Feb. 11, 1969 C. B. BANKS 3,426,419

LOCATOR PLATE

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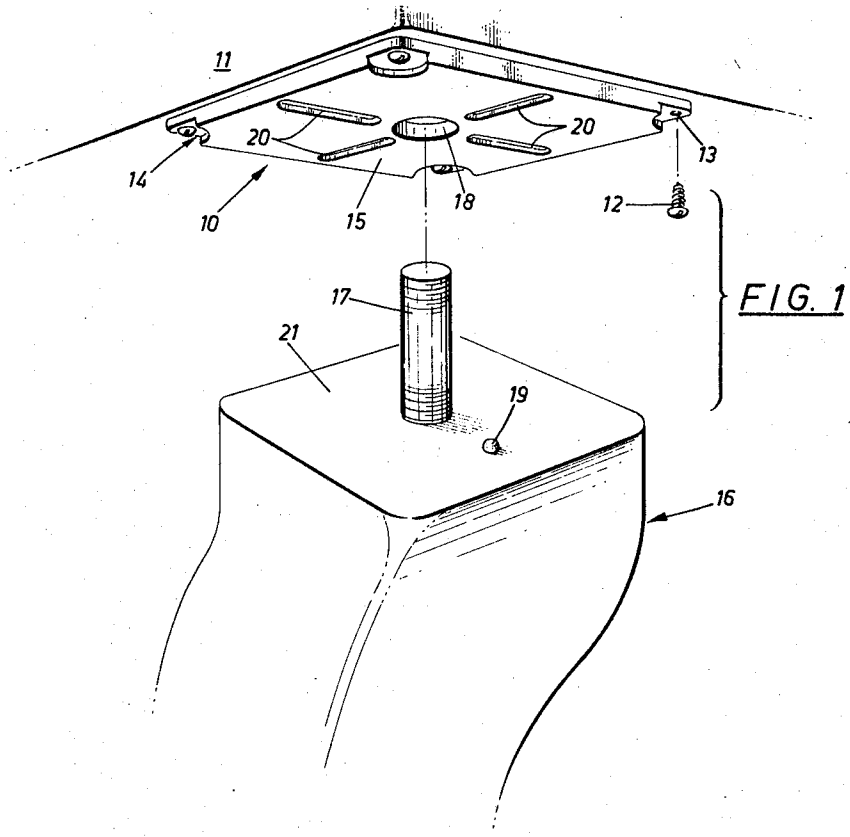


FIG. 1

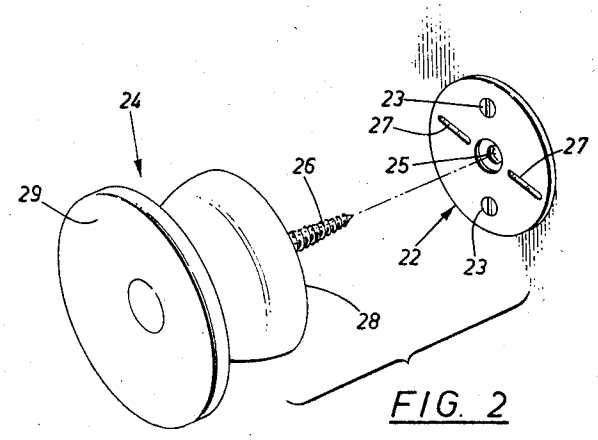


FIG. 2

INVENTOR.

CHARLES B. BANKS

BY

Douglas L. Johnson.

Attorney

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LOCATOR PLATE

Charles B. Banks, Hannover, Ontario, Canada, assignor to Plastiglide Limited, Downsview, Ontario, Canada

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This invention relates to a guard plate which is particularly useful in the manufacture of furniture pieces. More particularly, the invention relates to a locator plate which may be used not only as a guard plate to protect the material of a piece of furniture, but also to locate and orient parts of the furniture which are attached to it by a twisting or screwing action.

Many large articles of furniture are constructed so that the legs of the article are screwed into the bottom of it at the time when it is desired to have the complete furniure piece. This is particularly so with upholstered items of furniture such as box springs, chesterfields, chairs, etc., where the legs can be attached to the furniture at a later time. It is thereby possible to prepare the basic furniture piece, and to then attach legs having different designs, finishes, etc., and which are in themselves a completed article. Thus, for instance, a customer purchasing a box spring for a bed may separately purchase legs which will be attached beneath the box spring when it is assembled in the home; but which legs may be later removed to facilitate the incorporation of the box spring into a bedstead frame. Similarly, other upholstered items such as chairs may be shipped to the customer with the legs unattached, so that the customer may attach the legs at his own convenience.

There are, however, several shortcomings in such a manner of manufacture of upholstered furniture pieces. In the first place, it is necessary to purchase and install legs which are completely symmetrical, that is, they are circular at any right cross-section. Further, as the leg is screwed into the furniture piece, and when it is nearly tightened, any irregularities on the top end of the leg tend to snag on the fabric of the furniture piece, and may tear or rip the fabric and thus damage the furniture. It has been known to attach a small fibre washer to the furniture piece at each location where a leg will be later installed, to overcome the problem of snagging of the upholstery fabric; but in any event, it has been necessary to use round legs, as discussed.

A further problem which has upset the furniture industry, is the matter of protection of highly finished wood surfaces where items such as drawer pulls are to be attached contiguous to the wood surface. This is especially so when it is desired to install a round knob on the face of the drawer by screwing the knob up against the face. Should the knob then be removed to be replaced by another, smaller drawer pull, it sometimes occurs that the finish on the face of the drawer has been damaged beneath the place where the knob was attached.

It is an object of this invention to provide a novel guard plate which is useful in protecting the finish of a furniture piece, whether that finish is upholstered or otherwise.

It is a further object of this invention to provide a locator plate for furniture pieces which assists in properly orienting an item to be attached to the furniture piece.

Another object of the invention is to provide a locator plate which may be easily and inexpensively manufactured, and which may be readily installed on articles of furniture.

These and other objects of the invention will be more readily apparent in the following discussion made in association with the drawings, in which:

FIGURE 1 is an exploded view of a portion of an article of furniture illustrating a preferred embodiment of the locator plate of the present invention; and,

FIGURE 2 is an exploded view illustrating yet another manner in which the locator plate of the present invention may be employed.

A locator plate in accordance with this invention is indicated generally at **10** in FIGURE 1. The plate is attached in this instance beneath an item of furniture indicated generally at **11**. The particular item of furniture bears no relationship to the invention.

In the embodiment illustrated in FIGURE 1, the locator plate **10** is attached to the furniture piece with screws **12** through holes **13**. As a matter of convenience, the locator plate **10** is shown having each corner with an indentation **14** so as to accommodate the head of screw **12** in a manner that it will be flush or beneath the major surface **15** of the locator plate. Of course, the locator plate **10** may be attached to the furniture piece by other fastening means than screws; for example, by staples or by gluing. Also, it is not necessary that the corners of the locator plate be indented as is illustrated at **14** and as is discussed below.

A leg to be attached to the furniture piece **11** is illustrated generally at **16**. The leg has a mounting post **17** which is adapted to fit through central hole **18** in locator plate **10**, and which screws into a receiving nut or other fastening means situated within furniture piece **11** behind hole **18**. Mounting post **17** may be a lag-bolt fitted into leg **16** or any other convenient post arrangement, provided only that at least a portion of the post is threaded so that the leg fits to the furniture piece by a twisting action.

A stud or brad **19** is mounted in top surface **21** of leg **16**. A plurality of recesses **20** are formed or moulded into locator plate **10** so as to extend radially from central hole **18**. The exact number of recesses **20** is immaterial as is discussed hereafter. Also, recesses **20** may extend through the entire thickness of locator plate **10**, or they may extend only part way into the locator plate. It will become evident that the depth of recesses **20** must be sufficient to accommodate the height to which brad **19** extends above the upper surface **21** of leg **16**.

Another embodiment of the locator plate of this invention is indicated generally at **22** in FIGURE 2. This locator plate is particularly adapted to be mounted by such means as screws **23** on the face of a drawer or other surface such as a door to which it is desired to attach a knob shown generally at **24**. The knob **24** is adapted to be mounted to the face through central hole **25** of plate **22**, and has fastening means such as lag-bolt **26** for that purpose. Recesses **27** are provided in locator plate **22** in the same manner as recesses **20** are provided in plate **10**, and a stud is provided in face **28** of knob **24**.

It will be seen that the locator plate of this invention can be adapted to many different items of furniture manufacture, and can be used in any instance where a part of the item of furniture is attached with a mounting post which is screwed into the furniture piece; that is, the lo-

cator plate is used where a part of the furniture is provided with a locating stud or brad, such as stud **19** of leg **16**, which stud approaches the locator plate with a twisting action or a helical traverse as the part is screwed into the furniture piece.

As the part on which the stud is located approaches the locator plate, the stud will make a contact with the outer surface, for example, surface **15** of plate **10**. This stud slides across the surface of the plate, and slips into one of the recesses **20**. However, as the twisting action on the leg **16** continues, the stud moves out of the recess and along the face until it encounters the next recess. This procedure may be repeated several times with the stud slipping into and coming out of each recess in turn. However, since the stud is moving in a helical traverse, it projects further into each succesive recess. Therefore, with each successive engagement of the stud with a recess, more effort is required to disengage them, so that the stud may move out of the recess. That is, more effort is required to overcome the elasticity of the material of the locator plate, or of the material of the component part being attached to the article, or a combination of both. Eventually, however, the stud slips into one of the recesses **20**, and projects far enough into that recess that no amount of twisting effort can overcome the engagement of the stud and recess without actually tearing or damaging the material of the plate or dislodging the stud. It is in this position that the part being attached, and on which the stud is located, has reached its final position.

It is therefore possible, using a locator plate as illustrated in FIGURE 1, to provide a leg **16** having a particular shape or configuration, such as that illustrated, which requires that it must be oriented to the piece of furniture only in a particular direction. This provision may be effected by controlling the height of stud **19** above face **21**, so that after its first contact with face **15** of the locator plate, the number of recesses into which it will slip can be determined. As an example, it can be arranged that after the stud has slipped into a recess for the sixth time, it is no longer possible to further twist the leg without damaging the plate and without excessive effort: but the orientation of the stud to the leg and the locator plate have been predetermined, so that after the sixth contact of the stud and recess, the leg is in its proper orientation with respect to the furniture piece.

From FIGURE 2, and assuming that plate **22** is on the face of a drawer, it may be seen that it is possible to apply a design or escutcheon to end **29** of knob **24**, and to then screw knob **24** into the drawer face using automatic equipment, but being assured that the design on end **29** will be properly oriented with respect to the drawer face.

It is also obvious that the locator plates of this invention also serve as guard plates to protect the finish of the furniture piece, whether it be upholstery, varnish, etc.

The material of which a locator plate made according to this invention may be comprised is usually a suitable synthetic such as, for example, nylon, polyethylene, linear polyethylene, or polypropylene. The locator plate may also, of course, be made from such materials as fibreboard, rubber, or metal; provided only that a stud may be forced out of a recess in the material, at least on its initial contact, without tearing the material. As indicated above, it is clear that recesses **20** or **27** need not extend through the entire thickness of the material from which the plate is made, provided that they are deep enough to accommodate the stud when it is in its final position in one of the recesses.

It can also be seen that for special circumstances, the number of recesses provided in a locator plate may be anything from one up to half a dozen or so, depending upon the size of the plate and the specific purpose for which it is intended.

It may also be seen that it is possible to provide the stud in the furniture piece and the locator plate on the end surface of the part which is intended to be attached to the furniture piece. In any event, there is a relative helical traverse of the stud with respect to the locator plate as the two approach one another.

It is also possible to attach locator plates having a known modulus of elasticity to articles of manufacture onto which parts are intended to be applied by screwing them into the article. Thus, if the part is required to have a particular orientation, and it is desired that the assembly be automatic, it is possible to use apparatus having torque measuring means to screw the part into the article of manufacture so that at a certain torque the part is oriented in the desired manner by the mating of a stud with a recess. This may be achieved because a greater torque is required to overcome the engagement of a recess in the locator plate with a stud than the torque which is required to slide the stud across the face and to temporarily deform the face of the plate beneath the stud as it moves. That is, if more torque is required to disengage a stud and recess than a predetermined torque whose limit has been set in the apparatus, then when that predetermined torque is reached the part is properly oriented to the article.

It may be seen that the locator plates of this invention may be easily manufactured by such methods as stamping or moulding. It is only necessary to provide a central hole through which the mounting post of a part extends into the article to which the part is to be attached, together with at least one recess with which the stud coacts as described above.

From the above discussion, it is clear that the drawings are illustrative only of specific embodiments of the locator plate of this invention. Other embodiments may be made whose design is dictated by the fuction to which the locator plate is intended for use. It is obvious, then, that many specific locator plates can be made according to this invention without departing from the spirit and scope of the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A locator plate for use in the manufacture of articles to which parts are to be attached by means of a screw-threaded mounting post, comprising: a substantially flat plate having a front face and a back face, and having therein a substantially central hole adapted to receive said screw-threaded mounting post; and at least one recess formed at least in the front face of said locator plate and extending radially outwardly from said central hole.

2. The locator plate of claim **1** wherein said at least one recess extends only part way into the thickness of said plate.

3. The locator plate of claim **1** wherein said at least one recess extends through the thickness of said plate from said front face to said back face.

4. For use in the manufacture of articles to which a part is to be attached by means of a screw-threaded mounting post, a locator plate comprising: a substantially flat plate having a front face and a back face, and having therein a substantially central hole adapted to receive said screw-threaded mounting post; and at least one recess formed at least in the front face of said locator plate and extending radially outwardly from said central hole; said at least one recess being adapted to engage with a stud which is so situated that a relative helical traverse is described between said stud and said at least one recess as said part is screwed into said article.

5. The locator plate of claim **4** wherein the depth of said at least one recess is just sufficient to accommodate the height of said stud, when said stud is fully extended into said recess.

6. The locator plate of claim **4** wherein said at least one recess extends through the thickness of said plate from said front face to said back face.

7. The locator plate of claims **1**, **2**, or **3** wherein the material of said substantially flat plate is chosen from the

group comprising nylon, polyethylene, linear polyethylene, polypropylene, fibreboard, rubber, and metal.

8. The locator plate of claims **4**, **5**, or **6** wherein the material of said substantially flat plate is chosen from the group comprising nylon, polyethylene, linear polyethylene, polypropylene, fibreboard, rubber, and metal.

9. A method of attaching a part to an article of manufacture whereby said part is attached by means of a screw-threaded mounting post, and when fully attached to said article is in a desired orientation, comprising: attaching a substantially flat locator plate having therein a central hole and a plurality of recesses extending radially outwardly from said central hole to said article; attaching a stud to said part whereby when said part is screwed into said article, a relative helical traverse is described between said stud and said recesses; and screwing said part into said article by applying to said part sufficient torque to achieve

said relative helical traverse, and ceasing said screwing of said part into said article when a predetermined torque applied to said part has been reached.

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THOMAS H. EAGER, *Primary Examiner.*

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