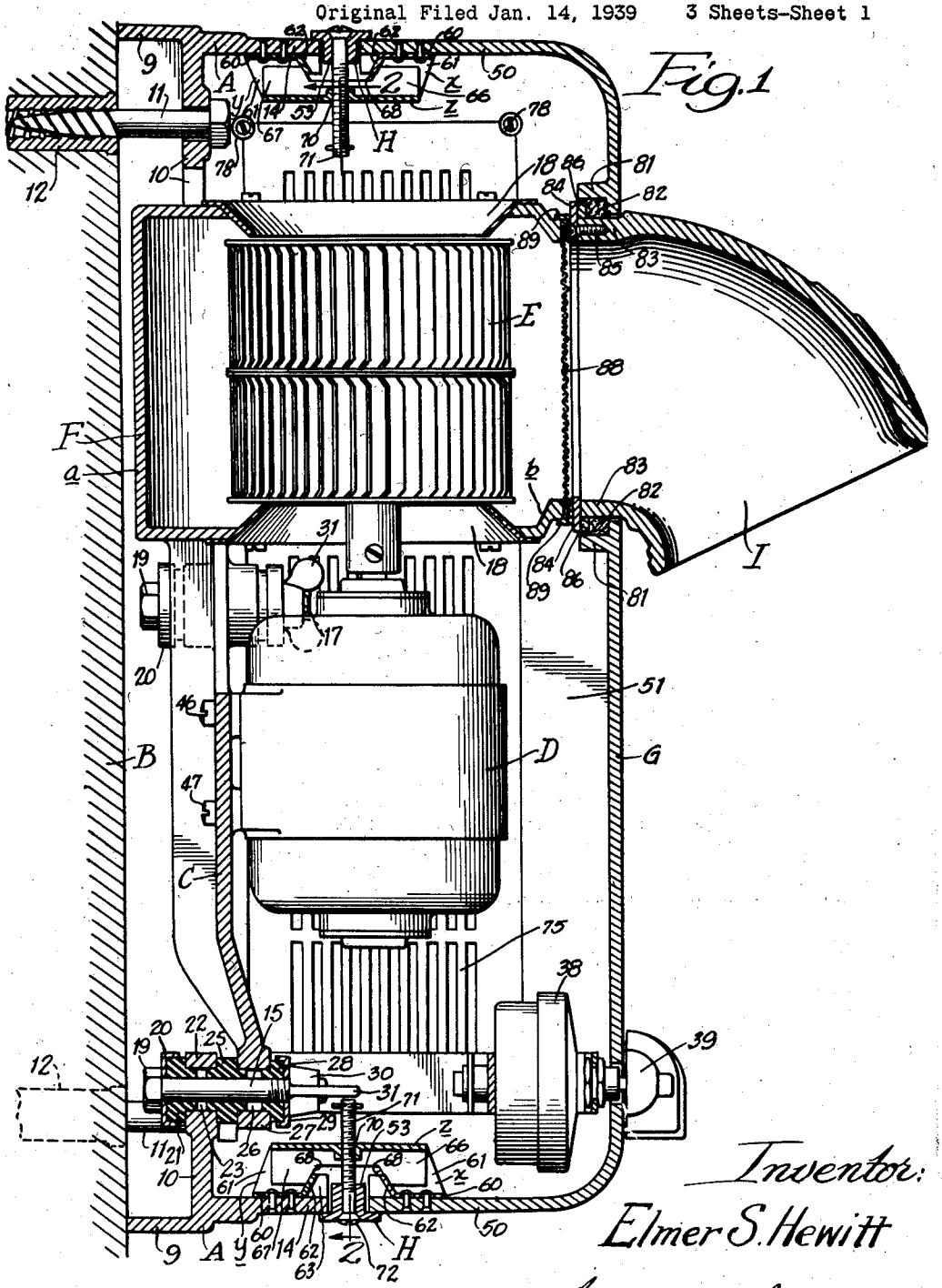
May 15, 1945. E. S. HEWITT 2,375,920

ELECTRIC DRIER

Original Filed Jan. 14, 1939 3 Sheets-Sheet 1

Fig. 1



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Fig. 2

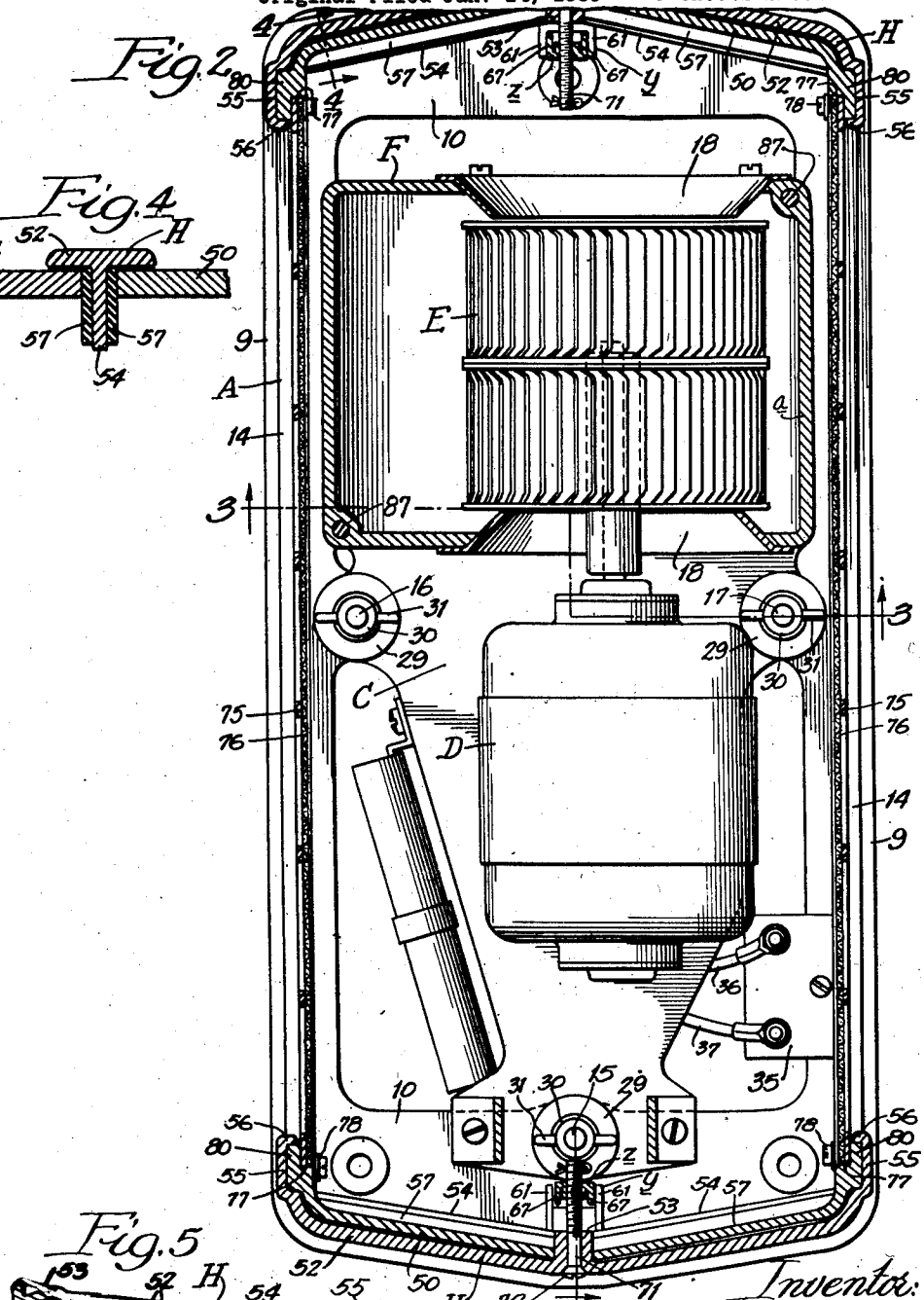
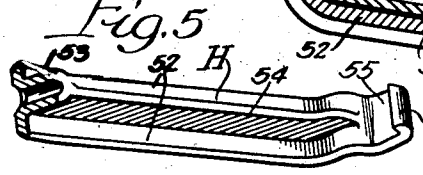


Fig. 4

Fig. 5



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Fig. 3

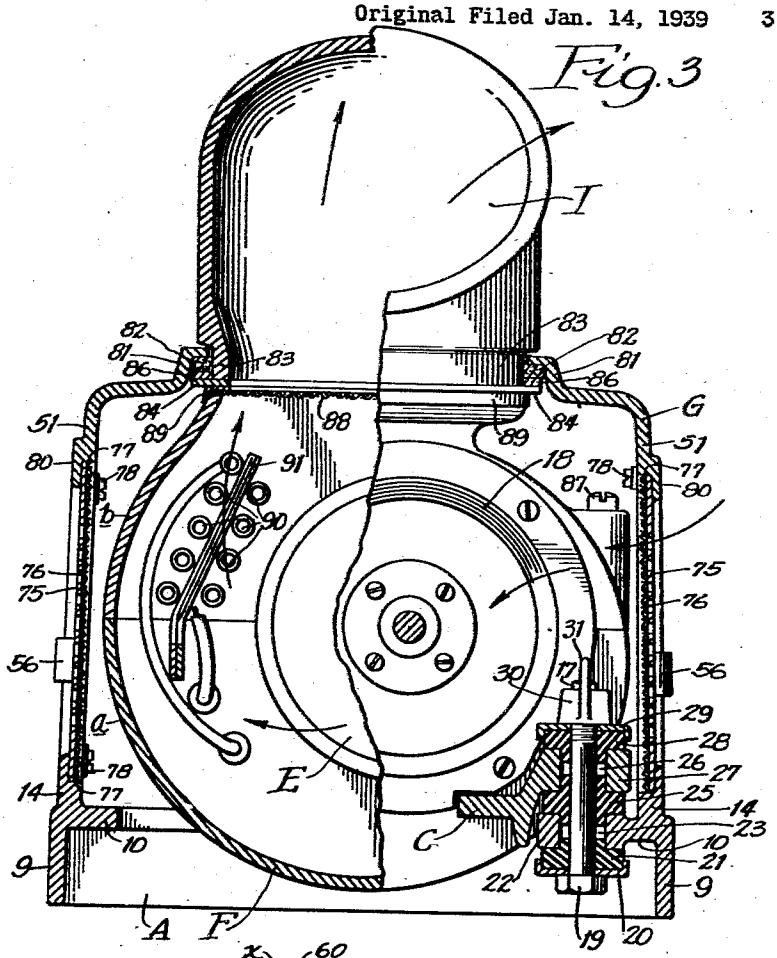
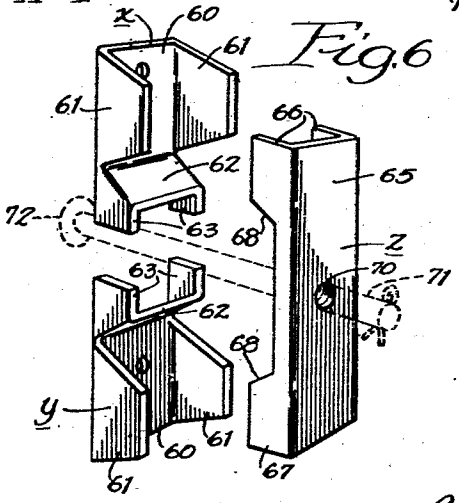


Fig. 6



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UNITED STATES PATENT OFFICE

2,375,920

ELECTRIC DRIER

Elmer S. Hewitt, Wilmette, Ill.

Original application January 14, 1939, Serial No. 250,863. Divided and this application August 11, 1943, Serial No. 498,226

4 Claims. (Cl. 34—243)

This invention relates to a small, compact, inexpensive and highly efficient apparatus adapted to discharge, in a desired direction, a stream of heated air for drying or heating purposes. An apparatus of this kind may be used with advantage in many places—in commercial establishments, in homes, etc. It will serve equally well as a heating medium for a small room, or for drying of hair, clothes, etc.

The present apparatus, which is designed for wall mounting, combines with great advantage a base with which is associated a cradle whereon is carried a motor-blower unit. The mounting of the base frame upon the supporting wall in relation to the mounting of the cradle upon the base, is such as to reduce vibration to a minimum, this being accomplished through the novel means which will be hereinafter explained. In addition I secure over the motor and blower a removable cover which is adapted to be locked in place by a device which is simple, inexpensive and effective for the purpose. The discharge of heated air is through a nozzle having a swiveled mounting engaging with both the cover and a housing for the blower, but insulated therefrom in such a manner as to dampen out vibrations which are transmitted thereto. In respect of these several features of construction the present apparatus embodies numerous points of advantage and utility all as will hereinafter be explained at length. A first disclosure of this invention was made in my application filed January 14, 1939, Serial No. 250,863 (of which this case is a division), now Patent No. 2,294,904, dated September 8, 1942.

A suggestive embodiment of my invention is set forth in the accompanying drawings wherein—

Figure 1 is a longitudinal section through the apparatus in its entirety, taken on line 1 of Fig. 2;

Fig. 2 is a similar view taken on line 2—2 of Fig. 1;

Fig. 3 is a transverse section taken on line 3—3 of Fig. 2;

Fig. 4 is a detail in section (enlarged) taken on line 4—4 of Fig. 2;

Fig. 5 is a transverse section through one of the connecting bars which is shown in perspective; and

Fig. 6 is a perspective view in assembly position of the parts forming the wedge mechanism by which the cover is secured to the base.

The present machine comprises a base A in the form of a frame which is generally rectangular in shape with walls 9 terminating in a common plane for fitting against a fixed support B such as a vertical partition or post. The base frame includes also a web 10 extending inwardly from each of its walls, and provided with holes to receive therethrough fastening elements such as bolts 11 each of which may be threaded into a wall anchor 12 or other securing device. Beyond the web the base walls are extended at 14 to define a shallow enclosure.

The base frame is adapted to support upon its web a cradle C whereon is mounted an electric motor D whose shaft carries a direct connected blower E. As shown, this cradle is in the general form of a triangular frame having its apex at one end connected to the base by a bolt 15, two other bolts 16 and 17 furnishing connections at points about midway of the length of the base on opposite sides thereof. The details of the cradle mounting will be explained at at later point. Carried by the cradle is one section of a two-part housing F which surrounds the blower, there being large draft openings at opposite ends of the housing each fitted with a frustro-conical guide 18 by which to direct incoming air into the blower as well as to eliminate much of the noise incident to its operation.

The mounting of the cradle within the base is such as to provide an effective barrier against the transmission of vibration. For this purpose there is fitted over each connecting bolt adjacent its head 19 a cup washer 20 adapted to receive the body of a resilient grommet 21 which bears against the under side of a boss 22 formed on the web of the base, the upper grommet end being reduced in diameter for entry within an opening 23 in the boss. On the opposite side of this boss is a second grommet 25 having its opposite ends of reduced diameter, one entering within the boss opening 23 and the other within an opening 26 in a boss 27 which is provided on the cradle, the body of this grommet being fitted between the ends of the bosses 22 and 27 to maintain them in spaced relation. A third grommet 28 which rests upon the boss 27 is formed with a reduced end adapted to enter the upper end of the opening 26, this last grommet being identical with the one first described. The body of this grommet is confined in part within an inverted cup washer 29 against which a nut 30, manually operable by wings 31 if desired, is adapted to abut. The connecting bolt traverses this entire assembly of grommets and washers so that the nut, when tightened, will cooperate with the head 19 in exerting a clamping pressure. While each of the grommets is desirably of resilient material, it is preferred that the one in the center be somewhat harder than the two

others. Such an assembly of grommets when used in the mounting for the cradle will provide an excellent barrier against the transmission of vibrations. It will be understood that a similar assembly of washers and grommets may be utilized with each of the two remaining connecting bolts.

Secured to the base at a point adjacent the motor is a terminal block 35 (see Fig. 2) with openings (not shown) to the exterior so that a plug, in connection with an electrical circuit, may be readily attached thereto. From the block leads 36 and 37 are extended to a rheostat-switch 38 (see Fig. 1) with which is associated a controlling handle 39, a fixed resistor (Fig. 2) being also included in the circuit, if desired. Since the details of the electrical connections form no part of this invention, further explanation thereof is deemed unnecessary. Suffice to say, by manipulation of the handle 39 the circuit may be closed or broken so that the motor will operate or stop. The speed of the motor operation is controlled by the position of the rheostat handle in the usual way. The motor is shown as bolted at 46 and 47 to the cradle so as to be fixedly secured thereto. When operated, the blower which may comprise a plurality of parallel vanes arranged peripherally with its axis will draw in air from its opposite ends for discharge from the housing through a nozzle in a manner which will presently be explained.

I provide for the operating mechanism which is carried by the cradle a cover G which comprises end and side walls 50 and 51, respectively. To secure the cover in place in a manner which will eliminate the transmission of any vibration, I utilize at each end of the base a connecting bar H of which one end portion is shown in perspective in Fig. 5. Each bar is of general T-form with a horizontal wall 52 formed midway of its length with an inwardly extending hollow boss 53 from opposite sides of which extends a web 54 proceeding inwardly in a vertical plane. Each end of the bar is laterally turned to extend beyond the web to provide a channel 55 defined in part by a tongue 56. By this construction I provide at each end of the bar a hook. Upon each of the opposite sides of the web 54 is arranged a flat strip 57 of rubber or other resilient material and when the bar is set in place the lower strip will rest upon the upper edge of the base wall 14 and the upper strip will underlie the lower edge of the cover wall 50 (see Fig. 4). Except at the mid-point of each bar where the hollow boss 53 is formed, these strips are extended continuously from end to end thereof.

To secure the cover fixedly in place, I have provided a wedge lock the components of which are best shown in Fig. 6. This comprises an upper fitting *x* secured to the inside of the cover wall 50 in line with a second fitting *y* therebelow secured to the inside of the base wall 14, there being a third complementary fitting *z* adapted to cooperate with each of the others. The fitting *x* is in the form of a plate 60 from which extends a pair of wings 61 in substantial parallelism with a shelf 62 slantingly arranged therebelow and supported outwardly from the plate as by means of lower wings 63. The lower fitting *y* may be identical with that just described, its parts bearing corresponding reference characters, and its position being inverted with respect to the upper fitting *x*. The fitting *z* comprises a plate 65 having two pairs of wings 66 and 67 occupying upper and lower positions, respectively, all extended in substantially parallel relation with facing inclined edges 68 corresponding to the slant of the two shelves 62. The spacing of the wings may be such that they lie closely to the outside of the wings on the complementary fittings *x* and *y*. The width of the slanting shelves is such that they will receive engagement from the slanting edges of the upper and lower wings on the fitting *z*, the remaining wings acting mainly as guides to maintain this relationship.

Through the plate 65 of the fitting *z* is a hole 70 for receiving a bolt 71 which is adapted to traverse the hollow boss 53 of the connecting bar H, the head 72 of this bolt being slotted, by preference, for manipulation from the exterior of the machine. When the connecting bar is fitted in place between the base and cover, this bolt will serve to advance the fitting *z* against the fittings *x* and *y* thereby drawing the cover tightly toward the base where it is securely held. Between the ends of the base and cover their respective side walls are largely cut away so as to provide an elongated opening into each of which may be fitted a foraminous plate 75 (formed with holes, slots, louvres, etc.) backed by a screen 76, the edges of the plate and screen being rested against seats 77 where they are held as by the heads 78 of screws which are screw-threaded into the base and cover walls.

The hooked ends of the bar, as shown, are adapted to engage certain vertical abutments 80 which are formed adjacent these seats. In this way the cover is effectively centered and held against lateral displacement with respect to the base with double resilient strips extending substantially continuously between every portion of their contacting surfaces. The cover walls are flush with those of the base, thereby giving substantially the effect of a one-piece casing for the entire structure.

At a point in the outer wall of the cover which is opposite the blower I have provided an opening surrounded by an inset flange 81 against which is seated a gasket 82 of sponge rubber or other appropriate resilient material which engages with the neck portion 83 of a discharge nozzle I having a swiveled mounting on the cover. As shown, this nozzle is in the general form of an elbow so as to present its open discharge end laterally. The nozzle at its end adjacent the neck carries a metallic washer 84 secured as with screws 85 the heads of which are countersunk (see Fig. 1). A spacer washer 86 rests upon the washer 84 so as to confine the gasket 82 in place.

The blower housing comprises fixed and removable sections *a* and *b*, respectively, interconnected as by bolts 87, the latter section being provided with a discharge opening over which is fitted a screen 88 held in place, if desired, by a flanged washer 89 which is fitted over the housing mouth adjacent its discharge opening. The washer 84 carried by the nozzle is adapted to rest upon the flanged washer 89. By this assembly of parts I provide for the nozzle a swiveled mounting which will eliminate rattles and maintain by friction the nozzle in any adjusted rotative position.

By reference to Figs. 2 and 3 it will be noted that the axis of the motor and blower is slightly off-center with respect to that of the housing, thereby providing a space within the housing to the outside of the blower for the accommodation of certain heating elements 90 which may be mounted upon a base 91 of mica or other suitable material. These elements are interconnected

electrically with the motor circuit so as to be energized when the motor is in operation, the heat delivered therefrom being drawn into the stream of air which is discharged from the blower so that there will issue from the nozzle a constant blast of air at relatively high temperature.

The apparatus of my invention is designed to operate efficiently at relatively high speeds, the motor R. P. M. varying from perhaps 1,800 to 4,000. Because of the environment in which the apparatus is to be used, it is essential that noise of all kinds, including vibrations, be eliminated as far as possible. This is accomplished by reason of the special features of construction hereinbefore described, notably the means by which the cover is removably affixed to the base, and the means by which the nozzle is swivelly mounted in the cover. In addition, the transmission of vibrations, consequent upon high speed motor operation, is snubbed practically entirely by the special mounting of the cradle on the base and of the base on its supporting wall. In this connection it will be noted that the base is connected to its supporting wall at three points forming a triangle, and that the cradle is mounted on the base at three opposite points. It will be noted also that there is complete separation of the cradle from the base through the use of resilient gaskets so that metal-to-metal contact is wholly avoided. It is found that with an assembly of three grommets, one relatively hard and the others relatively soft, a substantially immovable mounting is obtained without the transmission of vibrations therethrough. Also the wedge mechanism by which the cover is firmly secured to the base has special advantage because of the utilization of three complementary elements, two of them alike and the other reversible, all being formable by a stamping operation from sheet metal. The lock thus afforded is one which is wholly concealed, which is operable from the exterior of the cover, and which secures the cover and base tightly upon each other with all possibility of lateral movement avoided. By locking the two wedge mechanisms at opposite ends of the cover it is possible to provide along each side large, continuously extending openings for ventilation to the interior—an important point in order that the blower may have an adequate supply of air for heating and discharge from the nozzle without an excess of temperature interiorly of the casing.

I claim:

1. In apparatus as described, the combination of a base, a cradle having a three-point connection with the base, a motor mounted on the cradle substantially within the confines of the triangle defined by the three-point connection, the motor axis being disposed substantially transversely of one of the triangle sides beyond which the motor shaft is extended, a blower mounted on the shaft extension substantially to the outside of the triangle, a blower housing carried by the cradle and provided in one of its walls with a discharge opening, a cover for the cradle and blower housing having a mounting on the base, a nozzle mounted on the cover opposite the discharge opening in the blower housing, means connecting the blower housing and nozzle, and resilient elements interposed in the three connections between the cradle and base and in the connection between the housing and nozzle.

2. In apparatus as described, the combination of a base, a cradle having a multipoint connection with the base, a motor mounted on the cradle substantially within the confines of the figure defined by the multi-point connection, the motor axis being disposed substantially transversely of one of the figure sides beyond which the motor shaft is extended, a blower mounted on the shaft extension substantially to the outside of the figure, a blower housing carried by the cradle and provided in one of its walls with a discharge opening, a cover for the cradle and blower housing having a mounting on the base, a nozzle mounted on the cover opposite the discharge opening in the blower housing, means connecting the blower housing and nozzle, and resilient elements interposed in the several connections between the cradle and base and in the connection between the housing and nozzle.

3. In apparatus as described, the combination of a base, a cradle having a multipoint connection with the base, a motor mounted on the cradle substantially within the confines of the figure defined by the multi-point connection, the motor axis being disposed substantially transversely of one of the figure sides beyond which the motor shaft is extended, a blower mounted on the shaft extension substantially to the outside of the figure, a blower housing carried by the cradle, and provided in one of its walls with a discharge opening, a cover for the cradle and blower housing having a mounting on the base, a nozzle mounted on the cover opposite the discharge opening in the blower housing, means connecting the blower housing and nozzle, the distance between the said figure side and the point of connection between the blower housing and nozzle being less than that on the opposite side of said side to the remote end of said figure, and resilient elements interposed in the several connections between the cradle and base and in the connection between the housing and nozzle.

4. In apparatus as described, the combination of a base, a cradle and a cover both mounted on the base, a nozzle mounted on the cover opposite an opening through a wall thereof, a housing within the cover mounted on the cradle and having a releasable connection with the cover opposite the nozzle thereon, a motor-blower unit mounted on the cradle with the blower disposed within the housing, and means releasably securing the cover to the base whereby the cover, together with the nozzle thereon, may be removed without disturbing the motor-blower unit remaining within the housing and on the cradle.

ELMER S. HEWITT.