March 12, 1963 M. KRAMCSAK, JR 3,080,601

CASTER GLIDE

Filed Sept. 2, 1958

FIG. 3

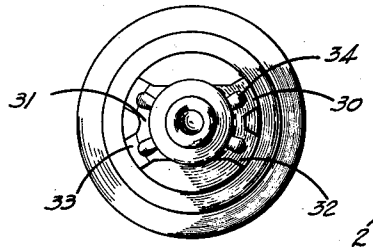


FIG. 4

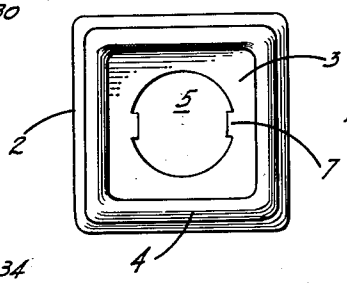
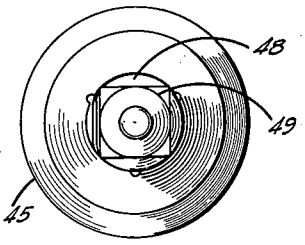


FIG. 7.



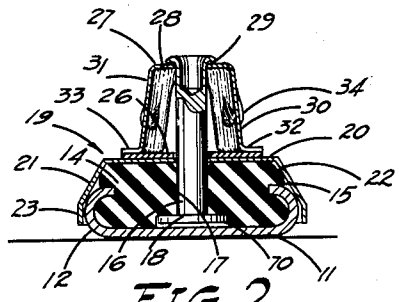


FIG. 2.

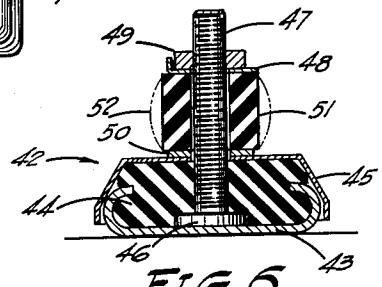


FIG. 6.

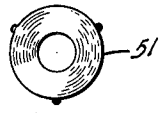


FIG. 8.

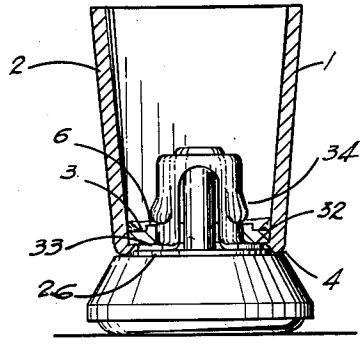


FIG. 1.

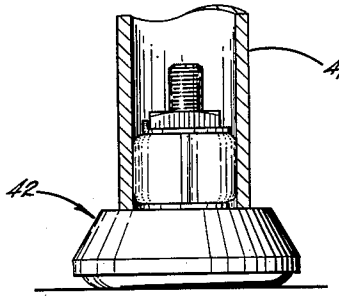


FIG. 5.

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CASTER GLIDE

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9 Claims. (Cl. 16—42)

This invention relates to improvements in removable caster glides.

The improved glides of the present application have been designed for particular use with hollow furniture legs and have been designed to assure reliable retention of the glide on the leg while at the same time providing ease of removal of the glide when desired without sacrificing cost.

Accordingly, it is a primary object of the present invention to provide an improved caster glide of the removable type for use with a hollow furniture leg which glide lends itself to the economies of mass production and which assures positive reliable retention of the glide in the leg and which permits easy removal of the glide when desired.

Another object of the present invention is the provision of a unique cooperating leg and glide retainer which assure economical construction yet reliable operation. In one form, the lower end of the hollow leg defines a transverse wall with a rimmed aperture which is snugly received between a flange and peripheral protrusions on a yieldable metallic retainer. Another form is characterized by a hollow furniture leg pressed over and retained by a generally annular rubber-like retainer having circumferentially spaced, axially directed projections, which retainer has been severely compressed to cause the outer peripheral wall of the retainer to bulge outwardly into tight engagement with the inner peripheral wall of the leg.

Other objects and the various features of the invention will be appreciated upon a perusal of the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is an elevation view, partially in section, of one form of the improved glide and furniture leg;

FIG. 2 is a sectional elevation view of the improved glide of FIG. 1;

FIG. 3 is a plan view of the improved glide of FIG. 1;

FIG. 4 is an enlarged bottom view of the furniture leg;

FIG. 5 is an elevation view, partially in section, of a second form of the invention;

FIG. 6 is a sectional elevation view of the improved glide of FIG. 5;

FIG. 7 is a plan view of the improved glide of FIG. 5; and

FIG. 8 is a plan view of the retainer of FIG. 5.

The first embodiment of the present invention, disclosed in FIGS. 1–4, comprises a uniquely designed and cooperating furniture leg and caster glide which give exceptional performance and stability in use. As may be best seen in FI. 1, the furniture leg 1 comprises an upstanding hollow wall portion 2 preferably square in cross-section (FIG. 4). The leg portion 2 tapers generally (FIG. 1) as it progresses from top to bottom to give a very pleasing modern appearance. The upstanding leg portion 2 may be conveniently formed of a suitable material such as aluminum by extrusion and is preferably provided with a smooth attractive outer surface.

A generally square washer 3 is inserted into the lower end of the leg portion 2 and is suitably secured, for example, by welding at the upper peripheral edges and by rolling over the lower edge of the upstanding leg section 2 at 4.

The washer 3 includes a central circular aperture 5. An upstanding annular lip 6 is formed at the periphery of the aperture 5, for example, by punching. Preferably, one or more radially inwardly extending projections 7 are provided in the lip 6 for a purpose to be discussed later.

The glide base selected for illustration in the present application has a smooth-bottomed metallic cup-shaped base 11 (FIG. 2). The base 11 includes an upstanding side wall or rim 12 which is of a semi-toroidal configuration. The base 11 and its rim 12 snugly receive the lower portion 13 of a generally annular cushion 14 made preferably of a rubber-like material. Said lower portion 13 has an outer circumferential periphery of a generally semi-toroidal configuration which conforms to the inner periphery of the rim 12. The cushion 14 is provided with a circumferential groove 15 immediately above the lower portion 13.

An elongated upright stem 16 projects through a central aperture 17 in the cushion 14. The lower end of the stem 16 is enlarged to form a head 18. The head 18 is in the form of a flange projecting radially outwardly from the stem 16. The head 18 is retained in a circular counter-bore 70 in the lower face of the cushion 14 and coaxial with the aperture 17.

An inverted generally cup-shaped shield 19 is carried by the cushion 14. The shield 19 includes an upper base 20 which rests upon the upper face of the cushion 14. At the outer periphery of the base 20, the shield 19 is provided with a generally truncated-conical annulus 21. The inner periphery of the upper portion of the annulus 21 conforms to and tightly engages an upper tapered peripheral wall portion 22 of the cushion 14. The retainer 19 includes a lower wall portion 23 at the lower extremity of the annulus 21. The lower wall portion 23 presents a vertically disposed cylindrical structure which partially encloses and is slightly spaced from the rim 12 of the base 11. The shield 19 provides greater structural rigidity and protection for the caster glide and at the same time presents a more attractive appearance.

A flat annular metallic support washer 26 is received by the stem 16 and rests on the upper surface of the shield 19. A generally cup-shaped retainer 27 is carried by the support washer 26. The retainer 27 includes an upper base section 28 having a central aperture 29 through which the stem 16 extends. The upper end of the stem 16 is preferably riveted over the upper surface of the base 28 to hold the retainer 27, the washer 26, the shield 19, and the cushion 14 in tight but yielding relation, with the cushion 14 being under compression.

The retainer 27 comprises a pair of arcuate side walls 30 and 31 each of which tapers as the wall progresses from bottom to top. Pairs of flanges 32 and 33 are provided at the lower extremities of the walls 30 and 31 respectively. The flanges extend radially outwardly to positions adjacent the outer periphery of the washer 26. A plurality of circumferentially spaced outwardly extending protrusions 34 are provided on the walls 30 and 31 in spaced relation to the flanges 32 and 33. The protrusions 34 extend outwardly and downwardly and are provided with rounded outer surfaces.

When the furniture leg 1 is pressed downwardly over the retainer 27, the peripheral lip 6 compresses the side walls 30 and 31 radially inward. As the lip 6 rides over the protrusions 34, it snaps into place and is firmly retained between corresponding protrusions 34 and flanges 32 and 33. The washer 3 rests on the flanges 32 and 33, which flanges in turn rest on the bearing washer 26 to support the leg 1 on the shield 19 of the glide. The washer 26 may conveniently engage the rounded over leg portion 4 to provide a firm connection.

By the application of a sufficient force, the lip 6 can ride up over the protrusion 34 compressing the side walls

30 and 31 inwardly for removal of the glide from the leg. The projections 7, described above, on the lip 6 will engage the edges of the walls 30 and 31 to prevent more than a limited angular relative movement between the leg 1 and the glide assembly.

In the embodiment disclosed in FIGS. 5–8 inclusive, a hollow cylindrical leg 41 and a glide assembly 42 are provided. The glide assembly 42 includes a base portion which is substantially the same as that shown in the embodiment of FIGS. 1–4. Thus the glide assembly 42 includes a base 43, a cushion 44, and a shield 45 which are similar to base 11, cushion 14, and shield 19 of FIG. 2.

In the embodiment of FIGS. 5–8, a stem 46 generally similar to the stem 16 of FIG. 2 is provided. However, in this instance, at least the upper end of the stem 46 is threaded as at 47. The threaded portion 47 is provided with a lock washer 48 and a nut 49 for securing a retainer structure thereto.

A flat annular support washer 50 is received by the stem 46 and rests on the upper surface of the shield 45. An annular retainer 51 of a suitable resilient material, such as rubber, is received by the stem 46 and is interposed between the support washer 50 and the lock washer 48. The retainer 51 may be made of a somewhat more resilient material than the cushion 44. The nut 49 is tightened to compress the washer 44 and the retainer 51 until the peripheral wall of the retainer 51 is deformed radially outwardly to a position substantially corresponding to the broken line 52.

It will be appreciated that the embodiment of FIGS. 5–8 may be provided with the rivet type stem 16 of FIG. 2 and that the embodiment of FIGS. 1–4 may be provided with the threaded stem and nut arrangement of FIG. 6.

With the retainer 51 deformed as described above, the leg 41 may be forced over the retainer into engagement with the upper surface of the shield 45. The retainer 51 is compressed inwardly by the leg 41 to form a tight yet removable connection between the glide assembly 42 and the leg 41. As shown in FIG. 8, the retainer 51 is preferably provided with a plurality of circumferentially spaced axially extending ridges on its outer peripheral wall to more effectively grip and retain the leg 41.

While there has been described what is believed to be the preferred embodiments of the invention, it will be appreciated that various changes and modifications may be made therein; and it is contemplated to cover in the appended claims all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In combination, a hollow furniture leg; a transverse wall rigidly secured closely adjacent the lower end of the leg, enclosing the lower end, and defining a circular central aperture therein; an upstanding circumferential rim on the wall at the periphery of the aperture; lugs projecting from the rim into the aperture; a removable caster glide including a base portion having a central upstanding stem; an inverted generally cup-shaped retainer received by the stem and supported by the base; means including the stem for holding the retainer on the base; the peripheral side wall of the retainer being substantially of a uniform truncated-conical form and defining axially extending slots to permit radial compression of the lower end of the retainer; flange means extending radially outwardly from the lower end of the retainer; and a plurality of circumferentially spaced protrusions on the retainer side wall extending outwardly and downwardly for securely and removably receiving the upstanding rim between the protrusions and flanges, with the lugs projecting into the slots to restrict angular displacement of the caster glide within the furniture leg.

2. In combination, a hollow furniture leg; a transverse wall rigidly secured closely adjacent the lower end of the leg and defining a central aperture therein; an upstanding circumferential rim on the wall at the periphery of the aperture; a lug projecting from the rim into the aperture; a removable caster glide including a base portion, an inverted generally cup-shaped retainer supported by the base, and means including an upstanding stem for holding the retainer on the base; the peripheral side wall of the retainer uniformly tapering upwardly in the direction of its base and defining axially extending slots to permit compression of its larger, lower wall portion incident to forcing of the retainer through the aperture in the transverse wall; the lug being received in one of the slots to prevent rotation of the glide relative to the legs, the glide including a leg engaging surface; and a plurality of circumferentially spaced protrusions on the retainer side wall extending outwardly and downwardly to engage the top of the upstanding rim for securely yet removably retaining the leg against the glide engaging surface.

3. A removable caster glide for a furniture leg having a hollow lower end comprising a generally annular cushion of a resilient material having a lower annular periphery irregular in the vertical direction; a cup-shaped floor engaging base with an upwardly projecting circumferential rim conforming to and tightly retaining the lower periphery of the cushion; an inverted cup-shaped shield carried by the cushion and enclosing the cushion and base; a flat annular support washer carried by the shield; an elongated cylindrical element carried by the washer; means including an upstanding stem retaining the cushion, shield, washer, and cylindrical element tightly and yieldingly in engagement; the cylindrical element being of a resilient material and being deformed radially outwardly under compression by the retaining means for tightly yet removably engaging the inner periphery of the leg.

4. A removable caster glide for a furniture leg having a hollow lower end comprising a generally annular cushion of a resilient material with its axis in a vertical plane and having a generally cylindrical body with an inwardly tapered upper periphery, a generally semitorodial lower periphery, and a circumferential groove adjacent and above the lower periphery; a cup-shaped floor-engaging base with an upwardly projecting curled circumferential rim conforming to and tightly retaining the lower and grooved peripheries of the cushion; the cushion defining a central opening; an elongated stem headed at its lower end and extending upwardly through the opening; an inverted cup-shaped shield carried by the cushion and enclosing the cushion and base; the shield defining a flat upper base with a central opening receiving the stem, a generally truncated-conical upper side wall conforming to and engaging the tapered upper periphery of the cushion and defining a lower vertical peripheral portion partially enclosing the base rim; a flat annular support washer received by the stem and resting on the shield; an elongated cylindrical element received by the stem and resting on the washer; means including the stem retaining the cushion, shield, washer, and cylindrical element tightly and yieldingly in engagement; the cylindrical element being of a resilient material and being deformed radially outwardly under compression by the retaining means for tightly yet removably engaging the inner periphery of the leg.

5. A caster glide for supporting on a supporting surface a device having a caster receiving opening, comprising a cup-shaped member having a base wall presenting a bottom surface for engaging the supporting surface and having upwardly projecting rigid side walls presenting a continuous outside surface thereon, an inverted cup-shaped shield having a base portion and downwardly projecting rigid side portions presenting a continuous inside surface thereon positionable over but spaced from the outside surface, a cushion of resilient material disposed in the enclosure defined by and between the cup-shaped member and cup-shaped shield and resiliently urging them apart, said member and shield being biased toward one another by the load of the supported device to decrease

the enclosure, and means disposed above the shield insertable into the caster receiving opening for securing the caster glide to the device, whereby the caster glide resiliently supports the device by the restricted resilient compression of the cushion by and between the cup-shaped member and cup-shaped shield.

6. A removable caster glide for supporting on a supporting surface a device having a hollow lower portion with a plate member secured to the device over the lower portion and having an aperture communicating therewith for receiving the caster glide, comprising a base having a lower surface engageable with the supporting surface, a cushion of resilient material secured to the base, said cushion having an opening extending substantially normal to the supporting surface, a stem headed at its lower end extending through the opening with the headed lower end engaging the cushion for restricted upward movement relative to the cushion, a shield engaging and substantially covering the cushion, said shield having an opening for receiving the stem, an inverted cup-shaped member having a base wall with a substantially central opening receiving the stem, legs projecting from the base wall toward the shield and diverging slightly uniformly from the stem, flanges on the free ends of the legs projecting outwardly parallel to the base wall and slidably engaging the shield, protuberances on the outside of the legs spaced from the flanges, and means on the upper end of the stem engaging the base wall for securing the member, shield, and cushion firmly together, wherein the cup-shaped member is insertable into the aperture so that the legs engage the plate member and are deflected inwardly thereby to slide the flanges inwardly along the shield until the protuberances slide past the plate member, and the plate member is firmly seated between the protuberances and the flanges for removably securing the caster glide to the device.

7. A removable caster glide for supporting on a supporting surface a device having a hollow lower portion, with a plate member secured to the device over the hollow lower portion and having an aperture communicating therewith for receiving the caster glide, comprising a base having a lower surface engageable with the supporting surface, a cushion of resilient material engaging the base, said cushion having an opening extending substantially normal to the supporting surface, a stem headed at its lower end extending through the opening with the headed lower end engaging the cushion for restricted upward movement relative to the cushion, a shield engaging and substantially covering the cushion, said shield having an opening for receiving the stem, an inverted cup-shaped member having a base wall with a substantially central opening receiving the stem, substantially straight legs projecting from the base wall toward the shield and diverging slightly from the stem, flanges on the free ends of the legs projecting outwardly parallel to the base wall and slidably engaging the shield, protuberances on the outside of the legs spaced from the flanges, means on the upper end of the stem engaging the base wall for securing the member, shield, and cushion firmly together, and lugs projecting from the plate member into the aperture, wherein the cup-shaped member is insertable into the aperture so that the legs engage the plate member and are wedged inwardly thereby to slide the flanges inwardly along the shield until the protuberances slide past the plate member, and the plate member is firmly held between the protuberances and the flanges for removably securing the caster glide to the device, said lugs being received between the legs and engaged therewith to prevent rotation of the caster glide relative to the device.

8. In combination, a hollow furniture leg having a transverse wall closely adjacent the lower end of the leg, said wall having a central aperture therein defined by a peripheral rim, a removable caster glide including a base, an upstanding stem supported by the base, an inverted generally cup-shaped retainer disposed above the base, and means including the stem for holding the retainer in a generally fixed position relative to the base, the retainer having side wall structure uniformly converging throughout its length in the direction away from the base and defining axially extending slots open to its free end to permit radial compression thereof incident to forcing of the retainer through the aperture of the transverse wall, the glide including a leg engaging surface proximate the free end of the side wall structure, and a plurality of circumferentially spaced protrusions formed on the intermediate portion of the retainer side wall structure each having its edge adjacent the leg engaging surface at a distance therefrom comparable to the distance in the secured position of the glide and leg between the leg engaging surface and the side of the rim remote therefrom, the protrusions being adapted to engage the rim on the side thereof remote from the leg engaging surface for retaining the leg against said surface.

9. A removable caster glide operable with a plate member having an aperture defined by a peripheral rim, comprising a base having a lower face engageable with a supporting surface, a stem operatively secured to the base and projecting away from the lower face, an inverted generally cup-shaped member having a base wall operatively connected to the stem, substantially straight legs projecting from the base wall toward the lower face and diverging slightly uniformly from the stem, flanges on the free ends of the legs projecting outwardly from the stem, and protuberances formed on the outside of the legs spaced from the flanges and constituting only a fraction of the outside periphery of the legs as measured on a plane extending through the protuberances, wherein the cup-shaped member is insertable into the aperture to deflect the free ends of the legs inwardly until the protuberances slide past the rim and the rim is firmly seated between the protuberances and the flanges.

References Cited in the file of this patent

UNITED STATES PATENTS

1,891,643	Henrikson	Dec. 20, 1932
2,172,004	Anderson	Sept. 5, 1939
2,513,193	Miller	June 27, 1950
2,631,330	Becker	Mar. 17, 1953
2,738,541	Thornsbury	Mar. 20, 1956