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ADJUSTABLE INDEXING GLIDE FOR FURNITURE LEGS

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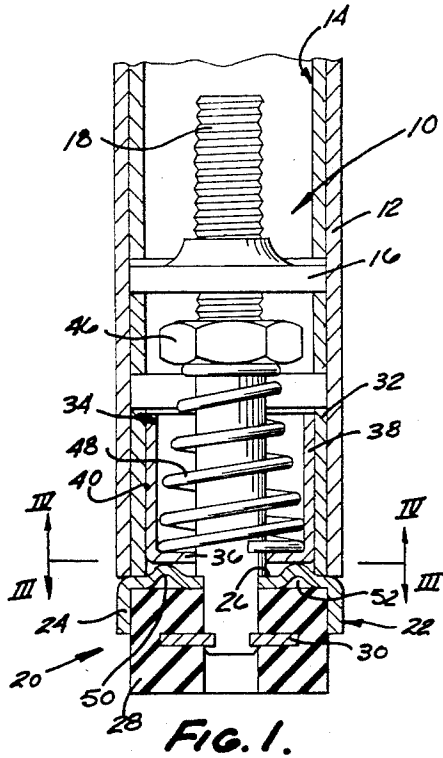


FIG. 1.

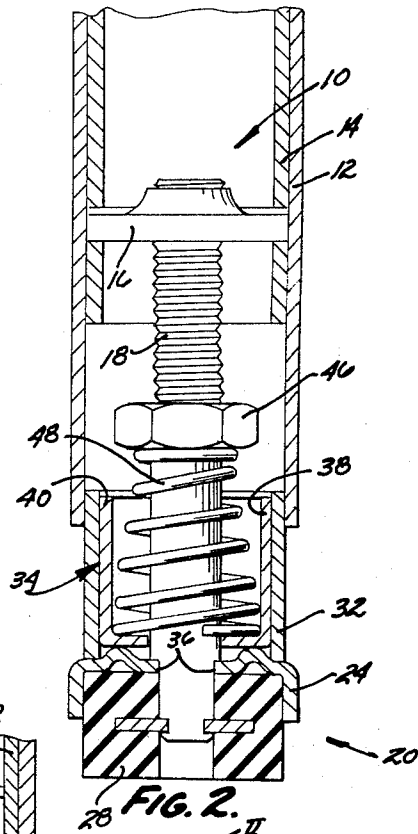


FIG. 2.

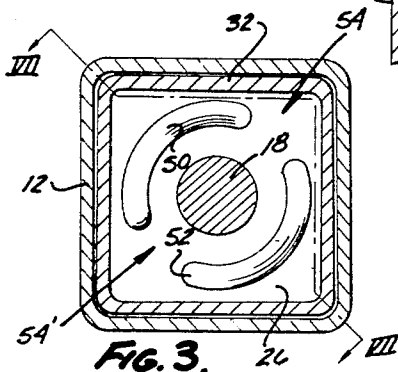


FIG. 3.

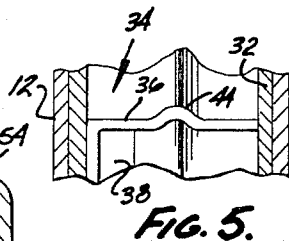


FIG. 5.

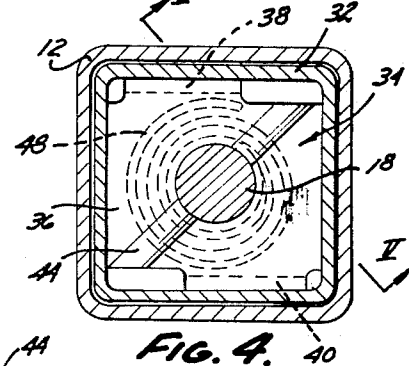


FIG. 4.

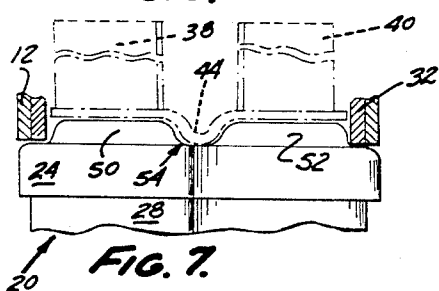


FIG. 7.

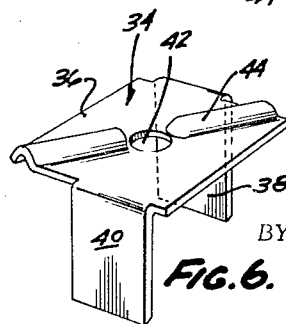


FIG. 6.

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## 3,430,287 ADJUSTABLE INDEXING GLIDE FOR FURNITURE LEGS

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### ABSTRACT OF THE DISCLOSURE

A glide shoe having a threaded upstanding adjustment stud which engages a nut-like mounting member attachable to the leg of an article of furniture, in which a generally tubular cover element telescopes over the adjustment stud and is spring-biased downwardly against the top of the glide shoe to cover and conceal the stud at all times. The top of the glide shoe is embossed to mate at desired degrees of rotation thereof with a complementary emboss on a flange means attached inside the cover element, to thereby form a detenting arrangement which indexes the rotational positions of the glide shoe with respect to the cover element.

This invention relates to glides which are used at the lower ends of the legs on furniture, and more particularly it relates to a novel glide which is vertically adjustable and which is self-indexing, so that a particular desired alignment may always be maintained between the configuration of the glide and that of the furniture leg to which it is attached.

Glides have long been used on furniture legs to provide a smooth or a resilient shoe or cushion which supports the weight of the furniture and prevents marring of the floor. Several of the previously known glide constructions have been vertically adjustable, so that the top of the furniture may be made level regardless of irregularities in the floor. Almost all such vertically adjustable glide constructions include some kind of a glide foot or shoe element having a threaded stud upstanding therefrom. This stud provides the adjustability of the structure by a threaded engagement with a nut of some kind secured to the leg of the piece of furniture. In all known previous instances, the aesthetic effects of glides of this nature were for the most part completely ignored. That is, the glide foot or shoe portion of the construction was usually made with a characteristic circular cross section, and the adjustment stud was always left exposed and completely visible when the glide was adjusted outwardly any appreciable extent from the bottom of the furniture leg. The harshly utilitarian nature of the adjustment studs of such previous glides invariably detracted from the beauty of the article of furniture. However, this situation has existed for many years, and it has remained for the present inventor to conceive of and devise a glide structure which would eliminate these design problems and provide a much more attractive overall configuration.

Accordingly, it is a major object of the present invention to provide an adjustable glide for furniture legs in which a sleeve-like housing or cover having the same general cross-sectional shape as the leg of furniture to which the glide is to be attached is provided. This cover is made to interfit with the leg of the article of furniture so as to appear as an extension thereof, and a means is included by which this cover is continually pushed downwardly against the foot or shoe portion of the construction, so that a gap will never exist between the end of the leg of furniture and the top of the glide foot or shoe.

A further important object of the invention is to provide

a glide construction having the foregoing characteristics and in which the glide element or foot also has the same general cross-sectional shape as the sleeve-like cover and the leg, so that the apparatus of the leg, the cover, and the glide element all blend together harmoniously.

A still further important object of the invention is to provide, in a guide construction having the foregoing attributes, a means for indexing the rotational position of the glide element or foot as the glide construction is adjusted vertically, so that the desired harmonious alignment of the glide with respect to the cover and the leg may always be easily maintained.

The foregoing major objects of the invention and the advantages provided thereby, together with other objects and advantages equally a part thereof, will become increasingly apparent following consideration of the ensuing specification and its appended claims, particularly when taken in conjunction with the accompanying illustrative drawings setting forth a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a central sectional elevation of the novel glide construction;

FIG. 2 is a cross sectional view similar to FIG. 1, but showing an adjusted position of the glide construction;

FIG. 3 is a sectional plan view taken through the horizontal plane III—III of FIG. 1 and looking downwardly;

FIG. 4 is a sectional plan view similar to FIG. 3, but looking upwardly from the horizontal plane IV—IV of FIG. 1;

FIG. 5 is a fragmentary sectional elevation taken through the vertical plane V—V of FIG. 4;

FIG. 6 is an enlarged frontal perspective view of a portion of the structure seen in FIGS. 4 and 5; and

FIG. 7 is a fragmentary sectional elevation taken through the vertical plane VII—VII of FIG. 3, and showing the placement and use of the structure of FIG. 6 in phantom lines.

Briefly stated, the present invention provides an adjustable, indexing glide construction for the ends of furniture legs which includes a shoe structure for contacting a support surface such as a floor, and adjustment stud secured to the shoe structure and extending upwardly therefrom, a means attachable to the leg of an article of furniture and adjustably engageable with the aforesaid stud so that the stud may be incrementally adjusted lengthwise with respect thereto, a sleeve-like cover which extends upwardly from the shoe structure and slidably telescopically interfits with the leg of the article of furniture so as to laterally enclose and house the stud therewithin, a spring or similar biasing means contained within the cover and arranged to urge the same downwardly against the shoe structure, and a detent defined by portions of the cover element and portions of the shoe structure, by which rotary movements of the shoe occurring when the glide is adjusted vertically may be indexed with respect to the cover element and the leg of the article of furniture to facilitate vertical alignment of the shoe with respect to the cover and leg and maintain the desired alignment therebetween once the shoe has been adjusted to the proper vertical position.

Referring now in more detail to the drawings, the completely assembled glide construction 10 of the invention is shown in FIGS. 1 and 2 installed in its operative position within the hollow lower extremity of an exemplary leg 12 of an article of furniture. It will be understood that one of the important features of the invention is that the glide construction which is provided corresponds in shape to the furniture leg, which itself has some distinguishing shape and is not merely round in cross section. Thus, the invention is described in connection with a square leg, but it will be appreciated that other non-

round shapes both simpler and more elaborate in nature than the square leg illustrated are equally compatible with the invention.

To continue the embodiment chosen for illustration, the hollow square leg 12 has a right-angled channel section 14 therein, preferably of U-shaped cross section, which is retained inside of the leg in a desired manner. This channel section is notched on opposite sides so as to receive by its edges a square nut 16 which provides an anchor or mounting member from which the remainder of the glide construction is suspended and against which it bears when in contact with the floor and supporting the leg. An adjustment stud 18 which is threaded along its length is engaged with the anchor nut or mounting member 16 and extends downwardly within the leg 12, beyond the bottom extremity thereof, where it attaches to a shoe structure 20.

The shoe structure 20 includes an inverted cup-shaped retainer member 22 having depending skirt-like side walls 24 defining a desired non-round cross-sectional shape which is preferably the same as that of the leg 12, i.e., square, in accordance with the configuration being described for illustration. The retainer 22 also has a base 26 to which the side walls 24 are joined, and this base is centrally apertured so that the lower portion of the stud 18 may pass through it. In addition to the retainer member 22, the shoe structure also includes a foot element 28 comprising a resilient pad of rubber or the like which fits within the depending walls 24 of the retainer member and is attached to the lower end of the adjustment stud 18, as for example by a washer 30 or other similar fastener which fits into an appropriate groove cut in the end of the adjustment stud. It will be observed that adjustment stud is necked-down near its bottom extremities, having a lower portion with a reduced diameter. This provides a shoulder which rests atop the base 26 of the retainer member and bears downwardly thereagainst to transfer the weight of the leg 12 to the shoe structure 20. Consequently, the washer or other such fastening means 30 need not be such as to transfer significant amounts of force to the resilient foot 28, but need only secure the shoe structure to the adjustment stud, preferably in a substantially nonrotative manner.

In accordance with the present invention, a sleeve-like cover or housing element 32 is provided immediately above the base 26 of the retainer member 22. The cover 32 should have the same cross-sectional shape as the leg 12 of the article of furniture upon which the glide construction is to be used; in accordance with the illustration being described, the cover should be square in cross section. The cover 32 should also be sufficiently smaller in cross section than the leg 12, so that the cover may be telescoped inside of the latter. The cover and the leg should be sufficiently close in diametral size, however, that once the cover is telescoped inside the leg, the leg will hold the cover from being rotated therewithin.

Inside the cover 32 and directly attached thereto is a flange means 34, which is shown in detail in an inverted position in FIG. 6. From this figure it will be observed that the flange means 34 has a generally square flange portion 36 and a pair of flat legs 38 and 40 which extend vertically from the flange portion 36. The flange portion has a central aperture 42 through which the adjustment stud 18 is slideable, and the flange portion also has a straight embossed ridge 44 which is smoothly curved in cross section and which extends diagonally thereacross, from one corner to the other thereof, but interrupted centrally by the aperture 42.

As seen in FIGS. 1 and 2, a nut or similar member 46 is threaded onto the adjustment stud 18 and located beneath the nut 16 serving as an anchor or mounting member for the glide construction. Nut 46 bears against one end of a coiled compression spring 48 which is telescoped over the adjustment stud 18 and which has its end opposite nut 46 resting against the inside or undersurfaces of

the flange portion 36 of flange means 34. This spring biases the flange means, and consequently the cover 32 which is directly attached thereto, downwardly against the top of the shoe structure 20. Nut 46 may be threaded upward or downward upon the adjustment stud 18 to provide a desired amount of compression of spring 48, thereby regulating the force with which this spring biases the cover and the flange means downwardly with respect to the adjustment stud, and, consequently, with respect to the anchor or mounting member 16 and the leg 12 of the article of furniture.

As best seen in FIGS. 3 through 7, the upper surfaces of the base 26 which forms a part of the retainer 22 and of the shoe structure 20 generally, is embossed to form a pair of semicircular or arcuate, symmetrically opposed, upraised ridges 50 and 52. Ridges 50 and 52 are arranged concentrically in a circular pattern on the base 26, but they each describe arcs of less than 180 degrees in extent, so that between the two ends of each of the two ridges there is a flat, unembossed area 54 and 54'. The height of the embossed ridges 50 and 52 should be made substantially the same as the height of the embossed ridge 44 running diagonally across the flange portion 36 of flange means 34 (FIG. 6), so that when diagonal ridge 44 is placed in register with the unembossed flat areas 54 and 54' by rotation of the shoe structure 20 with respect to the cover 32 and the flange means 34 attached thereto, a smoothly interfitting spring-biased detent is provided, as is illustrated in FIG. 7. That is to say, it will be remembered that the spring 48 continuously acts against the flange means 34 to thereby urge the cover 32 downwardly against the top of the shoe structure; consequently, when the shoe structure is rotated so that the ridge 44 falls into the aforementioned detent relationship, it will be held herein by spring tension and thus thus resist further rotary movement of the shoe structure until a deliberate and calculated force is applied.

In the operation of the invention, the channel section 14 which holds the anchor or mounting member 16 within the leg is typically secured in place within the leg before the legs are attached to the article of furniture; however, such channels may also be placed in the legs at any time after this point, since the channels need not actually be attached to the legs and may instead merely be slid inside them to rest against a given abutment within each leg. Whichever is the case, the glide construction itself is attached to the leg by merely threading the adjustment stud into the anchor or mounting member 16 therefor. The nut 46 which establishes the compression of spring 48 and the force with which the flange means 34 is urged downwardly is preferably adjusted before the glide construction is attached to its anchor 16. Consequently, the adjustment stud 18 may be threaded upwardly through the anchor 16 until the sleeve 32 enters the correspondingly shaped leg 12 and is telescoped thereinto at least a brief distance.

When the article of furniture is to be used, various selected ones of the glide constructions 10 attached to particular legs of the article of furniture are adjusted upwardly or downwardly with respect to the leg by turning the shoe structure 20 in the desired direction. As the shoe structure 20 of a particular glide is turned, the cover 32 of that glide is held stationary by its telescoping engagement within the leg 12, and consequently the shoe structure turns relative to the cover. Since the flange means 34 is of the same shape as the cover 32 and is also preferably secured thereto, the flange means remains stationary with the cover. Consequently, the shoe 20 also turns with respect to the flange means. Thus, on every half-turn of the shoe structure, the embossed ridge 44 of the flange means 34 engages the unembossed flats 54 and 54' on the base 26 of the shoe structure retainer member 22. Each complete turn of the shoe structure is then punctuated by the alternating detenting engagement of the aforementioned embossed ridge and the two unembossed flat portions.

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The detent arrangement just described provides a positive index of the relative alignment of the shoe structure with respect to the cover 32 and the leg 12, with the relationship being that the shoe structure is in exact alignment with the cover and the leg when ridge 44 is in its detenting position. Thus, the person making vertical adjustment to the glide construction will always know with complete certainty whether or not the glide construction is harmoniously aligned with the shape of the leg, and he will of course also know that he should not select an adjusted position of the shoe structure in which the latter is not in the desired alignment. Since there is a detent position each half turn of the shoe structure, there is little likelihood that a desired vertical adjustment cannot be found which does not also correspond to an indexed or detented position of the shoe structure. However, it will be apparent that if desired, unembossed flats like those at 54 and 54' could be placed so as to provide a detent with each 90 degrees or less of rotation of the shoe structure.

As the shoe structure is rotated to adjust the vertical spacing between it and the bottom of the leg 12, the adjustment stud 18 will of course be extended varying distances beyond the end extremity of the leg. However, due to the continuing downward bias placed against the flange means 34, the cover 32 will always be biased downwardly against the top of the shoe structure. Consequently, the adjustment stud and the interior parts of the glide construction will always be concealed from view and the leg of the article of furniture will at all times have a smooth and generally uninterrupted appearance, as though the leg itself were merely extended when the glide construction is adjusted. Further, the spring force acting against the flange means 34 will maintain the detenting position of the shoe structure against unintentional disturbing forces, so that the desired harmonious alignment of the shoe structure with respect to the cover and the leg will be maintained at all times, unless the shoe structure is intentionally rotated.

It is entirely conceivable that upon examining the foregoing disclosure, those skilled in the art may devise embodiments of the concept involved which differ somewhat from the embodiment shown and described herein, or may make various changes in structural details to the present embodiment.

I claim:

1. An adjustable glide for the ends of furniture legs, comprising in combination: a shoe structure for contacting a support surface such as a floor; an adjustment stud means upstanding from said shoe structure; mounting means attachable to such a leg and adjustably engageable with said stud means for anchoring said glide to such leg and also for providing incremental lengthwise adjusting movements of the stud means with respect thereto; a sleeve-like cover element extending upwardly from said shoe structure, substantially enclosing said stud means and slidably telescopically interfittable with such leg; and a biasing means at least partially within said cover element for urging the same downwardly with respect to said stud means and toward portions of said shoe structure; said stud means extended lengthwise of the said mounting means moving said shoe structure away from the mounting means and a leg to which the latter is attached, and said cover element when said stud means is so extended moving with respect to said mounting means and leg and following the moving shoe structure due to the urging of said biasing means, such that portions of said glide between said shoe structure and such furniture leg remain substantially covered and concealed at various adjusted positions of the glide.

2. The adjustable glide defined in claim 1, wherein said stud is threaded along its length and wherein said mounting means is adjustably engageable with said stud by threading thereupon.

3. The adjustable glide defined in claim 2, wherein said cover element merely rests atop portions of said shoe

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structure and is physically independent therewith and unconnected thereto.

4. The adjustable glide defined in claim 3, wherein said biasing means includes a spring element acting between said stud means and said cover element.

5. The adjustable glide defined in claim 4, wherein said stud means includes a member threaded thereupon and engaging a part of said spring element, for varying the force exerted by said spring element.

6. The adjustable glide defined in claim 3, wherein both said cover element and said shoe structure have a particular non-round cross-sectional shape made to generally correspond to the cross-sectional shape of a given non-round furniture leg and said cover element is of a size with respect to said leg such that the former is held against rotation with respect to the latter by said telescoping interfit therebetween; wherein said stud means is secured to said shoe structure such that the stud means may be rotated to thread it into or out of said mounting means by rotating said shoe structure; and wherein said cover element and said shoe structure define a detent arrangement therebetween; said detent arrangement indexing rotational movement of said shoe element with respect to said cover element and leg to maintain corresponding vertical alignment between like portions of the said cross-sectional shapes of each.

7. The adjustable glide defined in claim 6, wherein said detent arrangement comprises a projecting element on one of said shoe structure and cover element extending toward the other thereof and means defining a recessed area on such other, said projecting element and recessed area arranged with respect to each other to come into registering contact at at least one relative position of said shoe structure and cover element during each complete rotation of the shoe structure.

8. The adjustable glide defined in claim 7, wherein said shoe structure has a surface which is oriented generally horizontally when said stud means is positioned vertically, one of said projecting element and recessed area being located on said surface, and wherein said cover element has a flange portion arranged to extend over said surface in close contiguity thereto, the other of said projecting element and recessed area being located on said flange portion.

9. The adjustable glide defined in claim 8, wherein said surface is fixed with respect to said shoe structure and said flange portion is fixed with respect to said cover element, such that said biasing means urges said surface and flange portion toward each other and thereby urges said projecting element into said recessed area and when the same come into registration with each other.

10. The adjustable glide defined in claim 9, wherein said biasing means includes a spring element acting between said stud means and said cover element.

11. The adjustable glide defined in claim 10, wherein said stud means includes a member threaded thereupon and engaging a part of said spring element, for varying the force exerted by said spring element.

12. The adjustable glide defined in claim 11, wherein said means defining said recessed area comprises at least one embossed ridge having a generally circular length interrupted at least once by an unembossed, unridged, generally flat expanse comprising said recessed area.

13. An adjustable, indexing glide for furniture legs having hollow end portions which are non-round in cross-section, comprising in combination: a shoe structure including an inverted cup-shaped retainer having side walls defining a non-round cross-sectional shape similar to that of said leg portions, including a base, and further including a resilient foot element mounted between said side walls; a threaded stud secured to said shoe structure and extending upwardly from said base; a mounting member securable inside such leg and having a threaded aperture for threading engagement of said stud; a sleeve-like cover laterally enclosing said stud above said retainer base, said cover having substantially the same cross-sectional shape

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as said retainer and said leg portion but being sufficiently smaller than the latter to slidably telescope thereinto when said stud is threaded upwardly through said mounting member aperture to bring said shoe structure closer to the end extremity of said leg; said cover when telescoped into said leg being held thereby against rotation with respect thereto; said cover having flange portions extending inwardly toward said stud and oriented immediately over said retainer base; a spring having coils passing around said stud and spaced end extremities, one of which bears downwardly against said flange portions; a nut threaded on said stud below said mounting member and bearing downwardly against the other end extremity of said spring to apply adjustable amounts of stress thereto, such that the spring urges said cover downwardly by its flange portions; and embossments on the upper surface of said retainer

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base and on the lower surface of said flange portion; said embossments defining a detent for indexing rotation of said shoe structure with respect to said cover such that the corresponding cross-sectional shapes of each may be maintained in vertical alignment.

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