June 17, 1941. H. SCHECHTEL ET AL 2,246,069

PORTABLE AIR CONDITIONER

Filed Nov. 27, 1939 2 Sheets-Sheet 1

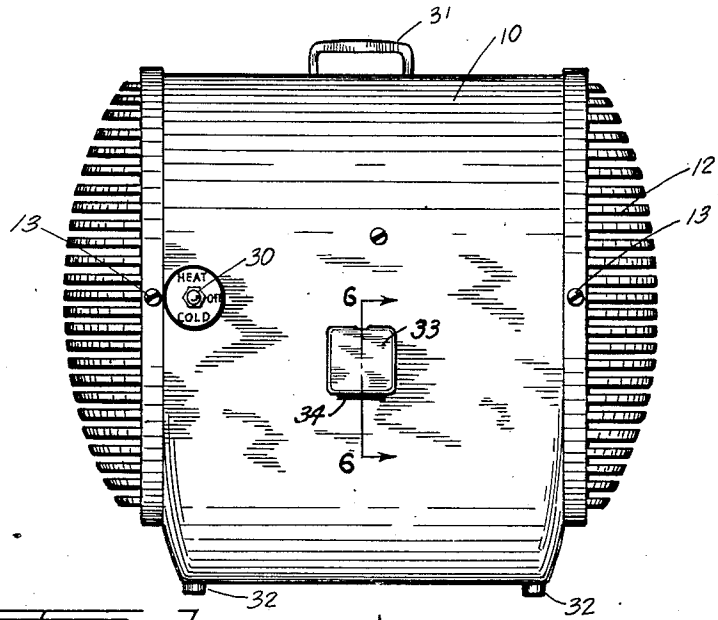



Fig. 1

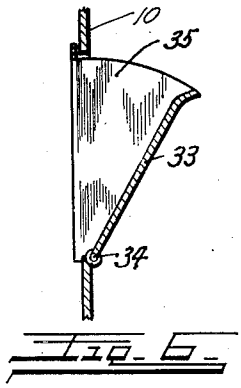



Fig. 6

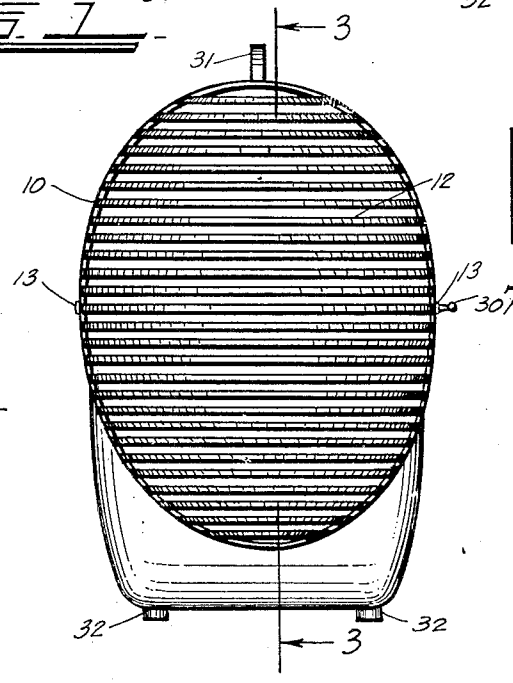



Fig. 2

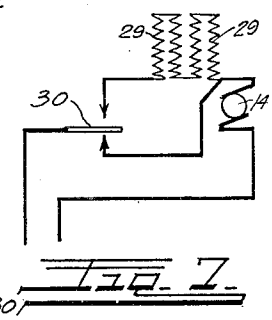



Fig. 7

Inventor:
Harry Schechtel and
Marcus G. Wright.
BY
ATTORNEY

June 17, 1941. H. SCHECHTEL ET AL 2,246,069

PORTABLE AIR CONDITIONER

Filed Nov. 27, 1939 2 Sheets-Sheet 2

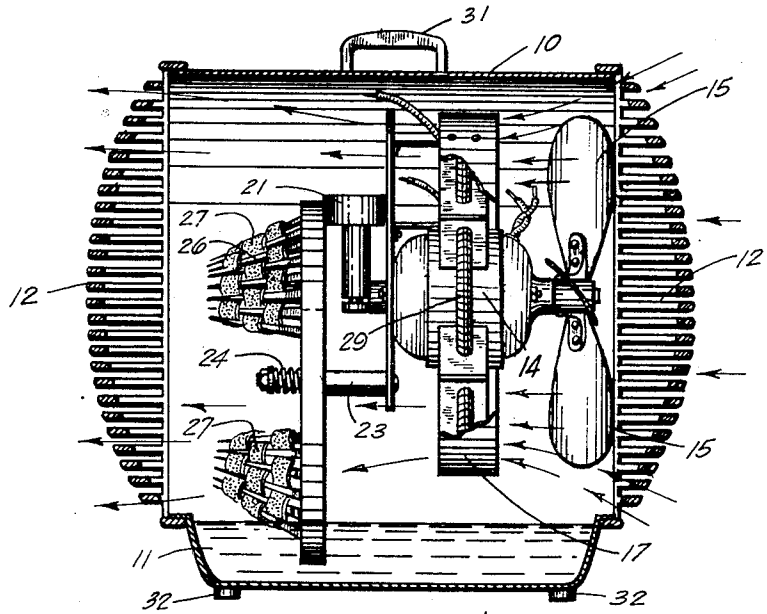



Fig. 3

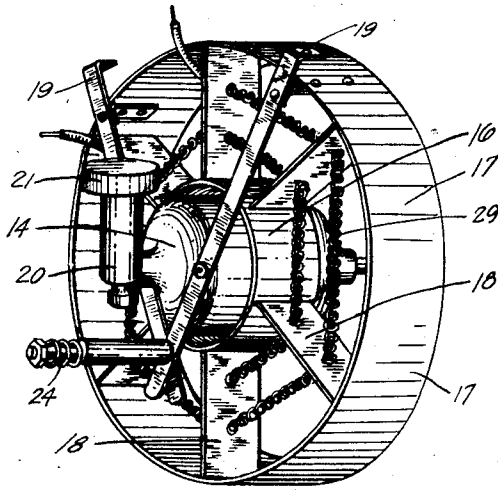



Fig. 4

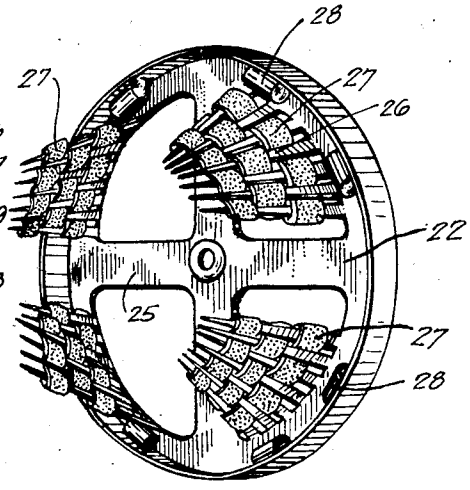



Fig. 5

Inventor:
Harry Schechtel and
Marcus G. Wright.
BY
ATTORNEY

Patented June 17, 1941

2,246,069

# UNITED STATES PATENT OFFICE

2,246,069

## PORTABLE AIR CONDITIONER

Harry Schechtel and Marcus G. Wright, Denver, Colo., assignor, by direct and mesne assignments, to Edward Schechtel, Denver, Colo.

Application November 27, 1939, Serial No. 306,296

2 Claims. (Cl. 261—30)

This invention relates to a portable air conditioner and has for its principal object the provision of a highly efficient device for producing and continuously humidifying an air stream.

Other objects of the invention are to provide an efficient driving device for a humidifying mechanism which will require no adjustments and which will wear indefinitely; to provide a highly efficient electrical heating unit for air conditioning devices; to provide means for automatically retarding the velocity of the air stream when the heating element is in operation so that the air may be raised to a comparatively high temperature with little expenditure of energy; to provide a construction which will be neat, compact, and easily portable; and to provide efficient means whereby water or ice or both may be easily placed in the conditioner.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawings which form a part hereof. Like numerals refer to like parts in all views of the drawings and throughout the description.

In the drawings:

Fig. 1 is a side elevation of the improved portable air conditioner.

Fig. 2 is an end view thereof.

Fig. 3 is a longitudinal, vertical section, taken on the line 3—3, Fig. 2.

Fig. 4 is a detail view illustrating the fan motor and heating element mounting.

Fig. 5 is a detail view illustrating the humidifying wheel.

Fig. 6 is an enlarged detail section through the filling door, taken on the line 6—6, Fig. 1, illustrating the door in the open position.

Fig. 7 is a wiring diagram illustrating the circuits employed in the device.

The improved air conditioner is enclosed in an ornamental portable housing 10, preferably, but not necessarily, having an ovalescent cross section with open extremities and provided with a carrying handle 31 and supporting feet 32. A water pan 11 is formed in the bottom of the housing 10. The two open extremities of the housing are closed by means of ornamental grills 12 which may be secured to the housing by means of suitable attachment screws 13.

An electric fan motor 14 is enclosed within the housing to drive suitable fan blades 15. The motor is supported within a frame consisting of an inner ring band 16 and an outer ring band 17 separated by radial plates 18 of electrical insulating, fire-proof material, such as pressed asbestos. The motor and its frame are supported from the inner wall of the housing upon bracket members 19.

The motor is of the oscillating fan type. Motors of this type are on the market and are provided with worm gear transmissions driven from the rear extremity of the motor shaft and mounted within a transmission housing 20 on the rear of the motor. The transmission drives a vertical slow speed shaft to which an oscillating mechanism is usually connected.

To adapt such a motor for the present purpose, a small friction wheel 21 is mounted on the slow speed shaft which is driven by the worm gearing in the housing 20.

A humidifying wheel 22 is journalled on a supporting stud 23 carried by the bracket members 19 below the motor and to the rear thereof. A compression spring 24 on the stud constantly forces the periphery of the humidifying wheel against the friction wheel 21. The humidifying wheel is preferably a sheet metal stamping formed with spokes 25. The material intermediate the spokes is cut into relatively long pointed fingers 26 which are bent to extend from the outer face of the wheel. These fingers form supports for humidifying pads 27 consisting of strips of absorbent material, such as spun glass, woven in and out among the fingers.

The lower edge of the wheel is continuously immersed in water in the pan 11 so that each pad, as it reaches the bottom, will become saturated. The pads are maintained moistened during their travel over the top of the wheel by means of water cups 28 which are secured to the periphery of the wheel. As the wheel rotates, these cups will fill with water and, as the top is approached, the water will be poured onto the pads to maintain them moist.

In actual practice the humidifying wheel rotates very slowly, approximately one-half a revolution per minute, so that the damp pads are slowly moved across the air stream flowing to the fan 15 while the fan is in operation.

A series of electrical heating coils 29 are trained through suitable openings in the radial plates 18 about the motor so as to be directly in the air stream. The coils are connected in series with the motor 14 and with one pole of a double throw switch 30 so that when the switch is thrown in one direction, it will pass current through the

coils and through the motor and when thrown in the other direction, will pass current through the motor only and not through the coils. This arrangement causes the motor to rotate at full speed when the heating coils are not in use and at a much slower speed when they are in use. This reduces the velocity of the air and allows ample opportunity for the coils to impart heat thereto.

It is desired to call particular attention to the annular bands 16 and 17. The outer ring band forms a restricted entrance for the air stream which acts in the nature of a vortex tube to draw additional air from around the fan as indicated by the arrows in Fig. 3, so that this additional air is impelled by the fan stream through the conditioner housing. The capacity is greatly increased by the ring bands.

A small filling door 33 opens through one wall of the housing 10. The door 33 is mounted on a horizontal hinge 34 at its bottom and is provided with arcuate side flaps 35 which limit the amount of opening of the door and which also form a funnel-like structure into which water may be poured for filling the water pan and through which, if desired, crushed ice or ice cubes may be inserted for cooling the water.

The ring 17 is of a diameter approximately equal to the diameter of the fan 15 and acts to confine and direct the air stream therefrom. The friction drive is particularly valuable in a device of this character since it is not effected in any way by the moisture to which the humidifying wheel is constantly subjected and since it will wear practically indefinitely without attention as the spring 24 accommodates all wear on the friction wheel 21.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. An air conditioner comprising: a housing open at its extremities; a motor supported within said housing; a fan in said housing arranged to be driven by said motor to pass air through said housing; a water pan in the bottom of said housing; a humidifying wheel positioned laterally of said housing with its lower periphery immersed in said pan; segment-shaped flaps cut from the material of said wheel and inclined outward from one face thereof; absorbent material secured to said inclined flaps to absorb water from said pan; and means for driving said wheel from said motor.

2. An air conditioner comprising: a housing open at its extremities; a motor supported within said housing; a fan in said housing arranged to be driven by said motor to pass air through said housing; a water pan in the bottom of said housing; a humidifying wheel positioned laterally of said housing with its lower periphery immersed in said pan; segment-shaped flaps cut from the material of said wheel and inclined outward from one face thereof; absorbent pads carried by said flaps; cups mounted about the periphery of said wheel to elevate water from said pan to said pads; and means for driving said wheel from said motor.

HARRY SCHECHTEL.
MARCUS G. WRIGHT.