Feb. 13, 1934. D. I. REITER ET AL 1,947,424

ADJUSTABLE SLIDE FASTENER

Filed Jan. 5, 1933

Fig. 1

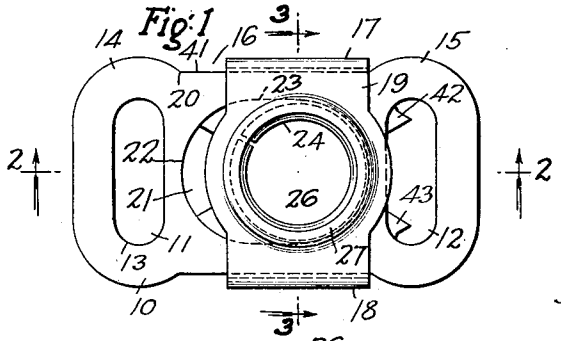


Fig. 2

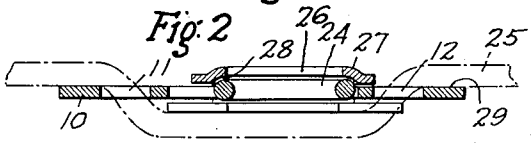


Fig. 3

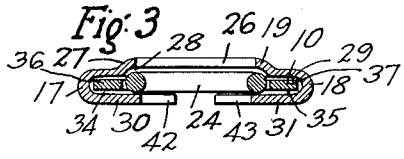
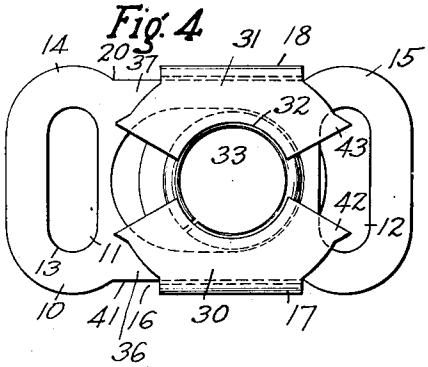


Fig. 4



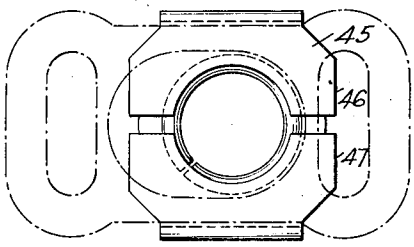


Fig. 5

Fig. 7

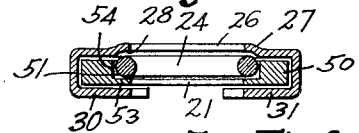


Fig. 6

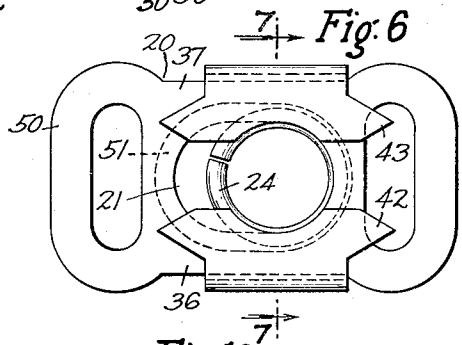


Fig. 10

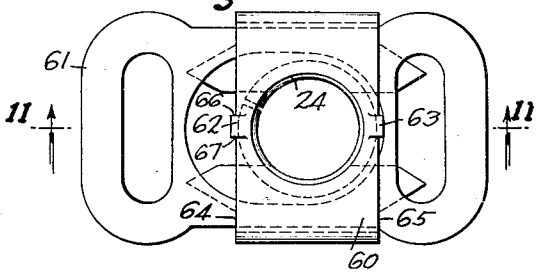


Fig. 11

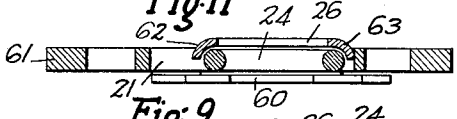


Fig. 9

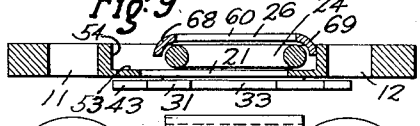
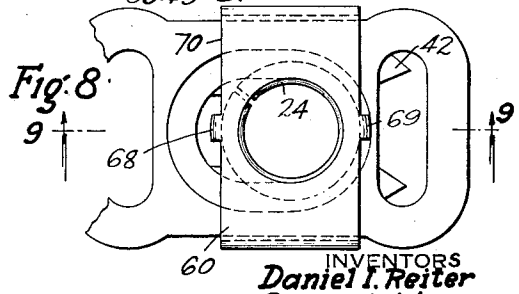


Fig. 8



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UNITED STATES PATENT OFFICE

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ADJUSTABLE SLIDE FASTENER

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Application January 5, 1933. Serial No. 650,216

16 Claims. (Cl. 24—77)

This invention relates to faster slides, and particularly to that type of slide which carries one element of a separable snap fastener in such a manner that the element is self-adjusting within a sufficient range to permit its engagement with a cooperating snap fastener element, even though the elements are not initially aligned coaxially of each other.

In the prior patent to Daniel I. Reiter, for self-adjusting fastener slide, No. 1,857,973, dated May 10th, 1932, are shown a number of slides of the type to which this invention pertains. The prongs there shown, however, are arranged on the main body portion of the auxiliary slide member, and the snap fastener element is arranged wholly on one side of the main slide member or plate.

Our invention contemplates the arrangement of the prongs, if any prongs are used, on the bent arms of the auxiliary slide member to adapt the fastener slide for economical production in large quantities.

Our invention also contemplates the reduction of the thickness of the fastener slide to a minimum by the arrangement of the snap fastener element thereof to slide in a suitable slot or recess in the main slide member.

Our invention further contemplates the provision of an adjustable slide adapted to be made of a minimum quantity of material while adequately gripping the strap to which it is to be attached, and providing a comparatively wide range of automatic adjustment.

The various objects of our invention will be clear from the description which follows, and from the drawing, in which

Fig. 1 is a top plan view of one form of our invention.

Fig. 2 is a vertical section of the same, taken on the line 2—2 of Fig. 1 and showing in dash and dotted lines, a strap passed through the strap slots of the main slide member.

Fig. 3 is a transverse section of the same, taken on the line 3—3 of Fig. 1.

Fig. 4 is a bottom plan view of the same.

Fig. 5 is a similar view of a modified form of the auxiliary slide member, wherein pointed prongs are omitted to prevent piercing or mutilation of the strap, and usable with any of the main slide members shown in the remaining figures.

Fig. 6 is a bottom plan view of a modified form of our improved slide, wherein a guideway is provided for the resilient socket ring.

Fig. 7 is a transverse section of the same, taken on the line 7—7 of Fig. 6.

Fig. 8 is a top plan view of another modified form of our improved slide similar to Fig. 6 but wherein means are provided for holding the resilient ring in place to the auxiliary slide member while the body portion of the auxiliary slide remains flat.

Fig. 9 is a vertical section of the same, taken on the line 9—9 of Fig. 8.

Fig. 10 is a top plan view of another modified form of our invention wherein the main slide is made of a thickness substantially equal to the thickness of the socket ring.

Fig. 11 is a vertical section of the same, taken on the line 11—11 of Fig. 10.

In the practical embodiment of our invention which we have illustrated by way of example, we prefer to arrange on the auxiliary slide member, a socket element of a separable snap fastener though it will be understood that other types of fastener elements, such as a different socket, or a combined socket and stud, or a stud, such as those illustrated in the above-mentioned Patent No. 1,857,973, may be used instead, if desired. In any case, the main slide member 10 is preferably provided with a pair of spaced transversely arranged strap-receiving slots as 11 and 12.

As illustrated, each of said slots is provided with parallel sides, and preferably but not necessarily, with arcuate ends as 13.

The outermost peripheral edge of the material surrounding each of the slots is preferably made correspondingly arcuate as at 14, a recess as 16 being provided between the transversely extended arcuate end portions 14 and 15 on each edge of the main slide member for the reception of the bent parts 17 and 18 of the auxiliary slide member 19. It will be noted that the corners 20, at each end of the longitudinal edge 41 of the recess, serves as a stop to limit the relative movement in either direction of the auxiliary member and the main slide member.

In those forms of our invention shown, wherein the slide is adapted to be attached to a cooperating stud, the auxiliary member is provided with a socket of such shape and arrangement that the stud may be inserted into the socket from either face of the slide. The resilient part of the socket is further shown in the form of a resilient open ended ring suitably held in place to, and movable with the auxiliary slide member, though we do not intend to be understood as limiting ourselves to a socket as the fastener element, nor to the particular type of socket shown.

In that form of our invention shown in Figs. 1 to 4 inclusive, the main slide member 10 is pro-

vided with a longitudinally elongated and preferably centrally arranged slot as 21, having arcuate ends 22 and substantially straight sides 23 joining said ends. The length of the slot 21 is greater than the outermost diameter of the resilient ring 24 to permit automatic longitudinal movement of said ring in the slot for self-adjustment under the pressure of a cooperating stud into the proper position to receive said stud. The stud being, as is well known in the art, carried by an article to which the slide and the slide carrying strap 25 are to be attached, no illustration thereof is deemed necessary.

It will be noted that the strap 25 may be passed through the strap-receiving slots 11 and 12 of the main slide member to assume the position shown in Fig. 2 so that the strap underlies the socket, or that said strap may be passed upwardly through the slot 11 and then downwardly through the slot 12 to overly the socket as desired, without interfering with the proper reception of the stud by the socket. In other words, the stud may be assembled with the socket in either direction, or the stud may be passed into the socket from either face of the main slide. The main body portion of the auxiliary member 19 is provided with a preferably central aperture or opening 26 of somewhat greater diameter than the normal innermost diameter of the resilient ring 24. However, since the thickness of the ring 24 is, as here shown, somewhat greater than that of the main slide, a portion 27 of the material of the auxiliary slide member surrounding the opening 26 is offset outwardly to provide a recess 28 into which said ring 24 is fitted, the remainder of said ring entering the central slot 21 of the main slide member.

In the form of our invention now being described, the upper part of said ring projecting above the upper surface 29 of the main slide member, the portion 27 is offset outwardly for the reception of the projecting portion of the ring 24. It will be obvious, however, that if the ring were of lesser thickness than the main slide, the portion 27 should be offset in the opposite direction to maintain the ring in place.

As best shown in Fig. 3, the arms 30 and 31 are bent from the main body of the auxiliary slide member as at 17 and 18, respectively, and are integral with said body portion. Said arms extend toward each other to any desired extent but the adjacent edges thereof are preferably out of contact with each other, the ring 24 being arranged between the arms and the portion 27 and held in place thereby. Each of the arms is suitably recessed, as at 32 to leave an opening as 33 between the arms, said opening being of substantially the same diameter as that of the opening 26 and in vertical alignment therewith to permit the passage of a stud in either direction.

It will be noted that the bends 17 and 18 of the auxiliary member each provide a groove as 34 and 35, respectively, for the slidable reception of that part of the respective edge portions 36 and 37 of the main member situated between the slot 21 and the adjacent edge 41. It will also be noted that the ring 24 is loosely held in the recess 28 and may rest on the arms 30 and 31, and therefore is permitted to expand in said recess under the pressure of a cooperating stud passed through either of the openings 26 or 33. The ring, however, is confined in the recess by the offset portion 27 and the arms 30 and 31, as will be clear, particularly, from Fig. 3. The auxiliary member and the ring move as a unit, relatively to the main member, the ring moving in the slot 21 until stopped by its engagement with either of the arcuate ends 22 of the slot 21 or by the engagement of the auxiliary member with either of the transversely extended projections 14 or 15 of the main slide member, such positions being the limiting positions of the auxiliary member.

The arms 30 and 31, at about the middle thereof, may be provided along each or both of their transverse edges with one or more prongs as 42 and 43, if desired. In the operative positions thereof, said prongs project into one of the slots, as 11 or 12, to a sufficient extent to engage the strap 25 passed through said slot (Fig. 2). If necessary, it will be understood that the auxiliary member may be moved on the main member to a sufficient extent to cause the desired engagement of said prongs with the strap 25, after the socket or other fastener element carried by the auxiliary member has been engaged with its cooperating element.

While the prongs are shown on both of the arms 30 and 31, it will be understood that a single prong may be formed on both edges of one of the arms only and on only one edge thereof, or that a prong may be formed on each of the arms or that the prongs may be entirely omitted from both of said arms, as is shown, for example, by the auxiliary slide member 45 of Fig. 5. In said slide member 45, the transverse edges 46 and 47 at both ends of each of the respective arms 30 and 31 are unpointed and without prongs. Said edges serve to wedge the strap 25 against a cooperating wall of either of the slots 12 or 11, as the case may be, without materially penetrating or mutilating the material of the strap, and are therefore advantageous in certain cases, as where soft or easily damaged material is used for the strap.

It will be understood that the auxiliary member 45 may be used to replace the auxiliary slide member 19 of Figs. 1 to 4, or to replace the pronged auxiliary slide member shown in the various modifications of my invention soon to be described. In other words, any of the auxiliary slide members shown and described herein may be provided with unpointed transverse edges as disclosed by the auxiliary slide member 45, should it be desired to do so while retaining the other features and modifications thereof, which modifications will now be pointed out in detail.

In that form of our invention shown in Figs. 6 and 7, the main slide member 50 is made of material of such thickness that a peripheral guide groove 51 may be provided, outwardly enlarging the slot 21 thereof. While the thickness of the main slide member 50 is shown as being greater than the thickness of the ring 24, it will be understood that the thickness thereof may also be made less than that of the ring, in which case the ring projects above the upper surface 52 of the main slide member a somewhat greater extent than is illustrated in Fig. 7. We prefer, however, to make the depth of the groove 51 at least half the thickness of the ring to better retain the ring in place. Regardless, however, of the comparative thicknesses of the ring and the main member, the groove 51, in this form of our invention, is made of less depth than that of the ring so that said ring projects above said upper surface to a greater or lesser extent.

The portion 27 surrounding the opening 26 is therefore, similarly to the modification shown in Fig. 1, offset to provide the recess 28 for the reception of the ring. Said ring slides on the shelf

or lower wall 53 of the groove 51, and is held in place by said shelf, together with the offset portion 27, and the wall 54 of the groove 51. Said groove 51, as will be obvious to those skilled in the art, may be stamped, pressed, cut or otherwise formed in the material of the main slide member 50 to provide the walls 53 and 54 for the slidable support of the ring, and to confine the ring in its proper position against loss or accidental removal from the slide.

It will be understood that if desired, the depth of the groove 51 may be made equal to or slightly greater than that of the ring 24, in which former case, the offset 27 of the auxiliary slide member is omitted and the body portion of said auxiliary member is made flat, as is illustrated, for example, in Figs. 8 and 9, and in the latter case, the offset 27 is depressed instead of raised, as will be obvious without further description.

It will be noted that in the modifications shown in Figs. 6, 7, 8 and 9, the ring is confined in and supported by the walls of a groove forming a continuation of the slot in the main slide member and bridges said groove and slot but nevertheless inwardly overhangs the edges of the slot 21, and that in the remaining forms of our invention, the ring is carried and supported solely by the auxiliary slide member but moves in the elongated slot of the main member.

In that form of our invention shown in Figs. 10 and 11, wherein the auxiliary slide member 60 supports the ring independently of the main slide member 61, (as is also the case in Figs. 1 to 4), the thickness of said main member (as in Figs. 8 and 9) is made substantially equal to that of the ring 24, but the slot 21 is made entirely through the main slide member without the provision of a groove such as 51 or any shelf or wall for supporting the ring.

In this form of my invention, the top or main body portion of the auxiliary slide member 60 is made flat, as are the arms of the auxiliary slide member. Means are provided, however, for securing the ring 24 against removal from the auxiliary slide member. Said means takes the form of an offset portion such as a pair of ears as 62 and 63 projecting beyond the respective edges 64 and 65 of the auxiliary slide member and bent around the adjacent portion of the ring to prevent movement of the ring longitudinally of the main slide member and out of the auxiliary slide member. It will be seen that the wall of the slot 21 prevents transverse movement of the ring out of its position relatively to the auxiliary slide member. Slits as 66 and 67 serve to partially separate the ears from the remainder of the auxiliary member to permit accurate bending thereof and to permit the bending to begin at a point inwardly of the transverse edge of said auxiliary member.

As shown in Fig. 8, however, the slits 66 and 67 may be omitted and the ears 68 and 69 may be offset inwardly and curved as well laterally to better hold the ring 24 in place, though in this form of offset, it will be understood that the curve of the offset begins at or beyond the transverse edge 70 of the auxiliary member.

While in Figs. 1, 4, 6, 8 and 10, the auxiliary slide member is shown with prongs on the transverse edges thereof, it will be understood, as above described, that the prongs may be omitted and transverse flat edges substituted therefor, as clearly shown in Fig. 5.

It will be seen that the ring 24 being arranged in the slot 21, whichever form said slot may take and whether enlarged into the groove 51 or not, the ring nevertheless may move in the slot 21 longitudinally of the main slide member until stopped by either of the end walls 22 of said slot or of the groove 51 or until the main slide member reaches the corner 16 and is stopped by the arcuate portion 14 or 15.

It will further be seen that our improved slide permits self-adjustment of the auxiliary slide on pressure put laterally thereon by a cooperating fastener element to move the main and auxiliary slide members relatively to each other and thereby to carry the auxiliary slide into the proper position to permit attachment thereof to a cooperating snap fastener. It will further be seen that our improved slide permits a considerable range of the self-adjustment just described while at the same time, being made of little lateral thickness and without waste of material, whereby it is well adapted for economical production in large quantities and to meet the severe requirements of practical use.

While we have shown and described certain specific embodiments of our invention, it will be understood that we do not intend to limit ourselves thereto but desire to claim our invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

We claim:

1. In a fastener slide, a sheet metal main slide member provided with spaced transverse slots for the passage of a strap therethrough, and with a longitudinally elongated slot between the transverse slots, an auxiliary slide member having a body portion provided with a central aperture and arranged on one side of said main member and having a pair of opposed arms each bent about an edge portion of the main member on to the other side thereof, each of said arms being recessed to provide an opening therebetween of substantially the same diameter as that of said central aperture and arranged coaxially of said aperture, means on said arms for cooperating with the walls of the transverse slots to engage the strap, and a resilient ring arranged between the arms and the main body portion of the auxiliary slide member and inwardly overhanging the central aperture and the opening.

2. In a fastener slide, a main slide member having a longitudinal slot therein, an auxiliary slide member arranged on one face of the main slide member and having arms each bent about an edge portion of the main slide member on to the other face thereof and extending inwardly past the adjacent side edge of the slot to partially cover the slot, and a resilient ring arranged between said members and in the longitudinal slot, and confined in the slot by said arms.

3. In a fastener slide, a slotted main member having transversely extending end projections and having edge recesses between said projections, an auxiliary member having a body portion arranged adjacent one face of the main member and having arms bent through the recesses of the main member into juxtaposition to the other face of the main member, strap-engaging prongs on said arms and, a resilient snap fastener element carried by said auxiliary member and movable in the slot of the main member.

4. In a fastener slide, a longitudinally slotted main member provided with a pair of opposed edge recesses, an auxiliary member movably mounted on the main member, arms bent from the edges of the auxiliary member through the recesses and adjacent the remote face of the main

member, and a fastener element carried by the auxiliary member and movable therewith and in the slot of the main member and confined in the slot by said arms.

5. In a fastener slide, a main slide member having a longitudinally elongated substantially central slot therein, an auxiliary member having an apertured main body portion and edge arm portions bent about said main member into substantial parallelism with the body portion, and a snap fastener element including yieldable parts carried by the auxiliary member and movable in the elongated slot on the relative movement of said main and auxiliary members, and confined in the slot by at least one of said portions.

6. In a fastener slide, a main slide member having a pair of spaced transverse slots therein and having a pair of opposed edge recesses between the slots and having further, a longitudinally elongated slot between the transverse slots and between the edge recesses, an auxiliary member comprising an apertured body portion adjacent one face of the main member, a pair of opposed arms bent through said recess into adjacent relation to the other face of the main member, and a strap-engaging portion on a transverse edge of at least one of said arms, said strap-engaging portion being adapted to project into one of said transverse slots on the movement of the auxiliary member into engagement with the end wall of one of said edge recesses, and a fastener element carried by the auxiliary member and slidable in the elongated slot.

7. In a fastener slide, a main slide member of substantially H-shaped outline, including longitudinally spaced and transversely extended end portions and a transversely reduced intermediate portion joining said end portions and providing edge recesses between said end portions, each of the end portions having a transverse slot therein, and the intermediate portion having a longitudinally elongated slot therein terminating inwardly of the transverse slots, an auxiliary slide member movably secured to the main member and having portions passing through said edge recesses, and a resilient snap fastener element arranged in the elongated slot of the main member and operatively connected to the auxiliary member and movable therewith.

8. In a fastener slide, a main member of sheet material provided with a longitudinally elongated slot, an auxiliary member of sheet material having one part thereof arranged adjacent one face of the main member and having an opposed part thereof arranged adjacent the other face of the main member to enclose an edge portion of the main member, said auxiliary member being slidable longitudinally on said edge portion, and a snap fastener element operatively connected to the auxiliary member and movable therewith and arranged in the elongated slot of the main member and confined in said slot by at least one of said parts of the auxiliary member.

9. In a fastener slide, a main member having an elongated slot therein, an auxiliary member of less length than that of the main member, arms on the auxiliary member each bent about an edge of the main member, coplanar prongs on the end of each of the arms, cooperating edge portions on the main and auxiliary members slidably securing said members together, and a snap fastener element operatively connected to the auxiliary member and movable therewith and arranged in said slot.

10. In a fastener slide, a sheet metal main member, a sheet metal auxiliary member slidably secured in face to face relation to the main member and including a pair of opposed arms bent about the respective edge portions of the main member to form grooves receiving said edge portions, a prong on a transverse edge of at least one of the bent arms, a snap fastener element arranged between said members, and means for connecting the element to the auxiliary member for movement therewith.

11. In a fastener slide, a main member having a slot therein, an auxiliary member slidably mounted on the main member, an arm on the auxiliary member bent about an edge of the main member, a prong on the transverse edge of the arm, said prong lying in the plane of the arm, a resilient ring movable with the auxiliary member longitudinally of the slot and of less innermost diameter than the width of the slot, said ring being arranged in said slot and means independent of the main member for holding the ring to the auxiliary member for movement as a unit.

12. In a fastener slide, a main member having a slot therein, a portion of said member surrounding the slot being depressed below the upper surface of said member to form a peripheral recess around and joining the slot, an auxiliary member slidable on the main member and having an aperture therein, the diameter of which is substantially equal to the width of the slot, a resilient ring bridging the slot and arranged in said recess, and a portion on the auxiliary member fitted to a portion of the ring to hold the ring in its operative position relatively to the auixilary member, whereby the ring and the auxiliary member are movable as a unit relatively to the main member.

13. In a fastener slide, a main member having an elongated slot therein, a resilient ring arranged in said slot and movable therein, an auxiliary member having bent arms partially covering the slot and thereby confining the ring in the slot, said auxiliary member being slidable longitudinally of the main member, and an offset portion on the auxiliary member fitted to a portion of the ring to operatively secure the ring to the auxiliary member for movement therewith as a unit.

14. In a fastener slide, a main member having a longitudinally elongated slot therein and having an L-shaped groove surrounding the slot and communicating therewith, a resilient ring arranged in the groove and bridging the slot, an auxiliary member provided with a main portion confining the ring in the recess and provided with arms bent about the main member to slidably connect said members, and a bent portion on the auxiliary member fitted to and adapted to engage the ring to maintain the ring in its operative position relatively to the auxiliary member.

15. In a fastener slide, a main member having a slot therein, a resilient ring arranged in said slot, said member having a ring-guiding portion thereon, and means for movably confining said ring within the slot comprising a one-piece auxiliary member having an apertured portion extending transversely across the slot and past the edges of the main member and arranged outwardly of one face of the main member and bent arm portions arranged on the other face of the main member and extending inwardly toward each other past the edges of said slot and embracing the edges of the main member to slidably connect said members, one of said portions of the auxiliary member cooperating with at least one

of said other portions to confine the ring in the slot.

16. In a fastener slide, a main member having an elongated slot therein, an auxiliary member slidable on the main member and comprising an apertured body portion adjacent one face of the main member and a pair of arm portions bent around the edges of said main member into adjacent relation to the other face of the main member, and a resilient ring arranged in said slot, said apertured body portion and said arm portions cooperating to confine the ring in the slot of the main member.

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