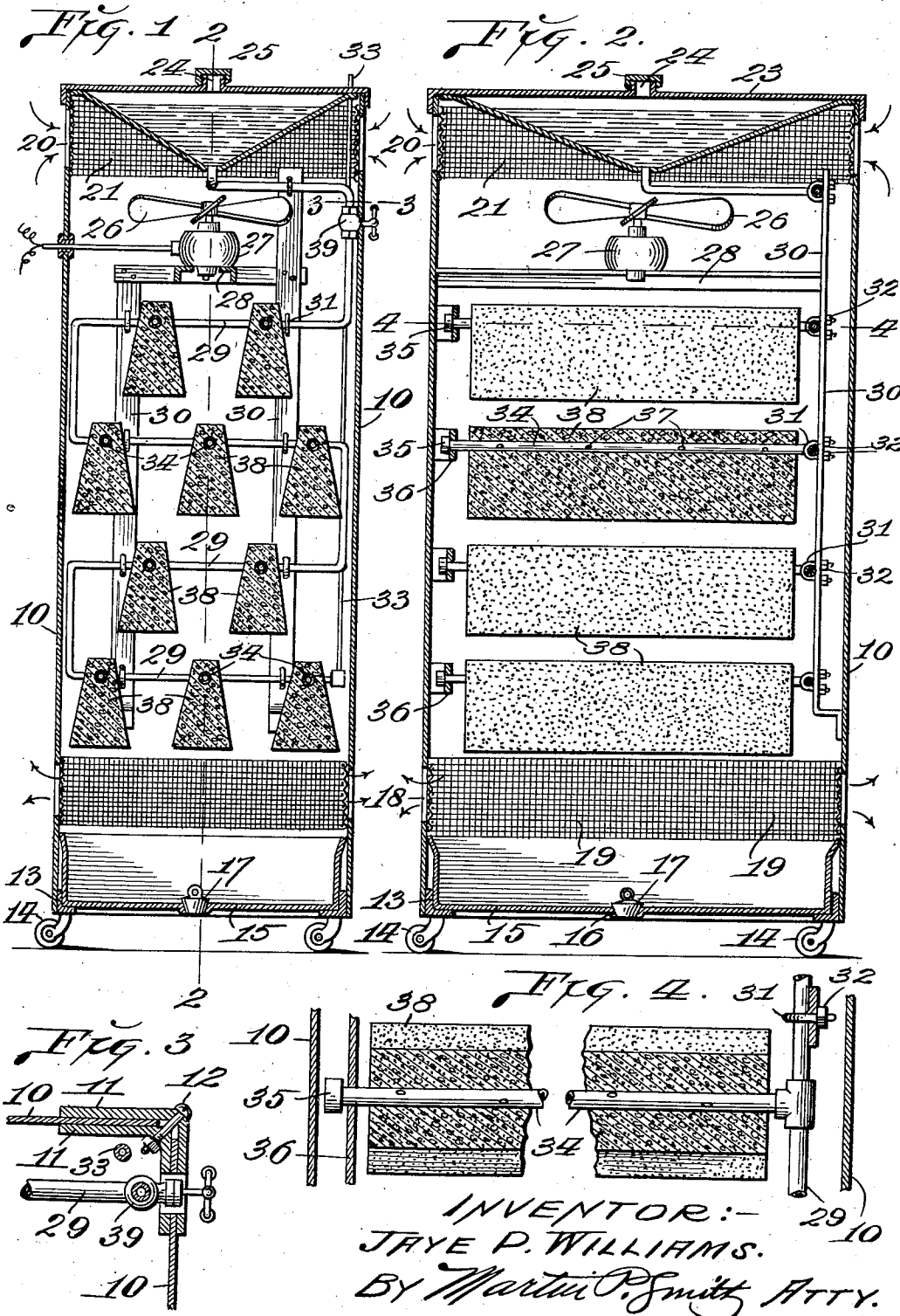


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HOUSEHOLD AIR COOLER

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HOUSEHOLD AIR COOLER

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My invention relates to an air cooler that is especially designed for household use and the principal object of my invention is, to provide a relatively simple, practical, inexpensive and efficient device that may be conveniently and economically used for humidifying and cooling air, particularly in households, rooms, offices and the like.

Further objects of my invention are, to provide a device of the character referred to that is compact and comparatively light in weight in order that it may be conveniently moved from one point of use to another and further, to provide an air cooler and humidifier wherein air is cooled as a result of its absorption of moisture that exudes from the surfaces of porous members that are arranged in a chamber through which the air to be cooled is forcibly driven.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawing in which:

Fig. 1 is a vertical transverse section taken through the center of an air cooler constructed in accordance with my invention.

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged horizontal section taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged horizontal section taken on the line 4—4 of Fig. 2.

Referring by numerals to the accompanying drawing which illustrate a practical embodiment of my invention, 10—10 designate the upright walls of a substantially rectangular housing, which walls are preferably formed of suitable sheet metal and their vertical edges are clamped between the flanges of vertically disposed corner posts, each of which is formed of a pair of light weight angle bars 11 and the members of each pair of angle bars being detachably connected by means of screws or bolts 12 which pass through the corners of said angle bars (see Fig. 3).

Arranged in the bottom of the housing thus formed is a frame 13 preferably composed of angle iron and arranged at the corners of said frame are casters 14 or suitable rolling supports, which enable the cooler to be readily moved from one position to another.

Supported by frame 13, is a drip pan 15, provided with an outlet 16 that is normally closed by a plug or cap 17.

Formed in the walls 10 of the housing, immediately above the drip pan, are air outlet openings 18 and covering said openings are sections of reticulated material 19, preferably wire screen of small mesh.

Formed through the upper portions of the walls 10 of the housing are air inlet housings 20 and arranged thereover are sections 21 of wire screen or reticulated material.

Arranged in the upper portion of the housing is a reservoir 22, above which is a cover plate 23 for the top of the housing and formed in said cover plate is a filler opening 24 that is closed by a removable cap or plug 25.

Arranged in the upper portion of the chamber within the housing, is a fan or air propeller 26 that is driven by a small electric motor 27 and the latter being mounted on suitable supports 28.

Leading from the bottom of the reservoir 22 is a conduit, preferably a metal tube, the same extending to one of the corners in the housing and said tube is then extended downwardly a short distance, thence horizontally across one end of the chamber within the housing, thence downwardly a short distance and thence horizontally across the end of the chamber within the housing and which arrangement provides a plurality of horizontally disposed tubular legs 29 that are preferably spaced at equal distances apart.

These horizontally disposed tubular legs are supported by an upright skeleton frame 30 that is arranged within the housing, in any suitable manner, preferably by means of U-bolts 31 that pass around the tubular legs and through the frame 30 and the threaded ends of said bolts having nuts 32 applied thereto.

From the end of the lower one of the horizontal legs 29, a small vent tube 33 extends upwardly through the housing and through the top 23, the upper end of this vent pipe being open to atmosphere.

Connected by suitable couplings to the tubular legs 29 are horizontally disposed tubes 34 and the ends of these tubes opposite the ends that are connected to the tubular legs 29 are closed by means of screw caps or plugs 35 and said closed ends are supported by horizontally disposed rails 36 that are secured to the adjacent end wall of the housing.

There are two or more of the tubes 34 connected to each horizontal leg 29 and the tubes on one leg are staggered in relation to the tubes of the next adjacent tubular legs.

Each horizontal tube is provided with a plurality of small apertures 37 which permits water to slowly discharge from said tubes.

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Moulded on each tube 34 is an elongated block 38 of porous material, preferably hardened plastic material, that is composed of or which may include sand, cement and gypsum. The underfaces of these blocks are considerably wider than the upper faces and thus the side faces are inclined and converge upwardly.

The porous blocks are slightly shorter than the tubes 34 and thus the ends of said tubes project slightly beyond the ends of the blocks for attachment to the tubular legs 29 and the supports 36.

Located in the upper portion of the tube that is bent to form the tubular legs 29 and above the uppermost one of said tubular legs, is a valve 39, the handle or stem of which is arranged on the exterior of the housing. This valve may be adjusted so as to regulate the flow of water from the reservoir 22 downwardly through the tube that is bent to form the legs 29.

During operation of my improved air humidifier and cooler, water from the reservoir 22 flows downwardly through the tube that is bent to form the legs 29, the flow of such water being controlled by valve 39 and water from the legs 29 flows outwardly through tubes 34 and discharges through the apertures 37 into the bodies of the porous blocks 38. This water eventually passes to the surfaces of the blocks from whence it is absorbed by the air that is driven downwardly through the housing over and past the porous blocks by the motor driven fan or propeller 26.

The operation of the fan or propeller 26 draws air inwardly through the openings 20 and after this air passes downwardly over and around the porous blocks and is cooled by the absorption of the moisture that exudes from the surfaces whereof, the cooled and humidified air discharges outwardly through the openings 18 in the lower portion of the housing.

Tests and experiments with a relatively small device constructed in accordance with my invention, prove that the temperature in a room of average size may be lowered from ten to fifteen degrees within a comparatively short time.

Any excess moisture that may drip from the porous blocks will be caught in the drip pan 15 and any accumulation of water within said pan may be discharged by removing plug 17 from the opening 16.

Thus it will be seen that I have provided an air humidifier and cooler that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of my improved household air cooler may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In an air humidifier and cooler, a housing provided in its upper portion with an air inlet opening and in its lower portion with an air outlet opening, a plurality of horizontally disposed porous blocks arranged in staggered relation within the housing between said openings said blocks having flat inclined side faces, means for delivering water into said blocks and means for producing and maintaining a flow of air downwardly through said housing and over the porous blocks therein.

2. In an air humidifier and cooler, a housing provided in its upper portion with an air inlet opening and in its lower portion with an air outlet opening, a plurality of horizontally disposed porous blocks arranged in staggered relation within the housing between said openings said blocks having flat inclined side faces, means for delivering water into said blocks, means for producing and maintaining a flow of air downwardly through said housing and over the porous blocks therein and means for regulating the flow of water to said porous blocks.

3. In an air humidifier and cooler, a housing provided in its upper portion with an air inlet opening and in its lower portion with an air outlet opening, a reservoir in the upper portion of said housing, a plurality of horizontally disposed porous blocks suspended within the housing between the air inlet and outlet openings said blocks having flat inclined side faces and arranged in staggered relation, a perforated pipe extending into each porous block, a conduit leading from the reservoir to the perforated pipes in said porous blocks and means for producing and maintaining a current of air downwardly through said housing over and around said porous blocks.

4. In an air humidifier and cooler, a housing provided in its upper portion with an air inlet opening and in its lower portion with an air outlet opening, a reservoir in the upper portion of said housing, a plurality of horizontally disposed porous blocks suspended within the housing between the air inlet and outlet openings said blocks having flat inclined side faces and arranged in staggered relation, a perforated pipe extending into each porous block, a conduit leading from the reservoir to the perforated pipes in said porous blocks, means for producing and maintaining a current of air downwardly through said housing over and around said porous blocks, means for controlling the flow of water from the reservoir to the perforated pipes in the porous blocks and a drip pan in the lower portion of said housing.

5. In an air humidifier and cooler, a housing provided in its upper portion with an air inlet opening and in its lower portion with an air outlet opening, a reservoir in the upper portion of said housing, a supporting rack arranged within said housing, certain members of which rack are in the form of tubes having communication with said reservoir, certain of which tubes are perforated, porous blocks suspended from said perforated tubes and means for producing and maintaining a flow of air downwardly through said housing over said blocks.

6. In an air humidifier and cooler, a housing provided in the upper portion with an air inlet opening and in its lower portion with an air outlet opening, a reservoir in the upper portion of said housing, a supporting rack arranged within said housing, certain members of which rack are in the form of tubes having communication with said reservoir, certain of which tubes are perforated, porous blocks suspended from said perforated tubes, means for producing and maintaining a flow of air downwardly through said housing over said blocks, means for controlling the flow of water from said reservoir to the tubular members of said rack and a drip pan located in the lower portion of said housing.

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