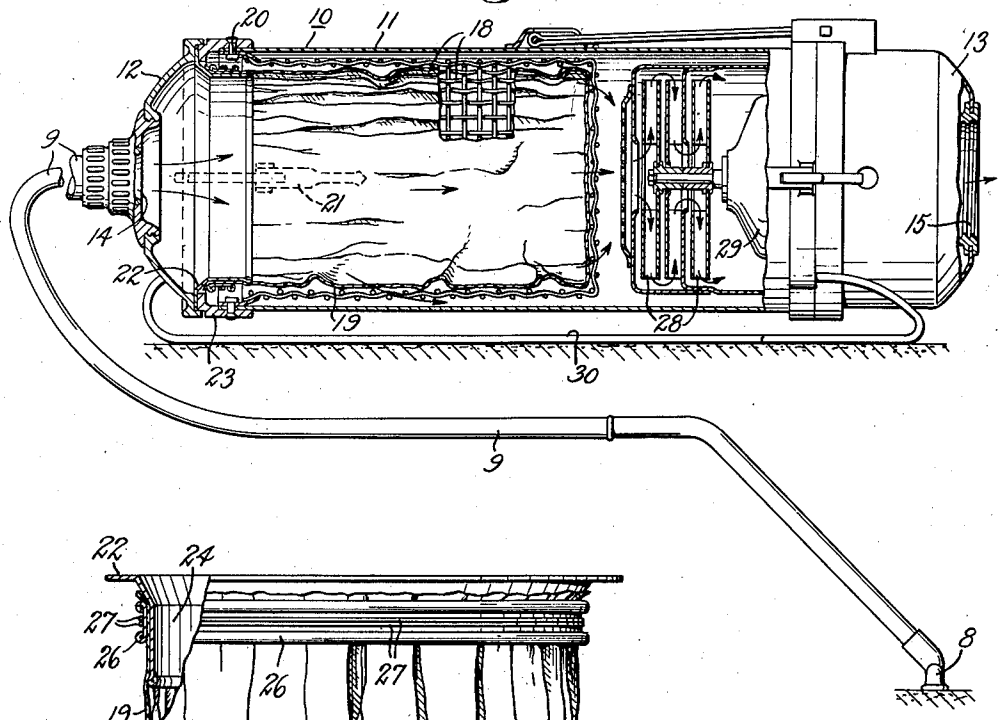
Jan. 21, 1936. J. F. HEUBERGER 2,028,215

VACUUM CLEANER

Filed Dec. 22, 1932

Fig. 1.



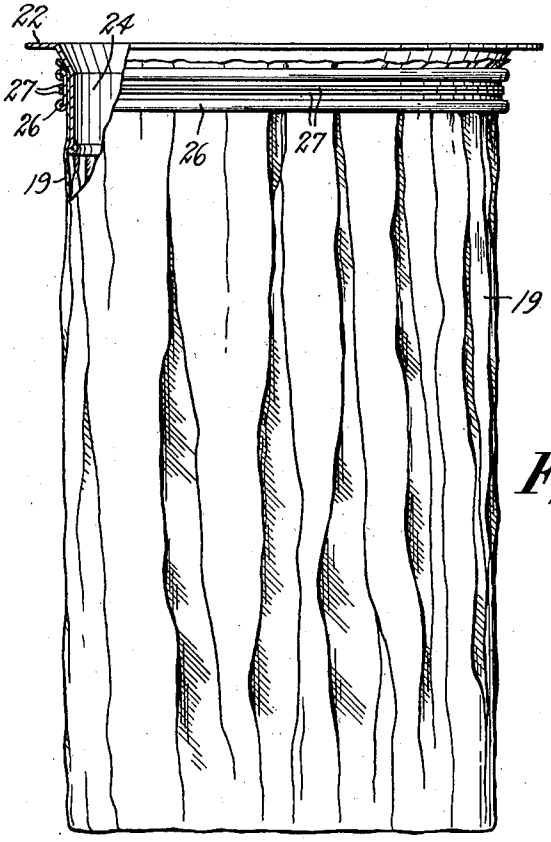


Fig. 2.

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VACUUM CLEANER

Joseph Friedrich Heuberger, Stockholm, Sweden, assignor to Electrolux Corporation, Dover, Del., a corporation of Delaware

Application December 22, 1932, Serial No. 648,397
In Germany December 24, 1931

5 Claims. (Cl. 183—51)

My invention relates to vacuum cleaners and more particularly to vacuum cleaners of the enclosed bag type. Still more particularly, my invention relates to dust bags for vacuum cleaners.

The objects of my invention include the provision of a readily manufactured, seamless, replaceable dust bag made of paper or the like having a large surface and, in combination therewith, means for supporting the dust bag to prevent enlargement and rupture thereof.

The invention, its nature, objects and advantages will become clear from the following description taken in conjunction with the accompanying drawing forming a part of this specification, and of which:

Fig. 1 is an assembly view of a vacuum cleaner including a longitudinal sectional view through a cleaner unit embodying the invention; and

Fig. 2 is a side elevation of a dust bag in accordance with the invention and as used in the assembly of Fig. 1.

The cleaner unit comprises a cylindrical casing 10 including a cylindrical barrel 11 and end covers 12 and 13. Inlet and outlet openings 14 and 15 are provided in the covers 12 and 13, respectively, and are threaded to receive a hose 9 to which a nozzle 8 may be connected.

An open-work screen bag 18 is provided in the casing and has an open end adjacent cover 12 and is adapted to receive a dust bag 19. The screen bag is preferably fixed in the casing, but it may be movable. It is spaced from the inside surface of the casing. The screen bag is preferably made of wire screening formed of relatively heavy wires and affording large openings. As shown in Fig. 1, the screen bag may be secured to the casing as indicated at 20.

The casing 10 encloses a fan 28 driven by a motor 29 for producing flow of air through the casing.

The cover 12 is removable and is held in position by means of spring clips 21, which may be of known construction. The dust bag has a flange 22 at its open end which is clamped between the cover 12 and a ring 23 secured to the barrel 11. The vacuum cleaner unit is supported on runners 30 whereby the unit may be drawn over the floor by pulling on the hose 9. The casing 10 is thereby mounted horizontally above a horizontal surface.

In accordance with the invention, the dust bag is made of paper and preferably is made from a flat sheet of paper. The paper must be of such nature (porous) as to allow the passage of air therethrough without too much resistance, but to prevent the passage of all or substantially all dust which may enter the cleaner unit through the hose 9. The dust bag is preferably made by bending a flat sheet of suitable paper over a suitable mould or form having a generally cylindrical shape of the general form of the dust bag. The paper may be folded or wrinkled to form a substantially cylindrical structure open at the top and closed at the bottom (the right-hand end as shown in Fig. 1). A ring 24 is placed on the inside of the bag at the open mouth and is bent to form the flange 22, which is clamped between the cover 12 and the ring 23 of the casing. Ring 24 is preferably placed on the mould before bending the paper. Ring 24 may be made of paper or cardboard. A ring 26, which may also made of paper or cardboard, is preferably disposed around the outside of the open end of the bag after the folding operation, and may be tied around the bag as by string 27. The two rings 24 and 26 may be glued to the paper of the bag and suitable filling material may be inserted to prevent leakage of air between the rings. It is preferable that all the dust bag, including the wrinkled portion and the bands 24 and 26, be made of a combustible material so that the bag may be removed and destroyed with the dust in it, as by being thrown into a fire. For this purpose, also, it is desirable to make the bands 24 and 26 of a frangible material so that the bag may be crumpled up with the dust in it.

The dust bag is inserted into what I term the screen bag or open-work structure 18 and then the cover 12 is attached. The fan causes flow of air in the direction of the arrows. Thus, air is sucked in through the nozzle 8 and through the hose 9 into the dust bag 19 whereby dust is deposited and the air passes on through the fan and out through the opening 15.

The open-work screen bag or structure 18 supports the bag so that the folds will not be drawn by the air current out against the inner cylindrical surface of the barrel 11. It will be seen that such a bag provides a very large surface for collection of dust and passage of air. A large surface is desirable in order to decrease the air resistance. It will be appreciated that if the paper dust bag alone were used and it were heavily laden with dust, the pull on the bag might rupture the material and this would be disadvantageous, particularly in a vacuum cleaner of the enclosed bag type. The screen bag overcomes this difficulty by providing a supporting surface for the bag so that the bag is unlikely to be ruptured.

While I have described a preferred form of my invention, it will be understood that various modifications may be made within the spirit and scope of the invention, so for instance the seamless paper bag may be manufactured directly from paper pulp either by pressing the pulp into the form desired or by spraying the pulp on a core having the shape of the bag to be manufactured.

What I claim is:

1. The combination with a vacuum cleaner unit including a casing and air flow producing means in said casing, of an open-work bag-shaped structure in said casing, and a seamless paper dust bag adapted to fit into said open-work structure and be supported throughout substantially its entire length thereby, said dust bag having a folded wall, said open-work structure preventing complete lengthwise and crosswise expansion of the dust bag.

2. In a vacuum cleaner, means for producing flow of air, and a seamless dust bag made from a single sheet of air pervious paper located in the path of air flow and having inner and outer rings at the mouth of the bag, one of said rings being formed with an outwardly extending annular flange.

3. In a vacuum cleaner, means for producing flow of air, and a seamless dust bag made from a single sheet of air pervious paper located in the path of air flow and having inner and outer rings made of frangible material at the mouth of the bag, one of said rings being formed with an outwardly extending annular flange.

4. In a vacuum cleaner, means for producing flow of air, a seamless dust bag made from a single sheet of air-pervious paper located in the path of air flow, and a ring having a portion substantially parallel to the side of said bag and an outwardly extending flange, the mouth of said bag being secured to the parallel portion of said ring.

5. In a vacuum cleaner, means for producing flow of air, a seamless dust bag made from a single sheet of air-pervious paper located in the path of air flow, and a ring made of frangible material and having a portion substantially parallel to the side of said bag and an outwardly extending flange, the mouth of said bag being secured to the parallel portion of said ring.

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