Sept. 20, 1960 C. H. KASTNER 2,953,079

ROTARY VENTILATOR

Filed June 17, 1955

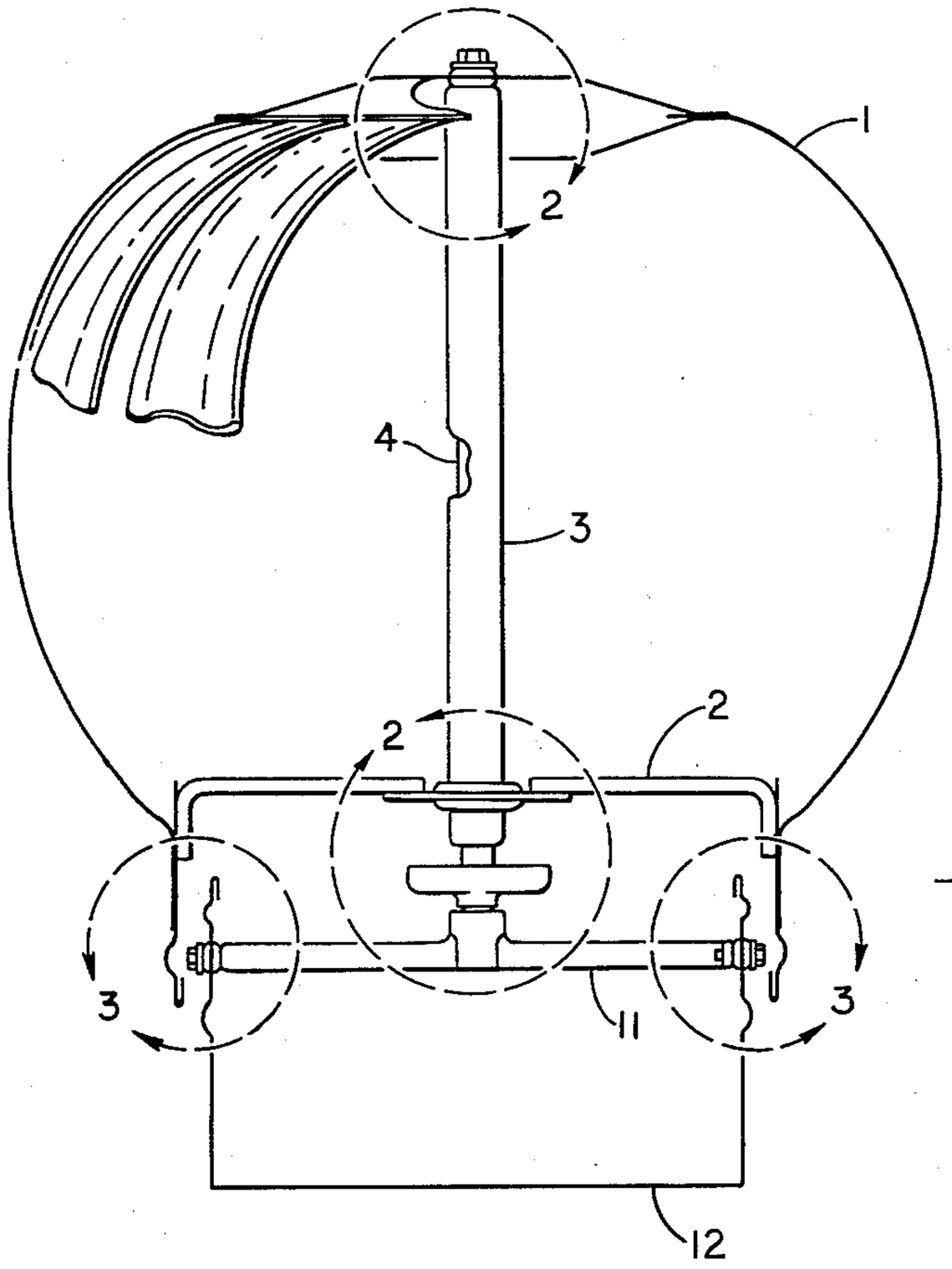

FIG. 1

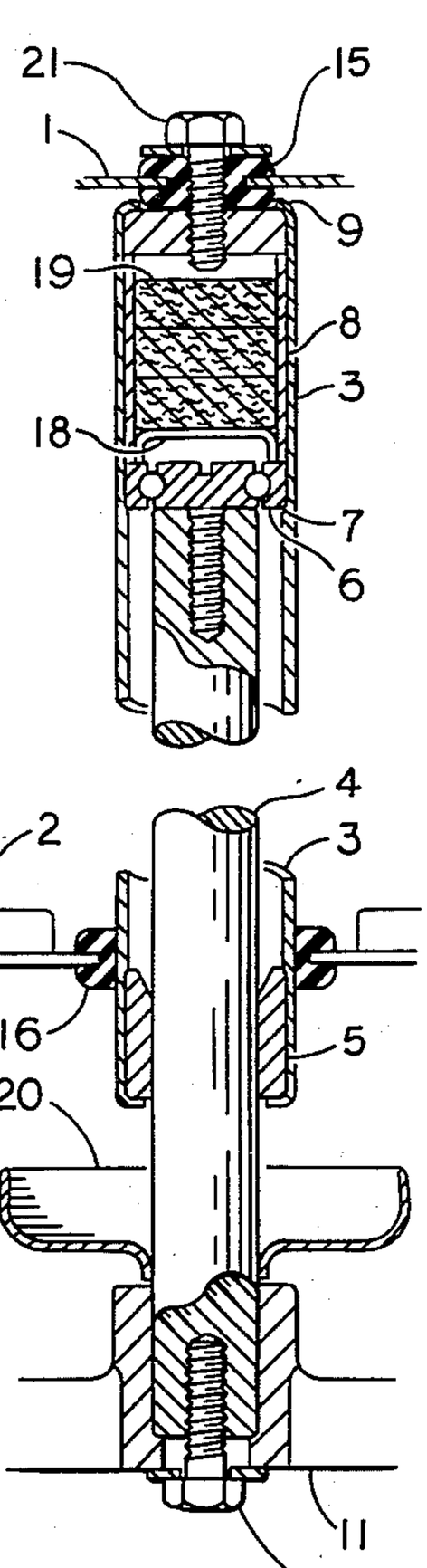

FIG. 2

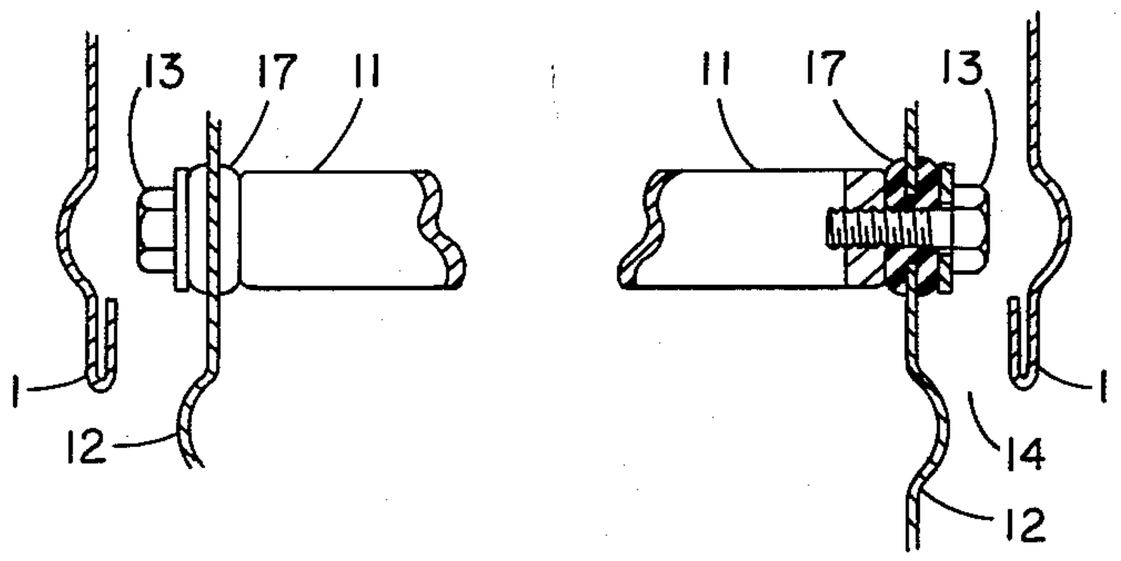

FIG. 3

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ROTARY VENTILATOR

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7 Claims. (Cl. 98—75)

This invention, relating to rotary turbine ventilators, has for its object the following improvements and innovations, to be described more fully below: (1) An improved thrust- and sleeve-bearing suspension of the rotary top which reduces to a negligible minimum the lateral and vertical play of the top, thus permitting a smaller clearance between the rotary and stationary parts, and improved draft because of this reduced air leakage from the outside. (2) A weather-proof and dust-proof tubular casing about the center-post and bearings, with a lubricant reservoir at the top to allow for gravity lubrication of the bearings. (3) Construction such that the center-post and casing with enclosed bearings form a single factory-sealed unit which can be easily unbolted for removal and replacement. (4) Because of this construction and bolting, an anchorage which makes it impossible for the top to blow off or for the shaft to be raised and bent. (5) An all-point rubber grommet mounting insulation between the top and casing, and the center-post support and stationary base, for quiet operation and the practical elimination of any vibration transference to the vent pipe below.

Fig. 1 is a vertical cut-away view of the interior of the rotary ventilator. Fig. 2 is an enlarged cross-sectional view of the details at the top and bottom of the center-post and casing unit. Fig. 3 is an enlarged view of the bolting ends of the support bracket, showing also the clearance between the rotary top and stationary base portions.

As illustrated in Fig. 1, a hollow, vaned, open-based rotary top **1** is coaxially and firmly affixed in two places, at the top and by the wire supports **2**, to the central tubular casing **3**, which in turn is coaxially and rotatably disposed about the vertical center-post **4**. The casing and post, as shown in Fig. 2, are spaced at the bottom by a sleeve-bearing **5**, and at the top by a ball-thrust-bearing fixture **6**, which screws into the upper end of the post. As shown in Fig. 2, the inside diameter of the casing widens slightly, forming a shoulder **7** on which the outer ring of the thrust-bearing rests. During fabrication, after insertion of the spacing collar **8** and other components, the top of the casing is crimped **9** so that the outer ring of the thrust-bearing fixture is firmly gripped between the collar **8** and the shoulder **7**. The center-post is held firmly in its upright position by the bolt **10** in the central socket of the plural-arm support-bracket **11**, which in turn is secured to the sides of the stationary, hollow base portion **12** by bolts **13** (Fig. 3). Therefore the only vertical play possible is that which takes place within the thrust-bearing fixture itself, and it is impossible for the top to blow off or for the shaft to be raised and bent. Because of the solid placement of the center-post and the snug fit of the bearings, the horizontal play of the rotational axis is also negligible, which permits a closer spacing **14** between the top and base (Fig. 3), resulting in the improved

draft because of the smaller amount of outside air which can be drawn through this gap.

The rotary top is separated at all attaching points by rubber grommets from the center unit (**15** and **16**, Fig. 2), and the support bracket of the center unit in turn is separated by rubber grommets **17** at the bolting points to the stationary base (Fig. 3), so that for all practical effects the operation of the top is silent and vibrationless. Above and separated from the ball-thrust-bearing fixture by a spacing clip **18** (Fig. 2), is a lubrication reservoir consisting of felt disks **19** impregnated with a lubricant which is slowly released, and carried by gravity and capillary action to bearing **6** and down the post and inside of the casing to bearing **5**. As shown in Fig. 2, the top inner edge of the sleeve bearing **5** is chamfered to catch the downward draining lubricant and direct it to the contact surface between the bearing and post. The weather-tight casing prevents any drying out of the lubricant, and the cup **20** at the base catches any excess lubricant which may come out of bearing **5**. As stated earlier in this specification, the center-post and casing together with enclosed bearings form a single unit which can be removed for replacement, by removing bolts **10** and **21** and drawing unit downward through grommet **16** (Fig. 2).

The following claims are made:

1. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said centerpost, with the lower end of said casing being disposed above the lower end of said center post; bearing means interposed between said casing and said center-post whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post, said top having a lower portion that extends below the upper end of said base with said lower portion being closely spaced relative to the outer surface of said base; radially inwardly extending support legs on the lower portion of said rotary top, the radially inner ends of said legs slidably engaging the lower portion of said casing whereby said legs and said casing may undergo relative axial movement; upper means removably affixing the upper central portion of said rotary top to the upper end of said casing; and lower means removably affixing the lower end of said center-post to said support bracket.

2. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between said casing and said center-post whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post, said top having a lower portion that extends below the upper end of said base with said lower portion being closely spaced relative to the outer surface of said base; radially inwardly extending support legs on the lower portion of said rotary top; upper bolt means removably affixing the upper center portion of said rotary top to the upper end of said casing; lower bolt means removably affixing the lower end of said center-post to said bracket; and rubber grommets on the radially inner ends of said support legs that slidably engage said casing.

3. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the

upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between the lower end of said casing and said center-post and between the upper portion of said center-post and the intermediate portion of said casing whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post, said top having a lower portion that extends below the upper end of said base with said lower portion being closely spaced relative to the outer diameter of said base; radially inwardly extending support legs on the lower portion of said rotary top, the radially inner ends of said legs slidably engaging the lower portion of said casing whereby said legs and said casing may undergo relative axial movement; a porous, lubricant impregnated material disposed in said casing between the upper end of said center-post and the upper end of said casing; upper bolt means removably affixing the upper central portion of said rotary top to the upper end of said casing; and lower bolt means removably affixing the lower end of said center-post to said bracket.

4. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between the lower end of said casing and said center-post and between the upper portion of said center-post and the intermediate portion of said casing whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post, said top having a lower portion that extends below the upper end of said base with said lower portion being closely spaced relative to the outer diameter of said base; radially inwardly extending support legs on the lower portion of said rotary top; rubber grommets on the radially inner ends of said support legs that slidably engage said casing; a porous, lubricant impregnated material disposed in said casing between the upper end of said center-post and the upper end of said casing; upper means removably affixing the upper central portion of said rotary top to the upper end of said casing; and lower means removably affixing the lower end of said center-post to said support bracket.

5. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between the lower end of said casing and said center-post and between the upper portion of said center-post and the intermediate portion of said casing whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post and extending downwardly to a point adjacent said base; radially inwardly extending support legs on the lower portion of said rotary top, the radially inner ends of said legs slidably engaging the lower portion of said casing whereby said legs and said casing may undergo relative axial movement; a porous, lubricant impregnated material disposed in said casing between the upper end of said center-post and the upper end of said casing; upper bolt means removably affixing the upper central portion of said rotary top to the upper end of said casing; and lower bolt means removably affixing the lower end of said center-post to said bracket.

6. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between said casing and said center-post whereby said center-post coaxially rotatably supports said casing; a hollow vaned rotary top coaxially arranged relative to said center-post and extending downwardly to a point adjacent said base; radially inwardly extending support legs on the lower portion of said rotary top; rubber grommets on the radially inner ends of said support legs that slidably engage said casing; upper bolt means removably affixing the upper central portion of said rotary top to the upper end of said casing; lower bolt means removably affixing the lower end of said center-post to said bracket; a second rubber grommet interposed between said upper bolt means, said rotary top and said casing; and third rubber grommet means interposed between said support bracket and said base.

7. A rotary ventilator, comprising: a stationary upright hollow base; a support bracket extending across the upper portion of said base; a stationary upright center-post extending upwardly from said bracket; a hollow cylindrical casing having an inner diameter greater than the outer diameter of said center-post, with the lower end of said casing being disposed above the lower end of said center-post; bearing means interposed between the lower end of said casing and said center-post and between the upper portion of said center-post and the intermediate portion of said casing whereby said center-post coaxially rotatably supports said casing; a porous, lubricant impregnated material disposed in said casing between the upper end of said center-post and the upper end of said casing; radially inwardly extending support legs on the lower portion of said rotary top; rubber grommets on the radially inner ends of said support legs that slidably engage said casing; upper bolt means removably affixing the upper central portion of said rotary top to the upper end of said casing; lower bolt means removably affixing the lower end of said center-post to said bracket; a second rubber grommet interposed between said upper bolt means, said rotary top and said casing; and third rubber grommet means interposed between said support bracket and said base.

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