

Nov. 8, 1938.

R. E. MILLER

2,135,945

FURNITURE LEG SHOE

Filed April 12, 1937

Fig. 1.

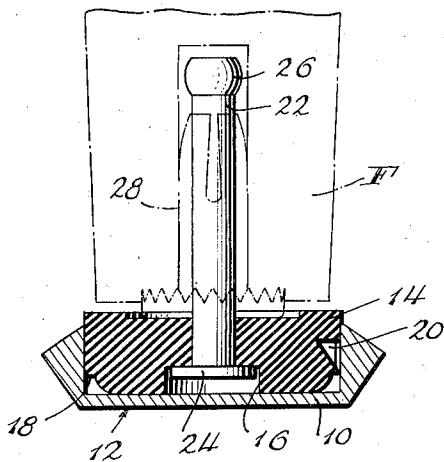


Fig. 2.

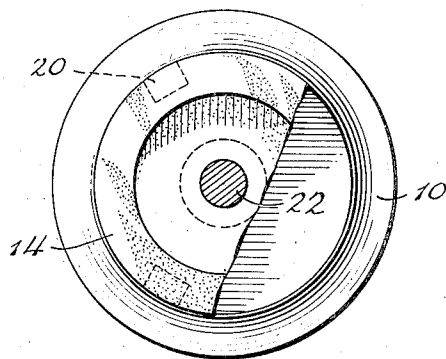


Fig. 3.

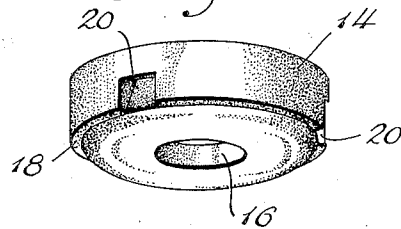


Fig. 4.

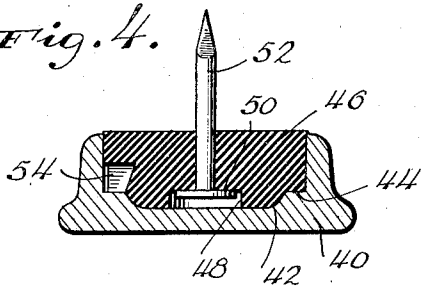


Fig. 6.

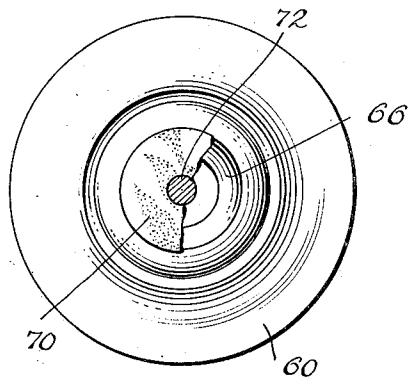


Fig. 5.

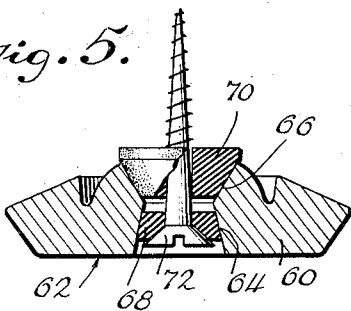
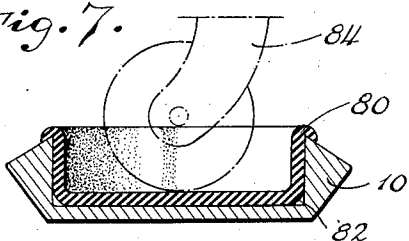


Fig. 7.



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2,135,945

FURNITURE LEG SHOE

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Application April 12, 1937, Serial No. 136,297

4 Claims. (Cl. 16-42)

This invention relates in general to devices for use in connection with furniture legs and serving to shield the floor or floor covering from being damaged by furniture legs and to make more easy and to reduce noises associated with the moving of furniture. In particular, it relates to devices of this type that are capable of movement relative to the furniture leg and in one of its phases it relates to a furniture leg shoe adapted both for attachment to a furniture leg and for use as a caster cup.

Among the objects of my invention is the provision in a furniture leg shoe of a construction permitting ready attachment of the shoe to a furniture leg without the use of special tools or special precautions; the provision in a furniture leg shoe of a construction including a yieldable member that is securely but removably held in a floor engaging member; the provision in a furniture leg shoe of a member removably held in a floor engaging member, the association being effected in a manner that will prevent accidental separation of the parts and yet will permit their relative movement or separation when desired; the provision in a furniture leg shoe of yieldable means intermediate the floor engaging portions and the furniture leg engaging portions; and the provision in a furniture leg shoe of a floor engaging member that is separable from other portions of the shoe and is adapted for receiving an element whereby it may be converted into a caster cup.

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, wherein: Figure 1 is a view partly in section of a furniture leg shoe;

Figure 2 is a plan view of the furniture leg shoe of Figure 1 with portions thereof broken away;

Figure 3 is a perspective view of one of the parts constituting the furniture leg shoe of Figure 1;

Figure 4 is a view partly in section of a modified form of furniture leg shoe;

Figure 5 is a view partly in section of a further modified form of furniture leg shoe;

Figure 6 is a plan view of the furniture leg shoe of Figure 5 with portions thereof broken away; and

Figure 7 is a sectional view of a caster cup utilizing as one of the elements thereof, an element of the furniture leg shoe shown in Figure 1.

Among the properties desirable in a furniture

leg shoe is that of adjustability relatively to the furniture leg to which it is attached, so that when the latter is angled in relation to the floor the shoe will continue to squarely engage the floor while angling in relation to the leg, without breaking or separation of the parts thereof under ordinary conditions of use, and another desirable property is that of ready attachability without the use of special tools.

These and other desirable properties are possessed by the form of my invention illustrated in Figures 1, 2 and 3. In these figures is shown at 10 a floor engaging member or cup provided with a wide, flat floor engaging surface 12, and this member is shown as hollowed out and as receiving in its hollow a resilient, compressible and yieldable element 14. While the floor engaging member 10 may be made of some hard, unyieldable and smooth substance, such as Bakelite, the inner element 14 may be made of any suitable or preferred substance having the properties heretofore enumerated, such as indiarubber.

It will be observed that the hollow or recess of member 10 is so contoured in relation to the side walls of element 14 that there are no obstructions preventing their separation. In the drawing the element 14 has walls that in general are cylindrical, and the walls of the recess in member 10 are also cylindrical, and it will further be observed that the diameter of the floor-engaging surface 12 exceeds that of the member 14.

The inner element 14 is shown as having a centrally located recess 16 in its lower wall, and its lower rim portions are cut away, as indicated at 18, whereby air spaces are provided between the inner walls of the member 10 and the walls of the element 14. Recesses 20 are shown arranged peripherally on the element 14, and when the element 14 is inserted into the member 10 these form closed spaces. The same is true of the space formed at the cut-away portions 18 and the recess 16.

The element 14 preferably is so related dimensionally to the member 10 that it can only enter the same under slight compression, so that once these parts are assembled there will be a resistance against their separation due to the resiliency of the material of which element 14 is constituted. This resistance to separation is enhanced by the provision of the recesses 16, 18 and 20. When an attempt is made to separate the parts 14 and 16, which attempt to separate of course results in movement of the parts relatively to each other, the air in the said air spaces becomes attenuated and causes a suction effect resisting the separa-

tion. The slightly enlarged diameter of the element 14 relative to the hollow of the cup-shaped member 10 and the construction of the element 14 from relatively soft rubber or the like, causes a slight compressing action on the periphery of the element 14 when the latter is inserted into the cup-shaped member 10 which will have the effect of contracting the sides of the peripheral recesses 20 within the hollow of the cup-shaped member 10, providing for greater frictional contact between the element 14 and the member 10 when these are assembled.

For purposes of attaching the furniture leg shoe just described to a furniture leg, I have shown an attaching member in the form of a pin having a shank 22, a flattened head 24 adapted to seat in the recess 16 of the element 14 and a bulging end portion 26 adapted to retain the pin within a socket 28, of well-known type, indicated in dotted lines, and which socket fits into a bore in a furniture leg indicated in dotted lines at F.

By referring to Figure 1, the manner of application and the functioning of my furniture leg shoe will become apparent. In applying the furniture leg shoe to the furniture leg, it is merely necessary to insert the socket 28 into the bore, and to insert the pin 22 into the socket 28. The pin may be driven into place by hammering on the floor engaging surface of the member 10. As a result of such hammering the element 14 will be compressed until the member 10 strikes the head 24, whereby the hammer blow will be transmitted to the head 24, resulting in a driving of the pin 22 into place in the socket.

When the furniture leg shoe is in use, it is obvious that any tilting of the furniture leg out of its upright position, indicated in Figure 1, will serve to compress the element 14 on one side and to lift it on the other side and thereby the member 10 and element 14 move relatively to each other and the furniture leg may tilt while the member 14 still remains flat against the floor. Were it not for the resistance due to the resilient, compressional engagement between the element 14 and the member 10, and the suction effect herein above described due to the air spaces 16, 18 and 20, disengagement of the element 14 from the member 10 might be effected by said lifting action. However, with the parts properly designed, the resistance will be sufficient to prevent such separation against ordinary tilting movement of the furniture leg. At the same time due to the cylindrical configuration of the interengaging surfaces, the member 10 and element 14 move relatively to each other on the lift side; this movement however is delayed by friction and by the air spaces 16, 18 and 20.

It will be understood of course, that the effects described may be attained by contours of the element 14 and the member 10 other than those disclosed in Figures 1, 2 and 3. Figure 4, for instance, shows a modified form of furniture leg shoe in which the outer member 40 is contoured differently from the member 10 shown in Figure 1 to which it corresponds. It will be observed that the base of member 40 is shown flared outward and that the hollow thereof is provided with a recess 42 which is positioned below the step or shoulder 44.

The inner element 46 is, in general, contoured complementarily to the hollow of member 40. It is shown as provided on its lower surface with a central recess 48 adapted to receive and to seat the head 50 of an attaching spike or nail 52.

Suction openings 54 are shown provided in the periphery of element 46.

This form of the invention has an advantage of greater cheapness over Figure 1 due to the substitution of the inexpensive attaching nail for the swivel construction, and it will be observed that it functions in substantially the same manner as the form of Figure 1.

In Figures 5 and 6 I show a modified form of my invention in which a floor engaging member 60, having a wide floor engaging surface 62, is shown as provided with a central opening that may be described as formed by two conical frusta 64 and 66 facing in opposite directions and merging at their narrow ends. A compressible, resilient element 68, which may be made of any suitable or preferred material, such as indiarubber, is shown as fitting into the lower portion 64 of the opening, and as being tapered to conform to the taper thereof, and a second compressible, resilient element 70, also tapered, is shown as seated in the portion 66 of the opening of member 60, its taper being complementary to that of the portion 66. The members 68 and 70 are shown as spaced from each other. Passing through openings in the elements 68 and 70 is an attaching member 72 shown as in the form of a wood screw, although obviously, it may be of any other form such as the spike 52 of Figure 4 or the pin 22 of Figure 1, or any other suitable or preferred form of attaching member. It will be observed that the screw 72 is supported yieldably in relation to the floor engaging element 60, so that it permits angular movement of the shoe in relation to a furniture leg into which the screw 72 is inserted. It will further be observed that this form of furniture leg shoe also is very conveniently attached to a furniture leg since the attaching element is always accessible without the necessity of separating the parts of the shoe, whether such attaching element is a screw, as illustrated, or a spike or pin, as shown in Figures 1 and 4. In the latter forms, where a hammer must be used, it is obvious that the element 70 will yield under the blow of a hammer against the face 62 of member 60 until the hammer engages the attaching element.

It will also be observed that the floor engaging surface is of such width that it extends beyond the projection of the resilient member 70 thereon. Consequently the effect of tilting of the leg will be to distort the resilient member 70 and to cause a compression thereof on one side and a lifting on the other, which lifting may ultimately result in lifting that portion of the member 70 out of its seat 66. Such lifting and distortion however, will be resisted by the suction created by the attenuation of air between the members 68 and 70.

In Figure 7 I have shown another phase of my invention. I have there illustrated an outer member 10, as in Figure 1, but separated from the element 14, which latter is shown as replaced by a cup-shaped element 80, which is yieldable and resilient and shaped so as to fit into the hollow of the member 10 under the slight compression so that it will resist separation from the member 10. In order to obtain the suction effect mentioned in connection with the foregoing forms of my invention air spaces, such as an annular space 82 may further be provided, the air space 82 being shown as due to a shaping of the element 80 so that its contour departs slightly from the contour of the hollow within the member 10. The assembly just described may be referred to

as a "caster cup" and is conveniently used for the reception of a caster, such as the one indicated in dotted lines at 84, or similar device, carried by a furniture leg.

5 While I have herein described several illustrative embodiments of my invention and indicated the operation and the manner of use thereof, it will be understood that my invention may be embodied in many other forms, such as will
10 be obvious to those skilled in the art, and that the disclosure herein is intended to be by way of illustration merely and is not to be construed in a limiting sense, and that I do not limit myself in any way other than as called for by the
15 prior art.

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 provided with a hollow member having a flat lower surface adapted to contact with the floor without marring it and having a hollow therein provided with cylindrical side walls, an element of compressible resilient material having substantially cylindrical side
25 walls, and adapted for insertion into said hollow member, and contoured and dimensioned so as to engage the inner walls of said hollow member under slight pressure, an attaching device passing through said element, said device being provided with a flat head, a recess formed in the
30 under wall of said element and positioned and dimensioned so that the head of said device is adapted to contact the upper wall of said recess and to leave an air space beneath said head, and
35 recesses provided in the periphery of said element, said peripheral recesses being closed by the contact between the walls of said member and said element, and the fit of said element within said hollow member being so close as to contract the
40 sides of said peripheral recesses whereby removal of said element from said member will be resisted.

2. A furniture leg shoe provided with a floor-engaging member having a hollow space therein with vertically upstanding side walls, an element of resilient compressible material in said hollow
45 space, and contoured and dimensioned so as to closely engage the walls surrounding said hollow space when the shoe is in use, said element having peripheral recesses therein constructed for

lateral contraction of the sides thereof when in place and to resist relative separation of said member and element, an attaching device passing through said element, and said attaching device being provided with portions adapted to distort said element when said device is moved relatively thereto.

3. A furniture leg shoe provided with a hollow member having a flat lower surface adapted to contact with the floor without marring it, and having a hollow therein provided with cylindrical side walls, an element of compressible resilient material having substantially cylindrical side walls, and adapted for insertion into said hollow member, and contoured and dimensioned so as to engage the inner walls of said hollow member under slight pressure, an attaching device passing through said element, said device being provided with a flat head, a recess formed in the under wall of said element and positioned and dimensioned so that the head of said device is adapted to contact the upper wall of said recess and to leave an air space beneath said head, and recesses provided in the periphery of said element, said recesses being closed by the contact between the walls of said member and said element, and the fit of said element within said hollow member being so close as to contract the sides of said peripheral recesses whereby removal of said element from said member will be resisted by a suction effect.

4. A furniture leg shoe comprising a cup-shaped floor engaging member having a hollow therein, and an element of resilient compressible material fitted in said hollow and substantially filling the same and conforming to the contour thereof, the inner walls of the hollow extending substantially in straight lines from the bottom to the top thereof with the diameter of said hollow at the top thereof at least as great as at the bottom or at intermediate points thereof whereby the resilient element may slide axially relative to the cup-shaped member, said resilient element having one or more recesses in the periphery thereof, the sides of said recesses being contracted upon insertion into the cup-shaped member to resist relative removal.

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