S. M. AND J. H. CARMEAN.

ELECTRIC HEATER.

APPLICATION FILED SEPT. 12, 1921.

1,416,688.

Patented May 23, 1922.

2 SHEETS—SHEET 1.

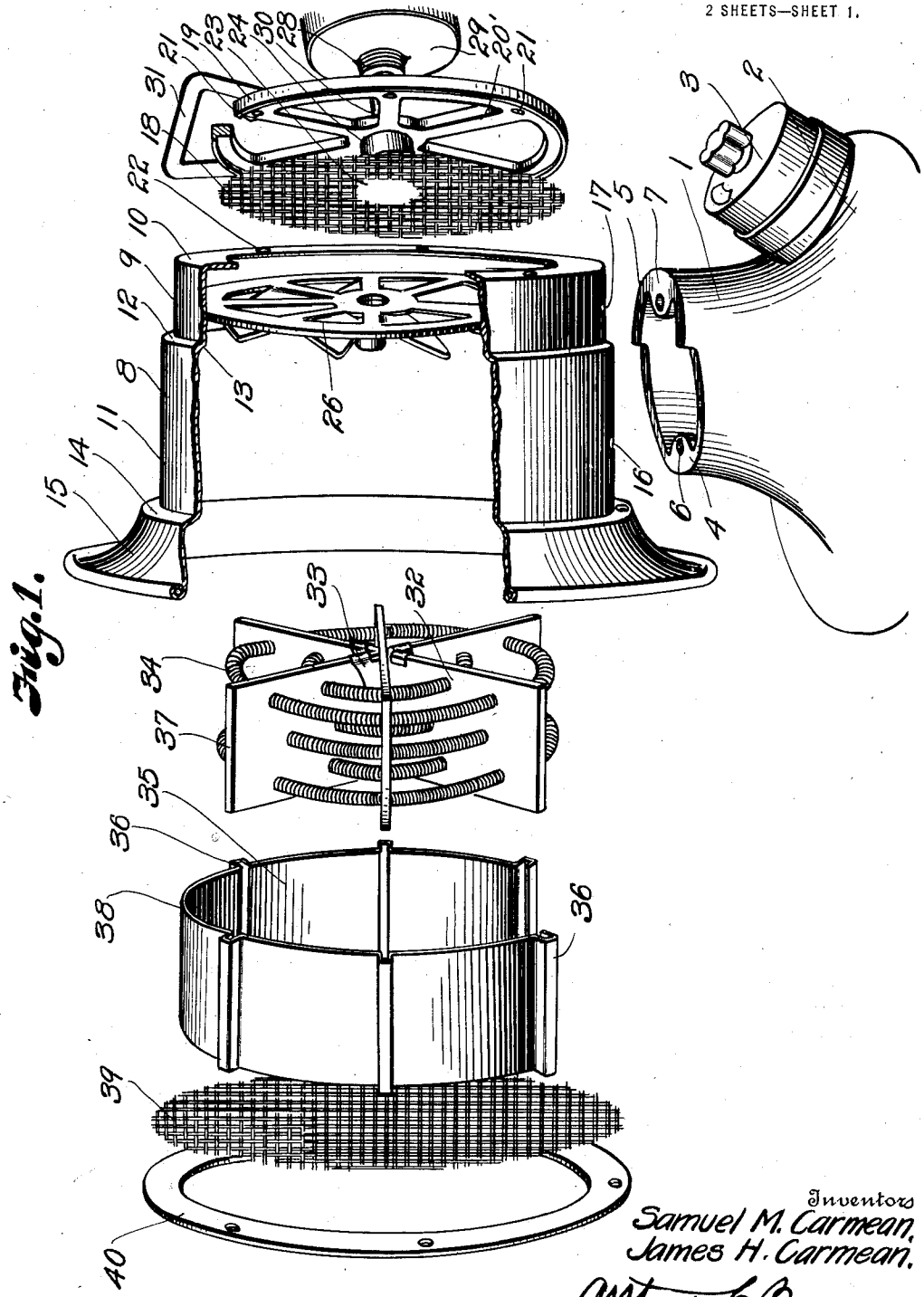


Fig. 1.

Inventors
Samuel M. Carmean,
James H. Carmean.

By Arthur G. Brown

Attorney

S. M. AND J. H. CARMEAN.

ELECTRIC HEATER.

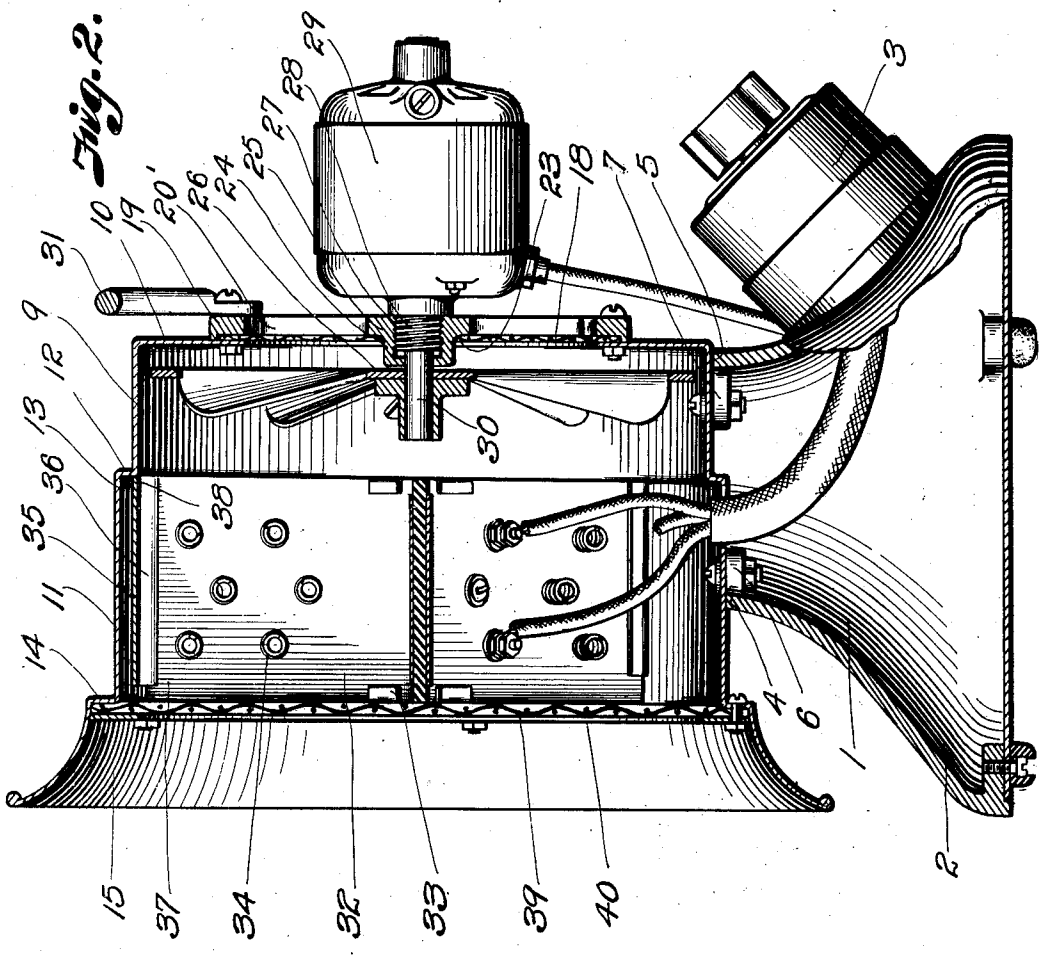
APPLICATION FILED SEPT. 12, 1921.

1,416,688.

Patented May 23, 1922.

2 SHEETS—SHEET 2.

Fig. 2.



Inventors

Samuel M. Carmean.

James H. Carmean.

By Wilmer C. Brown.

Attorney

UNITED STATES PATENT OFFICE.

SAMUEL M. CARMEAN AND JAMES H. CARMEAN, OF KANSAS CITY, MISSOURI.

ELECTRIC HEATER.

1,416,688. Specification of Letters Patent. Patented May 23, 1922.

Application filed September 12, 1921. Serial No. 499,976.

To all whom it may concern:

Be it known that we, SAMUEL M. CARMEAN and JAMES H. CARMEAN, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Electric Heaters; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to electric heaters and particularly to that class of electric heaters in which an impeller or fan is employed for directing air over heating elements before expelling it from the heater casing, the heating element and fan or impeller preferably having separate circuits so that the fan can be operated whether the heater is energized or not.

The primary object of the invention is to provide a device of the class described in which the parts can be easily constructed and readily assembled, this being an important feature of the invention because the cost of assembly of such a device is an important factor in the manufacturing cost, and the commercial success not infrequently depends upon the selling price, which is largely controlled by the cost of production.

It will, therefore, be apparent that a device which will function efficiently and which can be assembled easily so that the productive cost can be cut down to a minimum is a material advance in the art and while the invention has certain inherent virtues due to the structural embodiments of certain of the parts, the main object is to provide an improved electric heater at a minimum cost.

The other advantages, as well as the novel details of construction by which the desired results may be obtained, will be apparent by reference to the following description in connection with the accompanying drawings, in which—

Fig. 1 is a perspective disassociated view of the various parts ready to be assembled, and

Fig. 2 is a cross sectional view through the heater assembled, the motor and switch being shown in elevation.

The base 1 for supporting the heater housing is in the form of a tubular pedestal having a flared or enlarged bottom portion 2 to rest upon a suitable support, and the base 1 preferably carries the switch 3 by which the circuits may be made and broken.

The top of the tubular base member 1 has offset edges 4 and 5 with ears 6 and 7 to receive bolts or other fastening devices for securing the housing 8 to the base. The housing is provided with a rear tubular portion 9, having an inbent edge flange 10 to be hereinafter referred to, and the part 9 is connected to an enlarged tubular portion 11 by a vertical web 12, which constitutes a shoulder 13 against which certain of the elements may abut.

At the forward end of the tubular portion 11 is a peripheral flange 14, connecting the bell-shaped discharge end 15 as will be clearly apparent by reference to Fig. 1.

The casing may be constructed of a single spinning or stamping of sheet metal so that it may be produced at a minimum cost, and the casing may be fastened to the base 1 by suitable bolts or screws which pass through the openings 16 and 17 in the tubular portions 9 and 11. The inbent flange 10 constitutes a support or wall for a screen 18, which may rest against it and be secured by the shouldered ring 19 connected to the ends of the spider arms 20′. The shouldered ring 19 is slightly recessed, as shown in Fig. 1, so that it will receive the screen 18 and when it is secured to the flange by suitable fastening devices which pass through the openings 21 in the ring and 22 in the flange 10, the screen 18 will be held in place.

The screen 18 is provided with an opening 23, through which the boss 24 of the gland 25 on the spider projects, the boss constituting a spacing means for spacing the impeller fan 26 away from the rear of the casing 8. The gland is internally threaded, as at 27, to receive the threaded end 28 of the motor casing 29, the shaft 30 being on an armature and rotatable within the threaded portion 28 so that it may rotate the fan while the casing 29 is held stationary by the gland 25. The gland 25 is secured to the ring 19 by spokes or spider arms 20′ and the ring preferably carries a handle 31 by which the

heater may be transported. It will be seen, therefore, that the impeller, the motor and the screen can be readily assembled in a convenient manner.

The shoulder 13 constitutes an abutment for the heating element. This element is shown as consisting of a plurality of radial flat blades 32, secured together by fastening devices 33 in any well known manner and supporting the heating element or filament 34, which may be threaded through the openings in the blades 32 in the manner shown, so that a complete unitary heating structure may be provided.

There is a heater casing provided for the heater and it is shown as consisting of a sheet 35 which may be bent in the form of a horseshoe with a plurality of grooves 36 struck up transversely of the sheet to receive the ends 37 of the heater blades 32 so that the blades can be slipped into the grooves 36 and then the heater casing introduced into the casing 8 with the rear edge 38 bearing against the shoulder 13, the width of the casing 35 being substantially equal to the length of the tubular portion 11 so that when it is in place, it will be held by the screen 39, which may abut against the shoulder formed by the flange 14 and be secured to the flange by the ring 40 by means of fastening devices, such as suitable bolts or screws.

When the ring 40 clamps the screen 39 against the shoulder 14, it will be apparent that any longitudinal movement of the casing 35 will be eliminated because the casing will, in turn, be clamped between the shoulder 13 and the screen 39.

The grooved portions 36 are out-struck from the sheet so that they form spacing members to hold the major portion of the sheet 35 away from the inner wall of the casing 8, thereby providing dead air spaces between the coil casing and the casing 8 and since the heat is generated within the coil casing, it will be apparent that the dead air spaces will act as insulating spaces to prevent the casing 8 from becoming unduly heated.

The coil casing 35 could be made as a continuous ring but it may be conveniently formed as shown because it can be constructed of sheet metal with struck-up ribs at the spacing portions 35 and then appropriate lengths cut off and bent, as shown in Fig. 1, the construction being simple and conveniently arranged so that the parts can be expeditiously and efficiently assembled within the heater casing 8 from one end, the motor, the screen and motor support being fastened to the casing 8 from the opposite end; thus expediting the assembling of the parts and insuring an efficient construction of electric heating device or air impeller, dependent upon whether or not the heater is energized.

From the foregoing it will be apparent that the device may be inexpensively constructed, quickly assembled and that the cost of manufacture will be reduced to a minimum.

What we claim and desire to secure by Letters-Patent is:

1. An electric heater comprising a casing having an open end, a shoulder near the rear end of the casing, an impeller between the shoulder and the rear end of the casing, an electric heating member bearing against the shoulder, a shoulder at the front end of the casing, and a coil-retaining means connected to the second mentioned shoulder.

2. An electric heater comprising a casing having an open end, an impeller at one end of the casing, a shoulder on the casing in front of the impeller, an electric heating member having one end bearing against the shoulder, and a ring at one end of the casing and confining the electric heating member within the casing.

3. An electric heater comprising a casing having stepped offset portions providing shoulders, an impeller between one shoulder and one end of the casing, an electric heating member within the casing and bearing against one of the shoulders, and an electric-heating-member-retaining element carried by the other shoulder to retain the electric heating member within the casing.

4. An electric heater comprising a casing, an impeller within said casing, an electric heating element comprising radial blades with heating coil supported thereby, a heating coil case surrounding the electric blades and having blade-receiving grooves extending outwardly from the case to provide an insulating space between the coil case and the electric heater case, and means for securing the case and coil within the casing.

5. An electric heater comprising a casing having a shoulder intermediate its ends, an impeller between the shoulder and one end of the casing, a shoulder at the opposite end of the casing, a heating element comprising radial blades with heating coils carried thereby, a coil case surrounding the blades and having out-struck portions forming spacing ribs and provided with grooves to receive the ends of the blades, the blades and coil case abutting against the first named shoulder, and a ring secured to the second mentioned shoulder to prevent longitudinal movement of the blades and coil case with respect to the electric heater casing.

6. An electric heater comprising a casing having a plurality of offset tubular portions to provide shoulders, a spider at one end of the casing, a screen clamped between the spider and one end of the casing, a motor carried by the casing and having a shaft extending thereinto, an impeller on the shaft, an electric heater comprising radial blades

with coils carried thereby, the blades resting against one of the shoulders, and means secured to the other shoulder for holding the electric heater against longitudinal movement with respect to the casing.

7. An electric heater comprising a casing having a plurality of offset tubular portions to provide shoulders, a spider at one end of the casing, a screen clamped between the spider and one end of the casing, a motor carried by the casing and having a shaft extending thereinto, an impeller on the shaft, an electric heater comprising radial blades with coils carried thereby, the blades resting against one of the shoulders, means secured to the other shoulder for holding the electric heater against longitudinal movement with respect to the casing, and a coil case supporting the blades and having outstanding spacing ribs to space the major portion of the coil case away from the electric heater casing to provide an insulating space.

In testimony whereof we affix our signatures.

SAMUEL M. CARMEAN.
JAMES H. CARMEAN.