Jan. 12, 1937. C. E. MEYERHOEFER 2,067,575

HEATER

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Fig. 1.

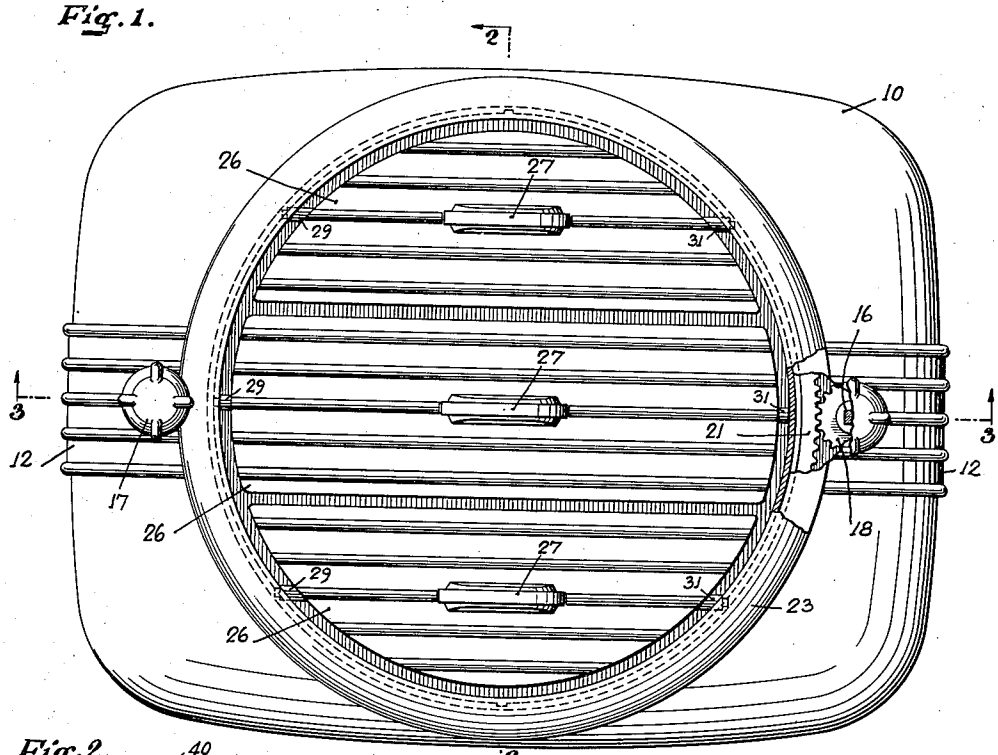
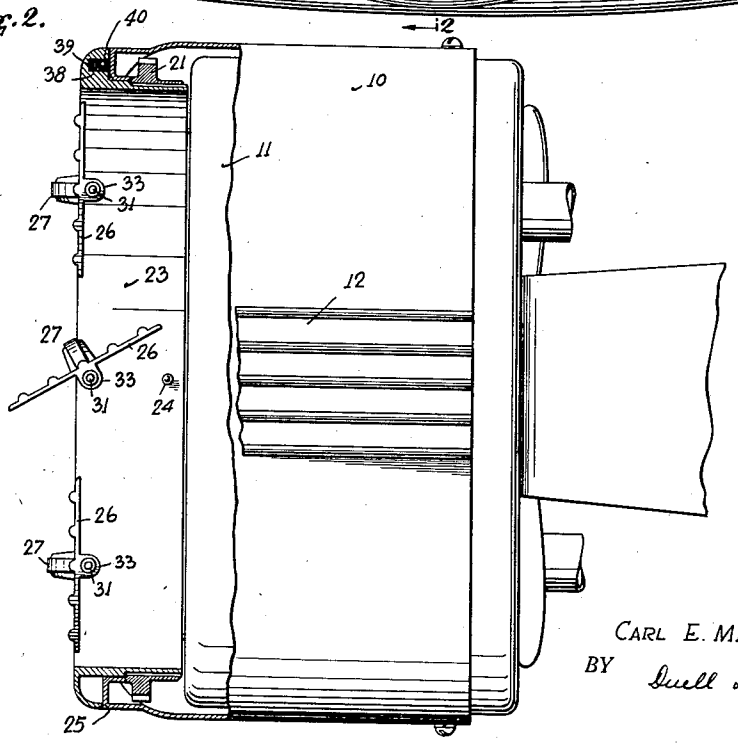


Fig. 2.



INVENTOR.
CARL E. MEYERHOEFER,
BY Dull & Kane.
ATTORNEYS.

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Fig. 3.

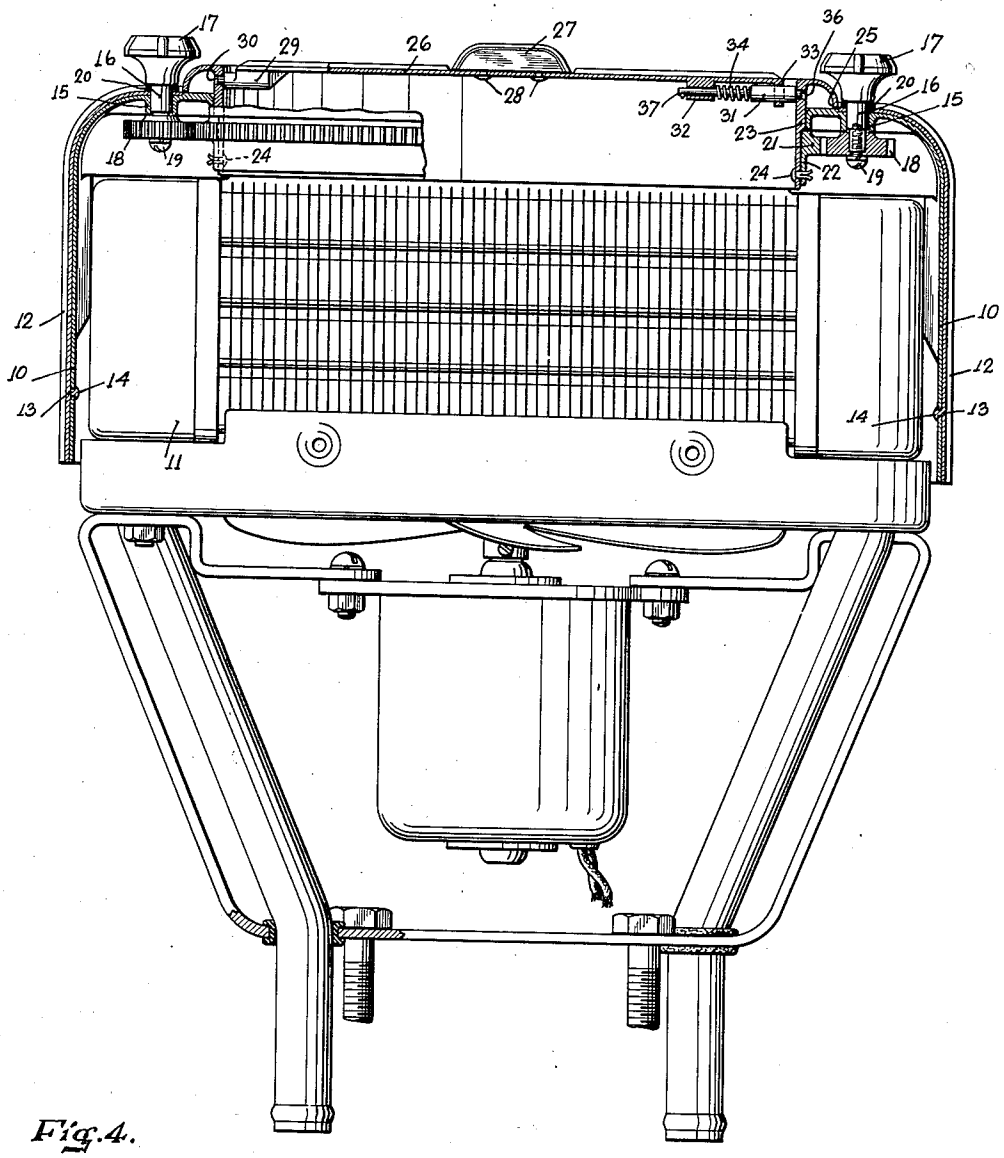
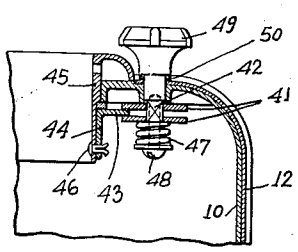


Fig. 4.



INVENTOR.
CARL E. MEYERHOEFER
BY Quell & Kane.
ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,067,575

HEATER

Carl E. Meyerhoefer, New York, N. Y., assignor to E. A. Laboratories, Inc., Brooklyn, N. Y., a corporation of New York

Application August 14, 1935, Serial No. 36,067

10 Claims. (Cl. 98—2)

This invention relates to an improvement in heaters, and particularly to that type of apparatus designed for vehicular installation.

It is an object of the invention to provide a heater which is directional in its radiation, and which can be easily manipulated to change the path of travel of the radiated heat.

Another object is that of providing a heater in which the output of radiated heat may be controlled in order to raise or lower the temperature of the surrounding air.

A still further object is that of providing an apparatus of this character which is relatively rugged and simple in construction, and will operate over long periods of time with freedom from mechanical difficulties.

With these and other objects in mind, reference is had to the accompanying drawings, in which:—

Fig. 1 is a front view of a heater embodying certain aspects of the invention;

Fig. 2 is a side elevation of said heater partially broken away along the lines 2—2 and in the direction of the arrows as indicated in Fig. 1;

Fig. 3 is a sectional plan view of the heater taken along the lines 3—3 and in the direction of the arrows as also indicated in Fig. 1; and

Fig. 4 shows a modified form of actuating member for the heat deflecting vanes.

In the several views, the heater shell or body cover is shown at 10 positioned over a conventional heater core and head assembly 11. Ornamental strips 12 are formed with rivet pins 13, which are passed through openings in the shell and thereafter flattened or headed as at 14, thus holding the parts in position. Shell 10 is provided on its front face with bearing portions 15, in which shafts 16 are rotatably mounted. These shafts, in turn, have manipulating knobs 17 at the outer ends thereof, and pinion gears 18 mounted on their inner ends; these gears being held in position as, for example, by means of screws 19. In this connection, it will be noted in Fig. 1 that the lower ends of the shafts 16 are preferably squared so that the gears 18 are positively engaged without any danger of slippage. Interposed between the adjacent faces of the knobs and the shell are gaskets or washers 20, which may be made of felt, leather, or other suitable material.

Adjacent the gears 18 and cooperating therewith is a ring gear 21 which is provided with a rearwardly extending flange portion 22. A ring shaped plate 23 is coupled to this flange by rivets 24 or equivalent fastening means, this plate having an outwardly and rearwardly extending flange 25 which bears against the shell 10 adjacent the bearing members 15. Upon manipulation of either of the knobs 17 the ring gear and the attached plate are free to rotate, and the latter may be turned so as to assume any position that may be desired.

Carried by the plate are a series of heat deflecting vanes 26 which are shaped to conform to the circular opening of such plate. These vanes are each provided with handle portions 27 which may be formed integrally therewith or secured thereto by means of rivets 28, as shown in Fig. 3. Each of the vanes may have one of its ends providing a pivot pin 29 which rotates within an opening 30 in the plate 23. At the opposite end of each vane a pivot pin 31 is slidably carried in bearing portions 32 and 33 and is encircled by a coil spring 34 which, in cooperation with the bearing portion 32 and the shoulder forming a part of the pin, tends to force the latter into position in the opening 36 formed in the plate 23. The rear end of the bearing pin is distorted as at 37 or otherwise secured to prevent an accidental displacement of the pin when the parts are disassembled.

In assembling the apparatus each of the deflecting vanes is mounted upon the plate by placing the bearing pin 31 thereof in the opening 36 and then moving the entire vane in the direction of the opening 36 so as to compress the spring 34 and move the bearing pin inwardly. The bearing pin 29 can thereupon be inserted in the opening 30 and the vane allowed to move in the direction of the opening 30 under the urging of the spring 34. In addition to providing a ready means of assembly, the spring provides a sufficient tension on each of the vanes so that they may be maintained in any desired position.

In operation, all or any of the deflecting vanes are moved about their respective points of pivot to assume predetermined positions, as, for example, shown in Fig. 2. Thereafter, the manipulating knob or knobs are turned to rotate the plate so that the air blown through the core by means of the fan will be deflected to either side of a plane intersecting the heater and any desired portion of the vehicle interior. To overcome any tendency towards looseness or rattling, the plate 23 may be provided, as shown in Fig. 2, with a suitable number of spaced sockets 38, each of which receive a coil spring 39 and a ball 40. The latter under pressure from the springs bear against the surface of the shell 10 and pre-

vent rattling of the parts, although allowing the cover plate to rotate freely with respect to the frame.

Referring now to Fig. 4, there is shown an alternative form of mechanism for rotating the cover plate. In this case two friction disks 41 are carried by the shaft or shafts 42 and which extend to either side of a friction ring 43. This ring is likewise provided with an inwardly extending flange 44 and is secured to the plate 45 by rivets 46, or other suitable means. A coil spring 47 bears against the lower surface of the inner friction disk, thus clamping the friction ring under pressure between the two friction disks. The spring is held in position by means of, for example, a screw 48. In operation, the turning of the manipulating knob 49 effects a turning of the friction disks 41, which, in turn, carry with them the friction ring 43, resulting in a rotation of the plate. As in the previously discussed modification, a washer 50 is placed between the knob and the ornamental strips.

It is apparent that while two manipulating knobs are disclosed in all forms of the apparatus, it will be understood that the shroud is coupled in any desired manner with the head and core assembly. The shell and parts heretofore described are assembled, and thereafter they are telescoped over the core assembly and attached in any desired manner thereto. It is also apparent that the same general results could be obtained by omitting one of the manipulating knobs and its dependent gear from the assembly.

Thus, among others, the several objects of the invention, as specifically aforenoted, are achieved. It will be understood that numerous changes in construction and rearrangement of the parts resorted to without in any sense departing from the spirit of the invention as defined in the claims.

Having described the invention, what is claimed is:

1. A heater comprising a core, a shell encircling the same, a cover plate cooperating with said shell and adapted for rotation with respect thereto, and means carried by said shell and engaging the periphery of said cover to effect the rotation thereof.

2. A heater comprising a core, a shell encircling the same, a cover plate carried by said shell and adapted for rotation with respect thereto, a ring gear secured to the periphery of said cover portion, and a pinion gear carried by said shell for engagement with said ring gear to effect a rotation of said cover plate.

3. A pivotal vane for use in connection with a heater comprising a vane body, a fixed pivot associated with one end thereof, and a retractible pivot carried at the opposite end thereof.

4. A pivotal vane for use in connection with a heater comprising a vane body, a fixed pivot associated with one end thereof, and a spring-pressed retractible pivot carried at the opposite end thereof.

5. A heater including, in combination, a core, a shell encircling the same, a cover plate supported by said shell for rotation with respect thereto, a plurality of pivotal vanes carried by said cover plate and adapted to move through an axis positioned at right angles to the axis of rotation of said cover plate, and frictional means engaging the periphery of said cover plate to effect a rotation thereof.

6. A heater including, in combination, a core, a shell encircling the same, a cover plate supported by said shell and adapted for rotation with respect thereto, a ring carried by said cover plate adjacent its periphery, and a frictional disk carried by said shell and engaging said ring to effect a rotation of said cover plate.

7. A heater including, in combination, a core, a shell encircling the same, a cover plate supported by said shell and adapted for rotation with respect thereto, a ring carried by said cover plate adjacent its periphery, and a plurality of frictional disks carried by said shell and engaging said ring to effect a rotation of said cover plate.

8. A heater including, in combination, a core, a shell encircling the same, and formed with an open face, a plate rotatably mounted on said shell and extending beyond and into the area of the open face thereof, said plate being also formed with an opening, a deflecting vane mounted on said plate and extending across the opening thereof, and means positioned to the rear of said vane and connected to said plate and shell respectively for effecting rotation of said plate with respect to said shell whereby said vane may be caused to deflect air in directions to either side of a plane intersecting said heater.

9. A heater including, in combination, a core, a shell encircling the same, and formed with an open face, a plate rotatably mounted on said shell and extending beyond and into the area of the open face thereof, said plate being also formed with an opening, a deflecting vane mounted on said plate and extending across the opening thereof, means positioned to the rear of said vane and connected to said plate and shell respectively for effecting rotation of said plate with respect to said shell whereby said vane may be caused to deflect air in directions to either side of a plane intersecting said heater, and means extending beyond said shell and coupled to said rotating means for actuating the latter.

10. Apparatus for directing the flow of air comprising a housing member having an aperture therein, a shutter-carrying member rotatably journalled on said housing member, a gear segment carried by one of said members, a gear carried by the other of said members and meshing with said gear segment, means for rotating said gear to rotate said shutter-carrying member, and a shutter movably mounted on said shutter-carrying member.

CARL E. MEYERHOEFER.