"Flower Power"

Preliminary Patent Application for a Cigarette Smoke Elimination Method

March 22, 1978

Background:

Mankind has much to learn from Mother nature. Her methods are usually the simplest and the best.

So it is in cleaning the air, and the need today is urgent.

The tobacco industry faces mounting pressure from non-smokers and the so-called environmentalists which could cut deeply into the future of the industry unless protective steps are taken.

Perhaps the most effective step is the control or elimination of smoke in confined spaces where its presence is objectionable. The use of living plants, together with methods of modern technology can indeed provide an answer.

Flower Power:

"Flower Power" is the suggested name being applied to the new system. Basically, the operation is simple, but in technical terms it is complex. The method utilizes the susceptibility of living plants to static charges - the same kind of charges which are always present in the atmosphere. in this case, however, the charges are manmade and are generated by a small electronic "chip" attached to the plant. In technical terms this action is as follows:

> **Charges generated by the chip are applied to the growing plant and induce what is termed "electroendosmotic transpiration" of the plant's internal fluids principally at leaf points and sharp edges. The electric fields then ejects these fluids (from the leaf points and edges) as microscopic droplets (charged aerosols) into the surrounding air. In turn then, these aerosol droplets capture suspended matter (smoke particles, etc.) by electrostatic attraction and (together) precipitate to the nearest grounded surface (usually the floor).**

The novelty of the system is "the application of static charges to a plant for the purpose of cleaning the surrounding air."

The action imparts a freshness to the air not unlike the fragrance of a forest following a thunderstorm. It is identically the same principal.

Electrostatic Air Cleaner:

This invention relates to methods and devices for cleaning and freshening the air in a room by the use of living plants.

The invention further relates to the electrostatic precipitation of smoke, pollen and other suspended particulates in air resulting from the action of electrically-charged aerosols emitted from plant leaves.

The invention further relates to the method and apparatus for electrostatically charging said living plants so that the internal plant fluid (sap) is withdrawn to the leaf-tips and edges, atomized and ejected as charged aerosols, into the surrounding air.

The invention contemplates the use of living plants in combination with electric charging means for the purpose of removing (cigarette) smoke from the surrounding air.

Specifications:

Devices in common use today for electric precipitation of smoke or other suspended particles from the air of a room such as in a home or office operate on a principle related to the "Cottrell" process. In such existing devices, precipitation takes place upon high voltage electrode plates between which the air of the room is forced and circulated by a fan. In the present invention, no fan of other device for circulating air is used. Also, no precipitation plates are used.

In the present inventions, the application of an electrostatic charge (preferably negative) to the living plant induces (what is termed) "electroendosmotic transpiration" causing the internal plant fluids to collect at leaf points and edges. the electric field surrounding the leaves then atomizes and ejects these fluids as microscopic droplets (called aerosols) into the air. In turn, these aerosol droplets capture suspended matter (smoke particles, etc.) by electrostatic attraction and (together) precipitate to the nearest grounded surface (usually the floor).

A further advantage is the fragrance and moisture imparted to the air by the increased (electric) atomization and evaporation of the plant's (natural) organic fluids. This action imparts a freshness to the air similar to the fragrance of a forest following a thunderstorm.

Precipitation of smoke resulting from electrostatic "attraction" is not new. It is a well known art. The novelty of the present invention lies in the use of plant leaves or thorns as aerosol emitters and the use of the plant's internal fluids as a source of the aerosols. the leaves of many plants are pointed or sharp edged and thorny plants such as rose, pine (needles) or cactus make excellent atomizers when statically charged. the present invention, therefore, makes use of living plants in combination with a source of electrostatic potential to which the said plants are electrically connected.

The invention, may take several forms, of which the following two forms are examples:

- **a) As a table-top device shown in Fig. 1, comprising a container (base) housing the electrostatic supply upon which the (potted) plant rests and to which it is electrically connected.**
- **b) As a suspended device, as illustrated in Fig. 2,**

with hanging means (from the ceiling) and basket containing the leafy plant (such as fern).

In both forms, the principle of operation is the same, i.e., charging the plant's leaf-structure, thorns, etc. to a high static potential and utilizing the rapid atomized fluid emission therefrom to induce the precipitation of smoke from the air of the room in an area as much as 10 to 20 feet surrounding the plant.

Referring in Detail to the Drawings:

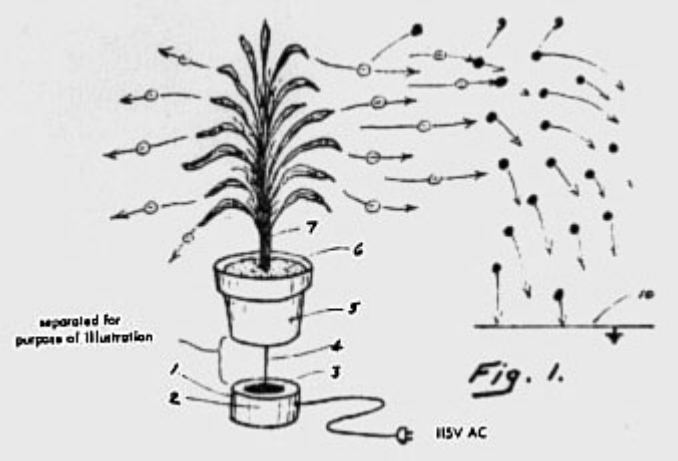

Fig. 1.

Fig. 1 shows electrically-insulated container 1, conveniently made of molded plastic material, electrostatic supply circuitry 2 (not shown in detail) which is normally potted (insulated) within the container 1 the output of which is connected to terminal plate 3. Conductor 4 connects plate 3 to the moist soil 6 so that the leaves of said plant are electrostatically-charged (normally at negative polarity). Under such charge fluid (from the plant's internal fluid) is withdrawn to the leaf point and edges, and is the atomized and propelled outward (away from the plant) by the electrostatic filed. These fluid particles 8 (now charged aerosols) encounter, attract and coalesce with particles of suspended matter (cigarette smoke, pollen, dust, etc.) in the air surrounding the plant, transferring their electrostatic charges to the particles 9 which, then, disperse and migrate (under the action of the electrostatic field) to a neighboring grounded surface 10 (such as floor). the precipitation and elimination of said particles cleans the air in the vicinity of the plant and for a considerable distance around the plant.

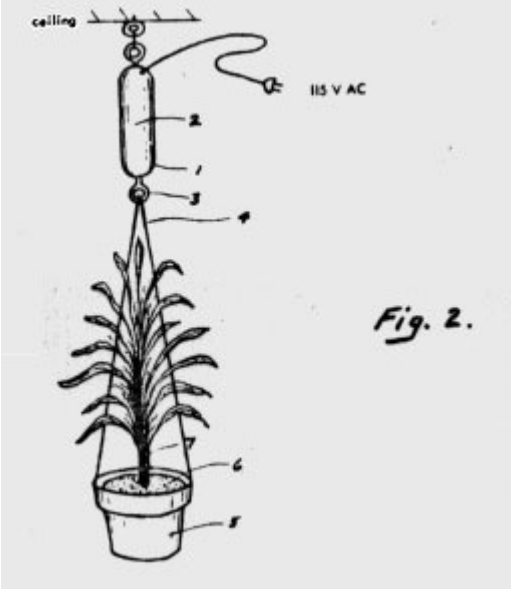

Fig. 2.

Fig. 2 is similar electrically to that shown in Fig. 1, the only difference being that the combination of electrostatic supply and leaf structure is suspended (from the ceiling). While the static voltage utilized by the devices illustrated may be high (preferably 15 to 20 kilovolts) the current available is infitesimally low (at most only a few microamperes). Such low current is a feature of the recommended electronic supply, which, actually, is a small (solid state) "chip." The limited output is designed to prevent shock or fire hazard. No hazard exists with such limited available current. As to shock, the only possible sensation is that from a tiny (static) spark, about as much as one feels from shuffling feet across carpet (static electricity) on a dry winter day. Insufficient current exists to cause any shock. Shorting the static charge (to ground) instantly reduces the generated voltage to zero.

Claims:

1. Air cleaning device comprising, in combination, a static electric source connected to a living plant.

2. Air cleaning device as in Claim 1, including electrostatic supply means capable of generating static electrical charge and means to conduct said charge to the pot containing said living plant.

3. Air cleaning device as in Claim 1, including a living plant with potted roots connected electrically to a source of high static potential.

4. Air cleaning device as in Claim 1, including a suspended potted living plant attached and hanging from a container housing an electrostatic supply to which said plant is electrically connected.