Nov. 10, 1942. V. F. EHRGOTT 2,301,385

FURNITURE PEDESTAL

Filed Feb. 15, 1941

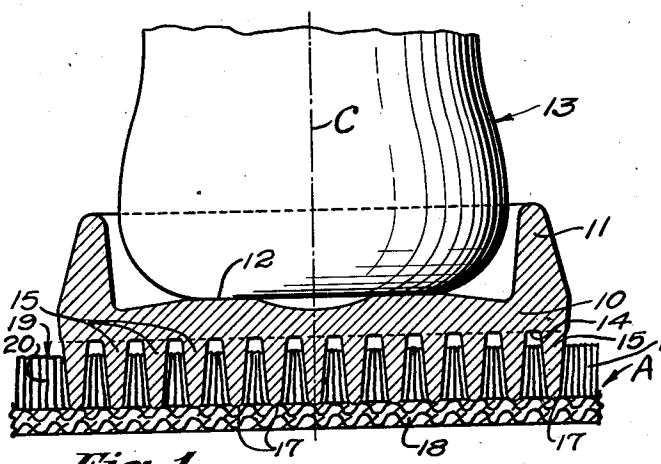


Fig. 1.

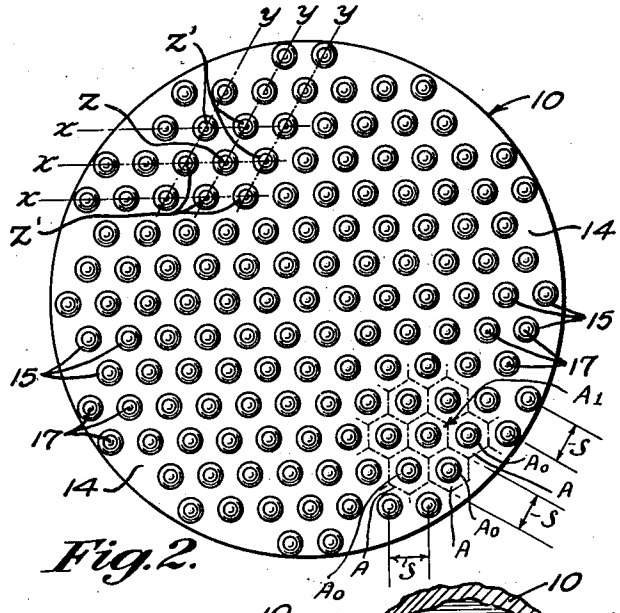


Fig. 2.

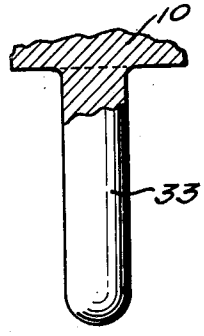


Fig. 8.

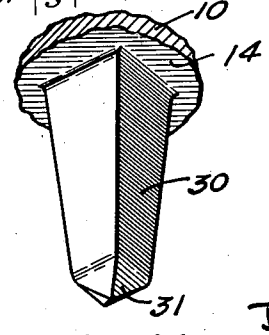


Fig. 7.

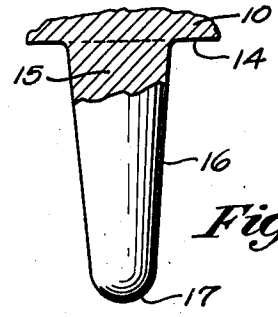


Fig. 3.

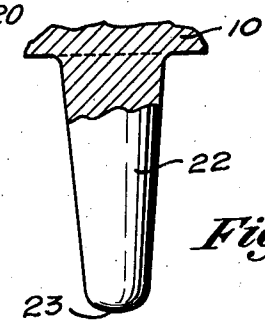


Fig. 4.

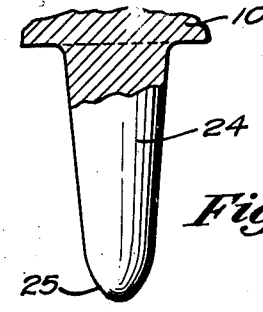


Fig. 5.

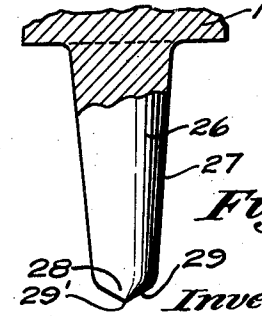


Fig. 6.

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UNITED STATES PATENT OFFICE

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FURNITURE PEDESTAL

Victor F. Ehrgott, Glendale, Calif.

Application February 15, 1941, Serial No. 379,145

4 Claims. (Cl. 45—137)

This invention relates to furniture pedestals and more particularly to such pedestals as are adapted to transfer furniture loads to pile-surfaced floor coverings such as carpet, rugs, or the like.

It has long been a common practice to place furniture loads upon the pile surface of floor coverings by resting the furniture upon pedestals or glides which in turn bear directly upon the pile surface, causing the pile fibres to be matted down or crushed. This results (especially when the furniture is left in one place for a relatively long period of time) in a permanent set of the pile fibres and, when the furniture is moved, in visible depressions or spots which detract from the appearance and lessen the value of the floor covering.

The primary object of this invention is to provide means for so transferring or distributing furniture loads to pile-surfaced floor coverings that such damage will be prevented.

I accomplish this and other objects by providing a pedestal comprising a body member adapted to be engaged at its upper surface by a furniture leg and provided with numerous, downwardly extending rigid projections on its under surface which are adapted to divide and pass between the fibres of the pile surface and to bear with load-transferring engagement upon the weave or woven backing of the floor covering. In this manner, only the backing of the floor covering, which is usually very compactly woven, is subjected to the furniture load, and the pile fibres remain substantially undisturbed, the base being supported by the projections above the top of the pile surface.

A more detailed description of the invention, wherein other objects and advantages will become apparent, will be given in connection with the accompanying drawing, in which:

Fig. 1 is a vertical section of the pedestal drawn on an enlarged scale and illustrates, diagrammatically, its relation to a pile surfaced fabric;

Fig. 2 is a bottom plan of Fig. 1;

Fig. 3 is a fragmentary and greatly enlarged detail of one of the projections as shown in Fig. 1;

Figs. 4, 5 and 6 are views similar to Fig. 3, but showing the projections in modified form;

Fig. 7 is a fragmentary perspective of a variational form of projection; and

Fig. 8 is a view similar to Fig. 3, but showing a further variation of projection form.

As noted in the brief descriptions of the figures, Figs. 1 and 2 are enlarged over actual scale, they being approximately double scale, and representing a diameter of approximately two inches, with all elements in corresponding proportion. However, it will be appreciated that the indicated size is not at all controlling on the invention. The pedestal, as illustrated in these figures, comprises a body member 10 having an upper surface 12 adapted to receive a furniture leg, as indicated at 13, and a bottom surface 14 provided with rigid, transversely spaced, depending projections 15. Upper surface 12 is bounded by an upstanding, annular flange 11 which prevents lateral displacement of the furniture leg, though this provision is not limitative on the broader aspects of the invention.

In one embodiment, as shown in Figs. 1 to 3, projections 15 are in the form of base-up cones 16, each having a small degree of taper (for instance, an included angle of about 10°) and terminating as semi-spherical tips 17. The projections are preferably of a length greater than the thickness of the pile of the particular floor covering A under consideration so that, when the tips 17 are brought into load bearing engagement with the weave or backing 18 of said floor covering, the under surface 14 of the body member does not bear on the surface 19 of pile 20, but, rather, is elevated thereabove. In order to obtain maximum benefit, the diameter of the tips of the projections must be such as to meet two requirements. First, the tips must be small enough to divide and pass between the pile fibres without tending to tuck the fibres beneath the pile surface; and, second, the tips must not be so small (or pointed) that they will harmfully pierce the woven backing under the weight of the furniture. Furthermore, as regards the transverse spacing of the projections, the projections must be spaced apart sufficiently to prevent the pile fibres from becoming wedged therebetween and depressed below the pile surface, and yet, it is preferable to keep this spacing down to a minimum in order to have the largest possible number of projections per unit area of the pedestal, it being understood that the greater the number of projections, the greater will be the load that the pedestal can support, or, conversely, the less will be the load imposed upon each projection. Under average conditions, it has been found that a satisfactory center to center spacing of the projections is substantially equal to twice the mean diameter of a typical projection, though this is not limitative on the invention considered broadly.

Since the woven backing is much more com-

pact than the pile, an additional advantage is gained by minimizing the transverse spacing of the projections for, by reason of that condition, a wedging action takes place between adjacent semi-spherical projection tips and the woven backing which results in increased load bearing capacity.

It is preferable that the tips of the projections be substantially in a common plane, it following that, if the underside 14 of body member 10 be flat, the projections will be of equal length; it following that the embedding depth will be even. Also, to secure ideal weight distribution, it is preferable that the projections be arranged substantially symmetrically about the axial center C of the pedestal and in equally spaced rows and cross rows, though such particular arrangement is not to be considered as at all limited on the broader aspects of my invention. An ideal arrangement is illustrated in Fig. 2 where rows x are equally spaced as are also cross rows y, but the cross rows y extend at an angle of approximately 60° with respect to rows x, it following that, taking any given projection (z for instance) all six immediately adjacent projection (z') are equally spaced from that given projection. The size and spacing of the projections may be varied to suit various expected loadings or various floor-covering characteristics, but, in any event, they are such that the furniture load is substantially evenly divided between the projections and is, accordingly, substantially evenly applied to the weave of the covering at a multitude of spaced points, a very small fraction of the total load being applied at each individual point.

It will be seen that each projection tip presents a load bearing surface, which I will term an "elemental load bearing surface," that engages the weave or backing of the fabric and transfers the furniture load directly thereto. The maximum effective area of any given elemental load bearing surface is equal to the projected area of that surface, and therefore the diameter of the larger end of the tip becomes a factor in figuring the effective area of an elemental load bearing surface. This diameter may be expressed in terms of the space S measured from center to center of the projections or from the midpoint of the space between any two adjacent projections to the midpoint of the space between one of those projections and a third, adjacent projection in line with the first two projections.

Thus, considering the illustrated example (it being remembered that Figs. 1 and 2 have been specified as enlarged scale views representing a pedestal of approximately two inches in diameter with all parts in corresponding proportion) the effective area A_0 of an elemental load bearing surface (represented in Fig. 2 by each of the smallest full circles) may be expressed as .4S, and, substituting this value for the value of the effective diameter of the tip, we may then express the following relationship.

$$A_0=\frac{\pi(.4S)^2}{4}=.126S^2$$

Considering any group of projections, the total load is divided between them but may be considered as, in effect, occupying a zone symmetrically overlying the entire group. I will term this zone as the "total load zone," and it will be seen that it may be considered as made up of what I will term "elemental load zones," which zones are symmetrical and of equal areas, with a projection, and hence an elemental load bearing surface, centered in each elemental load zone. When the projections are arranged in the pattern of Fig. 2, the elemental load zones A are hexagonal, and the minor diameter of each hexagon is equal to one spacing distance S. The total load zone A_1 of one group of seven projections, is outlined by a dash-dot line in Fig. 2.

Since the minor diameter of a given zone A may be expressed, as above, in terms of S, we may express the area of a given elemental load zone as follows:

$$\text{Area of } A=.866S^2$$

Since we have already expressed A_0 in terms of S, we may now establish a ratio between the areas of A_0 and A, as follows:

$$\frac{\text{Area of } A_0}{\text{Area of } A}=\frac{.126S^2}{.866S^2}=.145$$

That is, the effective area of a given elemental load bearing surface is 14½% of the elemental load zone area.

With this ratio existing between elemental units, it is obvious that it applies likewise to the sum of the areas of a number of elemental load bearing areas in a given group (for instance, the sum of the areas of the smaller full circles within area A_1) and the total load zone area A_1 of that group.

The particular numerical values, expressed in the ratio, as given above, are by way of example, only, and therefore the expression is not to be considered as limitative on the invention. I have found that, with the other specified conditions prevailing, I can reduce the total effective area of the elemental load bearing surfaces to as little as 2% of the total load zone area, and still secure beneficial results, though a higher percentage, such, for instance, as is expressed in the example, gives superior results under certain conditions of loading and with certain types of floor coverings.

For purposes of illustration, only, and basing the illustration on relatively extreme conditions, assume that a grand piano weighing approximately one thousand pounds is to be supported by three pedestals. Assume each pedestal is approximately two and one-half inches in diameter and has projections which are spaced apart center-to-center approximately five thirty-seconds of an inch. The number of projections on each pedestal would then approximate two hundred and nineteen, while the total number of supporting projections would be approximately six hundred and fifty-seven. Thus, the load on each projection would be only slightly more than one and one half pounds. From the foregoing, it is obvious that a projection having characteristics such as above described will not harmfully penetrate the weave of a floor covering under such slight individual load.

The projection forms shown in Figs. 4, 5 and 6 differ from the form above described mainly in the shape of the tips. Fig. 4 shows a projection comprising a conical body portion 22 that merges into a tip portion of spheroidal form as indicated at 23. In Fig. 5, the conical body portion 24 merges into a tip portion of conoidal form at 25. In Fig. 6, the conical body portion 26 having a small degree of taper at 27 merges into tip conical portion 28 having a relatively large degree of taper at 29. In this last form, the tip apex 29′ serves to more readily divide

the pile fibres. However, it will be seen that the tip, as a whole, has blunt characteristics.

The above description relating to the projection tip forms is representative of the manner in which the tip form may be modified to suit different conditions of compactness and texture of the woven backing and/or of the pile found in different floor coverings. However, it will be observed in each of the illustrated configurations that the projections terminate in relatively blunt tips so as to present load bearings (load transferring) surfaces that will not rapidly or harmfully penetrate the woven backing of the floor covering.

The projection shown in Fig. 7 illustrates a projection of other than circular cross-section. This projection form, as illustrated, comprises a pyramidal body portion 30 that merges into a relatively blunt pyramidal tip portion 31. While the elevational outline of this projection form is similar to that shown in Fig. 6, it will be understood that the tip portion may be modified to correspond to any of the other illustrative forms.

It is not essential to the broader aspects of the invention that the body portions of the projections be tapered. For instance, the body portion 33 of the projection form shown in Fig. 8 is shown as cylindrical. However, the taper is preferred since it gives added strength to the projections inasmuch as each projection constitutes a cantilever beam as regards side loads on the pedestal.

Though this is not an essential limitation on the invention, it is preferred to form the projections integrally with the base, for in doing so, the cost of manufacture is reduce since the pedestal may be quickly and easily molded of a plastic or other suitable material.

While I have shown and described preferred embodiments of my invention, it will be understood various changes may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A furniture pedestal adapted to be interposed between a furniture support and a floor covering consisting of a woven backing surfaced with pile fibres for transferring the furniture load through the pedestal directly to the backing, said pedestal comprising a body member adapted to take the support, and numerous, closely spaced, blunt-tipped and rigid projections depending from the body member and adapted to separate and pass between the pile fibres with the tips bearing at closely spaced intervals and with load-transferring engagement upon the backing without passing therethrough when the pedestal is subjected to furniture load.

2. A furniture pedestal adapted to be interposed between a furniture support and a floor covering consisting of a woven backing surfaced with file fibres for transferring the furniture load through the pedestal directly to the backing, said pedestal comprising a body member adapted to take the support, and numerous, closely spaced, blunt-tipped and rigid projections depending from the body member and adapted to separate and pass between the pile fibres with the tips bearing at closely spaced intervals and with load-transferring engagement upon the backing without passing therethrough when the pedestal is subjected to furniture load, the tips of said projections presenting elemental load bearing surfaces, the sum of the effective areas of said surfaces being at least two per cent of the total load zone area of the pedestal.

3. A furniture pedestal adapted to be interposed between a furniture support and a floor covering consisting of a woven backing surfaced with pile fibres for transferring the furniture load through the pedestal directly to the backing, said pedestal comprising a body member adapted to take the support, and numerous, closely spaced, blunt-tipped and rigid projections depending from the body member and adapted to separate and pass between the pile fibres with the tips bearing at closely spaced intervals and with load-transferring engagement upon the backing without passing therethrough when the pedestal is subjected to furniture load, the tips of a given group of said projections presenting elemental load bearing surfaces, the sum of the effective areas of said surfaces being at least two per cent of the aggregate load zone area of the group.

4. A furniture pedestal adapted to be interposed between a furniture support and a floor covering consisting of a woven backing surfaced with pile fibres for transferring the furniture load through the pedestal directly to the backing, said pedestal comprising a body member adapted to take the support, and numerous, closely spaced, blunt-tipped and rigid projections depending from the body member and adapted to separate and pass between the pile fibres with the tips bearing at closely spaced intervals and with load-transferring engagement upon the backing without passing therethrough when the pedestal is subjected to furniture load, the tips of a given group of said projections presenting elemental load bearing surfaces, the sum of the effective areas of said surfaces being approximately fourteen and one half per cent of the aggregate load zone area of the group.

VICTOR F. EHRGOTT.