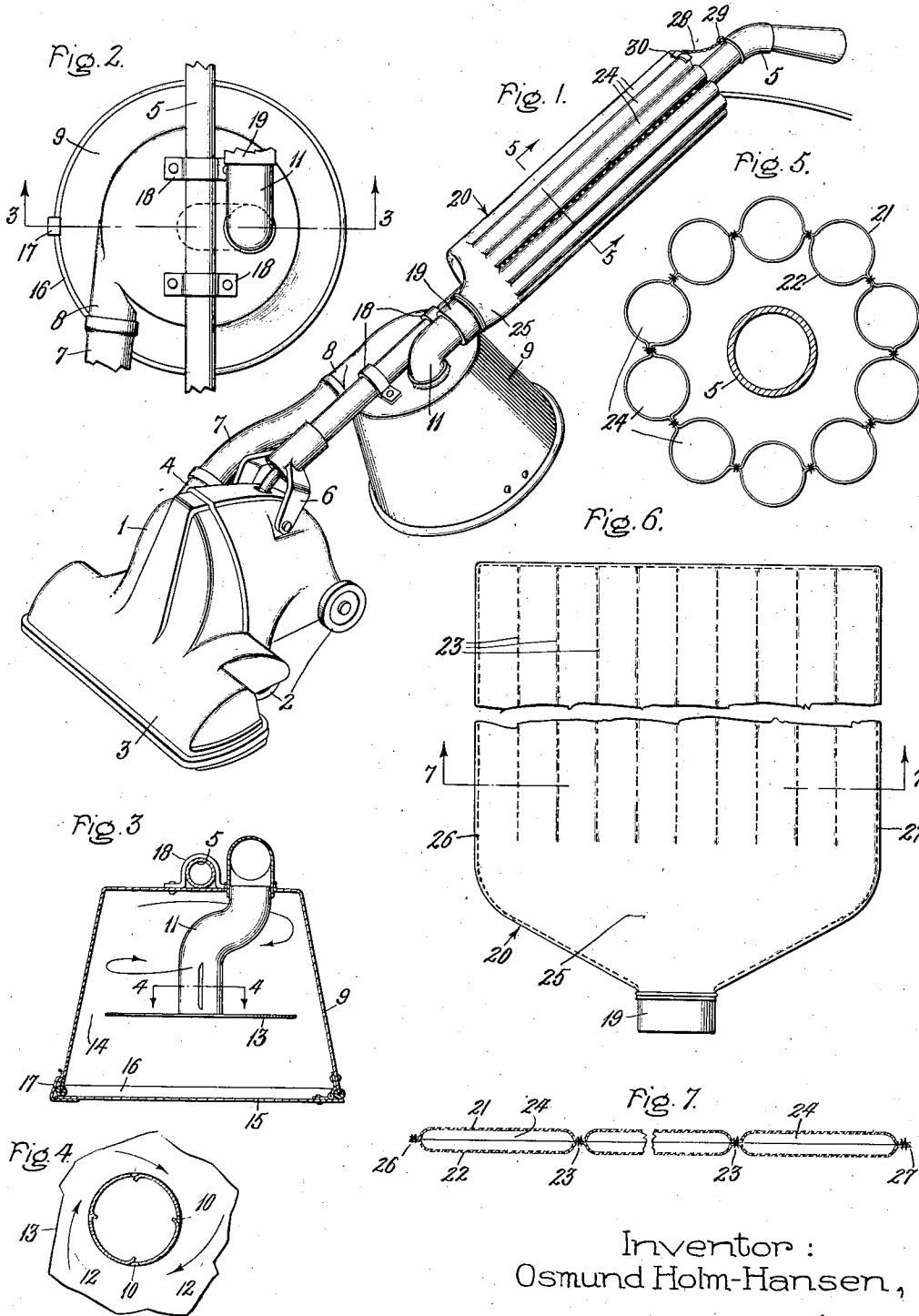
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VACUUM CLEANER

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VACUUM CLEANER

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4 Claims. (Cl. 183—51)

The present invention relates to vacuum cleaners.

The object of my invention is to provide an improved construction and arrangement for vacuum cleaners in which the space occupied by the bag is decreased.

In the accompanying drawing, Fig. 1 is a perspective view of a vacuum cleaner embodying my invention; Fig. 2 is a top plan view of the centrifugal separator used in the cleaner; Fig. 3 is a sectional view taken on line 3—3 of Fig. 2; Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is a sectional view taken on line 5—5 of Fig. 1; Fig. 6 is a view showing the method of making the bag; and Fig. 7 is an enlarged fragmentary sectional view taken on line 7—7 of Fig. 6.

Referring to the drawing, I have shown my invention applied to a vacuum cleaner having a casing 1 which is supported on front and rear supporting wheels 2. At the front of the casing is a suction nozzle 3 through which air is drawn by means of an electric motor driven fan mounted within the casing. The air is discharged through a discharge outlet 4. A handle 5 carried by a fork 6 pivoted on the casing is used to move the cleaner over the surface being cleaned.

The dust-laden air discharged from the outlet 4 is conducted by means of a flexible conduit 7 to the inlet 8 of a centrifugal separator contained within a casing 9. The inlet 8 discharges the air tangentially within the casing, producing a whirling annulus of air within the casing which centrifugally separates the dust from the air. Air is discharged from the casing through tubular member 11 which it enters through slots 10. As shown in Fig. 4 the direction of the whirling air, indicated by arrows 12, is such that the air must turn through an angle greater than 90 degrees in order to pass through the slots 10. Particles of dirt suspended in the air entering the slots 10 have a tendency to be thrown outward as the air is making the necessary sudden change in direction. The slots therefore assist in the separation of the dust from the air. The lower end of the tubular member 11 is closed by a baffle plate 13 which provides a relatively narrow passage 14 between its outer edges and side walls of the casing 9. The dust carried by the whirling air has a tendency to move toward the side walls of the casing and a considerable portion of the dust will fall through the passage 14 into the space below the baffle 13. The space below the baffle 13 is protected

by the baffle from rapidly whirling air and the dust therefore tends to settle more readily in this space. The bottom of the casing 9 is closed by a hinged plate 15 which is held against a gasket 16 on the lower edge of the casing by means of the spring latch 17. By releasing the latch and swinging the plate 15 downward the dirt in the casing 9 can be emptied. The centrifugal separator is supported on the handle by means of brackets 18. The centrifugal separator is particularly effective in separating the heavy particles of dirt from the air.

The tubular member 11 which conducts the air from the centrifugal separator is connected through a coupling 19 to the lower end of a vacuum cleaner bag 20. The construction of the vacuum cleaner bag is clearly shown in Figs. 5, 6 and 7. It comprises two sheets of fabric 21 and 22 which are stitched together around their outside edges and connected to the coupling 19 in the same manner as the conventional vacuum cleaner bag. The sheets 21 and 22 are stitched together along lines 23 extending from the upper end of the bag to points near the lower end of the bag. This stitching provides a plurality of tubular passages 24 which communicate a head-er portion 25 between the coupling 19 and the lower ends of the passages. In the assembly of the bag the outside edges 26 and 27 are stitched together so that the bag is in the form of an annulus. The bag is then slipped over the vacuum cleaner handle and the coupling 19 is connected to the member 11. The bag is supported on the handle by means of a cord 28 extending between a ring 29 on the handle and a tab 30 on the upper end of the bag.

With this construction the bag has a large filtering surface, but due to the fact that the walls of the bag are in the form of tubular passages the space occupied by the bag is small. The space requirements of the cleaner are further decreased by arranging the bag so that it encircles the vacuum cleaner handle. This bag is of particular utility in connection with vacuum cleaners having centrifugal separators. Centrifugal separators are primarily effective in separating the heavy particles of dust from the air. Some of the lighter particles are carried in the air discharged from the separator and some form of filter is therefore desirable for separating these lighter particles of dust from the air. The bag illustrated is very satisfactory for this function since it provides a large filtering surface which will require cleaning at in-

frequent intervals and is so arranged that it requires very little space.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

- 5 1. A vacuum cleaner bag having inner and outer annular fabric walls, said inner wall adapted to form a central passageway open at both ends whereby the bag may be arranged around a vacuum cleaner handle, an opening in one
10 end of said bag adapted to be connected to the discharge outlet of a vacuum cleaner, and means fastening the walls together for providing a plurality of tubular passages and a header communicating with said opening for discharging
15 air to said passages.

2. A vacuum cleaner bag having inner and outer walls joined at their edges and adapted to form an open ended central passageway, means
20 fastening the walls at other than their edges for providing a plurality of tubular passages and a header, and an opening in said header adapted

to be connected to the discharge outlet of a vacuum cleaner.

3. A vacuum cleaner bag having inner and outer fabric walls, said inner wall forming a central passageway open at both ends adapted
5 to receive a vacuum cleaner handle, means cooperating with said walls providing a plurality of tubular passages therebetween, and a header at the lower end of said bag for discharging dust-laden air to said passages. 10

4. A vacuum cleaner bag comprising a plurality of tubular elements arranged side by side, said elements being joined together along adjacent sides and closed at one end, a header communicating with the open end of said tubular
15 elements for discharging dust-laden air thereto, and an opening in said header adapted to be connected to the discharge outlet of a vacuum cleaner whereby a double walled bag is provided which is adapted to be wrapped around the
20 handle of said vacuum cleaner.

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