April 10, 1934. S. HIGGINS 1,954,130

FURNITURE SLIDE

Filed Aug. 4, 1930

FIG. 1

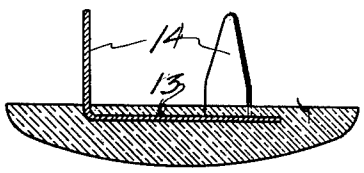



FIG. 3

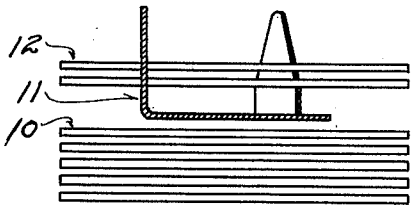



FIG. 4

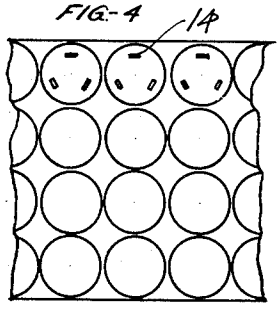
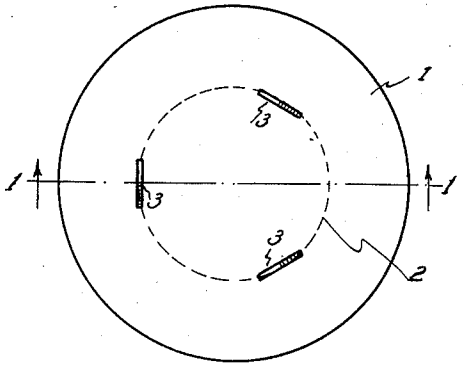



FIG. 2




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# UNITED STATES PATENT OFFICE

1,954,130

## FURNITURE SLIDE

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Application August 4, 1930, Serial No. 472,872

8 Claims. (Cl. 154—2)

This invention relates to furniture slides of the type commonly known as domes of silence, etc. The function of slides is to reduce the friction so that articles of furniture equipped with them can be easily moved. They have largely displaced casters for this purpose for the reason that casters present such a small contact surface that they dent the floor or covering supporting them; slides have an extended contact surface of comparatively large radius whereby the tendency to mar or injure the floor is minimized.

Furniture slides have been made with sliding surfaces of glass, wood or metal. The brittleness of glass, the difficulty of securing it and the dangers associated with broken glass practically preclude its use. Wood slides evidently offer no advantages over the chair or table legs to which they are attached and they are readily broken. Up to the present invention therefore metal has been the only material from which slides have been manufactured on a commercial scale. But metal slides likewise have inherent disadvantages. They are readily distorted and their smooth surface destroyed by hammer blows applied in driving them into place; they quickly rust with the production of surfaces having a relatively high friction coefficient with respect to as well as a tendency to disfigure the floor; and they are apt to squeak when an article of furniture equipped with them is drawn over a smooth surface.

The efficiency of a slide depends on the presence and maintenance of a low coefficient friction and freedom from noise when in motion over a floor. It is essential to these ends that the surface remain in a smooth condition and free from marks of distortion. A low manufacturing cost and ease of application are further practical requirements of a slide structure.

I have found that these and other objects are attained to a surprising extent by the use of compositions entirely unrelated to metal and hitherto proposed materials. These compositions are those that include a fibrous filler bonded by a resinoid, that is, a resin-like synthetic substance characterized by a transformation from an initial fusible and soluble or reactive condition to an infusible insoluble condition by the action of heat; preferably the resinoid is of the type obtained by reacting phenol or phenolic body with a methylene-containing agent such as formaldehyde.

The binder can be incorporated with the fibrous filler in various ways. For example the filler can be wood flour, cotton fibers, etc. and these thoroughly mixed and impregnated by rolling with the resinoid that is in a powdered form or by applying a solution of the resinoid to the filler and then removing the solvent; the compositions so obtained can be molded to the desired form under heat and pressure in accordance with known practice. Slides made of such a composition, particularly with a wood flour filler, however, generally require a thickness that is unsightly and objectionable in order to impart the strength necessary for withstanding shock or impact.

A preferable mode of manufacturing slides that I have found is the use of compositions in the form of sheets or laminations which are superimposed to the desired thickness in a mold and thereupon subjected to heat and pressure. Slides so made from paper and resinoid sheets can be made much less than one-half the thickness of those made from the aforementioned wood flour molding compositions for the same degree of resistance to shock and impact. In the molding operation the laminations lose their identity and a body so made presents a uniform homogeneous appearance in cross section.

The sheet form of composition can be obtained by impregnating paper, cloth, etc. with an alcoholic or other solution of the reactive resinoid and evaporating the solvent. Or the resinoid, either as a powder, or as an alkaline water solution and afterward precipitated, can be mixed with paper pulp or the like and the mixture then laid in the sheet form and the water removed. In these operations care is taken that the resinoid is not unduly advanced from its initial reactive condition.

In the accompanying drawing:

Fig. 1 is a cross section of a furniture slide made in accordance with my invention on line 1—1 of Fig. 2;

Fig. 2 is a plan view of the same;

Fig. 3 is a cross section of an assembly of laminations of resinoid-containing sheets and metal insert prior to molding into the finished article; and

Fig. 4 is a plan view of a sheet carrying inserts ready for punching.

In the manufacture of the slide illustrated in the drawing by way of an exemplification of the invention, discs of paper, or cloth, impregnated or otherwise provided with a resinoid in the reactive condition are stamped or cut out to an appropriate size. A number of discs 10 necessary to give the desired thickness of body are placed in a mold and the insert 11 together with one or

more additional covering discs 12 are placed on top. The assembly is then subjected to heat and pressure in accordance with the usual practice in the molding art.

The insert 11 may be given various forms. As shown in Fig. 1, it consists of a plate 13 with upturned prongs 14.

A preferred method of preparing the discs is to feed one or more strips or sheets through a blanking or die press in a continuous manner. For instance a sheet or plurality of superposed sheets of sufficient width to give the number of discs required can be fed into the press and a row of discs cut at one operation. In this case it is desirable that the inserts be previously placed in position on the sheet or sheets and held by their prongs inserted therethrough as shown in Fig. 4 so that the discs cut also carry the inserts. These discs can be collected on a belt moving beneath the dies of the press and then assembled; or the series of punches for cutting out a row of discs can be operated in sequence and a transverse belt provided with pockets or other aligning means moved beneath at a speed that will collect the discs in superposed position as shown in Fig. 3.

The resinoid binder primarily made use of is as before indicated a phenol- or a cresol-formaldehyde condensation product. But other resinoids preferably those suitable for the manufacture of laminated materials can be substituted.

Securing means of some kind are required for attaching the slides and the use of moldable compositions in accordance with this invention offers advantages over prior known materials in this regard, for metal inserts can be supplied and these can be positioned and secured during the molding of the slides. Embedding and maintaining metal in glass is difficult on account of the different coefficients of expansion of glass and metal; but metal inserts in a molded phenol resinoid composition show no tendency to become loose on account of changes of temperature. Furthermore the inserts can be so designed and placed that no metal is exposed when the slides are attached. In addition the diameter of a slide can be made greater than that of the metal insert and consequently the slide given an increased bearing surface over that of a chair leg or other article for which it is intended; such an extension of a sheet metal slide is scarcely feasible as a practical proposition.

Furniture slides made as described above are highly resistant to impacts, such as hammer blows. Slides so prepared from resinoid impregnated paper laminations have been found to successfully resist more than 15,000 blows struck by a one-half pound hammer falling a distance of one foot. Moreover, the slides produce no annoying squeaks when furniture to which they are attached is drawn over a smooth floor such as tile or cement as is often the case with both glass and metal slides.

This application is a continuation in part of my prior application Serial No. 48,629 filed August 6, 1925.

I claim:

1. Furniture slide comprising in combination a shaped body of fibrous laminations bonded with a phenolic resinoid, and a metal plate intermediate said laminations, said plate having prongs projecting through the laminations on one side thereof and beyond the exterior of the body.

2. Furniture slide comprising in combination a shaped body of fibrous laminations bonded with a phenolic resinoid and a metal insert embedded between said laminations, said insert having attaching means projecting therefrom and beyond the exterior of said body.

3. Furniture slide comprising a shaped body of fibers and a phenolic resinoid binder, and an insert embedded in said body and having attaching means integral therewith and projecting therefrom.

4. Furniture slide comprising in combination, a shaped body of fibrous laminations bonded with a phenolic resinoid and a metal insert embedded between said laminations, said insert having attaching prongs with their bases embedded in the body and their ends projecting from the exterior of said body.

5. Furniture slide having a smooth continuous bottom and comprising in combintion a shaped body of fibrous laminations bonded with a heat-hardened resinoid, and a metal plate intermediate of said laminations and embedded in the body, said plate having attaching means projecting through the body on one side thereof and beyond the exterior of the body.

6. Method of making furniture slides containing a metal plate with attaching means embedded in a resinoid body, which comprises assembling a plate and disks of fiber and reactive resinoid, with one of said disks one side of the plate with the attaching means projecting through it and another of said discs on the other side of the plate, and hardening the resinoid around the plate.

7. Method of making furniture slides containing a metal plate with attaching means embedded in a resinoid body, which comprises assembling the plate and disks of fiber and reactive resinoid of a size to provide disk margins beyond the edge of the plate, with one of said disks on one side of the plate with said attaching means projecting through it, and another of said disks on the other side of the plate, forcing the margins of the disks into contact and hardening the resinoid around the plate.

8. Method of making furniture slides containing a metal plate with attaching means embedded in a resinoid body, which comprises assembling the plate and a disk of fiber and reactive resinoid on one side of the plate, adding sufficient resinoid on the other side of the plate to bond with the resinoid in the disk and embed the plate with said attaching means projecting from the body, forcing the two portions of resinoid to unite, and hardening the resinoid.

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