Aug. 4, 1964 D. H. MOORE ETAL 3,143,214

OBJECT MOUNTING ASSEMBLY

Filed Aug. 1, 1963

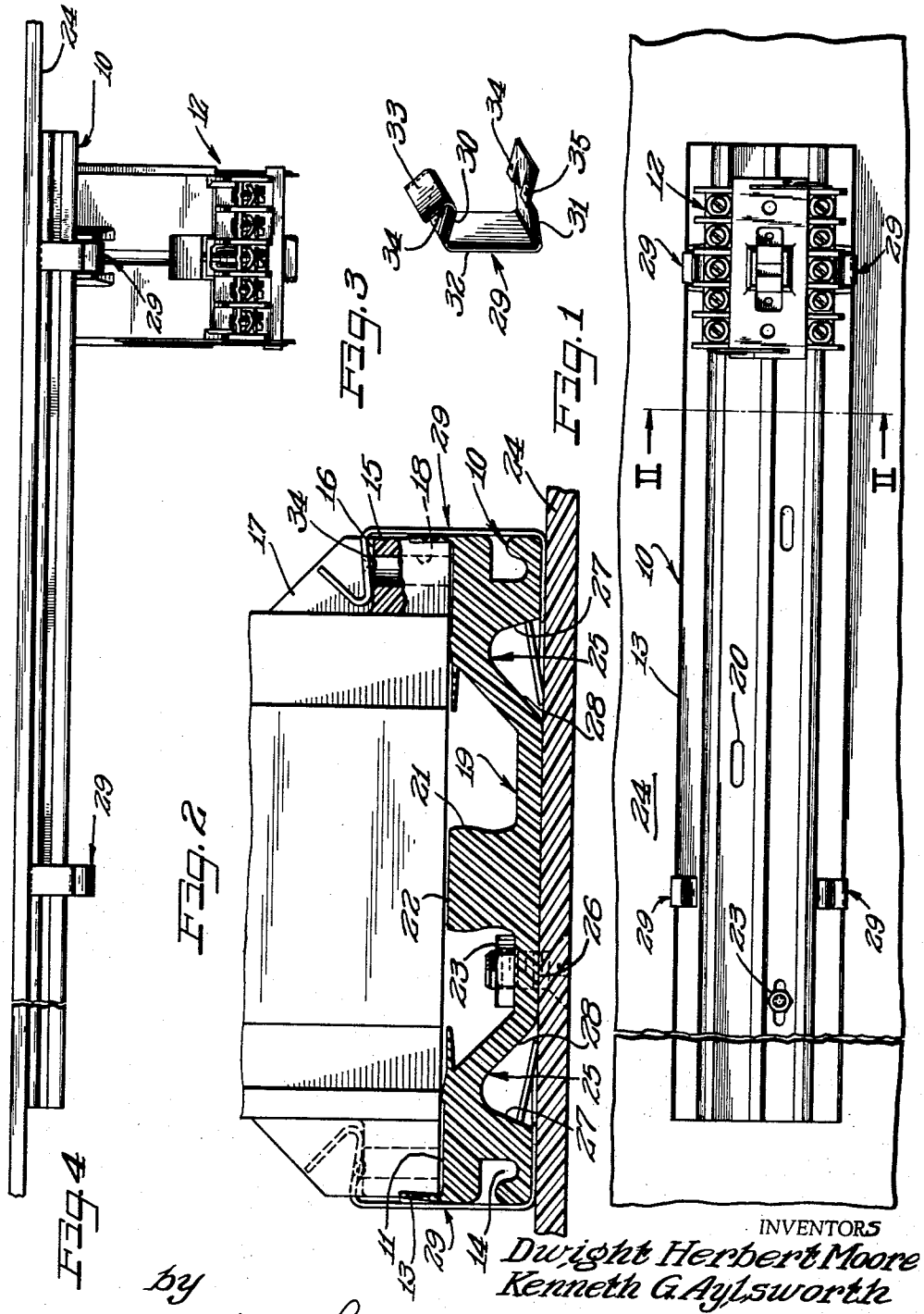


Fig. 4

Fig. 2

Fig. 3

Fig. 1

INVENTORS
Dwight Herbert Moore
Kenneth G. Aylsworth

by Hill, Sherman, Meroni, Gross & Simpson
ATTORNEYS

United States Patent Office 3,143,214 Patented Aug. 4, 1964

3,143,214

OBJECT MOUNTING ASSEMBLY

Dwight Herbert Moore, Belding, and Kenneth G. Aylsworth, Greenville, Mich., assignors to Stahlin Brothers Fibre Works, Inc., Belding, Mich., a corporation of Michigan

Filed Aug. 1, 1963, Ser. No. 299,329
11 Claims. (Cl. 211—26)

The present invention relates to mounting racks and more particularly relates to an elongated mounting rack or rail and associated mounting clips designed to provide means whereby a plurality of objects such as electrical assemblies can be quickly and detachably mounted in row alignment along any surface to which the mounting rail is affixed.

More specifically, my invention is directed to a channel rail having upturned lips along the longitudinal edges thereof which serve to maintain any mounting fixtures such as electrical relays and the like in proper position on the rail and a plurality of associated mounting clips which can be positively connected to the rail at any point along its length and which serve to detachably connect the mounted objects to the rail by the resiliency of the clips themselves.

It is therefore a principal object of this invention to provide a means whereby a plurality of objects such as electrical assemblies can be quickly and detachably mounted in row alignment along any surface to which the mounting rail is affixed.

Another object of the invention resides in the provision of mounting means for securing a plurality of electrical assemblies in row alignment without the heretofore necessary time consuming steps of drilling, tapping and permanently mounting individual assemblies.

A still further and important object of this invention lies in the provision of a channelled rail having guide lips formed therealong for maintaining a plurality of assemblies in an aligned position.

Yet another object of the invention resides in the provision of means for resiliently and detachably connecting such assemblies to such channelled rails at any point along their lengths as desired.

These and other objects of the invention will become apparent from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a front elevational view of a mounting assembly constructed in accordance with the principles of this invention and showing an electrical relay in a mounted position;

FIGURE 2 is an enlarged vertical sectional view taken along lines II—II of FIGURE 1;

FIGURE 3 is a perspective view of a resilient clip of the type used for mounting objects on the channelled rail; and

FIGURE 4 is a side elevational view of the mounting rail shown in FIGURE 1 with the mounting relay depending therefrom.

A channel rail **10** has a substantially flat bed **11** upon which an electrical relay **12** is mounted. The rail **10** has upstanding lips **13** formed integrally therewith and extending along the longitudinal edges of the rail on opposite sides of the bed **11** which serve to keep the relay **12** positioned on the rail. The lips **13** are preferably spaced apart a distance approximately equal to the width of the relay **12**.

The rail **10** is formed of a plastic material and can be extruded in a well-known manner. Elongated slots **14** are formed within the sides of the rail **10** and serve to reduce the thickness of the wall of the raid adjacent its

longitudinal edges so that faster and more even cooling of the plastic can be effected in the formation of the rails.

It will be observed that the relay **12** has an outwardly extending flange or lug **15** formed on each side thereof having an upper surface **16** lying between a pair of upstanding integral side walls **17**. A bore **18** is formed within each of the lugs or flanges **15** and is adapted to receive the shank of a screw conventionally used to mount the relay in position.

The base **19** of the rail **10** is spaced below the plane of the bed **11** and has a plurality of spaced elongated slots **20** formed therein and has an upstanding elongated rib **21** formed integrally therewith and extending the full length of the rail. The rib **21** serves to give added rigidity to the structure and has an upper surface **22** which is substantially coplanar with the surface of the bed **11**. The upper surface **22** of the rib **21** thus also serves as a support or bed for receiving objects to be detachably connected to the rail.

Headed screws **23** extend through the slots **20** and into the wall **24** and serve to rigidly mount the rail **10** on the wall **24**.

A pair of channels **25** are formed within the rail **10** on the under surface **26** thereof and these channels run the length of the rail in parallel spaced relation.

The channels **25** have outer walls **27** which extend upwardly rather abruptly from the plane of the wall **24** and have less abrupt residing inner walls **28** which lead back to the interface between the wall **24** and the undersurface **26** of the rail **10**.

Resilient metal clips **29** cooperate with the channels **25** and serve to detachably connect the relay **12** to the rail **10**. The clips **29** are formed from a generally flat piece of resilient or spring steel and have a finger **30** and a leg **31** bent outwardly in the same direction from the plane of an upstanding center section **32**. The finger **30** has a tab **33** bent backwardly therefrom for a purpose which will hereafter become apparent.

The leg **31** is designed to be forced between the undersurface **26** of the rail **10** and the wall **24** and has barbs **35** bent upwardly from the plane of the leg **31** in the direction of the upstanding section **32** so that abutment of the barbs **35** with the outermost wall **37** of the channel **25** will maintain the clip **29** in its mounted position and prevent the leg **31** from slipping out from between the rail **10** and the wall **24**.

It should also be understood that the rail is formed of somewhat flexible material and that, due to the central positioning of the mounting screws **23**, the longitudinal edges of the rail will bow upwardly from the longitudinal center axis of the rail upon insertion of a clip thereunder. In fact, removal of a clip from its mounted position is readily effected by inserting an instrument (a screw driver for instance) beneath the longitudinal edge of the rail and prying it up sufficiently to permit the barbed end of the clip to slide therepast.

The finger **30** is designed to extend over the flange or leg **15** of the relay **12** to positively grip the same and maintain it in its mounted position on the rail. To this end, the leg **31** and the finger **30** are each bent inwardly at an acute angle with respect to the main section **32** when the clip **29** is in an unstressed condition.

Recess **34** is formed in the finger **30** in a manner such that the hump will overlie the bore **18** in the lug **15**. The bent-back tab **33** facilitates spreading the clip **29** over the lug **15** and prevents the finger **30** catching on the side wall of the lug **15**.

It will be understood that it is important that the wall **27** be relatively close to the vertical inasmuch as this wall of the channel **25** constitutes the barb-contacting surface.

It is also important that the spring clip **29** be formed of a resilient material because the barbs **35** must move

into a coplanar position with the leg 31 while the clip is being inserted between wall 24 and rail 10 and must then snap back to the position shown in FIGURE 2.

It will be understood that we have used this embodiment of the invention for illustrative purposes only and that the rail and clip have general utility in mounting objects in row alignment in a detachable fashion and that other modifications and variations of the invention may be effected without departing from the spirit and scope of the novel concepts thereof.

We claim as our invention:

1. An object mounting assembly comprising:
an elongated rail having a substantially flat object supporting bed,
means mounting said rail on a support,
a channel groove formed at the rail-support interface,
a clip having an element engageable with the object on the bed and having a leg insertable between the said rail and the support,
and an element broken out from the said leg and contained within said groove and engageable with a wall of said groove,
whereby said clip is prevented from being removed from between said rail and support and serves by engagement with the object to maintain the object in a fixed position on the support.

2. An object mounting assembly comprising:
an elongated rail having a substantially flat object supporting bed,
means mounting said rail on a support,
a channel groove formed within said rail at the rail support interface,
a clip having a finger extending over and engageable with a portion of the object on the bed and having a leg insertable between the said rail and the support, and
an element broken out from the said leg and contained within said groove and engageable with a wall of said groove,
whereby said clip is prevented from being removed from between said rail and said support and said clip maintains the object in a fixed position on said rail.

3. An object supporting assembly constructed in accordance with claim 1 wherein said clip is formed of a resilient material.

4. An object mounting assembly constructed in accordance with claim 2 wherein said clip is formed of a resilient material and wherein said element comprises a barb broken out from the surface of said leg.

5. An object mounting assembly comprising:
an elongated rail having a substantially flat object supporting bed and having an elongated clip extending upwardly from said bed along each longitudinal edge of said rail,
means mounting said rail on a support,
a channel groove formed at the rail supporting interface,
a clip having an element engageable with the object on the bed and having a leg insertable between said rail and the support, and
element broken out from the said leg and contained within said groove and engageable with the wall of said groove,
whereby said clip is prevented from being removed from between said rail and said support and engagement of said clip with said object serves to maintain the object in a fixed position on the said rail.

6. An object mounting assembly comprising:
an elongated rail having a substantially flat object supporting bed,
a lip formed integrally with the said rail and extending upwardly from the bed along each longitudinal edge of said rail,

channel grooves formed at the rail-support interface along each longitudinal edge of the said rail,
means extending through the said rail between the said channel grooves and mounting said rail on a support,
a clip having an element engageable with the object on the bed and having a leg insertable between the said rail and the support,
and an element broken out from the said leg and contained within said groove and engageable with a wall of said groove,
whereby said clip is prevented from being removed from between said rail and support and serves by engagement with the object to maintain the object in a fixed position on the support.

7. An object mounting assembly constructed in accordance with claim 6 wherein said clip is formed of a resilient material and said element comprises a barb broken out from the surface of said leg.

8. An object mounting assembly constructed in accordance with claim 6 wherein said grooves are formed within said rail.

9. An object mounting assembly comprising:
an elongated rail having a substantially flat object supporting bed,
upstanding lips formed integrally with the said rail along each longitudinal edge thereof,
wherein said rail is formed of a resilient material and said lips are spaced apart a distance slightly less than the width of the object to be supported when said lips are in an unstressed condition,
channel grooves formed at the rail-support interface along each longitudinal edge of the said rail,
means extending through the said rail between the said channel grooves and mounting said rail on a support,
a clip having an element engageable with the object on the bed and having a leg insertable between the said rail and the support,
and an element broken out from the said leg and contained within said groove and engageable with a wall of said groove,
whereby said clip is prevented from being removed from between said rail and support and serves by engagement with the object to maintain the object in a fixed position on the support.

10. An object mounting assembly constructed in accordance with claim 9 wherein said clip is formed of a resilient material and said element comprises a barb broken out from the surface of said leg.

11. An object supporting assembly for maintaining an object in a fixed position on a flat support comprising:
an elongated rail rigidly affixed to the flat support and carrying the object to be supported,
said rail having an unsecured edge lying in juxtaposition to said support and having a channel groove formed therein on the under surface thereof adjacent said unsecured edge,
a resilient clip having a finger overlying a portion at least of the object to be supported and having a leg underlying the unsecured edge of said rail,
and a resilient barb bent away from said leg within said groove and facing toward said unsecured edge and engageable with said rail to maintain said clip in its mounted position on said rail.

References Cited in the file of this patent

UNITED STATES PATENTS

2,216,219	Wiley	Oct. 1, 1940
2,234,745	Von Rarrel	Mar. 11, 1941
2,918,244	Laney	Dec. 22, 1959
3,021,501	Blanchet	Feb. 13, 1962