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TUB AND SHOWER MAT WITH MAGNETIC HOLDING MEANS

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Fig. 1

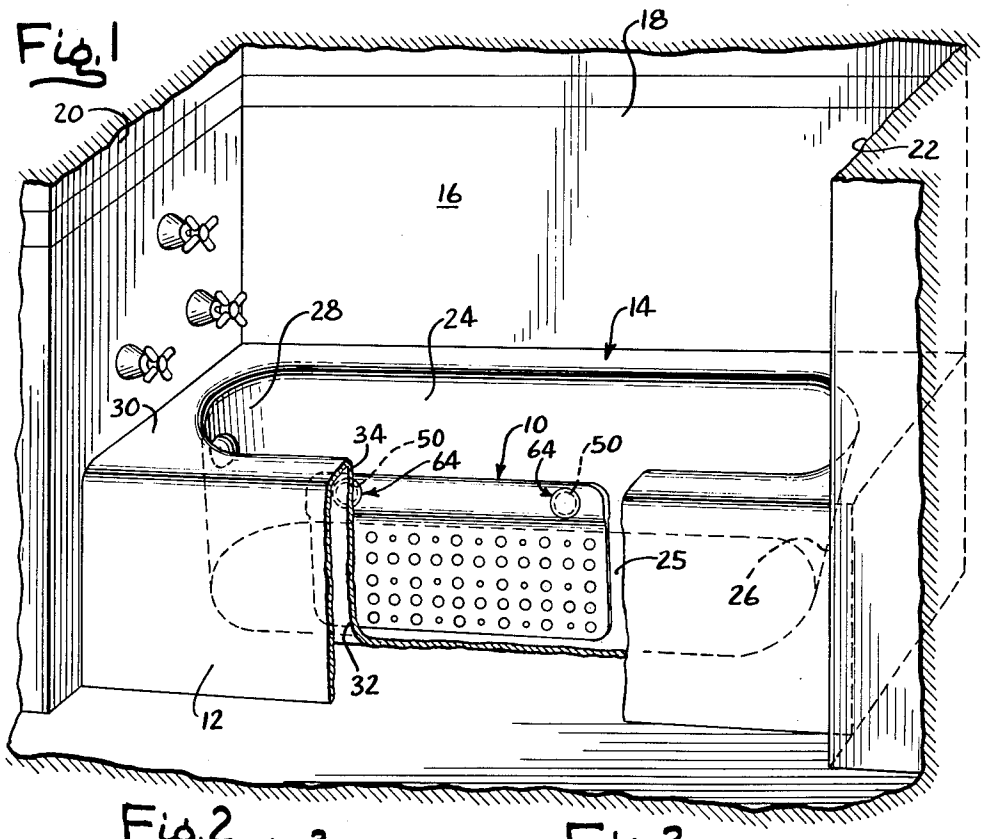


Fig. 2

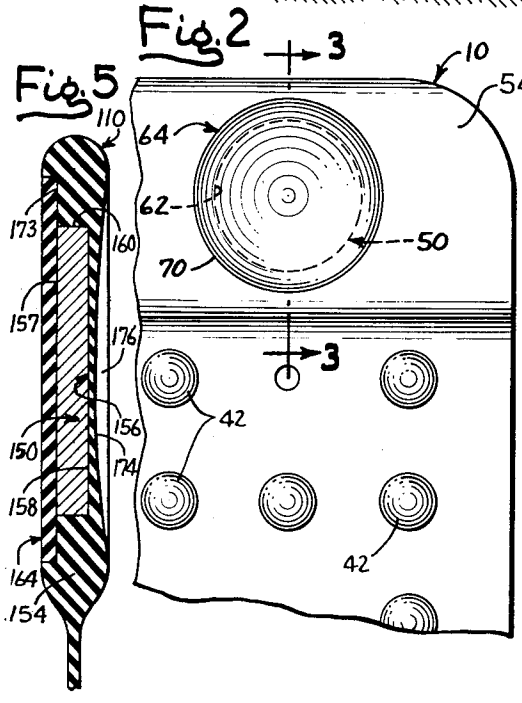


Fig. 3

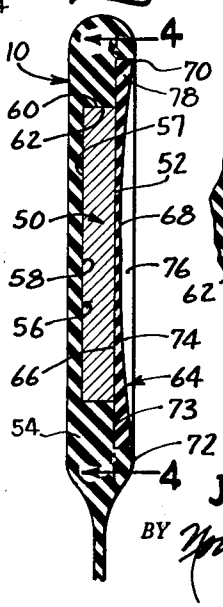


Fig. 4

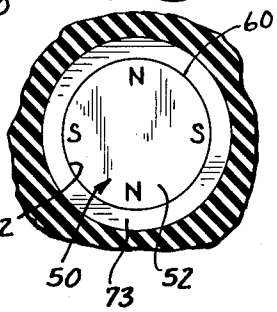


Fig. 5

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TUB AND SHOWER MAT WITH MAGNETIC HOLDING MEANS

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The present invention relates to bath tub and shower mats and has particular reference to an elastomeric bath mat having associated therewith novel means whereby the same may be supported when not in use in a flat unfolded condition on the inner surface of the outside side wall of a bath tub where it will be substantially concealed from view and where it may automatically be dried by a drip action.

The problem of conveniently storing a rubber or other elastomeric bath mat within a bathroom enclosure has long plagued the management of hotels, motels, rooming houses and other public lodging establishments, as well as home owners. The problem is aggravated by the fact that storage of a bath mat is usually required immediately after the use thereof and while the same is still wet. Many such establishments which, ordinarily would like to furnish bath mats to their guests refrain from doing so for several reasons. In the first place, rubber mats are invariably employed for anti-skid purposes with the mat resting on the bottom of the bath tub and with the user standing on the mat. After the user has stepped from the bath tub it is customary for him to hang the wet mat on an edge of the tub so that the moisture on one half of the mat will return to the tub while the moisture on the other half will drip to the floor. If the bath tub is of the built-in type, there is only one available edge for such placement of the mat and when the wet mat is placed thereon moisture will drip therefrom onto the floor in the working area of the room. If the tube is of the detached type, there will be two straight edges available for mat hanging purposes and when the inside edge near the wall is selected, the moisture which falls to the floor is inaccessible for mopping up purposes so that the inaccessible moisture accumulation frequently leads to seepage to the room below.

Secondly, placement of the wet mat over an edge of the tub in the manner outlined above presents an obstacle to free movement of the occupant of the bathroom since there is the danger of contact with the wet mat by the clothing of the occupant.

Thirdly, such mats, in themselves, are not particularly attractive and few of them conform to the decor of a well appointed bathroom. It is thus desirable to maintain a tub and shower mat which is not in use out of sight if possible. Obviously a mat which is hung over an edge of a bath tub does not present a pleasing effect, especially to a person of refinement.

It is for these reasons that many large hotels do not attempt to supply bath mats to their guests.

The present invention is designed to overcome the above noted limitations that are attendant upon the use of conventional tub and shower mats and, toward this end, it contemplates the provision of a mat, two adjacent corners of which have embedded therein powerful permanent magnets so that they may be positioned in a flat condition on the inner surface of the outside side wall of a bath tub where it may discharge substantially all of its moisture into the tub and where, although completely exposed, it will remain out of sight during all normal movements of the occupant of the bath room.

The provision of a tub and shower mat of the character briefly outlined above being among the principal objects of the invention, it is a further object to provide such a mat wherein the permanent magnets associated

therewith are hermetically sealed within the body of the mat so that they will not come into contact with or be subjected to the deleterious action of moisture.

It is another object of the invention to provide a mat of this character wherein the holding power of the magnets associated with the mat is augmented by the provision of suction cups in the immediate vicinity of the magnets, the suction cups and magnets being so disposed relative to each other that not only do the magnets exert their attractive influence upon the metal body of the tub side wall for mat holding purposes, but they also serve to increase the efficiency of the suction cups and hold them operative.

The great preponderance of bath tubs currently in use are comprised of a magnetic body, specifically iron, coated with an appreciably thick veneer of enamelled porcelain. There still remain in service however a few bath tubs which are formed of a cementitious substance and which, therefore, are non-magnetic. Mats constructed in accordance with the principles of the present invention nevertheless are useable with such non-magnetic bath tubs by virtue of the suction means above referred to.

The provision of a tub and shower mat which, although it embodies a plurality of embedded permanent magnets, is devoid of abrupt bulges or enlargements; one which is not prohibitively costly to manufacture; one which is rugged and durable and which therefore is possessed of a comparatively long life; and one which, otherwise is well adapted to perform the services required of it, are further desirable features which have been borne in mind in the production and development of the present invention.

Other objects and advantages of the invention, not at this time enumerated, will become more readily apparent as the following description ensues.

In the accompanying single sheet of drawings forming a part of this specification, one illustrative embodiment of the invention has been shown.

In these drawings:

FIG. 1 is a fragmentary perspective view of a bathroom enclosure showing a bath cubicle with a bath mat constructed in accordance with the principles of the present invention operatively applied to a bath tub within the cubicle;

FIG. 2 is a fragmentary plan view of the mat;

FIG. 3 is an enlarged sectional view taken substantially along the line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken substantially along the line 4—4 of FIG. 2; and

FIG. 5 is a sectional view similar to FIG. 3 showing a modified form of the invention.

Referring now to the drawings in detail and in particular to FIG. 1, a tub and shower mat constructed in accordance with the principles of the present invention has been designated in its entirety at **10** and it is shown as being operatively supported in an out-of-the-way, substantially concealed position on the inner face of the outer side wall **12** of a conventional bath tub **14**. The bath tub selected for illustration herein is of the built-in type and it is shown as being disposed within a bath cubicle **16** having a back wall **18** and end walls **20** and **22** respectively. In addition to the wall **12**, the bath tub is provided with the usual inner side wall **24**, bottom wall **25**, and head and foot end walls **26** and **28** respectively, the four walls **12**, **24**, **26** and **28** providing a generally flat rim **30**.

Bath tubs of the character described above are universally employed in modern hotels, apartment buildings and homes. Such bath tubs are comprised of an inner core or body **32** of cast iron or sheet steel which is completely covered by a relatively thick layer **34** of highly glazed porcelain, the former being a magnetic

material and the latter being a non-magnetic material.

As has been stated previously, the bath mat **10** of the present invention has associated therewith a plurality of permanent magnets which are maintained concealed entirely within the confines of the body of the mat and by means of which the mat as a whole may be supported in the position illustrated in FIG. 1 within the confines of the bath tub by virtue of the magnetic attraction offered by the magnets to the ferrous core **32** of the bath tub. Due to the relatively thick outer layer or coating **34** of non-magnetic porcelain, it is obvious that the aims of the present invention may be accomplished only by the use of magnets which possess great attractive power since wide magnetic gaps must necessarily form a part of the magnetic circuit due not only to the thickness of the porcelain but also to the thickness of rubber or other elastomeric material between the magnet pole and the surface to which the bath mat is to be applied. Additionally, the attractive power of the magnets must be applied over a relatively wide area if sufficient tractive power is to be developed to hold the relatively heavy article in its suspended condition on the vertical bath tub surface. Since the mat **10** is relatively thin, a magnet design which itself is thin must be employed.

One magnetic material which is capable of fulfilling the aims of the present invention is available for use. This material is of the ceramic type and is known as "Indox," a development of the Indiana Steel Products Company of Valparaiso, Indiana. This barium-ferrite material is characterized by the fact that it is electrically non-conductive, is extremely resistant to demagnetizing influences, evidences low eddy current losses, exhibits a high coercive force and has a low incremental permeability. Because of these characteristics of this magnetic material, the magnetic length thereof need be but a fraction of that required for the ferrous alloys in attaining the same magnetic pull for a given size magnet. Where barium-ferrite ceramic materials are concerned, magnetic stability is pronounced and permanent magnets constructed of this material maintain their magnetic strength despite weakening influences such as contact with extraneous field magnetic fields and frequent removal and replacement of the magnetic armatures. Additionally, such material is relatively light as compared with ferrous or other magnetic alloys.

The tub and shower mat **10**, except for the provision of a pair of magnets therein in a manner that will be described presently, is of more or less conventional design. It is preferably in the form of a substantially flat, generally rectangular molded article which may be formed of a suitable elastomeric material such as rubber, either natural or synthetic, or a rubber substitute. The body of the mat is molded so as to provide a series of cup-shaped bulges **42** therein, the direction of extent of the bulges being the same in each instance. These bulges **42** function in the manner of integral suction cups when the mat is in use. The mat is designed to be positioned on the bottom wall **25** of the bath tub **14** with the concave sides of the bulges **42** facing downwardly so that as the user steps upon or otherwise depresses the bulges, they effect a seal with the wet surface of the bottom wall **25** of the tub and prevent lateral shifting of the mat within the tub.

The mat **10** has associated therewith two identical permanent magnets **50** of the ceramic barium ferrite type as set forth above. Each magnet is in the form of a generally flat, circular disk which is magnetized on one side only to produce a pole face **52** which exhibits poles such as have been designated at "N" and "S" in FIG. 4. Although the magnets **50** selected for illustration herein are magnetized as shown on one face only, it is within the scope of the present invention to magnetize both faces of the magnets so that the poles thereof are circular and concentric. A wide variety of spot magnetization patterns may be effected on either or both faces of the magnets, the principal consideration being that the working face of the magnet has high attractive power. Irrespective however of the particular magnetic pattern associated with the two magnets **50**, the essential features of the invention are at all times preserved.

As best seen in FIG. 3, one longitudinal edge region **54** of the mat **10** is somewhat thicker than the remainder of the body of the mat and the two magnets **50** are, in effect, embedded in this thick region near the adjacent corners of the mat.

To accommodate such embedment of the magnets **50**, the region **54** of the mat is formed with a pair of shallow circular pockets **56** therein. Each pocket is of a diameter substantially equal to the diameter of the magnet **50** so that the latter may conveniently be nested in the pocket. The non-magnetized face **57** of the magnet **50** fits flush against the bottom wall **58** of the pocket while the circular rim **60** of the magnet fits against the cylindrical wall **62** of the pocket **56**. The depth of the pocket **56** is slightly greater than the thickness of the magnet **50** and a circular plano-concave disk **64** of rubber or other elastomeric material is disposed within the pocket **56** and covers the pole face **52** of the magnet **50**.

The elastomeric disk **64** has a flat inner face **66** which fits flush against the pole face **52** of the magnet and the outside face **68** is dished on a long radius with the rim **70** of the disk **64** lying in the general plane of the inside face **72** of the thickened region **54** of the mat body. The rim region of the disk **64** rests upon an annular ledge or recess **73** which is formed at the rim of the pocket **56**. Preferably, but not necessarily, both the magnet **50** and disk **64** may be cemented in position within the recess **73** by a suitable bonding agent such as Pliobond or other material having free flow characteristics when set.

In use, when it is desired to position the mat **10** on the inner surface of the outer side wall **12** of the bath tub **14** in the manner shown in FIG. 1, the outer surface **74** of the mat in the immediate vicinity of the two magnets **50** may manually be pressed toward the inner surface of the side wall **12** so that the rigid magnet bodies will extend the concave surfaces **68** of the disk **64** and drive out the entrapped air within the air pockets **76** existing between these concave surfaces and the wall of the tub, after which release of the pressure will allow the disks **64** to function as suction cups to cause the corner regions of the mat to adhere to the tub.

Such manual displacement of the magnets **50** will compress the thicker peripheral regions **78** of the disks **64** and permit proper function of the disks as suction cups and it will also cause the magnets **50** to be moved or displaced bodily toward the plane of the bath tube side wall **12** and thus the magnetic iron body or core **32** of the tub, functioning as an armature, will be brought within the magnetic field in the vicinity of the magnet poles so that the attractive power of the magnets will be applied through the disks **64** to assist the pressure of air acting on the external face of the mat in counteracting any unbalanced internal and external forces which may develop in connection with the normal functioning of the disks as suction cups. The magnetic strength of the magnets **50** is sufficiently great that these elements, acting independently of the suction disks, will serve to maintain the mat in position on the inside face of the side wall **12**. Thus, at such time as the moisture in the vicinity of the suction cup disks is evaporated to completion so that these suction devices are dry, and therefore inoperative, the magnetic attraction between the magnet poles and the ferrous core of the tub will retain the mat in its suspended position.

In FIG. 5 a slightly modified form of tub and shower mat embodying the principles of the present invention has been shown. The mat **110** is similar in its design and construction to the previously described mat **10** and thus, to avoid needless repetition of description, similar characters of reference but of a higher order have been em-

ployed in FIG. 5 to designate corresponding parts as related to the disclosure of FIG. 3.

In the modified form of mat, each pocket **156** which is provided in the thickened wall portion **154** of the mat **110** opens on the outside face of the mat instead of on the inside face thereof. The inside face of the mat is dished as at **168** on a long radius, thus providing a bottom wall **158** of varying thickness for the pocket, such walls establishing in effect a suction cup which cooperates with the adjacent magnet **150** in the same manner that the suction cup disks **64** cooperate with their magnets **50** in the form of the invention shown in FIG. 3. The magnet **150** is permitted limited freedom of movement in the pocket in that it is cemented only to the inside face of the closure disk **164** which extends across the open rim of the pocket **156** and which, itself, is cemented to the ledge **173**. Otherwise, the mat **110** is substantially the same as the mat **10**.

It is to be noted that in connection with the use of the mat **110** of FIG. 5, since the air pocket **176** which is created between the wall **158** and the bath tub surface to which the mat is to be adhered exists in connection with an integral portion of the mat body instead of with a separate disk, as is the case with the bath mat **10** previously described, a stronger construction results. In pulling the mat from the surface of the tub, there will be little danger of rupturing the wall **158** since this wall is an integral part of the mat body. Furthermore, in so pulling the mat away from the surface of the tub, practically no stress is applied to the disk **164** tending to dislodge the same from the shallow recess in which it is contained.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. Only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. A substantially flat tub and shower mat of generally rectangular design and formed of elastomeric material, said mat being formed with a longitudinally extending edge region embracing one adjacent pair of corner regions of the mat, each of said corner regions being formed with a shallow circular pocket therein with said pockets opening on one side of the mat, a thin flat circular disk-like permanent magnet of the barium ferrite type disposed within each pocket and having its inner face in coextensive face-to-face contact with the bottom of said pocket, the rim region of said pocket being formed with a shallow annular recess therearound of a depth equal to the overall depth of the pocket less the axial thickness of the magnet and of an overall diameter greater than the diameter of the pocket, and a thin plano-concave and imperforate disk of elastomeric material seated within said shallow annular recess, overhanging the circular edge of the magnet, and having its rim sealed to the rim region of the recess coextensively therearound, said disk, in combination with the walls of said pocket, serving completely to enclose the magnet and maintain the same within the confines of the mat, the outer face of said disk being of concave configuration whereby the disk will function in the manner of a suction cup when said one side of the mat is applied to a planar surface with the adjacent magnet exerting forward pressure against the disk under the influence of magnetic attraction between the magnet and a magnetic object in the vicinity of said planar surface.

2. A substantially flat elastomeric tub and shower mat having spaced thickened regions formed thereon, a shallow pocket formed in each of said thickened regions and opening on the outside face of the mat, the bottom wall of said pocket presenting a concave face exteriorly of the mat on the inside face thereof, a thin flat disk-like permanent magnet of the barium ferrite type disposed within said pocket and presenting a magnetized face in opposition to said bottom wall of the pocket, and a closure disk of elastomeric material fitting within the rim of said pocket and sealed to the latter.

3. A substantially flat tub and shower mat of generally rectangular design and formed of elastomeric material, said mat being formed with a longitudinally extending edge region embracing one adjacent pair of corner regions of the mat, each of said corner regions being formed with a shallow circular pocket therein which opens on one side of the mat, a thin flat circular disk-like permanent magnet of the barium ferrite type disposed within each pocket and having its inner face in coextensive face-to-face contact with the bottom of said pocket, the rim region of said pocket being formed with a shallow annular recess therearound of a depth equal to the overall depth of the pocket less the axial thickness of the magnet and of an overall diameter greater than the diameter of the pocket, and a disk of elastomeric material seated within said shallow annular recess and having its rim sealed to the rim region of the recess coextensively therearound, said disk, in combination with the walls of said pocket, serving completely to enclose the magnet and maintain the same within the confines of the mat whereby the magnet is covered on both sides thereof with a thickness of elastomeric material, the outer face of one of said covering thicknesses of elastomeric material being of concave configuration whereby said thickness will function in the manner of a suction cup when applied to a planar surface with the adjacent magnet exerting forward pressure against said thickness under the influence of magnetic attraction between the magnet and a magnetic object in the vicinity of said planar surface.

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