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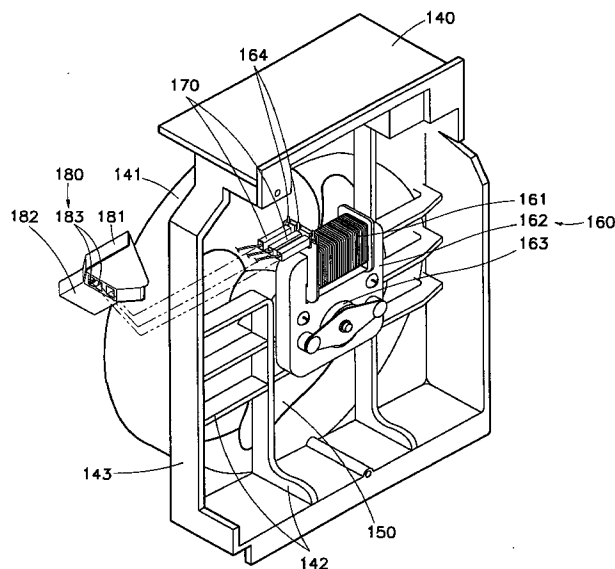
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(54) **Microwave oven**

(57) A microwave oven is disclosed and includes a housing (100) having a cooking chamber (110) and a motor (160) for driving a fan (150) to dissipate heat generated by electrical components (131,132,133), said motor (100) having electrical terminals (164) for connection to a power supply and means (180) are included for enclosing the electrical terminals (164) to prevent the possibility of an electric shock occurring during maintenance or performance testing. In one embodiment, the means (180) for enclosing the terminals is a protective cover.

FIG. 2



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Description

The invention relates to a microwave oven including a housing having a cooking chamber and a motor for driving a fan to dissipate heat generated by electrical components, said motor having electrical terminals for connection to a power supply.

Microwave ovens are a well known type of cooking appliance in which high frequency microwave energy is absorbed by water and other molecules in food which makes them move at very high speeds to create frictional heat which cooks the product evenly in a short space of time.

When the microwave oven is in operation, heat is produced by the various electrical components and so a fan is installed in the rear portion of the electrical component compartment. The fan is driven by a motor which is supported by a bracket.

A perspective view of a conventional microwave oven having a fan 20 and a motor 30 supported by a bracket 10 is illustrated in Figure 5. The motor 30 which is mounted in the centre of the bracket 10, consists of a stator 32 around which a coil 31 is wound, and a magnetic rotor 33 rotatably mounted on the stator 32. The rotor 33, connected to the fan 20 and facing towards the front of the bracket 10, rotates the fan 20, and terminals 34 are connected to the coil 31. When the coil is supplied with electrical current from a power source connected to the terminals 34, the rotor 33 rotates by its interaction with the current flowing through the coil 31, thereby spinning the fan 20. The bracket 10 supporting these components is mounted to the rear of the electrical component compartment, and one side 11 of the bracket 10 is cut away to enable the power source to be connected to the terminals 34 by means of connectors 50. A particular problem with the type of conventional microwave oven described above is that a person carrying out maintenance on the oven or a microwave oven performance test, may inadvertently come into contact with the terminals 34, either directly or with a tool and may receive an electric shock.

It is an aim of the present invention to overcome or substantially alleviate the aforementioned problem.

A microwave oven according to the present invention is characterised by means for enclosing the electrical terminals.

In a preferred embodiment, the means for enclosing the electrical terminals is a protective cover which shields the terminals.

Preferably, the protective cover is tapered in length.

Preferably, wires connect the power supply to the motor via the electrical terminals, the protective cover including paths through which the wires pass.

Conveniently, each path includes a connector which engages a respective terminal to provide electrical connection therebetween.

Embodiments of the present invention will now be described, by way of example only, with reference to the

accompanying drawings, in which:

Figure 1 is a perspective view of a bracket installed in an electrical component compartment for a microwave oven in accordance with an embodiment of the present invention;

figure 2 is an exploded perspective view of a protective cover and the bracket in accordance with a preferred embodiment of the present invention;

Figure 3 is a view of the perspective cover in use in accordance with an embodiment of the present invention;

Figure 4 is an exploded perspective view of a protective cover in accordance with an alternative embodiment of the present invention; and

Figure 5 is a perspective view showing the fan and motor of a conventional microwave oven, supported by a bracket.

As shown in Figure 1, a microwave oven in accordance with an embodiment of the present invention includes a main body 100 having a cooking chamber 110 and an electrical component compartment 120 therein. A door 111 is hingedly attached to the front of the cooking chamber 110, and a control panel 121 is installed on the front of the electrical component compartment 120. The electrical component compartment 120 includes a transformer 131 to increase the voltage of the electric current provided by an external power source, a storage battery 132 and a magnetron 133 connected to the storage battery 132 to produce high frequencies. These electrical components are connected to the control panel 121.

Inside the electrical component compartment 120, a bracket 140 is mounted on the rear of the main body 100, and a cooling fan 150 and an electric motor 160 for turning the cooling fan 150 are each connected to the bracket 140, which are more fully described below with reference to Figures 2 and 3.

The bracket 140 is a hollow case and has a circular rim to surround and protect the fan 150. A plurality of ribs 142 are provided in the centre of the bracket 140 to support the motor 160. The motor 160 includes a stator 162 around which a coil 161 is wound and a rotor 163 to which the fan 150 is connected.

The coil 161 is provided with terminals 164 which accept connectors 170 that are linked to the external power source. One side 143 of the bracket is narrower in width than the other to provide a space between the side 143 to which the terminals 164 are facing, and the main body 100 when the bracket 140 is installed. This enables the connectors 170 to be connected to the terminals 163 after the bracket 140 has been fixed to the main body 100. When the electric current is supplied to the coil 161, the current flowing across the coil 161 causes the rotor 163 to turn, thereby driving the fan 150.

The oven also includes a protective cover for preventing the terminals 164 from being exposed and is

used to keep a persons fingers or a tool away from the terminals 164 during repair or performance testing of the oven to prevent the possibility of an electric shock. The protective cover 180 consists of a terminal covering portion 181 which encloses the terminals 164, and a terminal guide portion 182. The terminal guide portion 182 includes paths 183, and the protective cover 180 is mounted over the terminals 164 such that the connectors 170 are inserted into their respective paths 183. In case that wires from the power source directly lead to the respective terminals 164, they pass through the paths 183.

Part of the terminal covering portion 181 positioned inside the bracket 140 is shorter than that part of it located outside, so that the cost of production is reduced.

An exploded perspective view of a protective cover in accordance with an alternative embodiment of the present invention is illustrated in Figure 4. In this embodiment, connectors 170 are integrally coupled to paths 183.

According to the preferred embodiments of the present invention, connectors or wires are connected to the terminals and the terminals are entirely enclosed by the protective cover to prevent injury caused by coming into contact with the live terminals with a finger or a tool should a person be carrying out maintenance or testing of the oven.

Claims

1. A microwave oven including a housing (100) having a cooking chamber (110) and a motor (160) for driving a fan (150) to dissipate heat generated by electrical components (131,132,133), said motor (160) having electrical terminals (164) for connection to a power supply **characterised by** means (180) for enclosing said electrical terminals (164).
2. A microwave oven according to claim 1 wherein the means (180) for enclosing the electrical terminals (164) is a protective cover (180) which shields the terminals (164).
3. A microwave oven according to claim 2 wherein the protective cover (180) is tapered in length.
4. A microwave oven according to claims 2 or 3 wherein wires connect the power supply to the motor (160) via the electrical terminal, the protective cover (180) including paths (183) through which the wires pass.
5. A microwave oven according to claim 4 wherein each path includes a connector (170) which engages a respective terminal (164) to provide electrical connection therebetween.
6. A microwave oven including a main body with a cooking chamber and an electrical component compartment therein, a fan for removing heat generated by electrical components of the electrical component compartment, an electric motor rotating the fan, and terminals provided to one side of the electric motor to transmit electric energy from an external power source to the electric motor comprising means for preventing the terminals from being exposed to outside.
7. A microwave oven as set forth in claim 6 wherein the means is realised as a protective cover which seals the terminals.
8. A microwave oven as set forth in claim 7 wherein an inner part of the protective cover is shorter than its outer part, whereby the protective cover is formed on an angle.
9. A microwave oven as set forth in claim 7 wherein the protective cover includes paths through which wires, connected to the external power source, pass.
10. A microwave oven as set forth in claim 9 wherein each of the paths has a connector connected to the terminals to transmit the electric energy from the external power source to the terminals.

FIG. 1

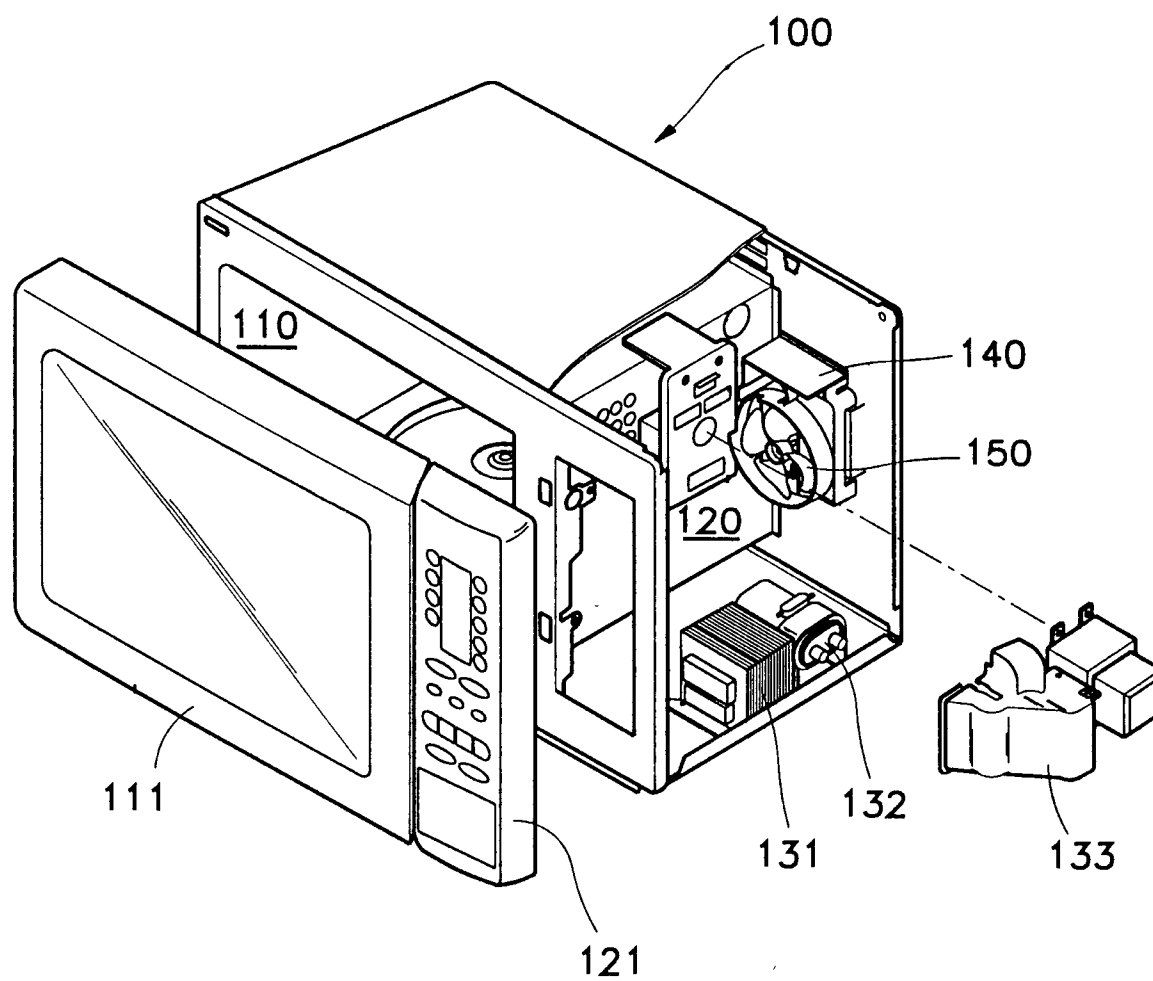


FIG. 2

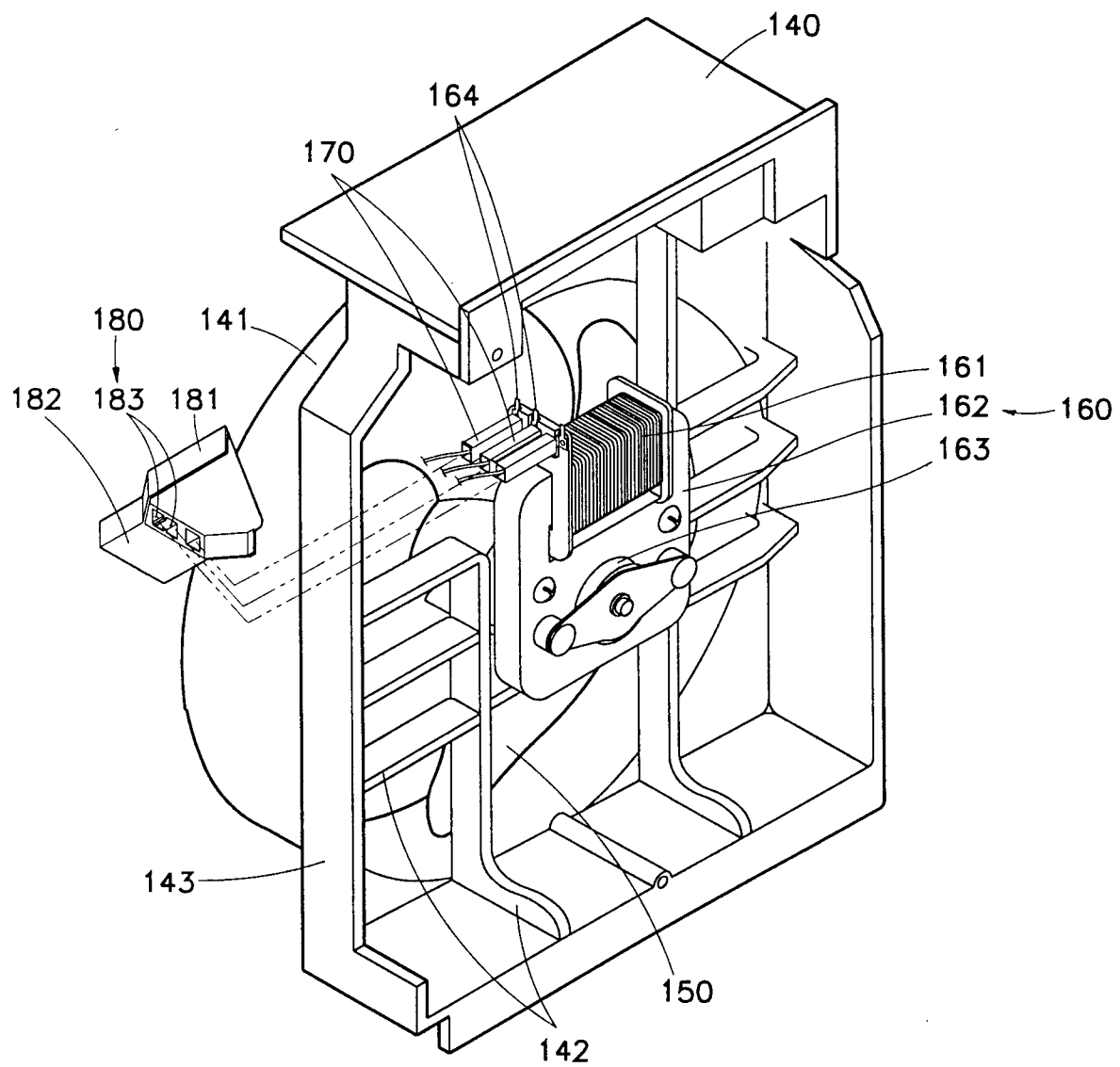


FIG. 3

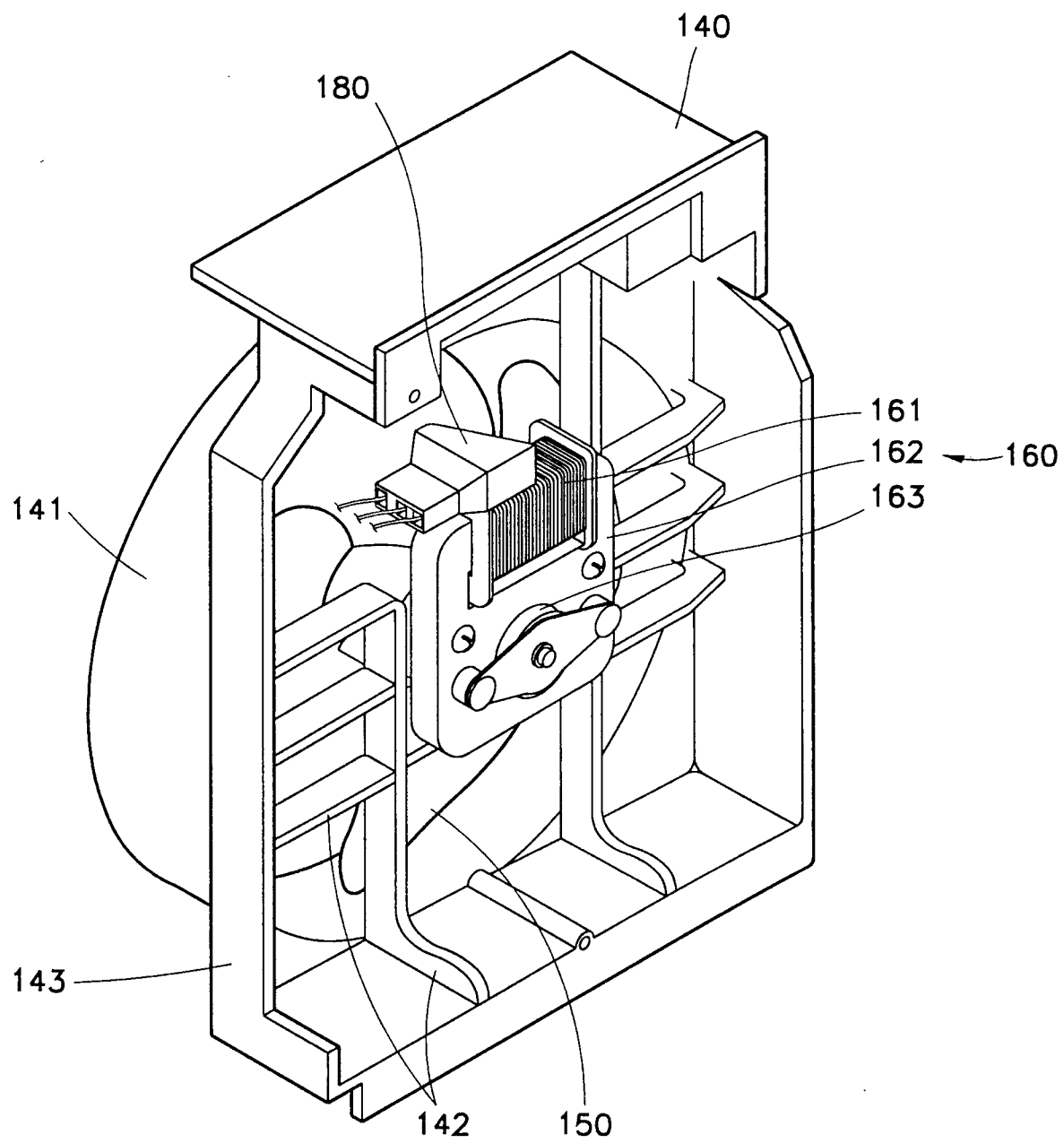


FIG. 4

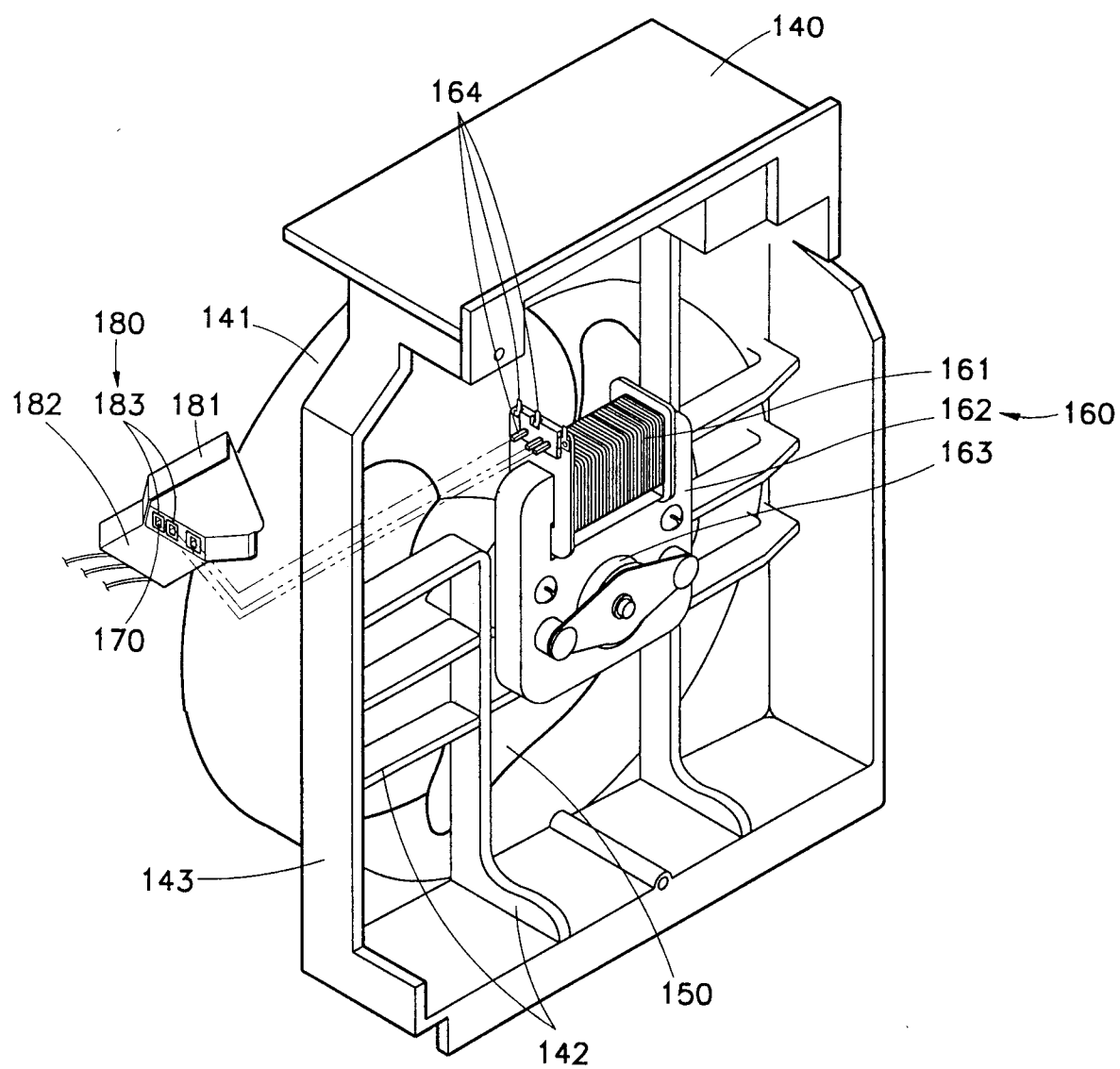


FIG. 5
(PRIOR ART)

