

Oct. 22, 1935.

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2,017,905

SUCTION CLEANER

Filed July 13, 1934

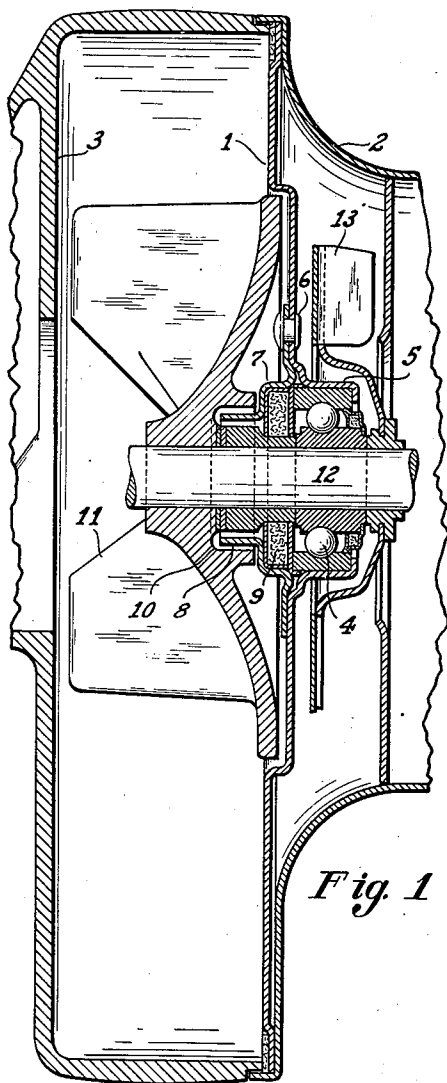


Fig. 1

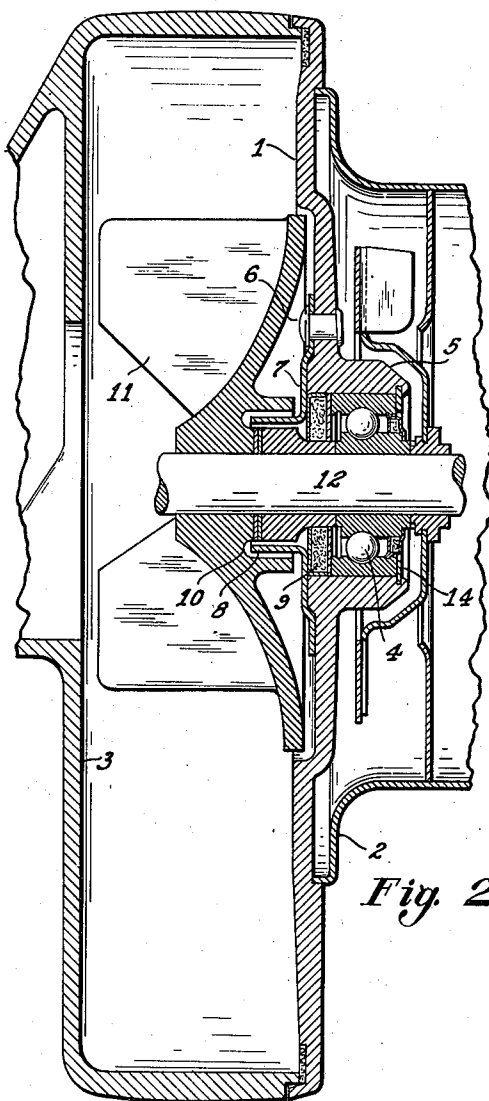


Fig. 2

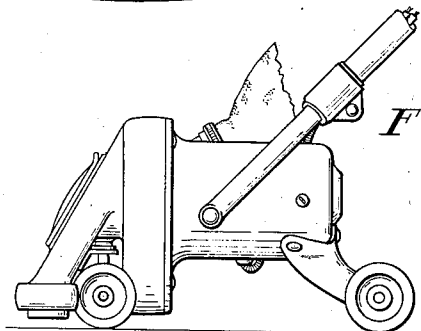


Fig. 3

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2,017,905

SUCTION CLEANER

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Application July 13, 1934, Serial No. 734,884
In Great Britain August 24, 1933

1 Claim. (Cl. 230—132)

The present invention relates to suction cleaners in general and particularly to a new and improved partition between the fan chamber and the motor casing of a suction cleaner.

It is an object of the present invention to provide a new and improved partition between the fan chamber and the motor casing of a suction cleaner. Another object is the provision of a new and improved bearing mounting and protecting means in a suction cleaner. These and other more specific objects will appear upon reading the following specification and claim and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing:

Figure 1 is a partial section through the fan chamber and the motor casing of a suction cleaner with the present invention embodied therein;

Figure 2 is a section similar to Figure 1 showing a slightly modified form of the invention;

Figure 3 is an illustration of the suction cleaner of the type in which the present invention is to be embodied.

The present invention comprises, in an electric suction cleaner, the combination with a partition wall which separates the fan chamber from the motor chamber and carries a bearing for the motor spindle which projects through an aperture therein, of a cooperating member secured to the partition wall and forming therewith not only a tubular housing for the bearing, formed or provided with end flanges for retaining it in place, but also a tubular projection extending into an annular groove in the back of the fan to form a labyrinth seal to exclude dust and foreign matter from the vicinity of the bearing.

Referring to Figure 1 in particular, the partition which separates the fan chamber from the motor casing is indicated by the reference character 1, the motor casing being indicated by the reference character 2, while the fan chamber bears the reference character 3. At its center where it surrounds the fan bearing 4, the partition 1 is formed with a tubular cylindrical seat 5 which serves to seat the outer race of the bearing 4, being formed with an integral inwardly extending flange at its inner or motor side. This inner flange prevents the bearing from shifting inwardly toward the motor casing.

Secured to the partition 1 by means of rivets 6, of which only one is shown in the drawing, is a pressed metal member 7 which is also formed with a tubular extension of the same size as portion 5 of the partition, with an inwardly projecting flange forming the forward limit of the tubular extension, and with a further tubular projection 8 of smaller diameter. The inwardly directed flange of member 7 serves to prevent the movement of the bearing towards the fan casing,

cooperating with the flange upon tubular portion 5 to definitely position the bearing through contacting the bearing seal member 9. The reduced diameter tubular projection 8 extends into a deep annular groove 10 formed upon the back of the suction-creating fan 11 which is carried within fan chamber 3 upon the extended end of the motor shaft 12 carried by bearing 4. The annular groove cooperates with the cylindrical tubular projection 8 to form a labyrinth to prevent the accumulation of foreign material around the bearing.

As in the usual construction a motor-cooling fan 13 may be mounted upon the shaft 12 adjacent the bearing and in the motor and functions to draw air through the motor casing to cool the driving motor positioned therein. The motor is not shown in the drawing, but may be of any common type.

In the modification of the invention shown in Figure 2 the construction is similar to that shown in Figure 1 but the partition 1 is cast and shaped to constitute the entire or complete surrounding wall for the bearing. The cooperating plate member 7 is formed, according to this embodiment, as a substantially flat plate which overlies the fan chamber side of the tubular portion 5 of the partition, being formed at its central portion, however, with the projecting small diameter tubular portion 8 which cooperates with the annular groove 10 of the fan to form the labyrinth as in the first embodiment. At the inner or motor casing end of the bearing 4 a separate metal ring 14 is secured to tubular portion 5 and cooperates with plate 7 in retaining the bearing in place. Ring 14 may be retained in any suitable manner as by crimping the end of the portion 5 to overlie its outer peripheral edge.

I claim:

In a suction cleaner having a motor casing and a fan chamber separated by a common wall, there being a driving motor in said casing the shaft of which extends thru said common wall into said fan chamber, and a fan having a circular channel in its back carried by said shaft in said chamber; a tubular bearing housing formed centrally in said common wall comprising a cylindrical wall surrounding said shaft, the end of said wall being defined by a flange perpendicular to said shaft, a ball bearing seated in said housing with its outer race held by said flange to prevent movement of said bearing toward said motor, the fan chamber side of said housing being closed by a separate closure member secured to said common wall around said housing and which extends toward said shaft to a point beyond the periphery of the outer race of said bearing at which point it is formed as a cylindrical flange which extends into the circular channel on the back of said fan to form a labyrinth seal.

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