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PAD FOR EVAPORATIVE COOLERS

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Fig. 1.

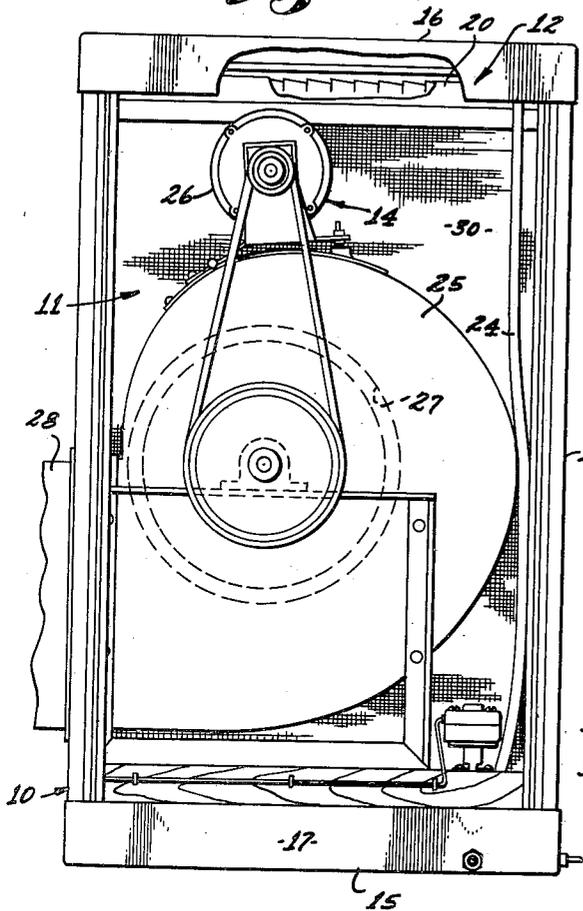


Fig. 2.

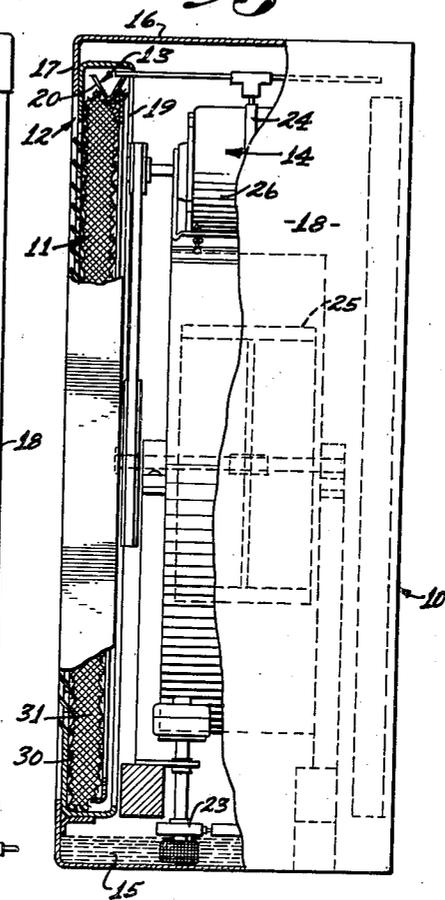


Fig. 3.

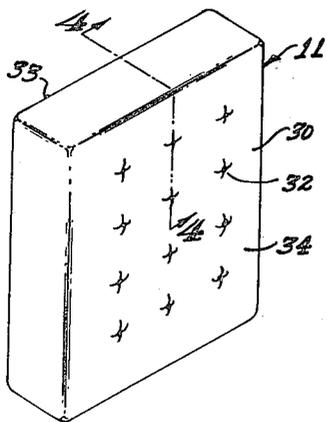
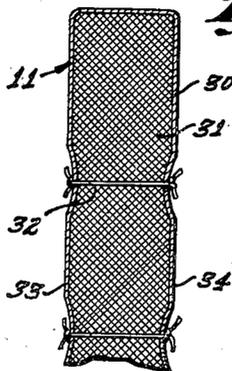


Fig. 4.



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# UNITED STATES PATENT OFFICE

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## PAD FOR EVAPORATIVE COOLERS

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7 Claims. (Cl. 261-97)

This invention has to do with a pad or padding for evaporative coolers, it being a general object of the invention to provide a practical, effective evaporative pad unit or padding which can be operated or used in the ordinary or conventional form of evaporative cooler over a long period of time, for instance for a whole season, without giving off disagreeable odors.

In many localities evaporative coolers are used extensively, the usual form or type being one in which there is a pad of material such as excelsior, or the like, which is wetted with water while air is drawn or circulated through it. In the usual arrangement the pad is maintained in position so that the water can be effectively dripped or sprayed onto it, and so that all of the air handled by the fan or blower is circulated through the pad so that a rapid rate of evaporation occurs at the pad, thus cooling the air that is circulated.

Under most favorable conditions the pad of such an evaporative cooler will last only one season or one year, for after a few months use the accumulation of dust or other foreign matter usually clogs the pad seriously impairing its efficiency. In practice a pad in an evaporative cooler rarely, if ever, lasts even one season, due to the fact that bacteria, rot, or mold, mildew or other fungus sets in and usually develops rapidly, with the result that the pad gives off a very disagreeable odor making it undesirable for use. When ordinary excelsior is used in a pad, that is, excelsior made of the usual white soft woods available for that sort of material, disagreeable growth develops in some cases in a matter of a few days, and frequently in a matter of a week or two. It is impossible to predict how long such a pad will operate before it has to be renewed, as the many varying conditions encountered, such as temperatures and general atmospheric conditions, have a marked influence upon the results obtained.

The aforementioned difficulty experienced with pads for evaporative coolers has led to efforts to correct the situation. However, as far as I am aware all such efforts up to the present time have failed. These efforts have included the use of inorganic materials in pads, such as asbestos wool, metal, fibrous glass, etc., but these materials have proved impractical. Further, woods not subject to disagreeable growths have been used but they characteristically possess natural odors which have proved unpleasant, and they do not have physical characteristics suitable for use in pads.

It is a general object of my present invention to provide a pad for an evaporative cooler of the general character referred to, which pad embodies excelsior formed of wood and having the desirable qualities of wood, without being subject to excessive growth of mildew, mold or other fungus, or bacterial growth, and without giving off any disagreeable odors.

Another object of this invention is to provide an evaporator pad of the general character referred to which is extremely simple and inexpensive of manufacture and which is, at the same time, highly efficient in action and also such as to remain desirable for use until clogged or otherwise impaired by use.

Another object of this invention is to provide a material for a pad of the character described which is composed of wood excelsior made of a mixture of woods including a strong curly wood that effectively supports woods that tend to be brittle and straight.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of the invention, throughout which description reference is made to the accompanying drawing, in which:

Fig. 1 is a view illustrating a typical evaporative cooler in which a pad of the present invention can be employed, parts of the structure being removed to facilitate illustration. Fig. 2 is another view of the cooler with parts broken away and showing the general arrangement and relationship of the essential parts. Fig. 3 is a reduced perspective view of the pad provided by my invention shown separate from the other parts of the cooler and Fig. 4 is an enlarged detailed sectional view taken as indicated by line 4-4 on Fig. 3.

The pad or structure provided by my invention is useful, generally, in evaporative coolers and is in no way limited to use in a cooler of any particular design or construction. In the drawing I have shown the pad as applied to an evaporative cooler wherein water is supplied to the pad from a trough arranged above the pad and air is circulated through the pad by a blower. It is to be understood, however, that the pad of the present invention can be used equally well in coolers where the water is sprayed onto the pad or in devices wherein the air is circulated by means other than a blower, as for instance by a fan, or the like. Further, in the particular cooler illustrated the construction employs two pads either one or both of which may embody the present invention.

The cooler shown in the drawing involves, generally, a box-like body 10, pads 11 supported at the front and rear of the body in carriers 12, means 13 for wetting the pad and means 14 for circulating air through the pad.

The body 10, as shown in the drawing involves, generally, a base 15 which serves as a container for a supply of water, a top 15, front and rear faces 17, and ends 18.

The pad carrier shown in the drawing is detachable from the body and involves, generally, a frame 19 and a retainer 21 for holding the pad in the frame.

The means 13 provided for wetting the pad involves a distributing trough 20 in the top of the carrier 12, a pump 23 and a water supply pipe 24 conducting water from the pump to the trough. The pump receives its supply of water from the base 15 of the body.

The means 14 provided for circulating air through the pads which are arranged at the front and rear of the body involves, generally, a blower 25 driven by a motor 26. The blower receives air through the intake openings 27 at its ends and circulates it out through a discharge duct 28.

The pad provided by my invention involves, generally, an envelope 30 of fabric, or the like, which receives and holds a body of the filling material or excelsior 31 that I have provided by my invention. The envelope is preferably formed of a loose woven fabric such as loose or coarse burlap, or the like, and it is shaped and proportioned to properly fit the particular collar in which it is to be used. In the particular case illustrated the envelope is of uniform thickness or depth and is generally rectangular in plan configuration. I prefer, in practice, to fill the envelope with excelsior 31 so that the envelope when placed in the cooler is sufficiently packed to maintain its shape. To assure continued maintenance of the proper shape I preferably provide ties 32 through the envelope at suitable points joining the front and rear sides 33 and 34 of the envelope so that they do not separate and so that the excelsior is effectively held against sagging.

In accordance with my invention I fill the envelope mainly, if not wholly, with wood excelsior since such material has proved to be most practical and efficient in evaporative coolers. In accordance with my invention I pack the envelope 30 with excelsior which is a mixture of what I will term white and red woods. The mixture of woods that I have provided is such as to provide a pad or padding which will hold its shape and will not develop mold, mildew or other fungus, or bacterial growths under ordinary conditions and which does not, in and of itself, possess or give off a disagreeable odor.

When I refer to white wood I refer to a wood which is suitable for excelsior but which is for all practical purposes odorless and which has little or no natural resistance to mold, mildew or other fungus, etc. In practice I prefer to use aspen (asp) or cottonwood, which are of the genus *Populus*. Experience has indicated that aspen is most desirable for general use as it forms an excelsior having advantageous characteristics. The excelsior formed from it is strong and curly so that a mass of it will hold its shape and will not crumble or sag appreciably. Such excelsior is buoyant. However, used alone in a pad for an evaporative cooler excelsior made of aspen or the woods that I refer to as white woods are not desirable as they will under many

conditions develop mold, mildew, etc., rapidly and with use give off a disagreeable odor.

When I refer to red wood I have reference to a wood or woods which, when wetted, give off a liquor that exterminates or materially retards growth of mildew, mold, etc. In practice I have found it practical to employ California redwood (*Sequoia sempervirens*), cypress or cedar. In general it may be said that I employ as the redwood a conifer of the family Taxodiaceae or Cupressaceae. In the family Taxodiaceae there is the California sequoia and the bald cypress. In the family Cupressaceae there is cypress, juniper, arbor vitae and North American cedar. As a general rule the redwoods most suitable for giving off a desired liquor tend to be brittle when made into excelsior and they do not have a natural tendency to curl or be springy. Such excelsior tends to be dead and is not buoyant.

It is to be understood that my invention is not limited to a wood or woods in any particular botanical class but rather that it is concerned with woods having the general characteristics that I have pointed out, and it is for this reason that I have chosen to employ the terms white woods and red woods.

In carrying out the invention I may combine white woods and red woods or excelsiors formed therefrom in various proportions and in any particular instance the particular proportioning most advantageous will naturally depend somewhat upon the particular white wood or the particular red wood being used. When employing white woods and red woods commonly available I find that I can use anywhere from 30 percent to 70 percent of red wood in the mix, the balance being white wood.

In practice I may commingle the excelsiors formed from the two woods so that they are intimately mixed one with or throughout the other, or I may superimpose the two excelsiors, that is, the white wood excelsiors or the red wood excelsiors, in layers through the pad. Excelsior is of such character that when layers are employed the mass becomes, in effect, intimately mixed, and for all intents and purposes is practically a uniform mix. By mixing or combing the excelsiors made from red and white woods the red woods that would otherwise crumble and sag are supported or held by the more live and curly white wood or woods.

In operation or when in use the wetted red wood bleeds or gives off a liquor possessing characteristics which stop or effectively retard the growth of mildew, mold, etc., and this liquor percolates through the white wood or white excelsior present in the pad and any excess finds its way into the water supply in the base 15 of the body and is recirculated by the means 13. The absorption of the liquor given off by the red wood into the white wood in effect treats the white wood so that mildew, mold, etc., do not grow and there is what appears to be an absorption of the odors that ordinarily attend wet red wood, or at least a partial absorption of such odors sufficient so that any odor from the pad is not disagreeable.

In referring to the material in the envelope as being excelsior I do not mean to limit the invention to the material being necessarily specifically excelsior but mean to have this term include chips, strips, or small pieces or bodies of wood in any form or made by any method that will form a mass having the general characteristics of excelsior. As an example, I may, in

practice use a substantial part of true excelsior and include in it chips or small pieces of wood not specifically in the form of excelsior. For example, I might use white wood excelsior and incorporate in it chips or small pieces of red-wood.

The pad which I have provided is practically free of or immune to growths such as mold, mildew, etc., and it is practically odorless, or at least it gives off such a faint odor that it is not at all objectionable. The pad of the present invention can, under normal circumstances or under normal conditions be used in an evaporative cooler without disagreeable odors until the pad is clogged with dust or is otherwise worn out and ready to be replaced.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior in the envelope including red wood having the property of retarding bacterial growth and white wood having a springy nature.
2. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior

in the envelope including red wood having the property of retarding bacterial growth and white wood having a springy nature, there being substantially 30 per cent or more of each of said woods.

3. A filler for an evaporative cooler pad including a body of wood excelsior including red wood having the property of retarding bacterial growth and white wood, the white wood being aspen.

4. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior in the envelope including red wood, and white wood having a springy nature, the red wood being cedar.

5. A pad filler for an evaporative cooler pad including, a body of wood excelsior including red wood, and white wood having a springy nature, the red wood being sequoia.

6. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior in the envelope including red wood, and white wood having a springy nature, the red wood being sequoia.

7. A pad for an evaporative cooler including, a porous envelope, and a body of wood excelsior in the envelope including red wood and white wood, the white wood being aspen and the red wood being sequoia, there being substantially 30 per cent or more of each of said woods.

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