Feb. 11, 1936. R. E. MILLER 2,030,649

FURNITURE LEG SHOE

Filed Aug. 4, 1934

Fig. 1

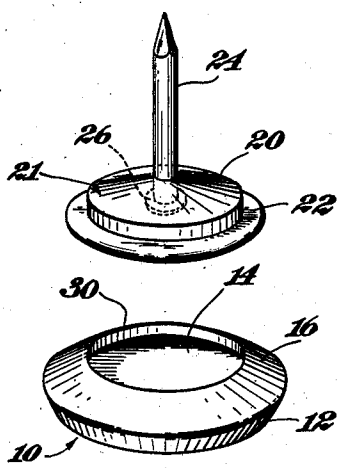


Fig. 2

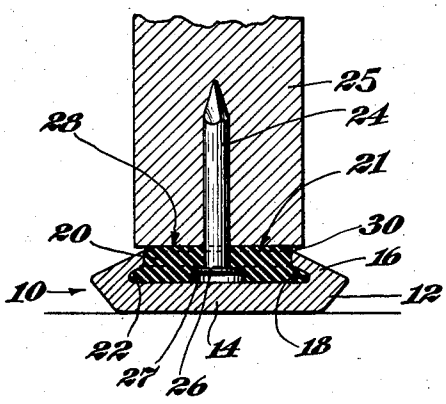


Fig. 4

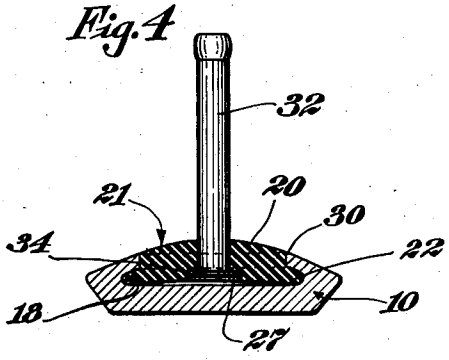


Fig. 3

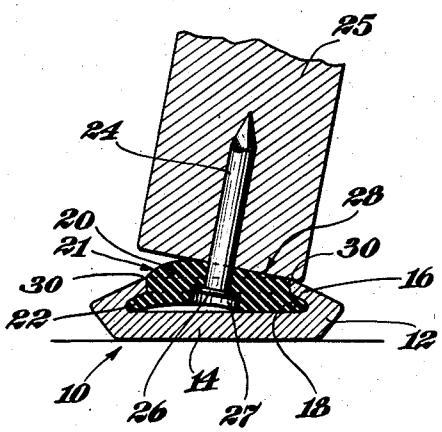
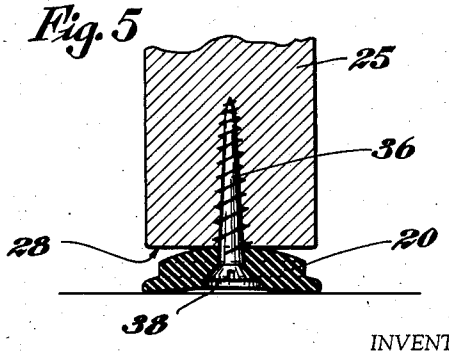


Fig. 5



INVENTOR.

Robert E. Miller

BY William N. Shurtleff

ATTORNEY.

Patented Feb. 11, 1936 2,030,649

UNITED STATES PATENT OFFICE

2,030,649

FURNITURE LEG SHOE

Robert E. Miller, Bronxville, N. Y.

Application August 4, 1934, Serial No. 738,437

3 Claims. (Cl. 16—42)

This invention relates to furniture leg shoes and in particular to shoes of the type that are movable in relation to the furniture leg, for more effectively performing their intended function.

Shoes of this character as heretofore constructed have as a rule either used a resilient cushioning pad, which yielded slightly under compression but which had the disadvantage of not permitting a wide range of angling of the shoe in relation to the leg, or, where the construction permitted a wide range of angling it was usually in the form of a swivel construction, often of very intricate design, and without the cushioning effect.

It is therefore among the objects of my invention to provide a furniture leg shoe having the advantages of both the aforementioned types of shoes heretofore used, without their disadvantages, in other words, one which will permit ready angling or other movement of the shoe in relation to the leg, and yet include the cushioning effect.

Among further objects of my invention are in particular the provision of a shoe of rigid material joined to a furniture leg by a resilient connection, the provision of a member adapted to be deformed on movement of the shoe in relation to the leg and adapted to restore the shoe to its normal position when the deforming force is removed, and further, in the provision of a member adapted to be placed under tension when the furniture leg shoe is moved away from the furniture leg or is tilted, and to resiliently draw the shoe back into its normal position, and in the provision of a shoe having a removable portion, which, when removed, results in shoe construction of different characteristics from that of the normal assembly.

For the attainment of these objects and such other objects as will hereinafter appear or be pointed out, I have illustrated several embodiments of my invention in the drawing in which—

Figure 1 is an exploded view of one form of my furniture shoe leg;

Figure 2 is a section through a furniture leg shoe of the type shown in Figure 1, completely assembled, and in its normal position of use, with the weight of the furniture bearing directly and centrally on the shoe;

Figure 3 is a view similar to Figure 2 but showing the shoe tilted in relation to the furniture leg;

Figure 4 is a vertical section through a shoe similar to the one shown in Figure 1, having a pin or pintle adapted to swivel in a socket in the furniture leg instead of the nail shown in Figures 1 to 3; and

Figure 5 is a sectional view through the inner member of a modified form of shoe applied to a furniture leg and illustrating the use of this member by itself as a resilient cushion.

Referring to the drawing in detail, it will be observed that in Figures 1 to 3 I show a furniture leg shoe having an outer bowl-shaped member 10 provided with upwardly diverging side walls 12 springing up from a bottom wall 14, and having an overhanging flange portion 16, which serves to define the annular recess portion 18. Into the hollow 19 of this bowl-shaped member 10 fits a washer-like element 20 made of soft elastic material adapted to yield under either tension or compression, and to return to a normal position when freed from stresses. Such material, for instance, might be India rubber. The element 20 is more or less disc-shaped with a convex upper surface 21 and is surrounded by an annular flange 22, which is adapted to seat in the recess 18 in the bowl-shaped member 10 and to be held in place in said recess by the overhanging flange 16. It will be observed that the floor contacting area of member 10 is flat and of substantial extent which, as shown, is so great that it exceeds that of element 20 even including the flange thereof. Such a construction adds to the stability of member 10 and makes possible the tilting action to be hereinafter described. Through the central portion of the element 20 passes a member 24 serving for attaching the shoe to the furniture leg. Member 24 may be of any suitable or preferred form; in Figures 1 to 3 it is shown as a nail, intended to be driven into the furniture leg 25 for the purpose of retaining the same, and provided with the usual head 26. The head 26 is adapted to seat in a recess 27 in the element 20.

It will be observed that this construction results in a connection between the shoe and the furniture leg that is in effect resilient throughout. Where it is desired to apply the shoe to a furniture leg the nail 24 and element 20 are first assembled and then the nail is driven into the furniture leg 25, and in doing so the portion of element 20 between the nail head and the furniture leg will usually be compressed to some extent, as indicated in Figures 2 and 3, thereby in effect deepening the recess 27, the normal depth of which is indicated in Figure 4 in connection with another form of the invention. This effect is of no particular importance, except that it prevents contact of the head 26 with member 10 when the shoe is angled, as shown in Figure 3, and with the

floor, as shown in Figure 5. While I have described the nail 24 as separate from element 20, it will be obvious that if convenient or desirable, the same may be made in one unit as by molding the nail head into the rubber of element 20 and this assembled unit then applied to the furniture leg by driving in the nail.

The next step in the assembly is to position the member 10 over the element 20 and this may be readily done with the aid of a suitable tool, such as a screw driver, by forcing the flange 22, small portions at a time, into the recess 18, or in any other convenient manner.

Reference is now made to Figures 2 and 3, as showing the functioning of my improved furniture leg shoe. Figure 2 shows the normal position, with the weight of the furniture bearing centrally and directly on the shoe, and Figure 3 shows the leg 25 angled in relation to the shoe, or what is the same thing, the shoe angled in relation to the leg. It will be observed that during use, when the weight of the furniture bears centrally on the shoe, as shown in Figure 2, the lower surface 28 of the leg 25 will compress the washerlike element 20 and cause it to approach the rim 30 of flange 16 as clearly appears from Figure 2, when contrasted with Figure 5, which shows the relation of the parts when the element 20 is under little or no compression. When the shoe is angled in relation to the leg the effect is to cause one side of the lower surface 28 of the leg to contact with and angle about the rim 30 of flange 16, as shown at the right of Figure 3, and to raise it away from the rim 30 at the opposite side as shown at the left in Figure 3. At the same time the central portion of element 20 is pulled upwardly by the head 26 of the nail 24 and this pull is resisted by the flange 22 which is held in place in the groove 18, and this results in deforming the left hand portion of the element 20 as shown in Figure 3, and in placing it under resilient tension. As soon as this tension is relieved, the shoe will assume its normal position as shown in Figure 2. The angling action just described will take place whenever the furniture leg is displaced from the vertical while the shoe retains its horizontal position. The broad base of member 10, the periphery of which lies outside rim 30, keeps it in contact with the floor until a limiting position is reached, when leg and shoe move as a unit. The greater is the weight, the greater the degree of tilting or angling attainable. Where a substance like a good quality of india rubber is used for the element 20, even a very slight force applied in tension will suffice to secure a relatively great degree of angling, and it is in this respect that my invention differs from furniture shoe legs as heretofore constructed.

In Figure 4 I have illustrated a second embodiment of my invention. In this figure the attaching member is shown in the form of a pin 32 passing through the element 20 and provided with a head 34 seating in element 20. Pin 32 is intended for seating within a socket applied to a furniture leg, the construction referred to being standard for fastening shoes, casters, etc. to furniture. In other respects this form of the invention is identical, in construction and in manner of use, with the form of Figures 1, 2, and 3.

In Figure 5 I have illustrated the use of the inner member 20 alone attached to a furniture leg so as to provide a resilient cushion, which effect is customarily obtained by the use of "crutch tips". Attachment is effected by a wood screw 36, which takes the place of the nail of Figures 1, 2, and 3, and the pin of Figure 4. The head 38 of the wood screw is shown as countersunk in relation to the member 20 in the same manner as the head of the nail in Figure 2 and for the same reason, namely, the compression of the rubber as the screw is inserted into the wood.

While I have herein shown and described several embodiments of my invention, it is to be understood that these embodiments are illustrative only, and they are not to be interpreted as limiting my invention in any sense and it will be further understood that my invention may be embodied in many other forms without departing from the spirit or scope thereof as defined in the appended claims.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. A furniture leg shoe comprising an outer rigid member and an inner resilient element, said outer member having a floor-engaging surface and an upwardly opening cavity, and said inner element being positioned within said cavity, and the rim portions surrounding the mouth of said cavity being adapted to engage the lower surface of a furniture leg associated with the shoe, and the periphery of said floor-engaging surface lying outside of the vertical projection of said furniture leg engaging rim portion at all points thereof, means on said resilient portion engaging cooperating means on said outer member for retaining said resilient element within said outer portion, and means for fastening said resilient element to a furniture leg, said fastening means having an enlarged head at one end thereof adapted to engage said resilient inner element and retain it thereon when said fastening means has passed through said element and is in place in a furniture leg.

2. A furniture leg shoe comprising an outer rigid member and an inner resilient element, said outer member having a floor-engaging surface and an upwardly opening cavity, and said inner element being positioned within said cavity, and the portions of the upper surface of the outer member surrounding the mouth of said cavity being adapted to engage the lower surface of a furniture leg associated with the shoe, and the periphery of said floor-engaging surface lying outside of the vertical projection of said furniture leg engaging rim portion at all points thereof, means on said resilient portion engaging cooperating means on said outer member for retaining said resilient element within said outer portion, and means for fastening said resilient element to a furniture leg.

3. In a furniture leg shoe a rigid member having a floor contacting surface adapted to set on a floor during the normal use of said shoe, a fastening element adapted for fastening said shoe to a furniture leg, means connecting said rigid member and fastening element and adapted to permit relative angling of said member and said means, and, on angling, to generate a tensile force opposing said angling, and portions of said rigid member being adapted to engage portions of the furniture leg, said furniture leg engaging portions being so disposed that their projection on said floor-contacting surface lies within the periphery of said floor-containing surface.

ROBERT E. MILLER.