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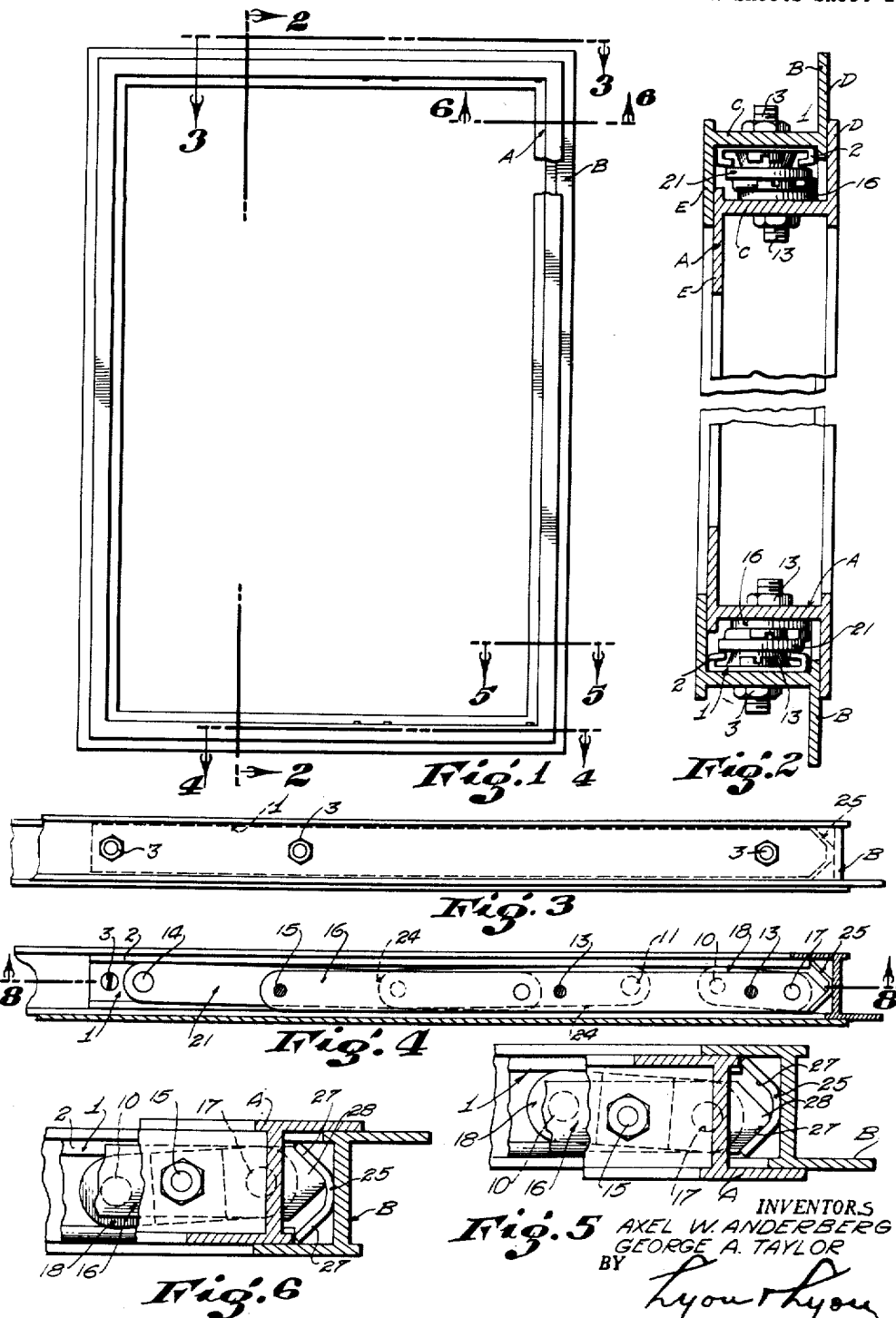
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2,784,459

SUPPORTING BRACKET FOR WINDOWS

Filed Feb. 21, 1955

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

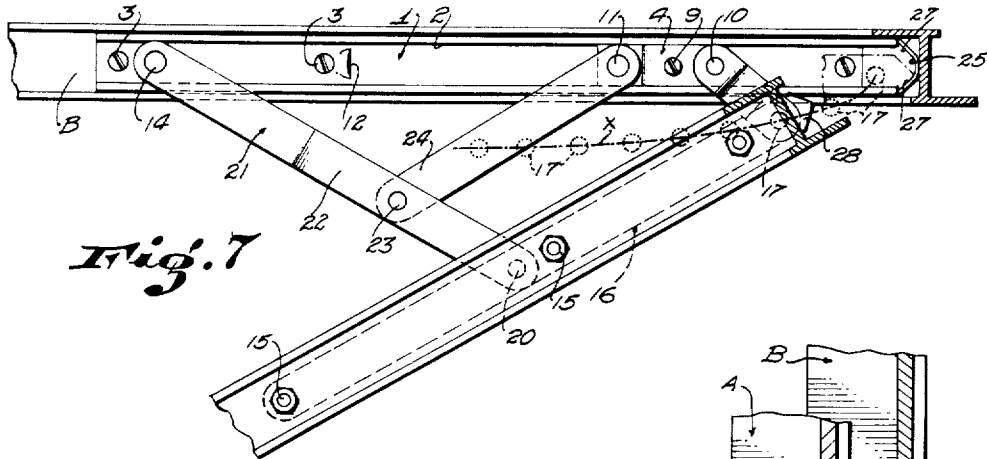


Fig. 7

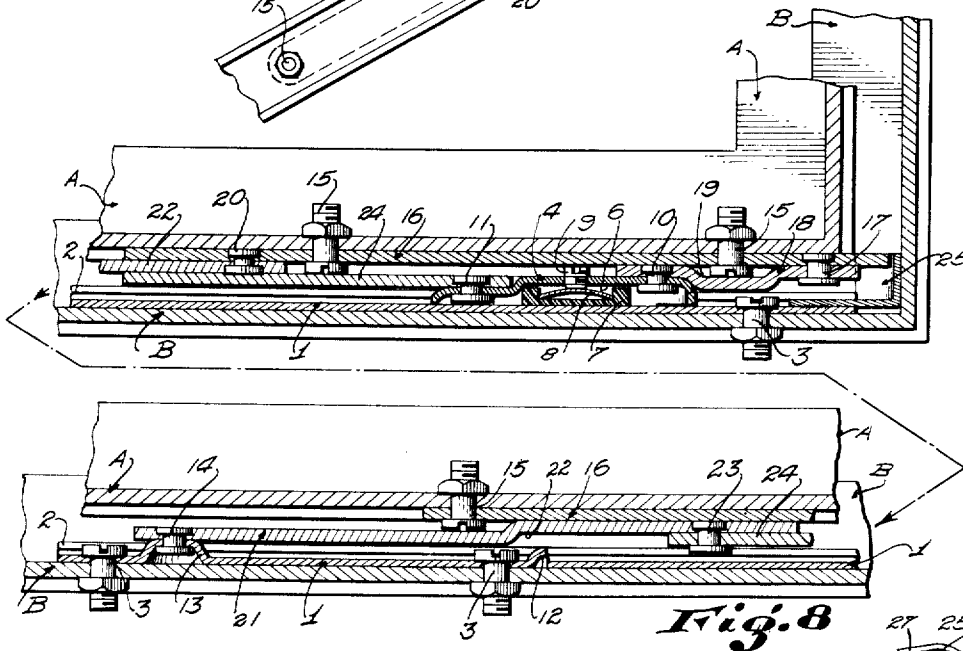


Fig. 8

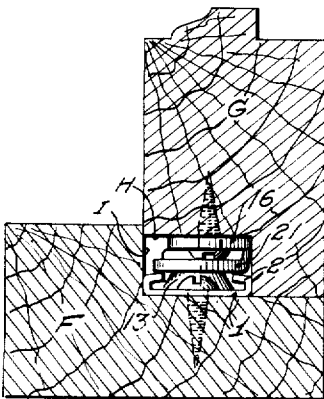


Fig. 11

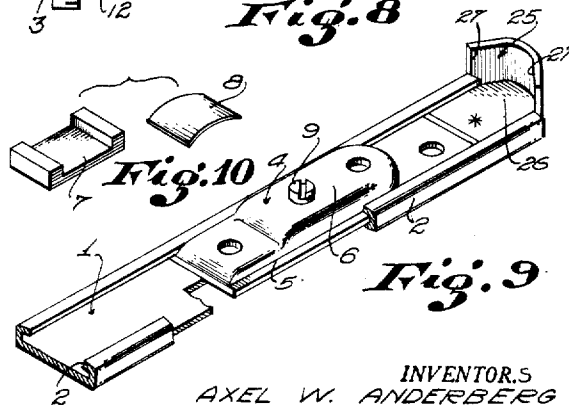


Fig. 10

Fig. 9

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SUPPORTING BRACKET FOR WINDOWS

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15 Claims. (Cl. 20—42)

Our invention relates to supporting brackets for windows, more particularly to brackets which are arranged to support a window for pivotal movement about either a vertical or a horizontal axis; and which are also arranged so that the pivotal axis of the window moves to and from the window frame so that when the window is open both surfaces are accessible from the inner side of the window frame.

Included in the objects of our invention are:

First, to provide a supporting bracket for windows which incorporates a novel, pivotal linkage means so arranged that the margin of the window adjacent the pivotal axis of the bracket moves outwardly from the window frame as the window is opened, so as to clear the window frame and in particular eliminate the necessity of notching or otherwise relieving the window sash at its outer side.

Second, to provide a supporting bracket for windows which incorporates a novel cam means arranged to draw the pivoted margin of the window sash tightly against the window frame.

Third, to provide a supporting bracket for windows which is operable in either a "left" or "right" position so that a pair of identical brackets may be employed to support a window, and wherein the cam means is operable in either position of the bracket.

Fourth, to provide a supporting bracket for windows which incorporates a novel, easily adjusted, friction slide to hold the window in position.

With the above and other objects in view, as may appear hereinafter, reference is directed to the accompanying drawings in which:

Figure 1 is an elevational view of a typical metal window frame and window sash arranged to utilize our window supporting brackets;

Fig. 2 is an enlarged, fragmentary, sectional view through 2—2 of Fig. 1 with our supporting brackets in end elevation;

Fig. 3 is an enlarged, fragmentary, top view of the window frame and sash, indicating by dotted lines the position of the upper supporting bracket, the view being taken along the line 3—3 of Fig. 1;

Fig. 4 is an enlarged, fragmentary, sectional view through 4—4 of Fig. 1 with the lower supporting bracket shown in elevation;

Fig. 5 is a further enlarged, fragmentary, sectional view through 5—5 of Fig. 1, illustrating the manner in which the lower supporting bracket is operative to draw the window sash against the window frame when the window is in its closed position;

Fig. 6 is a similar fragmentary sectional view through 6—6 of Fig. 1, showing the corresponding operation of the upper supporting bracket;

Fig. 7 is a fragmentary sectional view in the same plane as Fig. 5, showing the window sash in its partially open position and indicating diagrammatically the path of the link member which determines the movement of the pivoted side of the window sash;

Fig. 8 is a further enlarged, longitudinal, sectional view, taken through 8—8 of Fig. 4;

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Fig. 9 is a fragmentary perspective view of the track and slide member with the track partially broken away;

Fig. 10 is a perspective view of the friction member and its leaf spring employed in the slide; and

Fig. 11 is a sectional view similar to Fig. 2, but showing the supporting bracket mounted in a wooden frame and sash.

Our supporting bracket for windows is adapted to be employed for the support of casement type windows or transom type windows, that is, for the support of windows to permit their pivotal movement about a vertical axis or a horizontal axis, and is adapted to be connected between a conventional window frame and window sash, whether these structures be formed of metal or wood. For convenience of illustration our supporting bracket is shown as employed to support a conventional metal window sash A relative to a conventional metal window frame B.

The window sash A and window frame B are formed of members which are identical in cross-section. In practice they are formed from extrusions in the form of I beams having webs C with extended outer lips D and extended inner lips E, so that when the window sash is fitted within the window frame the outer lip of the window sash bears against the corresponding margin of the window frame, and the inner lip of the window frame is engaged by the adjacent margin of the window sash. The webs C are separated from each other to form an accommodation space in which is mounted our supporting bracket. A pair of brackets are employed, one at the top and one at the bottom in the case of a vertically hung window, or one at either side in the case of a horizontally hung window.

Each of our supporting brackets includes a track member 1 having folded side flanges 2. The track member is secured to the web C of the window frame B with one end of the track member adjacent a corner of the window frame. The track member is secured in place by screws 3.

Mounted on the track member 1 is a slide 4 having side flanges 5 which fit under and are retained by the side flanges 2. The slide is provided with a shallow raised portion 6 forming a cavity confronting the track 1.

Mounted within the cavity or raised portion 6 is a friction shoe 7. The friction shoe is backed by a leaf spring 8, the tension of which is controlled by a set screw 9 directed through the wall of the slide 4. The extremities of the shoe 7 are provided with pivot pins 10 and 11.

The friction shoe 7 is slidable between the end of the track member 1, adjacent the corner of the window frame B, and a position near the opposite or extended end, at which point there is provided a stop 12. Beyond the stop 12 the track member 1 is provided with a raised boss 13 extending to a level flush with the upper surfaces of the side flanges 2. The boss 13 is provided with a pivot pin 14.

Secured to the confronting web C of the window sash A by screws 15 is a flat bar 16. When the window sash A is in its closed position within the window frame B, the bar 16 overlies or confronts the track 1 with one end adjacent the end of the track disposed in the corner of the window frame. At this end of the bar 16 there is mounted a pivot pin 17.

A short link 18 is pivotally connected between the pivot pin 17 and the pivot pin 10 of the slide 4. The intermediate portion of the link 18 is provided with a clearance offset 19 to clear the head of one of the screws 15.

The bar 16 is provided with a second pivot pin 20. A strut 21 extends between the pivot pin 20 and the pivot pin 17 at the remote end of the track 1. The pivot pin 20 is so located that when the bar 16 is in superposed relation with the track 1 the strut 21 is in-

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terposed between the track 1 and bar 16 and is in approximate alignment with the bar 16. This is likewise true of the link 18.

A portion of the strut 21 is offset upwardly as indicated by 22. Within the length of the upwardly offset portion is a pivot pin 23. A brace 24 extends between the pivot pin 23 and the pivot pin 11 of the slide 4. The location of the pivot pins 23 and 11 and the length of the brace 24 is such that when the bar 16 is in its superposed or confronting position relative to the track member 1 the brace 24 extends along the track in approximate alignment with the bar 16 and strut 21.

In actual practice it is not desirable that the axes of the various pivot pins be in strict alignment, that is, the bar 16 is intended to occupy a position parallel to, but laterally offset from, the median line of the track 1, and is capable of occupying either one of two such offset positions. This enables the supporting bracket to be mounted at either end of a window frame and sash without requiring the manufacture of "right" and "left" pairs. This is indicated best in Fig. 2 and in Figs. 5 and 6. By disposing the bar 16 in a laterally offset position, the various pivotal axes are offset sufficiently that the bar moves freely and easily from its offset superposed position to its various angular positions.

It is desirable that the outer lips D of the window sash A fit tightly against the window frame B when the window sash is closed. This is accomplished by a cam member 25 secured to the end of the track 1 adjacent the corner of the window frame B. The cam member includes a tongue 26, which is spot welded or otherwise secured to the track 1, and upright angularly related cam faces 27 defining a truncated V. The corresponding end of the bar 16 is pointed, as indicated by 28, so that as the bar 16 moves into its superposed position relative to the track the pointed end 28 engages a corresponding cam face 27 and draws the adjacent lip D tightly against the window frame B, as shown in Figs. 5 and 6. It will be noted that the cam faces 27 are spaced sufficiently far apart that the bar 16 may occupy either of its lateral positions.

In mounting the supporting bracket in a wooden window structure comprising a window frame F and a window sash G, as shown in Fig. 11, it is merely necessary to provide an appropriate clearance notch H along the inner side of the window sash. The usual stop I, forming a part of the conventional window frame B, completely covers the notch H so that when the window is closed the supporting bracket is completely concealed, as is also the case when the supporting bracket is used in conjunction with a metal window frame as will be observed from Fig. 2.

Operation of our supporting bracket for windows is as follows:

The tracks 1 are secured within the window frame B so that the cam member 25 abuts opposite corners thereof. The bars 16 are fastened to the window sash A in such a manner that they are offset either side of the median line of the track, as shown in Figs. 2, 4, 5, and 6, the bars 16 being so located that when their pointed ends 28 engage the corresponding cam faces 27 the outer lip D of the window sash is held tightly against the window frame B.

The link 18 is caused to swing outwardly rather abruptly during the first few degrees of movement, as indicated by the broken line X in Fig. 7, which represents the path of movement of the pin 17. This causes the corresponding margin of the window sash A to be deflected laterally from the window frame B so that the overhanging outer lip D swings clear, avoiding any need of notching or otherwise mutilating the lip or impairing its sealing connection with the window frame when the window sash is closed.

Outward movement of the window sash A causes the strut 21 and brace 24 to draw the slide 4 along the track

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1 so as to move the pivoted margin of the window away from the corresponding margin of the window frame B. Consequently, when the window is in its fully open position one can reach between the pivoted margin of the window sash and the frame for the purpose of engaging the normally outer side of the window, thus facilitating the cleaning of the window. By adjustment of the set screw 9 the amount of force required to move the window may be adjusted.

Identical supporting brackets may be employed at each end of the window merely by shifting the bar 16 to either side of center to predetermine which side of the track 1 the bar and associated connecting members are to move.

Having fully described our invention, it is to be understood that we do not wish to be limited to the details herein set forth, but our invention is of the full scope of the appended claims.

We claim:

1. A supporting bracket, comprising: a track; a slide movable along said track; a bar; a strut pivotally connected between said track and bar permitting movement of said bar between a position confronting said track and an angular position; a brace operatively connected with said strut and slide to cause movement of said slide along said track as said bar is moved between its confronting and angular positions; and a link operatively connected between an end of said bar and said slide to cause said end to describe a path directed away from said track as said bar is moved from its confronting position to its angular position.

2. A supporting bracket as set forth in claim 1, wherein: the end of said bar connected to said link and the corresponding end of said track are provided with coacting cam means operable to guide said bar into confronting relation with said track.

3. A supporting bracket as set forth in claim 1, wherein: the several pivotal connections are capable of passing through a common plane centered along said track whereby said bar is laterally displaceable to either side of said plane, to predetermine the side of said track from which said bar may move to its angular position.

4. A supporting bracket for effecting angular movement of a window sash relative to a window frame, comprising: a track adapted to be secured in said frame; a bar adapted to be secured on said sash in confronting relation to said track when said sash is in its closed position relative to said frame; means pivotally connected between said track and bar to effect angular displacement of said sash; and means including a slide movable along said track and a link pivotally connected between said slide and bar to displace the pivotal axis of said bar and said sash along a path generally longitudinal to, but arching outwardly from, said track.

5. A supporting bracket for effecting angular movement of a window sash relative to a window frame, comprising: a track adapted to be secured in said window frame with one end adjacent a corner thereof; a bar adapted to be secured to said sash frame with one end adjacent said corner of the window frame and disposed in confronting relation with said track when said window sash is closed in said window frame; a slide movable along said track; a strut pivotally connected to said track at its end remote from said corner and pivotally connected to said bar; a brace pivotally connected to said strut and to said slide; and a link pivotally connected to said slide and to the end of said bar adjacent said corner; said brace being adapted to draw said slide along said track as said bar is moved and said window sash is moved angularly relative to said window frame, and said link adapted to thrust said bar and adjacent end of said window sash away from said window frame as said slide is drawn along said track.

6. A supporting bracket as set forth in claim 5, wherein: the end of said bar connected to said link and the corresponding end of said track are provided with co-

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acting cam means operable to guide said bar into confronting relation with said track.

7. A supporting bracket as set forth in claim 5, wherein: the several pivotal connections are capable of passing through a common plane centered along said track whereby said bar is laterally displaceable to either side of said plane, to predetermine the side of said track from which said bar may move to its angular position.

8. A supporting bracket for effecting angular movement of a window sash relative to a window frame, comprising: a track adapted to be secured in said window frame with one end adjacent a corner thereof; a strut adapted to be pivotally connected between said window sash and said window frame and movable between a position interposed between said window sash and window frame when said window sash and window frame are closed, and into an angular position when said window sash and window frame are in angular relation; a slide movable along said track; a brace pivotally connected to said strut and to said slide for moving said slide along said track as said window sash is moved between its closed and open positions; and a link pivotally connected between said slide and a corner of said window sash adjacent said corner of the window frame and operable to move said corner of the window sash outwardly from said window frame during initial angular movement of said window sash.

9. A supporting bracket for effecting angular movement of a window sash relative to a window frame, comprising: a track adapted to be secured in said window frame with one end adjacent a corner thereof; a slide movable along said track; a link pivotally connected between said slide and said window sash at a corner corresponding to said window frame corner; and other linkage means between said track, said slide, and said window sash cooperating with said link to move said window sash between a closed position within said window frame and an angular open position, said linkage means being operable to move said slide along said track to cause the pivoted connection between said link and window sash to move in an arched path outwardly from said window frame.

10. A supporting bracket as set forth in claim 9, wherein: coacting cam elements are adapted to be disposed adjacent said corresponding corners of said window frame and window sash for drawing said corner of the window sash into said window frame as said window sash is moved to its closed position.

11. A supporting bracket comprising: a track; a slide movable along said track; a link member pivotally connected to said slide and movable between a position longitudinally of said track directed toward one end thereof and an angular position either side thereof; a brace member pivotally connected to said slide and movable between a position longitudinally of said track directed toward the other end of the track and an angular position either side thereof; a strut member pivotally connected to said track at said other end and movable between a position overlying said brace and an angular position either side of said track, said strut member being pivotally connected to said brace; a bar member pivotally connected to said link member and said strut member and movable between a position longitudinally of said track and an angular position either side thereof; the several pivotal connections between said members adapted to define a common plane when said members extend longitudinally of said track, said bar member adapted to be displaced laterally offset either side of said plane to predetermine the direction of angular movement of said members, said link member adapted to swing its connection with said bar member laterally from said track, and said brace member adapted to draw said slide along said track as said bar member is moved into its angular position whereby said bar member is

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simultaneously moved laterally, angularly, and longitudinally of said track.

12. A supporting bracket comprising: a track; a slide movable along said track; a link member pivotally connected to said slide and movable between a position longitudinally of said track directed toward one end thereof and an angular position either side thereof; a brace member pivotally connected to said slide and movable between a position longitudinally of said track directed toward the other end of the track and an angular position either side thereof; a strut member pivotally connected to said track at said other end and movable between a position overlying said brace and an angular position either side of said track, said strut member being pivotally connected to said brace; a bar member pivotally connected to said link member and said strut member and movable between a position longitudinally of said track and an angular position either side thereof; the several pivotal connections between said members adapted to define a common plane when said members extend longitudinally of said track, said bar member adapted to be displaced laterally offset either side of said plane to predetermine the direction of angular movement of said members, said link member adapted to swing its connection with said bar member laterally from said track, and said brace member adapted to draw said slide along said track as said bar member is moved into its angular position whereby said bar member is simultaneously moved laterally angularly and longitudinally of said track; and dual cam elements incorporating corresponding ends of said track and bar members adjacent said link member, for guiding said end of the bar member into longitudinal relation to said track, said cam elements being disposed to determine either of said lateral offset positions of said bar member.

13. A supporting bracket, comprising: a track; a bar adapted to occupy positions longitudinally of said track offset at either side of the longitudinal center thereof; a slide movable on said track; a link pivotally connecting one end of said bar to said slide to displace said end of the bar laterally from the side of said track corresponding to the initial offset position of said bar; linkage means between said track, bar, and slide for effecting lateral displacement greater than said link of the other end of said bar from either side of said track, said linkage means also operative to move said slide along said track, whereby said link and linkage means simultaneously move said bar laterally, longitudinally, and angularly relative to said track.

14. A supporting bracket, comprising: a track; a bar adapted to occupy positions longitudinally of said track offset at either side of the longitudinal center thereof; a slide movable on said track; a link pivotally connecting one end of said bar to said slide to displace said end of the bar laterally from the side of said track corresponding to the initial offset position of said bar; linkage means between said track, bar, and slide for effecting lateral displacement greater than said link of the other end of said bar from either side of said track, said linkage means also operative to move said slide along said track, whereby said link and linkage means simultaneously move said bar laterally, longitudinally, and angularly relative to said track; and coacting means at the link-connected end of said bar and corresponding end of said track for predetermining either laterally offset position of said bar.

15. A supporting bracket, comprising: a track; a slide movable along said track; a bar; a strut pivotally connected between said track and bar permitting movement of said bar between a position confronting said track and an angular position; a brace operatively connected with said strut and slide to cause movement of said slide along said track as said bar is moved between its confronting and angular positions; a link operatively connected between an end of said bar and said slide to cause said

end to describe a path directed away from said track as said bar is moved from its confronting position to its angular position, said slide defining a cavity confronting said track; a friction shoe in said cavity engageable with said track; a spring bearing against said shoe; and means 5 for adjusting the force of said spring.

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