

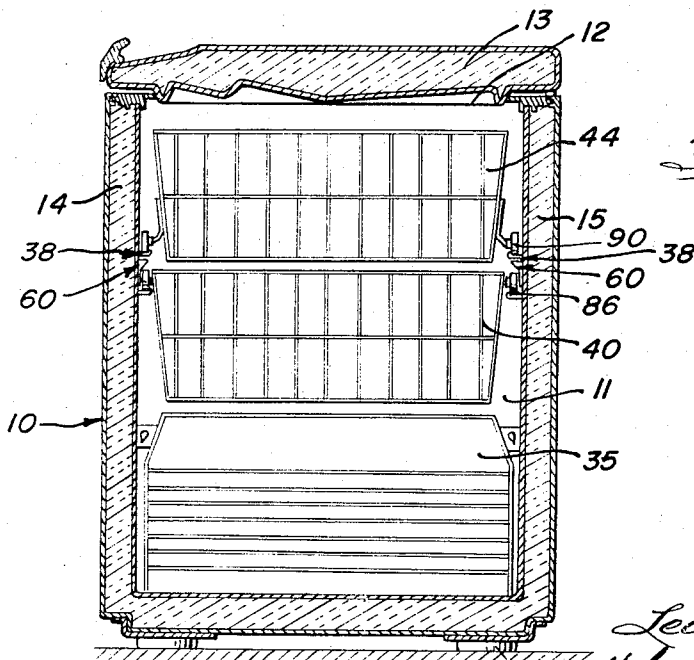
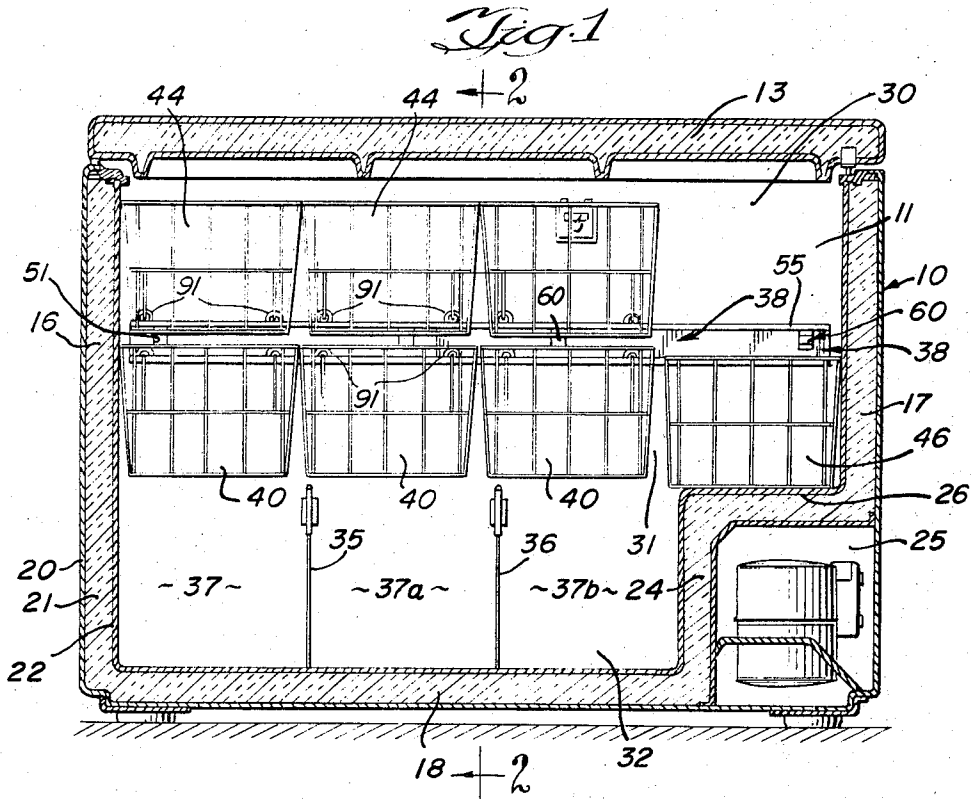
Jan. 14, 1969

L. C. LUSTIG  
CABINET STRUCTURE

3,421,803

Filed May 1, 1967

Sheet 1 of 2



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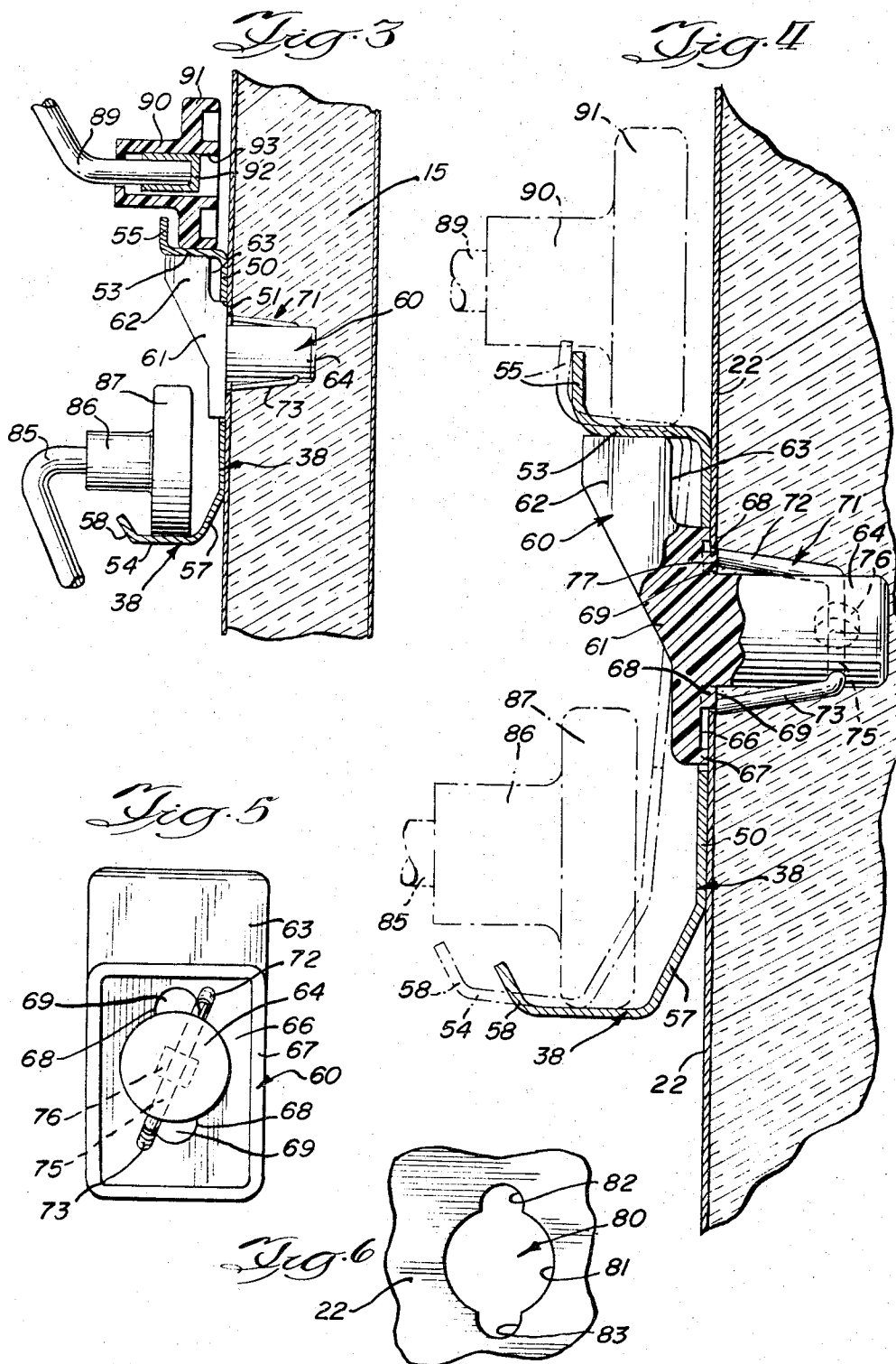
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## CABINET STRUCTURE

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8 Claims

### ABSTRACT OF THE DISCLOSURE

A storage cabinet such as a refrigerator or freezer chest having a plurality of baskets movably carried on tracks attached to the walls of the cabinet by new and improved attaching devices. The tracks are mounted by inserting spaced apart fastening devices into openings in the wall and installing the track thereon by suitably positioning and pivotally associating the track with the fastening devices.

This application comprises a division of my copending application Ser. No. 492,536, filed Oct. 4, 1965, and assigned to the assignee hereof.

This invention relates to storage cabinet structures and more particularly to a novel arrangement for subdividing or separating the inside of a storage cabinet, together with a novel track structure and attachment means therefor.

In storage cabinets such as a refrigerator or freezer chest and the like, it is desirable to make efficient use of as much space as possible within the cabinet and still retain some degree of accessibility to substantially all parts of the cabinet interior. In a top opening type cabinet, e.g. a freezer chest, access to certain items such as large cuts of meat may be necessary only once or twice a week so they can be stored near the bottom of the cabinet, while access to other items such as frozen vegetables or juices may be required daily so they should be stored near the top of the cabinet. In a cabinet that is full and access to an item at the bottom of the cabinet is required, it should not be necessary to remove item for item all of the articles above it.

Various methods have been devised for making it possible to have access to different parts of the cabinet without completely unloading the cabinet. One such method divides the cabinet into two parts, an upper and a lower part, with a track upon which containers having rollers are movably disposed. Such cabinets in use today have only two levels of storage, one level on the bottom of the cabinet and the other or upper level near the top served by the movable containers. Although the one upper level of movable containers was an improvement, it still has serious limitations in that either the movable containers are so deep that it is difficult to get items from within the container or the bottom section of the cabinet is so deep that it is still an unloading proposition to reach the desired items at or near the bottom of the cabinet. The tracks upon which the movable containers are positioned within the cabinet are permanently affixed to the cabinet substantially limiting the flexibility of the cabinet and its uses.

Thus, a principal feature of the present invention is the provision of a new and improved storage cabinet structure.

Another feature of the invention is the provision of an improved means and method for attaching a track member.

Still another feature of the invention is the provision

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of an improved fastener for securing one element to another.

A further feature of the invention is the provision of a new and improved method of mounting a track to a supporting structure.

Thus in summary, the invention comprehends an improved attaching member for removably fastening another member to a support structure. The improved attaching member includes a base portion defining a planar rear surface and carrying a lug to extend rearwardly from the plane of the base portion rear surface. The base portion further supports a retaining portion which projects outwardly and upwardly from the base portion. The attaching member is secured in a preselected desired position on the support structure by laterally projecting key means carried by the base portion and projecting rearwardly therefrom to define a rear outer surface spaced rearwardly of the plane of the base portion rear surface. Resilient latching means are carried by the lug rearwardly of the key means with a forward end of the latching means being disposed adjacent the plane of the rear outer surface of the key means and displaced laterally of the key means in the unbiased condition of the latching means. Thus, the attaching member may be readily installed on the support structure to fasten another member such as a track means thereto while permitting ready removal of the track means when desired for facilitated maintenance of the support structure, which in the illustrated embodiment comprises a refrigerator or freezer storage cabinet.

Other features and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

FIGURE 1 is a vertical longitudinal section of a cabinet illustrating the improved segmenting or sectionalizing feature of the invention;

FIGURE 2 is a cross sectional view taken along lines 2—2 of FIGURE 1;

FIGURE 3 is an enlarged elevational view partially in section of a track and roller arrangement thereof;

FIGURE 4 is a still further enlarged view similar to FIGURE 3 with parts of the track shown in phantom during assembly of the track with the wall structure;

FIGURE 5 is a rear elevational view of a fastener or connector element of the invention; and

FIGURE 6 is a fragmentary view of one of the openings in the front or rear wall of the cabinet.

In the exemplary embodiment of the invention as disclosed in the drawing, a cabinet 10 of the freezer chest type is shown having a box portion 11 with an open top 12 and a pivoted lid or closure portion 13 hinged to the box portion and adapted to cover said open top of the cabinet. The box portion 11 of the cabinet 10 is comprised of front and rear vertical walls 14 and 15, end walls 16 and 17 and a bottom wall 18, all integrally formed or joined together. As illustrated, each wall has an outer layer 20 and an inner layer 22 of sheet metal or other sheet material separated by a bat or thickness of insulating material 21. The bottom wall 18 and the end wall 17 each have one portion thereof offset as at 24 to form a separate housing 25 in which is mounted a compressor or other appropriate operating mechanism for use in cooling the interior of the cabinet. The outer layer 20 of sheet metal of the cabinet encompasses the chamber 25 so that from the outside of the cabinet the presence of the separate housing 25 is not readily apparent. The exposed surfaces of the walls of the cabinet can be painted, enameled or

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finished in some manner. Within the interior of the cabinet 10 the top surface 26 of the chamber 25 forms a shelf which can be used to support items within the cabinet. The lid or cover 13 is hinged to the cabinet and has gaskets and a latch mechanism so that when the lid is closed, the interior of the cabinet can be substantially sealed from the outside.

The area or space within the cabinet is divided into substantially three levels or three vertical segments; that is, an upper level or segment 30, an intermediate or middle level or segment 31, and a lower level or segment 32. The lower segment 32 has vertical dividers 35 and 36 extending between the front and rear walls to provide three separate subdivisions 37, 37a and 37b of the section. In a freezer chest the area of the lower level or segment 32 is normally the coldest so that larger items and items to be stored for longer periods of time would be stored therein. The space between the shelf 26 and the top of the box 11 of the cabinet is divided into the other two levels or segments, namely, the intermediate or middle level or segment 31 and the upper level or segment 30. The levels or segments 30, 31 are divided by a pair of horizontal guide channels 38, one extending along the inside of each of the front and rear walls 14 and 15, respectively.

A plurality of containers or baskets 40 are movably carried by the guide channels 38 in the area of the middle level or segment 31 of the cabinet, and another plurality of containers or baskets 44 are likewise movably carried by the guide channels 38 in the area of the upper level or segment 30 of the cabinet. A third type container or basket 46 is positioned in the area of the middle level or middle segment 31 of the cabinet and rests with its bottom on the top surface 26 of the chamber 25.

In use, the container 46 can be lifted from the cabinet by raising it straight up from its supporting shelf 26 in the area of the intermediate level or segment 31 of the chamber. The baskets or containers 40 and 44 can then be rolled either to the left or to the right along the guide channels 38 within the cabinet. In this way access past any one of the containers 44 into a container 40 can be readily accomplished. Furthermore, access into any of the lower chambers 37, 37a or 37b between the dividers 35 and 36 can be gained by moving in an appropriate fashion the containers 44 in the top segment 30 and the containers 40 in the middle segment 31.

To make use of the above described structure in a freezer chest, for instance, it is possible for an individual to subdivide a storage requirement into many relatively small discrete groupings; each grouping can be deposited in one or more of the various containers 40, 44, 46 or in the chambers 37, 37a, 37b. The containers 40, 44 and 46 can be made in such a way that not too many items can be stored in each container. In this way all of the articles in each container are readily accessible. The depth of the chambers 37, 37a and 37b are such that it is no longer necessary to unload several levels of articles to reach an item on the bottom of one of the chambers. Since the lowermost part of a freezer chest is the coldest, the larger frozen items and those to be stored longer would be deposited in the lower levels or chambers 37, 37a, 37b. Items of intermediate size and estimated length of storage time are stored in the intermediate level with the short term stored items being stored in the upper level. As a result of the ability to subdivide the storage chamber into at least three levels or segments, a more orderly and more efficient method and means for storing goods in a cabinet is provided.

When the appropriate additions or removals have been made from the containers or chambers in the cabinet, the containers 40 and 44 are moved to the left as viewed in FIGURE 1 and the extra container 46 is deposited on the surface 26 within the cabinet whereupon the cover 13 can be closed.

To accomplish the movability of the containers 40 and 44, the novel guide channel 38 is provided together with

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novel means for removably positioning the guide channels on a wall in the cabinet or the like. That is, each of the guide channels 38, as is shown in FIGURES 3 and 4, is formed of an elongate sheet material and has a vertical base or web portion 50 through which is formed a plurality of longitudinally spaced, generally rectangularly shaped openings 51. A pair of vertically spaced guide tracks or shelves 53 and 54 are formed outwardly in a horizontal direction from the web 50, one from the top edge and one from the bottom edge thereof. The outward exposed end of the upper or top guide track 53 has an upturned flange 55 lying in a plane substantially parallel to the plane of the web 50. The bottom track 54 has an angled wall 57 extending from the bottom edge of the web 50 to a point spaced slightly inward from the plane of the web 50. A flange 58 is formed on the outer edge of the track 54 and angles upwardly and outwardly therefrom. The bottom track 54 and angled flange 58 extend a short distance further from the web 50 than the track 53 and flange 55 so that the lower track projects beyond the plane of the flange 55 of track 53.

The guide channels 38 are removably attached to the front and back walls 14, 15 of the cabinet by means of a plurality of attaching members or connectors 60. Each attaching member or connector 60 has a rectangularly shaped base portion 61 with an upwardly and outwardly flared supporting member 62 having one face 63 thereof spaced from the plane of said base portion 61. A horizontally projecting cylindrical lug 64 is formed integrally with and extends rearwardly from substantially the central portion of said body 61. The rear surface of the base portion 61 of the connector 60 has an undercut portion 66 which results in a raised lip 67 completely encircling the edge of said base portion. At the junction of the lug 64 with the base portion 61 is formed a pair of raised abutments 68 which have their outer surfaces 69 lying in a plane spaced a short distance outward from the plane of the raised lip 67. Since the abutments 68 extend beyond the plane of the lip 67 of the base, they will serve as keys or positioning devices for the connectors 60.

A spring or resilient fastener 71 passes transversely through the outer portion of the cylindrical lug 64 with its opposite legs 72, 73 projecting back toward the base portion 61 and being angularly disposed outwardly from the side walls of the lug 64. The central part 75 of the spring fastener 71 cannot move relative to the lug 60 due to an anchor 76 secured to said part 75 which is embedded in the lug 64. The end faces 77, 78 of the legs 72, 73 of the spring fastener lie in a plane substantially coinciding with the plane of the surface 69 on the abutments 68 and are displaced sideways with respect to the abutments 68 (see FIGURE 5).

The walls 14 and 15 of the cabinet 10 have a plurality of slots 80 (FIGURE 6) passing through the inner wall 22 thereof. Each slot 80 has an enlarged circular central portion 81 with diametrically opposed semicircular shaped adjacent portions 82, 83. The portions 81, 82, 83 of the slot 80 are slightly larger than but shaped substantially the same as the lug 64 and adjacent abutments 68 of the connectors 60.

To attach the channel 38 to the wall 15 several of attachment members or connectors 60 are inserted one at a time into slots 80 with the lug 64 entering the enlarged central portion 81 of slot 80 and the legs 72, 73 of the spring fastener 71 entering the semicircular portions 82, 83 of slot 80. At this point, the top edge of the connector 60 is facing toward the bottom wall of the cabinet, and the surfaces 69 of the raised abutments 68 are against the surface of wall 22. As the connector 60 is forced against the wall 22 and simultaneously rotated clockwise the legs 72, 73 of spring fastener 71 are forced against the edges of the open portions 82, 83 of wall 22 and spread apart as they pass through openings 82, 83. The connector 60 is further rotated so that the ends 77, 78 of legs 72, 73 engage behind the wall 22 and abutments 68 nest in the

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open portions 82, 83 of the slot 80 to lock the connector 60 to the wall in a position with its top edge substantially parallel to the plane of the bottom wall of the cabinet. The connectors 60, due to the keying of abutments 68 with openings 82, 83, will not turn in the slots 80 once they are set. At least two, but preferably four, connectors 60 are connected to the front wall 14 and to the rear wall 15 of the cabinet.

To hang a guide channel 38 on the connectors 60, it is only necessary to align the openings 51 in the web 50 of the channel 38 with the supporting members 62 of the connectors and with the track 54 held inwardly away from the wall 22. The web 50 of the channel 38 is disposed at an angle to the vertical wall. The top edges of the openings 51 are positioned between the faces 63 of the connectors and the wall (see the dotted line position of FIGURE 4). Once the bottom edge of the openings 51 clear the lower part of the connectors 60, the channel 38 can be pivoted back against the wall into the operative solid line position of FIGURE 4. In this position, the lower face of the track 53 rests on or just above the top surface of the connectors 60.

The guide channels 38 can be removed from the inside of the cabinet by reversing the steps of the assembly just enumerated. This makes it possible to build a uniform cabinet 10 which can have either a plain interior or can have tracks and containers with the plural levels or segments therein. It also makes it possible to readily clean the inside of the cabinet and the channels.

The containers 40, as shown in FIGURES 1 and 2, are welded wire baskets. Other types of containers such as plastic or metal could be used without departing from the invention. Each basket or container 40 has at least four axles or arms 85 laterally projecting from the upper edges of said basket. Rotatably connected to the end of each axle 85 is a roller 86 having an enlarged rolling surface 87 which is adapted to ride or roll in the track 54. The containers or baskets 44 are of substantially the same construction as containers 40 and have at least four axles 89 laterally projecting from the lower edges of said containers. Rotatably mounted on each axle 89 is a roller 90 having a rolling surface 91 adapted to ride or roll in the track 53.

The rollers 86 and 90 are secured on the axles 85, 89 respectively, by means of caps 92 fitting over the ends of the axles and nesting in enlarged openings 93 in the central portions of the rollers 86, 90 respectively. The lengths of the caps 92 relative to the depths of the openings 93 and relative to the lengths of the axles 85, 90 are such that the rollers 86, 90 are free to translate axially to some degree outward and inward with respect to the ends of the axles. This is particularly important with respect to the lower baskets 40 since it permits the rollers 86 to be moved inwardly with respect to the baskets 40 as the baskets are lowered into the cabinet and past the tracks 53 of the guide channel 38. Once past the tracks 53, the rollers 86 engage with the angled and extended flanges 58 of the tracks 54 moving the rollers 86 outward on the axles so that the rolling surface 87 rides in the tracks 54. The movement of the rollers 86, 90 relative to the axles on the baskets also permits some misalignment between the channels, tracks and walls. In this way manufacturing tolerances need not be so rigidly controlled and thereby the cost of producing the cabinet can be reduced.

The guide channel 38 with the vertically spaced apart tracks 53, 54 provides a structure whereby two levels of containers 40, 44 can be supported on the single guide channel for independent movement without interference between the respective levels of containers. The bi-level mounting also makes it possible to create at least three storage levels within the cabinet.

The containers 40, 44 and 46, as well as the guide channels 38, can all be readily removed from the cabinet, making it very simple to clean the inside of the cabinet.

It is believed to be obvious that the dual track channel, 75

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the connector for the channel and the top and bottom suspension of rolling members is usable in other areas besides the cabinet structure upon which it is specifically described above. The invention is not intended to be limited by the fact that the disclosure is directed solely toward a cabinet structure.

While I have shown and described one embodiment of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows:

1. An attaching member for removably fastening another member to a support structure comprising a base portion defining a planar rear surface, said base portion having a lug extending rearwardly from the plane of said base portion rear surface and a retaining portion projecting outwardly and upwardly from said base portion, laterally projecting key means carried by said base portion and projecting rearwardly therefrom to define a rear outer surface spaced rearwardly of the plane of said base portion rear surface, and resilient latching means carried by said lug rearwardly of said key means and having a forward end adjacent the plane of said rear outer surface of said key means and displaced laterally of said key means in the unbiased condition.

2. An attaching member as claimed in claim 1 wherein said retaining portion is spaced forwardly of the plane of said rear surface of said base portion to define a space for the reception of a member to be supported, and said key means is carried by the base portion at the forward end of said lug.

3. The attaching member of claim 1 wherein said resilient latching means has an anchor portion securely fastened to said lug.

4. The attaching member of claim 1 wherein said retaining portion has a horizontal wall facing upwardly therefrom adapted to support part of a member carried by said attaching member.

5. An attaching member comprising a base portion having an upwardly and outwardly flared supporting portion, a horizontally projecting lug formed integrally with said base portion and extending rearwardly therefrom, at least one key means carried by said base portion and projecting rearwardly therefrom, and at least one latch means carried by said lug and projecting resiliently from said lug toward said base portion to laterally of said key means.

6. An attaching device as claimed in claim 5 wherein said latch means is provided with an exposed end thereof and said key means is provided with an exposed surface, said exposed end lying substantially in the plane of said exposed surface.

7. An attaching device as claimed in claim 5 wherein said key means is carried by said base portion at the junction of said lug with said base portion.

8. A method of mounting a track on a supporting structure, comprising:

- inserting a plurality of horizontally aligned, spaced apart fastening devices into openings in the supporting structure;

- holding a track having a track portion and a web portion with horizontally spaced apart openings in alignment with said fastening devices;

- tilting the web portion of the track at an angle with respect to said supporting structure;

- positioning the top edges of the openings in the track behind an overlapping portion of the fastening devices; and

- pivoting the bottom part of the track toward said supporting structure whereby the track portion of the track rests on said supporting structure with the fastening devices projecting through said openings in

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the web portion for holding said track on said supporting structure.

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3,214,230 10/1965 Vaughn ----- 312—351

3,279,876 10/1966 St. Cyr ----- 312—351

References Cited

JAMES T. McCALL, *Primary Examiner.*

UNITED STATES PATENTS

|           |         |              |           |   |               |
|-----------|---------|--------------|-----------|---|---------------|
| 2,741,525 | 4/1956  | Sywert ----- | 312—351 X | 5 | U.S. Cl. X.R. |
| 2,860,942 | 11/1958 | Carew -----  | 312—351 X |   |               |

312—214, 351