

Feb. 9, 1943.

A. F. FUKAL

2,310,772

PLASTIC FAN STAND

Filed March 14, 1942

2 Sheets-Sheet 1

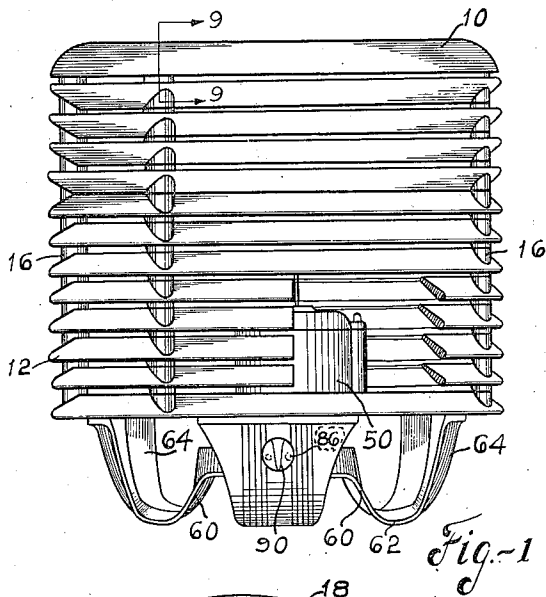


Fig. 1

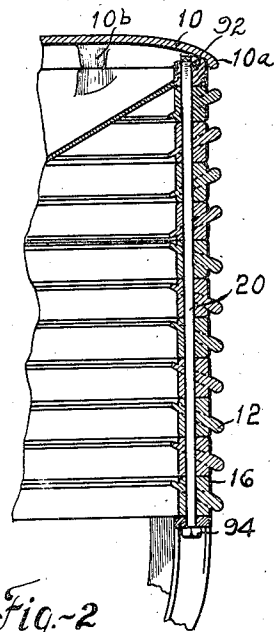


Fig. 2

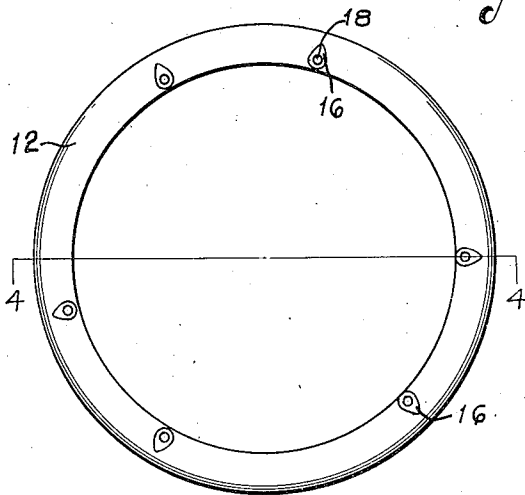


Fig. 3

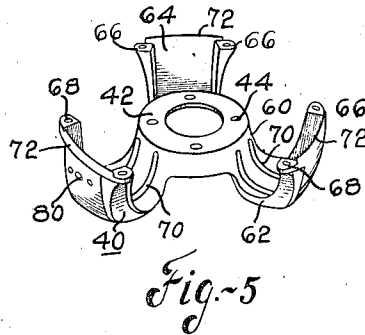


Fig. 5

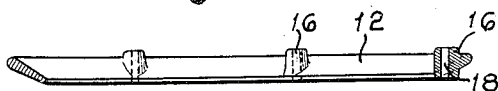


Fig. 4

Inventor

Alfred F. Fukal
By Henry G. Dybvig

Attorney

Feb. 9, 1943.

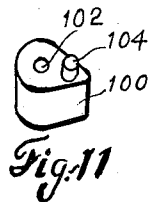
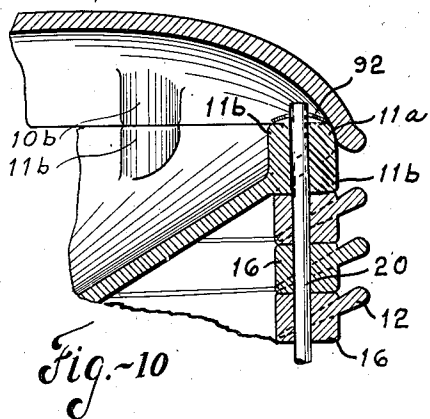
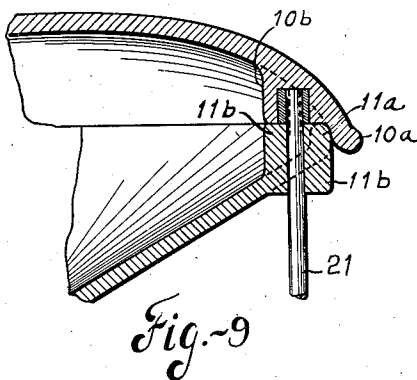
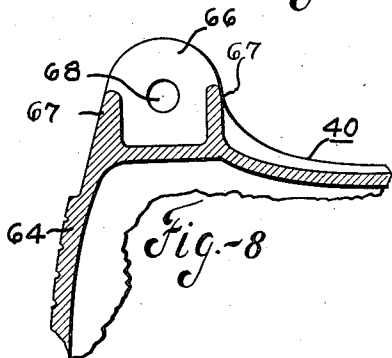
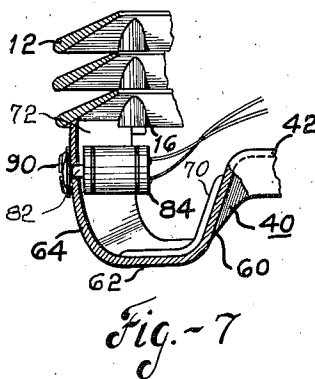
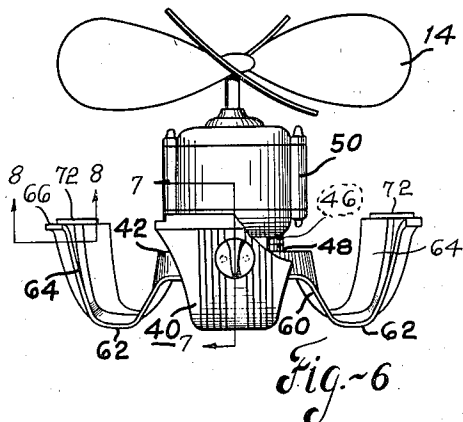
A. F. FUKAL

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PLASTIC FAN STAND

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2 Sheets-Sheet 2



Inventor

Alfred F. Fukal
By Henry G. Dylvoig

Attorney

UNITED STATES PATENT OFFICE

2,310,772

PLASTIC FAN STAND

Alfred F. Fukal, Cincinnati, Ohio, assignor to
William W. Welch, Cincinnati, Ohio

Application March 14, 1942, Serial No. 434,749

14 Claims. (Cl. 230—259)

This invention relates to a fan stand assembly and more particularly to the stand structure per se.

This application relates to the disclosure in my copending application Serial No. 403,702 filed July 23, 1941, for Plastic fan stand.

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 fan stand having a deflecting cone wherein the deflecting cone forms an interlocking member for holding parts together.

Another object of this invention is to provide a molded base for supporting the electric motor and for supporting the guard assembly.

Another object of this invention is to provide a molded base for the fan stand, wherein the guard may be removed from the base without the removal of the electric motor supported thereon.

Another object of this invention is to provide a base having clearance for the flow of the air stream propelled by the electric fan.

Another object of this invention is to provide a base that supports the electrical equipment independently of the guard assembly and the deflecting cone.

Another object of this invention is to provide a base provided with ornamentation, wherein the ornamentation harmonizes with the appearance of the balance of the fan stand.

Another object of this invention is to provide a molded base functioning as a support for the electric motor, which base is provided with clearance for the circulation of air, said base being provided with a support for the speed control coil.

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 discloses a perspective view of the fan stand assembly, with parts broken away for the sake of clearance.

Figure 2 is a vertical cross sectional view of the stand assembly shown in Figure 1.

Figure 3 is a top plan view of one of the rings

or hoops used in the fan assembly shown in Figures 1 and 2.

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

Figure 5 is a perspective view of the base, drawn to a smaller scale than that used in Figures 1 to 4.

Figure 6 is a side elevational view of the base, with parts broken away and the electric fan and its motor mounted thereon.

Figure 7 is a fragmentary cross sectional view taken substantially on the line 7—7 of Figure 6. Figure 7 is drawn to a larger scale than Figure 6.

Figure 8 is an enlarged fragmentary cross sectional view taken substantially on the line 8—8 of Figure 6.

Figure 9 is an enlarged fragmentary view taken substantially on the line 9—9 of Figure 1.

Figure 10 is an enlarged fragmentary view of the juncture between the top deflecting cone and a few of the rings or hoops, as shown near the top of Figure 2.

Figure 11 shows a perspective view of a spacer.

In the fan stand assembly shown in the above identified copending application for United States Letters Patent Serial No. 403,702, a base is used, which base forms practically a solid bottom underlying the guard assembly and the motor. In order to provide proper clearance for the free flow of air to be circulated by the fan, another base has been provided for this guard assembly, as will appear more fully from the description of the fan stand assembly that follows.

This base supports the motor and the electrical controls independently of the guard assembly, the deflecting cone and the top, so that the motor and the electrical equipment may be assembled on the base as a complete unit. After the motor and the electrical controls therefor have been mounted in position, the guard assembly, the deflecting cone and the top may be mounted in position on the base. In the event it is found necessary to service the motor and the electrical controls, the guard, the deflecting cone and the top may be removed as a unit from the base, leaving the motor and the electrical controls exposed for service, as will appear more fully from the detailed description that follows. However, before describing the base, a brief description will be made of the guard assembly, the deflecting cone and the top.

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 illus-

tration; 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 intervals the table top is provided with hollow bosses 10b. Furthermore, the under side may be reenforced by ribs or flanges, if so desired. When a three legged base is used, the top is preferably provided with three bosses, as will appear more fully later.

A cone member 11 is mounted underneath the top 10. This cone is provided with a peripheral lip 11a, snugly seated within the marginal bead 10a of the top 10. The cone is also provided with a plurality of pairs of bosses 11b, which will be described more fully later.

When a round table top is used, the guard assembly includes a plurality of hoops or 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 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. These bosses 16 are located in spaced relation from the margins of the rings 12. The cross sectional area of these bosses is substantially tear-shaped, again, to reduce resistance to 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 extend retaining bolts or rods 20 and 21.

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 of the fan stand assembly. As a matter of fact, it is cheaper to use the same type of hoops above and below the plane of the fan than 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 projections 16 arranged in pairs, there being three equally spaced pairs of bosses. There is one pair of bosses for each leg of the base. If a four legged base is used, there would preferably be four pairs of bosses 16.

The rings 12, forming the guard for the fan blades 14, are supported upon a base 40. The base 40 includes a centrally disposed annular, motor supporting base or annular portion 42. This centrally disposed motor supporting base 42 is provided with a plurality of holes 44 receiving retaining bolts 46, having mounted thereon rubber snubbers 48 for bolting the motor 50 in position. The snubbers absorb motor vibrations, so as to eliminate these from the fan stand

assembly. The base or annular portion 42 is supported upon a plurality of radially disposed downwardly looped leg portions, terminating in upwardly directed guard supporting portions, said leg portions including a downwardly extending portion 60 merging into a flat floor engaging base portion 62 terminating in an upwardly directed channel portion 64, provided with suitable ears 66, forming supports for the projections 16 of the hoops 12. Each ear 66 is provided with a suitable opening 68 registering with the apertures 18 in the hoops 12. A pair of flanges 67, integral with the upwardly extending portion 60, provide reenforcing supports for the ears 66. In order to reenforce each leg portion 60 and the flat base portion 62, these have been provided with radially disposed ribs 70, which, for convenience, have been arranged in pairs, there being one pair for each leg portion. The upper portion of the channel-shaped upwardly directed support 64 is provided with an upwardly directed arcuate flange 72, projecting under the lower ring or hoop 12, so as to eliminate light beams passing between the lower hoop and the top of the upwardly directed portion 60.

One of the upwardly directed channel portions 64 has been provided with an aperture 80 receiving a stubshaft 82 of a switch contacting several terminals of a coil 84, which coil is held in position by suitable screws 86 in the side of one channel portion 64. The coil 84 is provided with suitable taps for varying the speed of the motor, as is well known to those skilled in the art. The radially disposed downwardly looped leg portions are arranged to provide an air circulating passage between the downwardly extending portion 60, the base portion 62 and the upwardly directed portion 64. This permits the free flow of air from the floor upwardly through the fan and outwardly through the upper hoops.

The stub shaft 82 supports a suitable control knob or switch button 90, having suitable indicia thereon for indicating the various speeds and the "off" position. From this it may be clearly seen that the motor, the switch, the coil 84 and all electrical parts are supported on the base 40, independently of the guard assembly, the deflecting cone and the top.

Method of assembly

The motor, the coil and the switch are assembled on the base so as to form a unit consisting of the base, the electric fan and the controls therefor. The cone member 11 and the hoops 12 are assembled and three rods 20 passed through registering apertures in the hoops and in the bosses of the cone member. There is preferably one bolt for each pair of bosses corresponding to leg portions of the base. These bolts may be extended through the apertures in the corresponding ears in the base portion and secured in position by suitable nuts 92 and 94. The upper nut 92, as shown in Figure 10, is preferably some type of nut made from spring metal and adapted to be pushed into position. When seated in position, it locks itself, so that it cannot be removed without unscrewing. The lower nut 94 may be any conventional nut, threadedly engaging the lower end of the bolt 20. These three bolts, one for each of the leg portions, cooperate to hold the base, the hoops and the cone member together as a sub-assembly. The top, which is provided with three equally spaced bosses, is then mounted in position with the apertures in the

bosses registering with the unused apertures extending through the hoops and the ears. Bolts 21 are then passed through the remaining holes and threadedly engage the bosses 10b in the top. Nuts 94 are placed on the bottom of the bolts. The bolts 20 and 21 are used in holding the assembly together, three of which engage the top and the other three only hold the cone, hoops and base together.

As explained above, in the event it is found necessary to service the motor or any of the electrical parts, or to tighten, adjust or replace the fan blades, this may be done by merely removing the nuts engaging the ends of the bolts 20, lifting the hoops and the parts supported thereby away from the base, leaving the electrical parts, together with the fan, exposed for service.

As far as the shape of the hoops, the arrangement of the deflecting cone and the top is concerned, this is immaterial, as far as the base assembly is concerned.

In order to increase the efficiency of the fan assembly, it may be desirable to increase the space between one or more pairs of hoops, so as to increase the air passage to thereby increase the flow of air current. In Figure 11 a tear-shaped spacer 100 of substantially the same shape as the extensions 16 has been shown. This spacer is constructed to be mounted in registry with selected extensions or projections 16. This spacer is provided with an aperture 102 registering with the apertures through the projections 16.

Due to the fact that the spacer 100 is not secured to one of the hoops, it has been provided with a stud-like boss 104 adapted to be inserted in a recess in the adjacent projection 16. This stud-like boss 104 cooperates with the rod 20 or 21, as the case may be, to hold the spacer 100 aligned with the adjacent tear-shaped projection 16. In the manufacture of the rings, each of the projections 16 is preferably provided with a recess adapted to receive the stud-like boss 104. By this arrangement it is not necessary to prepare the hoops adjacent the spacers in a special manner, as for example, by drilling holes, in that if all of the hoops are provided with such holes, then any hoop may be used in association with the spacer. There are as many spacers as projections 16 on one hoop. If each hoop contains 6 projections, 6 spacers may be used.

For most purposes spacers will be placed only between two adjacent rings, which rings are positioned at the location of maximum air intake. The height of the spacer may be $\frac{1}{4}$ " , more or less. The exact location of the spacers depends entirely upon the type, the shape and the position of the fan. If the maximum intake is between the fourth and fifth hoops, measured from the top of the assembly, the spacers are placed between the fourth and fifth hoops. If the maximum intake is between the third and fourth hoops, the spacers would be placed there. If the maximum intake is found at some other position throughout the height of the guard, the spacers are inserted at such a position. The use of the spacers is optional, depending entirely upon the efficiency of the assembly and the function thereof.

Although the preferred modification of the device has been disclosed, 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 gen-

erally 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. A base for a fan stand assembly having a motor and a guard consisting of a stack of hoops, said base including a centrally disposed annular motor supporting portion, said motor supporting portion having a plurality of equally spaced leg portions integral therewith, each of said leg portions merging into a floor engaging portion being radially disposed with respect to said annular portion and terminating in an upwardly directed channel portion forming a support for the hoops; said upwardly directed channel portion being arranged in spaced relation from the motor supporting portion so as to form an air circulating passage.
2. A base for a fan stand assembly having a motor and a guard consisting of a stack of hoops, said base including a centrally disposed annular motor supporting portion, said motor supporting portion being provided with radially disposed downwardly looped leg portions terminating in an upwardly directed guard supporting portion arranged in spaced relation from the motor supporting portion so as to provide an air circulating passage.
3. A base for a fan stand assembly having a motor and a guard consisting of a stack of hoops, said base including a centrally disposed annular motor supporting portion, said motor supporting portion being provided with radially disposed downwardly looped leg portions terminating in an upwardly directed channel portion provided with a pair of ears for supporting the guard, said ears being arranged in spaced relation from the annular motor supporting portion so as to provide an air circulating passage.
4. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a base having a motor supporting portion for supporting the electric motor of a fan, said base portion including a plurality of downwardly disposed leg portions terminating in upwardly directed guard portions, and means for removably attaching the guard assembly and the top to said upwardly directed portions, said guard assembly being removably mounted to permit servicing of the motor without disconnecting the motor from the base.
5. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a base including an annular portion for supporting the motor in spaced relation from the floor, said annular portion being integral with a plurality of downwardly disposed looped portions, each of said looped portions including a downwardly directed portion extending from the base merging into a radially disposed floor engaging portion terminating in an upwardly directed channel portion provided with supporting ears, and means for removably attaching said guard assembly to said ears so that the guard assembly may be removed from the base for servicing the motor mounted upon the annular portion.
6. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a motor supporting base, said motor supporting

base including an annular portion arranged in spaced relation from the floor, said annular portion supporting an electric motor, a plurality of downwardly extending leg portions integral with said annular portion, said leg portions merging into radially disposed floor engaging portions terminating in upwardly directed guard supporting portions, said guard supporting portions including ears for removably supporting the guard assembly, and means for removably attaching the guard assembly to said ears so as to permit removal of the guard assembly from the base without removal of the motor for servicing the motor.

7. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a base for supporting the electric fan and the guard assembly, said base including a motor supporting portion having mounted thereon a motor for the fan, said motor supporting portion merging into a plurality of equally spaced leg portions extending downwardly so as to support the motor supporting portion in spaced relation from the floor, said downwardly extending leg portions being provided with reinforcing ribs and merging into a ribbed base portion terminating in an upwardly directed guard supporting portion for removably supporting the guard assembly, and means for removably attaching the guard assembly to said upwardly directed portions to permit the removal of the guard assembly from the base portion without the removal of the motor to permit servicing of the motor while mounted on the base portion.

8. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a supporting base including a motor supporting portion arranged in spaced relation from the floor for supporting the electric motor, and a plurality of legs integral with the motor supporting portion, each of said legs being directed downwardly for engagement with the floor so as to support the motor in spaced relation from the floor, said legs including a guard assembly supporting portion, the legs being provided with air passages for the flow of air upwardly around the motor.

9. In a fan stand assembly, the combination of a top and a guard assembly consisting of a plurality of hoops stacked upon each other and held in aligned relation by retaining means, with a motor supporting base, said motor supporting base including an annular portion arranged in spaced relation from the floor, said annular portion supporting an electric motor, a plurality of downwardly extending leg portions integral with said annular portion, said leg portions merging into radially disposed floor engaging portions terminating in upwardly directed guard supporting portions, said guard supporting portions including ears for removably supporting the guard assembly, means for removably attaching the guard assembly to said ears so as to permit removal of the guard assembly from the base without removal of the motor for servicing the same, and switching means for controlling the motor mounted upon the upwardly directed guard supporting portion of one of the legs.

10. A fan stand assembly including an annular top member having an arcuate marginal portion terminating in a bead-like ring, a plurality of

bosses including threaded inserts embedded therein, a plurality of hoops stacked upon each other and forming a support for the top, said hoops having aligned projections provided with apertures registering with each other and some of the apertures registering with the threaded insert in the top, said projections on the hoops being arranged in spaced relation from the outer margin of the hoops so as to be partially concealed thereby, a base assembly provided with supporting means for supporting the hoops, said base assembly having apertures registering with the apertures in the projections, and retaining means extending through the apertures and threadedly engaging the threaded inserts in the bosses for holding the assembly together as a unit.

11. A fan stand assembly including an annular top member having an arcuate marginal portion terminating in a bead-like ring, a plurality of bosses including threaded inserts embedded therein, a conical member mounted underneath the top, said conical member having a bead-like marginal portion nestled underneath the arcuate marginal portion of the top, said conical member having a plurality of apertured bosses, some of which bosses register with the bosses on the top member, a plurality of hoops stacked upon each other and forming a support for the conical member and the top, said hoops having aligned projections provided with apertures registering with each other and some of the apertures registering with the threaded insert in the top, said projections on the hoops being arranged in spaced relation from the outer margin of the hoops so as to be partially concealed thereby, a base assembly provided with supporting means for supporting the hoops, said base assembly having apertures registering with the apertures in the projections, and retaining means extending through the apertures and threadedly engaging the threaded inserts in the bosses for holding the assembly together as a unit.

12. A fan stand assembly including an annular top member having an arcuate marginal portion terminating in a bead-like ring, a plurality of bosses including threaded inserts embedded therein, a conical member mounted underneath the top, said conical member having a bead-like marginal portion nestled underneath the arcuate marginal portion of the top, said conical member having a plurality of apertured bosses, some of which register with the bosses on the top member, a plurality of hoops stacked upon each other and forming a support for the conical member and the top, said hoops having aligned projections provided with apertures registering with each other and some of the apertures registering with the threaded inserts in the top, said projections on the hoops being arranged in spaced relation from the outer margin of the hoops so as to be partially concealed thereby, a base assembly provided with supporting means for supporting the hoops, said base assembly having apertures registering with the apertures in the projections, and a plurality of retaining rods some of which threadedly engage the inserts in the bosses of the top for holding the top, cone, hoops and base in a unitary structure and the remaining rods extending through the remaining apertures in the cone, hoops and base for holding the cone, hoops and base as a unitary structure.

13. A fan stand assembly including an annular top member having an arcuate marginal portion

terminating in a bead-like ring, a plurality of bosses including threaded inserts embedded therein, a plurality of hoops stacked upon each other and forming a support for the top, said hoops having aligned projections provided with apertures registering with each other and some of the apertures registering with the threaded inserts in the top, said projections on the hoops being arranged in spaced relation from the outer margin of the hoops so as to be partially concealed thereby, said hoops having a substantially tear-drop shaped cross sectional area with the longitudinal axis of the cross sectional area forming an acute angle with the maximum diameter of the hoops, some of the hoops having the longitudinal axis extending substantially parallel to corresponding elements of the conical member, the remaining hoops being inverted, a base assembly provided with supporting means for supporting the hoops, said base assembly having apertures registering with the apertures in the projections, and retaining means extending through the apertures and threadedly engaging the threaded inserts in the bosses for holding the assembly together as a unit.

14. A fan stand assembly including an annular top member having an arcuate marginal portion terminating in a bead-like ring, a plurality of bosses including threaded inserts embedded therein, a conical member mounted underneath

the top, said conical member having a bead-like marginal portion nestled underneath the arcuate marginal portion of the top, said conical member having a plurality of apertured bosses, some of which register with the bosses on the top member, a plurality of hoops stacked upon each other and forming a support for the conical member and the top, said hoops having aligned projections provided with apertures registering with each other and some of the apertures registering with the threaded inserts in the top, said projections on the hoops being arranged in spaced relation from the outer margin of the hoops so as to be partially concealed thereby, said hoops having a substantially tear-drop shaped cross sectional area with the longitudinal axis of the cross sectional area forming an acute angle with the maximum diameter of the hoops, some of the hoops having the longitudinal axis extending substantially parallel to corresponding elements of the conical member, the remaining hoops being inverted, a base assembly provided with supporting means for supporting the hoops, said base assembly having apertures registering with the apertures in the projections, and retaining means extending through the apertures and threadedly engaging the threaded inserts in the bosses for holding the assembly together as a unit.

ALFRED F. FUKAL.