March 25, 1941. J. W. H. HANDLEY 2,235,927

REVOLVING CANOPY OR ROOF

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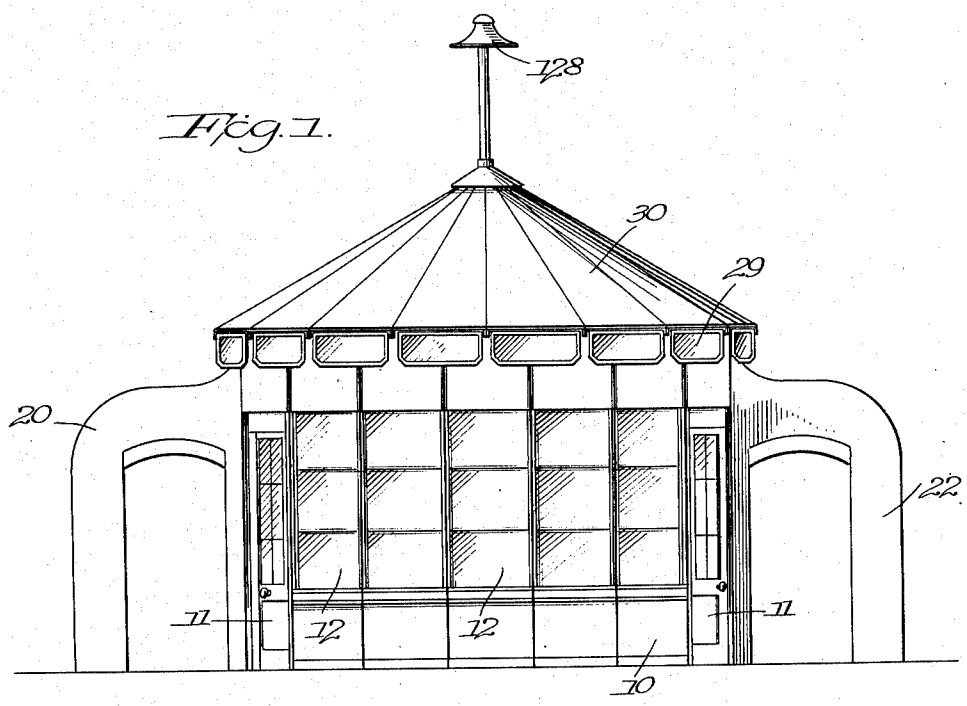


Fig. 1.

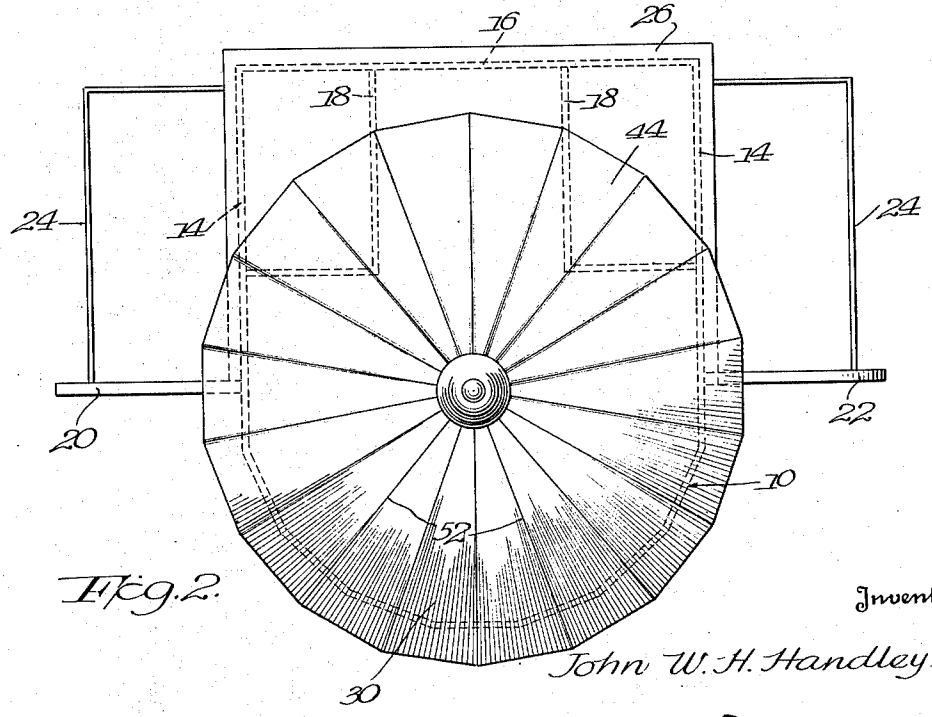


Fig. 2.

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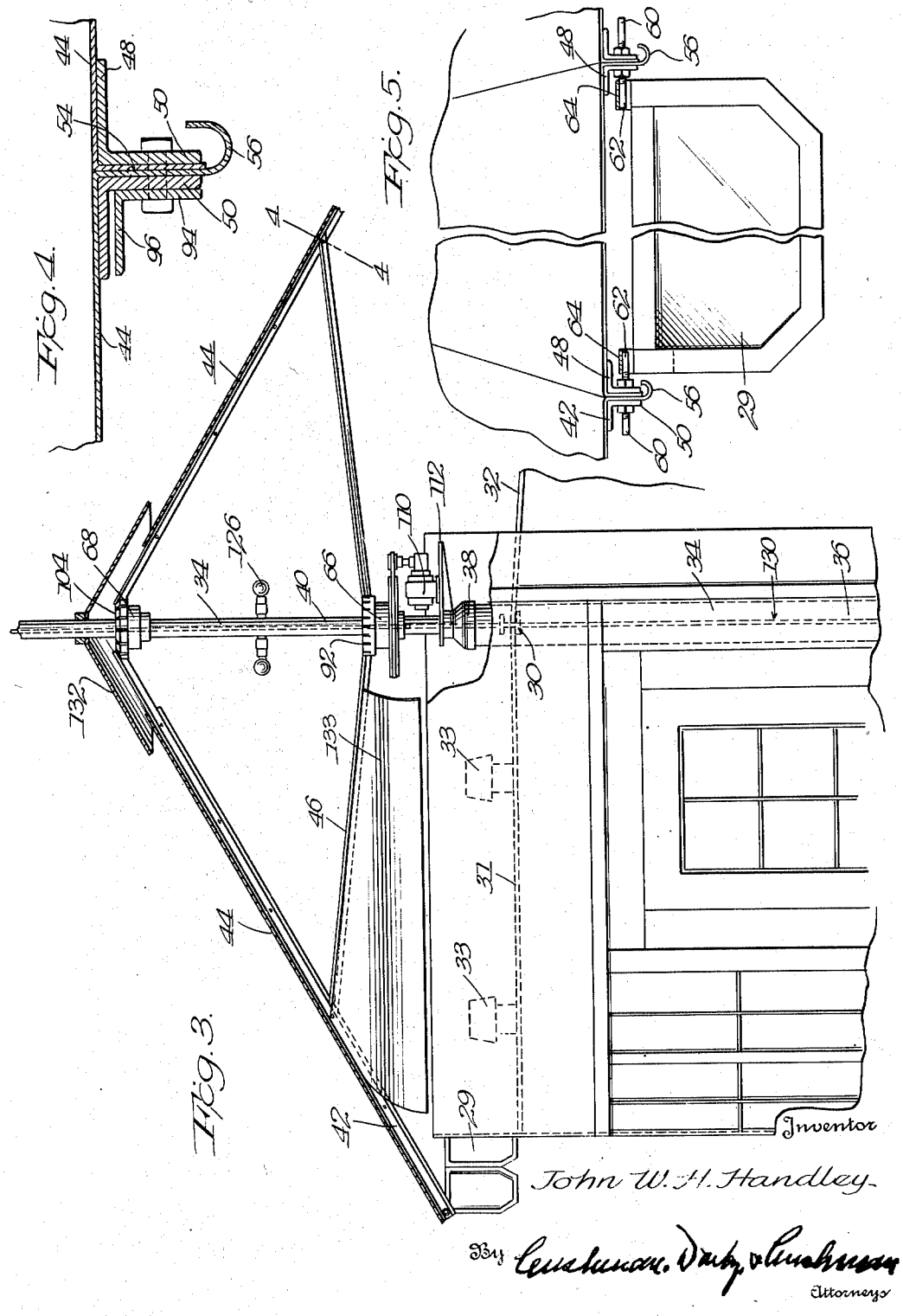
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Fig. 6.

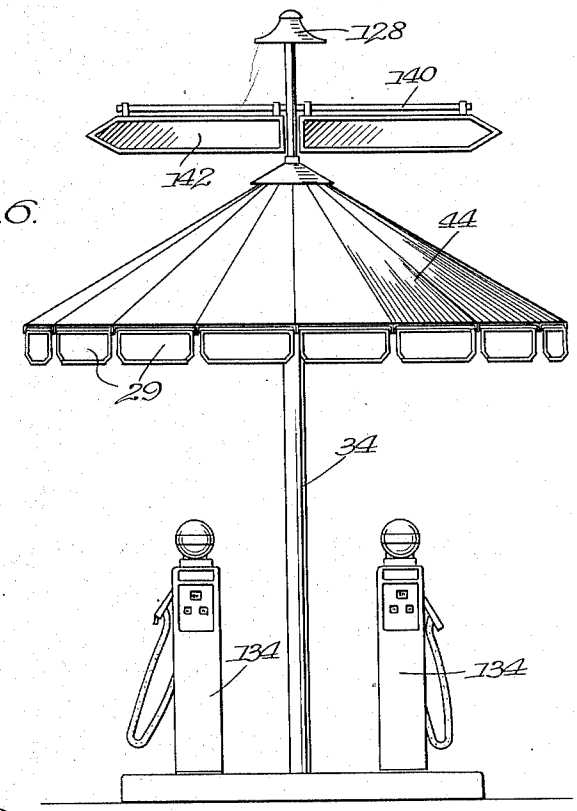


Fig. 7.

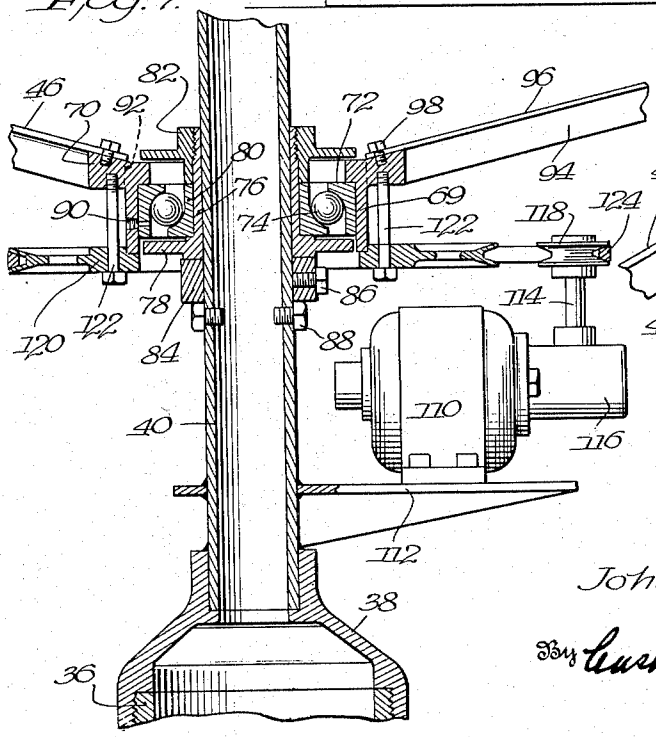
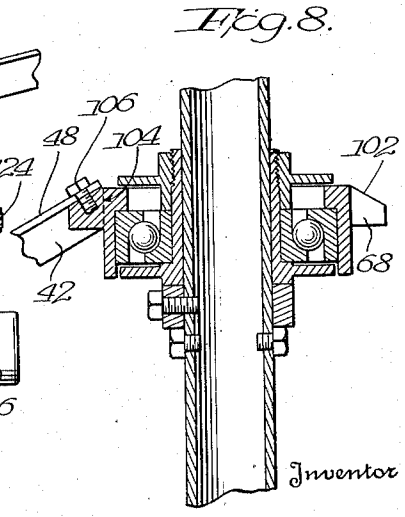


Fig. 8.



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REVOLVING CANOPY OR ROOF

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Application September 26, 1938, Serial No. 231,796

9 Claims. (Cl. 108—32)

The present invention relates to a canopy for use principally at sites where it is desired to attract attention, for instance, along an automobile highway at service stations, road houses, tourist camps, etc.

The principal feature of the invention is a novel construction of rotating canopy, which is effective for the protection from the elements of personnel and material beneath the same, and which at the same time may serve to display advertising matter carried by the canopy, thus drawing the attention of those passing to whatever wares or services are being dispensed at the site.

In one form of the invention, the canopy is used in conjunction with a relatively cheap and simple building enclosure, which enclosure is made up of assembled sections preferably of metal. The sections of metal are light and are secured together in such simple fashion that they may be readily assembled or broken down by unskilled workmen, thus providing a portable building.

In other forms of the invention, the canopy may be used alone as a cover for material or devices located beneath the same, such as a cover for gasoline dispensing pumps, and as a protection for the attendants against sun and rain.

One of the important objects of the invention is to provide a rotatable canopy characterized by the simplicity and cheapness of its construction, which canopy may be readily assembled or disassembled by unskilled persons and made up in any desired size, and which will be at the same time water proof, to afford the necessary protection for the articles or persons thereunder.

In the drawings, which disclose a preferred construction of the canopy and illustrate some of its most effective uses, which drawings are not intended to restrict the canopy or building associated therewith to any particular construction or use—

Figure 1 is a front view of a road-side building provided with a canopy.

Figure 2 is a top plan view of the building shown in Figure 1.

Figure 3 is a partial side elevational view of the portable building of Figure 1, showing the canopy in section, the building being partially broken away to reveal the canopy driving means.

Figure 4 is a detail sectional view taken along the line 4—4 of Figure 3 showing the union of adjacent sectors of the canopy.

Figure 5 is a detail side view showing one of the advertising panels suspended from the periphery of the canopy.

Figure 6 is a side elevational view showing another use of the canopy over gasoline dispensing pumps.

Figure 7 is an enlarged sectional view of the canopy mast, showing the driving means and lower bearing for the canopy, and

Figure 8 is a similar enlarged sectional view showing the upper bearing for the canopy.

It is well-known that a considerable business is done along automobile roadways in supplying the public with necessary materials and services incident to motor travel, the most important of which may be food, drink and fuel. Owing to the rapid increase in automobile traffic, the competition in supplying the traveler with these necessaries has become quite keen, and the motorist selects a site to stop by the attractiveness of its service buildings.

It is of course possible to construct permanent buildings of attractive appearance if sufficient capital is available. This is not always the case, and the present invention is intended to supply a portable structure of pronounced attractiveness and yet of inexpensive construction. Such a simple, cheap and portable construction is obviously desirable in rural sections where economy does not permit an expensive building. The low cost of this invention is also of great advantage at locations where temporary business may be done due to some unusual event, which location is not suitable to warrant the expense of constructing a permanent building.

In Figures 1 and 2, the invention is shown in the form of a portable building located adjacent to a roadway. The building may serve as a small lunch stand, and may be constructed to provide suitable rest room facilities. The front of the building is constructed of a series of metal panels 10 secured to one another in any suitable manner, preferably by bolting angle irons on one panel to corresponding angle irons on the adjacent panel. These panels may be bolted or otherwise secured to a concrete or other base or floor. Certain of the front panels of the building may include windows 12, and these windows may be open, or protected by glass panes as desired. If the public is to be admitted to the building, some of the panels may include doors 11 of any convenient construction, in which case the interior of the building may be provided with tables and chairs or with a counter at which the public may be served. If the public is not to be admitted to the building, certain of the windows

12 may be left open, and customers may be served through the windows, or attendants may carry the food being dispensed from the windows to their cars.

In Figure 2, the building front is made up of seven of the panels 10 arranged in a semi-circular fashion, and this portion of the building joins with a number of panels which extend rearwardly of the building as at 14 forming a connecting rectangular enclosure. The back of the building may be covered by a number of similar panels joined together to form the rear wall 16. If desired, partitions 18 may be arranged within the enclosure at the rear thereof, to provide rest rooms, the walls of which may be double and filled with insulation of ground cork, hair felt, rock or glass wool or other suitable material. The outside walls of the rest rooms should be provided with grilled openings for ventilation purposes. The entrance to these rest rooms may be on each side of the building. The building is shown equipped with false fronts 20 and 22 which have doors leading to the respective rest rooms giving desirable privacy. Lattice work 24 may enclose the space behind the false fronts 20 and 22.

The building described above is covered by a roof 26. This roof may extend entirely over the building, or may only serve to cover the rear end thereof. The principal cover for the building is the canopy 30, which will be hereinafter described in detail. This canopy is made up of a number of sectors which may be of uniform size, and any number of these sectors may be assembled together to form a canopy of the desired area.

As shown in Fig. 3, a roof supporting I beam 30 extends across the building centrally thereof. This beam and other similar rafter beams joining the upper ends of the side panels support a front horizontal metal roof section 31, and a rear sloping roof section 32. Any appropriate number of ventilators 33 extend through the roof sections, these ventilators being located under the canopy and having openings above the roof surface so that they will not permit rain to enter the building.

As will hereinafter be described, a novel means is provided for slowly rotating the canopy above the building, to attract attention to the building and perhaps to provide desirable ventilation in or above the building. The top surface of the canopy may carry suitable advertising matter, such as printed matter or pictures.

Suspended around the periphery of the canopy are a plurality of hanging panels 29, there being one panel for each sector of the canopy. These panels may also be provided with suitable advertising matter, and they slowly rotate around the building with the canopy producing a novel and pleasing effect.

Referring to Figures 3 and 7, the canopy is shown mounted for rotation on a mast 34. The mast comprises a lower section 36 which is anchored to a concrete base, or to the ground, as by being solidly cemented therein, an adaptor 38 secured to the upper end of the lower portion 36, and a canopy portion 40 which is in turn secured to the adaptor, as by welding. The canopy portion is shown as being smaller in diameter than the lower portion of the mast. This is not essential, but it is desirable to provide a relatively heavy foundation, surmounted by a canopy portion small enough to conveniently mount the canopy for rotation thereon.

The canopy comprises a plurality of sectors secured together, each sector including a structural angle member 42 along each of its converging sides, and a thin sheet of metal 44 secured to and covering the space between said members, the members 42 forming the ribs of the canopy, and a plurality of structural angle members 46 comprising braces which extend from the mast 40 to the ribs of the canopy.

The canopy sectors may be assembled by an unskilled person, and the resulting construction is such that no gaskets or cement are needed between the sectors to make their unions water proof. In Figure 2, 18 sectors are shown forming the canopy, but a greater or fewer number may be used depending on the size of canopy needed.

Referring to Figures 4 and 5, each structural angle member 42 includes a horizontal flange 48 and a downwardly extending vertical flange 50. These members, when the sectors are assembled together, converge upwardly to an apex at the top of the mast as shown by the lines 52 in Figure 2. The sheet metal 44 used to form the sectors extends between the same over the horizontal flanges 48 of the members 42, and this sheet material may be secured in any suitable manner to the angle members. On one side of each sector, for instance, the left side of the sector when facing the mast, the sheet metal 44 has a downwardly extending portion 54 which continues downwardly as far as the lower end of the vertical flange 50. When the adjacent structural members 42 are secured together as shown in Figures 4 and 5, this downwardly extending portion of the sheet material 44 is held between the angle members. On the other side of each sector, preferably on the right side, the edge of the sheet metal 44 extends down to the lower edge of the flange 50, and is provided with a further extension 56, which is bent upwardly to form a gutter, this edge of the sheet metal being also held between the vertical flanges of the structural member.

With each sector provided on one of its sides with an extension 56, when the sectors are secured together as shown in Figure 4, each joint between the adjacent sectors is provided with a gutter which will carry away any water which may leak through the union between adjacent sectors. Any suitable means may be used to secure the vertical flanges 50 of the structural members together.

In Figure 5, I have shown the flanges 50 secured together by bolts 60. There may be a plurality of these bolts suitably spaced apart from the lower edge of the canopy to the center thereof. These bolts may be equipped with lock nuts on each side of the flanges to lock the parts together in a relatively tight fit.

The two lowermost bolts 60 adjacent the lower edge of the canopy are in alignment with one another, and they have extensions 62 which are on the inner side of the structural members 42 of each sector. The hanging panels 29 are provided with knuckles 64 which fit over the extensions 62 to pivotally suspend the panels 29 from the lower edge of the canopy. This pivotal connection may be such that the panels will swing freely in the wind during rotation of the canopy, thus adding to the optical attraction of the apparatus. As mentioned before, the swinging panels 29 may carry a suitable advertising matter or representations thereon to attract attention or indicate the product or services being dispensed.

The canopy is mounted for rotation on the can-

opy portion 40 of the mast by means of a lower bearing ring 66 and an upper bearing ring 68. The radial braces 46 are secured to the lower bearing ring, and the converging ribs of the canopy formed by the structural members 42 are secured to the upper bearing member. The bearing rings rotate about the mast and the canopy rotates with them. With this construction, even a relatively large canopy needs no support other than the central mast. No support at the edges of the canopy in the nature of a trackway is required, and thus the canopy can be used with or without a building under it as desired.

The lower bearing ring 66 comprises a vertical portion 69 and outwardly extending horizontal upper portion 70. The top surface of portion 70 slopes outwardly and upwardly. Secured within the bearing ring is a ball race 72 which engages a plurality of ball bearings 74.

The bearing ring surrounds a journal portion carried by the mast, the latter including a sleeve 76 on the mast which may have a horizontal flange 78 forming the lower side of the bearing, which sleeve has secured thereto an inside ball race 80 which is held in place by a nut 82 threaded to the outside of the upper end of the sleeve 76, said nut having a horizontal flange which forms the top enclosure for the bearing. The journal sleeve 76 is held in place by a ring 84 secured to the mast below the bearing as by the bolt 86, and the bolts 88 which enter the mast. The ball race 72 has an inwardly extending flange above the ball bearings 74, and the inner ball race 80 has a similar flange below the ball bearings. This construction takes care of vertical thrusts on the bearing.

Any number of suitably equipped openings 90 may be provided through the vertical portion 69 of the bearing ring to provide for lubricating the bearing.

The portion 70 of the bearing ring extends outwardly and upwardly, and is provided throughout its periphery with a plurality of slots 92 to receive the vertical flanges 94 of the braces 46. Each one of the braces 46 fits in a slot in the bearing ring, and the horizontal flange 96 of each brace rests on the upper surface of the outwardly and upwardly extending flange 70 of the bearing ring, as shown in Figure 7. The horizontal flanges of the braces 46 may be secured to the bearing ring in any suitable manner as by bolt 98.

The construction of the upper bearing 68 is generally the same as that of the lower bearing, except that this bearing ring has a downwardly extending top surface 102 and the radial slots 104 are somewhat larger than those of the lower bearing ring in order to receive both of the vertical flanges 50 of the structural members 42. The horizontal flanges 48 of the structural members 42 are secured to the bearing ring 68 by suitable bolts 106.

With the above described arrangement, when power is applied to rotate the lower bearing ring 66, the same is rotated about the mast and imparts rotation to the canopy through the braces 46, the vertical flanges 94 of said braces being secured to the vertical flanges 50 of the structural members 42 in any suitable manner, as by a bolt connection shown in Figure 4. The canopy is maintained in proper position on its mast during rotation by the two spaced bearings, and by the rigid arrangement of ribs and braces. Thus, even disposition and rotation will result even when the canopy is being rotated in a high wind.

In Figures 3 and 7, the means for rotating the canopy about its mast is disclosed. The preferred means is an electric motor 110 carried on a platform 112 which is welded or secured in any other suitable way to the mast below the bearing 66. The shaft of this motor drives a vertical shaft 114 through suitable reduction gears in the gear box 116, and mounted on the upper end of the shaft 114 is a relatively small drive pulley 118.

The bearing ring 66 is also provided with a relatively large pulley 120, this pulley being secured to the bearing ring by means of the bolts 122. A V-shaped belt 124 extends around said pulleys, thus completing a relatively loose transmission between the motor and the canopy, as well as one which effects a considerable reduction in speed of rotation. By means of any well-known change speed device, the speed of rotation of the canopy could be varied as desired. While the speed should be great enough to attract attention, the canopy should rotate slowly enough so that the advertising matter carried by the canopy can be understood. A motor which turns its shaft at about 1800 R. P. M. has been used, reduced by gearing to about 45 R. P. M. and further reduced by the connecting belt to about 2½ to 4 R. P. M. When the motor is shut off to stop the canopy, its momentum will not injure the mechanical gearing at the motor, for the belt 124 will slip on its pulley when such a situation exists.

In Figure 3, the apparatus is shown provided with a cluster of lights 126 positioned on the mast beneath the canopy. In Figure 1, a large flood light 128 with reflector is shown at the upper end of the mast above the canopy. Either one or both of such illuminating means may be used to increase the attractive appearance of the canopy at night, and to illuminate the advertising material carried thereby. Neon lights or signs may also be arranged on the canopy as desired.

Electric leads 130 extend upwardly through the mast as shown in Figure 3. These leads may be used to supply current to the lights 126 and 128, and also to supply the motor 110. Because the motor is stationary on the mast, and does not rotate with the canopy, no involved electrical connection problem is present.

The sheet metal 44 which covers the canopy sectors may be cut away adjacent the top of the canopy as shown in Figure 3, to provide desirable ventilation through the top of the canopy. If this arrangement is provided, a funnel shaped guard 132 may be fixed to the mast above the canopy to keep out water. This guard is desirable in any case, to protect the bearing 68. However, venting through the apex of the canopy is probably only desirable when the canopy is used to cover a building, as in Figure 3. In that construction, air from the building can rise from the ventilators 33 upwardly and out through the open apex of the canopy.

In particularly hot locations, considerable ventilation may be desired beneath the canopy. As shown in Figure 3, any suitable number of equally spaced metal vanes 133 may be attached to depend from the structural members 46. These vanes, in the construction of Figure 3, draw air upwardly through the ventilators 33 and force it out through the vent in the top of the canopy. They are of such shape and dimensions to clear

adjacent parts of the building and canopy. If these vanes are used on the canopy of Figure 6, they will fan air downwardly on the attendants at the pumps.

In Figure 6, an arrangement is shown wherein the canopy is used to cover normally exposed gas pumps **134**. In this use, the canopy is not used in association with a portable building, but only serves to cover the top of the exposed gas pumps. In such an arrangement, it is desirable to have the canopy of sufficient diameter to cover the pumps and the attendants who work beneath the same, and the canopy should be high enough from the ground or base to not interfere with vehicles moving into the station adjacent the pumps. This canopy is of the same construction as those described above, and may be provided with the same rotation means. It may have the upper illuminating flood light **128**, and/or a cluster of lights beneath the canopy. It may further be provided with outwardly extending arms **140** on the mast above the canopy which arms carry sign panels **142** serving to denote the owner of the service station. These panels may be pivoted to swing similar to the panels **29**.

From the above disclosure, it will be seen that I have provided a very useful canopy construction which may be conveniently shipped in separate parts, and assembled at the site by relatively unskilled persons. The apparatus provides desirable protection from the elements, and will attract attention and invite customers to the place of business where it is used.

It will be apparent that various changes in the constructions disclosed herein may be made without departing from the scope of the invention.

I claim:

1. In a device of the character described, a substantially conical canopy comprising a plurality of sectors secured to one another, each sector including a structural metal angle member along each of its converging sides and a sheet of metal secured to and covering the space between said members, said members of adjacent sectors having downwardly directed flanges which abut one another when the sectors are assembled together, the edge of the sheet of metal on one of said sectors being bent downwardly and secured between said flanges and having a portion extending below said flanges which is bent upwardly forming a trough to receive water which may leak through the union of said flanges.

2. Apparatus of the character described comprising a mast supported on a base, said mast having a journal portion thereon, a bearing ring for a canopy mounted on said mast around said journal portion, means on said mast for supporting said bearing ring on said journal portion, said bearing ring having a plurality of substantially vertical slots therein, a plurality of structural angle members for said canopy having top flanges and downwardly extending flanges, the downwardly extending flange of each of said members fitting in one of said slots and the top flange of each of said members engaging the top of said bearing ring, and means for securing said members to said bearing ring.

3. Apparatus of the character described comprising a portable building having side walls and a roof, ventilators for the interior of the building in said roof, a substantially conical canopy mounted for rotation above said roof and extending outwardly beyond the edge thereof, the apex of said conical canopy being open to provide a central vent from beneath the same, said side walls extending above said roof and upwardly beneath the outer edge of said canopy.

4. Apparatus of the character described comprising a portable building having side walls and a roof, ventilators for the interior of the building in said roof, a substantially conical canopy mounted for rotation above said roof and extending outwardly beyond the edge thereof, the apex of said conical canopy being open to provide a central vent from beneath the same, said side walls extending upwardly beneath the outer edge of said canopy, and a plurality of panels suspended from the lower edge of said canopy and extending below the upper edges of said side walls.

5. Apparatus of the character described comprising a portable building having side walls and a roof, ventilators for the interior of the building in said roof, a substantially conical canopy mounted for rotation above said roof and extending outwardly beyond the edge thereof, the apex of said conical canopy being open to provide a central vent from beneath the same, said side walls extending above said roof and upwardly beneath the outer edge of said canopy, and one or more blades carried by said canopy for rotation therewith in the space between said roof and said canopy, said blades circulating air from the building through said ventilators and discharging the same through the apex of said conical canopy.

6. Apparatus of the character described comprising a portable building having side walls and a roof, ventilators for the interior of the building in said roof, said building being constructed around a mast which extends upwardly above said roof, a substantially conical canopy mounted for rotation on said mast above said roof and extending outwardly to overlie said roof adjacent the edge thereof, and one or more blades carried by said canopy for rotation therewith in the space between said roof and said canopy, said blades circulating air through the building by drawing the same through said ventilators as the canopy rotates above said roof.

7. Apparatus of the character described comprising a portable building having side walls and a roof, said building being constructed around a mast which extends upwardly above said roof, a substantially conical canopy mounted for rotation on said mast above said roof and extending outwardly to overlie said roof adjacent the edge thereof, the apex of said canopy being open to provide a central vent from beneath the same, and one or more blades carried by said canopy for rotation therewith in the space between said roof and said canopy, said blades circulating air from the building through said ventilators and through the apex of said conical canopy.

8. Apparatus of the character described comprising a portable building having side walls and a roof, said building being constructed around a mast which extends upwardly above said roof, a substantially conical canopy mounted for rotation on said mast above said roof and extending outwardly to overlie said roof adjacent the edge thereof, said canopy having an upper bearing ring rotatable on said mast, and a lower bearing ring rotatable on said mast spaced below said upper bearing ring, a plurality of converging ribs forming the skeleton of the canopy detachably secured at their upper ends to said upper bearing ring, a plurality of braces detachably secured to said lower bearing ring and extending radially therefrom to connect with said ribs adjacent the lower ends of the latter, and one or more blades carried by said braces for rotation therewith in the space

between said roof and said canopy, said blades circulating air through the building by drawing the same through said ventilators as the canopy rotates above said roof.

9. Apparatus of the character described comprising a portable building having side walls and a roof, said building being constructed around a mast which extends upwardly above said roof, a substantially conical canopy mounted for rotation on said mast above said roof and extending outwardly to overlie said roof adjacent the edge thereof, said canopy comprising a plurality of individual substantially triangular sectors adapted to be secured to one another to form the cone of the canopy, a panel carrying advertising matter suspended from the lower edge of each of said sectors, and one or more blades carried by said canopy for rotation therewith in the space between said roof and said canopy, said blades circulating air through the building by drawing the same through said ventilators as the canopy rotates above said roof.

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