April 26, 1938. H. W. WATTS 2,115,475

VENETIAN BLIND MECHANISM

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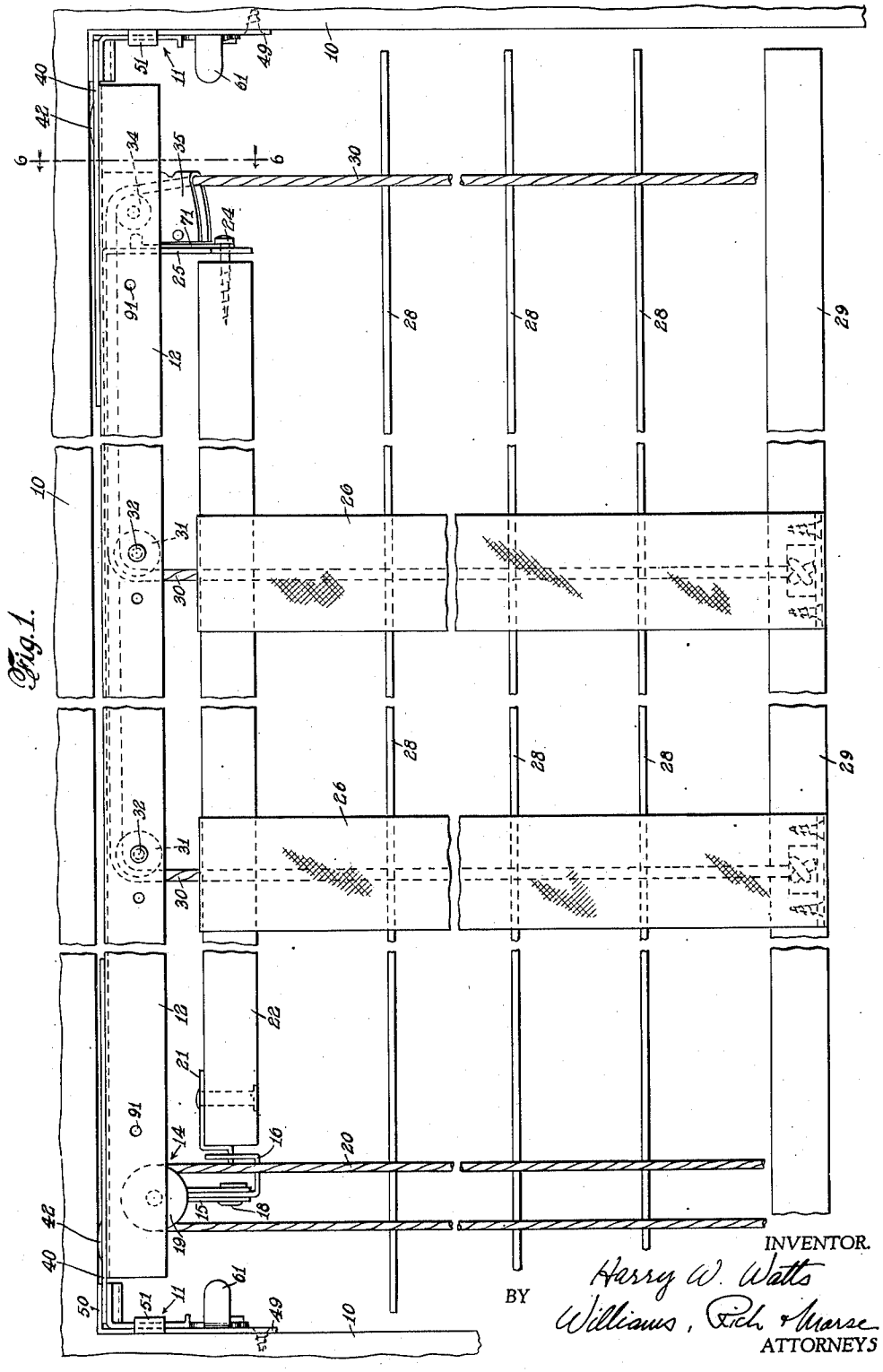


Fig. 1.

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Fig. 2.

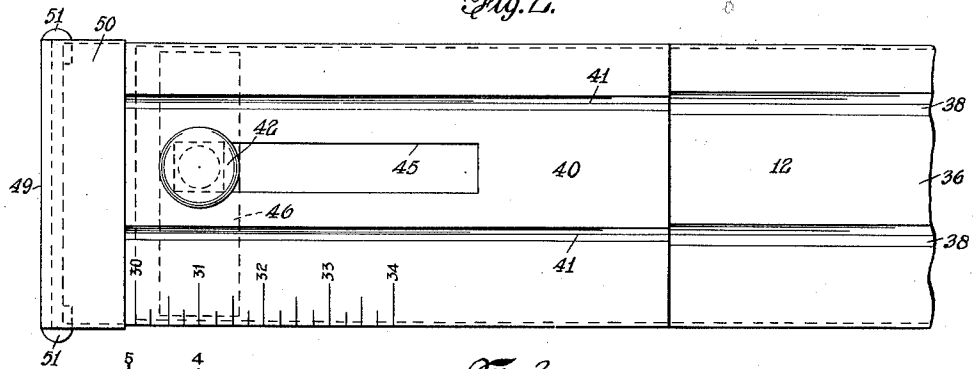


Fig. 3.

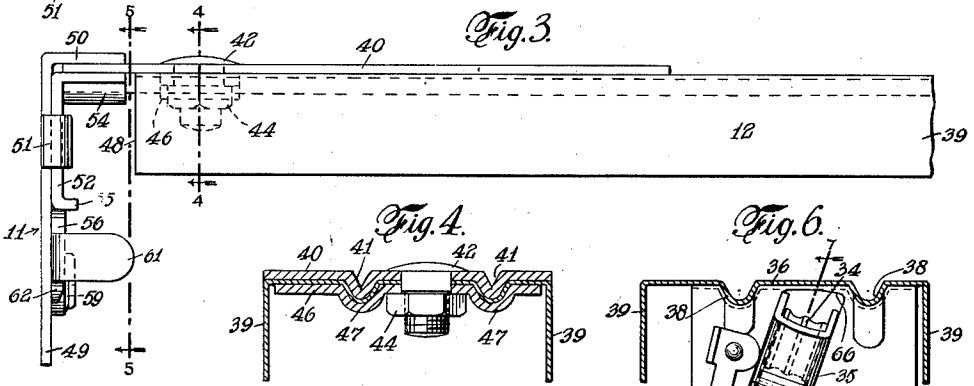


Fig. 4.

Fig. 6.

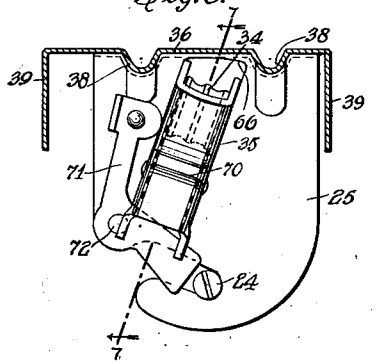


Fig. 8.

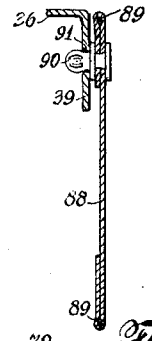


Fig. 5.

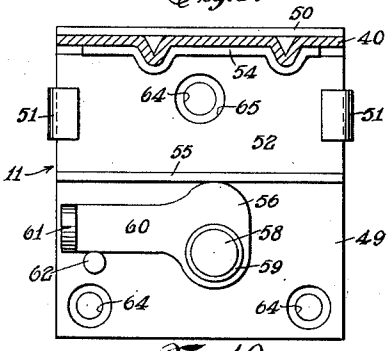


Fig. 7.

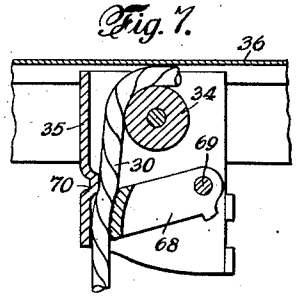


Fig. 9.

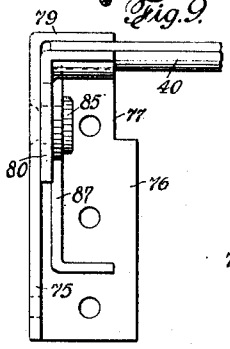
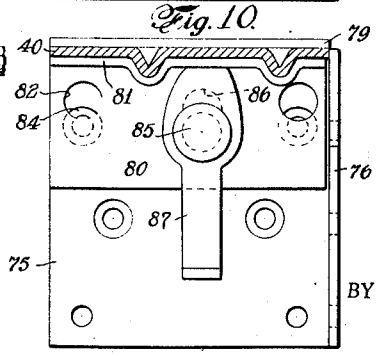


Fig. 10.



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VENETIAN BLIND MECHANISM

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Application April 1, 1936, Serial No. 72,031

11 Claims. (Cl. 156—17)

This invention relates to supporting mechanism for Venetian blinds.

Some objects of the invention are the provision of a novel type of head-rail to which the mechanism of the blind is secured, a novel type of supporting bracket for head-rails and a new combination of a head-rail with its supporting brackets.

Other objects of the invention will become apparent in the course of the following description of a preferred embodiment of the invention as shown in the accompanying drawings, in which

Fig. 1 is a front view of a Venetian blind in position in a window-frame.

Fig. 2 is a plan view of one end of the head-rail and one of the supporting brackets therefor.

Fig. 3 is a front view corresponding to Fig. 2.

Fig. 4 is a section through the head-rail taken on the line 4—4 of Fig. 3.

Fig. 5 is a front view of a supporting bracket, showing a section through the head-rail extension piece, taken on the line 5—5 of Fig. 3.

Fig. 6 is a view of the supporting bracket for the tilt bar, together with the cord lock, shown in position attached to the head-rail, taken on the line 6—6 of Fig. 1.

Fig. 7 is a section taken on the line 7—7 of Fig. 6, showing the internal construction of the cord lock.

Fig. 8 is a section through a part of the head-rail and a valance, showing how a valance may be secured to the head-rail.

Fig. 9 is a side view and Fig. 10 a front view of a modified form of supporting bracket.

Referring to Fig. 1, a Venetian blind is shown in position inside a window-frame 10, wherein it is supported in the usual manner by brackets, designated generally as 11, in which is held a head-rail 12. In this head-rail is located the mechanism which supports the blind and by which it is operated. Secured in the head-rail 12, at the left-hand end, is any suitable type of tilting mechanism 14, which comprises a supporting bracket 15, a tilting bracket 16 mounted so as to be rotatable on the pivot 18 by means of a gear and worm (not shown), which worm is driven by the pulley 19 actuated by the cord 20. A suitable lug 21, which is secured to the tilt bar 22, is inserted in a slot in the tilting bracket 16 in such manner as to support the tilt bar 22 and cause it to be rotated together with the bracket 16. The right-hand end of the tilt bar 22 is provided with a gudgeon 24, which is supported in a slot in the bracket 25 which is secured to the head-rail 12.

The blind proper is of the usual construction and consists, as shown, of the ladder tapes 26 fastened to the tilt bar and carrying the slats 28 and the bottom rail 29.

The blind is raised and lowered in the usual manner by means of the cords 30 which are secured to the bottom rail 29 and pass over pulleys 31 which run on axles 32 mounted in the head-rail. The cords 30 pass to the right and over the pulley 34 and through the cord lock 35.

Referring to Figs. 2 and 3, the head-rail 12 is in the form of a channel member having a web 36, in which are formed the reinforcing ribs 38, and the side walls 39, as best shown in the cross-section of the head-rail in Fig. 6. The head-rail is formed from sheet metal, which may be of relatively light gauge because its construction gives the head-rail great inherent rigidity. It is therefore very inexpensive to manufacture.

To each end of the head-rail 12 is secured an extension plate 40, also formed from sheet metal and having the reinforcing ribs 41, which are of such shape and so positioned as to nest with the ribs 38 in the head-rail. The extension plate 40 is secured to the head-rail 12 by means of the square-shouldered bolt 42, provided with a nut 44. This bolt 42, as shown in Fig. 4, passes through an elongated slot 45 in the extension plate 40, a square opening in the head-rail and a corresponding square opening in the washer plate 46. This washer plate 46 is shown in plan view in dotted lines in Fig. 2, and in cross-section in Fig. 4, from which it may be seen that it is provided with the depressions 47 to accommodate the ribs 38 in the head-rail.

From the foregoing description it will be observed that with two of the extension plates 40, which are arranged to slide on the head-rail 12, the effective length of the head-rail may be varied by twice the length of the slot 45. To enable the head-rail to be adjusted quickly for windows of various sizes and at the same time adjusted so that the Venetian blind will be centered with respect to the window, indicia may be provided on the extension plate 40, as indicated in Fig. 2. As shown, these indicia may consist of graduations, in fractions of an inch, marked at the edge of the plate 40, which may be read against the end 48 of the head-rail 12 as an index. As an example of how the head-rail may be adjusted for the correct length and centered, it may be assumed that, with the extension pieces in their fully retracted position, the over-all length of the head-rail and extension pieces is 30 inches. This length is indicated when the graduations marked "30" on each extension piece are opposite the ends of the head-rail 12. The graduations are numbered successively each half inch so as to indicate the total length of the head-rail when the extension plate on each end has been moved to the same number. Thus, when the extension plate is moved so as to bring the graduation, numbered "31", into a position opposite the end of the head-rail, thus extending that plate ½ inch, and the corresponding extension

plate on the other end is placed in a corresponding position; the over-all length will be 31 inches. When the extension plates have been positioned as may be desired, they are locked in place by tightening the nuts 44.

Referring to Figs. 3 and 5, the supporting bracket will now be described. This bracket consists generally of a clamping device which is adapted to be secured to any suitable part of the window-frame, and into which, after it is in position, the head-rail carrying the blind may be placed and securely locked. This bracket consists of a fixed plate 49, the top 50 of which is provided with a flange at right angles to the plate to form one of a pair of jaws. A pair of ears 51 are bent up from the metal of the plate 49 to form guides for the clamping member 52. The top 54 of the member 52, which is bent at right angles to the body to form a flange, is preferably given a configuration corresponding to the under side of the head-rail extension plate 40. The lower edge 55 is bent outwardly to provide a bearing surface for the cam 56, the cam being affixed to the plate 49 by means of the rivet 58, between the cam and which there is a spring washer 59. The outer end of the cam lever 60 is turned up to form a handle 61.

By rotating the cam 56 about its pivot, the clamping member 52 is raised and lowered relative to the top flange 50 of the plate 49, so that the top flange 50 of the plate 49 and the top flange 54 of the member 52 act like the jaws of a vise. To retain the cam in the position shown in Fig. 5, a lug 62 is provided on the plate 49. The lever 60 can be snapped over this lug by reason of the play provided by the spring washer 59.

To permit the parts of the bracket to be readily assembled, it will be noted that the top flange 54 of the clamping member 52 has a width slightly less than the distance between the ears 51, permitting the clamping member 52 to be slipped under the ears 51, after which operation the cam may be assembled to the plate 49. As soon as this has been done, the clamping member 52 can no longer be removed.

Suitable screw holes 64 are provided in the plate 49, it being understood that the screw hole which is underneath the clamping member is countersunk so that a flat-head screw can be inserted through the larger hole 65 in the clamping member, leaving the clamping member free to slide up and down.

A modified form of supporting bracket, but one operating on the same principle as that just described, is shown in Figs. 9 and 10. This bracket is adapted to be fastened to parts of the window frame which are either parallel or at right angles to the window. To this end the fixed plate is bent to form a base 75 and a side 76 at right angles thereto, each containing suitable holes for screws or other fastenings. The side 76 is recessed as at 77 to accommodate the end of the head-rail 12 in windows of minimum width. The top 79 is bent at right angles to the base 75 and forms a flange acting as one of the jaws of a clamp. The clamping member 80 has a top flange 81 with a shape conforming to the lower surface of the extension plate 40 and is provided with openings 82 through which screws can be inserted in the holes 84. It is mounted for sliding movement on the fixed plate by means of the shouldered rivet 85 which passes through the elongated slot 86. One edge of member 80 abuts the side 76 of the fixed plate so that it can only slide parallel thereto. A cam lever 87 is pivotally mounted on the rivet 85, with its cam face bearing against the under side of the top flange 81, raising it into clamping position when the lever is moved downwardly. The flat face provided on the nose of the cam causes it to remain in the clamping position shown in the drawings unless intentionally moved.

Obviously, with either type of bracket, the distance between the jaws may be adapted to receive a head-rail of any thickness.

Referring to Figs. 6 and 7, the tilt bar supporting bracket 25 is secured to the web 36 of the head-rail 12 by any suitable means, such as spot-welding. An opening 66 is provided in the bracket 25 for the passage of the cords 30, which pass over the pulley 34 and through the cord-lock 35 in which is the dog 68 which is free to rotate about the pivot 69, locking the cord 30 against the shoulder 70 in a manner well understood in the art.

To secure the gudgeon 24 in the bracket 25 against accidental displacement, the latch 71, which is pivoted at 72, is provided.

From the foregoing, detailed description of the construction of the various parts, the following explanation of the operation will be readily understood: The supporting brackets are screwed to the window-frame, whereupon the cam levers are moved to open the clamping jaws of the brackets. The width of the window having been determined, the extension plates 40 are adjusted to the appropriate dimension and the nuts 44 are tightened, locking the extension plates in place. The head-rail 12, together with the mechanism for raising and tilting the blind which is carried by it, is then placed in position with the protruding ends of the extension plates between the jaws of the brackets, the extension plates resting upon the tops of the lower clamping members. The entire mechanism is then quickly and securely locked in place by moving the cam levers to raise the clamping members. The tilt bar 22 carrying the tapes and slats is then placed in position with the lug 21 in the tilting bracket 16, and the gudgeon 24 is dropped into the slot in the bracket 25 and the latch 71 is closed. The entire blind mechanism may be quickly removed, for purposes of cleaning the blind or giving access to the window, by merely reversing the procedure just described.

One of the features of the present invention, which is highly advantageous from the standpoint of simplicity, economy in manufacture, and improvement in appearance, is the construction of the head-rail in the form of a channel member with the opening in the channel opening downwardly, so that the operating mechanism for the blind, including the tilt bar brackets and associated mechanism and the cord pulleys, may all be mounted up inside the head-rail where much of the mechanism is hidden from view. It will readily be understood that the front wall of the head-rail, being one of the walls 39, may be given any suitable dimension so as to conceal as much of the mechanism as may be desired.

By a means other than increasing the width of the wall of the head-rail, the mechanism may also be effectively concealed by the means shown in Fig. 8, which consists of a valance 88 in the form of a panel of textile fabric or other suitable material, hemmed along its edges and preferably stiffened by inserting wires 89 in the hems. This valance is provided with snap fasteners 90 for insertion in holes 91 in the head rail. This valance

can be made of such size as to conceal the tilt bar, or still larger to conceal the stack of slats when the blind is fully raised.

Another advantage, over previous devices, from the standpoint of appearance is that the tilt bar brackets are elevated above their usual position by substantially the entire thickness of the head-rail, thus reducing the space between the tilt bar and the head-rail which has heretofore been an unsightly gap.

While the foregoing description refers to a preferred embodiment of the invention, various modifications in the configuration, construction, and disposition of the component elements going to make up the same may readily occur to those skilled in the art, and no limitation is intended by the phraseology of the foregoing description or the specific illustrations in the accompanying drawings.

What is claimed is:

1. A supporting bracket for a Venetian blind headrail comprising a fixed plate adapted to be secured to a vertical surface and having a clamping face extending at right angles to the main portion of said plate, an angular clamping member having one face slidably mounted upon said plate and having its other face parallel to said clamping face and forming therewith a pair of jaws, and a cam lever pivotally mounted on said fixed plate and adapted to move said clamping member to close said jaws.

2. A supporting bracket for a Venetian blind headrail comprising a fixed plate adapted to be secured to a vertical surface, a perpendicularly extending clamping flange on said plate, a clamping member slidably mounted on said plate and having a portion adapted to coact with said flange to form a pair of jaws, guide means for securing said member to said plate, and a cam mounted on said plate and bearing against said member, whereby said jaws can be closed.

3. A supporting bracket for a Venetian blind headrail comprising a fixed plate adapted to be secured to a vertical surface, a perpendicularly extending clamping flange on said plate, a clamping member slidably mounted on said plate and having a portion adapted to coact with said flange to form a pair of jaws, a shouldered stud secured to said plate and passing through an elongated slot in said member, and a cam mounted on said stud and adapted to bear against the clamping jaw of said member.

4. Supporting means for a Venetian blind comprising, in combination, a head rail, supporting brackets adapted to be secured to a window frame, each bracket including an outwardly extending stationary flange, and a movable clamping member extending beneath and adapted to support an end of the head rail, and a cam arranged to raise said clamping member to clamp the head rail against said flange.

5. Supporting means for a Venetian blind comprising in combination, a head rail in the form of a channel member provided with longitudinally extending reinforcing ribs, extension pieces slidably mounted on said head rail and extending beyond the ends thereof and provided with ribs corresponding to and coacting with those of the head rail to maintain said members in alinement, brackets adapted to be secured to a window frame, each bracket having a flange extending above said pieces, and a clamping member having a flange extending beneath and adapted to support said pieces, the flange of said clamping member being formed with recesses to receive the ribs on said pieces, and means for raising the clamping member to clamping position.

6. A supporting device for a Venetian blind comprising, a head-rail having longitudinally disposed ribs therein, brackets for supporting the respective ends of the head-rail, said brackets including jaw elements in each instance engaging the upper and lower faces of the head-rail, at least one jaw of each bracket including longitudinal depressions registering with the ribs of the head-rail for preventing lateral displacement of the head-rail with respect to the jaws and means for actuating one of the jaws of each bracket for clamping the head-rail in the brackets.

7. A Venetian blind supporting mechanism comprising, a head-rail consisting of a channel-shaped element having its side flanges extending downwardly and extensions adjustably slidably mounted and attached to each end of the head-rail, and brackets for mounting the respective ends of the head-rail in a window frame, said brackets including jaws clamping upon the extensions of the head-rail.

8. A Venetian blind supporting mechanism comprising, a head-rail consisting of a channel-shaped element having its side flanges extending downwardly and extensions adjustably slidably mounted and attached to each end of the head-rail, said extensions being of strip form without flanges, and brackets for mounting the respective ends of the head-rail in a window frame, said brackets including jaws clamping upon the extensions of the head-rail.

9. A Venetian blind supporting mechanism comprising a sheet metal head-rail of channel form providing a horizontally disposed web and depending side walls, means for attaching said head-rail to the window frame, a valance consisting of a panel of cloth, and snap fastener elements for securing said valance to the front wall of the head-rail for concealing the mechanism of the Venetian blind, said valance, therefore, quickly detachable for cleaning purposes.

10. A Venetian blind supporting mechanism, comprising, a head-rail, extensions adjustably slidably mounted upon each end of the head-rail, means for fixing the extensions in position on the head-rail, brackets for mounting the respective outer ends of the extensions in position in a window frame, each of said brackets including elements providing a throat adapted to receive the end of the adjacent extension, and locking devices for fixing the extensions in position against displacement from said throats.

11. A Venetian blind supporting mechanism comprising a head-rail consisting of a channel element having its web disposed horizontally for attachment to the window frame and its flanges extended downwardly, said head-rail including extensions at its ends having strip form without flanges, and brackets for mounting the respective ends of the head-rail in a window frame, said brackets including jaw elements providing throats receiving the extensions of the head-rail, and means associated with the jaw elements for locking the extensions of the head-rail in position in the brackets.

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