

Sept. 22, 1964

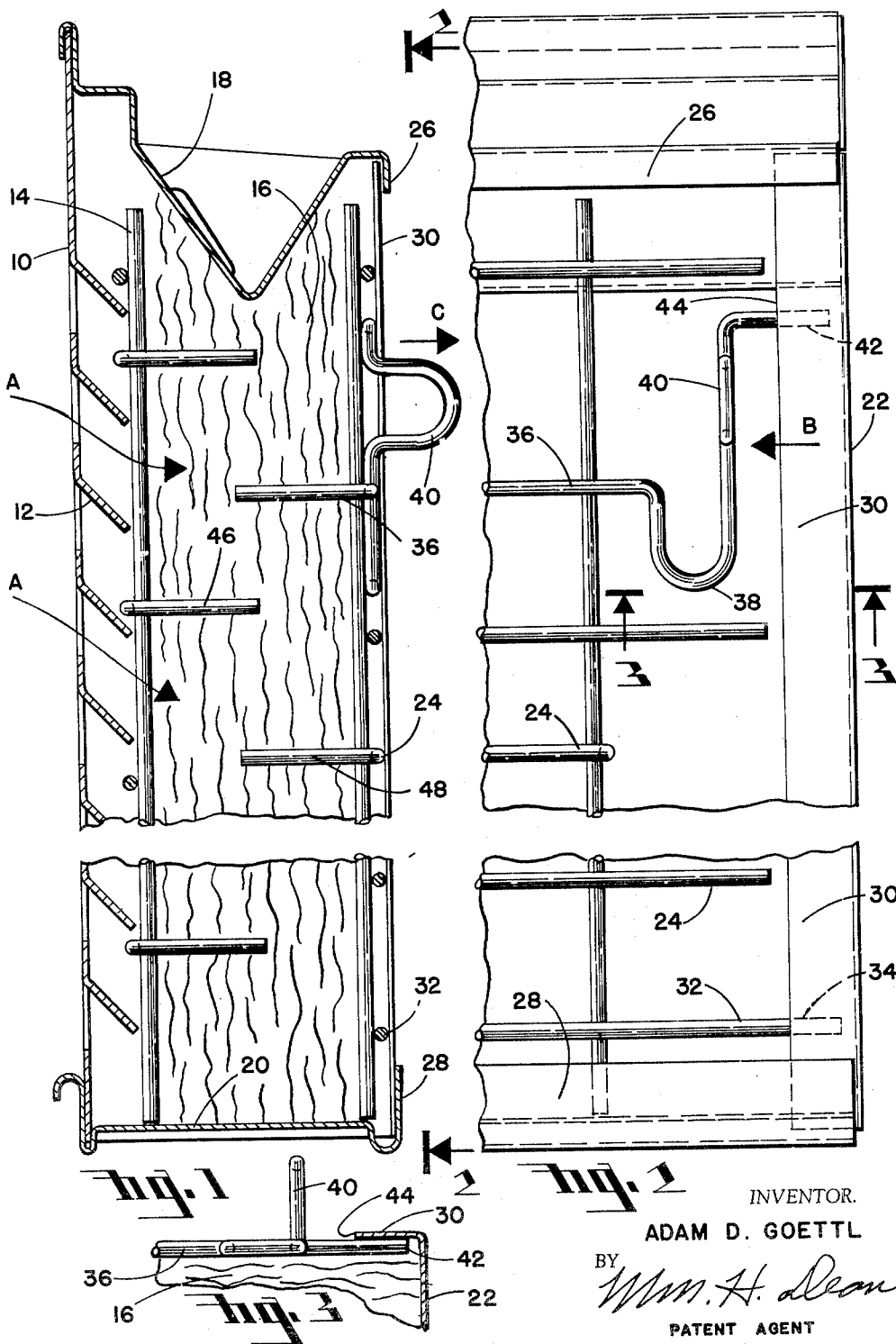
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PAD FRAME AND RACK CONSTRUCTION

Filed Jan. 7, 1960

2 Sheets-Sheet 1



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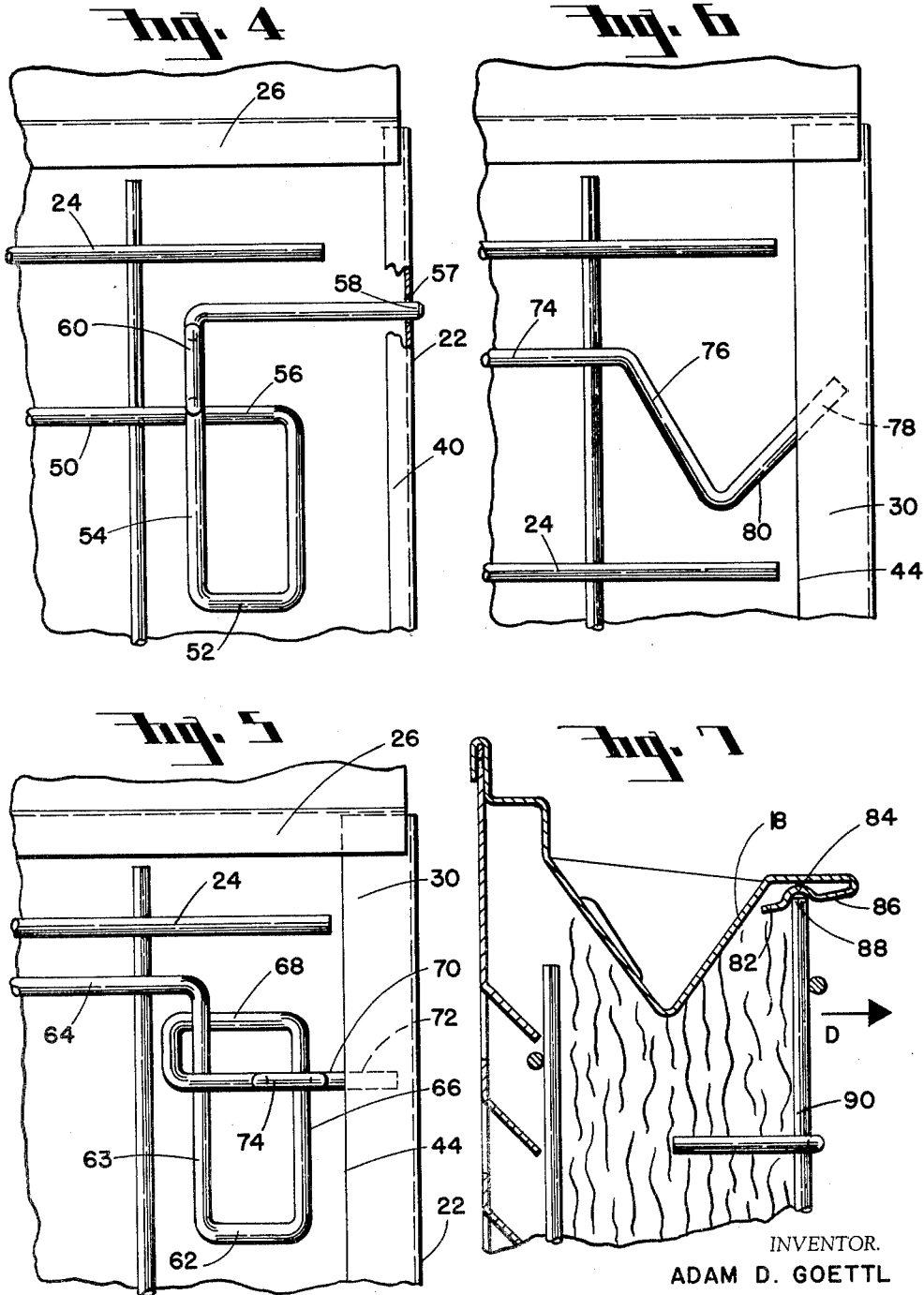
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2 Sheets-Sheet 2



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PAD FRAME AND RACK CONSTRUCTION

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This invention relates to a pad frame and rack construction for evaporative coolers and more particularly to a pad frame and rack construction for evaporative coolers which facilitates the removal and replacement of the rack relative to the pad frame when removing and replacing evaporative cooler pads.

Evaporative cooler pads in evaporative coolers are usually replaced each season. Evaporative coolers which have been operated throughout one summer ordinarily require new pads before the next season starts. These pads collect minerals from water which courses there-through during normal operation and generally deteriorate so that it is desirable to replace them once a year.

Evaporative cooler pad frames which retain evaporative pads must have one side open to provide access to the pads for removal and replacement thereof. Also, said one side of the frame must be enclosed by a foraminous structure which will properly support the pad and retain it in the frame.

Heretofore, such foraminous sides known as pad racks, have been secured to the pad frame in various ways and by various devices some of which are complicated to operate and some of which are structurally undesirable.

Accordingly it is an object of the invention to provide a pad frame and rack construction wherein the rack is supported in the frame by novel resilient latch portions of the pad rack.

Another object of the invention is to provide a pad frame and rack construction wherein an evaporative cooler pad frame is engaged by resilient portions of a wire mesh rack and whereby the resilient portions may be deflected out of engagement with the pad frame to permit removal of the rack from the frame and to permit removal and or replacement of an evaporative cooler pad relative to the frame.

Another object of the invention is to provide a pad frame and rack construction wherein a deflecting portion of a resilient wire mesh pad rack may be resiliently deflected out of engagement with a flange of the pad frame thereby permitting the rack to be disengaged from the frame and readily removed therefrom.

Another object of the invention is to provide a pad frame and rack construction wherein a mesh wire rack may be readily and easily removed from an evaporative cooler pad frame by a manual operation which does not require any tools.

Further objects and advantages of the invention may be apparent from the following specification, appended claims and accompanying drawings in which:

FIG. 1 is a vertical sectional view of an evaporative cooler pad frame and rack construction.

FIG. 2 is a fragmentary elevational view taken from the line 2-2 of FIG. 1.

FIG. 3 is a fragmentary sectional view taken from the line 3-3 of FIG. 2.

FIG. 4 is a view similar to FIG. 2 but showing a modified form of the deflecting latch portion of the pad rack.

FIG. 5 is another view similar to FIG. 2 but showing a further modified form of the deflecting latch portion of the pad rack.

FIG. 6 is still another view similar to FIG. 2 showing a still further modified form of the deflecting latch structure of the pad rack; and

FIG. 7 is a vertical sectional view of a pad frame and

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rack construction showing an additional modification of the present invention.

As shown in FIG. 1 of the drawings, the pad frame and rack construction of the present invention comprises a conventional louver plate 10 having air inlet louvers 12 disposed to permit the flow of air therethrough as shown by arrows A. Rearwardly of this louver plate and inwardly of the pad frame is a foraminous rack 14 disposed to support one side of an evaporative cooler pad 16 which may be made of conventional materials such as wood shavings and or glass fibers.

Secured to the louver plate 10 is a box shaped structure comprising a trough 18 at the upper portion thereof and a bottom plate 20. The trough 18 and bottom plate 20 are interconnected by vertical sides 22 which complete the box shaped pad frame structure rearwardly of the louver plate 10. This box shaped structure retains the evaporative cooler pad 16 and a removable pad rack 24 is located in spaced relation to the pad rack 14 and at the rear side of the pad frame.

The trough portion 18 is provided with a downwardly extending vertical flange 26 and the bottom 20 is provided with an upwardly extending vertical flange 28. The sides 22 are provided with inwardly extending flanges 30 whereby the box shaped structure of the pad frame is provided with a surrounding inwardly extending flange structure which retains the pad rack 24 as will be hereinafter described.

The pad rack 24 is an open mesh structure formed of wire and preferably spot welded together at the intersections of the wires which are disposed in spaced relation to each other and in crossed relation as shown best in FIG. 2 of the drawings.

The pad rack 24 is provided with a horizontal wire 32 near its lowermost portion and this wire 32 is provided with oppositely disposed projecting ends 34 which engage the inner sides of the inwardly extending flanges 30 integral with the sides 22 of the pad frame structure 18. These ends 34 are placed in position behind the flanges 30 by first disposing the wire 32 at an angle to the flanges 30 so that one end 34 may be placed behind the one flange whereupon the opposite end 34 may subsequently be pivoted into position behind the opposite flange 30. The pad rack 24 may then be pivoted about the axis of the wire 32 upwardly into substantially the position shown in FIG. 1 of the drawings while the deflecting latch portions are held in deflated position as will be hereinafter described.

The rack 24 near its uppermost portion is provided with horizontal bars 36 near opposite frame flanges 30. These bars 36 are provided with deflecting portions 38 which are elongated loop structures designed to provide sufficient length of wire so that deflection thereof does not create a permanent set therein. Integral with these deflecting portions are finger engaging loops 40 which extend outwardly at the rear of the pad rack 24 so that they may be engaged by the fingers of the person for deflecting loop shaped portions 38 to thereby retract latch end portions 42, integral with the loop portions 40, into a position which is out of interference with the flanges 30.

It will be noted that the ends 42 are arranged to be disposed behind the flanges 30 so that the pad rack 24 will hold the evaporative cooler pad 16 in position within the pad shaped structure of the pad frame.

When force is applied to the loops 40 in an inward direction as indicated by the arrow B in FIG. 2 of the drawings, the ends 42 of the deflecting latch portions 38 clear the inner edges 44 of the flanges 30 thereby permitting the pad rack 24 to be moved outwardly and backwardly in a direction of the arrow C in FIG. 1 of the drawings. Thus, the rack when removed is pivoted outwardly in

the direction of the arrow C in a rearwardly direction around the axis of the wire 32 whereupon the rack may subsequently be pivoted angularly with respect to the flanges 30 so that the ends 34 of the wire 32 may readily and progressively be removed from their positions behind or inwardly of the flanges 30.

It will be noted that the racks 14 and 24 are provided with horizontally and inwardly extending bars 46 and 48, respectively, which extend into the foraminous structure of the evaporative cooler pad to support the pad in vertical position and prevent sagging thereof between the pad racks 14 and 24.

In the modification of the invention as shown in FIG. 4 of the drawings, the pad rack 24 is provided with a horizontal wire 50 similar to the wire 36 hereinbefore described. This wire 50 is provided with a deflecting portion 52 which is disposed in a rectangular shape and has one leg 54 which crosses a horizontal portion 56 of the loop to lend support to the portion 54 in a direction of the arrow C shown in FIG. 1 of the drawings. Thus, any pressure imposed by compression of the evaporative cooler pad 16 is borne against the vertical portion 54 by the horizontal wire 56 while an integral latch end portion 58 bears on the rear or inner side of the flange 30. A finger engaging loop 60 is integral with the vertical portion 54 of the deflecting loop portion 52 and this U shaped loop 60 extends outwardly in substantially the same manner as the loop 40 shown in FIG. 1 of the drawings for manual operation of the deflecting latch portion. The loop 60 may be engaged manually to retract the end 58 from a position behind the rear of the flange 30 to a position which clears the edge 44 thereof so that the rack may be removed from the frame.

In the modification of the invention as shown in FIG. 5 of the drawings, a deflecting latch portion 62 is provided with a rectangular loop comprising a vertical portion which extends directly downwardly from a horizontal wire 64.

Integral with this downwardly extending wire 63 is an upwardly extending wire 66 having a loop 68 which surround the vertically extending wire 63 and is provided with a horizontally extending portion 70 which has a latch end 72 disposed inwardly and behind the flange 30 to retain the rack 24 in position as hereinbefore described. The loop 68 which surrounds the vertical wire 63 lends lateral support to the deflecting loop portion in order to resist any lateral load imposed by the pads 16 relative thereto.

A manual engaging loop 74 is integral with the horizontal wire portion 70 and this loop 74 is disposed substantially at right angles relative to the loop 40 shown in FIG. 1 but is otherwise structurally similar.

In operation, the loop 74 is manually engaged to deflect the vertical wire portion 66 toward the vertical wire portion 63 whereby the loop 68 slides over the vertical wire 63 and permits retraction of the end 72 of the wire beyond the inner edge 44 of the flange 30. Thus, the pad rack 24 may then be freely moved outwardly in the direction of the arrow C in FIG. 1 of the drawings.

In the modification of the invention as shown in FIG. 6 of the drawings, the pad rack 24 is provided with a horizontal wire 74 having an integral V-shaped deflecting loop 76 provided with an extending end 78 which is engaged behind the flange 30 inwardly of the inner edge 44 thereof. This V-shaped deflecting latch portion 76 is engaged at 80 by a person's finger and is deflected inwardly so that the end 78 may clear the inner edge 44 of the flange 30 and permit removal of the rack as hereinbefore described.

In the modification as shown in FIG. 7 of the drawings, the trough portion 18 of the pad frame is provided with a rearwardly extending portion terminating in a forwardly and downwardly directed angular flange 82 having a detent recess 84 therein. Adjacent the detent recess 84, this flange 82 is provided with a downwardly and inward-

ly inclined ramp 86 disposed to receive upper end portions 88 of vertical wires of a pad rack 90 which is similar in construction to the pad rack 24.

It will be noted that the flange 82 is a resilient sheet metal flange which may be deflected upwardly and when the upper ends of the wires 88 are forced inwardly on the incline 86 that the flange 82 deflects upwardly until the ends 88 are disposed in the recesses 84 whereupon the upper end of the pad rack is latched in place.

The lower end of the pad rack 90 may be supported by horizontally extending wire structure similar to the wire 32 hereinbefore described in connection with the structure disclosed in FIGS. 1 and 2 of the drawings.

In operation of the structure shown in FIG. 7 of the drawings, the pad rack 90 may be removed by manually deflecting the ramp portion 86 upwardly with the fingers whereupon one of the horizontal wires of the rack 90 may be engaged to pull the ends 88 of the vertical wires outwardly of the detents 84 and move the pad rack 90 in the direction of the arrow D which corresponds with that of the arrow C in FIG. 1 of the drawings.

It will be obvious to those skilled in the art that various modifications of the present invention may be resorted to in a manner limited only by a just interpretation of the following claims.

I claim:

1. In a pad frame and rack construction for evaporative coolers the combination of: a box shaped pad frame having a louver plate at the normally outer side thereof and having inwardly extending flanges disposed substantially parallel to said louver plate at the normally inner open portion thereof; an evaporative cooler pad in said frame and disposed inwardly of said louver plate; and a foraminous wire mesh pad rack contiguous with said pad and having resilient deflecting latch portions engaged with the inner sides of said inwardly extending flanges of said pad frame and disposed to support said evaporative cooler pad in said frame, said deflecting latch portions having outwardly extending manually engageable loop portions adapted to be engaged by a person's fingers for the deflection of said latch portions out of position behind said flanges to permit removal of said rack from said frame and provide access to an evaporative cooler pad in said box shaped frame, said deflecting latch portions being loop shaped to provide sufficient length of the deflecting portions thereof to prevent a permanent set from occurring therein when deflected out of engagement with the flange portions of said pad frame, said deflecting portion having a rectangular configuration wherein a portion of the wire loop crosses itself outwardly of the plane of the pad rack to lend support thereto at the deflecting portion.

2. In a pad frame and rack construction for evaporative coolers the combination of: a box shaped pad frame having a louver plate at the normally outer side thereof and having inwardly extending flanges disposed substantially parallel to said louver plate at the normally inner open portion thereof; an evaporative cooler pad in said frame and disposed inwardly of said louver plate; and a foraminous wire mesh pad rack contiguous with said pad and having resilient deflecting latch portions engaged with the inner sides of said inwardly extending flanges of said pad frame and disposed to support said evaporative cooler pad in said frame, said deflecting latch portions having outwardly extending manually engageable loop portions adapted to be engaged by a person's fingers for the deflection of said latch portions out of position behind said flanges to permit removal of said rack from said frame and provide access to an evaporative cooler pad in said box shaped frame, said deflecting latch portions being loop shaped to provide sufficient length of the deflecting portions thereof to prevent a permanent set from occurring therein when deflected out of engagement with the flange portions of said pad frame, said deflecting portions having a rectangular configuration wherein a portion of the wire loop crosses itself outwardly of the plane of the

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pad rack to lend support thereto at the deflecting portions, said rectangularly formed portion at its cross portion having a loop shaped portion surrounding itself to lend support to the wire structure in both lateral directions inwardly and outwardly of the pad frame.

3. In a pad frame and rack construction for evaporative coolers the combination of: an evaporative cooler pad frame having a louver plate in the normally outer side thereof and having a box shaped structure extending inwardly therefrom, an evaporative cooler pad in said frame, said box shaped structure having inwardly directed flange portions; one of said flange portions being inclined inwardly on an angle and having a detent recess therein; and a pad rack engaging said evaporative cooler pad and disposed in the rear portion of said box shaped structure and having portions engaged in said detent portions for retaining said rack in position at a rearward portion of the box shaped structure of said frame.

4. In a pad frame and rack construction for evaporative coolers the combination of: an evaporative cooler pad frame having a louver plate in the normally outer side thereof and having a box shaped structure extending inwardly therefrom, an evaporative cooler pad in said frame, said box shaped structure having inwardly directed flange portions; one of said flange portions being inclined inwardly on an angle and having a detent recess therein; and a pad rack engaging said evaporative cooler pad and disposed in the rear portion of said box shaped structure and having portions engaged in said detent portions for retaining said rack in position at a rearward portion of the box shaped structure of said frame, said inwardly and angularly extending flange portion resiliently deflectable

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to permit said detent portion to be disengaged from portions of said pad rack.

5. In a pad frame and rack construction for evaporative coolers the combination of: an evaporative cooler pad frame having a louver plate in the normally outer side thereof and having a box shaped structure extending inwardly therefrom, an evaporative cooler pad in said frame, said box shaped structure having inwardly directed flange portions; one of said flange portions being inclined inwardly on an angle and having a detent recess therein; and a pad rack engaging said evaporative cooler pad and disposed in the rear portion of said box shaped structure and having portions engaged in said detent portions for retaining said rack in position at a rearward portion of the box shaped structure of said frame, said inwardly and angularly extending flange portion resiliently deflectable to permit said detent portion to be disengaged from portions of said pad rack, said pad rack being formed of wire mesh and having wire ends engageable with said detent portions.

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