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CHAIR TRAY HAVING PIVOTED, SPRING BIASED, ARM-ENGAGING CLAMPS

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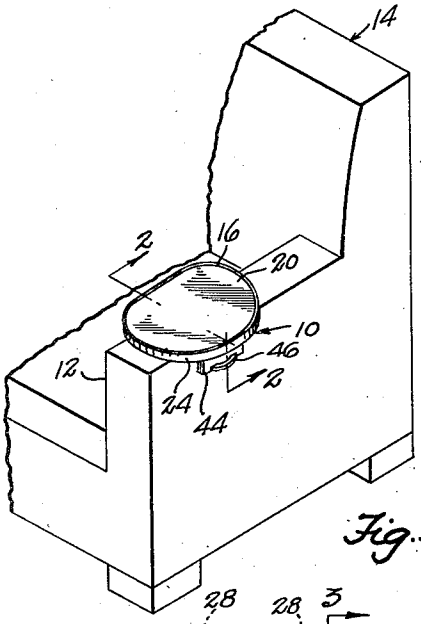


Fig. 1.

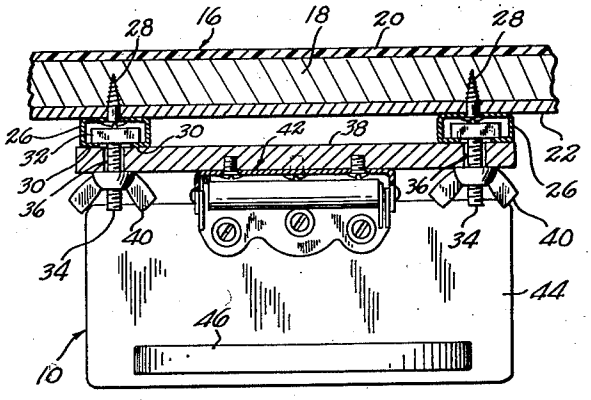


Fig. 3.

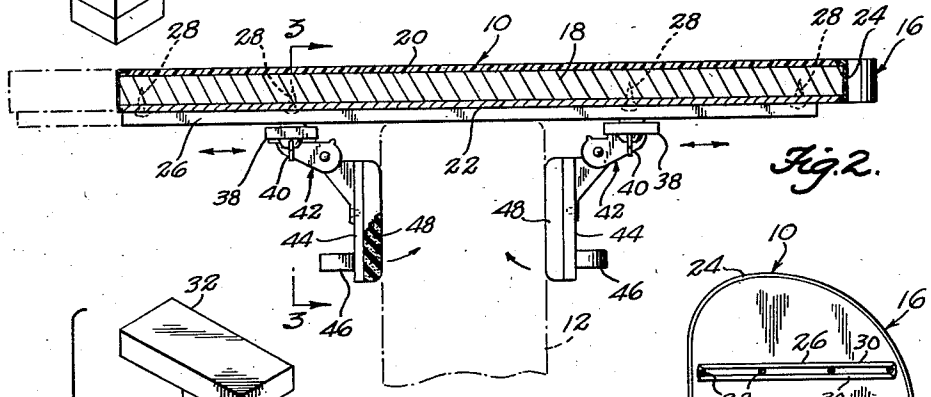


Fig. 2.

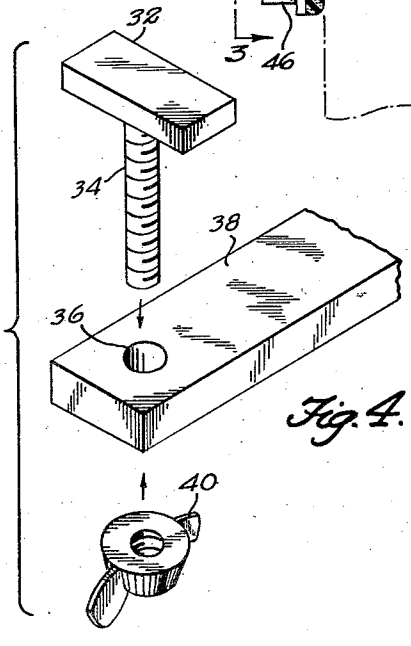


Fig. 4.

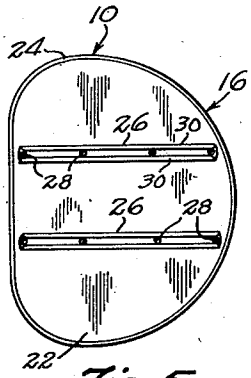


Fig. 5.

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CHAIR TRAY HAVING PIVOTED, SPRING BIASED, ARM-ENGAGING CLAMPS

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3 Claims. (Cl. 311—17)

This invention is a foldable tray assembly detachably connectable to the arm of a chair, sofa, or other piece of furniture, so as to afford a conveniently located support for an ash tray, glasses, or other articles.

It is often difficult, particularly when space available in a living room or similar area for furniture is somewhat limited, to provide sufficiently well located supports for small articles, where they will be conveniently disposed for persons seated in the area. The main object of the present invention, accordingly, is to provide a highly compact, relatively inexpensive, attractive tray assembly of a foldable nature, that can be ordinarily stored in a comparatively small amount of space, but can be swiftly attached to the arm of a chair, sofa, or other piece of furniture to afford a support for various small articles.

The device constituting the present invention, in this regard, is particularly well adapted for use as a supplemental table when, for example, company is being entertained, this giving rise to a typical situation in which a substantial number of seated persons may each find the need of a conveniently located individual support for ash tray, glasses, etc. The invention has further utility in providing small trays on which refreshments can be supported while individuals are seated in a particular area viewing television programs, etc.

A more specific object of importance is to provide a tray member as described which, when attached to a chair arm, such as for example the arm of an overstuffed or upholstered chair, will not in any way damage said arm, but will nevertheless be securely and grippingly engaged therewith so as to prevent relative movement of the tray and the associated arm.

Another object of importance is to provide a tray device as described in which the tray element, that is, the plate-like support on which the refreshments or other articles are resting, will be adjustable bodily in a transverse direction in respect to the associated chair arm, without disturbing the clamps on which the tray element is supported and which are left in gripping engagement with the chair arm.

Another more specific object is to provide clamp means for the mentioned tray element which can be independently adjustable along an associated trackway, with each clamp means being adjustable independently of the other, whereby to adjust the spacing between the clamp means to accommodate the device for engagement with chair arms of different thicknesses, and, further, permit selective location of the cooperating clamp means at different locations on the underside of the tray member, according to the needs of the particular situation.

Still another object is to provide, in a device as described, means for locking the clamp means and the associated tray element against relative movement, in selected positions to which the tray element and/or the clamp means are adjusted.

A further object of importance is to provide, in a foldable tray device as stated, means automatically biasing the clamp means to a folded position against the underside of the tray element, said means further serving as that which causes the clamp means to grippingly engage the chair arm.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a fragmentary perspective view of a chair equipped with a tray device formed according to the present invention;

Figure 2 is an enlarged, transverse sectional view through the tray device substantially on line 2—2 of Figure 1, the chair being illustrated fragmentarily and in dotted outline, the chain dotted lines indicating a second position of the tray element;

Figure 3 is a transverse sectional view, still further enlarged, on line 3—3 of Figure 2;

Figure 4 is a fragmentary, exploded perspective view, the scale being enlarged still further, of the means for connecting the clamps to the associated trackway; and

Figure 5 is a bottom plan view of the tray element per se, the scale being enlarged slightly above that used in Figure 1.

The removable tray attachment constituting the present invention has been generally designated at **10**, and in the illustrated example, is shown attached to a conventional arm **12** of an upholstered chair or sofa generally designated **14**.

The tray includes a flat tray element generally designated at **16**, which in the illustrated example, but not necessarily, is approximately of semi-circular outer configuration, with a straight inner side edge merging into heavily rounded corners that in turn merge into the opposite ends of the arcuate, approximately semi-circular outer side edge of the tray member.

The tray member, in the illustrated example, includes a flat body portion **18** formed of wood, such as plywood, and bonded to the upper surface of said body portion is a relatively thin cover plate **20** of plastic or the like. To the underside of the body portion **18** there is cemented or otherwise fixedly secured a bottom plate **22**, and extending about the periphery of the tray member, as shown in Figure 2, is an ornamental trim strip **24**.

The tray member, of course, can not only be varied in outer shape, but also need not necessarily be formed of a plurality of laminations enclosed by a trim strip such as that shown. Instead, the tray member can be simply a single piece of material, such as molded plastic or wood.

To the underside of the tray member, medially between the opposite ends thereof, there are secured a pair of parallel, straight, open-ended track elements **26**, these being attached by lag screws **28** or equivalent fastening elements to the tray element **16**, said screws **28** being spaced uniformly along the length of each track **26**. If the tray element is of molded plastic, the track, as will be understood, might well be formed simply by being molded directly into the underside of the tray element.

In any event, the tracks **26** as shown in Figure 3 are each formed with inwardly turned guide flanges **30** extending longitudinally thereof, defining guiding slots opening downwardly in respect to the tray element, and loosely engaged in said slots are the relatively elongated, approximately rectangular T-heads **32** of bolts **34**, that depend from the respective tracks, the shanks of the bolts projecting through the slots defined by the flanges **30** of each track.

The heads **32** of the bolts are of a sufficient length to prevent rotation of the heads within the associated tracks, while still permitting the bolts to be freely slidable along the lengths of the tracks.

The shanks of the bolts project through smooth-walled openings **36** formed in the opposite ends of cross bars **38** disposed in engagement, at said ends thereof, with the respective tracks as shown in Figure 3. After the shanks have been extended through the cross bars, wing nuts **40** are threaded onto the bolts, against the undersides of the cross bars, so as to fixedly clamp the cross bars to the associated tracks in selected positions to which the cross bars are adjusted independently of one another along the length of the tracks.

Secured to the midlength portions of the respective cross bars **38** are spring hinges **42**, one leaf of each spring hinge being attached by screws or the like to the associated cross bar, and the other leaf of each spring hinge being similarly secured to the midlength portion of a rectangular clamp plate **44** carried by each cross bar. The springs of the hinges are so tensioned as to normally swing the plates **44** in the direction of the arrows shown in Figure 2, upwardly toward the trackways, when the device is not in use, and thus, it will be seen that under these circumstances, the clamp plates are urged tightly against the undersides of the tray element, so as to permit the device to be stored away in a relatively small area.

To the free longitudinal edges of the clamp plates **44** there are attached handles **46**, which are used to facilitate the swinging of the plates outwardly from their folded, inwardly biased positions to the use positions thereof shown in Figure 2.

To the inner faces of the respective clamp plates **44** there are adhesively or otherwise secured relatively soft cushioning elements of pads **48**, those illustrated being formed of foam rubber. In an alternative embodiment, not shown, the pads **48**, instead of being adhesively attached to the clamp plates, could be provided with peripheral grooves receiving the edges of the clamp plates **44**. This would facilitate attachment of the pads to the clamp plates, and would further permit replacement of the pads whenever desired.

In use of the device, one need merely loosen the wing nuts **40**, to permit bodily adjustment of each clamp assembly along the length of the trackway defined by the parallel tracks **26**. Each clamp assembly, as will be understood, includes one of the cross bars **38**, the associated spring hinge, clamp plate **44**, handle **46**, and pad **48**.

In any event, each clamp assembly is bodily adjustable along the length of the trackway independently of the other clamp assembly, and this permits the two clamp assemblies to be located anywhere desired along the length of the trackway. Further, the clamp assemblies when adjusted toward or away from one another are adapted to be properly located for gripping an arm **12** of a particular thickness.

When the clamp assemblies have been adjusted as desired, the wing nuts **40** are tightened, and to attach the tray device to the chair arm, it is merely necessary that one pull outwardly on the handles to an extent sufficient to provide a space between the pads **48** sufficient to receive the chair or sofa arm. Then, the device is shifted downwardly until the top surface of the arm **12** is engaged against the underside of the tray element, that is, against the trackway. On release of the arms **46**, the tension of the spring hinges is permitted to exert itself, and the clamp plates will, under the strong tension of said hinges, be urged into tight, gripping engagement with opposite sides of the chair arm, thus holding the device securely upon the arm, where it will provide a conveniently located support for glasses, ash tray, etc.

During the loosening or tightening of the wing nuts, the bolts **34** are, of course, held against rotation due to the fact that the T-heads of the bolts are of such length as to prevent rotation of the bolts within the tracks.

Once the spacing of the clamp assemblies has been adjusted for a particular chair arm, of course, the adjustment need not be made on any future occasion, unless the device is to be used on a different arm having a different width than that on which the device has previously been used. Each time the device is used, it need merely be placed in gripping engagement with the selected arm **12**, and should the tray element not be supported at a particular location transversely of the arm **12** that is most suited to the needs of the particular user, the wing nuts **40** can be loosened, and, with the clamp assemblies remaining in engagement with the opposite sides of the arm **12**, the tray member **16** can itself be adjusted transversely of arm **12**, as for example, to the position shown in chain dotted lines in Figure 2. If desired, the wing nuts can be left loose, so that the tray assembly can be adjusted to an out-of-the-way location whenever desired during use thereof.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A tray attachment for the arm of a chair, comprising: a flat tray element including a pair of parallel, spaced tracks extending from one to the opposite side of said tray element at the underside thereof; spaced pairs of bolts depending from said tracks, each of said bolts having an elongated T-head having its length aligned with the length of the track, each of said T-heads being greater in length than the width of the track to prevent rotation of the bolts in the tracks while permitting free sliding of said bolts along the lengths of the tracks; a cross bar connected at its ends to the bolts of each pair and extending between the respective tracks, for adjustment of the cross bars independently of one another, with their bolts, along the lengths of the tracks; and clamp plates hinged to the respective cross bars under spring bias tending to swing the clamp plates toward one another into engagement with opposite sides of said arms.

2. A tray attachment for the arm of a chair, comprising: a flat tray element including a pair of parallel, spaced tracks extending from one to the opposite side of said tray element at the underside thereof; spaced pairs of bolts depending from said tracks, each of said bolts having an elongated T-head having its length aligned with the length of the track, each of said T-heads being greater in length than the width of the track to prevent rotation of the bolts in the tracks while permitting free sliding of said bolts along the lengths of the tracks; a cross bar connected at its ends to the bolts of each pair and extending between the respective tracks, for adjustment of the cross bars independently of one another, with their bolts, along the lengths of the tracks; wing nuts threaded on said bolts against the undersides of the cross bars, to clampably engage the cross bars against the tracks in selected positions to which the cross bars are adjusted; and clamp plates hinged to the respective cross bars under spring bias tending to swing the clamp plates toward one another into engagement with opposite sides of said arms.

3. A tray attachment for the arm of a chair, comprising: a flat tray element including transversely spaced, parallel tracks at its underside each of which opens downwardly in its midwidth area and includes longitudinal guide flanges extending inwardly from its opposite sides; and a pair of clamp assemblies depending from the tracks

each including a pair of connecting elements slidably supported on the guide flanges and depending from the respective tracks through the open midwidth portions thereof, a cross bar underlying and extending between the tracks, the cross bar being formed with apertures at its ends loosely receiving the respective connecting elements and being slidable upwardly and downwardly upon said elements into and out of engagement with the tracks, thus to bind frictionally against the tracks when shifted upwardly on the connecting elements to engage the connecting elements against sliding movement within the tracks, means mounted on the connecting elements in engagement with the underside of the cross bar and shiftable axially of the connecting elements to bind the cross bar against the tracks, a clamp plate having a hinged connection to the cross bar, the axis of said hinged connection being spaced downwardly from the undersides of the tracks a substantial distance and extending adjacent one longitudinal edge of the clamp plate, said clamp plate

being swingable about its hinge axis into and out of a position in which it lies in a plane substantially perpendicular to that of the tray element and being spaced from the tray element a substantial distance when in said position, and resilient, yielding means engaging each clamp plate and tensioned to bias the same about said axis toward the clamp plate of the other assembly for clamping of a chair arm therebetween.

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