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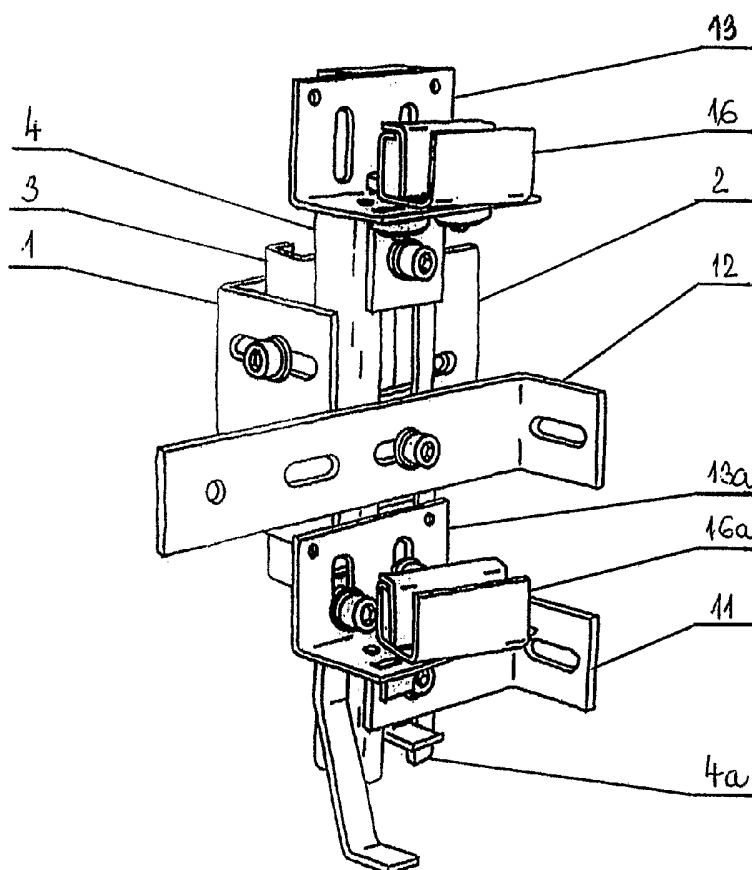
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[Continued on next page]

(54) Title: SYSTEM FOR FASTENING LININGS



(57) Abstract: Lining fastening constructional system comprising of supporting bar (4) on which is at least one inside fixing element (5) at which is fixed with the fixing screw (15) the outside fixing element (6) of the supporting bar, whereby on inside fixing element (5) is at least one gripping bracket (13) fastened with the second fixing screw (151), whereby the gripping bracket is longitudinal shaped L-profile and on surface (132) at shorter side (130a) at least two springing elements (17) are placed and on surface (133) at longer side (130b) at least one fixing hole (134) is made, whereby the gripping bracket (13) is on surface (132) of the shorter side equipped at least with two rectangular holes (135) for gripping element (16) and at least with two round holes (136) fixing the springing elements (17) or at least with one extended gripping bracket (14).



SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

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JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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SYSTEM FOR FASTENING LININGS

Technical Field

This invention relates to constructional bearing system for fastening of all kinds of lining materials in interiors and also in exteriors to create technical or decorative wall surface design or to create spatial layout in room, to create sceneries and also to create protective and safety walls, especially designs which require variability of surface treatment and fast design variation and also an operative transposition of the constructional system. The present constructional system enables to create various shaped rooms and also cusped walls with various tilt angles and also rotary walls.

Till Now Known State of the Technique

Till now for wall lining standard systems are used mostly pasting various materials on wall surfaces and ceilings. These methods are disadvantageous because of the fact that the applied lining is steady attached without the possibility of a non-destructive removal and displacement. The removal of the lining is very laborious, noisy, harmful for the environment and economically serious, and at removal the lining is corrupted or damaged. Further lining fastening methods are known using various metallic or non-metallic bearing or frame structures on which the lining materials are fastened using screws, rivets or nails. Such lining fastening methods are suitable for stable created wall linings, but the protective and safety function of such structures is very low. The common disadvantage of the till now known lining fastening systems is the static sterility on lining base and the impossibility to change, replace simply flexible the lining or quickly, operatively to locate the linings in the room.

Substance of the Invention

The object of the invention removing the above negatives is the constructional solution of the lining fastening system with the possibility of a variable layout and location of the constructional system with lining. The substance of the constructional system

according to the invention is that it consists of the supporting bar on which at least one inside fastening element is located on which the outside fastening element of the supporting bar is fixed with fixing screw, whereby on inside fixing element the gripping bracket is mounted fixed with the second fixing screw, whereby the gripping bracket is shaped as a longitudinal L profile and on the surface of its shorter side at least two springing elements are located and on the surface of its longer side is at least one fixing hole. The gripping bracket is fitted on the surface of the shorter side at least with two rectangular holes for setting of the gripping element and at least with two round holes for fixing of the springing elements, whereby at least one hole is in upper part on the surface of the longer side of the gripping bracket. The gripping bracket is alternatively double sided so that on the surface of the shorter side of the gripping bracket are at least two springing elements and on opposite surface of the gripping bracket's shorter side at least two counter-directed springing elements are inserted. The gripping brackets with two springing elements are intended especially as border brackets. The extended gripping bracket on gripping bracket's longer side is equipped with oval holes and the shorter side is equipped with two pairs of springing elements and for its placing apart from the border surface it is equipped on opposite surface of the shorter side with two pairs of counter-directed springing elements. On gripping bracket further rectangular holes are made into which the gripping elements are placed in which the lining is fastened. For completion of the lining in constructional system in upper and/or lower horizontal plane on gripping bracket in second fastening hole by means of the third fixing screw the holder and locking element of the horizontal border bar is fixed, whereby between the inside fixing element of the bearing bar and the outside fixing element of the bearing bar the locking plug of the lock is inserted. In horizontal border bar is the transversal groove on horizontal border bar into which the gripping elements are inserted in which the lining is inserted. For fastening of the lining outside of the border field the constructional system is equipped with the enlarged gripping bracket made as a longitudinal L-profile and its surface on longer side is equipped with oval hole for fixing on bearing bar and fastening of the holder on horizontal border bar, of the locking element on horizontal border bar and of the locking plug on lock, whereby on surface of its shorter side two pairs of springing elements are placed and for the placing outside of the border field on opposite surface of the shorter side two pairs of

opposite directed springing elements are placed. For completion of the constructional system in vertical direction on bearing bar the extended holder of the vertical border bar is fixed by means of the fourth fixing screw, which is located on inside fixing element of the supporting bar, whereby the longitudinal holder of the vertical border bar is an enlarged L-profile, whereby on its surface at shorter side an oval hole is made and on surface at its longer side at least two oval holes are made and at least one round hole. Alternatively on supporting bar in front of the outside fixing element the short holder of the border bar is positioned, fixed by means of the fixing screw. The short holder of the border bar is a horizontal L-profile, whereby on the surface of its shorter side at least one oval hole and on surface of its longer side the fixing hole for the short holder of the vertical border bar are made. In order to ensure the required dimensions of the constructional system on surface of the bearing bar the rectifying element of the supporting bar for assembling the supporting bars and for fixing of the constructional system in room is located, which is equipped with the shifting jointing element of the supporting bar and on opposite side of the rectifying element on supporting bar the fixed jointing element of the supporting bar is fastened, whereby the rectifying element in conjunction with the shifting jointing element and fixed jointing element of the supporting bar enable to create lining surfaces with various inclination angles and to set the distance from base on which the constructional system with the lining is mounted. The lining is fixed by means of the made circumferential groove with the gripping elements, which are fixed in gripping brackets or in extended gripping brackets, whereby in horizontal border bar the transverse groove of the horizontal border bar is made into which the locking element of the horizontal border bar is inserted, whereby in horizontal border bar is the lock with the latch protecting the lining against disassembling. The constructional system is equipped with protection against unauthorized disassembling or theft so that in horizontal border bar is the lock with the latch. This protection may be in upper and/or in lower horizontal border bar.

Abstract of the Figures on Drawings

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The invention is clarified by means of figures on drawings. The Fig. 1 plots the basic unit of the constructional system for fastening the linings. The Fig. 1a presents the basic

unit of the constructional system for fastening the linings with inserted gripping elements for placing and fastening of the lining into constructional system, the Fig. 1b presents the extended unit of the constructional system with gripping elements stated for constructional system inside of its area. The figures 2, 3, 4, 5, 5a, 6, 7, 8, 9, 10, 11, 12, 13, 14, 14a, 14b, 15, 16 and 17 present the basic elements of the constructional system, the Fig. 2 plots the stable jointing element of the supporting bar, the Fig. 3 the shifting jointing element of the supporting bar, the Fig. 4 the rectifying element of the supporting bar, the Fig. 5 the supporting bar, the Fig. 6 the inside fixing element of the supporting bar, Fig. 7 the outside fixing element of the supporting bar, Fig. 8 the inside flat fixing element of the supporting bar, the Fig. 9 the holder of the horizontal border bar, Fig. 10 the locking element of the horizontal border bar, Fig. 11 the locking plug of the lock, Fig. 12 the short holder of the vertical border bar, Fig. 13 the extended holder of the vertical border bar, Fig. 14 the gripping bracket and Fig. 14a the gripping bracket with springing elements and Fig. 14b the extended gripping bracket, Fig. 15 the fixing screws, Fig. 16 the gripping element and Fig. 17 presents the springing elements. The Fig. 18 plots the set up of the gripping bracket with springing elements set on fixing element of the supporting bar and Fig. 18a plots the positioning of the gripping element on gripping bracket, Fig. 19 plots the set up of the gripping bracket with the holder of the lower bar, locking element of the horizontal border bar and locking plug of the lock, Fig. 19a plots the set up as in Fig. 19 with gripping element, Fig. 20 plots the gripping of the short holder on vertical border bar, Fig. 21 plots the gripping of the extended holder on vertical border bar. Fig. 23 plots the constructional system with mounted lining in cross-section with horizontal border bar with lock in closed position and Fig. 24. plots the constructional system with mounted lining in cross-section with horizontal border bar with lock in released position. Fig. 25 plots the constructional system in cross-section with double sided lining.

Examples for Realization of the Invention

30 Example 1

The lining fastening constructional system according to the invention is in concrete example represented in figures 14, 14a, 18 and 18a comprising of gripping bracket 13, which is equipped on surface 132 of the shorter side with four longitudinal holes 135, 135a, 135b and 135c for the positioning of the gripping element 16 and four round holes 136, 136a, 136b and 136c for fastening of the springing elements 17, whereby the gripping bracket 13 is in upper surface part 133 of the longer side equipped with holes 137 and 137a and in middle surface part 133 of the longer side are two oval fastening holes 134 and 134a. The gripping bracket 13 is fastened on supporting bar 4 by means of the fixing screw 151 positioned in inside fixing element 5 of the supporting bar and is fixed with the outside fixing element 6 of the supporting bar, which is fixed with the fixing screw 15. The mentioned gripping bracket 13 is used as border gripping bracket without locking.

Example 2

The lining fastening constructional system according to the invention is in concrete example represented in figures 1, 1A, 1b, 14, 14a, 14b, 18 and 18a according to example 1 is on opposite surface of the shorter side 132a of the gripping bracket equipped with two counter directed springing elements 17a. This gripping bracket 13 is used as continuous gripping bracket.

Example 3

The lining fastening constructional system according to the invention is in concrete example represented in figures 19 and 19a according to example 1 on gripping bracket 13 in second fixing hole 134a by means of third fixing screw 152 is fixed the holder 8 and the locking element 9 of the horizontal border bar 18, whereby between the inside fixing element 5 of the supporting bar and the outside fixing element 6 of the supporting bar the locking plug 10 of the lock 19 is inserted, whereby the locking plug 10 has on surface 10a the hole 101 for the locking plug and the locking element 9 on horizontal border bar has on surface 9a of the locking element the oval hole 91, which enables to

use shifting lock-in or unlocking of the horizontal border bar 18. This gripping bracket 13 is used as border gripping bracket with locking system.

Example 4

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The lining fastening constructional system according to the invention is in concrete example represented in figures 1b and 14b according to example 1 the gripping bracket is made in form of extended gripping bracket 14, which is equipped on surface 143 of the gripping bracket with oval holes 144, 144a, 144b, 144c, 144d and on surface 142 are positioned the springing elements 17 and 17a and for its location out of the border bar on opposite surface 142a of the shorter side is equipped with two pairs of counter-directed springing elements 17 and 17a.

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Example 5

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The lining fastening constructional system according to the invention is in concrete example represented in figures 1b and 14 b according to Example 4 the gripping bracket 14 is extended made in form of a longitudinal L-profile and on surface 143 of the longer side is equipped with oval holes 144, 144a, 144b, 144c, 144d for its fixing on supporting bar 4 and for fastening of the holder 8 of the horizontal border bar, locking element 9 of the horizontal border bar and locking plug 10 of the lock.

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Example 6

The lining fastening constructional system according to the invention in concrete example represented in Fig. 1 comprises of supporting bar 4 in which the inside fixing element 5 is positioned, on which with the outside fixing element 6 of the supporting bar is fastened with fixing screw 15, whereby on inside fixing element 5 the gripping bracket 13 is inserted fixed with the second fixing screw 151, whereby the gripping bracket 13 is made in form of a longitudinal L-profile and on surface 132 of the shorter side at least two springing elements 17 are located and on surface 133 of the longer side oval fixing holes 134 and 134a are made. In gripping bracket 13 on surface 132 of the

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shorter side four rectangular holes 135, 135a, 135b and 135c are made for the positioning of the gripping element 16 and four round holes 136, 136a, 136b and 136c for fixing of the springing elements 17 and 17a, whereby at gripping bracket in upper part 133 on surface of the longer side two holes 134 and 134a are made. The gripping bracket 13 is double sided so that on surface of the shorter side 132 of the gripping bracket two springing elements 17 are located and on opposite surface of the shorter side 132a on gripping bracket are two counter-directed springing elements 17a. In gripping bracket 13 are further four rectangular holes 135, 135a, 135b and 135c into which the gripping elements 16 are inserted for fastening of the lining 20. In order to finish the lining 20 on constructional system at upper and/or lower surface on gripping bracket 13a fixed in second fixing hole 134a by means of the fixing screw 152 is the holder 8 of the horizontal border bar and the locking element 9 of the horizontal border bar, whereby between the inside fixing element 5 of the bearing bar and outside fixing element 6 of the bearing bar the locking plug 10 of the lock is inserted. In horizontal border bar 18 the transversal groove 181 of the horizontal border bar in which the gripping elements 16 are inserted and into which the lining 20 is mounted. In order to finish the constructional system in vertical level to supporting bar 4 the extended holder 12 of the vertical border bar is fixed by means of the fourth fixing screw 153, which is located in inside fixing element 5 of the supporting bar, whereby the extended holder 12 of the vertical border bar is extended L-shaped, whereby on its surface 121 at shorter side 121a is the oval hole 12a and on surface at its longer side 122 are two oval holes 12b and 12c and one round hole 12d. On supporting bar 4 below the extended holder 12 at vertical border bar is the second gripping bracket 13a and in its second fixing hole 134a by means of the third fixing screw 152 is fixed the holder 8a and the locking element 9 on horizontal border bar 18, whereby between inside fixing element 5 on supporting bar and outside fixing element 6 on supporting bar the locking plug 10 of the lock 19 is inserted. Below the gripping bracket 13a is on supporting bar 4 in front of outside fixing element 6 the short holder of the vertical border bar 11 fixed with fixing screw 15a.

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Example 7

Lining fastening constructional system according to the invention in concrete example represented in Fig. 1 according to example 6, which has on rear surface 4ab on supporting bar the rectifying element 3 of the supporting bar for jointing the supporting bars 4 up to 4n and for fixing the constructional system in room, on which the shifting jointing element 2 is fixed and on opposite side of the rectifying element 3 is fastened the fixed jointing element 1 of the supporting bar, whereby the rectifying element 3 in conjunction with the shifting jointing element 2 and fixed jointing element 1 enables to make lining surfaces with various inclination angles and to set the distance from base on which the constructional system with the lining 20 is located.

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Example 8

Lining fastening constructional system according to the invention in concrete example represented in Fig. 1 and 1a according to examples 6 and 7, which has on gripping bracket 13 the gripping element 16 and on gripping bracket 13a the gripping element 16a.

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Example 9

Lining fastening constructional system according to the invention in concrete example represented on Fig. 1b according to examples 6 or 7, with extended gripping bracket 14 on which the gripping elements 16 are mounted.

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Example 10

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Lining fastening constructional system according to the invention in concrete example represented on Fig. 1 and 1a according to examples 6 and 7 with the gripping element 16 on gripping bracket and with the gripping element 16a on gripping bracket 13a.

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Example 11

Lining fastening constructional system according to the invention in concrete example represented on Fig. 20 with the short holder 11 of the vertical border bar fixed on supporting bar 4 by means of the fixing screw 15 and the inside plane fixing element 7 of the supporting bar.

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Example 12

Lining fastening constructional system according to the invention in concrete example represented on Fig. 21 with the extended holder 12 of the vertical border bar on supporting bar 4 fixed by means of fixing screw 15 and inside fixing element 5 on supporting bar.

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Example 13

Lining fastening constructional system according to the invention in concrete example represented on Fig. 22 according to examples 6 and 7 having on supporting bar 4 and 4a the rectifying element 3 for jointing of the supporting bars and for creating of the constructional system in requested dimensions and design, whereby in supporting bar 4 is the inside fixing element 5 of the supporting bar fixed by outside fixing element 6 of the supporting bar and with fixing screw 15 fixed in hole 53 on inside fixing element 5 of the supporting bar, whereby the outside fixing element 6 of the supporting bar is equipped with the latch 6a positioned in hole 52 of the inside fixing element 5 of the supporting bar and the hole 51 of the inside fixing element 5 on supporting bar is designed for placing of the gripping bracket 13 or of the extended gripping bracket 14 and on supporting bar 4a is the inside fixing element 5a of the supporting bar, which is fixed with the outside fixing element 6a of the supporting bar and with the fixing screw 15a fixed in hole 53 on inside fixing element 5a of the supporting bar, whereby the outside fixing element 6a of the supporting bar is equipped with the latch 6 positioned in hole 52 of the inside fixing element 5a on supporting bar and the hole 51 on inside fixing element 5a of the supporting bar is designed for placing of the gripping bracket 13 or extended gripping bracket 14a.

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Example 14

The lining fastening constructional system according to the invention in concrete example represented on Fig. 23 plots the fitting of the lining 20 by means of the made circumferential lining groove 200 in lining, in which the gripping elements 16 up to 16n are inserted, which are fixed on gripping brackets 13 up to 13n or on extended gripping brackets 14 up to 14n, whereby on horizontal border bar 18 is the transverse groove 181 in horizontal border bar into which the locking element 9 of the horizontal border bar is inserted, whereby in horizontal border bar 18 is the lock 19 with the latch 191 ensuring the lining against disassembling in locked position.

Example 15

The lining fastening constructional system according to the invention in concrete example represented on Fig. 24 plots the constructional system with lining as according to example No. 13 with the lock 19 unlocked position.

Example 16

The lining fastening constructional system according to the invention in concrete example represented on Fig. 25 plots the constructional system with lining 20, which is mounted in continuous gripping bracket 14 up to 14n by means of gripping elements 16 up to 16n.

25 Industrial Utilizability

The lining fastening constructional system can be well used in piece production, serial production and also in automated production and it is utilizable wheresoever it is necessary or desirable to fasten arbitrary planar materials for various surfaces and for various purposes, e.g. glass, plastics, wood, metal whether complete materials as well as perforated materials, sieves, gratings, structured materials, sound accomodating

materials and similar materials, especially there, where variability at changes of linings and fast variability of for their lay-out in room is required.

The utilization of the constructional system is very various, e.g. for decorative purposes, interiors, wall facing, various sceneries, for broadcasting telecasting studios and also for exhibition purposes, for arrangement of show-rooms, for making of panels and party walls. The above utilization does not limit further possibilities at application of the presented invention.

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PATENT CLAIMS

1. Lining fastening constructional system characterised in that it comprises of the supporting bar (4) in which at least one inside fixing element (5) is set on which the outside fixing element (6) of the supporting bar is fixed with the fixing screw (15), whereby on inside fixing element (5) at least one gripping bracket (13) is set fixed with the second fixing screw (151), or at least one extended gripping bracket (14), whereby the gripping bracket is an extended L-shaped profile and on the surface (132) of the shorter side (130a) at least two springing elements (17) are set and on surface (133) of the longer side (130b) at least one fixing hole (134), or at least one extended gripping bracket (14) is set.
2. Lining fastening constructional system according to claim 1 characterised in that on gripping bracket (13) on surface (132) of the shorter side at least two rectangular holes (135) for the gripping element (16) and at least two round holes (136) for fixing of the springing elements (17) are made.
3. Lining fastening constructional system according to claim 1 characterised in that on gripping bracket (13) at upper surface part (133) of the longer side at least one hole (137) is made.
4. Lining fastening constructional system according to claim 1 characterised in that on gripping bracket (13) on surface (132) of the shorter side at least two springing elements (17) and on opposite surface (132a) of the shorter side at gripping bracket at least two counter-directed springing elements (17a) are placed.
5. Lining fastening constructional system according to claim 1 characterised in that the gripping bracket (13) is an extended gripping bracket on which at surface (143) of the gripping bracket oval holes (144, 144a, 144b, 144c, 144d) are made and at surface (142) springing elements (17 and 17a) are set and for its

positioning outside of the border area on opposite surface (142a) of the shorter side are two pairs of counter-directed springing elements (17 and 17a)

- 5 6. Lining fastening constructional system according to claim 1, 2, 3, and 4 characterised in that at least in one rectangular hole (134) is placed the gripping element (16) into which the lining (20) is inserted.
- 10 7. Lining fastening constructional system according to claim 1 characterised in that on gripping bracket (13) in second fixing hole (134a) by means of the third fixing screw (152) the holder (8) and the locking element (9) of the horizontal border bar (18) is fixed, whereby between the inside fixing element (5) of the supporting bar and outside fixing element (6) of the supporting bar the locking plug (10) of the lock (19) is inserted.
- 15 8. Lining fastening constructional system according to claims 1 and 2 characterised in that on supporting bar (4) the extended holder (12) of the vertical border bar is fastened by means of screw (153), which is set in inside fixing element (5) of the supporting bar.
- 20 9. Lining fastening constructional system according to claim 7 characterised in that the extended holder (12) of the vertical border bar is extended L-shaped, whereby on its surface (121) at shorter side (121a) the oval hole (12a) is made and on surface (122) at its longer side (122a) at least two oval holes (12b, 12c) and at least one round hole (12d) are made.
- 25 10. Lining fastening constructional system according to claims 1 to 8 characterised in that on supporting bar (4) is in front of the outside fixing element (6) positioned the short holder of the vertical border bar (11) fixed with fixing screw (15).
- 30 11. Lining fastening constructional system according to claims 1 to 8 characterised in that on supporting bar (4) the short holder of the vertical border bar

(11) is fixed by means of the inside fixing element (7) and the sixth fixing screw (155)

- 5 12. Lining fastening constructional system according to claim 1 characterised in that the short holder of the vertical border bar (11) is lay L-shaped, whereby on surface (11a) its shorter side (11c) at least one oval hole (114) is made and on surface (11b) at its longer side (114) the oval hole (113) for the short holder of the vertical border bar.
- 10 13. Lining fastening constructional system according to claim 1 characterised in that on surface (4aa) on supporting bar (4) is the rectifying element (3) of the supporting bar jointing the supporting bars (4 to 4n) and fastening the constructional system in room, on which the shifting jointing element (2) of the supporting bar is fixed and on oppositeside on rectifying element (3) the fixed
- 15 jointing element (1) of the supporting bar is fastened.
14. Lining fastening constructional system according to claims 1 to 12 characterised in that on horizontal border bar (18) transverse groove (181) of the horizontal border bar is made into which is inserted the locking element (9) of
- 20 the horizontal border bar, whereby on horizontal border bar (18) is the lock (19) with latch (191)
15. Lining fastening constructional system according to claims 1 to 13 characterised in that on lining (20 to 20n) circumferential lining groove (200) is
- 25 made in which the gripping elements (16 to 16n) are inserted.
16. Lining fastening constructional system according to claims 1 to 14 characterised in that by means of rectifying elements (3 to 3n) the constructional system constructed by supporting bars (4 to 4n) is made.

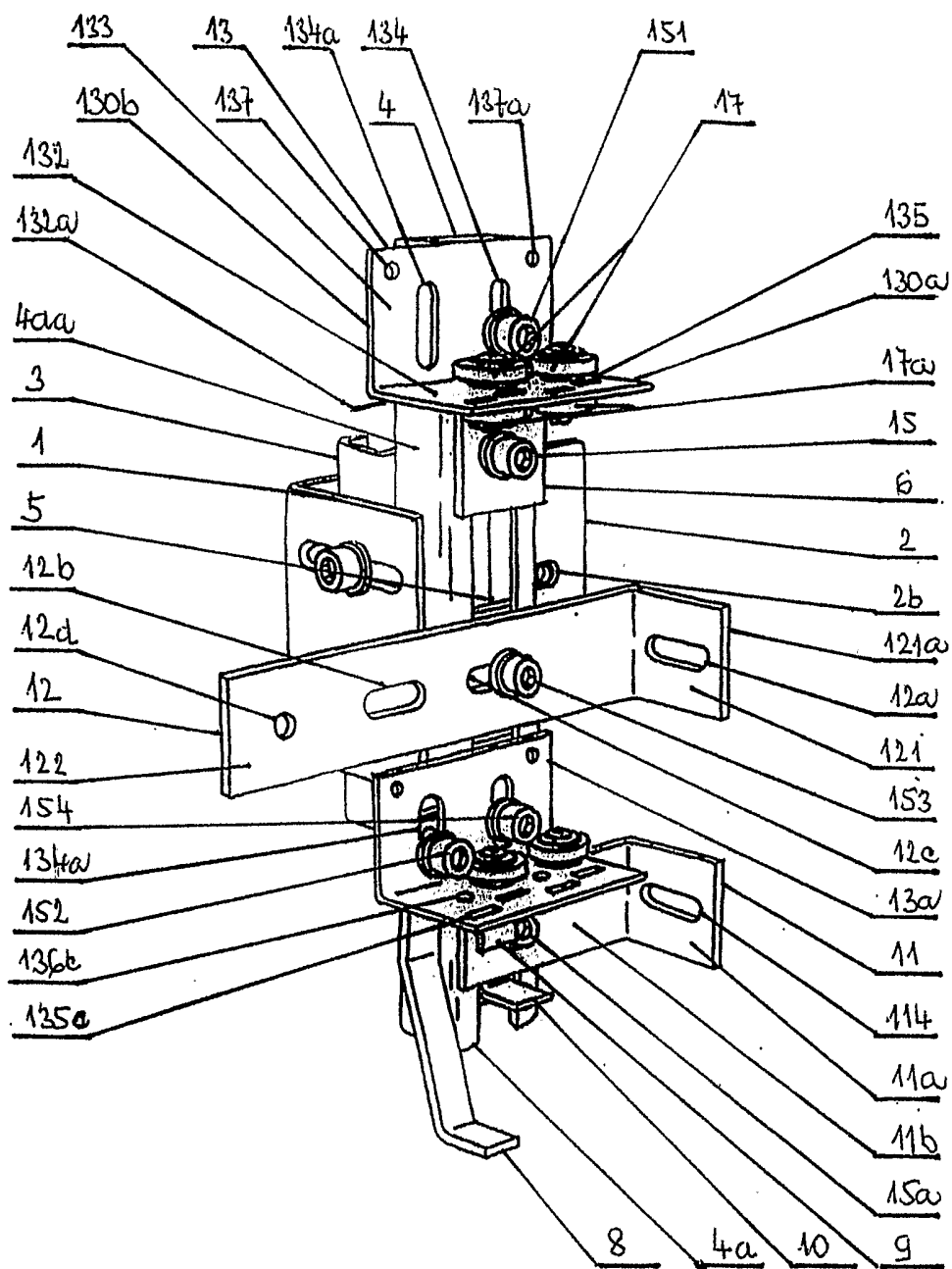


FIG. 1

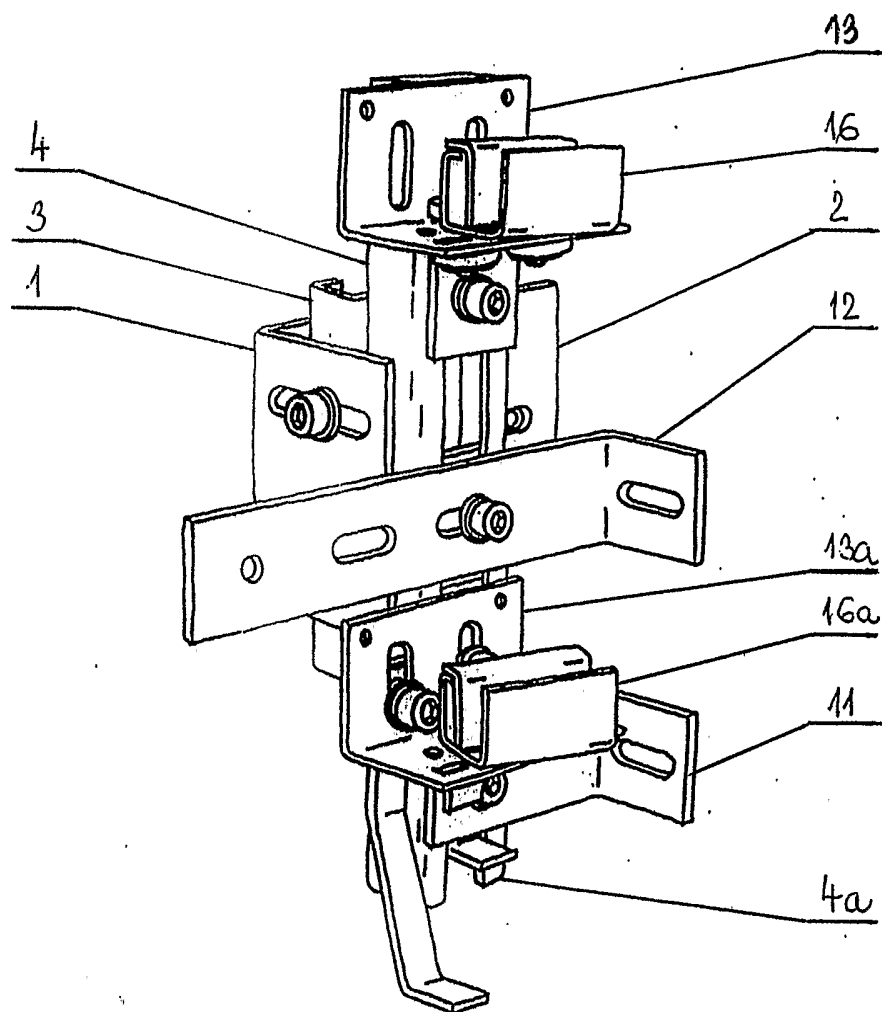


FIG. 1a

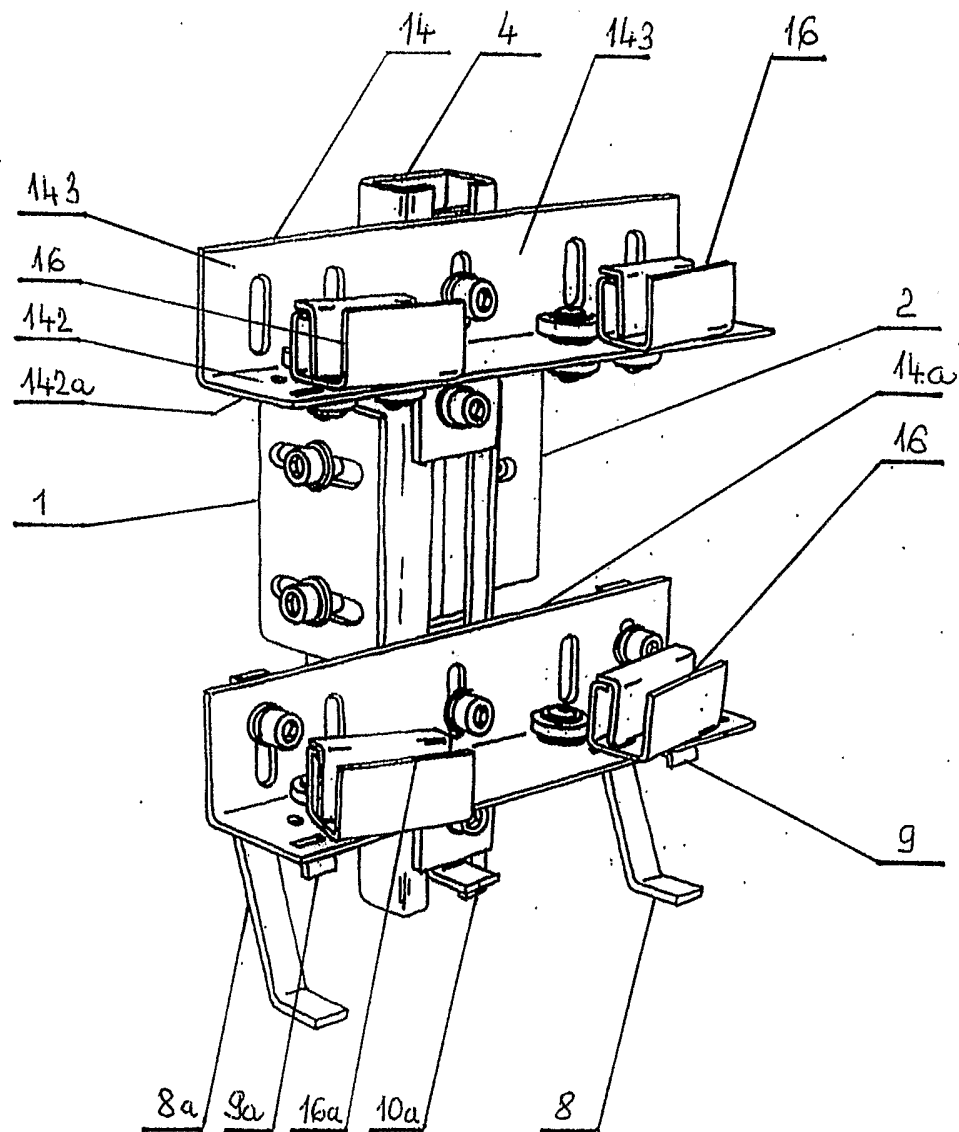


FIG. 1b

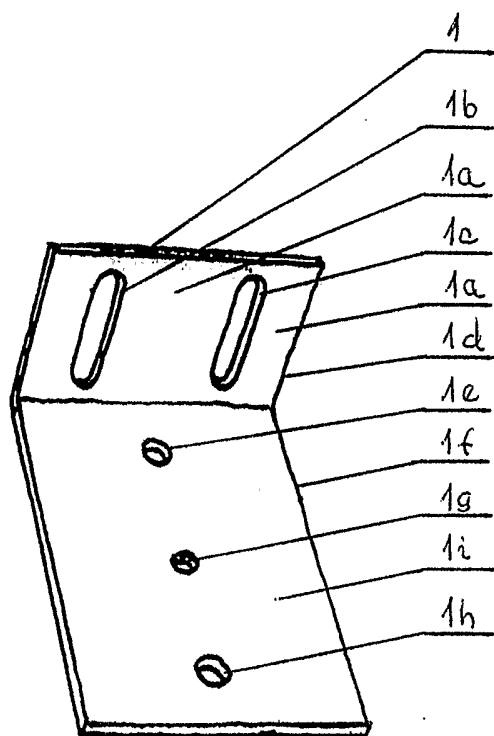


FIG. 2

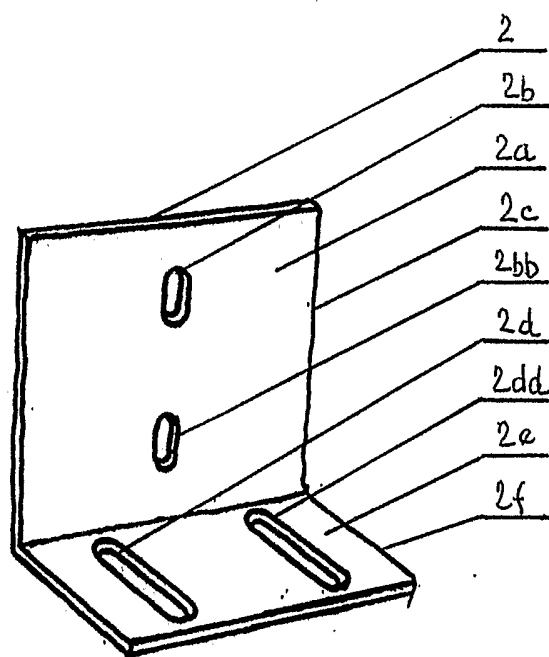


FIG. 3

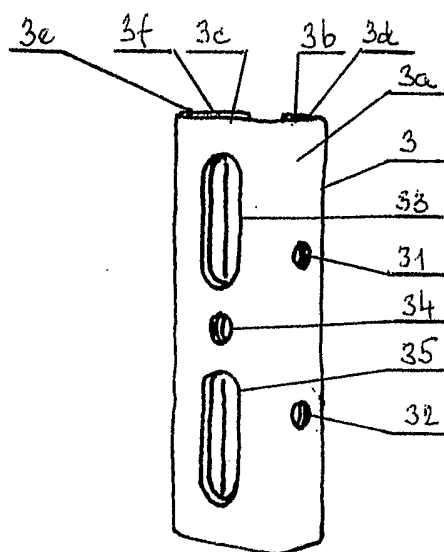


FIG. 4

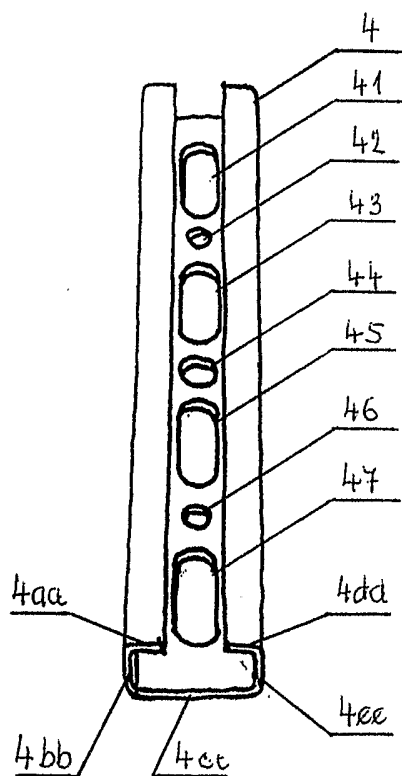


FIG. 5

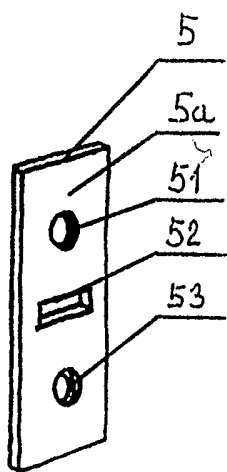


FIG. 6

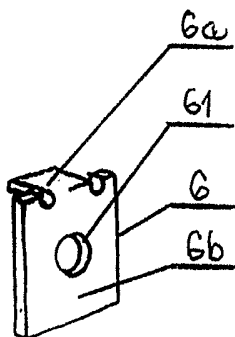


FIG. 7

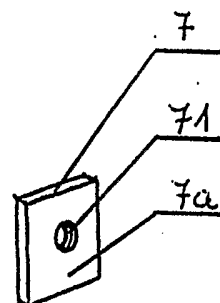


FIG. 8

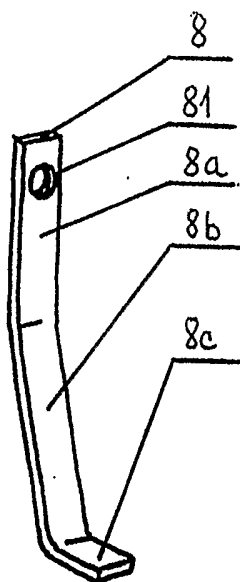


FIG. 9

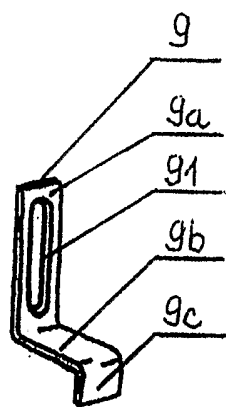


FIG. 10

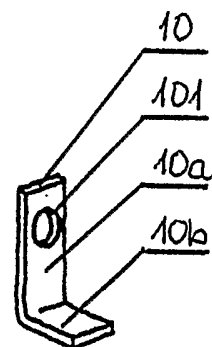


FIG. 11

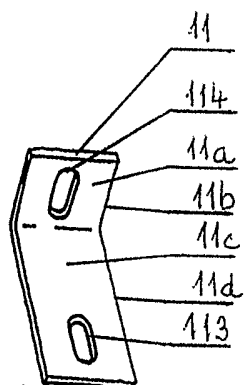


FIG. 12

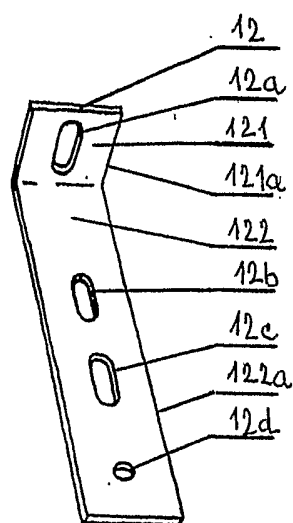


FIG. 13

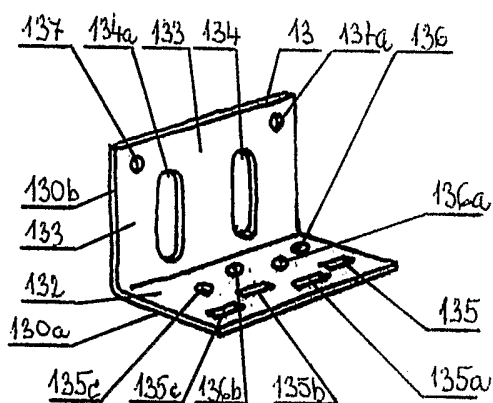


FIG. 14

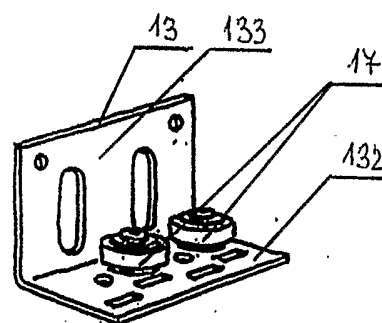


FIG. 14a

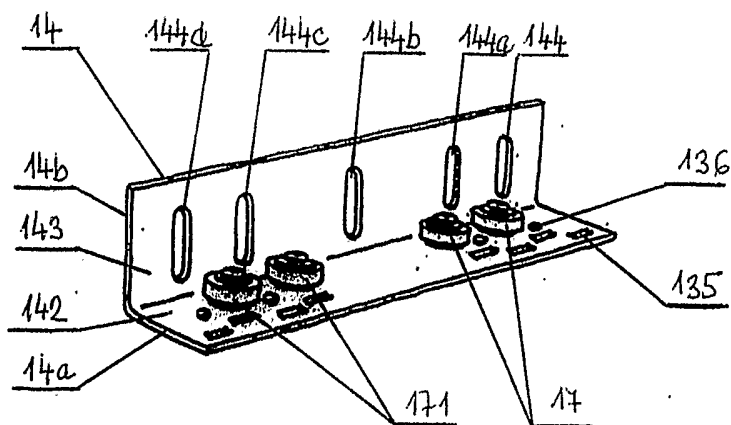


FIG. 14b

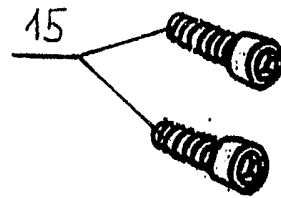


FIG. 15

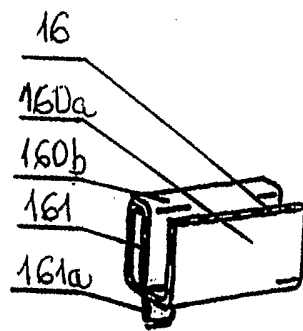


FIG. 16

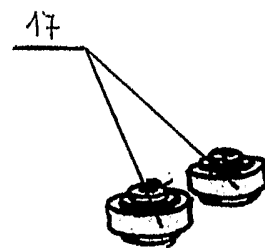


FIG. 17

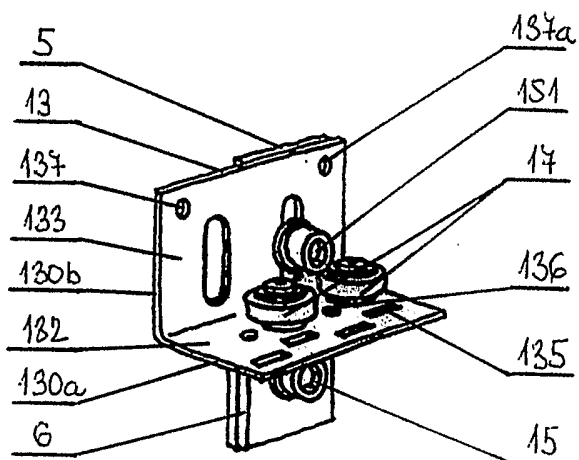


FIG. 18

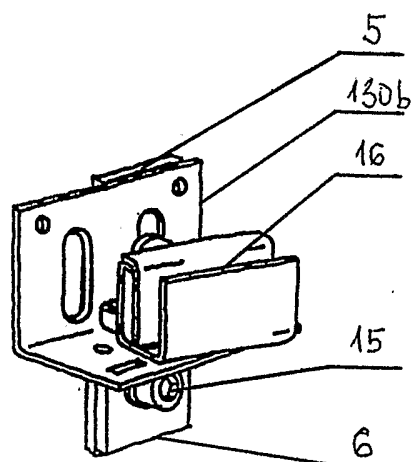


FIG. 18a

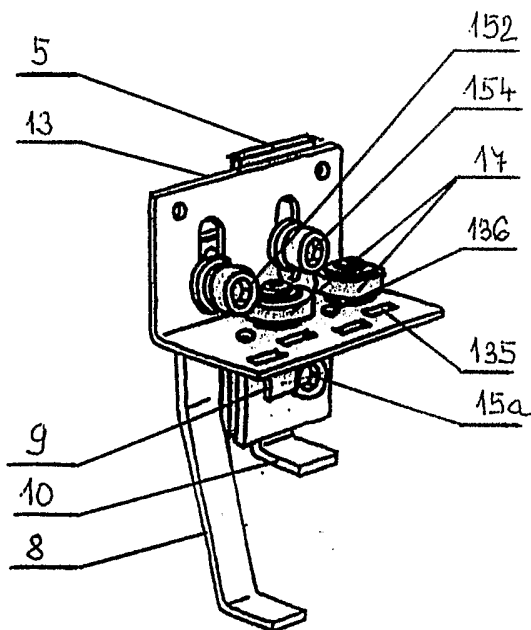


FIG. 19

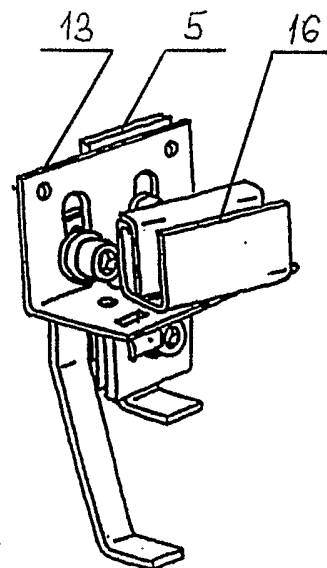


FIG. 19a

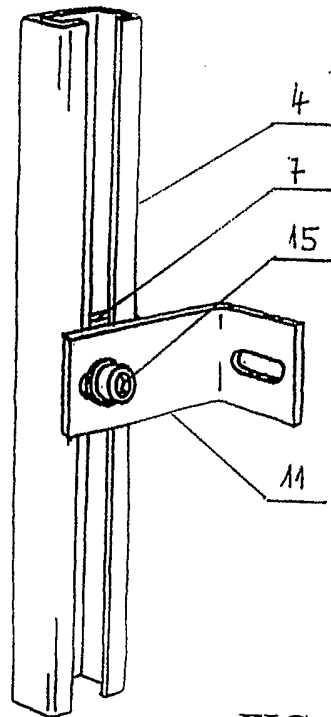


FIG. 20

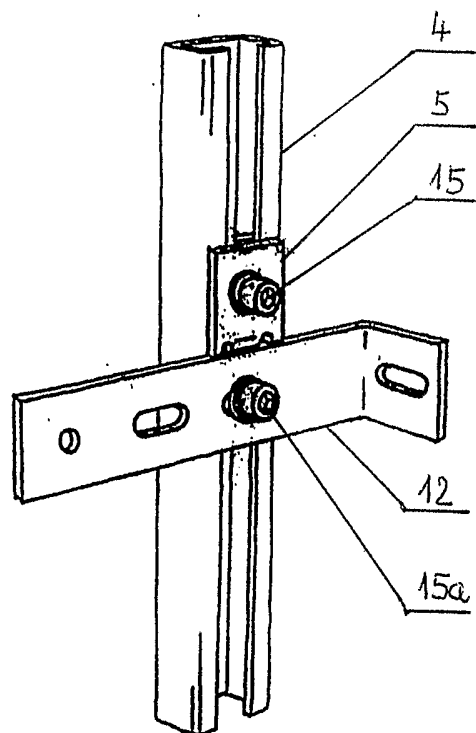


FIG. 21

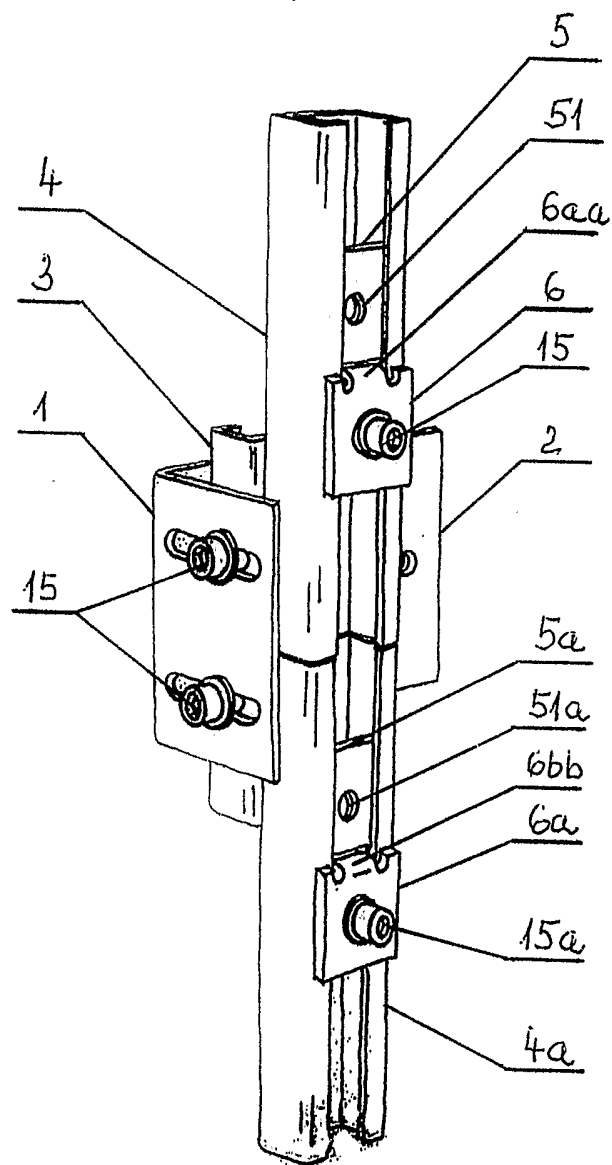


FIG. 22

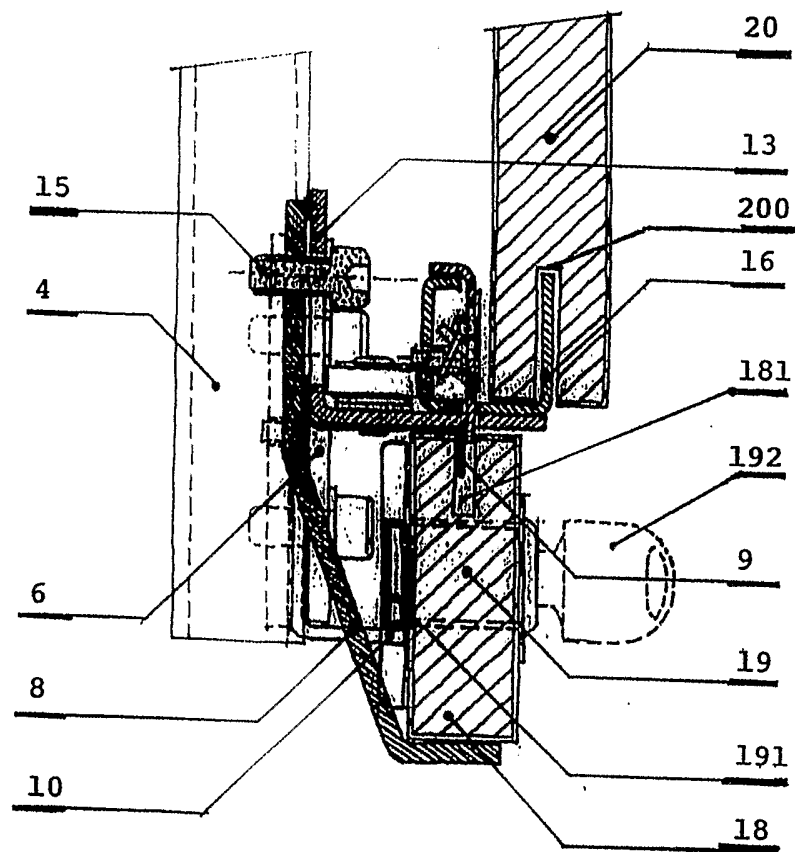


FIG. 23

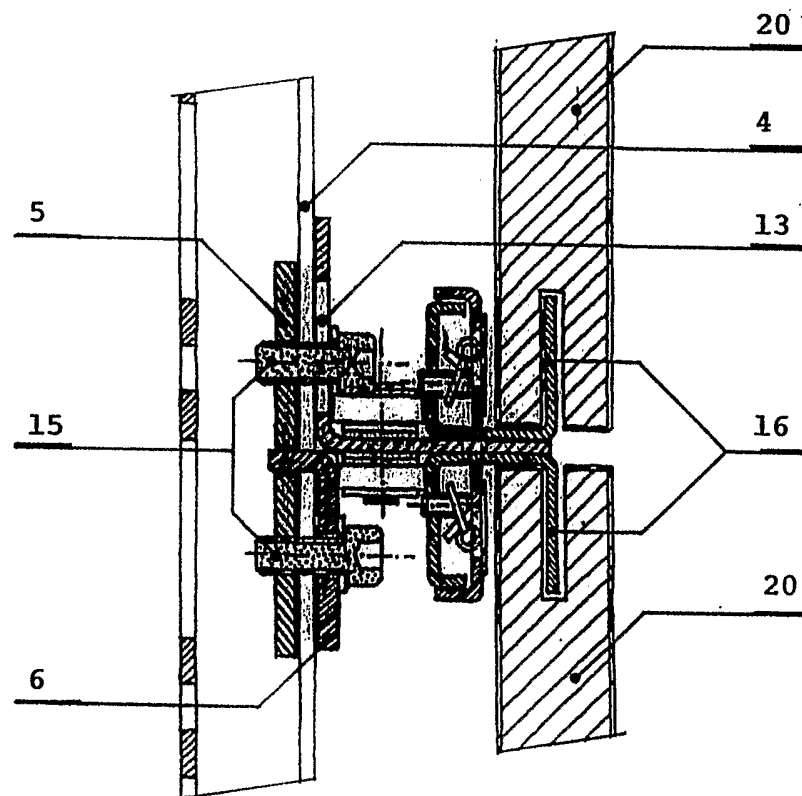


FIG. 25

INTERNATIONAL SEARCH REPORT

International Application No

PCT/SK 03/00018

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E04F13/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1 125 123 A (JULES SCOTT ZIBELL) 28 August 1968 (1968-08-28)	1,3,4,15
Y	page 2, line 74 -page 4, line 93; figures 1,3,6,7,12,13	2,5-14, 16
Y	CH 671 255 A (AUGUST BRAENDLI) 15 August 1989 (1989-08-15) abstract; figure 1	2
Y	DE 43 27 512 A (ETERNIT AG) 23 February 1995 (1995-02-23) column 3, line 48 -column 5, line 39; figures 1-6	5-7,12, 13,16
Y	US 3 561 182 A (MADL JOSEPH JR) 9 February 1971 (1971-02-09) column 2, line 36 -column 3, line 73; figures 2,3	8-11
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

19 April 2004

Date of mailing of the international search report

29/04/2004

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Khera, D

INTERNATIONAL SEARCH REPORT

International Application No
PCT/SK 03/00018

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	paragraphs '0020!-'0028!; figures 1,2 ---	1-13
A	US 2001/045075 A1 (WATANABE MORIMICHI) 29 November 2001 (2001-11-29) paragraph '0030! - paragraph '0036!; figures 1-4 -----	1-16

INTERNATIONAL SEARCH REPORT

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International Application No

PCT/SK 03/00018

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