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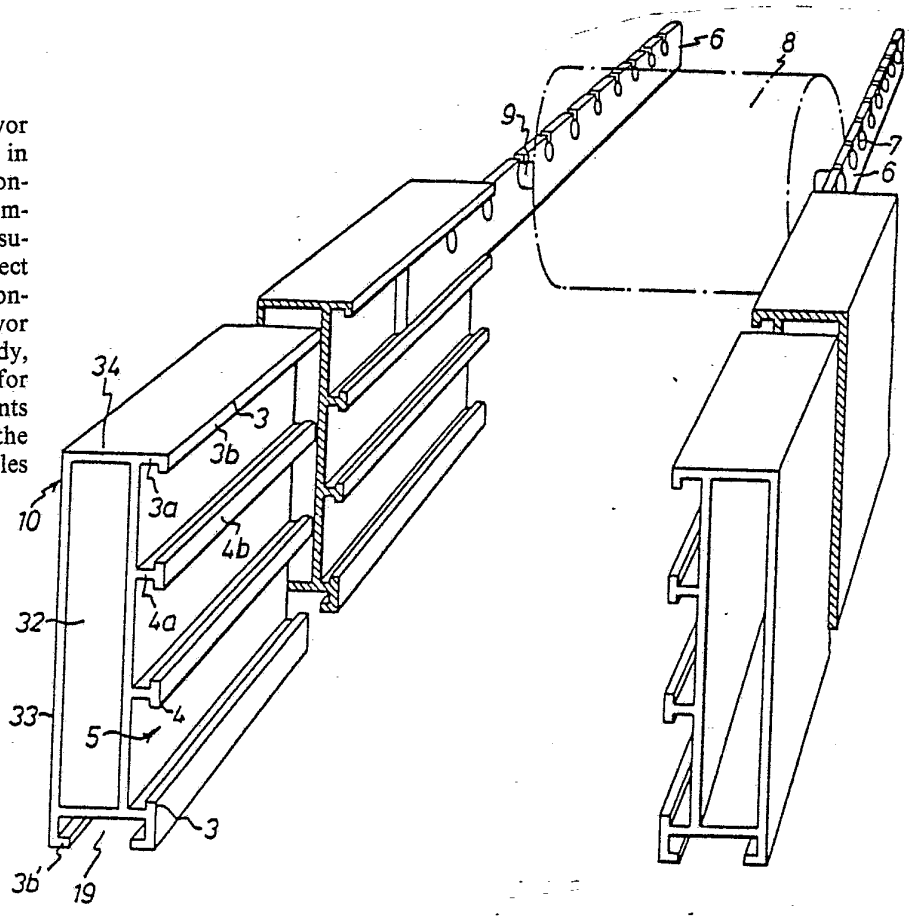
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(54) Title: ARRANGEMENT IN A ROLLER CONVEYOR OR A CONVEYOR BELT

(57) Abstract

An arrangement in a conveyor has frame profiles (10) extending in the longitudinal direction of the conveyor. The frame profile (10) comprises a body (2) and at least two superposed bars (3, 4) which project from the body and extend in the longitudinal direction of the conveyor and which, together with the body, form a longitudinal channel (5) for accomodating coupling elements which are adapted to connect the frame profile to other frame profiles in order to form the conveyor.



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ARRANGEMENT IN A ROLLER CONVEYOR OR A CONVEYOR BELT

The present invention relates to an arrangement in a conveyor having a frame profile extending in the longitudinal direction of the conveyor.

In the construction of continuous conveyors, for instance roller conveyors, one sets out from a frame which may consist of U- or L-profiles. These profiles are designed individually according to the desired type of roller conveyor. For example, the desired pitch of the rollers affects the distance between the recesses in the profile which should accommodate the roller shafts. Also other details of the conveyor, e.g. cross-bracings, supporting legs and protective plates, affect the shape of the profile, and to be able to offer the customers a full line of conveyor types, the manufacturer will thus have to make many different types of frame profiles.

The object of the present invention, therefore, is to provide a standard component for continuous conveyors (roller conveyors or conveyor belts) by means of which it is possible to make any conveyor type demanded by a customer.

Another object of the invention is to provide different types of coupling members which can be connected to the frame profile in order to make up a conveyor.

These objects are achieved by the provision of an arrangement of the type which is stated in the introduction to the specification and the features of which appear from the characterising clauses of the appended claims.

The invention will be described in greater detail hereinbelow in a few embodiments with reference to the accompanying drawings.

Fig. 1 illustrates a first embodiment with two opposed frame profiles in which roller receiving members have been partially inserted, a roller placed in

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the roller receiving members being indicated by dash-dot lines.

Fig. 2 is a side view of the roller receiving member of Fig. 1.

Fig. 3 shows clamping means for a crossbracing.

Fig. 4A is a side view of one end of a frame profile in which an endpiece closes the ends of some channels in the frame profile.

Fig. 4B is an end view of the endpiece with a connecting piece clamped to the endpiece.

Fig. 4C is a section taken along the line IVC-IVC in Fig. 4A, the connecting piece of Fig. 4B also appearing from this Figure.

Fig. 5 is a view similar to that of Fig. 1, but shows a second embodiment of the invention using modified frame profiles.

Fig. 6 shows a crossbracing and a 90^{o} connecting piece mounted on the profile in Fig. 5.

Fig. 7 is an end view of the lower portion of the frame profile in Fig. 1 and illustrates lines for e.g. electricity, water and air, extending within the frame profile, a supporting leg construction associated with a lowermost channel at the underside of the profile, and a fixing member in a channel on one side of the frame profile.

Fig. 8 shows one end of the frame profile in Fig. 5 and illustrates a connecting piece disposed in the lowermost channel for linearly joining frame profiles, and an attachment for sundry equipment mounted on the fixing member in Fig. 7.

Fig. 9 is a perspective view of the connecting piece in Fig. 8.

Fig. 1 illustrates two opposed frame profiles 1 according to the first embodiment of the present invention. The frame profile is approximately 3 m long, 9 cm high and is made from extruded aluminium. The frame profile 1 consists of a vertical body 2 and bars 3 and

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4 projecting therefrom. The upper and lower bars 3 are L-shaped, the long leg 3a of the L projecting orthogonally from the body 2 and the short leg 3b of the L being parallel to the body and oriented inwardly towards the other bars 4. The bars 4 provided between the L-bars are T-shaped and evenly distributed on the body. The web 4a of the T-bar projects orthogonally from the body while the leg 4b of the T is parallel to the body and aligned with the short leg 3b of the L-bar 3. Thus, there are provided a number of superposed identical channels 5 on one side of the frame profile 1. The channels are approximately U-shaped but the short leg 3b of the L-bar and the leg 4b of the T-bar form two inwardly directed flanges at the open end of the U-profile, these flanges being adapted to retain different coupling means in the frame profile, which will be described in greater detail hereinbelow.

The frame profile can and should be manufactured in different lengths and widths, such that maximum flexibility is obtained in the assembly of different conveyors. Furthermore, more or fewer channels can be designed on the frame profile. Although aluminium is a preferred material in the making of the frame profile, it is of course possible to use other materials, such as plastics.

According to the present invention, the rollers can be readily mounted by the use of roller receiving members 6 which are shown partially inserted in the channels 5 in Fig. 1. Fig. 2 shows a portion of such a roller receiving member which preferably is 25 cm long and has a height and thickness corresponding to the dimensions of the channels, such that the roller receiving member can be inserted in the channel 5 and is retained in the channel without the existence of such great plays that the roller receiving member would be loose in the channel. The roller receiving member has a number of key-hole shaped recesses 7 in which a roller shaft 9 (Fig. 1) can be placed before the rol-

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ler receiving member 6 is inserted in the frame profile 1. The bottom of the recesses is cylindrical and conformed to the roller shaft, while the mouth of the recesses is slightly narrower than the roller shaft. Since use is preferably made of an elastic material, such as plastics, for the roller receiving members, the roller shaft can be pressed down into the recess. The spacings between the recesses may be for example 25 mm and different pitches of the rollers in a roller conveyor can be readily realised by placing the roller shafts in suitable recesses 7.

The recess may be designed otherwise, for instance be closed at the top, so that the roller shaft must be introduced in the recess at one side face of the roller receiving member.

For obtaining stability in a conveyor, one or more crossbracings must be used. Fig. 3 shows the mounting of such a crossbracing 14 on the frame profile 1. A clamp 10 one end of which is adapted to clamp the crossbracing by means of for instance bolts 12 and 13 has its other end designed as a gripping claw 11. This can be clamped about one of the T-bars 4 upon tightening of the bolts 12 and 13.

Fig. 4A shows an endpiece 15, preferably of plastics, which may serve several purposes. First, the endpiece can serve as a stop for the roller receiving members 6 to prevent them from escaping from the frame profile, secondly it conceals the end of the frame profile so as to provide an aesthetic ending of the frame structure, and thirdly it permits mounting a rigid connecting piece, an articulated connecting piece or other elements.

The endpiece 15 is fork-shaped and has two fork arms 16a, 16b which are conformed to the shape of the channels 5 and extend preferably into the central channels, and a back portion 16c closing the channels. As shown in Fig. 4a, the fork arms 16a and 16b each has a hole 17 for receiving a bolt.

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Figs. 4B and C show the endpiece 15 from one end thereof and in a section taken along the line IVC-IVC in Fig. 4A, respectively, a connecting plate 18 being clamped against the endpiece 15 and the T-bars 4. By using the connecting plate 18, it is possible to join the frame profile 1 to another frame profile. It will be understood that the connecting plate 18 bridges the interstice between the frame profiles and is secured to the other frame profile in the manner shown in Fig. 4C or in any other suitable way.

Fig. 5 shows a second embodiment with modified frame profiles. The parts in Figs. 1 and 5 corresponding to each other have been given the same reference numerals.

The frame profile 10 has at its underside a channel 19 which extends throughout the entire frame profile and has a shape corresponding to that of the channels 5. The function of the channel 19 will be described in more detail below. The frame profile also has an internal channel 32 which is defined by the vertical body 2, the bottom wall of the channel 19, a vertical wall 33, and a horizontal top wall 34. The internal channel 32 is of rectangular cross-section, extends in the longitudinal direction of the profile 10 and has for its purpose to accommodate various lines for instance for electricity, water and air (Fig. 7). The bottom wall of the channel 19 and the walls 33, 34 also contribute to the stability of the frame profile. The channel 19 is defined at the bottom by flanges 3b' corresponding to the flanges 3b of the bars 3.

Fig. 6 shows how two frame profiles 10 and 10' placed at right angles to each other, are joined by means of a connecting piece 20 consisting of a plate 21 of T-shaped section which is inserted in the channel 19 of the profile 10, a plate 22 of rectangular section which is inserted in the channel 19' of the profile 10', and a plate 23 of L-shaped section which inter-

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connects the plates 21 and 22. The plates 21, 22, 23 are made in one piece. The connecting piece is secured in the channels by means of screws 24 and 25.

Fig. 6 also shows a tubular crossbracing 26 which by means of an adaptor 27 is mounted in one of the channels 5. The adaptor consists of a T-shaped shaft 28 whose web over a conical portion 29 merges into a portion 30 the thickness of which corresponds to the inner dimension of the crossbracing for supporting it. The crossbracing 26 is locked to the adaptor by means of a clamping screw 31 which is screwed through the wall of the crossbracing and exerts a locking action against the conical portion. The tightening of the clamping screw 31 will not only lock the crossbracing to the adaptor 27 but also secure the adaptor in the channel 5.

Fig. 7 shows the lower portion of the frame profile 10, an attachment 35 for a supporting leg 36 being inserted in the channel 19 to secure the supporting leg to the frame profile. The attachment consists of first portions 37 on which the supporting leg is mounted, and second claw-shaped portions 38 grasping the flanges 3b' of the channel 19.

Fig. 7 also shows lines 39 in the channel 32 for supplying electricity, air and water to various equipments which may be used in a conveyor made up of the frame profiles 10.

Fig. 8 shows the mounting of an attachment 40 for sundry electrical equipment or a guide edge over the conveyor. The attachment 40 has holes which are passed over fixing members 41 placed in the channels 5 and conformed to the shape of the channel. The fixing member has a threaded shaft 42 carrying the attachment 40 and extending therethrough. A nut 43 secures the attachment and the fixing member to the frame profile.

Fig. 8 also shows a connecting piece 44 inserted in the channel 19 for linearly joining two frame profiles. When in use, the connecting piece extends from

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the channel 19 in one profile to the corresponding channel of another profile and is fixed in the channels by screws 45.

Fig. 9, in perspective, shows the connecting piece 44 with a number of holes 46 for receiving the screws 45.

While the above description and the drawings show frame profiles which form a horizontal roller conveyor, the invention is of course also applicable to inclined roller conveyors and conveyor belts.

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CLAIMS

1. An arrangement in a conveyor with frame profiles (1) extending in the longitudinal direction of the conveyor, c h a r a c t e r i s e d in that the frame profile (1) comprises a body (2) and at least two superposed bars (3, 4) projecting from the body and extending in the longitudinal direction of the conveyor and defining, together with the body, a longitudinal channel (5) for accomodating coupling means (6; 10, 14; 15) adapted to connect the frame profile to other frame profiles in order to form the conveyor.

2. Arrangement as claimed in claim 1, c h a r a c t e r i s e d in that the frame profile (1) comprises at least three equidistant superposed bars (3, 4); that the outermost bars (3) are L-shaped, the long leg (3a) of the L projecting perpendicularly from the body (2) and the short leg (3b) of the L being parallel to the body and directed towards the other bars (4); and that the bars (4) provided between the outermost bars are T-shaped, the web (4a) of the T projecting perpendicularly from the body and the leg (4b) of the T being parallel to the body and aligned with the short leg (3b) of the L, such that a number of identical, approximately U-shaped channels (5) are formed over each other on one side of the body.

3. Arrangement as claimed in claim 1 or 2, c h a r a c t e r i s e d in that the coupling means comprise a roller receiving member (6) which has a recess (7) open at the top for receiving a roller shaft (9) which is placed in the recess before the roller receiving member is inserted in the channel (5).

4. Arrangement as claimed in claim 3, c h a r a c t e r i s e d in that the roller receiving member (6) has a plurality of juxtaposed recesses (7) spaced with a predetermined pitch.

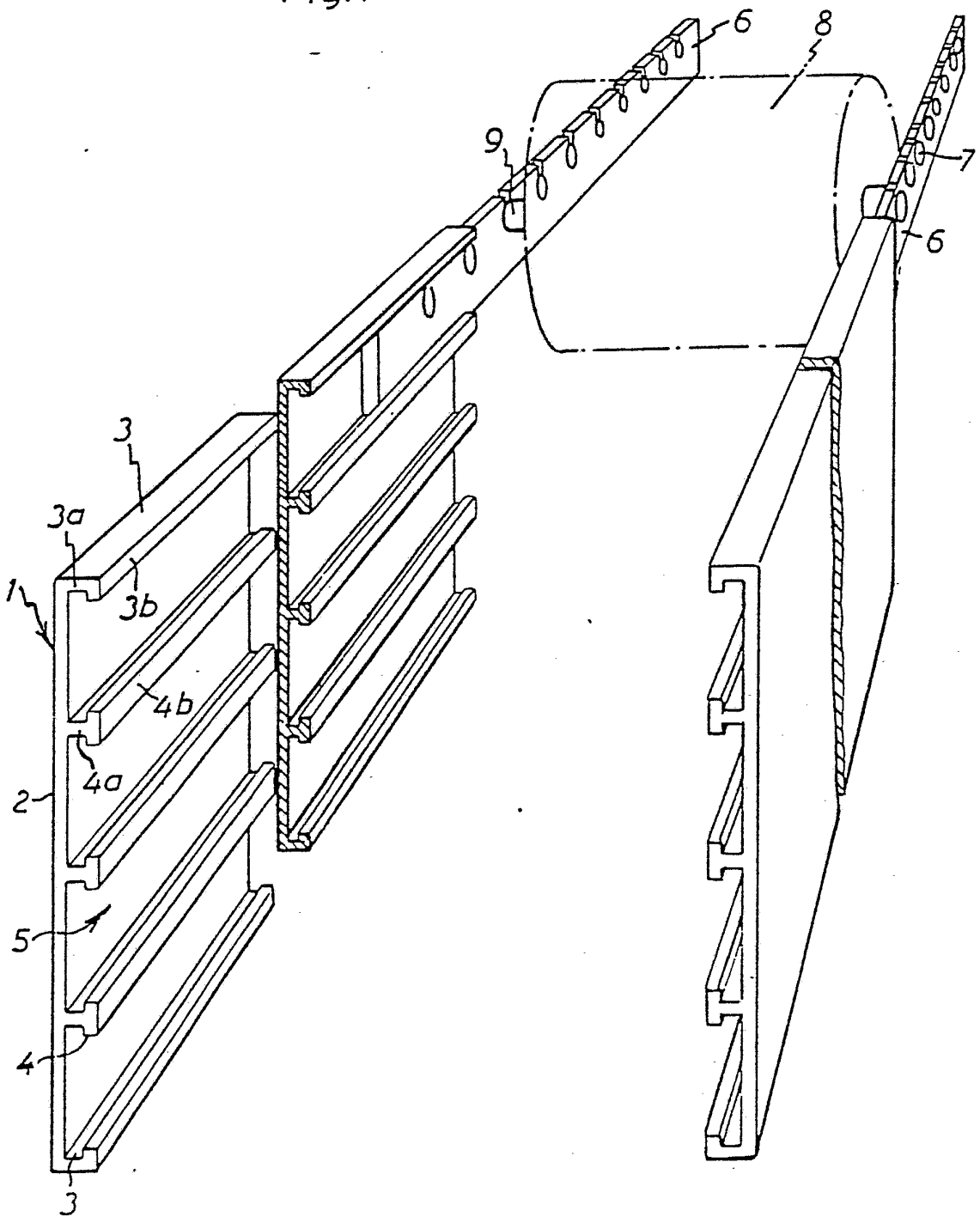
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5. Arrangement as claimed in claim 2, c h a r a c t e r i s e d in that the coupling means comprise a clamp (10) adapted to clasp one of the T-bars (4) and to serve as an attachment for e.g. a crossbracing (14).

6. Arrangement as claimed in any one of the preceding claims, c h a r a c t e r i s e d in that the coupling means comprise an endpiece (15) which has a first part (16a, 16b) insertable in the channel (5), and a second part (16c) covering the end of the channel, and that the first part has a bore (17) for receiving a bolt by means of which a connecting piece (18) can be clamped against the bars (3, 4).

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Fig. 1



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Fig.2

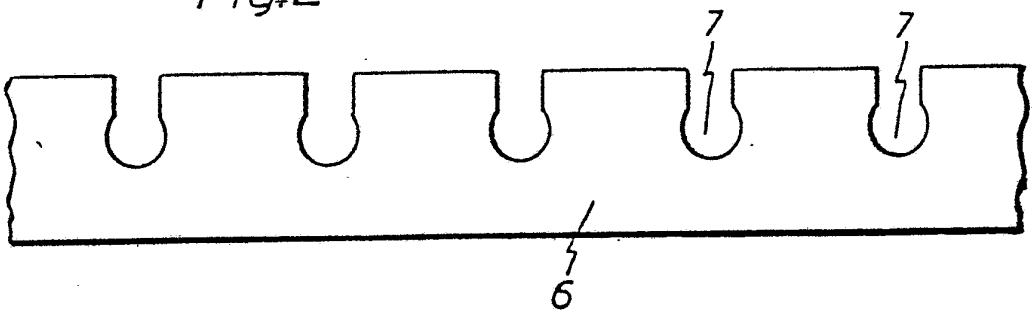
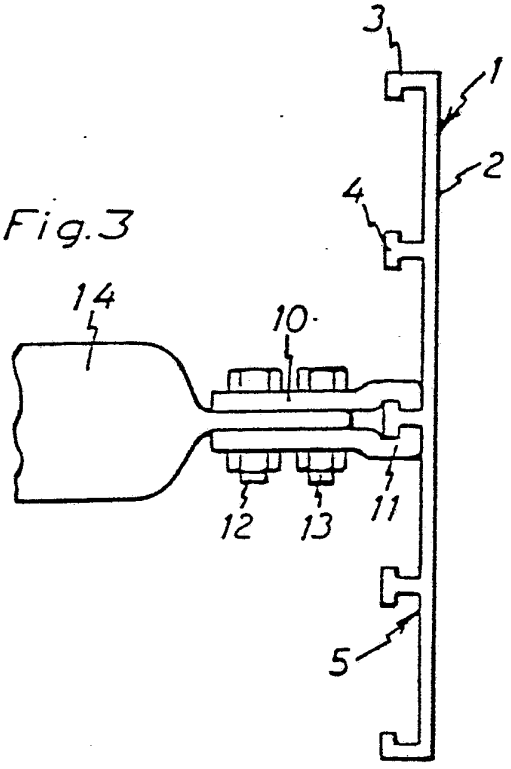


Fig.3



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Fig. 4A

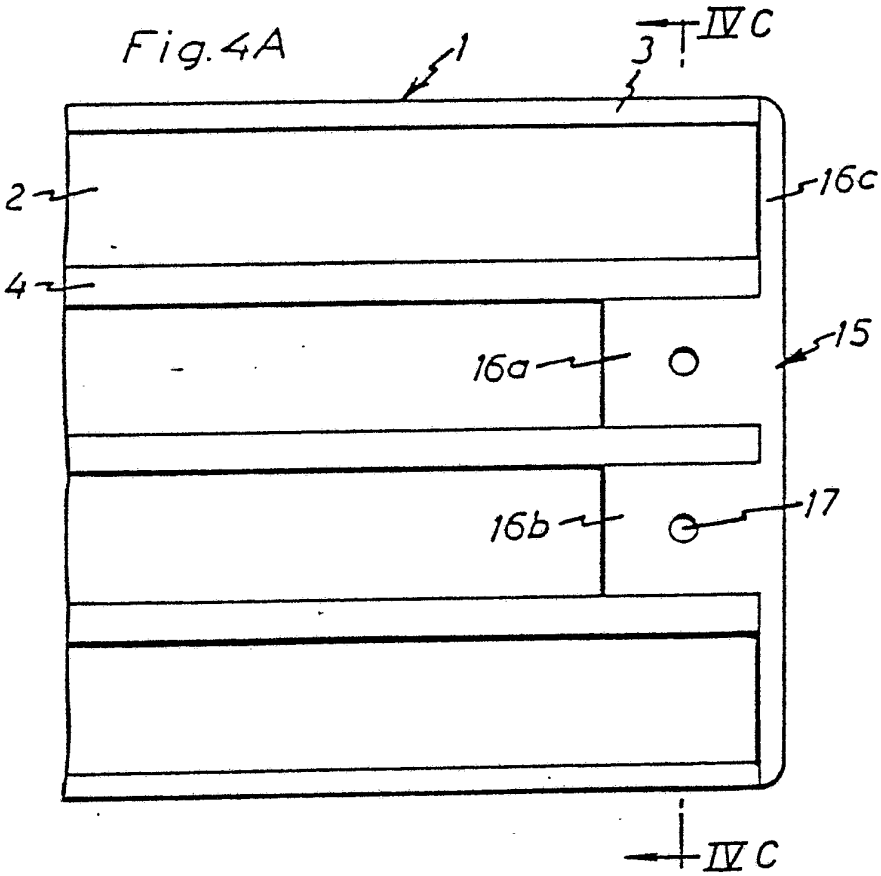


Fig. 4B

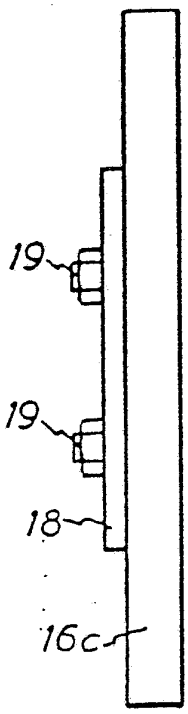
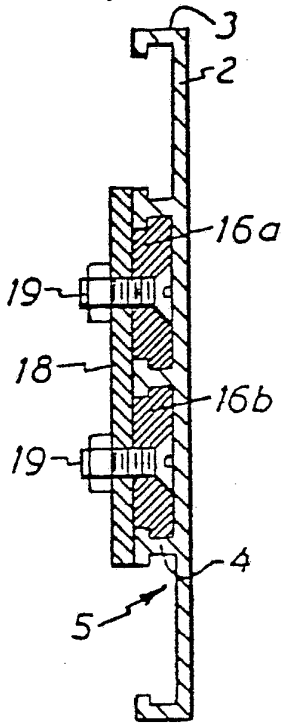
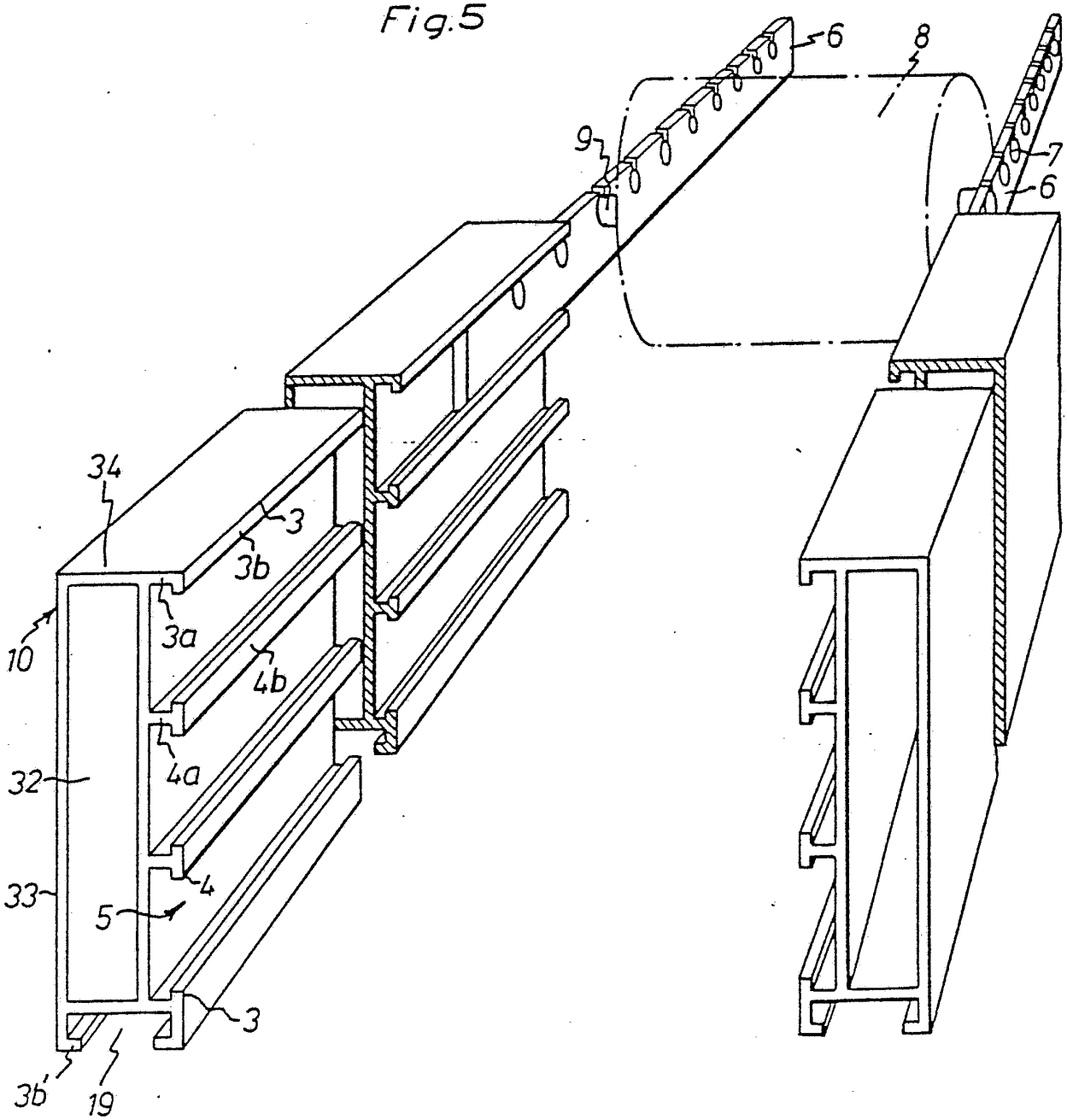


Fig. 4C



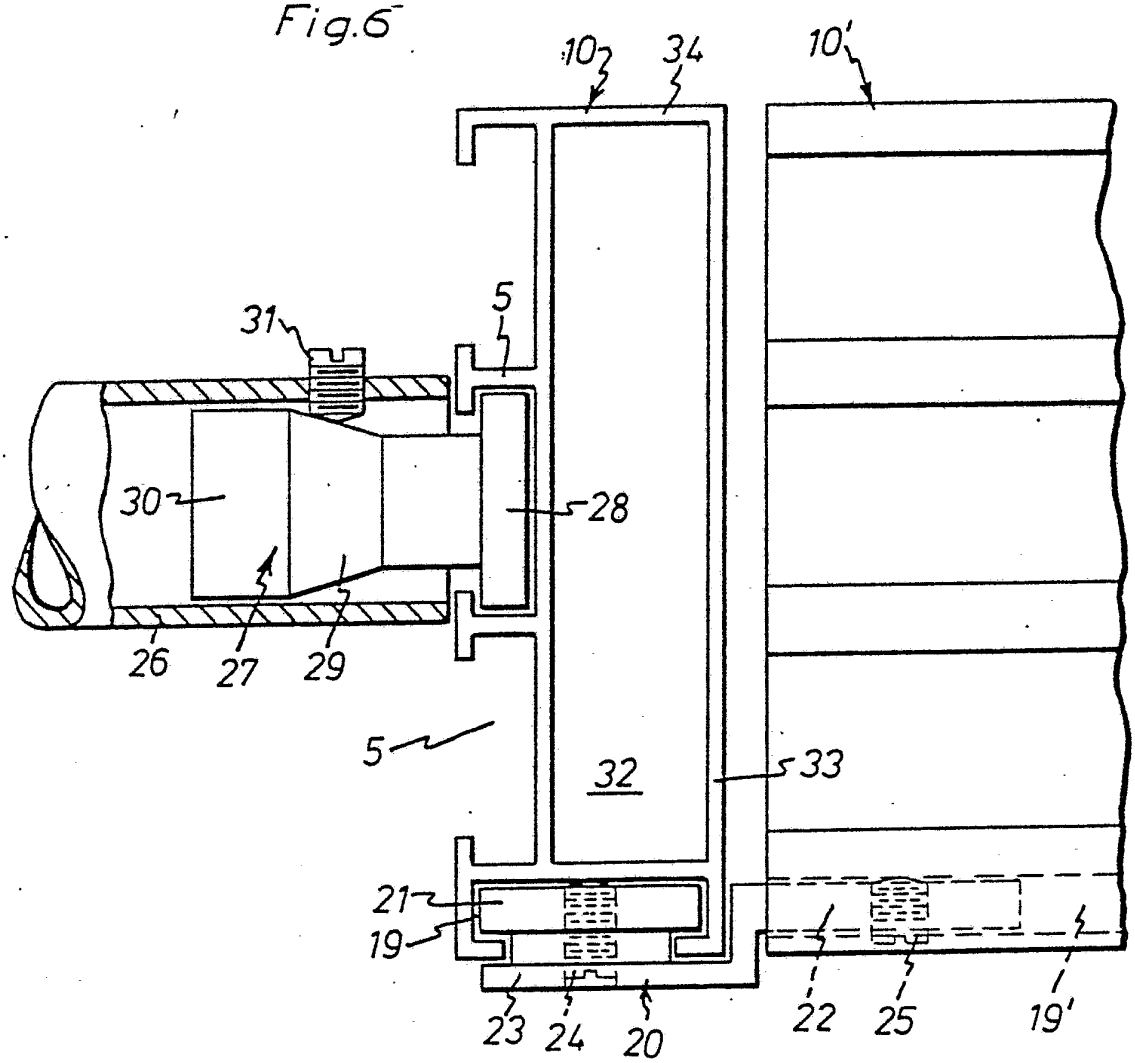
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Fig.5



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Fig.6



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Fig.7

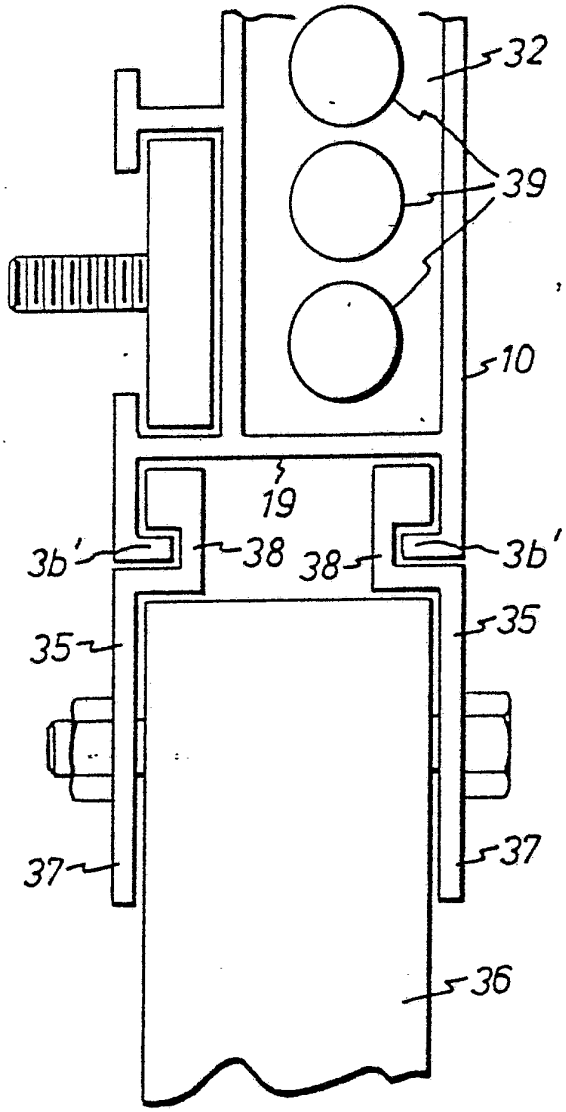


Fig.8

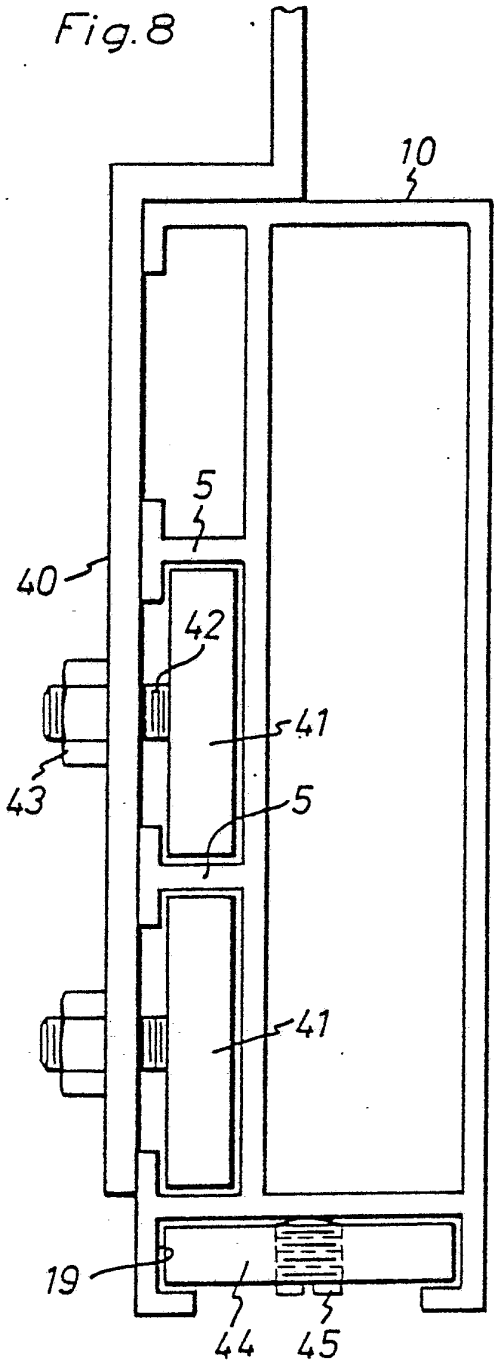
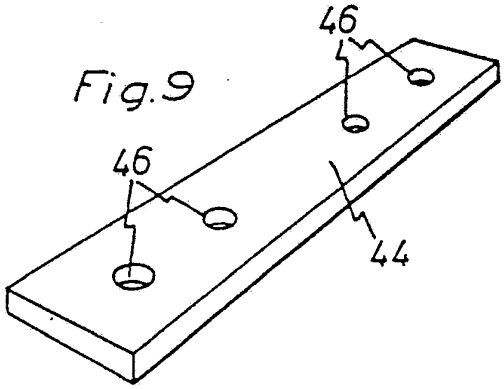


Fig.9



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INTERNATIONAL SEARCH REPORT

International Application No PCT/SE82/00355

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC 3

B 65 G 21/06

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC 3	B 65 G 13/00,11,12, 21/00,02,06,20,22, 39/00,02,09,10,12
National Cl	81e:80, 81
US Cl	193:35, 198:860-862

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category [6]	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
X	US, A, 3 825 108 (STONE) 23 July 1974	1, 2
X	US, A, 2 593 089 (BARRY) 22 August 1949	3, 4
A	US, A, 4 056 180 (GUNTI) 1 November 1977	5, 6
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IV. CERTIFICATION

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