Oct. 19, 1965 R. F. ANDERSON 3,212,814

HIGH CHAIR TRAY CATCH AND SWIVEL ASSEMBLY

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Fig. 1.

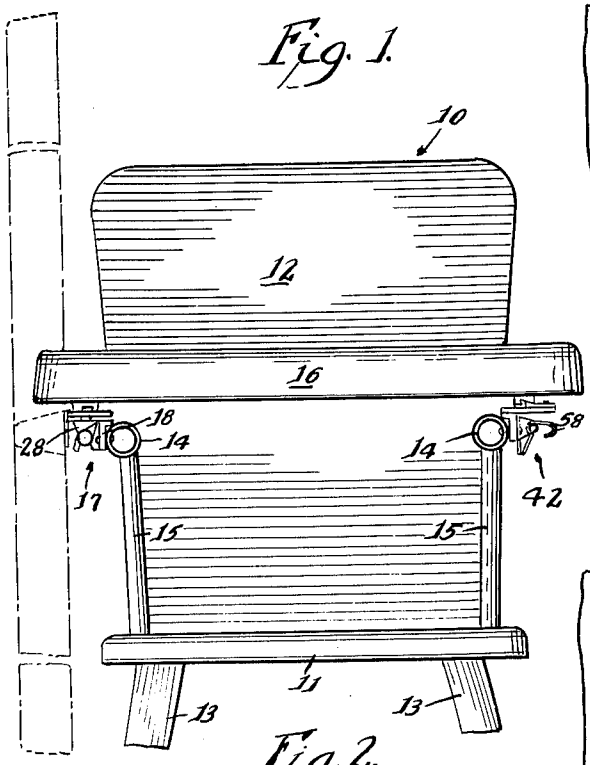


Fig. 2.

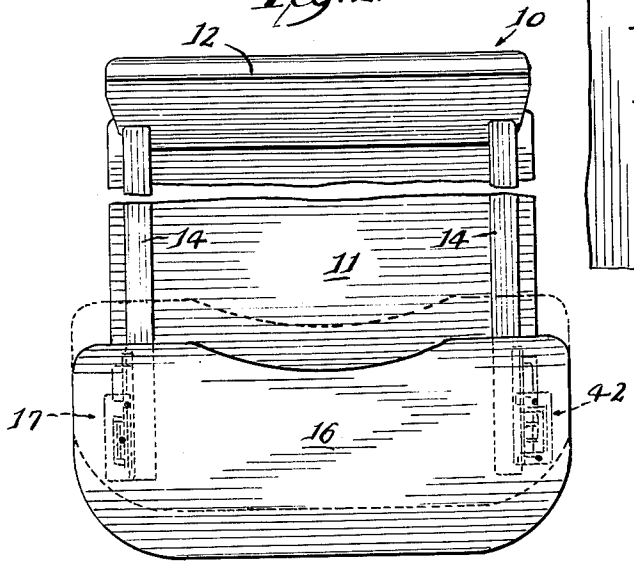


Fig. 3.

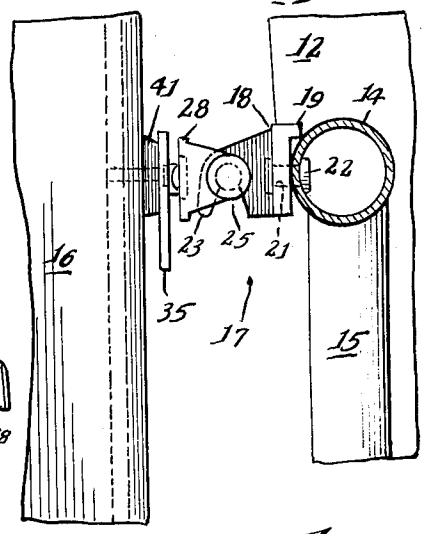
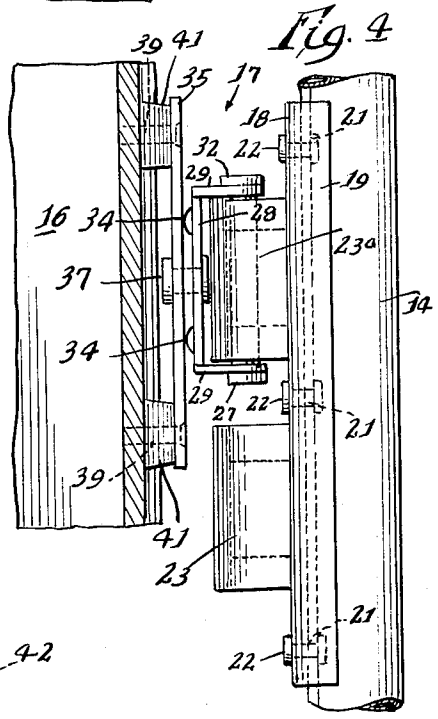


Fig. 4



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HIGH CHAIR TRAY CATCH AND SWIVEL ASSEMBLY

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Fig. 5.

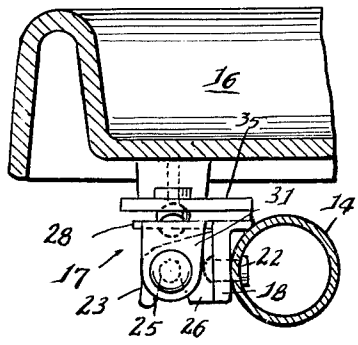


Fig. 6

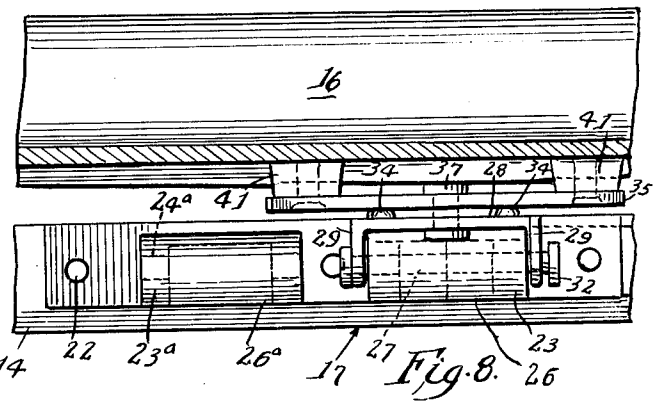


Fig. 7.

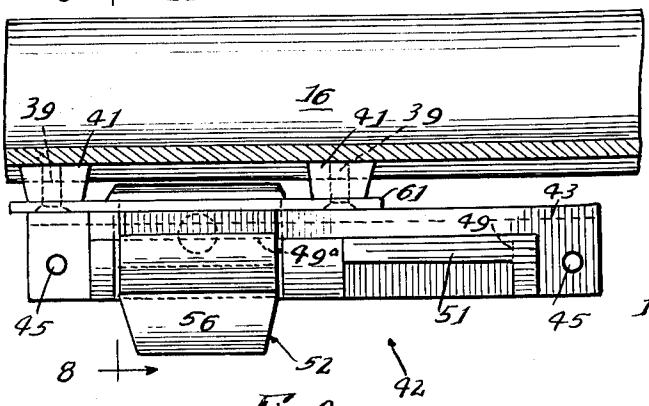


Fig. 8.

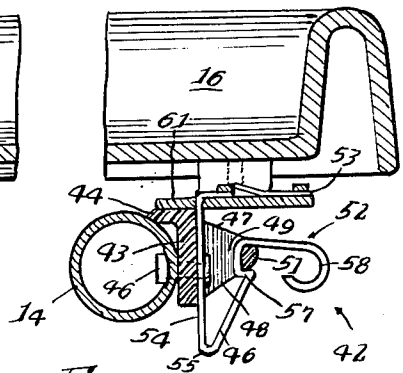


Fig. 9.

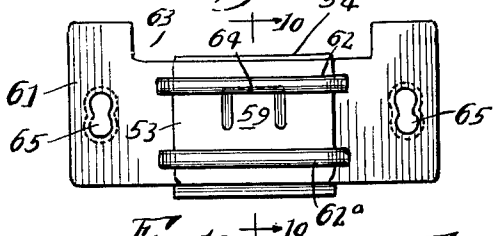


Fig. 11.

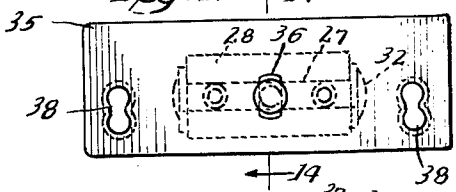


Fig. 10.

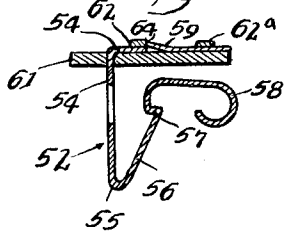


Fig. 12.

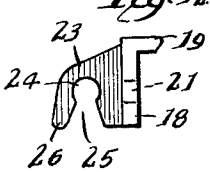


Fig. 13.

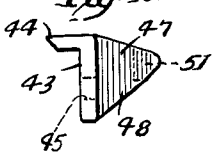
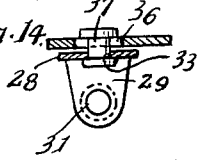


Fig. 14.



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3,212,814
HIGH CHAIR TRAY CATCH AND SWIVEL ASSEMBLY

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8 Claims. (Cl. 297—155)

The present invention relates to a novel catch and swivel assembly for the tray of a high chair and more particularly to an assembly providing a novel spring catch cooperating with a bracket on one arm of the high chair and a swivel mounting and bracket assembly on the other arm of the high chair. The assembly provides for two positions of adjustment for the tray which functions to support in an easily accessible position a child's food and toys, and also to retain a child in seated position and prevent injury by falling or sliding out or off of the high chair and onto the floor.

An important object of the present invention is the provision of a high chair tray assembly which is securely latched in operative position upon and spanning the arms of the high chair and can be easily released and swiveled to an inoperative position at one side of the chair when the child is to be removed. The catch mechanism is easily and quickly engaged or released from a bracket secured to the arm and the swivel mechanism may be readily released from the bracket on the opposite arm.

Another important object of the present invention is the provision of a novel swivel or pivotal mounting at one side of the tray which provides a universal connection including a horizontally arranged swivel bracket pin carrying a swivel bracket which in turn carries a vertically arranged swivel bracket rivet or pivot. When the other side of the tray is released by the disengagement of its locking spring, the tray is free to pivot about the horizontal swivel bracket pin and also to rotate about the vertically arranged swivel bracket rivet or pivot extending through an elongated opening in a swivel plate affixed to the tray.

A further important object of the present invention is the provision of brackets which are secured to the arms of the high chair and which provide a two-position adjustment of the locking spring and the swivel bracket to adjust the tray position on the arms of the high chair. The arm bracket for the locking spring has a pair of spaced openings in the bracket defining a locking bar adapted to receive and retain the spring, and the opposite bracket has a pair of spaced clamping hook-like projections which are adapted to grip the horizontal swivel bracket pin.

The present invention further comprehends the provision of arm brackets which are formed of a suitable plastic material such as nylon to provide an economical and lightweight assembly and one assuring a long life even under rough usage.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawings:

FIGURE 1 is a front elevational view of a high chair to which the novel tray swivel and catch assembly have been applied but with the upper portion of the chair legs only being shown, the tray being shown in full lines in its operative, latched position and in dotted lines in the manner in which the released tray may be lifted and swung to fully open or inoperative position above and also at one side of the chair.

FIG. 2 is a fragmentary top plan view of the high chair and tray of FIG. 1 with the tray shown in full lines in one position of adjustment and in dotted lines in the other position of adjustment.

FIG. 3 is a fragmentary enlarged view in front elevation showing the swivel mounting bracket mounted on the arm of the high chair with the tray in released depending position at one side of the chair.

FIG. 4 is a fragmentary top plan view of the bracket shown in FIG. 3.

FIG. 5 is a fragmentary enlarged view in front elevation similar to FIG. 3 but with the tray in its operative position.

FIG. 6 is a fragmentary enlarged view in side elevation of the swivel mounting bracket with the tray in operative position.

FIG. 7 is a fragmental enlarged view in side elevation of the arm bracket and locking mechanism on the tray in operative position.

FIG. 8 is a vertical cross sectional view taken on the line **8—8** of FIG. 7.

FIG. 9 is a top plan view of the plate and locking spring which are secured to the tray.

FIG. 10 is a vertical cross sectional view taken on the line **10—10** of FIG. 9.

FIG. 11 is a top plan view of the swivel plate and swivel mounting assembly adapted to be secured to the tray.

FIG. 12 is a front elevational view of the arm bracket for the swivel assembly.

FIG. 13 is a front elevational view of the arm bracket for the locking assembly.

FIG. 14 is a vertical cross sectional view taken on the line **14—14** of FIG. 11 and viewed in the direction of the arrows.

Referring more particularly to the drawings in which is shown an illustrative embodiment of the present invention, FIGS. 1 and 2 disclose a high chair **10** having a seat **11**, a back rest **12**, legs **13**, and arms **14** mounted upon supporting members or uprights **15**. The arms **14** are adapted to support a tray **16** thereabove with the tray spanning and extending beyond the arms. The tray not only serves to support a child's food as well as toys but also to restrain the child from falling or sliding out of the high chair. This tray may be of any suitable design.

To effectively retain the tray **16** secure in its operative position and prevent the seated child from disengaging the latching means and thereby displace or move the tray to unlatched or open position but to permit the tray to be quickly unlatched and swung to open position by another or older person for removal of the child, the present invention comprehends a novel swivel assembly adjacent one end of the tray and a novel spring catch adjacent the opposite end thereof. The tray is pivotally mounted on one arm of the chair upon a substantially horizontal axis and when the opposite end of the tray is released, the tray may be swung upwardly and also swiveled to further permit the tray to be swung outwardly about a substantially vertical axis to one side of the chair and also about a substantially horizontal axis when moved to the elevated position shown in dotted lines in FIG. 1; from either of which positions at the one side of the chair the tray may be moved or dropped to a depending position at one side of the chair as shown in FIGS. 1, 3 and 4.

As shown in FIGS. 3 through 6, the swivel assembly **17** is mounted onto the arm **14** of the chair at the left-hand side, as seen in FIGS. 1 and 2. The swivel assembly includes an elongated arm bracket **18** formed of a suitable plastic material such as nylon having a horizontal flange **19** to aid in positioning the bracket **18** on the round surface of the chair arm **14**. The bracket has spaced openings **21** (see FIG. 12) aligned with openings in the arm **14** for suitable securing means **22** to fasten the bracket

to the chair arm. The bracket 18 is provided with a pair of longitudinally spaced outwardly extending and downwardly opening horizontal swivel mounting arms 23, 23a which have elongated cylindrical channels 24, 24a (FIG. 6) with a converging entrance or notch 25, 25a from the lower surface 26, 26a of the arm. The intersection of the entrance 25 with the channel 24 is of a width slightly less than the diameter of the channel to yieldably receive and retain a swivel bracket pin 27 within the channel.

A generally U-shaped swivel bracket 28 has spaced depending arms 29 at each end thereof with an opening 31 in each arm to receive the swivel bracket pin 27. The pin has an enlarged head 32 at one end and the opposite end is upset to secure the swivel bracket thereon. As shown in FIGS. 4, 6, 11 and 14, the bracket 28 has a central opening 33 (FIG. 14) and a pair of spaced embossments 34 thereon to space the bracket from the tray swivel plate 35. The plate 35 includes a central and transversely arranged elongated slot 36 adapted to be aligned with the opening 33 in the bracket 28 to receive a swivel bracket rivet 37 to provide for swivelling of the plate relative to the swivel bracket 28. The plate 35 is further provided with a pair of spaced mounting openings 38 for suitable securing means 39 to fasten the plate to depending embossments 41, 41 on the underside of the tray 16.

It should be noted that the swivel assembly will provide for pivotal movement about a vertical axis through the rivet 37 and/or about a horizontal axis through the pin 27. Also, the swivel bracket 28 and pin 27 can be removed from the channel 24 and inserted in the channel 24a to provide for a two position adjustment of the tray 16 on the arms 14 of the chair to accommodate children of different sizes or ages.

The opposite end of the tray 16 carries the locking assembly 42 (FIGS. 7 and 8) which includes an arm bracket 43 with a horizontal flange 44 and openings 45 at the ends for suitable fastener means or rivets 46 to secure the bracket to the arm 14 of the chair. An outwardly extending arm 47 (FIGS. 8 and 13) on the bracket has an inwardly and downwardly sloping lower surface 48 and a pair of spaced generally rectangular openings 49, 49a (FIGS. 7 and 8) formed therethrough parallel to the bracket. An outer locking bar 51 is formed in the arm 47 by the openings 49, 49a and cooperates with a locking spring 52.

The locking spring 52 is formed of a suitable spring steel and, as seen in FIGS. 8 and 10, is provided with an upper horizontal portion or flange 53 and a downwardly extending vertical portion 54 at right angles to the flange 53; the vertical portion 54 being bent upwardly as at 55 to form an outwardly and upwardly extending resilient portion 56 having an undercut portion at 57 and terminating in an outwardly curled projecting end 58. The vertical portion 54 and resilient portion 56 provide a generally V-shaped locking spring which cooperates with the arm bracket 43.

The horizontal flange 53 is provided with a central slightly upwardly biased locking tongue or tab 59 which cooperates with the stationary tray plate 61 (see FIGS. 9 and 10). The plate 61 includes a pair of parallel longitudinally extending raised ribs 62, 62a which are raised above the plate to provide suitable spacing therebetween to receive the flange 53 of the locking spring 52. One edge of the plate 61 is cut away at 63 to receive the vertical portion 54 of the spring 52 and the flange 53 is inserted into the space above the plate 61 and below the ribs 62, 62a so that the tongue 63 passes under one rib 62 and the end 64 of the tongue 59 is biased upward and positioned against the side of the rib 62 to retain or prevent removal of the locking spring 52.

The plate 61 is provided with openings 65 adjacent each end thereof to receive suitable securing means 39 to secure the plate to the embossments 41 on that end of the tray (FIG. 7).

In the utilization of the presnet assembly, the swivel bracket pin 27 is snapped into one of the two channels 24, 24a formed in the arms 23, 23a depending on the size of the child occupying the chair. The locking spring 52 is inserted downwardly into one of the openings 49, 49a, corresponding with the channel housing the swivel bracket pin 27, until the undercut portion 57 snaps under the locking bar 51, to securely retain the tray 16 on the arms 14 of the chair 10. When the child occupying the chair is to be removed, the curled projecting end 58 of the locking spring 52 is pushed inward toward the vertical portion 54 to release the locking bar 51 from the undercut portion 57 and the locking spring 52 is lifted out of the opening 49 or 49a.

Now the tray 16 can be swung or pivoted upward about the horizontal axis of the swivel bracket pin 27 to the upper position shown in dotted lines in FIG. 1 and then pivoted about the now horizontal swivel bracket rivet 37 to the lower depending position shown in dotted lines in FIG. 1 and partially shown in FIGS. 3 and 4. Also, instead of first pivoting about the swivel bracket pin 27, the tray, after the locking spring is released, may be pivoted on a horizontal plane outward about the then vertical swivel bracket rivet 37 through an arc of approximately 180° and then pivoted about the swivel bracket pin 27 to its final position.

Furthermore, the position of the tray on the chair arms may be adjusted as shown in FIG. 2 from the full line position to the dotted line position by snapping the swivel bracket pin 27 from one channel 24 or 24a and inserting the pin into the other channel when the tray is in its inoperative position. Then when the tray 16 is swung or pivoted to its operative position, the locking spring 52 is inserted in the proper opening 49 or 49a corresponding to the adjusted position of the swivel bracket pin 27.

Having disclosed the invention, I claim:

1. In a high chair provided with spaced arms and a tray for supporting a child's food and toys and for retaining the child in the chair, a tray latch and swivel assembly for adjustably, detachably and swingably mounting the tray upon the chair arms, comprising a swivel assembly mounted adjacent one end of the tray and secured to the corresponding chair arm, said swivel assembly including a bracket secured to the chair arm, at least one arm extending from the bracket and having a downwardly opening channel, a swivel pin adapted to be releasably retained in said channel, a swivel bracket mounted on said swivel pin, a swivel plate secured to the underside of said tray, and a swivel rivet pivotally mounting said plate on said bracket, and a locking assembly mounted adjacent the opposite end of the tray and secured to the other chair arm, said locking assembly including a bracket secured to the chair arm, an outwardly extending arm having at least one opening therein defining a locking bar, a stationary plate secured to the underside of the tray, and a locking spring secured to and depending from the plate, said spring including a vertical portion and a resilient portion joined by a V-shaped bend, said resilient portion having an undercut portion cooperating with the locking bar and an outwardly extending curled end.

2. A tray latch and swivel assembly as set forth in claim 1, in which said bracket for the swivel assembly has a pair of spaced arms with downwardly opening channels for said swivel pin and said bracket for the locking assembly has a pair of spaced openings for reception of the locking spring to provide for adjustment of the tray.

3. A tray latch and swivel assembly as set forth in claim 1, in which the stationary plate includes a pair of parallel ribs with their lower surfaces raised above the upper surface of the plate to provide slots, said locking spring having a horizontal flange adapted to be received in said slots, and means to lock the flange of the locking spring in operative position.

4. In a high chair provided with spaced arms and a tray for supporting a child's food and toys and for retain-

ing the child in the chair, a tray latch and swivel assembly for adjustably, detachably and swingably mounting the tray upon the chair arms, comprising a swivel assembly mounted adjacent one end of the tray and secured to the corresponding chair arm, said swivel assembly including a bracket secured to the chair arm having a pair of spaced arms extending from the bracket with downwardly opening channels, a swivel pin adapted to be releasably retained in one of said channels, a swivel bracket mounted on said swivel pin, a swivel plate secured to the underside of said tray, a swivel rivet pivotally mounting said plate on said swivel bracket, and a locking assembly adjacent the opposite end of the tray including a bracket secured to the other chair arm having a pair of spaced openings and a locking spring catch mounted on the underside of the tray and received in one of the openings.

5. Mechanism for pivotally and swingably mounting one end of a tray upon an arm of a high chair to provide for movement of the tray from an operative position upon the arms of the high chair to a position at the side of the high chair, comprising a bracket mounted on the arm of the high chair and having a pair of longitudinally spaced arms, each arm having a downwardly opening channel to provide for adjustment of the tray, a swivel pin adapted to be releasably retained in the downwardly opening channel of an arm, a swivel bracket mounted on the swivel pin and a plate secured to the underside of the tray and adapted to swivel relative to the swivel bracket.

6. Mechanism for pivotally and swingably mounting one end of a tray upon an arm of a high chair to provide for movement of the tray from an operative position upon the arms of the high chair to a position at the side of the high chair, comprising a bracket formed of a resilient material mounted on the arm of the high chair and having at least one arm with a downwardly opening channel

therein, said channel having a converging entrance with the intersection of said entrance with said opening being of a width less than the diameter of the channel, a cylindrical swivel pin having a diameter corresponding to the diameter of the channel adapted to be frictionally releasably retained in the channel, a swivel bracket mounted on the swivel pin and a plate secured to the underside of the tray and adapted to swivel relative to the swivel bracket.

7. Mechanism for pivotally and swingably mounting the tray of a high chair as set forth in claim 5, in which the opposite chair arm and adjacent end of the tray are provided with a locking assembly including a locking spring for detachably mounting and retaining the last mentioned end of the tray on said adjacent chair arm.

8. Mechanism for pivotally and swingably mounting the tray of a high chair as set forth in claim 5, in which the opposite chair arm and adjacent end of said tray is provided with a locking assembly including a bracket secured to the opposite chair arm and having a locking bar, a stationary plate secured to the underside of said tray, and a locking spring depending from the stationary plate and having a resiliently biased locking portion cooperating with said locking bar.

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