

Feb. 3, 1931.

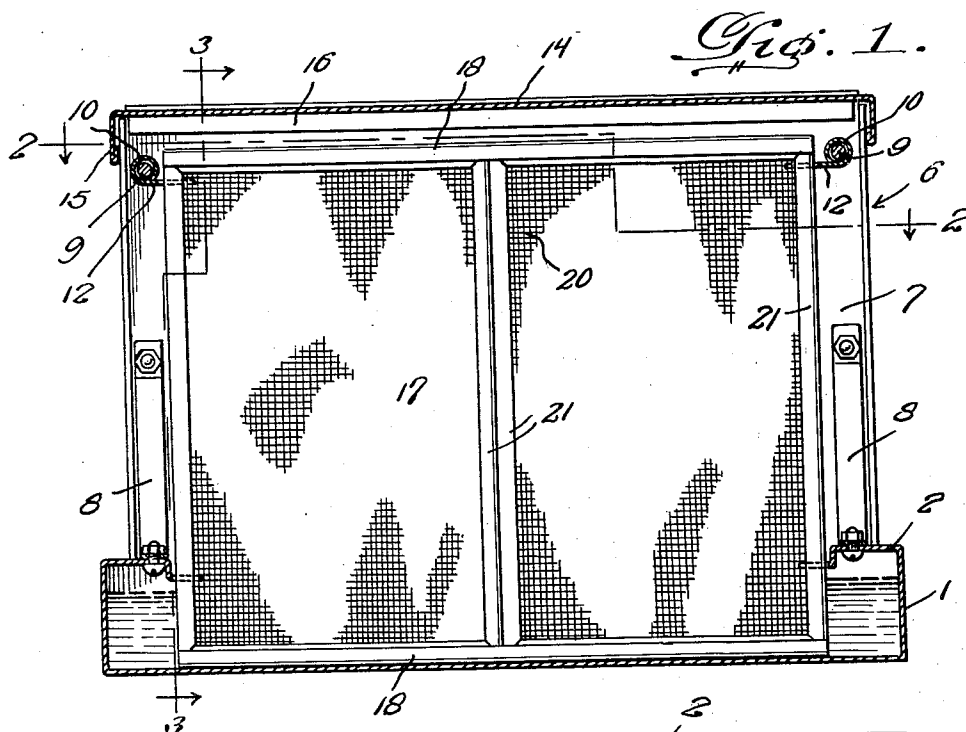
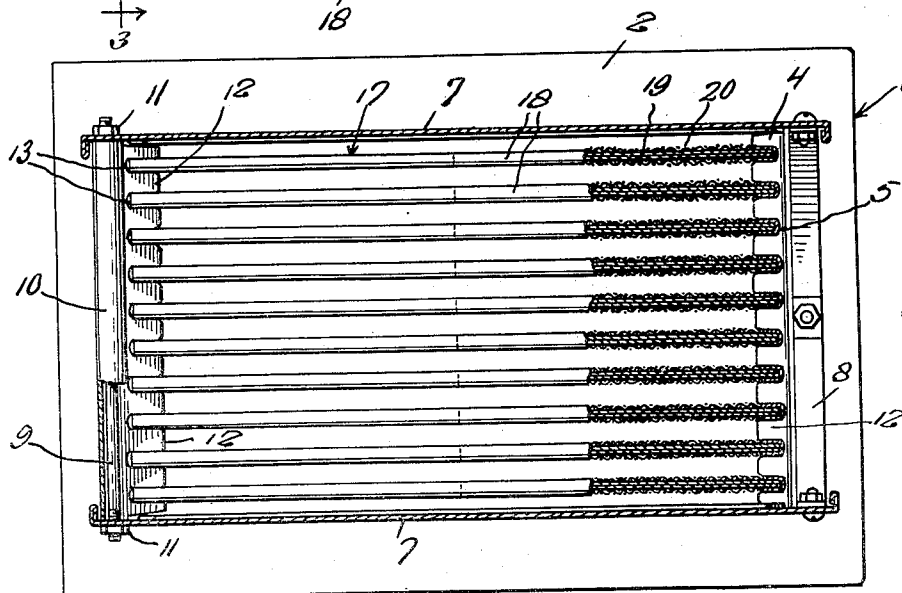
R. D. MATTESON

1,790,993

AIR COOLER AND HUMIDIFIER

Filed Dec. 31, 1929

2 Sheets-Sheet 1



Ralph D. Matteson,
INVENTOR.

Fig. 2.

BY *Stanley Knuch*
ATTORNEY.

Feb. 3, 1931.

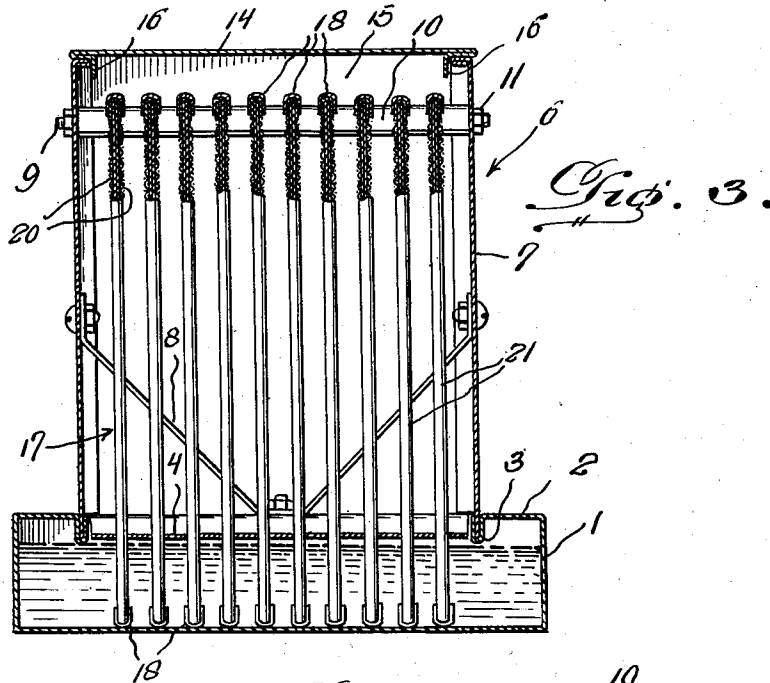
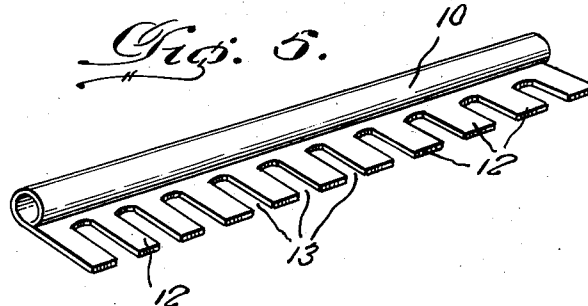
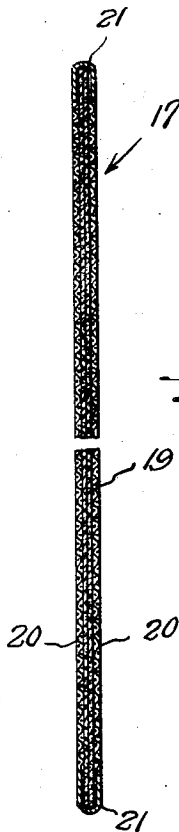
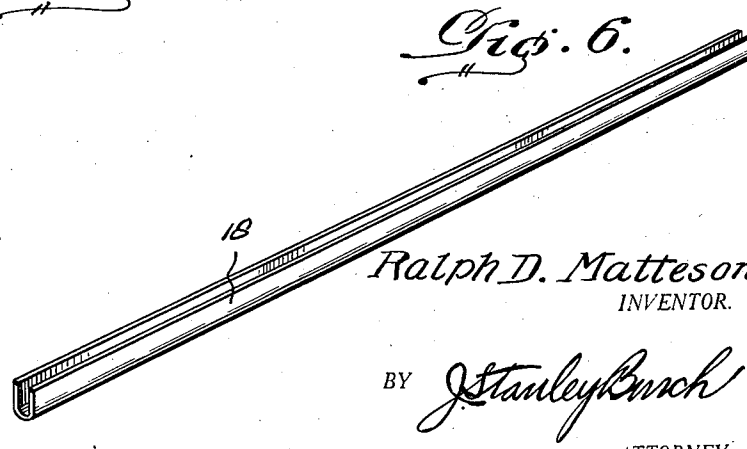
R. D. MATTESON

1,790,993

AIR COOLER AND HUMIDIFIER

Filed Dec. 31, 1929

2 Sheets-Sheet 2



Ralph D. Matteson,
INVENTOR.

BY *Stanley Bruch*
ATTORNEY.

UNITED STATES PATENT OFFICE

RALPH D. MATTESON, OF BOISE, IDAHO, ASSIGNOR TO MATTESON AIR COOLER COMPANY, OF BOISE, IDAHO, A CORPORATION

AIR COOLER AND HUMIDIFIER

Application filed December 31, 1929. Serial No. 417,711.

The present invention relates to improvements in air cooling and humidifying devices and has reference more particularly to certain improvements over the structures shown in my prior U. S. Patents No. 1,727,658 and 1,727,998.

Another important object of the invention is to provide an air cooler and humidifier wherein an improved moisture absorbent unit is employed whereby the rapidity of the capillary attraction is increased thus rendering the device more efficient in contending with extreme heat conditions.

A further and important object is to provide a device of the above-mentioned character wherein the open-ended casing that is mounted on top of the water pan may be readily and easily assembled or disassembled for shipping purposes thus making the device compact.

A further and salient object of the present invention resides in the provision of a pair of sleeves for disposition transversely between the side walls of the open-ended casing at the upper corners thereof, each sleeve being formed with a horizontally disposed inwardly directed strip that is notched to form slots which register with similar slots formed in laterally disposed strips that are associated with the ends of the guard flange on the top of the water pan whereby to maintain the moisture absorbent units in proper vertically spaced relation.

A still further and important object is to provide an air cooler and humidifier of the above-mentioned character which will at all times be positive and efficient in carrying out the purposes for which it is designed, the same being further simple in construction, inexpensive, strong and durable.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a vertical longitudinal sectional view through my improved structure.

Figure 2 is a horizontal sectional view

taken substantially on the line 2—2 of Figure 1 looking downwardly.

Figure 3 is a transverse vertical section taken approximately on the line 3—3 of Figure 1 looking in the direction of the arrows.

Figure 4 is a vertical sectional view through one of the moisture absorbent units.

Figure 5 is a detail perspective view of one of the upper spacing members; and

Figure 6 is a detail perspective view of one of the channeled members for the reception of the pair of pads comprising each absorbent unit.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates a substantially rectangular-shaped water pan having an inturned guard flange 2 at the top which provides an anti-splash guard. Upon referring to Figure 3 of the drawings it will be observed that the inner edges of the longitudinal sides of said inturned guard flange are bent downwardly and thence upwardly to form the troughs 3, the purpose of which will be presently described.

The inner opposed end portions of the guard flange 2 have their free edges directed downwardly and thence laterally and the laterally disposed strips 4 are each formed with the spaced notches 5 forming guide slots for the lower portions of the absorbent units and this particular feature is clearly illustrated in Figure 2 of the drawings.

Forming a salient part of the present invention is the sectional open-ended casing denoted generally by the numeral 6 and this casing is adapted to be mounted on the top of the water pan 1 in such a manner as to permit the casing to be readily and easily removed therefrom and disassembled for shipping purposes. The casing includes the parallel-spaced side walls 7, the lower edges of which are cut away at the corners so that the intermediate portion of the lower edge of each side wall will fit snugly within the respective trough 3 as suggested in Figure 3 of the drawings. Substantially V-shaped braces 8 are secured at their apex portion on the guard flange 2 at the respective ends of

the water pan 1 and the free ends of the arms of these braces are detachably secured to the intermediate portions of the opposed side walls 7 by any appropriate fastening means as also clearly illustrated in Figure 3 of the drawings.

Additional supporting and spacing means for the side walls of the open-ended casing 6 is provided in the form of elongated bolts 9 that extend through the upper corner portions of the side walls and surrounding each bolt is the elongated tubular sleeve 10, the ends of which abut the inner faces of the side walls, it being understood of course that the ends of each bolt are threaded to accommodate the nuts 11 that engage against the outer faces of the side walls. In addition to aiding in spacing the upper portions of the side walls and rendering the casing structure more rigid, said sleeves 10 perform an additional function and in this respect, one edge portion of each sleeve is directed horizontally and tangentially with respect to the sleeve. The horizontally disposed portion 12 is formed with a series of spaced notches 13 as shown in detail in Figure 5 to form guide slots for cooperation with the respective guide slots 5 formed in the laterally disposed strips 4.

Each side wall is formed with the intumed flanges at the upper edges as well as at the ends thereof and removably fitted across the top of the casing is the cover 14. The ends of the cover are directed downwardly as shown at 15 for disposition over the upper corner portions of the side walls 7 while the longitudinal side edge portions of the cover are bent inwardly and thence downwardly as indicated at 16 with reference more particularly to Figure 3 for cooperation with the inwardly disposed flanges formed on the upper edges of the side walls of the casing. This construction provides a means whereby the cover will fit snugly on the top of the casing yet permit the same to be readily and easily removed for gaining access to the moisture absorbent units that are arranged vertically within the casing. The specific construction of these moisture absorbent units which constitute an important feature of the present invention will now be described in detail.

Each absorbent unit comprises a pair of like pads denoted generally by the numeral 17, the same being removably fitted in edge to edge engagement within upper and lower channeled supporting elements shown at 18 in Figure 6. The ends of these channeled elements 18 are opened in order to permit the pads to be readily and easily inserted or removed.

Each pad which is of substantially rectangular shape comprises a plurality of pieces of blotting paper denoted by the numeral 19 and the sheets are arranged in superimposed layers and as many of these sheets of blotting

paper may be employed as is desired depending upon the amount of water to be conveyed. These sheets of absorbent material are confined between fine wire mesh screens 20 which serve as a protection to the blotting paper and which also tend to confine or limit the expansion of the blotting paper.

A metal retaining rim 21 extends around the edges of the layers of blotting paper and the screens to render each pad compact. The width of the pads 17 remains constant for all sizes of air coolers or humidifiers. The vertical dimensions of the pads may vary as the size of the air cooler or humidifier increases, the reason for this being that the expansion of the blotting paper due to the action of the water can be confined in this smaller area and will prevent bulging.

In assembling the device, the cover 14 is removed and the moisture absorbent units are arranged vertically within the casing, said units being disposed within the respective pairs of registering slots or notches 5 and 13 with the lower portions of the units submerged within the water in the pan 1. The notched strips serve to maintain the moisture absorbent units in proper spaced relation and form passages between the units for the passage of air. It is also to be understood that an air circulating fan not shown is disposed adjacent one open end of the casing for producing a rapid circulation of air between the moisture absorbent units in the manner as specifically described in my prior United States patents.

As the pads 17 become thoroughly moistened, the air circulating between the spaced units will become evaporated or absorbed and will be discharged from the discharge end of the casing into the room or place where the air cooler is set up.

By employing an improved pad construction, the rapidity of the capillary attraction will be increased to better handle extreme heat conditions. Furthermore by eliminating the metal center or core from the pad, the weight of the pad will be reduced.

It will be observed from the foregoing description, that I have provided an improved air cooler or humidifier that will at all times be positive and efficient in its operation and due to its construction, the same can be readily and easily assembled or disassembled.

Furthermore the moisture absorbent units can be replaced whenever necessary thus reducing the cost of the operation of the cooler to a minimum.

While I have shown the preferred embodiment of the invention, it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

What I claim as new is:

1. In a cooler and humidifier of the class described, a water pan having inturned top guard flanges, moisture absorbent units arranged vertically and having their lower portions submerged in the pan, means for spacing said units apart to provide air passages therebetween, and an open-ended casing enclosing the moisture absorbent units detachably mounted in the top guard flanges.

2. In a cooler and humidifier of the class described, a water pan, a casing for disposition on top of the pan, said casing including spaced side walls, and a removable top, an inwardly directed guard flange at the top of the pan, the side edge portions of the flange being formed with troughs to receive the lower edges of the respective side walls of the casing, braces secured to the end walls of the guard flange and connected to the side walls of the casing, and a series of moisture absorbent units arranged vertically within the casing, the lower edge portions of said units being submerged in the water pan.

3. In a cooler and humidifier of the class described, a water pan, a casing for disposition on top of the pan, said casing including spaced side walls, and a removable top, an inwardly directed guard flange at the top of the pan, the side edge portions of the flange being formed with troughs to receive the lower edges of the respective side walls of the casing, braces secured to the end walls of the guard flange and connected to the side walls of the casing, and a series of moisture absorbent units arranged vertically within the casing, the lower edge portions of said units being submerged in the water pan, and coacting means within the casing and the pan for maintaining the moisture absorbent units in spaced relation with respect to each other to provide air passages therebetween.

4. In a cooler and humidifier of the class described, a water pan, a casing for disposition on top of the pan, said casing including spaced side walls, and a removable top, an inwardly directed guard flange at the top of the pan, the side edge portions of the flange being formed with troughs to receive the lower edges of the respective side walls of the casing, braces secured to the end walls of the guard flange and connected to the side walls of the casing, and a series of moisture absorbent units arranged vertically within the casing, the lower edge portions of said units being submerged in the water pan, and coacting means within the casing and the pan for maintaining the moisture absorbent units in spaced relation with respect to each other to provide air passages therebetween, said means including transversely disposed notched strips, the side edges of the moisture absorbent units being

seated within the respective pairs of notches.

5. In a cooler and humidifier of the class described, a water pan, an inwardly directed guard flange formed at the top of said pan, the free edges of the end portions of said flange being directed downwardly and thence laterally, said laterally disposed portions being formed with a series of spaced notches, an open-ended casing arranged on the top of the pan, transversely disposed strips mounted between the sides of the open-ended casing at the upper corners thereof and formed with spaced notches that register with the respective notches in the laterally disposed portions, and a series of moisture absorbent units removably arranged in the casing and seated within the registering notches to space the units apart, the lower edge portions of the units being submerged in the water pan.

6. In a moisture absorbent unit for a cooler, a pad comprising sheets of absorbent material arranged in superimposed relation, and wire mesh screens disposed against the outermost sheets of absorbent material, and a retaining rim extending around the marginal edges of the sheets and the screens, and upper and lower channeled members for receiving a plurality of pads, the adjacent edges of the pads being disposed in abutting engagement.

In testimony whereof I affix my signature.
RALPH D. MATTESON.