United States Patent [19]

Cohen

[11] **3,708,927**

[45] **Jan. 9, 1973**

[54] **EXTRUSIONS FOR CARRYING CEILING TILES AND WINDOW CURTAINS, SHADES, AND THE LIKE**

[76] Inventor: **Seymour Cohen,** 21 Newport Drive, Plainview, N.Y. 11803

[22] Filed: **Feb. 19, 1971**

[21] Appl. No.: **117,002**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 57,066, July 22, 1970.

[52] **U.S. Cl.** **52/39,** 52/173, 52/484, 160/345

[51] **Int. Cl.**.....**G09f 7/18**

[58] **Field of Search**.....52/39, 484, 487, 27, 173; 248/343; 160/345, 346; 16/93 D, 94 D, 95 D, 96 D

[56] **References Cited**

UNITED STATES PATENTS

3,346,909	10/1967	Blackburn	16/94 D
3,004,636	10/1961	Shane	52/484 X
2,910,738	11/1959	McCorkell	52/484 X

Primary Examiner—Price C. Faw, Jr.
Attorney—Steinberg & Blake

[57] **ABSTRACT**

A structure to be used in buildings or the like for supporting ceiling tiles as well as for supporting window curtains, shades, or the like. An elongated extrusion has at its upper surface structure for supporting the extrusion in a horizontal attitude from a suitable beam or the like with the extrusion having an inner side edge region adapted to support ceiling tiles and an outer side edge region adapted to be located next to an upper frame member situated over a window. Between its side edge regions the extrusion is provided with a downwardly directed hollow channel defined by vertical wall portions of the extrusion and an upper horizontal wall portion extending between the vertical wall portions. These vertical wall portions are respectively formed with grooves extending parallel to each other longitudinally of the extrusion and communicating with the interior of the channel. These grooves are adapted to receive opposed side edges of a carrier structure situated in the channel for carrying units such as window curtains, Venetian blinds, or the like. This carrier structure is supported exclusively by the location of its opposed side edges in the grooves, so that there is no necessity of fastening the carrier structure to the extrusion.

11 Claims, 5 Drawing Figures

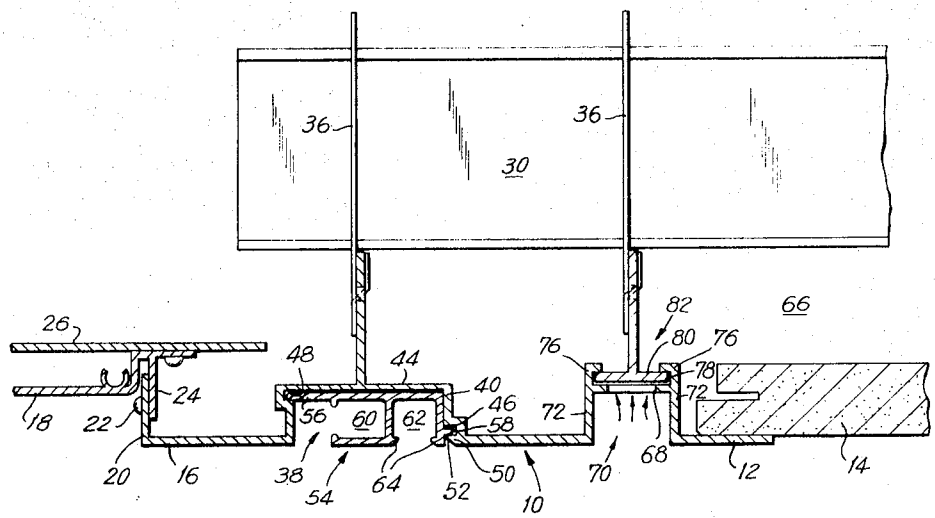
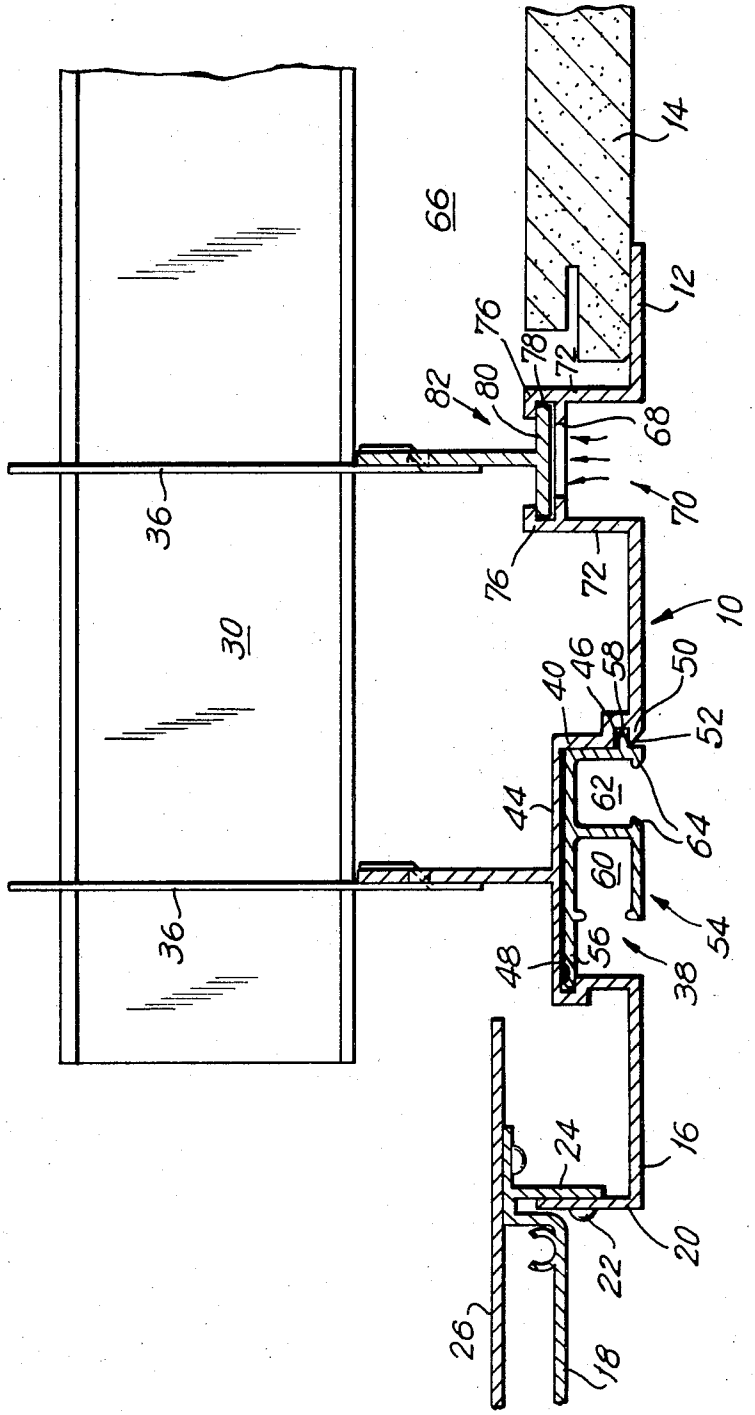


FIG. 1



INVENTOR.
SEYMOUR COHEN

BY
Steinberg and Blake
ATTORNEYS

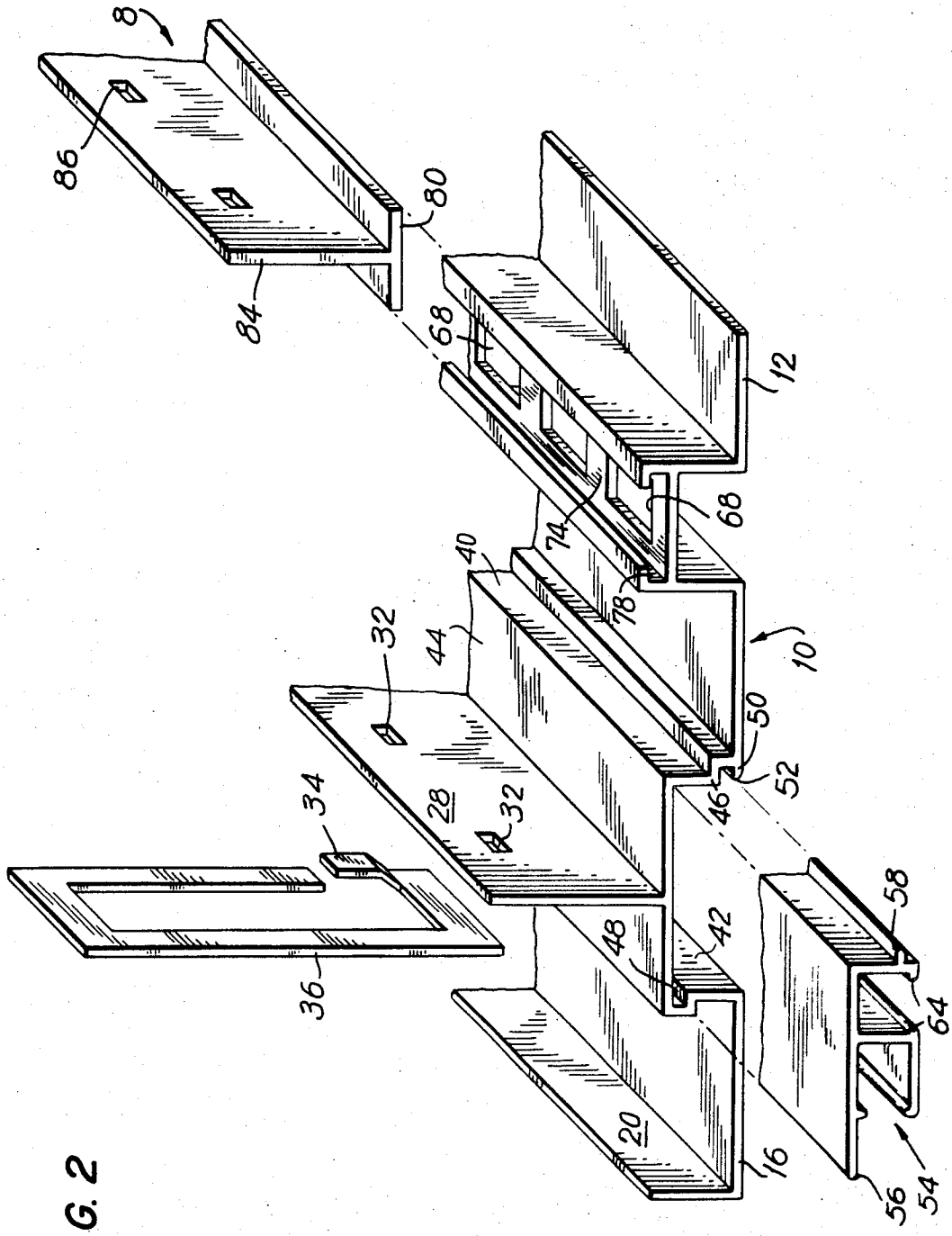


FIG. 2

INVENTOR.
SEYMOUR COHEN

BY
Steinberg and Blake
ATTORNEYS

FIG. 3

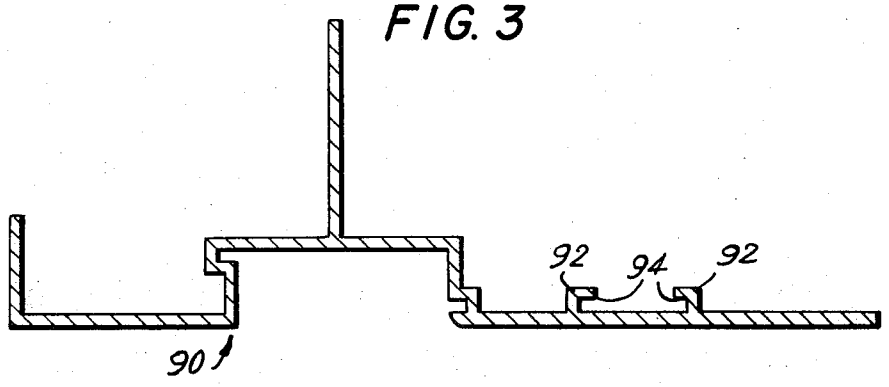
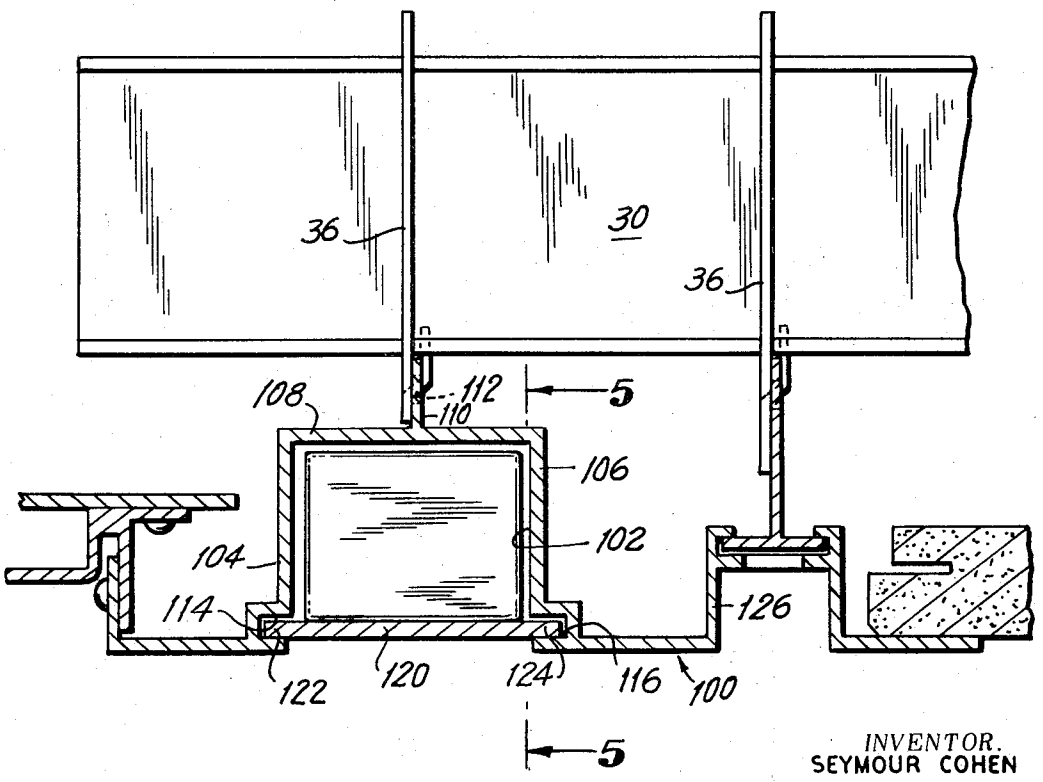


FIG. 4

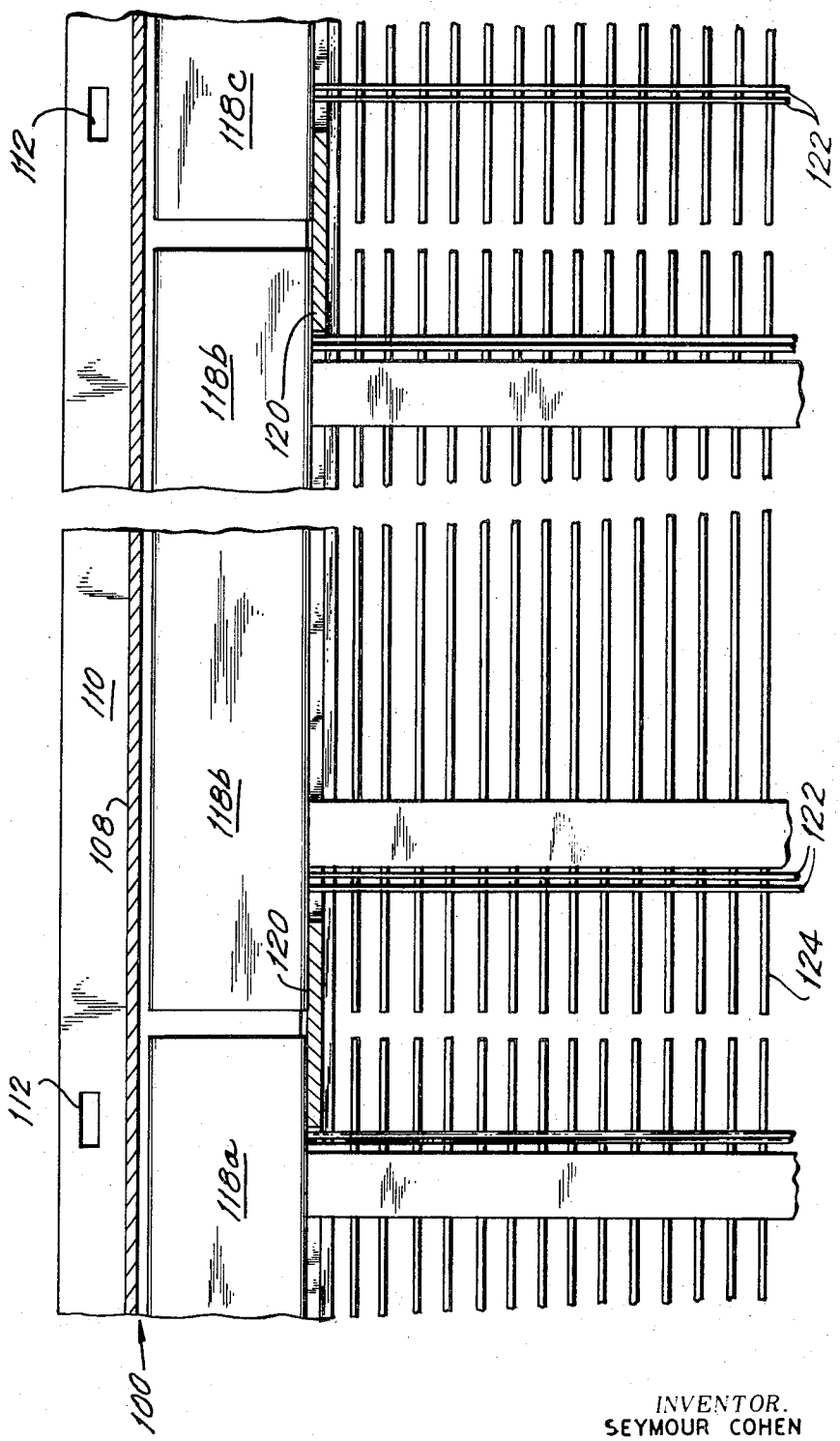


INVENTOR.
SEYMOUR COHEN

BY

Steinberg and Blake
ATTORNEYS

FIG. 5



INVENTOR.
SEYMOUR COHEN

BY

Steinberg and Blake
ATTORNEYS

EXTRUSIONS FOR CARRYING CEILING TILES AND WINDOW CURTAINS, SHADES, AND THE LIKE

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of copending application Ser. No. 57,066, filed July 22, 1970, and entitled CEILING TILE SUPPORTS.

BACKGROUND OF THE INVENTION

The present invention relates to structures to be used in buildings and the like for supporting ceiling tiles.

For example, such structures are used to support ceiling tiles at a given distance below a floor situated over the tiles so that the floor forms with the tiles a hollow space into which recessed lighting fixtures may extend and which may also form a plenum chamber for air-conditioning purposes, for example.

With that part of the structure of this type which is located adjacent windows, it becomes necessary to provide for attachment to the structure of components to be used in connection with carrying window curtains, Venetian blinds, and the like. At the present time considerable problems are encountered in fastening to suitable elements the structures which are required to carry the Venetian blinds, curtains, or the like, and in addition problems are encountered in providing for flow of air for air-conditioning purposes. Thus, a considerable amount of labor and time is required to fasten brackets or other elements which are to carry window shades, curtains, or the like, and also considerable time and labor is involved in providing for air-flow from a room to the plenum chamber over the ceiling tiles.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a structure which will greatly reduce the time and labor required in connection with provision of suitable supports for window shades, Venetian blinds, or the like, as well as in connection with provision of openings through which air can flow to the plenum chamber from a room beneath the ceiling tiles.

In particular, it is an object of the present invention to provide a relatively inexpensive extrusion which can readily be mounted for the purpose not only of supporting ceiling tiles but also of accommodating components which carry Venetian blinds, curtains, or the like, as well as to provide for flow of air into the plenum chamber.

In particular, it is an object of the invention to provide a structure which will enable components which carry curtains, window shades, or the like to be readily placed in position with an extremely small amount of labor in an extremely short time while requiring no fasteners to be used.

It is also an object of the present invention to provide an extrusion of this type which can be readily mounted in its position of use. Also, it is an object of the present invention to provide simple components to be used with the extrusion and which are readily assembled therewith, without the use of any fasteners, for the purposes of supporting window shades, Venetian blinds, or the like, as well as for supporting the extrusion itself and aligning a series of extrusions.

According to the invention the extrusion has an inner side edge region which is adapted to support ceiling tiles and an outer side edge region which is adapted to be located next to a frame member over a window. The extrusion has an upper surface provided with a means for supporting the extrusion from a building element. The extrusion is formed with a downwardly directed hollow channel extending longitudinally of the extrusion and defined between a pair of vertical wall portions of the extrusion and an upper horizontal wall portion extending between the vertical wall portions. These vertical wall portions are respectively formed with grooves which are parallel to each other and extend longitudinally of the extrusion, these grooves being horizontal and communicating with the interior of the channel. A carrier means is provided for carrying units such as Venetian blinds, window curtains, or the like. This carrier means has a pair of opposed side edges respectively located in these extrusion grooves and supported exclusively by location of the side edges of the carrier means in the grooves, so that no fasteners are required with the structure of the invention.

BRIEF DESCRIPTION OF DRAWINGS

The invention is illustrated by way of example in the accompanying drawings which form part of this application and in which:

FIG. **1** is a transverse sectional elevation of an extrusion according to the invention shown schematically in FIG. **1** with additional parts associated with the extrusion;

FIG. **2** is a fragmentary exploded perspective illustration of several of the components shown in FIG. **1**;

FIG. **3** is a transverse sectional elevation of another embodiment of an extrusion of the invention;

FIG. **4** is a transverse sectional elevation of a further embodiment of an extrusion according to the invention; and

FIG. **5** is a schematic fragmentary longitudinal sectional elevation taken along line **5—5** of FIG. **4** in the direction of the arrows.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, there is illustrated in FIG. **1** an extrusion **10** according to the invention. This extrusion **10** is continuously extruded through a suitable extrusion die and is cut into any desired lengths. The extrusion is made preferably of a metal which has a certain amount of springiness for a purpose referred to below. The extrusion **10** may be made from aluminum, for example, and, if desired, it may be coated as with a suitable covering of paint of any desired color.

The extrusion **10** of the invention has an inner side edge region **12** which is adapted to support ceiling tiles **14** in the manner shown schematically at the lower right portion of FIG. **1**. The extrusion also has an outer side edge region **16** adapted to be located next to a frame member **18** located over a window and forming for example, a window closure component. At its outer side edge region **16** the extrusion **10** may have an upwardly directed flange **20** to be fastened by suitable rivets **22** to a downwardly extending flange **24** of the frame member **18** which in turn may be fastened by suitable rivets or the like to a stationary structural component **26**.

At its upper surface, the extrusion **10** is provided with a means **28** for supporting the extrusion from any suitable structural element such as the beam **30** which may be a black iron channel. As is apparent particularly from FIG. **2**, the means **28** is in the form of a web of the extrusion which extends vertically and is formed with openings **32**. These openings **32** are adapted to receive legs **34** of suspending elements **36** in the form of plates adapted to extend around the beams **30** and having angled legs **34** which respectively pass through the openings **32**. Through this simple structure it becomes possible to support the extrusions **10** at the required elevation in a horizontal attitude, and the rivets **22** will fixedly hold the extrusions at their proper horizontal attitude and elevation.

The web **28** extends upwardly from a downwardly directed hollow channel **38** of the extrusion. This channel **38** is defined between a pair of vertical wall portions **40** and **42** of the extrusion **10**. These vertical wall portions are interconnected by an upper horizontal wall portion **44**. The vertical wall portions **40** and **42** are respectively formed with grooves **46** and **48** which are parallel to each other and extend horizontally, longitudinally of the extrusion. These grooves **46** and **48** communicate with the interior of the channel **38**, with the groove **48** being an upper groove situated next to the horizontal wall **44** while the groove **46** is a lower groove situated adjacent the lower surface of the extrusion **10**. The lower groove **46** is limited at its lower region by an inwardly extending rib **50** which is formed with a downwardly directed inclined surface **52** forming a bevel for a purpose referred to below.

In the example shown in FIGS. **1** and **2**, the channel **38** is adapted to support in its interior a carrier means **54** for carrying vertically extending curtains which can be horizontally shifted for covering and uncovering a window. The carrier means **54** is itself in the form of an extrusion which may be made of the same material as the extrusion **10**. This carrier means **54** has a pair of opposed side edges **56** and **58** which are respectively located in the grooves **48** and **46**. Thus it will be seen that the side edges **56** and **58** are upper and lower side edges of the carrier means **54**. This carrier means is supported only and exclusively by the location of the side edges **56** and **58** respectively in the grooves **48** and **46**.

As is apparent from FIGS. **1** and **2**, the carrier means **54** is itself formed with a pair of channels **60** and **62**. The channel **62** is adapted to support glides which are adapted to slide along the interior of the channel **62**. These glides will have upper portions situated within the channel **62** and will be formed with grooves or the like for receiving the ribs **64**. These glides have lower eyes adapted to receive hooks or the like from which a curtain is suspended. Thus the glides in a well known manner will simply slip along the channel **62** in order to close or open a curtain, and suitable strings, wires, cords, or the like, may be used to interconnect this series of glides with each other.

The channel **60** will accommodate control cords guided over suitable rollers and actuating suitable pushing or pulling elements which are connected with the end glides in the channel **62** so that through manipulation of these cords it is possible to open and close the curtains. This structure located in the channel **60** and **62** for supporting the curtain is conventional and forms no part of the invention.

As is apparent from FIGS. **1** and **2**, the side edge **58** of the carrier means **54** is in the form of a rib having a convexly curved configuration while the side edge **56** simply forms an extension of the upper wall of the carrier means **54**. With this construction it is only necessary, in order to mount the carrier means **54** in the channel **38**, for the operator first to place the edge **56** in the groove **48**, and then to snap the rib **58** past the rib **50**. For this purpose the rib **58** will first slide along the bevel **52**, with the extrusion **10** yielding sufficiently so that the side edge **58** will snap into the groove **46**. Through this exceedingly simple rapid operation it becomes possible to reliably mount the carrier means **54** in the channel **38** without the use of any fasteners. An exceedingly small amount of time and labor is required for this purpose. Once the extrusions **10** are mounted in position in end-to-end relation, it is a simple matter to snap the extrusions which form the carrier means **54** one after the other in position so that curtains for windows of any desired width can be readily accommodated. Thus, without the use of any fasteners such as screws, bolts and nuts, rivets, or the like, it is possible with the invention to quickly snap the carrier means **54** in its operative position, greatly reducing the time and labor conventionally required for this purpose.

The space above the ceiling tiles **14** and the extrusions **10**, between the latter and the next-upper floor will usually form a plenum chamber **66** into which air is directed through suitable blowers or the like from the room beneath the ceiling tiles **14** and extrusions **10**. From the plenum chamber **66** as is well known, the air is either recirculated or simply discharged to the outer atmosphere.

According to a further feature of the invention, the extrusion **10** is formed between the channel **38** and its inner side edge region **12** with suitable openings **68** (FIG. **2**) through which the air can readily flow into the plenum chamber **16**. For this purpose it is preferred to form the extrusion **10** with a second channel **70** defined between the vertical walls **72** and the horizontal wall **74** which is formed with the opening **68**. These openings **68** are simply punched through the wall **74** after the extrusion is formed. In this way the extrusion forms a recess **70** for receiving the returning air and serving to recess the openings **68** upwardly beyond the bottom surface of the ceiling tiles and the extrusion **10**. Thus, dust or other particles which are like to collect along the edges of the openings **68** will not be exposed at the lowest surface area of the extrusion **10**.

In order to align successive extrusions and to further support the extrusions, they are provided with elongated angle portions **76** forming extensions of the walls **72** and defining a pair of grooves which are directed toward each other and located directly over the wall **74**. These grooves **78** are adapted to receive opposed side edges of a horizontal web **80** of a plurality of T-shaped support members **82** which have upwardly directed webs **84** formed with openings **86** corresponding to the openings **32** and coacting with the hangar elements **36** in the manner described above. These members **82** are of sufficiently short length and are distributed in such a way as to provide for the required flow of air through the openings **68**. Also the members

82 will be arranged across the butting edges of a pair of successive extrusions 10 extending into the grooves 78 of both extrusions so as to accurately align successive extrusions with each other.

It is not essential to provide the extrusions of the invention with the additional channels 70 and with the capability of providing for flow of air into a plenum chamber 66. In certain buildings where such plenum chambers are not provided, it is possible to use an extrusion 90 as shown in FIG. 3. This extrusion 90 is identical with the extrusion 10 in all respects except that it does not have the channel 70. However, for alignment purposes the extrusion 90 is formed with the elongated angle portions 92 defining at the upper surface of the extrusion 90 a pair of grooves 94 directed toward each other. These grooves are adapted to receive simple alignment bars whose opposite side edges are located in the grooves 94. These bars will extend across the adjoining edges of successive extrusions 90 for the purpose of aligning them with each other. The extrusion 90 will accommodate a carrier means 54 in precisely the same way as described above in connection with FIGS. 1 and 2.

When it is desired to support, in front of the windows, Venetian blinds rather than curtains, the structure of FIGS. 4 and 5 may be used. Referring to FIG. 4, there is illustrated therein an extrusion 100 which is identical with the extrusion 10 except that the extrusion 100 is formed with a downwardly directed hollow channel 102 which is deeper than the channel 38. This channel 102 is defined between a pair of vertical walls 104 and 106 interconnected by a wall 108 provided with a means for supporting the extrusion from a structural element such as the beam 30. Thus, the extrusion may include an upwardly directed web 110 formed with openings 112 to coact with the hangar elements 36 in the manner described above.

The walls 104 and 106 are respectively formed with grooves 114 and 116 located adjacent the lower surface of the extrusion and situated at the same elevation, these grooves extending parallel to each other in a horizontal direction, longitudinally of the extrusion. It will be noted that the grooves 114 and 116 also communicate with the interior of the channel 102.

In order to support Venetian blind units 118, a carrier means 120 is provided. This carrier means 120 takes the form of simple bars or plates made of any suitable metal and having opposed side edges 122 and 124 respectively situated in the grooves 114 and 116, so that the carrier means 120 is also supported only and exclusively by location of its opposed side edges in the grooves of the downwardly directed channel of the extrusion.

When each extrusion 100 is mounted in its position of use, a given number of the plates or bars 120 are slipped into the grooves 114 and 116. These plates can be easily shifted along the grooves 114 and 116. FIG. 5 shows a pair of such plates 120 in one of the extrusions 100, FIG. 5 also illustrating openings 112 of the web 110. When an extremely wide window is encountered it is necessary to situate a series of Venetian blinds next to each other. Thus, FIG. 5 shows three Venetian blind units 118*a*, 118*b*, and 118*c* situated next to each other. In order to mount these units in position, the several carrier means 120 are shifted along the grooves 114 and 116. When the left unit 118*a* is mounted in the channel 102, with a suitable plate 120 beneath the unillustrated left end thereof, the left plate 120 can be slipped beneath the right end of the unit 118*a*, which is shown in FIG. 5. Then the left end of the unit 118*b* can be slipped into the channel 102 over the left plate 120 of FIG. 5, and then right plate 120 of FIG. 5 can be moved beneath the right end of the unit 118*b*. Then the next unit 118*c* can be mounted in the same way. The tapes and cords of the Venetian blind units are sufficiently flexible so that when mounting the last of the series of Venetian blinds the supports or carriers 120 therefor can readily be shifted to first permit the last unit to be inserted and then the carrier means 120 can be shifted beneath the ends of the last Venetian blind unit. As is apparent from FIG. 5, the several carrier means 120 are short enough so that the operating cords 122 for tilting and raising or lowering the slats 124 can be free to operate without engaging the plates 120. Moreover it will be noted that with this arrangement the slats 124 of the successive Venetian blinds will be located directly next to each other forming the effect of one continuous Venetian blind for an extremely wide window.

Except for the above differences the embodiment of FIGS. 4 and 5 is identical with that of FIG. 1, as is apparent from a comparison of FIG. 4 with FIG. 1. However, where a plenum chamber and air conditioning is not provided it is possible to eliminate a second channel 126 of the extrusion 100 and instead to provide it only with a pair of angle portions similar to the angle portions 92 of FIG. 3, to receive alignment bars for aligning successive extrusions 100 with respect to each other in a manner described above in connection with FIG. 3.

Thus, it is apparent that with the invention relatively simple inexpensive extrusions can be readily mounted in position for accommodating, without the use of fasteners, suitable carrier means for carrying curtains, Venetian blinds, or the like, and in addition it is a simple matter to provide the extrusions with the possibility of accommodating the air flow into the plenum chamber over the extrusion and ceiling tiles.

What is claimed is:

1. For use in buildings and the like, an elongated extrusion having an upper surface provided with a means for supporting said extrusion in a substantially horizontal attitude from a structural element over the extrusion, said extrusion having an outer side edge region adapted to be located next to a frame member over a window and an opposed inner side edge region adapted to support ceiling tiles, said extrusion being formed with an elongated downwardly directed channel extending longitudinally of said extrusion and defined by a pair of vertical wall portions of said extrusion and an upper horizontal wall portion thereof extending between said vertical wall portions, said vertical wall portions respectively being formed with longitudinal horizontal grooves extending parallel to each other and longitudinally of the extrusion and communicating with the interior of said channel, and carrier means for carrying a window-covering unit such as a shade, curtain, or the like, said carrier means having opposed edges respectively located in said grooves to be supported by said channel with part of the structure carried by said

carrier means situated in the interior of said channel, said carrier means being supported exclusively by the location of said opposed side edges thereof in said grooves, said carrier means having its side edges located at different elevations to form upper and lower side edges while said grooves are also located at different elevations to form upper and lower grooves for respectively receiving said upper and lower side edges of said carrier means.

2. The combination of claim 1 and wherein said lower groove of said extrusion is limited at its lower region by an inwardly extending rib of said extrusion and said extrusion being springy for facilitating snapping of said lower side edge of said carrier means past said rib into said lower groove after said upper side edge of said extrusion has been situated in said upper groove.

3. The combination of claim 2 and wherein said inwardly extending rib of said extrusion is formed with a downwardly directed inclined surface forming a bevel which facilitates snapping of said lower side edge of said carrier means into said lower groove.

4. The combination of claim 3 and wherein said upper groove of said extrusion is situated next to said upper horizontal wall of said channel while said lower groove is situated adjacent a lower surface of said extrusion, and said carrier means being itself in the form of an elongated extrusion of channel-shaped configuration and having said lower side edge thereof in the form of a rib for snapping into said lower groove.

5. The combination of claim 4 and wherein said carrier means is formed with a pair of channels one for slidably supporting glides for carrying a curtain and the other for accommodating cords for controlling the curtain.

6. For use in buildings and the like, an elongated extrusion having an upper surface provided with a means for supporting said extrusion in a substantially horizontal attitude from a structural element over the extrusion, said extrusion having an outer side edge region adapted to be located next to a frame member over a window and an opposed inner side edge region adapted to support ceiling tiles, said extrusion being formed with an elongated downwardly directed channel extending longitudinally of said extrusion and defined by a pair of vertical wall portions of said extrusion and an upper horizontal wall portion thereof extending between said vertical wall portions, said vertical wall portions respectively being formed with longitudinal horizontal grooves extending parallel to each other and longitudinally of the extrusion and communicating with the interior of said channel, and carrier means for carrying a window-covering unit such as a shade, curtain or the like, said carrier means having opposed edges respectively located in said grooves to be supported by said channel with part of the structure carried by said carrier means situated in the interior of said channel, said carrier means being supported exclusively by the location of said opposed side edges thereof in said grooves, an air-conditioning plenum chamber being situated over said extrusion and tiles carried thereby, and said extrusion being formed adjacent said inner side edge region thereof between the latter and said channel of said extrusion with openings through which air can pass from the space beneath said extrusion into the plenum chamber.

7. The combination of claim 6 and wherein said extrusion is formed with a second hollow downwardly directed channel having a raised horizontal wall formed with said openings through which air flows to said plenum chamber, so that said openings are situated in a recessed portion of the extrusion.

8. The combination of claim 7 and wherein said extrusion is provided at said second channel thereof with an upper pair of angled portions defining over said upper horizontal wall of said second channel a pair of grooves extending longitudinally of the extrusion and directed toward each other, and members of substantially T-shaped cross section having side edges situated in the latter grooves and an upwardly directed web for connection to a supporting beam or the like so as to form part of said support means with said parts located in said grooves over said second channel being adapted to extend across adjoining edges of a pair of said extrusions which are situated one next to the other for aligning the extrusions.

9. For use in buildings and the like, an elongated extrusion having an upper surface provided with a means for supporting said extrusion in a substantially horizontal attitude from a structural element over the extrusion, said extrusion having an outer side edge region adapted to be located next to a frame member over a window and an opposed inner side edge region adapted to support ceiling tiles, said extrusion being formed with an elongated downwardly directed channel extending longitudinally of said extrusion and defined by a pair of vertical wall portions of said extrusion and an upper horizontal wall portion thereof extending between said vertical wall portions, said vertical wall portions respectively being formed with longitudinal horizontal grooves extending parallel to each other and longitudinally of the extrusion and communicating with the interior of said channel, and carrier means for carrying a window-covering unit such as a shade, curtain, or the like, said carrier means having opposed edges respectively located in said grooves to be supported by said channel with part of the structure carried by said carrier means situated in the interior of said channel, said carrier means being supported exclusively by the location of said opposed side edges thereof in said grooves, said grooves being located adjacent a lower surface of said extrusion and are situated at the same elevation, said carrier means being formed by a series of plates respectively having opposed side edges situated in said grooves and adapted to be situated beneath the ends of Venetian blind units located in said chennel of said extrusion.

10. For use in buildings and the like, an elongated extrusion having an upper surface provided with a means for supporting said extrusion in a substantially horizontal attitude from a structural element over the extrusion, said extrusion having an outer side edge region adapted to be located next to a frame member over a window and an opposed inner side edge region adapted to support ceiling tiles, said extrusion being formed with an elongated downwardly directed channel extending longitudinally of said extrusion and defined by a pair of vertical wall portions of said extrusion an an upper horizontal wall portion thereof extending between said vertical wall portions, said vertical wall portions respectively being formed with longitudinal

horizontal grooves extending parallel to each other and longitudinally of the extrusion and communicating with the interior of said channel, and carrier means for carrying a window-covering unit such as a shade, curtain or the like, said carrier means having opposed edges respectively located in said grooves to be supported by said channel with part of the structure carried by said carrier means situated in the interior of said channel, said carrier means being supported exclusively by the location of said opposed side edges thereof in said grooves, said extrusion having at an upper surface a pair of elongated parallel angle portions defining grooves which are directed toward each other for receiving alignment bars to extend across adjoining edges of successive extrusions to align them with each other.

11. The combination of claim **10** and wherein said means for supporting the extrusion includes an upwardly directed web extending upwardly from said channel to be attached to a member for connecting the extrusion to a supporting beam or the like.

* * * * *