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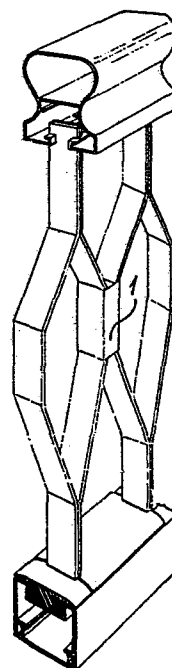
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⑤④ **Modular metal barriers to be set up by restraining.**

⑤⑦ The barrier can be set up by restraining, on the counter-posed longitudinal guides of a profile pair in parallel, shaped unions by stabilizing them in a composition succession between spacers. The composition can be blocked at the end by means of a blocking plate at the angle posts. The system allows the employ particularly for anodized aluminium profiles which can be connected without using fixing screws. It will then be possible to compose only by means of restraining enclosure barriers, staircase balustrades, terraces, gates and anything else in this connection.



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Modular metal barriers to be set up by restraining.

The invention refers to a system which permits to carry out metal barriers exclusively by means of restraining composition. The invention, which avoids the necessity of boring the components, can be used in the metal structure in general and particularly for those in anodized aluminium.

For composing barriers, at present each component is blocked by means of through screws and nuts; boring causes the weakening of the aluminium structure, an irksome mounting work, as well as the necessity of employing skilled workers. To which it is to add that the connection of anodized aluminium structures requires special screws in stainless steel. This mounting procedure turns out to be very limiting for the employ of anodized aluminium in the building industry on account of the costs and of the required worker skill. The connection of the parts, in fact, if carried out through other fixing means, would cause burr to the aluminium parts.

The invented method enables the integral solution of the problem by adopting a modular system to be carried out exclusively by means of restraining the components. The system employs three orders of components: a pair of profiled girders A and B, to be employed in parallel, the shaped unions C and D which complete the structure and are stabilized between the spacers E. The barrier can be composed by inserting on the longitudinal guides of the sections set up in parallel, the end parts properly prepared in advance of the shaped unions, bringing them into restraining position, and then by fitting the spacers and so on in a modular prosecution.

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Forms of execution are supplied in a merely indicative way with the drawings of Tables 1 and 2, where Fig. 1 is the view of the upper girder, which operates also as handrail, and Fig. 2 is a view of the lower girder. From the two figures, the central guides can be noted which are used for setting up the shaped unions. Fig. 3 is the cross section of a spacer, while Fig. 4 is the view of an upper girder with a shaped union fitted on it which can be observed in its end part. Fig. 5 is the view of a composition part with straight unions employing all system parts. Fig. 6 is a front view of a composition as seen in Fig. 5. Fig. 7 of Table 2 is the cross section of the upper girder, with a union fitted on the stabilization spacer of the projecting type, that can be noted in the terminal. Fig. 8 is the perspective view of the spacer to employ for the condition of Fig. 7. Fig. 9 is the composition perspective view employing projecting shaped unions. The use of spacers can be noted as shown in Fig. 8. Fig. 10 is the front view of the composition as per Fig. 9. Fig. 11 is a view of the particular of a plate fitted in addition for blocking the composition at the angle posts.

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The straight unions show a flat structure 1c with symmetrical recessings 2c and end parts 3c for allowing the binding condition. The upper girder (A) shows a convex envelope 1a acting as handrail with symmetrical recessing 2a and lower flat parts 3a with a central slit 4a determined by the inner lap 5a of the borders. The lower profile (B) presents shape 1b with a square base and central slit 2b determined by the inside lap of borders 3b. Distance piece (E) function is to stabilize the shaped unions of type (C) or (D), at the distance fixed in advance, by blocking them in their seats. It is characterized by plate 1e with central restraining part 2e which is inserted into the guide in a balanced condition through the pair of lugs 3e and 4e. The spacer shows an inner straight recessing for fitting a screw to fix an end plate for blocking the angle posts when the composition has been completed.

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- For mounting a flat barrier, the pair of horizontal parallel girders (A) and (B) are at first fitted on the angle post; then a pair of spacers is applied, and subsequently a fillet of type (C) and so on until the structure is completed. The set of flat fillets will be stabilized in the guides 4a and 2b by means of spacers. The intermediate connection between the unions (C) in particular can be executed by means clamp connectors 1 to be fitted and blocked in different ways.
- 75 For mounting projecting barriers, the stabilization of unions (D) on the terminals has been foreseen by means of binding seats on the spacers to obtain by composing the half recesses 5e. The projecting fillet 1d shows shaped end parts with curving 2d which act by retaining when unbinding. For the composition, the pair of distance pieces (E) is at first inserted, by fitting end parts 2d afterwards into the pair of slits 5e and by completing the binding condition by inserting the subsequent spacer pair. As the structure is completed, it can be blocked on the head distance piece by means of a screw for fixing a blocking plate to the angle post of the barrier.
- The shape of all system components may change according to the requirements of the design.
- 90 The materials, the fixing elements and the completing ones may be foreseen in different ways.

CLAIMS.

- 1) Modular metal barriers to be set up by restraining, characterized by the fact that the system employs three orders of components: a pair of profiled girders A and B, to be employed in parallel, the shaped unions C and D which complete the structure and are stabilized between the spacers E. The barrier can be composed by inserting on the longitudinal guides of the sections set up in parallel, the end parts properly prepared in advance of the shaped unions, bringing them into restraining position; and then by fitting the spacers and so on in a modular prosecution.
- 2) Modular metal barriers to be set up by restraining, according to the previous claim, characterized by the fact that the straight unions show a flat structure 1c with symmetrical recessings 2c and end parts 3c for allowing the binding condition.
- 3) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that the upper girder (A) shows a convex envelope 1a acting as handrail with symmetrical recessing 2a and lower flat parts 3a with a central slit 4a determined by the inner lap 5a of the borders.
- 4) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that the lower profile (B) presents shape 1b with a square base and central slit 2b determined by the inside lap of borders 3b.
- 5) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that distance piece (E) function is to stabilize the shaped unions of type (C) or (D), at the distance fixed in advance, by blocking them in their seats. It is characterized by plate 1e with cen-

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35 tral restraining part 2e which is inserted into the guide in a balanced condition through the pair of lugs 3e and 4e.

6) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that the spacer shows an inner straight recessing for fitting a screw to
40 fix an end plate for blocking the angle posts when the composition has been completed.

7) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that for
45 mounting a flat barrier, the pair of horizontal marallel girders (A) and (B) are at first fitted on the angle post; than a pair of spacers is applied, and subsequently a fillet of type (C) and so on until the structure is completed. The set of flat fillets will be stabilized in the guides 4a and 2b by means of
50 spacers. The intermediate connection between the unions (C) in particular can be executed by means clamp connectors 1 to be fitted and blocked in different ways.

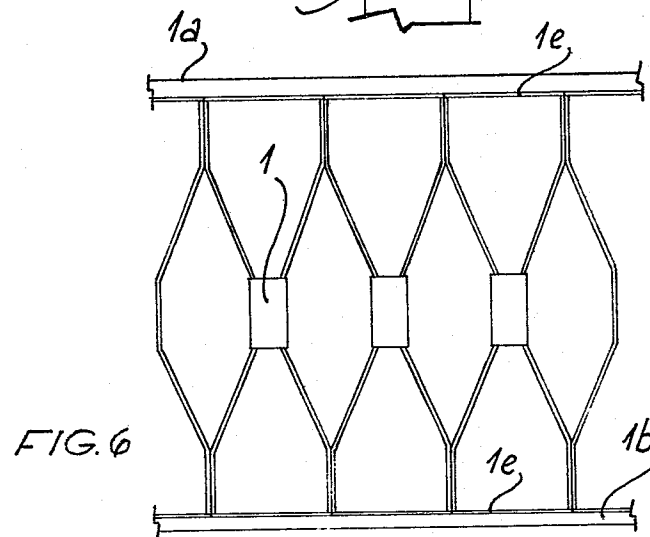
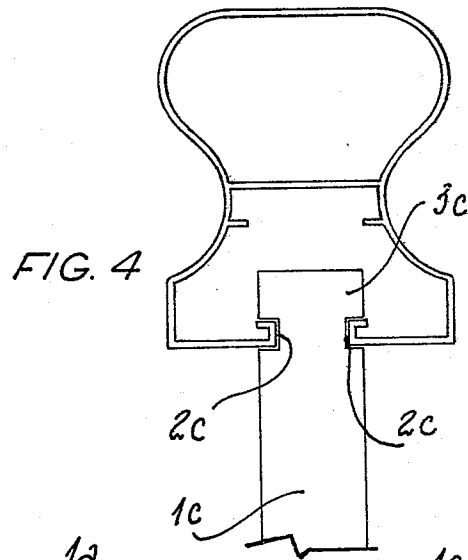
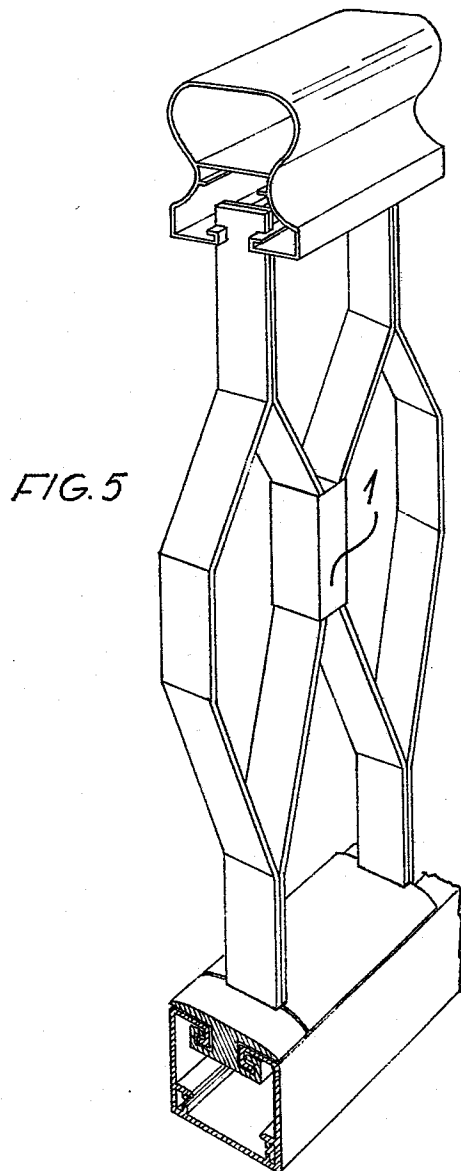
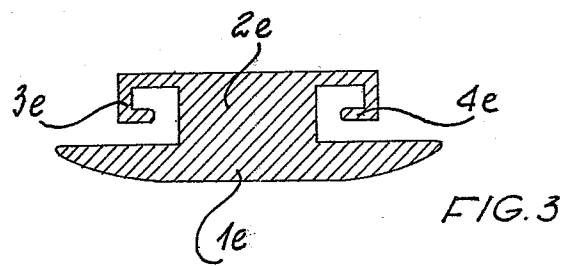
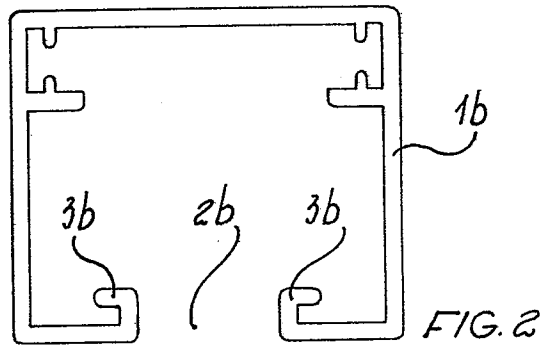
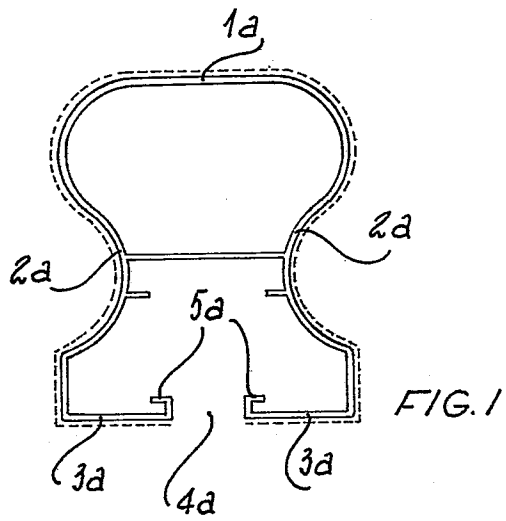
8) Modular metal barriers to be set up by restraining, according
55 ing to the previous claims, characterized by the fact that for mounting projecting barriers, the stabilization of unions (D) on the terminals has been foreseen by means of binding seats on the spacers to obtain by composing the half recesses 5e. The projecting fillet 1d shows shaped end parts with curving 2d which
60 act by retaining when unbinding. For the composition, the pair of distance pieces (E) is at first inserted, by fitting end parts 2d afterwards into the pair of slits 5e and by completing the binding condition by inserting the subsequent spacer pair:

65 9) Modular metal barriers to be set up by restraining, according to the previous claims, characterized by the fact that as the structure is completed, it can be blocked on the head dis-

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tance piece by means of a screw for fixing a blocking plate to the angle post of the barrier.

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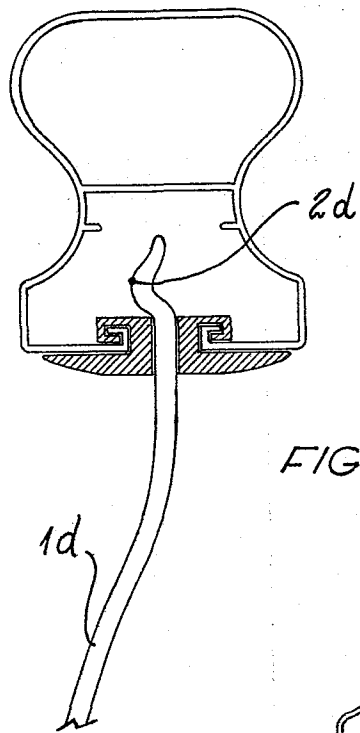


FIG. 7

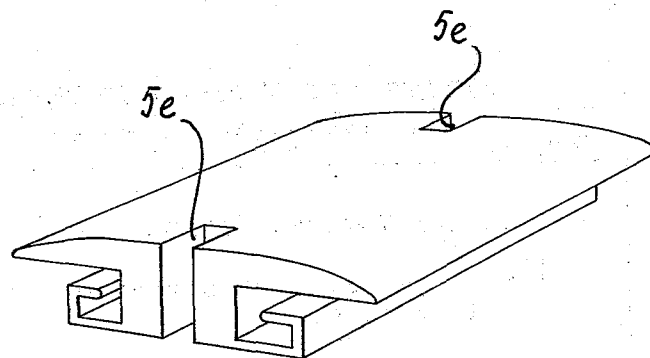


FIG. 8

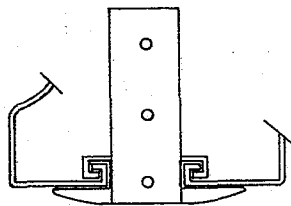


FIG. 11

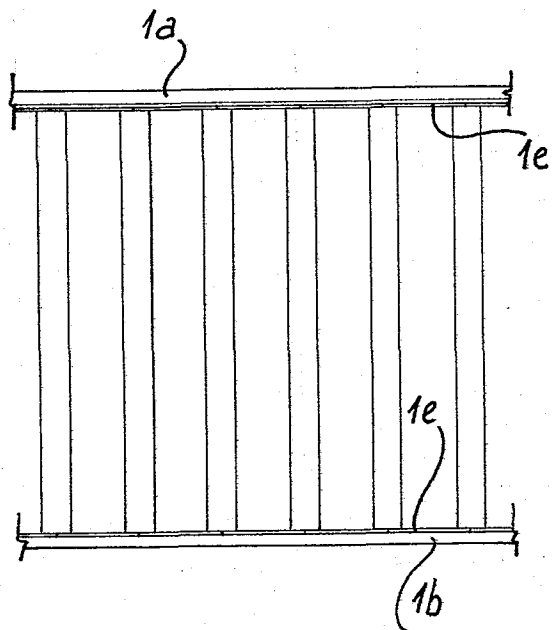


FIG. 10

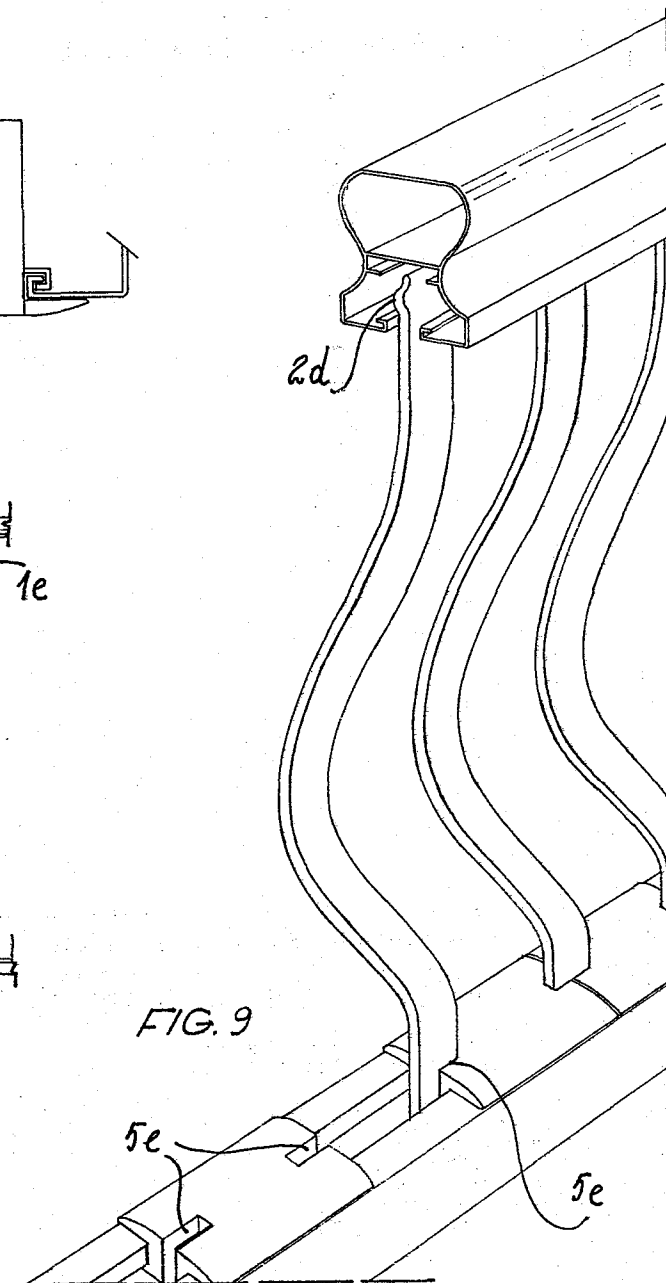


FIG. 9

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European Patent
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EUROPEAN SEARCH REPORT

Application number

EP 83 83 0071

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	DE-A-1 752 863 (ERBSLÖH) * Page 2, last paragraph; pages 3,4; figures *	1,2,4,5	E 04 F 11/18
A	FR-A-2 323 837 (FILDIER)		
A	FR-A-2 247 598 (Y.K.K.K.)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			E 04 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11-07-1984	Examiner PERROTTA A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			