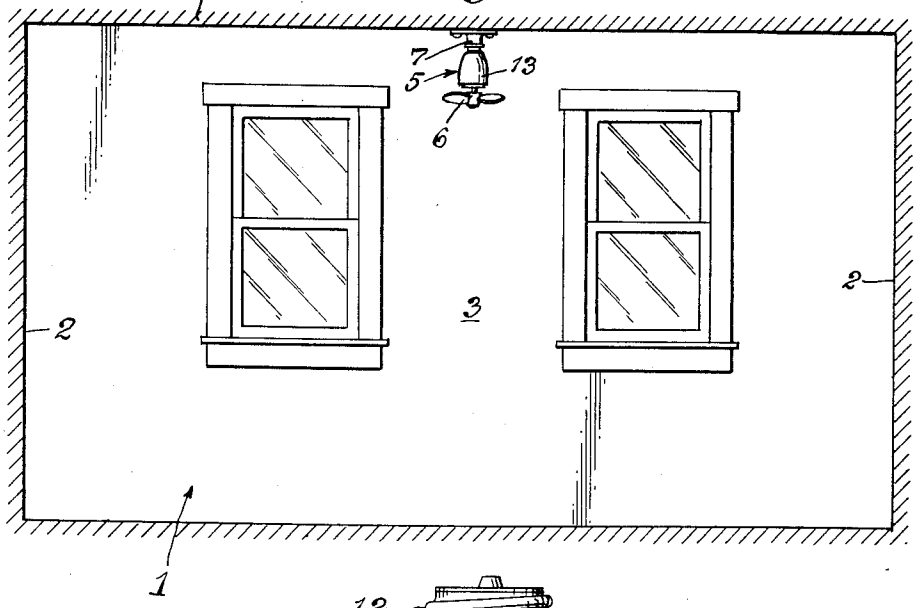
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AIR CIRCULATING FAN FOR HEATING SYSTEMS

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Fig. 1



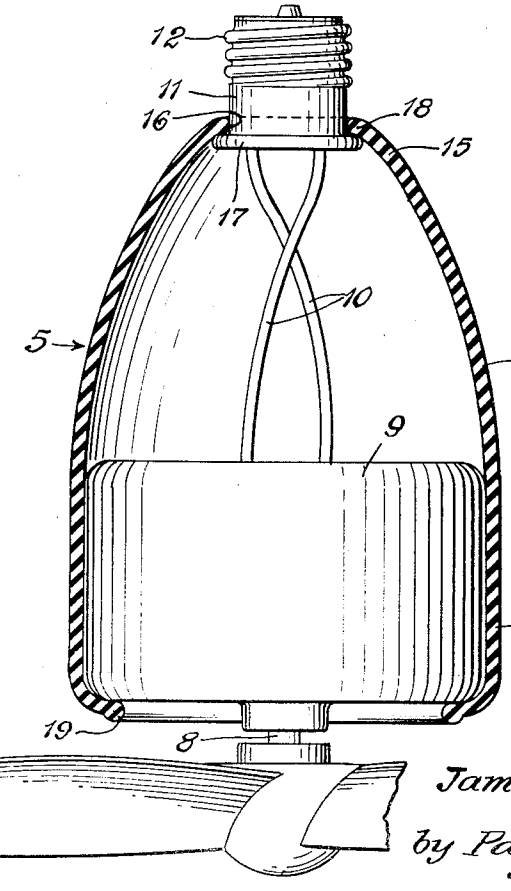


Fig. 2

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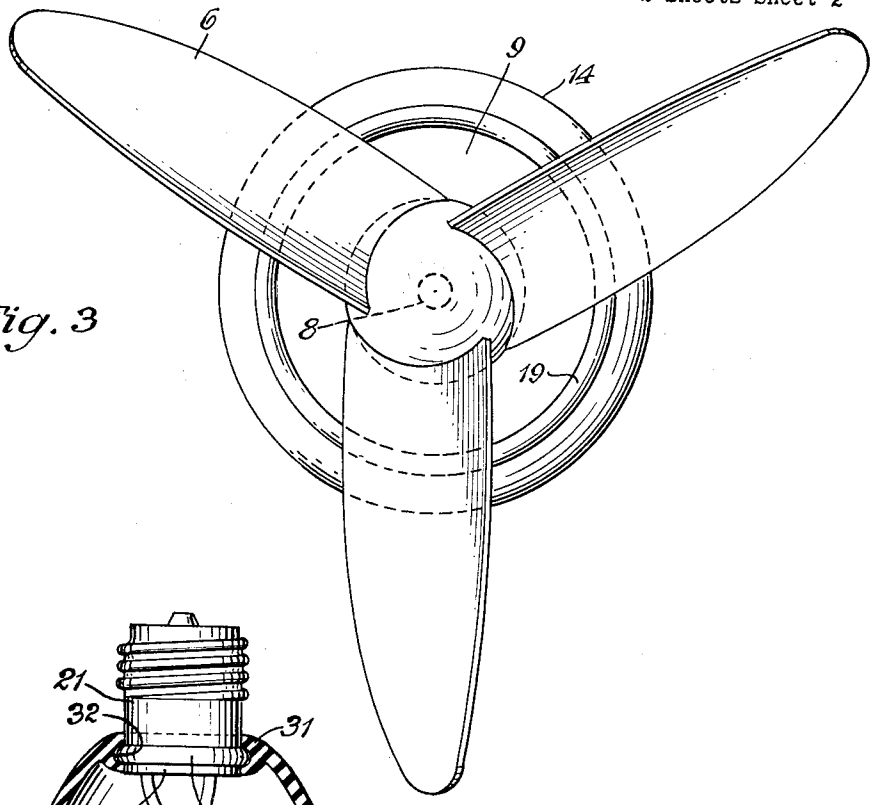


Fig. 3

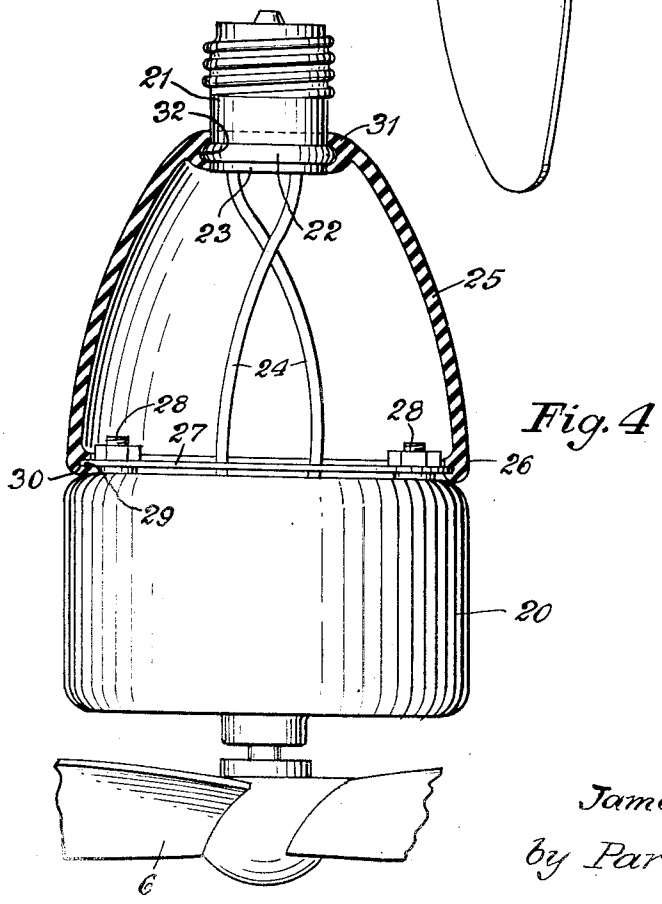


Fig. 4

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AIR CIRCULATING FAN FOR HEATING SYSTEMS

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Application August 31, 1955, Serial No. 531,796

5 Claims. (Cl. 230—259)

The present invention is directed to a new and improved electric fan unit. The invention may be advantageously employed in conjunction with the invention illustrated in my co-pending application Serial No. 443,615 which was filed on July 15, 1954, now abandoned.

One purpose of the present invention is the provision of an improved electric fan which may be conveniently supported from the ceiling of a room in which the fan is employed.

Another purpose of the present invention is the provision of an improved electric fan unit which is extremely quiet in operation.

Another purpose of the present invention is the provision of an improved coupling or adapter between an electric fan motor and an electrical plug or fitting.

Another purpose is the provision of an improved supporting assembly for electric fans.

Other purposes will appear from time to time in the course of the ensuing specification and claims.

Referring generally now to the drawings:

Figure 1 is a diagrammatic view illustrating the invention as employed with a building space or room;

Figure 2 is an enlarged detail view of the fan unit illustrated in Figure 1 with certain parts being shown in section for purposes of clarity;

Figure 3 is a plan view of the structure illustrated in Figure 2; and

Figure 4 is a detail view of another embodiment of the invention.

Like elements are designated by like characters throughout the specification and drawings.

Referring specifically now to the drawings and in the first instance to Figure 1, I illustrate a building space or room **1** which is defined by walls **2** and **3** and ceiling **4**. The fan assembly constituting the present invention is indicated generally at **5**. In Figure 1 the fan assembly is shown as including a fan blade **6** which is adapted for rotation about a generally vertical axis. An electrical outlet **7** is mounted on the ceiling **4**.

The fan unit **5** is of a type adapted to direct a slowly moving column of air downwardly toward the base or floor of the room **1**.

The fan blade **6** which may take the form of a plurality of equally spaced blades, as is indicated in Figure 3, is mounted for rotation with the output shaft **8** of an electrical motor **9**. An energizing electrical connection **10** supplies electrical current to the motor **9** from an electrical plug or fitting **11**. In the embodiment shown, the plug **11** is shown as a male plug with threads **12** which may engage corresponding threads in the outlet fitting **7**.

Supporting means for suspending the fan and motor from the plug is shown as including jacket **13** having a lower end portion **14** which conforms in size and configuration to the size and configuration of the motor **9**. The jacket or sleeve **13** encloses the conduit connections **10** and maintains them in a slack condition. Reduced upper portion **15** defines an opening **16** through which

the body of the plug **11** extends. It should be noted in Figure 2 that the plug **11** has an outwardly directed flange **17** upon which the rim **18** of the upper end portion rests. The upper end portion is secured to the body of the plug **11** through any suitable means. It may, for example, be bonded to the flange **17** and plus **11**. Other suitable fastening means such as rivets may be employed.

In the embodiment shown in Figure 2 the lower end portion **14** of the jacket **13** extends over the housing of the motor **9** and terminates in an inwardly directed rim **19** upon which the housing of the motor **9** rests. The housing of the motor may be secured to the rim **19** and if desired may be secured to the circumferential wall of the motor **9**.

The jacket **13** is formed of rubber or a rubber-like material which has a thickness and stiffness such as to prevent any large torsional movements between the motor housing **9** and the body of the plug **11**. The body of the jacket **13** is, however, sufficiently flexible that it may give or yield slightly in vertical and axial directions about the axis of the fan unit.

In Figure 4, I illustrate another embodiment of the invention. In this embodiment of the invention the fan motor is illustrated at **20** and the electrical plug is illustrated at **21**. It should be noted in this embodiment that the plug **21** has a flange portion **22** that is spaced upwardly a slight distance from the lower portion **23** of the plug. An energizing electrical connection **24** extends from the plug **21** to the motor **20**.

A jacket or sleeve **25** is formed from rubber or a rubber-like material and has a lower end portion **26** which conforms generally to the size and confiuration of the housing of the motor **20**. A metal plate **27** is bolted to the housing **20** as is indicated by the bolts **28**. The plate **27** is preferably circular and the rim **29** of the plate is adapted for reception within a groove **30** which is formed in the lower end portion **26**.

The upper end portion of the jacket **25** is reduced as at **31** to define an opening through which the plug **21** passes. A groove **32** is formed in this upper end portion **31** and receives the flange **22**. The flange **22** may be fastened to the groove or recess **32** in the same manner as that described with reference to the embodiment of Figure 2. The plate **27** may be similarly fastened to the body of the material of the jacket defining the groove **29** in the same fashion.

Whereas I have shown and described preferred operative forms of my invention I wish it to be understood that the showing and description thereof should be taken in a diagrammatic or illustrative sense only. There are many modifications of the invention that will fall within the spirit of the invention which will be apparent to those skilled in the art. The scope of the invention therefore, should be limited only by the scope of the hereinafter appended claims.

The use and operation of my invention are as follows:

I illustrate a fan unit which is adapted to be supported from the ceiling of a building space or room. In each embodiment of the invention the fan and motor therefor, depend from an electrical plug. The weight of the fan and motor is transferred from the jacket enclosing the electrical conduits to the electrical plugs. The electrical conduits may be of any length and stored within the space of the interior of the jackets.

The user of this unit may easily instal the fan unit in the position illustrated in Figure 1 by merely rotating the jacket, motor and plug sufficiently to engage the plug **11** with the outlet **7**.

In both embodiments of the invention the rubber jackets serve to define what is, in effect, a continuation of the motor housing to the electrical plug. The body of the jackets absorb vibrations from the fan and motor

and thus minimize noise and disturbance which would otherwise be caused by operation of the fan.

The unit is easily assembled by merely fitting the jackets or sleeves to the motor housings and plugs. The jackets **13** or **25** readily adapt a conventional motor and electrical plug therefor to a ceiling supported fan assembly.

In the form of Figure 2 I illustrate a flexible, distortable, rubber-like member or jacket **13** which is relatively large in diameter at the lower end and of upwardly reducing diameter. The portion of larger diameter surrounds and flexibly supports the motor housing **9**, while the reduced upper end surrounds and is supported by the flange **17** on the electric light plug **11**. In the form of Figure 4 the fan motor housing **20** is exposed, and a considerably shorter sleeve **25** serves as a supporting connection between it and the electric light plug. In both forms electric conduits are enclosed. Both forms provide a sightly and symmetrical, as well as an efficient, support for the fan permitting both vertical and lateral vibration or flexure.

Whereas I have shown and described the invention as including a supporting sleeve or housing of rubber or rubber-like material, I wish to point out that this is material exemplary of a class of materials which may yield both vertically and laterally with respect to the outlet plug and the motor. Under some circumstances a supporting sleeve may be formed as a metallic bellows enclosing the electric conduits and attached to the motor and the outlet plug in accordance with the principle of the invention. In such a situation, the metal sleeve is so formed as to yield vertically and laterally and thus absorb vibrations while at the same time providing adequate support for the general unit and enclosing the electric conduits.

I claim:

1. A supporting member for electric fan and motor assemblies including a sleeve having one end portion conforming generally to the size of the housing of the motor and a reduced, opposite end portion defining an opening generally conforming to the size and configuration of an electrical outlet plug, said sleeve being formed of flexible material each of said end portions having an opening defined by an inwardly directed rim, the rim at said first named end portion being adapted to support said housing, and the rim at the other end portion being adapted for supporting engagement with said plug.

2. The structure of claim 1 wherein said first named end portion of said sleeve has an internal dimension conforming generally to the external dimension of the fan motor.

3. A room air circulating assembly for connection to an outlet including an electric plug receivable in said outlet, an electric fan having a driving motor and an energizing connection between said motor and said plug, a plate carried by the motor, and supporting means for said motor including a sleeve formed of rubber like material enclosing said connection, said sleeve having a lower end with an inwardly facing groove therein which receives said plate, said sleeve having a reduced upper end portion attached to said plug.

4. A room circulating assembly including a fan, a driving motor enclosed in a housing and connected to said fan, a plug receivable in an electric outlet, electrical connections between the plug and motor, and supporting means for suspending the fan and motor from the plug while maintaining the energizing connections in a slack condition, said supporting means including a yieldable sleeve having upper and lower flanges, said upper flange being attached to the plug and the lower flange supporting the motor housing, said sleeve being sufficiently yieldable to give slightly in both vertical and transverse directions to thereby dampen noise and vibration from the fan and motor.

5. The room air circulating assembly of claim 4 further characterized in that the sleeve extends downwardly along the motor housing with the lower flange directed inwardly beneath the motor housing.

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