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**FURNITURE GLIDE**

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1 Claim. (Cl. 16-42)

The present invention relates to furniture glides, i.e., to fittings adapted to be secured to the bottom surfaces of the legs and feet of chairs and analogous articles of furniture for the purpose of trimming such surfaces, reducing the likelihood of damage to floors and floor coverings on which the article may be positioned and over which it may be moved, eliminating the noise of movement of the furniture over hard floor surfaces, compensating for inequalities in floor level, and for other purposes well understood by the art, the industry and the public.

The invention aims to provide an improved glide having both swiveling and self-leveling action and which can be manufactured economically and will be unusually durable in use.

More specifically, the glide provided by the present invention comprises a floor-engaging lower element and an upper element which is secured to the furniture leg, with means connecting those two elements that permits the leg and the upper element that is made fast to the leg to be tilted to a considerable angle while the lower element remains flatly seated on the floor, and this same connecting means permits the leg and the upper element to be depressed relative to the lower element a distance adequate to compensate for and adjust to substantially all floor surface inequalities that may be expected to be encountered, as in fairly extreme cases of badly warped wood flooring, poorly laid or damaged brick or ceramic surfaces, and even in situations where one or more of the legs of a chair or the like are positioned on a rug or other floor covering and the other leg or legs are positioned directly on the bare floor.

Certain glides of the prior art have been designed to provide for tilting or swiveling, and others have been designed to be automatically adjustable or self-leveling, and some efforts have been made to provide a glide having both features. However, in all such cases of which I am aware, the construction has been complex and expensive to manufacture, involving mechanisms replete with numerous delicate parts that were unable to withstand any long period of rough usage, or they have not worked with facility and automatically but required positive attention and manual adjustment to produce the tilting and/or the self-leveling action.

Among the objects of the present invention is the production of a simple, foolproof, reliable glide that will accomplish all the objectives of the foregoing prior art glides and will be devoid of the manufacturing, cost and performance objections of those glides.

A preferred form of the invention which has been produced commercially and found a high degree of public acceptance and which is therefore at present preferred as constituting the best embodiment of the inventive concept is illustrated in the accompanying drawing, in which—

FIGURE 1 is a vertical central sectional view taken

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through the terminal portion of a tubular metal leg of a chair or equivalent piece of furniture, showing the new glide, also in vertical central section, applied in operative position thereto, with the parts in normal position and relation, as when the piece of furniture, hereinafter for simplification called the chair, is unloaded and rests on a level floor surface;

FIG. 2 is a similar view showing the relation of the parts consequent upon the imposition of a load on the chair;

FIG. 3 is a transverse cross sectional view taken on the line 3—3 of FIG. 1, looking in the direction of the arrows;

FIG. 4 is a view similar to those of FIGS. 1 and 2 showing, with some exaggeration for clarity, the relation of the parts consequent upon the imposition of a tilting force on the chair leg or the application of the leg to a floor area having some degree of incline or slope; and

FIG. 5 is an exploded perspective view of the principal parts of the new glide.

In these figures the reference numeral 10 designates the lower extremity of any piece of furniture to which it may be desirable to affix a glide. In the present illustrations the extremity is shown as the lower portion of a tubular metal chair leg, but it will be understood that this is shown merely to depict a typical application of the new glide and that the glide may be mounted in place on any of a wide variety of furniture supporting parts where the advantages of a silencing, self-adjusting, floor-protecting, attractive trim are desired, and that the material of which the leg or the like, hereinafter for simplification called merely the leg, may be made, whether of metal, wood, plastic or otherwise, is of no consequence.

The glide itself comprises four principal parts: a block element 11, a bottom shell 12, a high mount 13, and means 14 connecting the block, bottom and high mount.

The block element 11 is formed of firm, form-sustaining, resilient rubber or rubber-like material, and the bottom shell and the high mount are best made of metal, being preferably heavy gauge sheet metal stampings, with a decorative plating of nickel, chrome or the like applied to the outer surface of the shell.

The connecting means 14 is preferably a headed rivet as shown, but of course this element could quite satisfactorily be provided in the form of a screw or bolt with a nut threaded thereon, or a stud cotter-pinned in place, or otherwise, as will be obvious.

The shape and form of the block element 11 is important and comprises the essence of the invention. The block, in the preferred embodiment of the invention selected to illustrate the inventive principles, is of circular cross section, being characterized by cross sectional dimensions of varying diameters, with the section of greatest diameter being in the lowermost part of the block and that of smallest diameter being in the uppermost part. The bottom surface of the block is flat. Immediately above this bottom surface the periphery of the block bulges outwardly as shown at 15. Directly above this bulge the wall of the block rises substantially vertically to provide a virtually cylindrical portion 16. This terminates upwardly in a shoulder 17 formed by an annular area radially outstanding from the base of the topmost portion of the block, which is a parti-spherical dome 18.

The block is provided with a bore extending axially through it, open to the top surface by an upwardly flaring enlargement 19, and open to the bottom surface by a counterbore 20. This counterbore connects with the central reduced portion of the bore by a rounded concave surface 21.

The shell 12 is simply a cup-shaped metal stamping having a flat bottom area 22 on the inner surface of which the bottom of the block 11 is seated, and having a return bent side wall 23 that encloses the bulge 15 of the block and is crimped over the bulge, terminating at the base of the cylindrical portion 16 of the block so as to hold the shell securely on the block, in enclosing, protective relation with the lower part of the block.

It may be stated that the function of the shell is to trim and protect the block and provide a good wear plate that will well withstand the rubbing, sliding and generally abrasive action of moving the glide over floor and analogous surfaces. Theoretically, if such considerations of wear protection, and incidentally also considerations of appearance, were not considered important, the shell could be omitted.

The third component of the glide is the high mount 13. This is best made as a metal stamping of the special shape shown. The shape comprises a parti-spherical dome-like lower portion 24 which presents an under surface of concave curvature complementing the convex curvature of the top surface 18 of the block 11 but being shorter in length from top to bottom than the domed portion of the block. This lower portion 24 of the high mount terminates at its bottom in a peripheral outwardly extending flange 25 and terminates at its top in a cylindrical, inverted cup-shaped extension 26 the top of which is flat and centrally perforated as shown at 27.

The proportions of the high mount 13 are such that when its concave lower portion 24 is seated on the convex upper portion or dome 18 of the block 11, with the high mount and the block aligned co-axially as shown in FIG. 1, and the parts are not loaded or compressed, the high mount flange 25 will be spaced appreciably above the shoulder 17 of the block.

The high mount and the block are secured in the foregoing position by the fourth member of the combination: the connecting means 14, here shown in its preferred form as a rivet standing through the registering, aligned bore of the block and perforation in the top of the high mount, with its head 28 normally seated up against and conforming to the rounded, concave seated surface 21 at the top of the counterbore 20 in the bottom of the block and having its upper end 29 headed, or peened over the top surface of the high mount. Caught under this head, and held by it securely against the top surface of the high mount, is a spring washer 30 having a normally downwardly bent marginal portion providing sharp edges, or edge points, shown at 31 in FIG. 3, which serve as barbs for biting into the inner surface of the bore of a metal leg 10 when the glide assembly is applied to such leg by driving the upper end of the glide, headed by the washer 30, up into the leg to the position shown in FIGS. 1, 2 and 3.

The proportions of the washer and high mount are such that when the washer is thus driven into position on the leg 10 the points 31 of the washer will scratch and bite into the metal of the leg bore and will hold the glide assembly securely against accidental separation from the leg, and at the same time the bottom end surface of the leg will seat squarely on the upper surface of the high mount flange 25. It will be understood that application of the glide assembly is readily effected by striking the bottom of the shell 12 of the assembly with a hammer or equivalent driving means which compresses the material of the block, as shown in FIG. 2, and transmits driving pressure to the flange 25 and thence to the washer 30 until the washer is pushed to a position in which the flange remains seated against the leg bottom and on release of the

driving pressure the rubber of the block expands and the parts take their normal relation shown in FIG. 1.

With the glide thus installed, it is believed that its action in use will be readily understood.

On the imposition of any load on the leg the rubber or equivalent resilient material of the block 11 becomes compressed to a limit attained when the flange 25 of the high mount seats on the shoulder 17 of the block or, in the case of extreme loads, when the block material undergoes some additional compression after such seating. The resulting condition of the parts is shown by FIG. 2. In this way the glide becomes self-adjusting when the legs of a given piece of furniture are of unequal length or, as perhaps more often happens, the legs rest on uneven areas of floor.

As has been stated hereinabove, the glide is capable of swiveling, or tilting, when this is required by reason of a leg fitted with the slide being positioned on a floor area having some slope or incline. This produces a relation of the parts illustrated to an exaggerated degree by FIG. 4. It will be understood that, while the parts are fully capable of assuming the extreme angular relationship shown in FIG. 4, they would seldom if ever in actual practice be required to swivel to such an extent to correct a floor slope. It should also be observed that, while the showing in FIG. 4 shows the manner in which the parts swivel, in actual practice it usually happens that the chair leg stands straight and vertically upright, with the high mount and the rivet remaining rigid with the leg, while the block and attached shell assume an inclination conforming to the slope of the floor surface. However, the angular disposition of the parts is as shown in FIG. 4, as will be understood.

In accommodating such a floor inclination, with ultimate disposition of the parts in substantially the relation shown in FIG. 4, the concave under surface of the lower portion 24 of the high mount appears to slide over the dome-like top surface 18 of the block, and at the same time the rubber of the block appears to undergo some torsion. Just how much of each action takes place, and what are the proportions of each, and which contributes most to the result, is not shown. This is believed to be immaterial, however, since the effect is the highly desirable one of a resilient adjustment to a position in which the leg remains vertical, or in any other position required by its place and position on the piece of furniture of which it is a part, while the bottom of the glide, comprising the under surface of the shell 12, lies flat on the floor despite the incline or angle of that particular portion of the floor area.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

A furniture glide comprising a block of resilient, form-sustaining rubber-like material having a substantially flat bottom surface area, a parti-spherical dome-like convex top portion, an outwardly extending shoulder portion at the base of said top portion, and an undercut, outwardly flaring bulge portion between said shoulder portion and said bottom surface area, a hard, wear-resistant shell covering said bottom surface area and having marginal edges inturned over said bulge portion and thereby securing said shell in place on said block, a metallic high mount having a parti-spherical dome-like lower portion presenting an under surface of concave curvature complementing the convex curvature of the top portion of the block but being shorter in length from top to bottom and terminating at its bottom in a peripheral outwardly extending flange, a furniture penetrating washer surmounting the high mount and having a sharp edge adapted to bite into holding relation in the bore of a chair leg or the like when the bottom of said leg is seated on said flange, and a connecting element penetrating registering holes in the washer, the high mount and the block clamping said washer, high mount and block together with the flange of the high mount normally spaced above the shoulder

portion of the block and in a plane parallel to the plane of said shoulder portion, whereby the high mount, washer and connecting element are adapted to settle down toward contacting relation of the flange, and shoulder portion upon compression of the material of the convex top portion of the block responsive to a load, being imposed on the chair leg or the like and are adapted to swivel relatively to the shell consequent upon tilting movement of the leg or the like, thereby producing sliding movement of the high mount on one side of the top portion of the block and compression of the block material below the shoulder portion at the diametrically opposite side of the block.

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