

March 28, 1967

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3,311,338

ADHERENT CUSHIONING SUPPORT

Filed Feb. 1, 1966

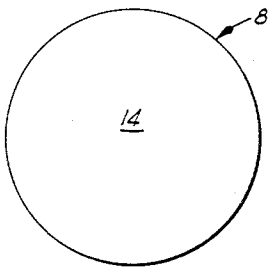


FIG. 1

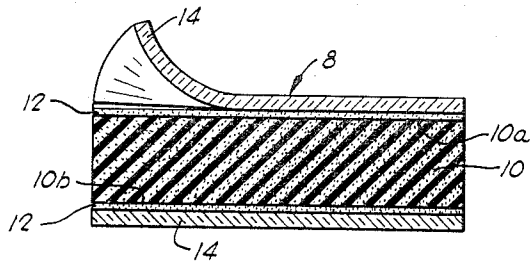


FIG. 2

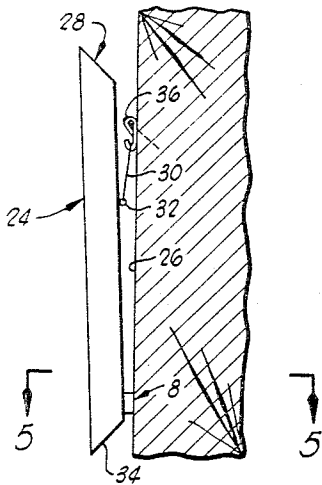


FIG. 4

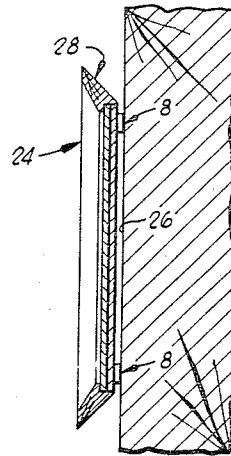


FIG. 5

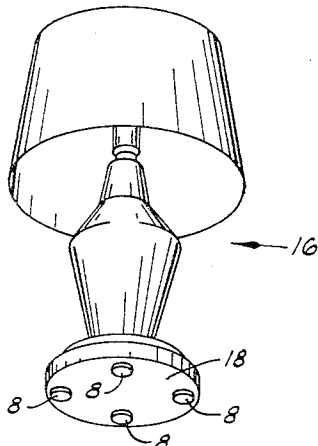


FIG. 3

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3,311,338
ADHERENT CUSHIONING SUPPORT
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Filed Feb. 1, 1966, Ser. No. 523,990
1 Claim. (Cl. 248-205)

This application is a continuation-in-part of my co-pending application for "Adhesive Pads," Ser. No. 358,448, filed Apr. 9, 1964, now abandoned.

This invention relates generally to an adhering cushion of the type which can be used to simultaneously provide a cushion support for an article, and prevent the article from moving relative to a surface upon which it is supported by the cushion. More specifically, but not by way of limitation, the present invention relates to a self-adhering resilient pad useful in inhibiting movement of pictures or other articles relative to the wall or other surface upon which they are hung, rested, or in other manner supported.

In hanging pictures or mirrors on a vertical surface such as a wall, there is a need to prevent the pictures and mirrors from moving relative to the wall so as to become canted or tilted. Even where a multiple point support is provided for the pictures and mirrors, vibration of the building in which they are mounted frequently causes them to shift slowly over an extended period of time until they attain a position in which they are perceptibly askew or out of alignment with a desired position.

The present invention provides an improved self-adhering resilient pad consisting of soft, very resilient and pliable material having a high coefficient of friction, a very low deflection loss, and a relatively low bulk density. The soft, highly resilient material is preferably and usually formed as a small circular or oval tab, and is preferably coated on each of its opposed monoplanar faces with a very soft, animal base gum or adhesive commonly known in the trade as convention or badge gum. This gum is a pressure sensitive adhesive material, and under microscopic examination has rather elongated fingers projecting from the main body of the matrix thereof which reach into and penetrate the pores or interstices of material to which it is bonded.

Superimposed on at least one of the gummed surfaces of the resilient tab is a sheet of treated release paper which protects the adhesive coated surface of the tab. The release paper is treated with a silicone material on each of its surfaces so that it is not strongly bonded to the adhesive, but can be quickly removed by the use of a fingernail. The paper is flexible and strong enough to use as a pad as hereinafter described, yet is rigid enough that it can be easily removed when the plastic is to be exposed for certain uses of the tab.

The adherent resilient tabs of the invention differ from those which have been heretofore proposed for analogous uses in several respects. One of the most important differences, however, resides in the characteristics and properties of the resilient material used to form the central main portion of the tab. This material is a latex foam rubber of high compressibility, low density, and a high elastic memory or recovery from plastic deformation. A preferred material which can be employed is the latex foam rubber sold under the tradename Koylon by the United States Rubber Company and having a grade number of from about RU-11 to about RU-35 as defined in American Society for Testing and Materials standard D 1055-62. In tests of numerous generally similar materials, such as other foam rubbers, sponge rubbers, cardboard, foamed polyurethane, and the like, it has been determined that none of these materials are sufficiently flexible or sufficiently compressible to permit them to

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provide the adherent effect, and the high effective coefficient of friction which characterize the tabs of the present invention.

From the foregoing description of the invention, it will have become apparent that it is a major object of the present invention to provide an improved, self-adhering resilient pad that can be attached to any item to inhibit relative movement between that item and an adjacent surface.

A further object of the invention is to provide an improved self-adhering pad that can be quickly and easily attached to an item by the simple expedient of pressing the pad or tab against the item after removing a protective release paper from one side of the pad.

Another object of the invention is to provide an improved self-adhering, resilient pad or tab that will prevent marring of a surface by the object to which the pad is attached.

An additional object of the invention is to provide an improved, self-adhering pad that can be attached to the back of pictures and the like when they are hung on the wall to prevent relative movement between the picture and the wall.

An additional object of the invention is to provide a self-adhering, resilient pad that has a high coefficient of friction, will elastically conform to the minutest deformities or defects in an otherwise planar surface, such as a wall or tabletop, and will prevent substantial ingress of air between the tab and such surface and thus continue over long periods of time to resist relative movement between the tab and the surface.

Another object of the invention is to provide a self-adhering, resilient pad that can be deformed by compression to a very great extent over extended periods of time and which will recover at least 70% of its original bulk volume as a result of a high elastic memory.

In addition to the foregoing described objects, additional objects and advantages will become apparent as the following detailed description of the invention is read in conjunction with the accompanying drawings which illustrate certain embodiments of the invention.

In the drawings:

FIGURE 1 is a plan view of a self-adhering, resilient pad constructed in accordance with the present invention.

FIGURE 2 is a sectional view with the section being taken along the diameter of the circular pad illustrated in FIGURE 1.

FIGURE 3 is a perspective view of the self-adhering pad of FIGURE 1 as applied to the base of a lamp.

FIGURE 4 is a view, partly in elevation and partly in cross-section, of the application of the self-adhering pads of this invention to a picture frame or the like as such frame is hung on a wall or other vertical surface.

FIGURE 5 is a cross-sectional view taken along the line 5-5 of FIGURE 4.

Referring now to the drawings in detail, and particularly to FIGURES 1 and 2, the pad 8 of the illustrated embodiment is disc-shaped in configuration and includes a central, relatively thick body of resilient, relatively soft porous material 10. The resilient porous material of the present invention is a latex foam rubber of specific properties and characteristics, and in the preferred form of the invention is preferably from about 3/4 to 1 inch in diameter and from about 1/8 to 1/4 inch in thickness.

To more specifically characterize the latex foam rubber utilized to form the body or central element 10 of the pads of the invention, the latex foam rubber is a vulcanized open celled structure in which the cells are interconnecting or communicating with each other. The latex foam rubber has a grade number of from about

RU-11 to about RU-35 as defined by the American Society for Testing and Materials in standard D 1055-62, and must have a density of from about 0.002 to 0.006 pound per cubic inch. The latex foam rubber used is not to be confused or equated with sponge rubber or with other foamed elastomeric materials which, through extensive testing, I have found do not possess sufficient resiliency and flexibility to permit their successful use in the present invention.

A material which is preferably employed in constructing the central body 10 of latex foam rubber used in the pads of the present invention is latex foam rubber sold by the Uniter States Rubber Company under the tradename Koylon and having an ASTM defined compression grade of RU-20 and an apparent or bulk density of 0.0042 ± 0.0005 pound per cubic inch. The disc-shaped body 10 of latex foam rubber has a pair of opposed, parallel, substantially monoplanar surfaces 10a and 10b, each of which is preferably the smooth natural skin formed in the molding of the rubber from which the tabs or pads 8 are cut.

Applied to each of the opposed monoplanar surfaces of the latex foam rubber central body 10 is a very thin layer 12 of a pressure-sensitive adhesive or gum having a high degree of tack. The pressure sensitive adhesive or gum 12 is preferably a soft, animal base material of the type commonly termed badge or convention gum. The gum 12 is applied in a manner which permits a very thin layer to be superimposed on the surface of the latex foam rubber 10 without breaks or discontinuities in the gum. The advantage of this manner of application is that the gum then follows precisely all deformations and departures from a monoplanar characteristic of the surface of the latex foam rubber, and thus moves with the foam rubber into all irregularities, deformities or defects in a surface with which the pad 8 may be in contact.

Superimposed on the thin films or coatings of soft, animal base gum or adhesive 12 on each side of the pad are a pair of release papers 14. The release papers 14 are each constructed of relatively tough, yet flexible paper which has been coated on its side adjacent the gum with a silicon resin release agent. The silicone coating on the paper 14 prevents it from adhering tenaciously to the gum 12, and permits it to be easily released therefrom when the pad is to be used. Enough adherence is achieved between the layers of gum 12 and the release papers 14 that the papers will not be inadvertently lost from the pad during storage or shipment. On the other hand, the release papers 14 can be easily stripped away from the pad by the use of a fingernail, and such removal does not destroy or produce breaks or pinhole defects in the adhesive coating on the central body 10 of latex foam rubber.

One method of using the self-adhering resilient pads 8 of the invention is illustrated in FIGURE 3. Here a plurality of the pads 8 are being used to provide a protective cushion for a lamp base. Assuming that the lamp 16 illustrated in FIGURE 2 is a relatively heavy object, a plurality of the tabs or pads 8 are distributed around the base 18 of the lamp to evenly support the weight thereof. In applying the pads 8 to the lamp base 18, one of the release papers 14 on one side of the tab is stripped away using a fingernail or the tips of the fingers. This may be easily accomplished without disturbing the layer of adhesive 12 applied to one face of the pad. The exposed adhesive 12 is then contacted with the lamp base 18 of the lamp 16 and by a slight pressure of the fingers, the pads 8 are caused to adhere tenaciously to the lamp base. The pads 8 collectively provide a support for the heavy lamp 16 and the release paper 14 provides a smooth relatively soft surface which will be in contact with a table or other supporting structure upon which the lamp is rested and which will not mar or scratch such surface.

If it should be desired to prevent movement of the lamp 16 along or on the surface upon which it is rested, the second sheet of release paper 14 can be removed from the opposite sides of the tabs 8 so as to expose the adhesive layer 12 therebeneath. When the lamp is then rested upon a table or other supporting structure, the exposed adhesive layer 12 will grip and adhere tenaciously to the supporting structure. The particular adhesive employed will not stain or mark the supporting surface, and when the lamp is removed to another location, no trace of its previous position on the surface can be discerned.

FIGURES 4 and 5 illustrate the use of the pads or tabs 8 for hanging a picture 24 or the like upon a wall 26. As illustrated, the picture 24 includes a frame 28 which has a supporting wire 30 attached thereto at two opposed points 32. (Only one point is visible in FIGURE 4.) The points of attachment 32 are located on the frame 28 in such a position that the center of gravity of the picture will tend to force the bottom edge 34 into contact with the wall 26. The wire 30 extends upwardly from the picture 24 over a supporting member 36 which is attached to the wall 26. A pair of relatively small area, self-adhering, resilient pads 8 are shown as having been applied to the back of the picture frame 28 near the bottom edge 34 thereof in such a position that they will extend between the wall 26 and the frame 28 to prevent contact between the wall and the frame.

In applying the pads 8 to the frame 28, one of the sheets of release paper 14 is initially stripped away from the pad to expose the layer of soft, pressure sensitive animal base gum disposed beneath the release paper. The respective pads are then pressed against the frame 28 near the bottom edge thereof in a desired location and quickly adhere tenaciously to the wood, metal, plastic or glass forming the back of the frame. After the pads have been positioned on the back of the frame, the outer exposed layer of release paper 14 is stripped away to expose the pressure sensitive gum therebeneath. This gum is thus free to adhere to the surface of the wall and prevent movement of the picture therealong. With this arrangement, the inward force due to the weight distribution of the picture 24 will be carried by the pads 8. When a rather large or heavy picture or mirror is to be hung, the pads 8 may be of relatively large size and still exhibit sufficient frictional characteristics to prevent canting or tilting of the picture due to their frictional engagement with the wall 26. If a relatively small or lightweight picture or mirror is to be hung, the area of the pads 8 may be substantially reduced to provide a greater force per unit area, thus providing for a relatively high frictional engagement with the wall 26 despite the light weight of such small pictures.

The unique characteristics of the latex foam rubber material used in constructing the pads of the present invention permit it to conform very precisely and completely to the microscopic surface deformities of the wall. Its elastic memory property permits it to be subjected to considerable compression by the picture without permanently changing the shape of the pressure sensitive adhesive carrying surface which conforms to the wall. Its performance in the described applications is considerably better than that which characterizes the foamed polyurethane described in U.S. Patent 3,160,509 to Caldwell et al. when an attempt is made to use it for this purpose.

From the foregoing description of the invention, it will have become apparent that the self-adhering resilient pads constructed in accordance with the invention are a substantial improvement over those which have been hereinbefore provided, and are subject to a great variety of uses. The pads are quickly and easily applied to surfaces of many different chemical and physical characteristics and are effective to inhibit relative movement between the object to which it is applied and a surface

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spaced from the object and with which the pad is also in contact. The soft resilient surface of the pad does not mar surfaces with which it is in contact and the soft, animal base adhesive used does not stick to or leave residual matter on such surfaces.

Although certain specific embodiments of the invention have been herein described in order to provide an example of its construction and use, it is to be understood that many other uses may be made of the invention, and that the materials of construction employed can include other types of materials than those specifically mentioned herein except insofar as certain critical properties and characteristics of the materials have been defined as critical in the practice of the invention. Of particular criticality are the characteristics of the latex foam rubber employed. All materials which possess the described properties and characteristics are deemed to be included within the spirit and scope of the invention except as the same may be necessarily limited by the appended claim.

I claim:

An article supporting pad for supporting and non-permanently adhering one object having a substantially monoplanar surface to a second object having a substantially monoplanar surface, said pad comprising a circular body of open celled, springy live latex foam rubber having a monoplanar, natural skin upper surface, and a monoplanar, natural skin lower surface extending substantially parallel to said upper surface and spaced therefrom by from about 1/8 to about 1/4 inch, and further including a cylindrical side extending between said monoplanar surfaces, said latex foam rubber having a grade number of from RU-11 to RU-35 as defined by the American Society for Testing and Material in Standard D 1055-62, and having a bulk density of from about 0.002 to about 0.006 pound/cubic inch, said springy, live latex foam rubber having a resiliency and elastic memory, and a flexibility and softness, such that its upper and lower natural skin surfaces will deform under low pressure to conform during such

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deformation to minute cracks, depressions and discontinuities in a surface against which said natural skin surfaces are pressed, and will immediately snap back and recover their original shape upon release of pressure therefrom;

a film of pressure-sensitive, low tack convention badge adhesive gum uniformly covering each of said parallel natural skin surfaces, said convention badge gum being characterized by a nonpermanent tack and being removable from a surface to which said pad is adhered without leaving stains or other deleterious marks; and

a protective, continuous, unperforated release paper sheet superimposed on, and nonpermanently adhered to, each of the films of low tack convention badge adhesive gum, each of said release paper sheets lying in a single plane and completely covering one of the monoplanar, natural skin surfaces of said body of latex foam rubber and the low tack gum thereon whereby said gum is protected from exposure to air until said release paper sheets are removed, and whereby said springy, live latex foam rubber is unconfined and exposed on its cylindrical side and can thus expand in a radial direction upon compression between two objects bearing against the monoplanar upper and lower surfaces of said body of latex foam rubber.

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