

Sept. 1, 1942.

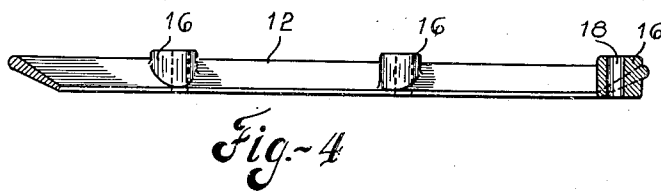
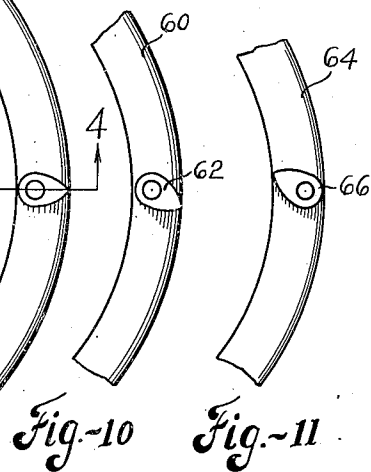
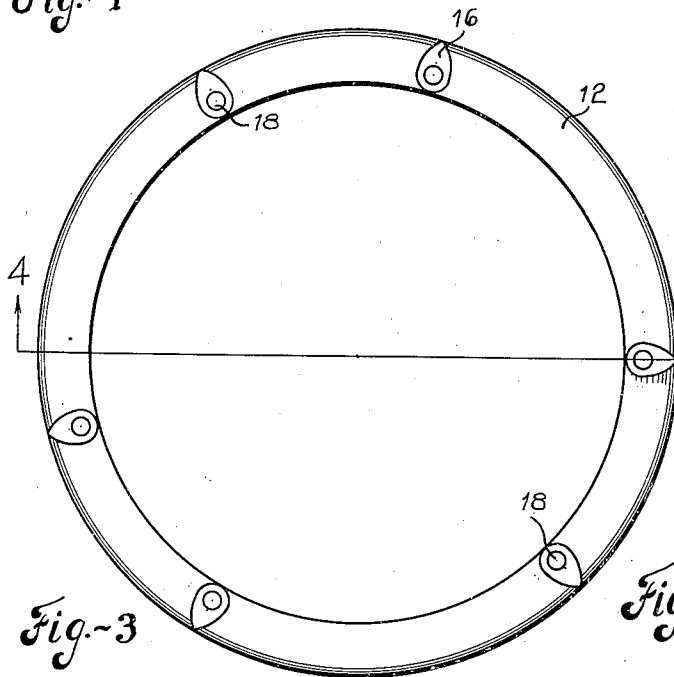
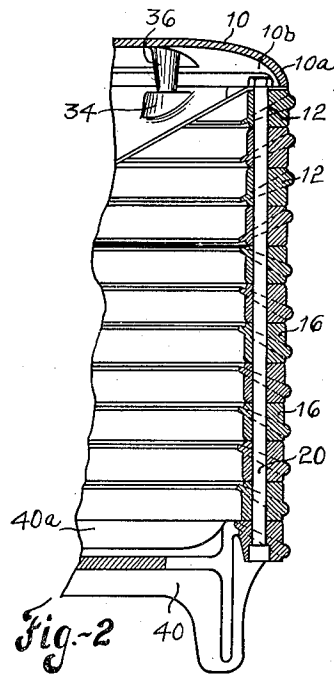
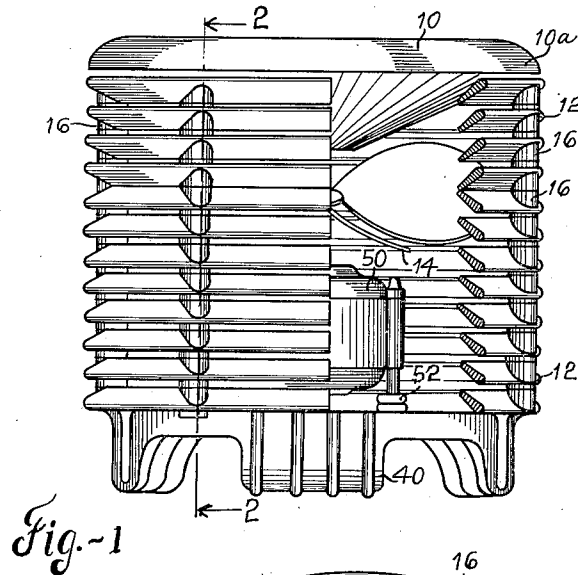
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2,294,399

PLASTIC FAN STAND

Filed July 23, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

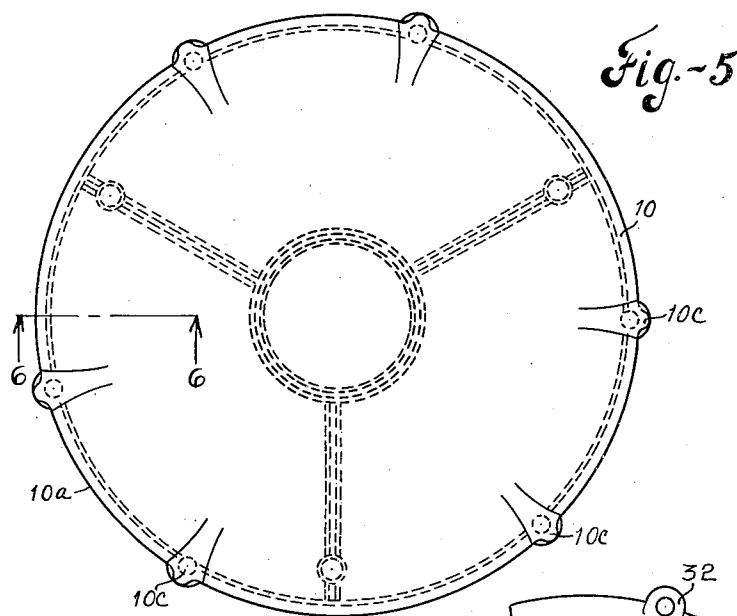


Fig. 6

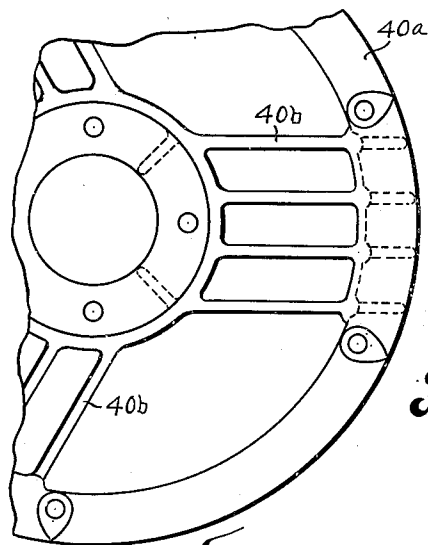
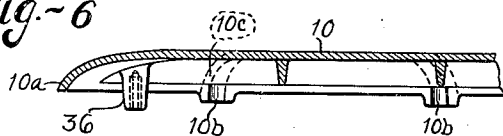


Fig. 9

Fig. 7

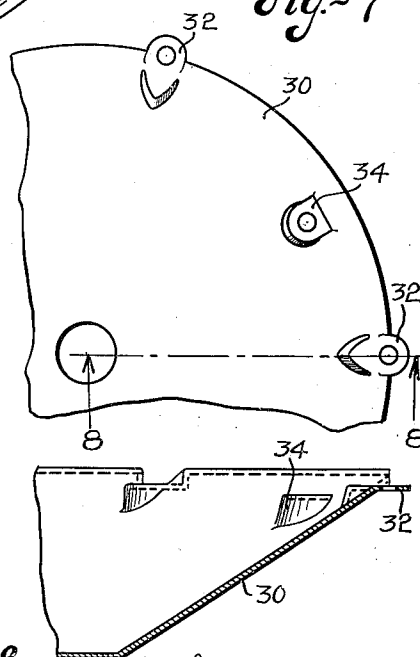
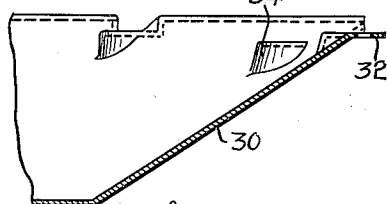


Fig. 8



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UNITED STATES PATENT OFFICE

2,294,399

PLASTIC FAN STAND

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14 Claims. (Cl. 230—274)

This invention relates to a fan stand assembly and more particularly to a fan stand assembly wherein the fan stand may be made from plastic molding material.

Electric fan stands that have appeared on the market in the past have been made from metal. This results in a heavy assembly that may or may not harmonize with the surrounding furnishings. Furthermore, for all practical purposes this assembly has its limitations as far as artistic design is concerned.

An object of this invention is to provide a stand for an electric fan that is made from a plurality of units molded from plastic molding material.

Another object of this invention is to provide a fan stand made from a plurality of stacked molded pieces.

Another object of this invention is to provide a plurality of molded members forming a fan guard surrounding the fan blades.

Another object of this invention is to provide a plurality of molded members surrounding the fan blades so as to form a guard, said members having a tear-drop shaped cross sectional area.

Another object of this invention is to provide a plurality of molded hoops provided with lugs, the lugs having a tear-drop shaped cross sectional area.

Another object of this invention is to provide a plurality of curved hoops for a guard for the fan blades, said hoops having elongated lugs angularly disposed with respect to the adjacent radius of curvature of the hoops, so that the lugs are aligned tangentially with respect to the fan blades.

Another object of this invention is to provide a plurality of units each of which encircles the fan blades of an electric fan, said members being provided with elongated spacing projections tangentially disposed with respect to the outer periphery of the fan blades.

Another object of this invention is to provide a guard for fan blades including a plurality of hoops having inclined surfaces so as to be aligned with an air stream having a conical pattern.

Another object of this invention is to provide a plurality of hoops surrounding fan blades, the hoops having inclined surfaces and being so arranged that the sides of the hoops located on one side of the fan blades are directed towards the center of the fan blades and the sides of the hoops on the other side are oppositely inclined so as to also be directed towards the center of the fan blades.

Another object of this invention is to provide hoops for fan blades that are asymmetrical, the hoops located on one side of the fan blades being reversely positioned with respect to the hoops located on the opposite side of the fan blades.

Another object of this invention is to provide a fan stand having a deflecting cone wherein the deflecting cone forms an interlocking member for holding the parts together.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawings Figure 1 is a side elevational view of the preferred embodiment, with parts broken away so as to be shown in section.

Figure 2 is a fragmentary cross sectional view taken through the projections on the ring, taken substantially on the line 2—2 of Figure 1.

Figure 3 is a top plan view of a ring.

Figure 4 is a cross sectional view taken substantially on the line 4—4 of Figure 3.

Figure 5 is a top plan view of the top of the fan as it appears when removed.

Figure 6 is a fragmentary sectional view taken substantially on the line 6—6 of Figure 5.

Figure 7 is a fragmentary top plan view of the deflecting cone.

Figure 8 is a fragmentary cross sectional view taken substantially on the line 8—8 of Figure 7.

Figures 10 and 11 are views of fragments of modifications of the ring assembly.

Metallic fan stands like those disclosed in the Welch et al. Design Patents No. 127,165, No. 127,166 and No. 128,185 are enjoying extensive commercial use. However, there are several objections. A metallic article does not always harmonize with the surroundings. Such fan stands are heavy. It is difficult to secure paint that will last. The finish is easily scratched and marred. The design is influenced to a great extent by the available shapes and types of bars that appear on the market.

In view of the foregoing, there has been a desire on the part of manufacturers for a radically different type of fan stand. It seems that plastic molding material offers a solution. However, plastics as used in the past have definite limitations, both as to size and as to strength, particularly if an attempt is made to follow the conventional design of fan stands.

In the preferred embodiment disclosed herein, the fan stand utilizes a plurality of stacked molded units, thereby eliminating the necessity of the use of conventional legs, as will appear more fully from the detailed description that follows.

Referring to the drawings, the reference character 10 indicates a table top. In the preferred embodiment this table top is substantially round. It has been shown round for the purpose of illustration; but it could be oval, rectangular, square, polygonal or any other suitable shape. The margins 10a are curved downwardly and are somewhat thicker than the main body portion, so as to give the table top rigidity. At spaced in-

tervals the table top is provided with hollow cavities 10b, which underlie bosses 10c. Furthermore, the under side may be reinforced by ribs or flanges.

When a round table top is used, the guard assembly includes a plurality of rings 12. These rings are preferably tear-drop shaped in cross sectional area. Furthermore, the longitudinal axis of the transverse cross sectional area is aligned with the general direction of the air currents emerging from the fan blades 14, which will be described more fully later. This has been done to reduce the air resistance. Each of the rings is provided with a plurality of spacing and supporting bosses or projections 16. The cross sectional area of these bosses is substantially tear-shaped, again, to reduce resistance to the air currents. The longitudinal axis of each projection is substantially radially disposed with respect to the fan blades. Each of the bosses 16 is provided with a hole or aperture 18, through which extends a retaining bolt or rod 20.

The four hoops lying above the neutral plane of the fan blades are positioned so as to accommodate the air stream directed upwardly and outwardly, so as to have a substantially conical pattern. The hoops below the plane of the fan have been reversed, so as to provide low resistance to the air currents drawn upwardly towards the fan. The upper hoops and the lower hoops are identical, as far as the shape is concerned; but the angle of inclination of the upper hoops is opposite to the angle of inclination of the lower hoops. This permits identical hoops being utilized above and below the fan blades. By this arrangement, the efficiency of the fan is increased, without increasing the cost thereof. As a matter of fact, it is cheaper to use the same type of hoops above and below the plane of the fan that it would be to use different types of hoops, in that the same molds may be used in molding all of the hoops.

In the preferred embodiment eleven (11) rings 12 have been used. Each ring is provided with six bosses or extensions 16 arranged in pairs, there being three equally spaced pairs of bosses.

The rings 12 forming the guard for the fan blades 14 are supported upon a base 40. This base 40 is provided with a marginal portion 40a, simulating in appearance a ring. This marginal portion is provided with pairs of apertures aligned with the apertures in the overlying pairs of bosses in each ring. The base 40 includes three radially disposed bracket-like portions 40b forming a mounting for the electric motor 50. A plurality of rubber snubbers 52 are mounted between the motor housing and the bracket.

A cone 30 is located below the table top 10. This cone is provided with a plurality of radially disposed ears 32 arranged in pairs and aligned with the bosses or projections 16 on the rings 12. Each of the ears 32 is provided with an aperture registering with the aperture 18 in the bosses, so that the bolts or rods 20 clamp the rings 12, the cone 30 and the base 40 into a unitary structure. The cone 30 is provided with a plurality of seats or projections 34 formed from the sheet metal forming the body of the cone. The seats 34 support bosses 36 extending downwardly from the under side of the table top 10. These bosses 36 are provided with threaded apertures receiving screws, not shown. It can readily be seen that the deflecting cone 30, in addition to deflecting the air outwardly, also forms an

interlocking unit for interconnecting the table top to the rings.

The hoops shown in the drawings are circular. The hoops need not necessarily be circular. They may be square, rectangular, polygonal, oval or any other suitable shape. As shown, the outer edge of the hoops are thicker than the inner edge. This arrangement could be reversed, so that the inner edge would be thicker than the outer edge. This is a matter of choice. Likewise, the bosses 16 could be reversed. The particular arrangement has merely been shown for the purpose of illustration, without any intention of limitation. The assembly has been referred to as molded from plastic molding material. The parts need not necessarily be molded from plastic molding material. These parts could be made from metal, if desired. If the parts are made from molding material, plastic molding material may be selected that lends itself to the use of various shades and colors, thereby obtaining a wide range of ornamentation. For example, the top could be one color, the hoops of a different color, or colors, and the base of any selected color.

In the modification disclosed in Figure 10, a ring 60, similar to the ring 12, has been used; but instead of the tear-drop being radially disposed like the disclosure in the preferred embodiment, the tear-drop projection 62 is angularly disposed so as to have its longitudinal axis substantially tangentially arranged with respect to the outer margins of the path swept out by the fan blades. By this arrangement, the resistance to the air may be further reduced, in that the longitudinal axis of the tear-drop projections are aligned with the air stream.

In the modification disclosed in Figure 11, a similar ring 64 has been shown with tear-drop projections 66, wherein the tear-drop projections are reversed so as to be pointed inwardly, rather than pointed outwardly. The shape, the angular position and the arrangement of the projections may be selected depending upon the efficiency of the structure, the use to which the fan is to be put, et cetera.

Although the preferred embodiment discloses a plurality of annular members, rings or hoops enclosing the fan, it is not necessary that the molded members be annular or closed members. The fan guard could be molded in sections provided with suitable apertures for the circulation of air, these sections being supported upon the base structure and mounted intermediate the base and the top. As far as the use of plastic molding material is concerned, the detailed shape of the component parts is a matter of choice to meet the particular demands. Likewise, the means for holding the parts together need not necessarily be vertically disposed rods or bolts. If, for example, a molding material is used that may be dissolved by suitable solvent, the parts may be homogeneously united together, so as to form a unitary structure or the parts may be cemented together, interlocked or held together in any other suitable manner.

Although the preferred modification of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, each of said hoops having a tear-drop shaped transverse cross sectional area, the longitudinal axis of each transverse sectional area forming an acute angle with the diameter of the hoop so that the hoops have angularly disposed arcuate surfaces, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, and means for holding the hoops and the base as a unitary structure.

2. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, each of said hoops having a tear-drop shaped transverse cross sectional area, the longitudinal axis of each transverse sectional area of the hoops located below the plane of the fan blade being directed upwardly when extended inwardly so as to be inclined in the general direction of the air stream, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, and means for holding the hoops and the base as a unitary structure.

3. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, each of said hoops having a tear-drop shaped transverse cross sectional area, the longitudinal axis of each transverse sectional area of the hoops located below the plane of the fan blades being directed upwardly when extended inwardly and the longitudinal axis of each transverse sectional area of the hoops located above the plane of the fan blades being directed downwardly when extended inwardly so that the hoops located below and above the plane of the fan blades are inclined in the general direction of the air stream, and means integral with the hoops for spacing the hoops apart from each other so as to provide air passages between the hoops.

4. In a fan stand assembly including a guard assembly having a plurality of substantially horizontally disposed molded annular hoops each having a tear-shaped transverse cross sectional area wherein the longitudinal axis of the tear-shaped transverse cross sectional area forms an acute angle with the diameter of the hoop, and a plurality of spacing projections integral with the hoops, said spacing projections having a tear-shaped cross sectional area.

5. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, said base including a plurality of circumferentially disposed legs, a plurality of substantially horizontally disposed molded hoops stacked upon the base for encircling the motor and the fan, each of said hoops having tear-shaped transverse cross sectional area, the longitudinal axis of each trans-

verse cross sectional area forming an acute angle with the diameter of the hoop so that the hoops have angularly disposed arcuate surfaces, a plurality of pairs of projections integral with the hoops, there being one pair of projections on each hoop for each leg, said projections holding the hoops in spaced relation from each other, and means for holding the hoops and the base as a unitary structure.

6. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, said base including a plurality of circumferentially disposed legs, a plurality of substantially horizontally disposed molded hoops stacked upon the base for encircling the motor and the fan, each of said hoops having tear-shaped transverse cross sectional area, the longitudinal axis of each transverse cross sectional area forming an acute angle with the diameter of the hoop so that the hoops have angularly disposed arcuate surfaces, a plurality of pairs of projections integral with the hoops, there being one pair of projections on each hoop for each leg, said projections holding the hoops in spaced relation from each other, each of the projections having a hole registering with a like hole in the projections on the other hoops, said projections holding the hoops in spaced relation from each other, and rods extending through the holes in the hoops for holding the hoops together in a unitary structure.

7. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, said base including a plurality of circumferentially disposed legs, a plurality of substantially horizontally disposed molded hoops stacked upon the base for encircling the motor and the fan, each of said hoops having tear-shaped transverse cross sectional area, the longitudinal axis of each transverse cross sectional area forming an acute angle with the diameter of the hoop so that the hoops have angularly disposed arcuate surfaces, a plurality of pairs of projections on each hoop for each leg, said projections holding the hoops in spaced relation from each other, each of the projections having a hole registering with a like hole in the projections on the other hoops, said projections holding the hoops in spaced relation from each other, rods extending through the holes in the hoops for holding the hoops together in a unitary structure, and a top overlying said hoops, said top having a downwardly directed arcuate marginal portion for covering the upper end of the retaining rods.

8. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, said projections being provided with holes aligned with like holes in adjacent projections, a conical member lying on top of the hoops, said conical member having an outwardly directed horizontally disposed flange portion overlying the top hoop, said flange having apertures registering with the holes in the hoops, bolts extending through the holes in the hoops and the apertures

in the flange of the conical member for holding the hoops and the conical member together, a top overlying the conical member, said top having an overhanging arcuate marginal portion overlying the upper ends of the bolts so as to conceal the same, and means for holding the top in position.

9. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, said projections being provided with holes aligned with like holes in adjacent projections, a conical member lying on top of the hoops, said conical member having an outwardly directed horizontally disposed flange portion overlying the top hoop, said flange having apertures registering with the holes in the hoops, bolts extending through the holes in the hoops and the apertures in the flange of the conical member for holding the hoops and the conical member together, a top overlying the conical member, said top having an overhanging arcuate marginal portion overlying the upper ends of the bolts so as to conceal the same, said top having downwardly projecting bosses, and means engaging the bosses for securing the top to the conical member.

10. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, said projections being provided with holes aligned with like holes in adjacent projections, a conical member lying on top of the hoops, said conical member having an outwardly directed horizontally disposed flange portion overlying the top hoop, said flange having apertures registering with the holes in the hoops, bolts extending through the holes in the hoops and the apertures in the flange of the conical member for holding the hoops and the conical member together, a top overlying the conical member, said top having an overhanging arcuate marginal portion overlying the upper ends of the bolts so as to conceal the same, said conical member having upwardly directed bosses, the top member having downwardly directed apertured bosses registering with the bosses on the conical member, and means for securing the bosses together so as to hold the top in position.

11. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, said base being provided with a plurality of legs, apertures extending through the base adjacent the legs, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, a plurality of apertured projections integral with the hoops, said projections holding the hoops in spaced re-

lation from each other and with the apertures in the projections registering with the apertures in the base, a conical member having an outwardly directed horizontally disposed flange overlying the top hoop, said flange being provided with apertures registering with the apertures in the projections of the hoops, and bolts extending through the apertures in the flange of the conical member, through the apertures in the hoops and through the apertures in the base, for holding the conical member, the hoops and the base together as a unitary structure.

12. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, said base being provided with a plurality of legs, apertures extending through the base adjacent the legs, a plurality of substantially horizontally disposed molded hoops stacked upon the base for enclosing the motor and the fan, a plurality of apertured projections integral with the hoops, said projections holding the hoops in spaced relation from each other, the apertures of adjacent projections registering with each other and with the apertures in the base, a conical member having an outwardly directed horizontally disposed flange overlying the top hoop, said flange being provided with apertures registering with the apertures in the projections of the hoops, bolts extending through the apertures in the flange of the conical member, through the apertures in the hoops and through the apertures in the base for holding the conical member, the hoops and the base together as a unitary structure, and a molded top member overlying said hoops, said top having a downwardly directed arcuate portion for covering the upper end of the bolts.

13. An electric fan enclosure for enclosing an electric fan of the circulatory type and its motor, said enclosure including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops provided with apertured projections, the apertures in the projections of adjacent hoops registering with each other, and a conical member overlying the hoops, the conical member being provided with an outwardly directed flange portion provided with apertures registering with the apertures in the projections, and bolts extending through the apertures in the flange portion and the apertures in the projections for holding the hoops and the conical member together.

14. An electric fan enclosure for supporting an electric fan of the circulatory type and its motor, said fan enclosure including a base for supporting the motor and the electric fan, a plurality of substantially horizontally disposed molded hoops stacked upon the base for encircling the motor and the fan, each of said hoops having a tear-drop shaped transverse cross sectional area, a plurality of projections integral with the hoops, said projections holding the hoops in spaced relation from each other, a top having an arcuate marginal portion provided with bosses overlying the projections of the hoops, and means for holding the top, the hoops and the base as a unitary structure.

ALFRED F. FUKAL.