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Naske

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[54] **FURNITURE HINGE**

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[30] **Foreign Application Priority Data**

July 8, 1969 Germany ..... P 19 34 581.4

[52] **U.S. Cl.** **16/163**

[51] **Int. Cl.** **E05d 3/06**

[58] **Field of Search** 16/163, 164, 149, 16/158, 159, 137; 248/224

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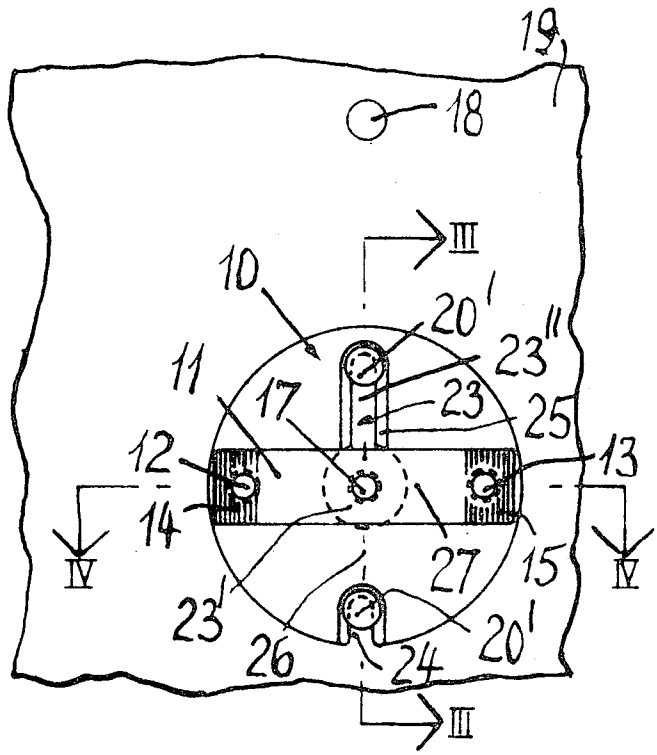
[57] **ABSTRACT**

A furniture hinge consisting of a cup-shaped fitting and an arm which is pivotably connected thereto and may be removably secured to a plate which by means of a pair of elongated apertures therein may be plugged on the headed projecting ends of a pair of pins which may be mounted in bores in a furniture wall, and the plate may then be shifted in a perpendicular direction and will thereby be wedged tightly against the furniture wall.

11 Claims, 4 Drawing Figures



PRIOR ART

FIG. 1

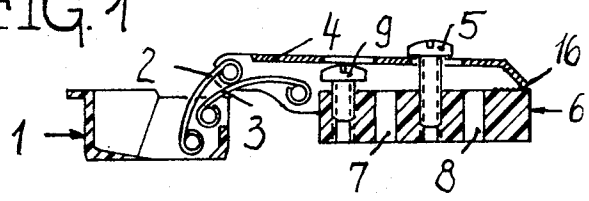


FIG. 2

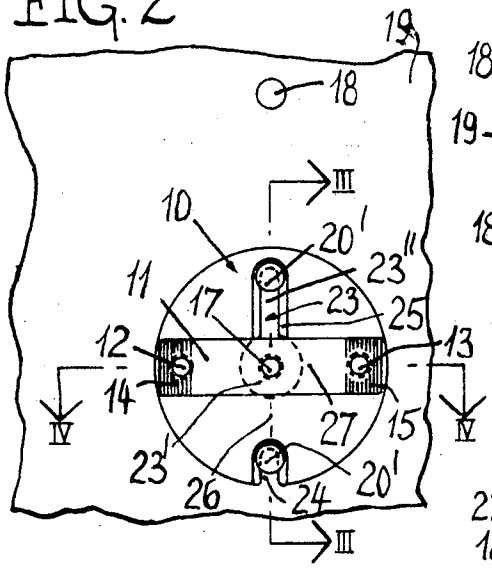
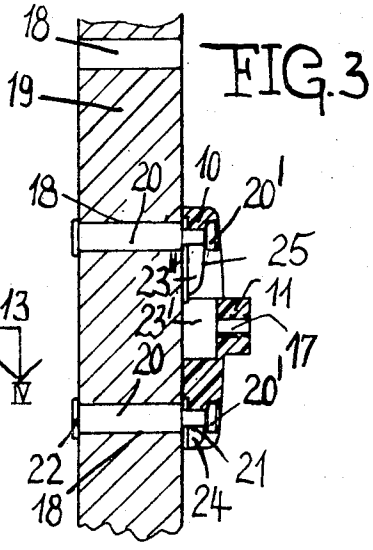


FIG. 3



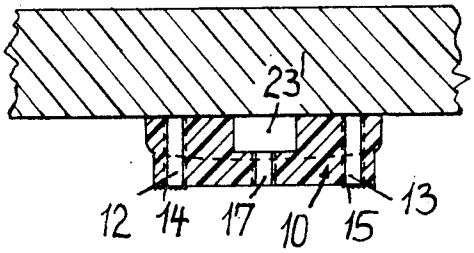


FIG. 4

FURNITURE HINGE

The present invention relates to a furniture hinge which comprises a cup-shaped fitting which is adapted to be secured to a door, and an arm which is pivotably mounted on the cup-shaped fitting and is adjustable by means of at least one screw on a base plate which is provided with a guide for the arm and at the opposite sides of the guide with a pair of apertures for securing the plate to the side wall of a cabinet or the like.

The known furniture hinges of this type are of two different constructions. One kind of these hinges has a strip-shaped base plate which is provided at its center with a tapped bore and a pair of apertures at the opposites of this bore into which screws may be inserted for screwing the plate to a side wall of a cabinet or the like. Near one end of this strip-shaped plate the latter is further provided with a further tapped bore into which a screw is screwed which permits the hinge arm to be adjusted to an inclined position relative to the plate. The other kind of these hinges has a hinge arm which is provided with an aperture of a shape similar to a keyhole which extends in the longitudinal direction of the arm and permits a screw on the plate to be slipped into the aperture and to be shifted longitudinally therein, whereupon the screw may be screwed into the plate to secure the arm in a fixed position relative to the plate. This plate is provided like the strip-shaped plate as previously described with a guide for the hinge arm and with an aperture at each side of this guide for securing the plate by a pair of screws to a side wall of a cabinet or the like. The screw for adjusting the arm to an inclined position relative to the plate is in this case provided in the arm.

After the cup-shaped fitting of either of these hinges has been secured to a door, it is further necessary to screw the base plate which has to be connected to the hinge arm to a side wall of the cabinet or the like. It is therefore necessary first to drill holes into the side wall of the cabinet into which dowels are inserted, and then to screw the plate to these dowels. These operations require considerable time. Furthermore, such dowels have the disadvantage that they remain visible in the side walls of cabinets or the like when they are no longer needed, for example, when the door hinges have been removed and then been mounted in a different position. Otherwise, these known furniture hinges have proved very successful.

It is an object of the present invention to modify these known kinds of furniture hinges in a manner so as no longer to require screws for securing them to the side walls of cabinets or the like.

For supporting shelf boards on the side wall of cabinets or other pieces of furniture it is well-known in the art to provide such side walls with vertical parallel rows of bores into which plugs may be inserted which are provided on one or both ends with projections upon which the shelf boards may be placed. Since such rows of bores are often provided in the side walls of cabinets, wardrobes or the like for supporting shelf boards, the invention provides that these bores may also be employed for the purpose of securing the plates of the mentioned type of furniture hinges to such a wall by inserting into and removably securing in two of these bores a pair of pins which project a certain distance at least from one side of the side wall of the cabinet or the

like, and by designing these pins and the plate so as to permit the latter to be simply hooked over the projecting ends of the pins and thereby also to be clamped tightly against the cabinet wall. It is therefore no longer necessary to screw these plates to a cabinet wall, but they may be very simply clamped thereon and, if desired, also be easily removed therefrom. For this purpose, the invention provides that each pin which is secured in an already existing bore in the cabinet wall is provided with a peripheral groove in its projecting end portion so that the actual end of the pin forms a head, and that in place of the apertures which were previously provided in the plate of the hinge for the insertion of screws, these apertures are made of an elongated shape so that when the plate is applied over the projecting ends of the pins and is then shifted downwardly in a perpendicular direction relative to the pins, the pins will slide toward the upper ends of the apertures and will thereby clamp or wedge the plate against the cabinet wall. If for some reason the hinge should again be removed from the cabinet wall, the plate only needs to be shifted upwardly and may then be taken off the pins. Thereafter, the two pins may also be removed from the bores of the cabinet wall and it will then no longer be possible to see on this wall the position in which the hinge plate was previously secured.

At least one of these apertures in the plate is preferably made of a shape similar to a keyhole. When such a plate is mounted on the side wall of a cabinet or the like, the wider part of such an aperture should form the lower end thereof. Although both apertures may be made of such a keyhole-like shape, it is more advisable only to make that aperture of such a shape which forms the upper one of the two apertures when the plate is in its mounted position, while the other, lower, aperture should be made in the form of a slot which is open at its lower end. The plate as seen in its perpendicular mounted position, may then be made of a shorter length than it would have if both apertures were made of a shape similar to keyholes.

According to another feature of the invention, the surfaces directly adjacent to at least the upper aperture along which the head of the associated pin is slidable when the plate is being installed should be inclined so as to ascend toward the closed upper end of the aperture. These inclined surfaces will then exert a wedging action between the plate and the head of the pins, whereby the plate will be tightly clamped against the cabinet wall. Finally, it is advisable to design the plate so that its two parts at the opposite sides of a line connecting the two apertures are symmetrical.

The features and advantages of the present invention will become further apparent from the following detailed description thereof which is to be read with reference to the accompanying drawings, in which

FIG. 1 shows for comparison with the invention a cross section of a furniture hinge of a known design;

FIG. 2 shows a plan view of a base plate which is designed according to the invention for a hinge similar to that as shown in FIG. 1;

FIG. 3 shows a cross section which is taken along the line III — III of FIG. 2; while

FIG. 4 shows a cross section which is taken along the line IV — IV of FIG. 2.

For comparison with the present invention, FIG. 1 illustrates a furniture hinge which is made according to a known design and consists of a cup-shaped part 1 which is to be inserted into a bore in a door and is then to be secured to this door by two screws. The cup-shaped part 1 is pivotably connected by a pair of levers 2 and 3 to an arm 4 which may be connected by a screw 5 to a base plate 6 which, in turn, is to be secured upon a side wall of a cabinet, wardrobe or the like, by means of screws which are to be inserted into bores 7 and 8 in base plate 6. Plate 6 further contains a setscrew 9 which permits the distance of the arm 4 from plate 6 to be varied.

In order to avoid the necessity of screwing such a base plate 6 upon a side wall of a cabinet or the like, the present invention as illustrated in FIGS. 2 to 4 provides in place of the plate 6 a base plate 10 which may be, for example, of a circular shape. This base plate 10 is provided with a strip-shaped projection 11 which is adapted to guide the hinge arm 4 and is provided with two tapped bores 12 and 13 and with two groups of knurls 14 and 15 on the upper side of the projection 11 adjacent to the bores 12 and 13. These knurls 14 and 15 are operatively associated with a nose 16 on the end of the arm 4 of the known type of hinge as shown in FIG. 1 and are adapted to prevent this arm 4 from shifting relative to the base plate 10 after the screw 5 has been tightened. This screw 5 extends through a bore 17 in plate 10 which may be threaded, although it is more advisable to secure the screw 5 to plate 10 by screwing it into a nut (not shown) which is nonrotatably mounted in plate 10.

For securing such a base plate 10 in the most suitable position to a wall 19 of a cabinet or the like which is provided with parallel rows of bores 18, a pair of pins 20 are inserted into two of these bores 18. Each of these pins 20 has at least in one projecting end portion a peripheral groove 21 which is spaced at a certain distance from the respective end of the pin so as to form a head 20' thereon. The other end of each pin 20 is provided with a head or flange 22 which abuts against the other side of the cabinet wall 19. If, however, the pins 20 should also serve for connecting other elements to this other side of the cabinet wall 19, each pin 20 may be extended beyond the flange 22 and this extension may be likewise provided with a peripheral groove 21 and a head 20'.

For securing the base plate 10 to the pins 20, it is provided with two apertures 23 and 24, the first of which forming the upper aperture when plate 10 is in its installed position has a shape similar to a keyhole. The enlarged part 23' of this aperture 23 which is similar to that as provided in a keyhole for receiving the shank of a key preferably extends coaxially to the bore 17. The narrower part 23'' of the aperture 23 has an inner width which is substantially equal to the diameter of the grooved part 21 of each pin 20. This width of the part 23'' is made of such a size that base plate 10 may be shifted easily and without considerable play relative to one of the pins 20. The head 20' at least of the upper pin 20 rests on inclined surfaces 25 which ascend toward the upper end of the aperture 23 so that, when plate 10 is shifted downwardly in a perpendicular direction on the pins 20 to the position as shown in FIGS. 2 and 3, these surfaces 25 will press tightly against the inner side of the head 20' and thereby clamp the plate 10 tightly against the side wall 19 of a cabinet or the like. The other aperture 24 forms a slot which is open at one end where it terminates into the peripheral surface of plate 10. This slot 24 has a shorter length than the keyhole-shaped aperture 23. After being slipped over two pins 20 and shifted in the longitudinal direction of the apertures, plate 10 will therefore be securely clamped to the side wall 19.

In place of the slot-shaped aperture 24, it is also possible to provide a keyhole-shaped aperture similar to the aperture 23, although this is not as desirable since it would require plate 10 to be made of a larger size.

As illustrated particularly in FIG. 2, the base plate 10 is shaped symmetrically to a line 26 connecting the two apertures 23 and 24. It is therefore made of a different shape than the base plate of the known design which was shaped symmetrically to a line 27 which extends at right angles to the line 26.

If by means of a screw 5 an arm 4 is screwed in such a position upon base plate 10 that the cup-shaped part 1 will be located at the left of plate 10 as shown in FIG. 2, such a hinge may be secured in a certain position on a door as well as on a side wall of a cabinet or the like. The setscrew 9 as shown in FIG. 1 should in this case be screwed into the tapped bore 12 so as to permit the arm 4 to be adjusted to an inclined position relative to plate 10. If, however, the cup-shaped part 1 has to be located at the right of plate 10 as shown in FIG. 2, setscrew 9 must be screwed into the tapped bore 13 in order to permit the arm 4 to be adjusted to different inclined positions relative to plate 10.

Of course, aside from providing inclined wedging surfaces 25 at both sides of the slot-shaped part of aperture 23, it is possible to provide such inclined surfaces also at both sides of the aperture 24. However, in this case it is necessary to incline these surfaces in accordance with the length of this aperture 24 so that plate 10 after it has been shifted relative to the pins 20 will be properly clamped in a fixed position also at its lower end.

Although my invention has been illustrated and described with reference to the preferred embodiment thereof, I wish to have it understood that it is in no way limited to the details of such embodiment but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. In a furniture hinge having a cup-shaped fitting adapted to be secured to a door of a cabinet or the like, and an arm pivotably mounted on said fitting adjustably secured by means of at least one screw to a plate having a guide for said arm and an aperture on each of the opposite sides of said guide for securing said plate to a side wall of said chamber cabinet or the like, and further having at least one adjusting screw for adjusting the arm to an inclined position relative to said plate, the improvement comprising a pair of pins adapted to be removably inserted into and locked in bores vertically above each other in said side wall and each pin having a stem of a reduced diameter projecting from said side wall and having a head on its free end, said apertures having an elongated shape so as to permit said plate to

be applied over said heads and stems and then to be shifted perpendicularly downward in the longitudinal direction of said apertures so that said stems slide along said apertures and said heads overlap said apertures and press said plate tightly against said side wall, wherein said plate includes adjusting screw openings at opposite sides of a longitudinally extending dividing line interconnecting said apertures, said adjusting screw openings including means for accepting said at least one adjusting screw and being symmetrically arranged with respect to said dividing line for accommodating both right and left hand mountings of said plate.

2. A furniture hinge as defined in claim 1, in which at least one of said apertures has a shape similar to a keyhole having a wider part located at the lower side of said aperture when said plate is installed on said side wall.

3. A furniture hinge as defined in claim 2, in which said plate is installed on said side wall, the upper one of said apertures has a shape similar to a keyhole, while the lower aperture forms a slot having an open lower end.

4. A furniture hinge as defined in claim 1, in which the outer surfaces of said plate adjacent to both sides of at least one of said apertures are inclined so as to ascend toward the upper end of said aperture when said plate is installed.

5. A furniture hinge as defined in claim 1, wherein knurl means are arranged at opposite sides of said dividing line in a symmetrical manner for preventing shifting of a nose portion of said arm.

6. A furniture hinge as defined in claim 1, wherein said plate is constructed symmetrically with respect to said dividing line.

7. An arrangement for attaching a base plate of a furniture hinge to a side wall of a cabinet or the like; said furniture hinge being of the type having a cup-shaped fitting adapted to be secured to a door of the cabinet or the like, an arm pivotably mounted on said fitting, said arm being adjustably secured by at least one screw to a base plate; said arrangement comprising two bores arranged vertically above one another in said side wall, a pair of unthreaded pins removably inserted into said bores, each of said pins having an outer end for engaging with said base plate and an inner end for engaging with said side wall, the outer ends having a smaller cross-section than said bores so that they can be passed through said bores during the insertion of the pins, said pins including a middle portion having a cross-section slightly smaller than the cross-section of said bores, each of said outer ends including a stem portion immediately adjacent the middle portion having a cross-section smaller than said middle portion and a head portion at their extreme outer ends having a cross-section greater than said stem portion, said base plate including two apertures of elongated shape, at least one of said apertures having a portion with a cross-section larger than a corresponding head portion whereby said base plate can be applied over said pins and can be shifted downwardly in the longitudinal direction of said apertures to lock the base plate to the side wall by the engagement of the head portions with edges of said apertures, wherein said plate includes adjusting screw openings for accommodating at least one adjusting screw for adjusting the arm, said adjusting screw openings being symmetrically arranged with respect to a longitudinal dividing line interconnecting said apertures for accommodating both right and left hand mountings of said base plate.

8. An arrangement according to claim 7, characterized in that said bores are cylindrical in shape and said pins are of stepped cylindrical shape, and in that the inner end of said pins includes an enlarged portion for abuttingly engaging said side wall.

9. An arrangement according to claim 7, characterized in that the edges of said apertures have portions tapered in the upward direction for force lockingly engaging with the head portions upon downward movement of the base plate in its installed position.

10. An arrangement according to claim 7, wherein knurl means are arranged at opposite sides of said dividing line in a symmetrical manner for preventing shifting of a nose portion of said arm.

11. An arrangement according to claim 7, wherein said plate is constructed symmetrically with respect to said dividing line.

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