United States Patent

Pollak et al.

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[54] **INSTALLATION CHANNEL**

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[52] **U.S. Cl.**.....**174/68 C,** 24/201 C, 24/224 R, 52/221, 138/108, 138/157, 174/101, 220/3.94, 220/60 R

[51] **Int. Cl.**.....**H01b 7/00,** F16l 55/00

[58] **Field of Search** .....211/90, 134; 138/115, 108, 138/117, 155, 157; 174/49, 48, 72 C, 72 A, 72 R, 66 C, 101; 52/221; 220/3.94, 3.8, 60 R, 59; 248/68, 65, 49; 312/350; 24/201 C, 224, 230

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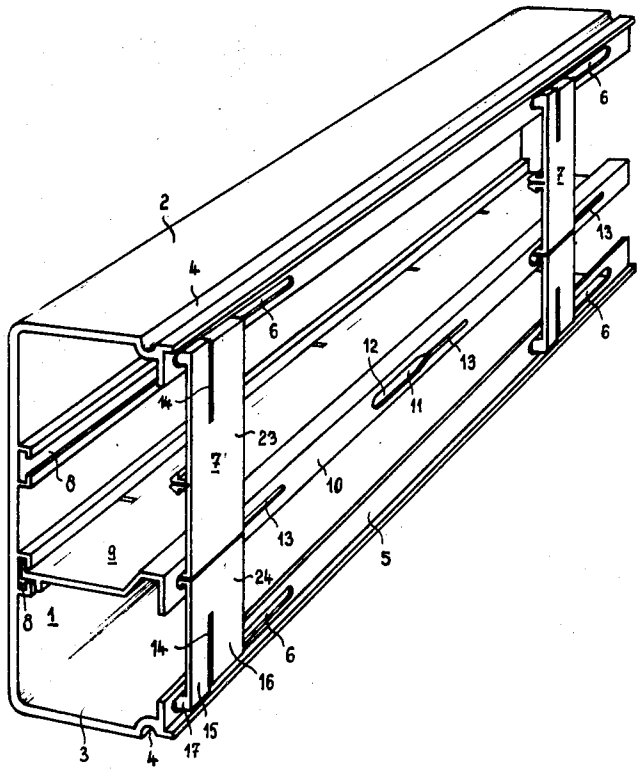
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[57] **ABSTRACT**

Installation channel to be mounted on building walls which is of rectangular cross-section and has an open side opposite the mounting wall which can be closed by a cover, where spacing bars are provided for subdividing the channel into a plurality of electrically separated chambers. Means defining grooves are opposite the open side of the channel on the mounting wall for supporting the spacing bars, the side walls of the channel as well as the separating bars have free edges with elongated slots for cooperation clamps to be mounted therein. Clamps having ends to be introduced in the slots at the free edges of the channel side walls are provided with an angularly offset portion of rectangular cross-section and an angularly offset area portion of arrow-shaped cross-section on one side with an undercut, which portions are separated from one another by a longitudinal slot, the portion of rectangular cross-section has an inner edge which registers with the undercut portion of the area that is of arrow-shaped cross-section on one side, and the portion of rectangular cross-section is of a width corresponding to the width of the slots in the free edges of the side walls of the channel and projects beyond the portion of arrow-shaped cross-section on one side by an amount corresponding to the depth of the undercut.

2 Claims, 4 Drawing Figures

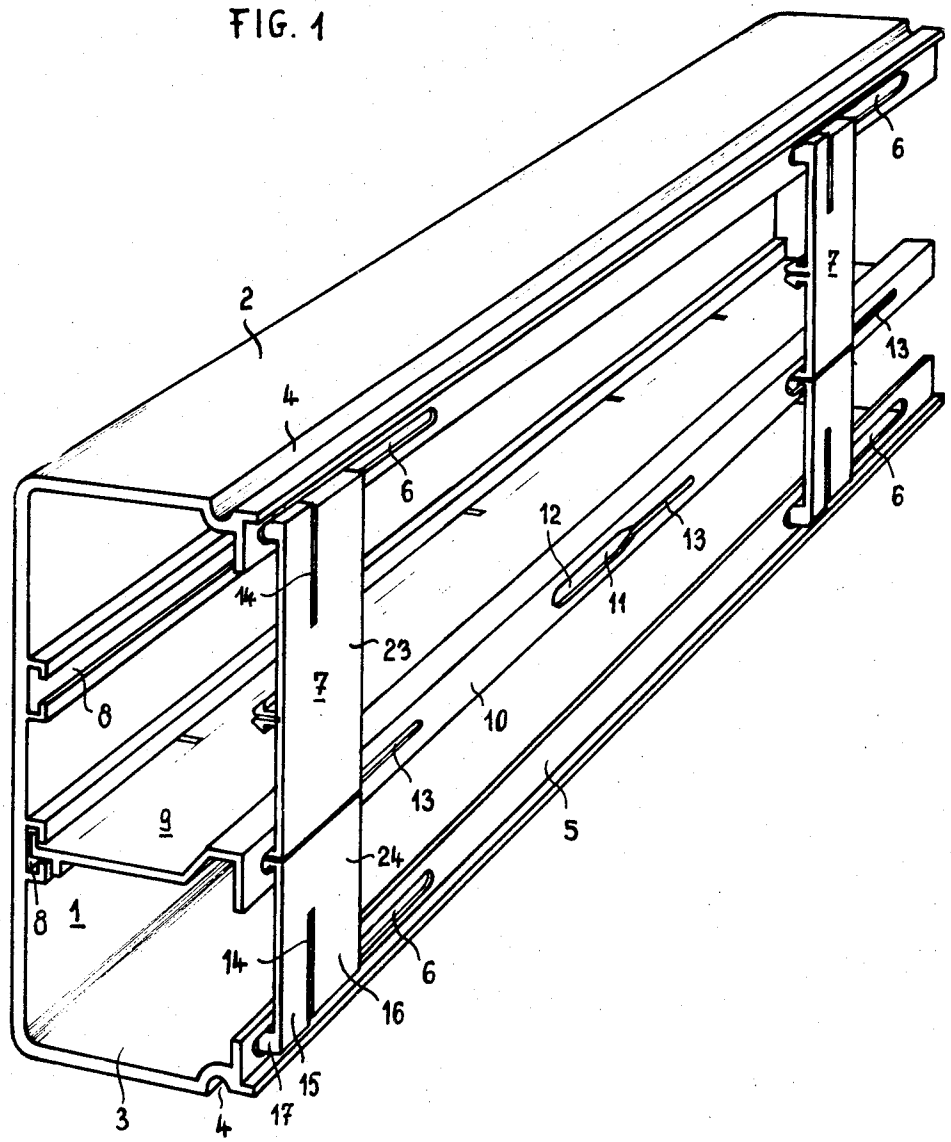


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SHEET 1 OF 2

FIG. 1



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FIG. 4

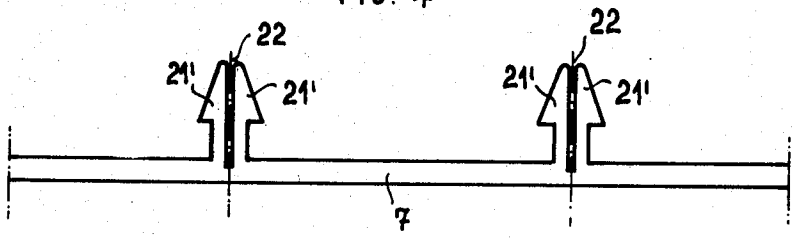


FIG. 3

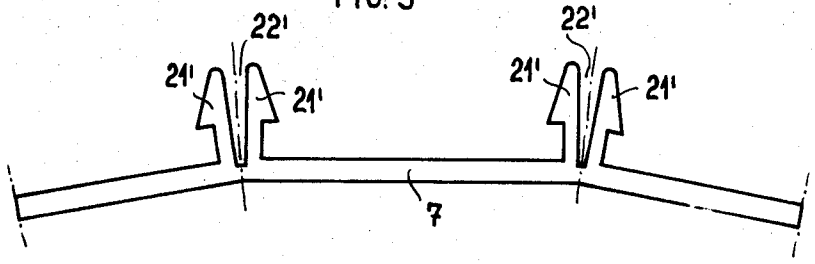
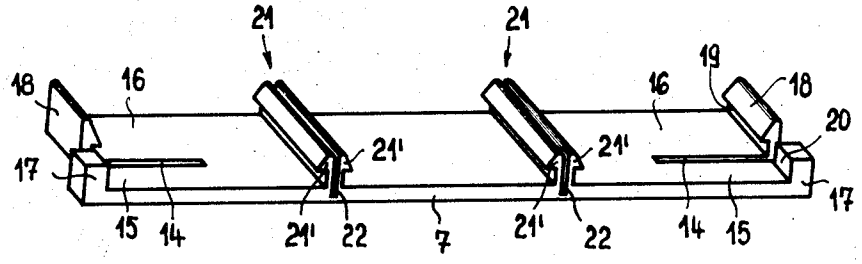


FIG. 2



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INSTALLATION CHANNEL

BACKGROUND OF THE INVENTION

The invention concerns an installation duct or channel based on known embodiments of substantially rectangular cross-section affording the possibility of providing separating bars to make it possible to subdivide the channel into several areas and clamp members which essentially serve first for supporting the free front edge of the separating bar and furthermore for fixing cables that have already been installed.

Based on this known installation channel and connecting means between clamp members and channel walls or separating bars, the invention is concerned with the problem of mounting and also releasing the clamp members in a simple manner so that they can be adapted in their length to the existing subdivision of the chambers and can, in spite of this requirement, be produced in a simple manner.

In accordance with the invention, this problem is met by an installation channel to be mounted on building walls and having rectangular cross-section and an open side opposite the mounting walls that may be closed with a cover, with separating bars for subdividing the channel into several electrically separated chambers that can be mounted in grooves on the mounting wall opposite the open side of the channel, where furthermore slots extending longitudinally of the channel are provided in the free edges of the side walls longitudinally of the channel as well as also of the separating bars, where in accordance with the invention the clamp members are provided at their ends that are to be introduced in the slots at the free edges of the side walls of the channels with a portion of angularly offset rectangular cross-section and an angular area that is of arrow-shaped cross-section on one side with an undercut, which are separated from one another by a longitudinal slot and where the area of rectangular cross-section registers with its inner edge with the undercut of the area on one side of arrow-shaped cross-section, and where finally the area of rectangular cross-section corresponds in width to the width of the slots in the free edges of the side walls of the channel and projects beyond the area of arrow-shaped cross-section on one side by the depth of the undercut thereof.

By means of this embodiment it is accomplished that the clamp elements can be engaged and again released in simple fashion without the use of tools and without destroying the clamp element or the slots in the free edge of the side wall of the channel. For this it is merely necessary to hang in the portion of the one-sided arrow-shaped cross-section into the slot and drawing up in the longitudinal direction of the clamp until the area of the rectangular cross-section is likewise engaged by the slot and thus unintentional release of the undercut of the one-sided arrow-shaped portion out of the clamp of the slots is prevented. If the clamp member is to be released from the slot, it is merely necessary to slightly bend the portion of the rectangular cross-section out of the slot so that the latch effect thereof is eliminated. Thereupon, the one-sided arrow-shaped portion can be readily released from its hooked position in the slot. This latching and release operation can be repeated practically without limits.

SUMMARY OF THE INVENTION

For the further development of the present invention, the free edges of the separating bars are provided with slots which comprise a narrow and a broad portion. With these slots on the separating bars, ribs of arrow shape project inwardly from the clamp member at a corresponding height which are separated by a narrow and deep central groove into two parts of mirror image likeness that are one-sidedly arrow-shaped. If a clamp is now to be fixed not only in the two longitudinal slots coordinated with it at the free edges of the side walls of the channel, but must simultaneously support the separating bar, it is sufficient to perforate the clamp in the area of the rib that cooperates with the separating bar which, in turn, is possible without difficulties and without any special tool. Then the clamp part is first slid into the broader area of the slot in the separating bar and then into the narrower portion. Thereupon the second partial clamp element is inserted into the broader area of the slot and the first partial clamping element is pushed back into this broader area. The two partial clamp elements now again form a clamp covering the entire width of the channel which then is correctly fixed also to the separating bar. The releasing of the partial clamp element is effected in reversed order. First one is pushed into the narrowed area of the elongated slot, then the other one is removed, and then the first is pushed back again and removed.

If only one chamber of the two chambers formed in the channel by the separating bar is to be covered by a clamp element, it is also possible by breaking a complete clamp element to form a suitable partial element.

The ribs described can be distributed in the same parted condition on the clamp elements as the grooves in the wall of the assembly of the channel for mounting the separating bars. In order to simplify the production of a clamping element with really very small grooves in the arrow-shaped ribs, the mold for forming the clamp elements can be nicked in the area of the particular ribs so that the forming core necessary for forming the grooves may be of triangular cross-section. If the clamp elements arrive out of the form on a plane support while still in plastic condition, they assume their final even shape while closing the heretofore triangular slots between the rib portions to constitute deep and very narrow grooves.

BRIEF DESCRIPTION OF THE DRAWINGS

Further features and details of the invention and of the advantages obtained thereby will become apparent from the following description of an embodiment of the subject of the invention illustrated in the accompanying drawings, in which

FIG. 1 shows a perspective view of a section of the installation channel or conduit in accordance with the invention,

FIG. 2 shows the clamping means in accordance with the invention, and

FIGS. 3 and 4 illustrate the central clamping section in two stages of construction.

DESCRIPTION OF THE INVENTION

The installation channel has a mounting wall 1 and two side walls 2 and 3 which define a channel having a rectangular cross-section that at first is open along the fourth side. This open side can be closed by means of a covering, which is not illustrated, and which can be engaged, for example, with the outer longitudinal grooves 4 in the side walls 2 and 3.

The free edge members 5 of the walls 2 and 3 are provided with slots 6 that extend at equal distances longitudinally of the channel. These slots 6 can, in turn, be releasably engaged by clamp elements 7 whose engaging and release mechanism will be described more in detail hereinafter.

The installation channel is furthermore provided on the inside of its mounting wall 1 with longitudinally extending groove members 8 in which separating bars 9 can be placed which serve to form electrically separated chambers in the channel.

Also these separating bars are provided at their free front edge 10 with longitudinal slots 11 which have a wide portion 12 and a narrower portion 13. The cooperation between these elongated slots 11 with the clamp elements 7 will be explained more in detail hereinafter. The clamp elements 7 are of essentially flat shape and define at both ends areas 15 and 16 that are separated by longitudinal slots 14. The areas 15 are angularly offset at their ends and their angularly offset end areas 17 are of rectangular cross-section. The areas 16 are likewise angularly offset at their ends. However, the angularly offset areas 18 are on one side of arrow-shaped cross-section and define an undercut 19. This undercut 19 registers with the inner surface 20 of the angular offset 17. Furthermore, the angularly offset portion 17 extends beyond the offset portion 18 by approximately the amount of the depth of the undercut 19 and is of a width corresponding to that of the elongated slots 6 in the free edges 5 of the side walls 2 and 3 of the installation channel.

The shaping of the end portions 17 above described makes it possible that they can be hooked or hung in a simple manner in the elongated slots 6 and without it being necessary to use tools, and that they can be released in the same manner, i.e., without destroying any part thereof, they may in practice frequently be released as desired.

As the clamping elements are installed, they are first hung with their one angularly offset portion 18 in an elongated slot 6. As soon as it rests with its undercut 19 at the lateral edge of the slot 6, portion 17 engages the slot and there latches the clamp member, so that it can no longer be readily released from the slot 6. Subsequently the same operation is performed at the opposite end of the clamping element in a slot of the opposite side wall of the channel. In order to release the clamping element, it is sufficient to bend the portion 15 slightly out of the plane of the clamping element so that its latching effect in the slot is eliminated. It is then possible to readily withdraw the portion 18 from the slot.

The clamping member 7 is furthermore provided with ribs 21 that may be provided in a plurality of numbers that correspond to the subdivision of grooves 8 on the mounting walls 1, and thus correspond to the possible number of the arrangement of the separating bars 9 in the channel. These ribs 21 are coordinated to the slots 11 in the free edge 10 of the separating bars 9. The ribs 21 are of generally arrow-shaped cross-section and have very small and deep grooves 22.

If a clamp member 7 is not only to be inserted into the slots 6 of the side walls 2 and 3, but is also to be utilized for supporting one or several separating bars 9, it is sufficient to simply cut through the clamp member at the particular rib 21 in accordance with groove 22. Then the clamp member, for example the upper clamp part 23, can first be introduced in the slot 6 in the manner described above, and then reaches with its half rib 21' the broad area 12 of the slot 11 of separating bar 9. The clamp portion 23 is tHen slid longitudinally of the channel until it is latched with the rib 21' in the small part 13 of the slot 11. Then the lower clamp part 24 is inserted in the same manner and the upper clamp portion is slid back so that the clamp member constitutes a whole. It is accurately fixed by means of the partial ribs 21' which are then again brought together as a rib 21, in the wide area 12 of the slots 11 and thus forms the desired support for the intermediate bar 9.

In order to make it possible to constitute the desired very narrow and deep groove 22 in a simple manner, one proceeds preferably in a manner that the clamp member is produced in a folded shape as indicated in FIG. 3. In this manner the grooves 22 define broad grooves 22' of triangular cross-section that favor the formation of corresponding form cores. The completed clamp member then arrives in still plastic condition out of the production mold on a plane base and then assumes the position in accordance with FIG. 4, i.e., the broad grooves 22' of triangular cross-section close, to form the desired very small grooves 22. These grooves 22 reach in the ribs 21 at least to the area in which the clamp member 7 extends essentially evenly. They may also be introduced into this area as indicated in FIG. 3.

The shape of clamp in accordance witH the invention together with the coordinated slots at the free edges of the side walls of the channel and of the separating bar provides the possibility of mounting the retaining and supporting clamps at practically any desired position in accordance with the division of the slots longitudinally of the channel and also to release them again. Furthermore it affords the possibility of hanging the clamp only on one side so that when inclined obliquely outwardly the locating of the cables is not impeded before it is latched in its final position. The insertion as well as also the releasing of the clamp can take place in a simple manner without the use of tools or substantial force.

Having now described the invention with reference to the embodiment illustrated, what we desire to protect by letters patent is set forth in the appended claims.

1. Installation channel for mounting on building walls for supporting electric cables or the like said channel being of rectangular cross-section and having a mounting wall, side walls including means for receiving a cover, an open side opposite said mounting wall adapted to be closed by said cover, separating bars for subdividing said channel into a plurality of electrically separated chambers, means defining grooves opposite said open side of said channel on said mounting wall for supporting said spacing bars, said channel side walls as

well as said separating bars having free edges provided with elongated slots for cooperation with clamps to be mounted therein, clamps having ends to be introduced in said slots at the free edges of said channel side walls provided with an angularly offset portion of rectangular cross-section and an angularly offset area portion of arrow-shaped cross-section on one side with an undercut, said portions being separated from one another by a longitudinal slot therebetween, where the portion of rectangular cross-section has an inner edge which registers with the undercut portion of the area that is of arrow-shaped cross-section on one side, and where said portion of rectangular cross-section is of a width corresponding to the width of the slots in the free edges of the side walls of the channel and projects beyond the portion of arrow-shaped cross-section on one side by an amount corresponding to the depth of its undercut, said clamps further including means received within said slots in the free edges of said separating bars.

2. Installation channel in accordance with claim 1, where said slots in the free edges of said separating bars comprise a narrow portion and a wider portion and said means on said clamps present inwardly projecting ribs having arrow-shaped cross-section at the level of the slots in the separating bars cooperating with said slots, and a groove separating said ribs into portions of arrow-shaped cross-section of mirror image likeness on one side.

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