

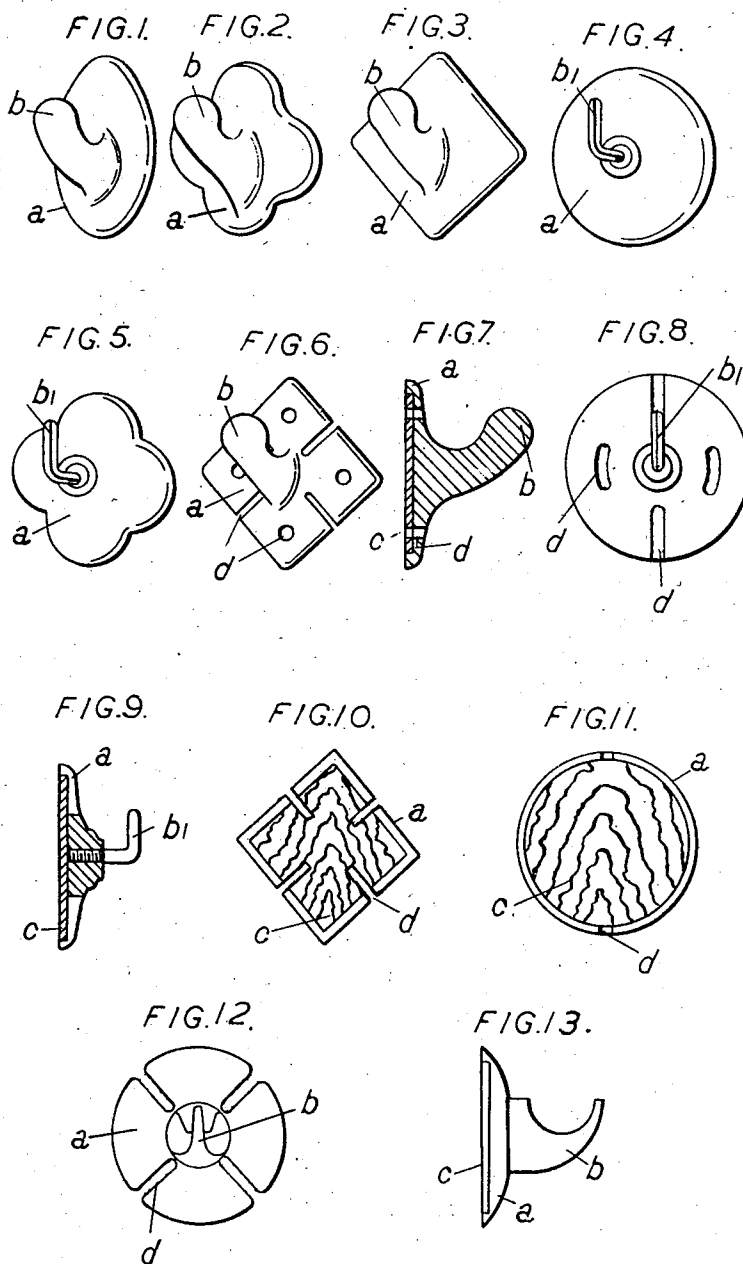
June 1, 1954

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2,679,998

SUSPENSION DEVICE

Filed Oct. 10, 1949



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UNITED STATES PATENT OFFICE

2,679,998

SUSPENSION DEVICE

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Application October 10, 1949, Serial No. 120,435

1 Claim. (Cl. 248—205)

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Suspension devices already exist each in the form of a hook or an eye integral with or attached to a flat plate or base adapted to be stuck to a wall or similar surface by means of an adhesive applied to the back thereof.

It has been found in practice that an adhesive substance capable of adhering to a wall is not always capable of reliably adhering to the back of the attachment plate or base, which is usually made of plastic. For this reason it has been suggested first to cement a backing of some fibrous material to the attachment plate or base, the material selected being suitable for receiving on its outer surface another adhesive which can also adhere firmly to a wall. Generally, paper gummed on its outer surface has been used, the attachment to a wall being effected merely by moistening the gum coating of the paper-backed suspension device and pressing it against the wall.

An object of the invention is to facilitate and cheapen the manufacture of adhesively attachable suspension devices by in particular avoiding the use of an adhesive coating for uniting the backing to the base plate.

A further object is to provide a suspension device in which the backing is so intimately connected with the base plate that it will better resist rupture or tearing under loads suspended from the device in use.

A suspension device in accordance with the invention comprises a base plate made of a moldable or castable substance, a load-carrying member such as a hook projecting from the front of the base plate, and a backing made of a fibrous material such as wood or cork or textile fabric, the outer surface of said backing having a moisture-softening adhesive layer for attaching the device to a wall or the like, and said backing and said base plate having been directly bonded together in the course of molding or casting the latter, i. e. said base plate having been molded or cast in direct contact with said backing.

It has been found that suspension devices made in accordance with the invention can support many times more than the safe load on devices having backings which are merely glued or cemented in position.

In order to obviate the disadvantage of slow drying of the adhesive coating on the outer surface of the backing after this coating has been moistened and the device has been applied to a wall or the like, the base plate and the backing of the suspension device of the invention may be provided with perforations or openings. Through

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these perforations or openings, which may be disposed to give a decorative effect, air can reach the moist adhesive, thus considerably reducing the required drying time.

Some examples of suspension devices in accordance with the invention are shown on the accompanying drawings.

Figs. 1 to 5 are front perspective views of five different forms;

Fig. 6 is a front view of a form similar to that of Fig. 3 but having openings for the purpose already mentioned;

Fig. 7 is a section of the device of Fig. 6;

Fig. 8 is a front view of a form similar to that of Fig. 4 but having openings for the purpose already mentioned;

Fig. 9 is a section of the device of Fig. 8;

Figs. 10 and 11 are back views respectively of the devices of Figs. 6 and 8;

Fig. 12 is a front view of still another form; and

Fig. 13 is a side view corresponding to Fig. 12.

Each of the suspension devices illustrated comprises a base plate *a* made of a moldable or castable substance, e. g. a plastic material or synthetic resin, a load-carrying member in the form of a hook *b* or *b*₁ projecting from the front of the base plate, and a backing *c* made of a fibrous material such as wood or cork or textile fabric. The backing *c* has a coating of a moisture-softening adhesive applied to its outer surface, so that the suspension device can be stuck to a wall or the like simply by moistening this adhesive coating and pressing the backing of the device against the wall or the like.

Figures 1, 2, 3, 6 and 7, and 12 and 13 show suspension devices in each of which the hook *b* is molded or cast integral with the base plate *a* which may be variously shaped as shown.

Figures 4, 5, and 8 and 9 show, by contrast, suspension devices in each of which the shank of a metal hook *b*₁ is inserted in the molded or cast base plate *a*.

Figures 3 and 6 show particularly the manner of distributing stresses between the hook *b* and a base plate *a* of substantially polygonal shape by aligning the hook with a diagonal axis *o* of the base plate, so that when the suspension device is stuck to a wall surface with this axis *o* vertical, maximum linear distribution of push-pull stresses with respect to the wall surface will be assured. Push forces *f* will be exerted against the wall surface by the lower portion of the base plate *a* under conditions of load on the hook *b*, while pull stresses will exist along the diagonal

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axis *o* above the position of the hook, thereby securing maximum distribution of stresses per unit area of the suspension device and attaining the most adhesive effect between the backing *c* and the wall or other supporting surface.

In accordance with the invention the backing *c* and the base plate *a* are directly bonded together in the course of molding or casting the base plate. The backing which, as already mentioned, is formed from fibrous material, is thus incorporated with the base plate without any adhesive between them during the said molding or casting of the base plate, so that there is a direct and intimate connection or bond between the backing and the "as-cast" or molded base plate.

As appears from Figures 10 and 11, the fibers of the backing *c* are ordered substantially in one direction, and the backing is directly bonded to the base plate *a* in the manner already described with the fibers of the backing ordered in the direction of the force which will be acting on the suspension device when a load is suspended from its hook. This arrangement minimises the danger of the backing being torn away under load from the suspension device and enables greater loads to be suspended than otherwise would be the case.

Figs. 6, 8 and 12 show arrangements of the air or drying openings *d*. A backing *c* of wood, cork or the like is both porous and resistant. The adhesive coating applied to its outer surface should, after having been moistened for the purpose of attaching the device in place, dry as uniformly as possible over the entire surface. In the case of a continuous or imperforate base plate this is difficult to attain, since the process of drying develops rather slowly from the outside: while, if the edge dries too quickly, the device may not dry completely over the entire surface of the base and the force with which it adheres to the wall may be impaired. The openings *d* in the base plate and the backing provide a more uniform admission of air and thus ensure uniform drying, which contributes to a better durability of the attachment. Alternately, the base plate can be provided on the back with incised, diagonal lines.

In all forms of the suspension device of this invention the molded synthetic plastic base plate *a* is molded at its rear completely about the entire inner surface and the entire edges of the fibrous backing member *c*. As a result the base plate *a*

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has marginal flanges forming a recess in the rear thereof in which the fibrous backing member *c* is permanently bonded by the molding operation to the base plate over the entire inner surface and the entire edges of the fibrous backing member. This provides a direct, intimate, homogeneous and permanent connection or bond therebetween which will withstand large applied forces tending to separate the same. Also, the outer surface of the fibrous backing member is flush with the rear surface of the marginal flanges so that when the suspension device of the invention is applied to a wall or other flat surface by the adhesive coating no unsightly cracks are presented which could well act as annoying dirt collectors.

I claim:

A suspension device for adhesional attachment to a wall or other flat surface, comprising a rigid fibrous backing member, a molded synthetic plastic base plate having a load carrying member projecting from the front thereof and molded at its rear completely about the entire inner surface and the entire edges of the fibrous backing member, whereby said base plate has marginal flanges forming a recess in the rear thereof in which the fibrous backing member is permanently bonded to the base plate over its entire inner surface and its entire edges, the outer surface of the fibrous backing member being flush with the rear surface of the marginal flanges, and an adhesive layer on the outer surface of the backing member for attaching the suspension device to the wall or other flat surface.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
72,867	Lavater	Dec. 31, 1867
198,703	Smith	Dec. 25, 1877
920,236	Albee	May 4, 1903
1,560,029	Erickson	Nov. 3, 1925
1,971,396	De Waide	Aug. 28, 1934
1,999,633	Grunwood	Apr. 30, 1935
2,122,999	Burke	July 5, 1938
2,199,851	Culver	May 7, 1940
2,385,296	Moore	Sept. 18, 1945
2,549,766	Benson	Apr. 24, 1951

FOREIGN PATENTS

Number	Country	Date
240,755	Switzerland	May 1, 1946