United States Patent [19]

Radke

[11] **3,736,022**

[45] **May 29, 1973**

[54] **MOLDED SEAT CUSHION WITH CAST SKIN AND INSERT RECEIVING RECESS**

[75] Inventor: **Arthur O. Radke,** Milwaukee, Wis.

[73] Assignee: **Oil Products Company,** Des Plaines, Ill.

[22] Filed: **July 26, 1971**

[21] Appl. No.: **166,182**

[52] **U.S. Cl.**.....**297/453,** 5/347, 297/DIG. 1, 297/DIG. 3, 297/458

[51] **Int. Cl.**.....**A47c 27/08,** A47c 7/02

[58] **Field of Search**.....297/219, 452, 453, 297/458–460, DIG. 3; 5/347, 345 R

[56] **References Cited**

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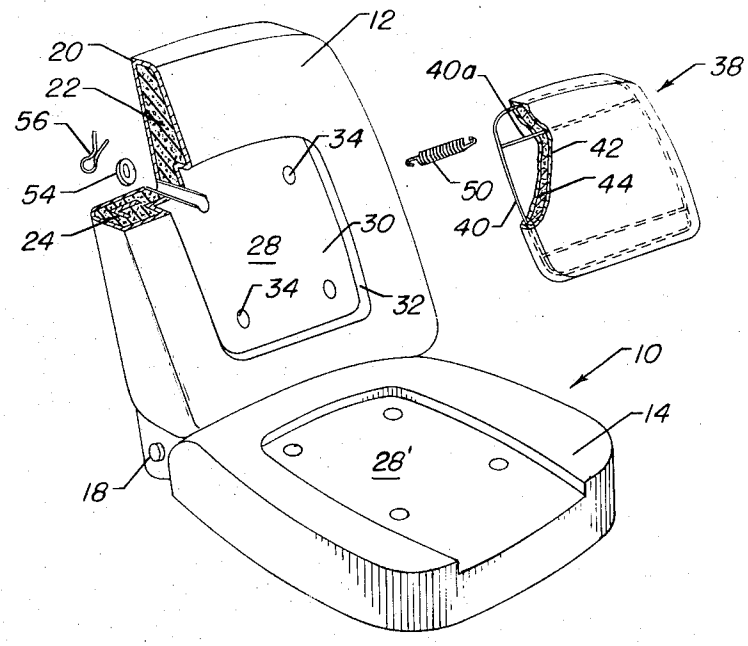
Primary Examiner—Casmir A. Nunberg
Attorney—James R. Hoatson, Jr. and Barry L. Clark

[57] **ABSTRACT**

In order to overcome the non-breathing properties of a molded seat cushion having a cast skin and to permit a single molded seat cushion member to be capable of taking on various aesthetic appearances as well as to provide functions such as ventilation, heating, cooling and manufacturer or owner identification, the seating area of the cushion is provided with large recessed areas which are adapted to receive insert members. The insert members, which may be formed of porous materials, are fastened to the seat parts in a manner such that they appear to be permanently attached to the seat parts but can be readily replaced when desired.

15 Claims, 9 Drawing Figures



Patented May 29, 1973 3,736,022

Figure 1

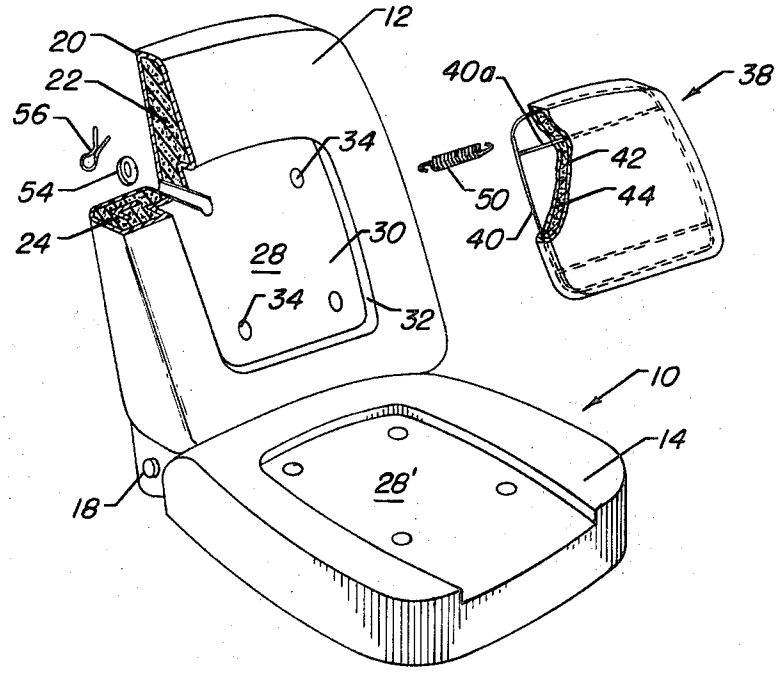


Figure 2

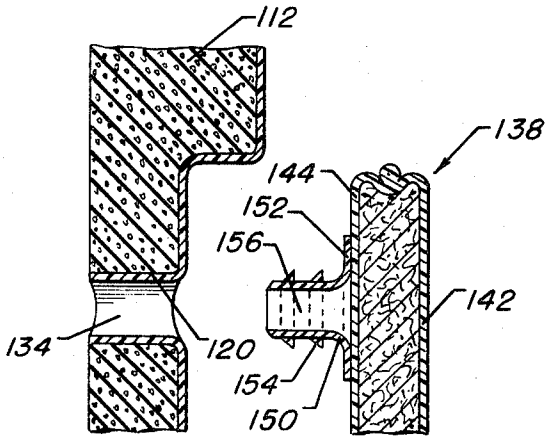
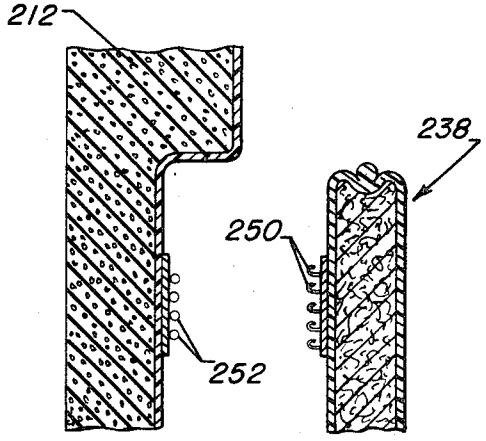


Figure 3



INVENTOR:
Arthur O. Radke
BY: James P. Hoatson, Jr.
Barry L. Clark
ATTORNEYS

Figure 4

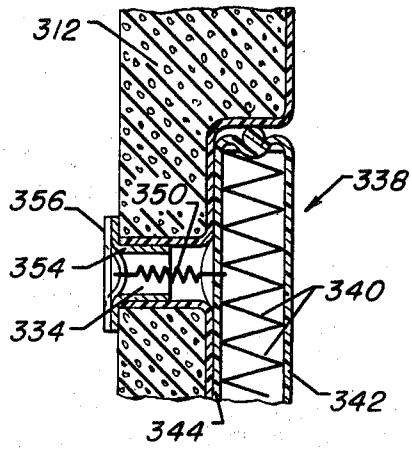


Figure 7

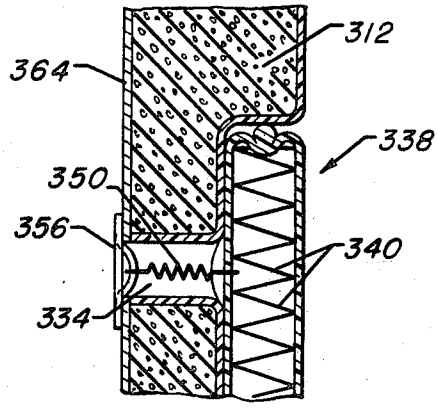


Figure 5

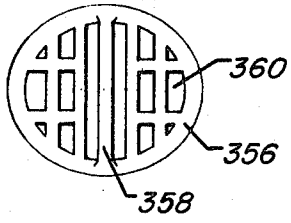


Figure 6

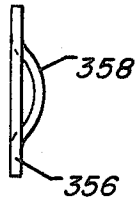


Figure 9

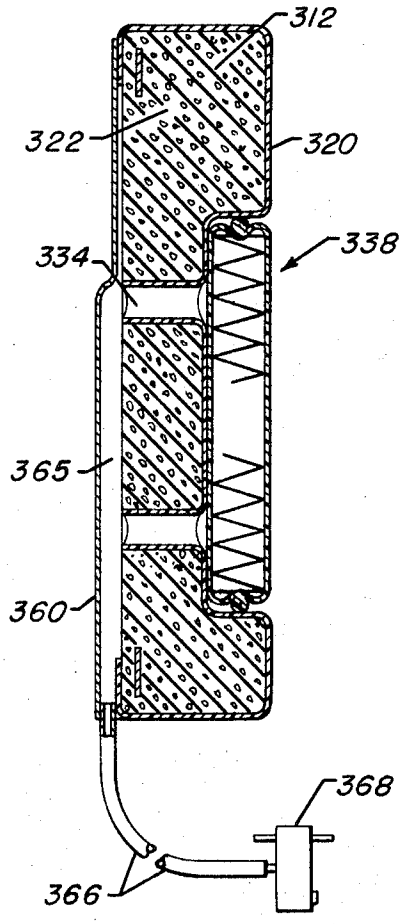
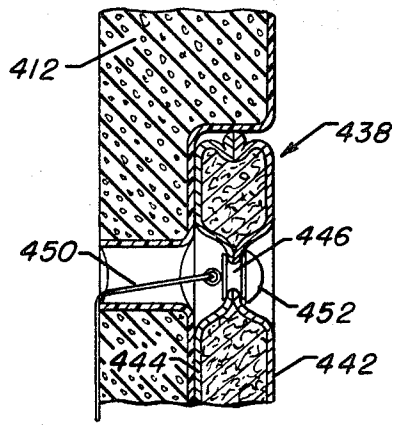


Figure 8



INVENTOR:
Arthur O. Radke

BY: James P. Hoatson, Jr.
Barry L. Clark
ATTORNEYS

MOLDED SEAT CUSHION WITH CAST SKIN AND INSERT RECEIVING RECESS

BACKGROUND OF THE INVENTION

For many years, vehicle seats, and particularly individual vehicle seats for trucks and off-the-road vehicles have been made by placing foam or other filler material on a support frame and attaching a cover which has been cut, sewn, and fitted—usually by hand. With the advent of techniques for the casting of textured and colored self-skinned cushions and seats it has been possible to reduce the amount of hand labor and material required to make a seat while providing a more rugged product without the inherent weaknesses which seams provide. Even though seats having cast coverings have certain advantages, as noted above, one disadvantage remains, namely, the cost of molds. The mold expense is greatly multiplied when it is necessary to provide a plurality of sets of molds to obtain the large number of shapes and textures desired by different users. The reason for a great variety of designs being required is that a particular vehicle manufacturer would not want the seats in one of his models looking like those in another or like those sold by a competitor. When seats are covered with cut and sewn covers, a large variety of fabrics and sewing patterns can be used to lend distinctiveness to a seat without substantially increasing the unit cost. This variety is neither practical or economically feasible with molded cushions since it is expensive just to change a color.

Another problem of molded seats with cast covers is that the covers, being made of plastic, do not breathe and thus the seat is not usually as comfortable as a seat with a porous cover. Although the cast covers are very resistant to weather, are quite durable, and are easily cleaned, their lack of breathability is, to many, a large drawback. One type of construction which provides good ventilation is shown in U.S. Pat. No. 3,331,089. However, the particular type of construction shown in the patent would be quite expensive since the plastic cover is cut and sewn and the porous cloth portion is also either sewn or bonded to the plastic. U.S. Pat. Nos. 3,220,767 and 3,278,226 illustrate the use of auxiliary cushions which strap onto a seat. However, in neither of these latter patents does a breathable covering cooperate with a self-skinned cushion to provide ventilation. Furthermore, auxiliary cushions do not give the appearance of being an integral part of an upholstered seat and are thus, to many, not as aesthetically pleasing as a cushion that appears to be an integral unit.

SUMMARY

It is an object of this invention to provide a seat cushion which has a cast skin filled with foam but wherein the appearance of the cushion may be changed quite easily and economically.

It is another object of this invention to provide a seat cushion which has a cast non-porous skin but which is capable of receiving inserts which may be formed of porous material.

These objects are obtained by the present invention wherein a seat cushion having a cast skin is formed so that a large recess is incorporated into the seating surface. The recess is preferably shallow and has side walls which are generally perpendicular to the surface of the cushion so as to form a nest for snugly capturing an insert member placed therein. The insert member may be formed of the same material as the cast skin but in a different color so as to provide contrast, or it may be formed of a porous material which provides a degree of ventilation. The inserts are preferably attached to the cushions by fasteners which are not visible but which may be readily fastened or unfastened. In an embodiment wherein the cushions are molded to include ventilating tubes between the recess area and the rear of the cushion, the fasteners may conveniently pass through said tubes and be anchored behind the cushion.

The foregoing and other objects, features and advantages will be apparent from the following more particular description of a preferred embodiment thereof, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a partially cut away and partially exploded perspective view showing a pair of seat cushions of the present invention and one type of insert member and fastening therefor:

FIG. **2** is a partial side sectional view of the seat back cushion of FIG. **1** in association with a modified form of insert and attachment means with the various parts shown in the positions they assume just prior to the assembly of the insert to the seat;

FIG. **3** is similar to FIG. **2** but shows modified forms of the insert member, fastening means and seat cushion of FIG. **2**;

FIG. **4** is similar to FIG. **2** but shows an additional modification;

FIGS. **5** and **6** are front and side views respectively of the ventilated fastener retainer plate used in the modification shown in FIG. **4**.

FIG. **7** shows a slight modification of the FIG. **4** arrangement;

FIG. **8** is a view similar to FIG. **2** showing yet another modification but with the seat cushion and insert members in assembled relationship; and

FIG. **9** is a side sectional view of the cushion and insert members of FIG. **4** in combination with other seat structure which includes ventilating passages and a blower device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. **1**, a seat **10** has a back cushion **12** and a bottom cushion **14** pivotally attached to each other by means of fastener means **18**. The cushions **12, 14** are covered with a cast skin **20** which is preferably formed of a tough durable plastic. Molded to the inside of the cast cover **20** is a filler **22** which preferably comprises an expanded foam material such as polyurethane. To provide rigidity to the seat cushions, a seat pan or frame member **24** may be molded into the foam material **22**. For reasons hereinbefore explained, the cushions **12, 14**, are formed with recessed areas **28, 28'** which are defined by a generally flat recess surface **30** and side walls **32** which are generally perpendicular to the plane of the seating surface. Since the materials which are most desirable for the casting of the skin or cover **20** are usually non-porous and thus offer no opportunity for the seat cushions to breathe, a plurality of tubular openings **34** are preferably provided in the cushions which extend from the surface **30** of the recess area **28** to the rear of the cushion.

Adapted to be mounted in the recess area **28** is an insert member indicated generally at **38** which may in-

clude an interior bent wire frame **40** for giving rigidity to the insert member and for providing a plurality of support locations **40a** to which fasteners **50** may be attached for holding the insert **38** to the cushion **12.** If it is desirable to provide the occupant of the seat with some degree of ventilation, the front and back surfaces **42, 44** of the insert **38** may be made of a porous covering material such as cloth. The cover layers **42, 44** may be backed up by fillers such as jute padding which provide some measure of softness to the insert while preventing the support frame **40** from rubbing directly on the cover layers. Recess **28'** requires a larger insert than recess **28.**

The insert **38** is preferably maintained within the recessed area **28** by fastening means such as springs **50** which may be looped around the frame **40***a* of the insert **38** at one of its ends and be retained at its other end by fastening means such as a washer **54** and a pin or clip member **56.** Such a fastening means is invisible from the front of the seat cushion and retains the insert **38** against unauthorized removal while permitting the insert to be removed when desired by removing pin **56** or by pulling out on insert **38** sufficiently to enable spring **50** to be disconnected.

FIG. **2** shows an insert member indicated generally at **138** having outer and inner surface coverings **142, 144.** The insert **138** is attached to the cushion **112** by means of a plurality of plug-like fastener members **150** which have large flanges **152** which may be bonded or otherwise fastened to the surface **144** so as to be held in alignment with the holes **134** in cushion **112.** The plug-like fasteners **150** include friction engaging members such as rings **154** which are adapted to dig into portions of the cover material **120** which extend into the holes **134** so as to provide firm retention of the insert member. The fasteners **150** preferably have a hole **156** extending through them in order to permit air to pass freely between the interior of the insert member **138** and through the ventilating holes **134.**

In the modification of the invention shown in FIG. **3,** the insert member indicated generally at **238** is attached to the cushion **212** by means of hook and loop fastener members **250, 252** such as those sold under the trademark "Velcro". This type of fastening means is particularly convenient when the seat cushion **212** does not include ventilating holes.

FIG. **4** shows a modification of the invention wherein the insert member indicated generally at **338** is fastened to the cushion **312** by a spring-like fastener member **350** which is anchored to the rear of the cushion **312** by a flanged grommet member **354** and a ventilating grid plate **356** (FIGS. **5** and **6**) having an anchor or loop portion **358** to which the spring **350** is attached and including a plurality of ventilating holes **360** which permit air to pass through the tubular opening **334.** The internal construction of the insert **338** shown in this modification includes a pair of outer surface layers **342** and **344** formed of porous material and a center portion **340** formed of coiled wire. The coiled wire **340** gives a resilient support to the insert **338,** permits air circulation therein, and provides convenient connection points for the fasteners **350.**

The modification shown in FIG. **7** is identical to FIG. **4** except that the cushion **312** has a rigid back panel **364** which eliminates the need for the grommet member **354** of FIG. **4.**

In the embodiment of FIG. **8,** the insert member indicated generally at **438** is shown as being held to the cushion **412** by means of an upholstery button **452** which is anchored to the cushion **412** such as by strings **450.** The insert **438** may include grommet or eyelet members **446** for properly positioning the buttons **452** and protecting the surfaces **442, 444** from tearing. The insert **438** may be covered with different materials on each side in order to increase its usefulness. For example, one side of the insert could be covered with a porous material which could be made to face outwardly in the summertime to permit ventilation through the insert interior and the porous covering whereas the opposite side of the insert could be surfaced with a heat reflective material which would provide warmth when facing outwardly in the wintertime by reflecting body heat. Alternatively, one side of the insert could be covered with a material such as terrycloth to provide an absorbent and cool surface for use when the vehicle containing the seat is to be driven to the beach or left in the sun while the opposite side could be covered with a more attractive looking material.

FIG. **9** shows the insert **338** and cushion structure **312** of FIG. **4** in association with a seat back member **360** which includes ventilating channels **365** which interconnect the ventilating holes **334** through a conduit such as a flexible pipe **366** to a blower member **368** which can either blow air into the inserts and against the seat occupant or withdraw it from the insert. Obviously, many other types of heating and cooling means could be connected to the seat and insert to make the seat more comfortable.

I claim as my invention:

1. A ventilated seat construction comprising a molded cushion having a cast skin cover and a molded resilient filler portion, said filler portion being integrally bonded to said cover, said cast cover including at least one recessed portion on its external seating surface, a porous insert member having a cover of a material different from said cast skin cover, said porous insert member being adapted to be engaged by a seat occupant and having external dimensions corresponding to the dimensions of said recessed portion so as to be receivable in said recessed portion and retained thereby against sideways movement, and cooperating fastening means on said molded cushion and on said insert member for maintaining said insert member within said recessed portion.

2. A seat construction in accordance with claim **1** wherein said seat cushion includes a plurality of ventilation holes extending through said cushion from said recessed portion.

3. A seat construction in accordance with claim **2** wherein said seat cushion includes a molded in seat pan.

4. A seat construction in accordance with claim **1** wherein said insert member includes internal stiffening means.

5. A seat construction in accordance with claim **4** wherein said stiffening means comprises a wire frame.

6. A seat construction in accordance with claim **4** wherein said stiffening means comprises a three dimensional substantially hollow filler member formed of wire, said filler member spacing the front and back portions of the insert cover from each other by a distance greater than the thickness of said wire.

7. A seat construction in accordance with claim 2 wherein said fastening means passes through said ventilation holes.

8. A seat construction in accordance with claim 1 wherein said fastening means comprises cooperating hook and loop fastener members on said insert and in said recess.

9. A seat construction in accordance with claim 1 wherein said insert member is fastened into said recess by upholstery buttons.

10. A seat construction in accordance with claim 1 wherein said recess includes a plurality of holes which are adapted to cooperate with a plurality of plug-like fastener members on said insert member.

11. A seat construction in accordance with claim 10 wherein said plug-like fasteners are hollow and said plurality of holes extend throughout the depth of said cushion for ventilating the interior of said cushion.

12. A seat construction in accordance with claim 2 wherein said ventilation holes in said seat cushion are connected by passageways to an air blower.

13. A seat construction in accordance with claim 2 wherein said fastening means comprises a plurality of spring members extending through at least some of said ventilation holes and anchored relative to the insert member at one end and relative to the cushion member at their other ends.

14. A seat construction in accordance with claim 13 wherein said other ends of said spring members are each anchored relative to said cushion member by a perforated plate of a dimension too large to pass through said ventilating holes, said perforated plate including a retaining portion for engaging said cushion members.

15. A seat construction in accordance with claim 6 wherein said hollow filler member comprises a plurality of resilient coiled spring members.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,736,022

DATED : MAY 29, 1973

INVENTOR(S) : ARTHUR O. RADKE

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On page 1, INID code [73], insert -- Universal -- before "Oil Products Company".

Signed and Sealed this

second Day of *March 1976*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks