Sept. 28, 1926. 1,601,191

L. SIMMONS

CEILING VENTILATOR

Filed June 30, 1925 2 Sheets-Sheet 1

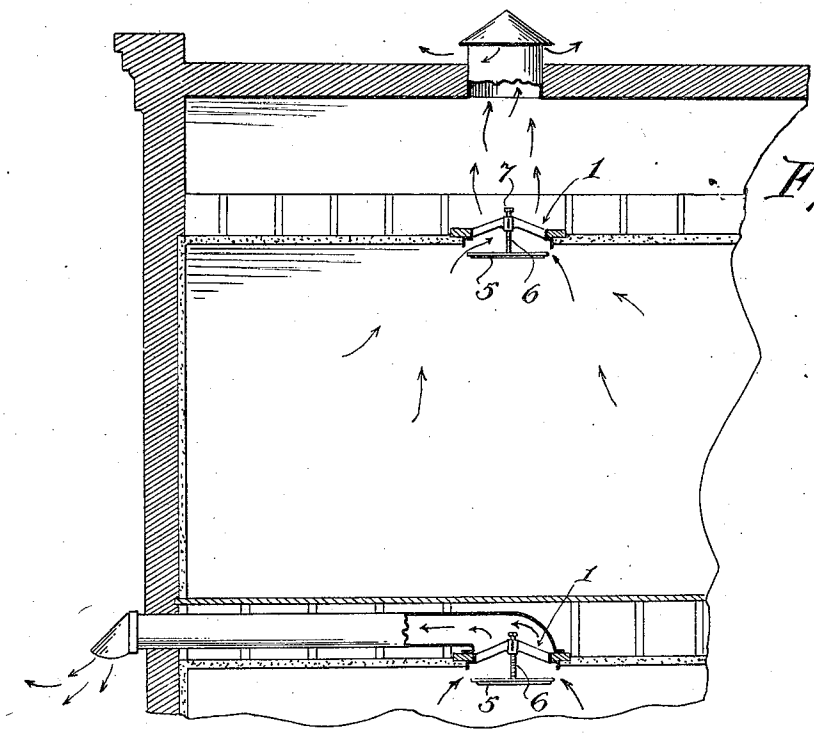


Fig. 1.

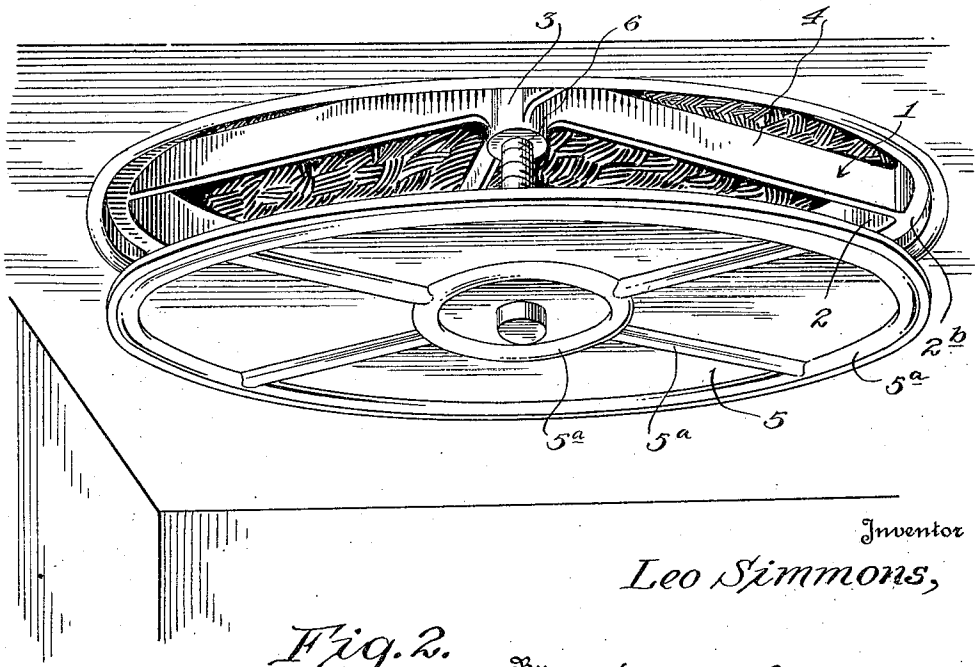


Fig. 2.

Inventor

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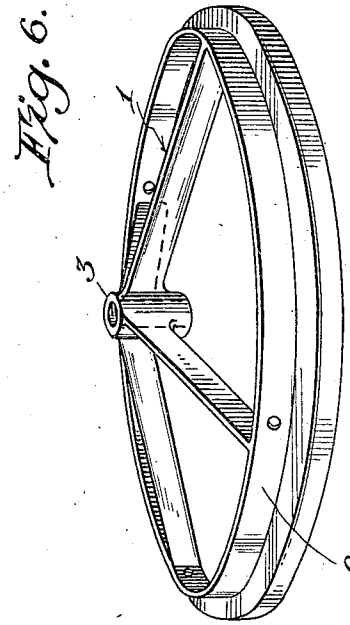


Fig. 6.

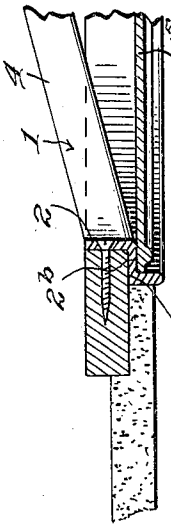


Fig. 5.

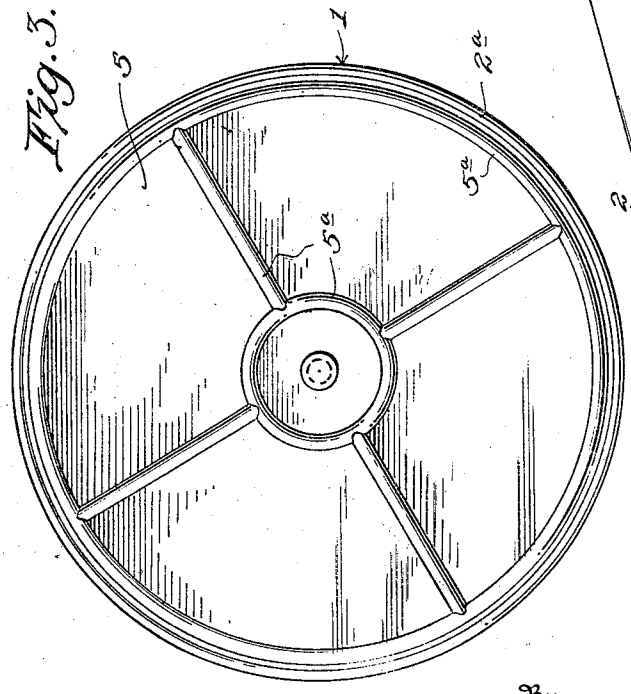


Fig. 3.

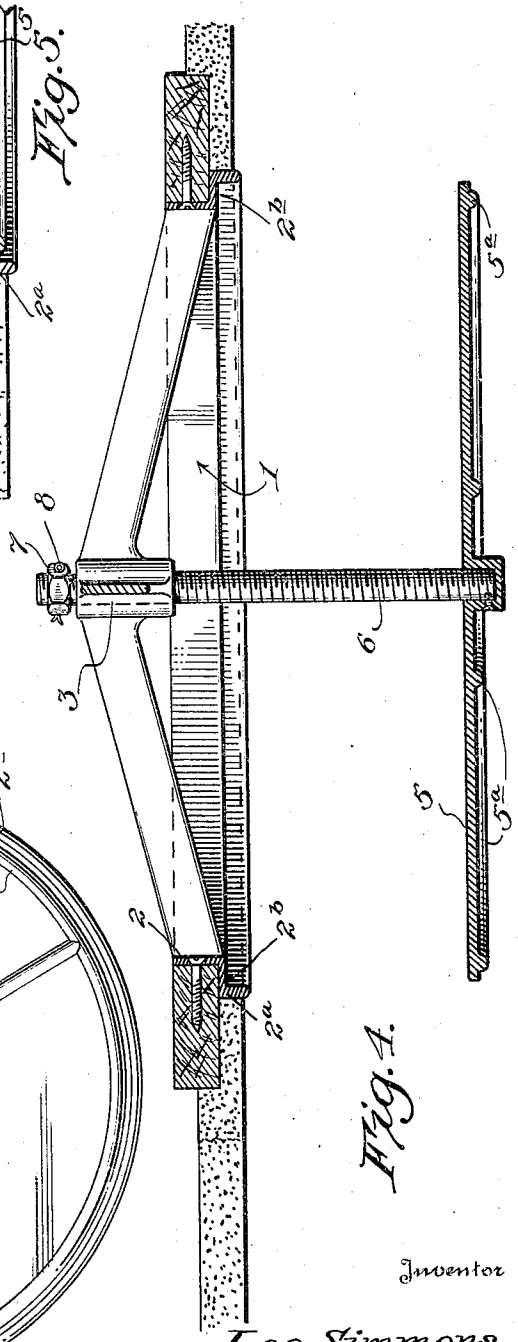


Fig. 4.

Inventor

Leo Simmons

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Patented Sept. 28, 1926. 1,601,191

UNITED STATES PATENT OFFICE.

LEO SIMMONS, OF WASHINGTON, DISTRICT OF COLUMBIA.

CEILING VENTILATOR.

Application filed June 30, 1925. Serial No. 40,522.

This invention relates to ventilators for opening and closing and controlling the capacity of air circulating outlet openings or ducts in the ceilings of enclosures, such as kitchens and other rooms, passenger cars and buses, and the like; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanations of the accompanying drawings that illustrate what I now believe to be the preferred mechanical expression or embodiment of my invention from among other forms, constructions and arrangements within the spirit and scope thereof.

An object of the invention is to produce a simple and comparatively inexpensive device that can be readily secured, for opening and closing and controlling the capacity of vertical air outlet openings or ducts through ceilings to promote natural circulation of air and ventilation of a room or other enclosure, and that embodies a movable closure member that can be readily spun or rotated, by hand or by means of any suitable object held by hand, to closed, opened or any desired intermediate position, and that can be so installed as to be exposed within the ceiling, and that can be so formed or finished as not to be objectionable in appearance as a part of the ceiling.

With this and other objects in view, the invention consists in certain novel features in constructions, and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings, that form a part hereof.

Fig. 1 is a vertical section showing the ceilings of several rooms having ventilating outlets equipped with ventilators in accordance with my invention.

Fig. 2 is a detail perspective.

Fig. 3 is a bottom plan view of the ventilator.

Fig. 4 is a detailed sectional view showing the ventilator installed in a ceiling with the closure plate in extreme opened position.

Fig. 5 is a detailed sectional view of the ventilator installed showing the closure plate in closed position.

Fig. 6 is a detailed perspective of the supporting annulus.

In the particular embodiment illustrated, the ceiling ventilator consists of (1) a spider frame cast in one piece to form an annulus or ring 2, a hub forming nut 3, and arms 4, radiating from the nut and connecting nut and ring; and (2) a bottom closed or imperforate flat disk or closure plate 5 provided with a suspending screw threaded rod or bolt 6, extending upwardly therefrom and at its lower end fixed thereto rigid therewith.

The annulus or cylindrical ring 2 defines or surrounds the ventilating outlet, that is closed and opened by the round cover plate 5. This ring 2 is constructed and arranged to be fixed to the ceiling, surrounding the vertical ventilating outlet, and is designed as the supporting element of the ventilator. The nut or hub 3 is formed with a screw threaded bore extending longitudinally therethrough and this bore is alined with the center line or longitudinal axis of the opening through the ring, i. e., the axis of the ring 2. The hub 3, is elevated a distance above the horizontal plane in which the ring is located by the inclination of the rigid spaced arms 4 which are inclined upwardly from the ring 2 while converging inwardly to the hub 3. The ring 2 is, preferably angular in cross section to provide one flange forming a vertical cylinder concentric with and surrounding the outlet opening and the other flange 2^a, horizontally disposed and extending outwardly to form a finish or facing fitting the inner surface of the ceiling and covering the edges of the hole cut therethrough to form the outlet opening therein. Where the ceiling ventilator is installed during the construction of the building, the flange 2^a, can be set against the lathing and then be covered or partially covered by the plastering or other inner surface finish or covering of the ceiling. The ring is preferably formed with annular depressed seat 2^b, at the inner corner of its lower end, to receive the peripheral edge portion of the closure or cover plate 5, and permit said plate when in closing position at its limit of upward movement, to lie approximately flush with the lower surface of the ring, or with the finished surface of the ceiling.

Perforations can be formed in either flange 2, or flange 2^a, of the ring for the passage of securing screws or nails by which the ring is fixed to and supported from the rafters, or from pieces secured thereto, or from other portions of the supporting

structure of the ceiling. The closure plate 5 is provided with an upstanding elongated supporting rod 6, alined with the center vertical axes of the plate 5 and the ring 2, and this rod is rigid with the plate preferably by having its lower end screwed thereinto or cast therein so that the rod is concealed from below and rises from the upper side of the plate. This rod 6 is longitudinally screw threaded to mesh with the threads of the bore of hub 3, and extends upwardly through said bore. The upper end of the rod above the hub 3 is provided with any suitable stop to limit the downward movement of the rod and plate. For instance, the stop can consist of a nut 7, screwed on the projecting threaded upper end of the rod and locked by a cotter pin 8, passed through the nut and rod. The plate 5 is preferably without holes or other air passages therethrough and at its peripheral edge portion is formed to enter the annular seat 2^b and there close against the ring to close and cover the air outlet. The exposed or under side of the plate is formed with recesses or projections, such as circular and radial raised ribs 5^a, by which the plate can be rotated to cause the screw 6 to raise or lower the same. If the plate is located within reach of the hand, the ribs 5^a, afford finger holds by which the plate can be rotated. If the plate, as is usual, is beyond reach from the floor, a cane, umbrella or other stick can, by reason of the uneven exposed surface of the plate, be utilized to rotate the plate to closed and opened positions.

The exposed closure plate can be ornamental in appearance, or otherwise so formed or finished at its exposed surface as not to be objectionable to the eye. The single flat plate can be easily and quickly rotated to the desired position to control or entirely cut off the outflow of air and by reason of its threaded rod support will remain at the elevation to which it is adjusted.

By applying my ventilator to a vertical hole through the ceiling of a room, leading to an air flue or passage that discharges to atmosphere or elsewhere, or where rooms are under a roof, by applying my ventilator to a vertical air outlet or hole through the ceiling to the air space under the roof and then providing a top outlet from the air space as disclosed by Fig. 1 of the drawings, such rooms can be most advantageously ventilated by permitting outflow of heated air, and consequent inflow of air through doors or windows and the resulting rapid air circulation in and through the room.

It is evident that various changes and modifications might be resorted to without departing from the spirit and scope of my invention and hence I do not wish to limit myself to the exact disclosures hereof.

What I claim is:

1. In combination with a ceiling having an air outlet opening, a supporting annulus secured in said opening having inwardly and upwardly converging arms provided with a central fixed nut, a flat rotary closure plate, a vertically elongated threaded bolt secured to the plate and extending up through said nut, whereby the plate may be rotated to various positions, said annulus having an offset bottom portion providing an annular seat substantially in the plane of the ceiling to receive the peripheral edge portion of said plate when in closed position, said plate when in closed position lying substantially flush with the ceiling.

2. A ceiling ventilator embodying a supporting annulus formed to be secured in a horizontal position in a vertical opening through the ceiling and having converging arms provided with a central elevated fixed vertical nut, a flat rotary closure plate having a vertically elongated threaded bolt rising therefrom and fixed thereto and extending vertically through said nut, the nut and bolt threads being constructed and arranged to permit rotation of the plate to various positions of vertical adjustment with the plate held horizontally at any vertical position by the engaging threads of the nut and bolt, said annulus at its under portion being formed to provide a seat for the peripheral edge portion of the plate when in closed position.

Signed at Washington, D. C., this 27 day of June, 1925.

LEO SIMMONS.