

[54] **MOUNTING PLATE FOR FURNITURE HINGE**

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 16/134

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[58] **Field of Search**..... 16/129, 130, 131,  
 16/132, 133, 134, 151

[56] **References Cited**

**UNITED STATES PATENTS**

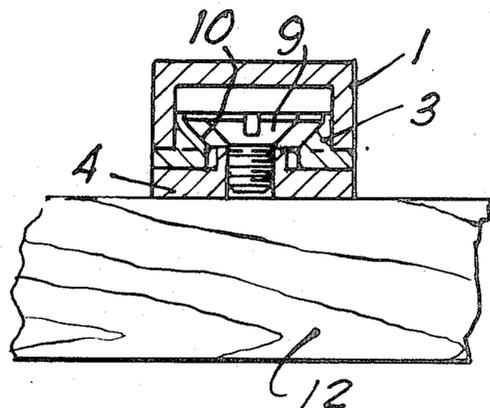
3,206,794	9/1965	Johnson, Jr.	16/151
3,562,853	2/1972	Heinze	16/164
2,988,414	6/1961	Growe et al.	16/129
3,590,420	7/1971	Salice	16/164

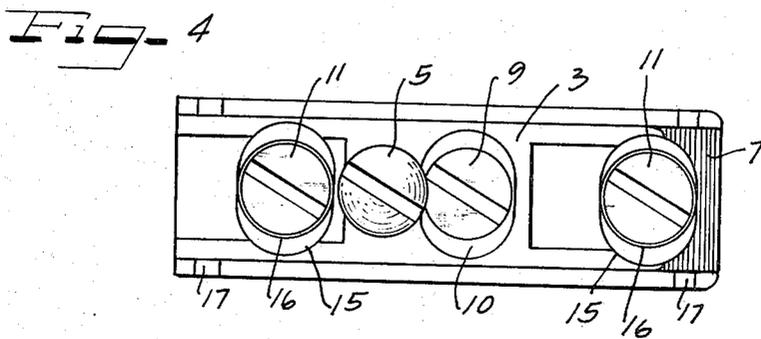
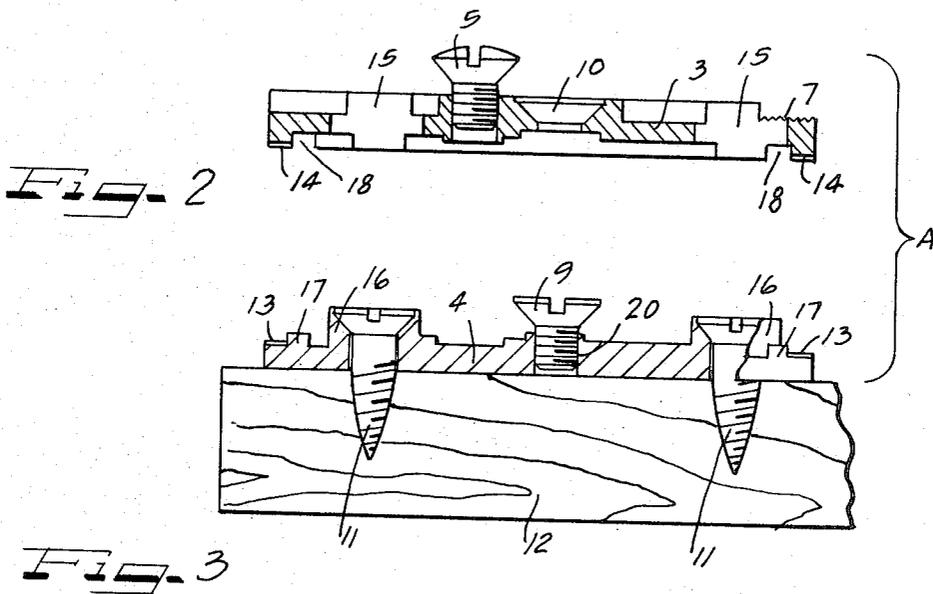
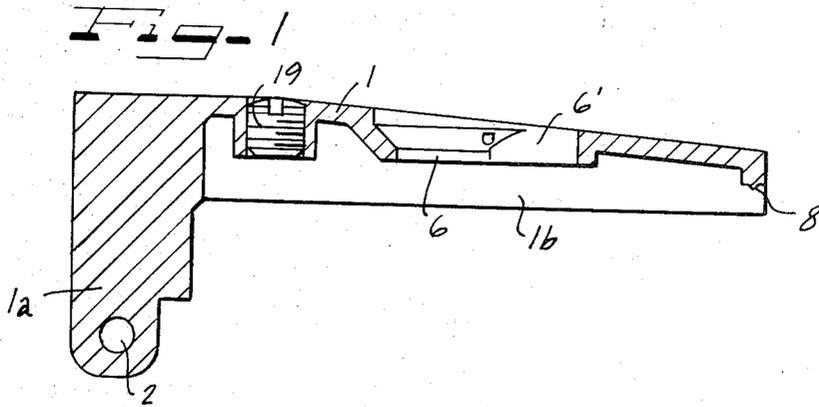
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[57] **ABSTRACT**

Precise, simple and secure fastening of a hinge to a furniture carrier wall is made possible by a mounting means comprising a lower part adapted to be mounted directly on the carrier wall and an upper part adjustably connected to the lower part by a first fastening means. The carrier wall arm of the hinge is securely mounted on the upper part by a second fastening means. When the carrier wall arm is in position attached to the upper part, the first and third fastening means are accessible so that adjustment of said hinge carrier arm may be effected without disturbing the lower part. While the upper part may be moved on the lower part within a plane generally parallel to the carrier wall and in a direction generally parallel to the direction of the pivotal axis, the carrier arm may be adjusted in a direction perpendicular to the direction of adjustment of the upper part on the lower part, and a further adjustment means is provided whereby the carrier wall arm is adjustable in a direction toward and away from the upper part so that adjustment in three dimensions is provided.

**6 Claims, 7 Drawing Figures**





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FIG-5

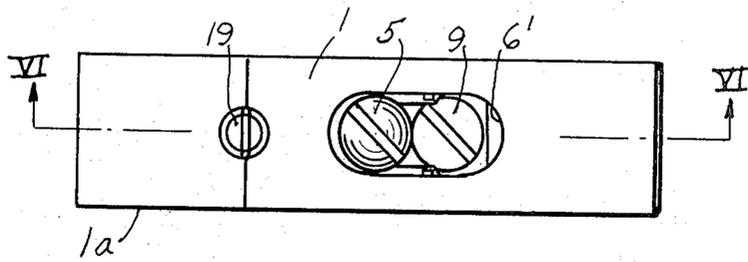


FIG-6

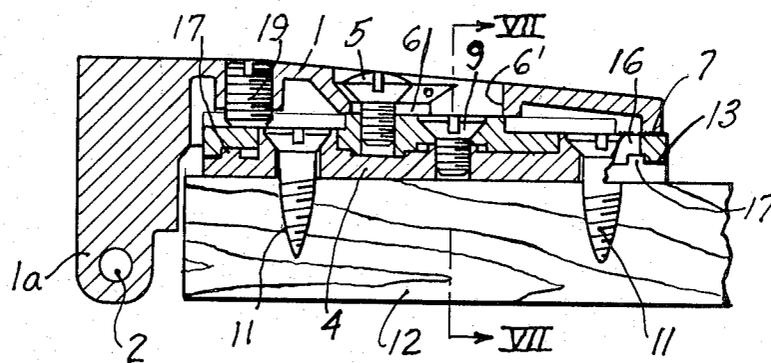
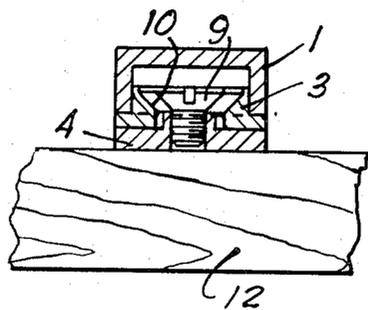


FIG-7



**MOUNTING PLATE FOR FURNITURE HINGE****BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention generally relates to furniture hardware and particularly concerns adjustable mounting plates for furniture hinges. Such mounting plates comprise a lower part fixedly attached to a carrier means and an upper part detachably connected thereto and movable thereon to allow adjustment of the hinge mounted thereon. The mounting means or plate of the invention may be advantageously used for the application of a carrier wall arm or part of a hinge to the carrier wall of a piece of furniture although it will be understood that the mounting plates may also be used for mounting the door arm part of the hinge. The mounting means of the hinge is installed first and then in a second operation the arm of the hinge is mounted thereon.

**2. Prior Art**

It is known in the prior art to provide a mounting plate which is divided into a bottom part that is to be mounted directly on a carrier wall and into an upper part which is movable on the bottom part in a direction transverse to it within a plane located parallel to the surface of the carrier wall and in a direction parallel to the direction of the pivotal axis. In such cases the hinge carrier arm is fastened to the lower part and the upper part of the mounting plate functions as a shim for example, and is held in position by the clamping action of the carrier arm as it is fastened and drawn toward the lower part of the mounting plate. In the prior art a single screw is used. This seemingly simple embodiment, however, in reality suffers from many disadvantages because of the complicated handling which is required in practical use. For example, if the carrier arm is loosened, the upper part also is loosened and may shift from its optimum position. As a result, when the carrier arm is later replaced, the proper position of the upper part must again be adjusted through a relatively lengthy procedure which is known to those skilled in the art. Also, it will be understood that if the single screw should loosen, for example, the upper part of the mounting plate may move and not cause inconvenience to the user but require readjustment.

The disadvantages of the prior art are particularly apparent in the case of glass doors wherein the positioning of the perforations and recesses is not always possible with a precision which is absolutely necessary to prevent dangerous tensions. In such cases the requirements of a precise fine adjustment in a direction generally parallel to the pivoting axis is of particular significance. The prior art has failed to meet these requirements.

**SUMMARY OF THE INVENTION**

The disadvantages of the prior art are overcome by the invention herein which makes possible the mounting of a divided mounting plate means in the proper position on a piece of furniture at the factory under optimum conditions. Accordingly, the proper position of the upper part of the mounting plate is assured even if the carrier might have to be removed and replaced at a later point in time. With the lower part of the mounting plate properly fastened in the furniture factory in its correct position it will be extremely easy with the hinge of the invention to properly mount the carrier arm in an exact predetermined position initially and at any

later point in time. Thus, by means of the fastened lower part of the mounting plate, the position of the carrier arm will be precisely determined so that the cabinet maker need not concern himself particularly with its exact adjustment. This greatly simplifies furniture construction both at the factory and at the place of use.

The mounting plate according to the invention is divided into a lower part to be fastened immediately to the carrier wall and an upper part transversely adjustable on the lower part, however, by contrast with the prior art the mounting plate of the invention provides separate fastening means with the upper part being adjustably attached to the lower part by means of a first fastening means and the carrier wall arm being mounted on the upper part by a second fastening means. The lower part is fixedly mounted to the carrier wall by a third fastening means. It is an important advantage of the invention that the first and third fastening means are accessible to a mechanic making adjustments with the door in place and when the upper part is mounted on the lower. This accessibility is provided by access holes in the upper part. These access holes are elongated in the direction of adjustment movement of the upper part on the lower part so that access to the third fastening means may be possible over a wide range of movement of the upper part.

By means of projections on one part of the mounting plate fitting closely into recesses on another part of the mounting plate adjustment in a predetermined direction is permitted and movement of one part transverse to the direction of adjustment is prevented. Additional cooperating engagement means positioned at opposite ends of the upper and lower parts prevent movement therebetween when the first fastening means has secured the upper part to the lower part. Adjustment of the carrier arm on the upper part is possible in a direction perpendicular to the direction of adjustment of the upper part on the lower part so that the carrier arm may be precisely adjusted in two dimensions.

Movement of the carrier arm in a third direction, i.e. in a direction toward and away from the upper part is provided by a conveniently accessible screw means in the carrier arm which, when turned, bears against the upper part. Screws are particularly applicable as fastening means in the usual manner. The upper part of the mounting plate is shaped in dimensions so that the heads of the screws used to fasten the lower part to the carrier wall are accessible with the upper part mounted in place. Especially secure mounting of the carrier arm to the upper part may be effected by the provision of a keyhole slot in the upper arm which receives the second fastening means.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Other objects, features and advantages of the invention will be readily apparent from the following description of certain preferred embodiments thereof, taken in conjunction with the accompanying drawings, although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure, and in which:

FIG. 1 is a cross section elevational view of a carrier arm;

FIG. 2 is a cross sectional elevational view of the upper part of the mounting plate means;

FIG. 3 is a cross sectional view of the lower part of the mounting plate means shown mounted in a place on a carrier wall, FIGS. 1, 2 and 3 provide in effect an exploded view of a carrier arm connection with the exception that the first, second and third fastening means are shown in position;

FIG. 4 is a top view of the invention herein in assembled relationship with the upper part in position on the lower part but without the carrier arm;

FIG. 5 is a plan view of the assembled mounting arrangement comprising the lower and upper parts and the carrier arm;

FIG. 6 shows a sectional view along line VI—VI of FIG. 5; and

FIG. 7 shows a transverse sectional view of the assembled arrangement.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

A carrier arm 1 is shown in FIG. 1 with an articulated end portion 1a having a simple pivoting axis 2 therein. A door arm portion of the hinge is not shown but will be understood to be pivotally connected by means of the pivoting axis 2 to the carrier arm 1. For purposes of the invention herein the particular design of the hinge joint is immaterial. Thus, analogous hinge joints include articulated quadrangular joints, cross joints, bar guides and the like.

A mounting plate means A as shown by FIGS. 2 and 3 comprises an upper part 3 as shown in FIG. 2 and a lower part 4 as shown in FIG. 3. The upper part 3 must generally meet the same conditions as the undivided mounting plates according to the prior art. By contrast with the prior art, however, the upper part according to the invention is not fastened directly to a carrier wall but rather is fastened indirectly by means of a first fastening means 9 to the lower part 4 which in turn is mounted on a carrier wall 12 by third fastening means 11. The carrier arm 1 in turn is secured to the upper part 3 by means of a second fastening means 5.

Securement of the hinge carrier arm to the upper part 3 is accomplished by forming the second fastening means 5 with a tapered head and providing a keyhole shaped slot 6 in the carrier arm 1 with the right part 6' of the slot being so flared that the head of the fastening screw means 5 can be pushed through at this point. The remainder of the slot 6, however, is narrow and engages the fastening means 5 below the head of the screw as the carrier arm 1 is moved to the right with respect to the upper part 3.

A knurling 7 of a type known in the prior art is provided at the end of the upper part 3. A sharp terminal edge 8 of the carrier arm is urged into engagement with the knurling 7 by the firm tightening of the fastening screw 5 whereby longitudinal shifting of the carrier arm with respect to the upper part 3 is prevented.

In order to fasten the upper part 3 to the lower part 4, a first fastening means 9 such as a screw is used and extends through a slot 10 in the upper part and is threaded into a tapped perforation 20 in the lower part 4. As may be seen from the top view of FIG. 4 the slot 10 is elongated to permit movement of the upper part 3 transverse to the lower part 4 when the fastening means 9 is loosened.

The lower part 4 in turn is fastened by means of a third fastening means 11 such as wood screws to the carrier wall 12. According to the invention herein the

upper part 3 may be mounted on the lower part 4 by the fastening means 9 with the hinge carrier arm 1 mounted thereon so that the first fastening means 9 is accessible through the flared part 6' of the slot 6. By this construction it is possible that adjustment of the upper plate with respect to the lower plate may be made with the carrier arm mounted in position. Thus, where the fastening means 9 is a screw, a screw-driver can be pushed through the slot part 6' to loosen the screw 9 to allow adjustment and then retighten after the adjustment has been completed.

Because the slot 10 and the upper part extends transversely to the longitudinal direction of the carrier arm as shown in FIG. 4 the upper part 3 can be displaced in the direction transverse to a plane parallel to the plane of the carrier wall, i.e. parallel to the direction of the pivotal axis 2, by an amount which is determined by the length of the slot 10. To prevent undesired transverse displacement of the upper part 3 because of the elongated slot 10, the upper part 3 and the lower part 4 may be roughened at their opposite ends along narrow, longitudinally extending marginal strips. Thus, the lower part 4 may have knurling 13 at both ends thereof and the upper part 3 may have associated and complementary knurling 14 at both ends thereof. With the first fastening means 9 tightened, the knurling 13, 14 opposite each other interlock and prevent any undesired displacement in the transverse direction that is perpendicular to the drawing surface.

As shown in FIG. 4 the third fastening means 11 are accessible with the upper part 3 in position on the first part 4. Access is provided by recesses 15 above the screws 11 which are used for fastening the lower part 4 to the carrier wall 12. As shown in FIG. 3 the holes in the lower part 4 which accommodate the fastening means 11 are on a portion 16 which is raised above the surface of the lower part 4. This raised portion 16 may take the form of elongated hollow prisms and may be of any transverse cross section. The particular cross sectional form is unimportant and may be circular or polygonal shape. With the fastening means 11 being circular the circular form may be preferable.

The transverse shifting of the upper part 3 on the lower part 4 is made possible by the oblong or elongated shape of the recesses 15 and is limited in both directions by the hollow prism means 16. These hollow prisms 16 thus function as stops which coact with the two elongated, transversely extending recesses 15. A guide bar 17 adjacent each end of the lower part 4 assures precise guidance of the upper part 3 in a direction transverse to the lower part 4. The guide bars 17 engage correspondingly dimensioned guide grooves 18 of the upper part 2 provide precise parallel shifting. Thus, the single fastening screw 9 suffices to prevent twisting of the upper part 3 in relation to the lower part 4. However, it is also possible to equip the upper part 3 at its two longitudinally extending marginal edges with upwardly pointing bars so that the flanking portions 1b of the carrier arm 1 will extend into engagement with the bars to secure the carrier arm in exact angular position. In this case also a single fastening means such as the screw 5 will serve to secure the carrier arm 1 to the upper part 3.

In practice I have found that with the invention herein the upper part 3 and the lower part 4 may be temporarily assembled at the factory with the aid of the first fastening means 9 and be so shipped to the point

of use. At the furniture plant or other point of use, the lower part 4 may be fastened to the furniture with the aid of the third fastening means 11 to the carrier wall 12. As may be seen from the top view of the assembled mounting plate in FIG. 4 it is possible to secure the mounting plate A to the carrier wall 12 while the upper and lower parts 3 and 4 are fastened together. After the attachment of the mounting plate A to the carrier wall 12 the upper part may be adjusted precisely by loosening the screw 9, transversely shifting the upper plate 3 on the lower plate 4 and then tightening the fastening means 9 to firmly engage the meeting knurls 13 and 14 so that any subsequent transverse shifting is prevented. The position of the upper part 3 clearly and positively defines the position of the carrier arm 1 so that in the subsequent assembly of the carrier arm 1 to the upper part 3 any possibility of an error is prevented. If necessary, the adjustment screw means 19 on the carrier arm 1 can be adjusted at the furniture plant although it is usually the case that a precision adjustment of the means 19 will be necessary when the carrier arm is mounted on the upper plate 3. It is an important feature of this invention that if for any reason the carrier arm 1 must be subsequently removed or adjusted, the upper part 3 will remain in its original position and will not move.

The fact that the mounting plate construction according to the invention herein allows the positioning of the carrier arm in the furniture factory with perfect precision and dependability is of particular significance where the hinges are intended for the mounting of glass doors. According to the prior art the positioning of the perforations and recesses on the glass doors is not always possible with the high degree of precision which is absolutely necessary to prevent dangerous tensions. For this reason the precise fine adjustment of the carrier arm 1 made possible by the invention is of particular significance. While the mounting plates according to the present invention were created with this particular condition in mind it will be understood that the advantageous properties may also be used in other situations.

Although minor modifications might be suggested by those versed in the art, it should be understood that I wish to embody within the scope of the patent warranted hereon all such modifications as reasonably and properly come within the scope of my contribution to the art.

I claim:

1. A mounting means for securely mounting a carrier wall part of a hinge to a carrier wall, comprising an upper part and a lower part adjustably interconnected by a first fastening means extending through an opening in said upper part a carrier wall part

and,  
 a second fastening means securing said carrier wall part of a hinge to said mounting means,  
 third fastening means for mounting said lower part of said mounting means directly on the carrier wall, and  
 means of preventing a pivotal movement between said upper and said lower part,  
 wherein said opening in said upper part is elongated in a direction transverse to their longitudinal axis, wherein a secure relative adjustment between said upper and lower part in a direction perpendicular to their longitudinal axis is obtained by means of said first fastening means,  
 wherein a secure relative adjustment in a direction parallel to their joint longitudinal axis is obtained between said upper part and said carrier wall part by means of said second fastening means,  
 wherein said relative adjustment between said upper and lower parts can be effected independently from whether said carrier wall part is mounted upon or detached from said mounting means, and wherein said first and third fastening means are accessible when said upper part is mounted on said lower part.

2. A mounting means according to claim 1 wherein said third fastening means project from said lower part, and said upper part has recesses therein of a width to accommodate said projections, said recesses extending in the direction of adjustment whereby adjustment in a direction perpendicular to the axis of said upper and lower parts is permitted.

3. A mounting means according to claim 2, wherein said upper and lower parts have cooperating engagement means at their opposite ends which prevent movement between said upper and lower parts when said first fastening means secures said upper part to said lower part and which permit an adjustment between said upper and lower parts only in a direction perpendicular to their longitudinal axis and prevent movement of the upper part transverse to and pivotal to said direction of adjustment.

4. A mounting means according to claim 1 wherein said first fastening means is a screw threaded in said lower part and extending through an elongated slot in said upper part.

5. A mounting means according to claim 1 wherein said carrier wall part is securely adjustable in a direction toward and away from said upper part to thereby provide adjustment in three directions.

6. A mounting means according to claim 5 wherein said adjustment in a direction toward and away from said upper part is a screw means.

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