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54 Assembly of storage units provided with drawers.

57 An assembly of storage units (6,7) which are mainly used in offices for a well-ordered filing of documents, will appear to be too small after some time. If one adds a column of units, this will have a lock of its own. The invention provides an assembly whereof some or all units of some or all columns can be locked by one locking mechanism. In the case of storage units consisting of a case with inwardly directed flanges cooperating with side flanges of drawers, each column has a converting mechanism (11) which is not only responsible for the up and down movements of lock rods but also for the reciprocating movement of a coupling rod (12) whose other end can cooperate with the converting mechanism of adjacent columns.

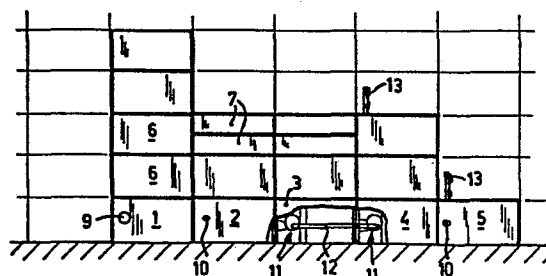


FIG.1

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ASSEMBLY OF STORAGE UNITS PROVIDED WITH DRAWERS

This invention relates to an assembly of storage units provided with drawers and which can be disposed in a series of substantially vertical columns, and a substantially horizontal row of locking units contained
5 in or at each column, the storage units and locking units being interconnectable in such a way that an assembly that can be extended and reduced at will can be obtained.

10 Such assemblies are known in many embodiments and are mainly used in offices for a well-ordered filing of documents. In this connection it is a known phenomenon that an arrangement once selected will appear to be too small or too big after some time.

15 As a rule the storage units consist of a case provided with inwardly directed flanges which can cooperate with side flanges of the drawers. It is then possible to make a horizontal connection between the assembly of cases, in
20 that fitting ribs and grooves are arranged in the vertical side faces near the corners; when the adjacent side faces are shifted parallelly to each other two units can then be interconnected or loosened. By "units"

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are understood here: the storage units and locking units already mentioned which preferably are of the same standard height and cover the column either as a pedestal and/or as a top part.

5

The storage units may contain drawers of different types. It is e.g. possible to fasten a file clamp in the drawer, and one can also choose so-called half-height drawers for documents expected not to be stored
10 in too high a pile. For reasons of an attractive appearance one will often choose storage units comprising a so-called arrow mechanism, i.e. cases on which a cover hinging about a horizontal upper axis is applied which is driven by a vertical arrow that can
15 reciprocate in the case and is driven by a cam on one of the flanges of the drawer.

Whatever type of storage units is concerned, however, it will often be desirable and/or necessary to be able
20 to lock a plurality of or all drawers. In case of a great number of drawers this appears to become a cumbersome affair. For, the most current locking system consists of metal rods, which can be locked per column by means of a padlock. Then many rods and padlocks are
25 needed and locking and opening will be very time-absorbing. Moreover, it is an ugly sight.

The invention aims at improving this and has succeeded by providing an assembly having as the most important
30 feature that some of or all the storage units of a column can be locked by a locking mechanism hidden from sight.

But herewith the wish to be able to extend the assembly at will without limiting the number of locks to be operated and/or keys to be handled to a minimum has not yet been complied with. This is only achieved by the measure that some of the or all the storage units of some or all the columns can be locked by a locking mechanism that can be put into and out of operation by means of only one lock.

Now, if the storage units consist of a case provided with inwardly directed flanges which cooperate with side flanges of the drawers, the just mentioned measure can be put into practice in a way answering its purpose, characterized in that the portion of the locking mechanism of each column of storage units that is contained in the locking unit consists of a converting mechanism disposed in the corner between a side and a rear wall, which converting mechanism converts the rotary movement of a lock axis into a substantially perpendicular reciprocating movement of a slide member which can be coupled to lock rods which are provided with cams which can engage and disengage the inwardly directed flanges of the cases and corresponding horizontal flanges of the drawers.

The converting mechanism consists preferably substantially of a disc fixed to the lock axis and carrying a drive pin that can cooperate with a drive slot of the slide member, and a coupling pin that can cooperate with one end of a coupling rod whose other end can cooperate with the coupling pin of the disc of the converting mechanism of an adjacent column.

The lock rods preferably are of a length which is substantially equal to the standard height of the storage units and are preferably provided with securing means at their extremities.

5

The lock rods are preferably U-shaped in cross-section between the securing means and are also preferably provided with two cams distributed over their lengths, so that also so-called half-height drawers can be locked.

10

At least one of the securing means of the lock rods is preferably chamfered in such a way that directing edges have been obtained which together with guide strips of the cases facilitate interconnection of the lock rods considerably.

15

As already remarked, the storage units and locking units in the vertical side faces near the corners are mostly provided with fitting ribs and grooves for making a horizontal connection. This is not sufficient for securing the storage units against simple lifting off and that is way the invention prescribes furthermore that the inwardly directed flanges of the cases must be provided with aperture in which U-shaped snapping tongues with barbs can be disposed to impart also a vertical connection to the system.

20

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It is also possible to apply thread connections, but this is in conflict with the idea that in case of extending or reducing the assembly separate tools would be necessary.

30

In a suitable embodiment it was furthermore established that the lock axis of the end turned away from the lock and the blindstop respectively, is bearing in a lock frame that is provided with guidings and
5 recesses for the slide member.

The invention will further be illustrated hereinunder with the aid of the drawing, in which by way of example an embodiment of an assembly according to the invention
10 is represented. In the drawing

fig. 1 shows a partially cut front view of an assembly of storage units provided with drawers and locking units during extending or reducing,
15

fig. 2 shows on a larger scale in perspective part of a storage unit to which the invention can be applied,

fig. 3 shows a longitudinal view of a snapping tongue,
20

fig. 4 shows on a larger scale a vertical section thorough a locking unit,

fig. 5 shows a section according to the line V-V of figure 1,
25

fig. 6 shows on an even larger scale a front view of the disc contained in the locking unit of figures 4 and 5,
30

fig. 7 shows a section according to the line VII-VII of figure 6,

fig. 8 shows a top view of the lock frame contained in

the locking unit of figures 4 and 5,

fig. 9 shows a side view of the lock frame of figure 8,

5

fig. 10 shows a section according to the line X-X of figure 8,

10

fig. 11 shows a longitudinal view of a slide which can cooperate with the lock frame of figures 8-10,

fig. 12 shows a side view of the slide of fig. 11,

15

fig. 13 shows a longitudinal view of a lock rod,

fig. 14 shows a side view of the lock rod of figure 11, and

20

fig. 15 shows a section according to the line XV-XV of figure 13.

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The assembly represented in the drawing and in particular in figure 1 consists of locking units 1-5 arranged on the floor or on a table or other elevation and in top thereof a plurality of storage units 6 and 7.

30

Among the locking units 1-5 only locking unit 1 is provided with a lock 9 to be operated by a key 8 (fig. 5); the other locking units are constructed with a so-called blindstop 10.

The important feature of the invention that if desired all storage units can be locked by a locking mechanism

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that is operated by only one lock, is achieved in the example by the application of the parts to be indicated by means of the cutting out of the locking units 3 and 4 of figure 1: by converting mechanisms 12 of each locking unit connected to substantially horizontally extending coupling rods 11, and substantially vertically extending lock rods 13.

It is remarked that the locking units need not necessarily be positioned at the bottom, they may also be present in any place in vertical direction between the storage units; the only condition is that they are positioned in a horizontal row.

By incorporating storage units 7 in figure 1 which with regard to the storage units 6 are of half height it is indicated that the principle of the invention are also applicable to said units. More in general it can be stated that, as represented in figure 2, the storage unit should consist of a case 14, preferably produced from plastic with inwardly directed flanges 15, 16, of which only the pair on one side wall 17 is indicated, said case furthermore consisting of a rear wall 18 and an open (not indicated) front side through which a drawer 19 indicated by dotted lines can be slid in and out. The drawer 19 is drawn in figure 2 in the position in which it has been slid almost completely in.

Furthermore, it is noticed in figure 2 that the drawer is at its bottom face provided with a horizontal flange 20 in which near its rear end a recess 21 is present which bears resemblance to the apertures applied in the

inwardly directed flanges 15 and 16 of the case 14. These recesses 21 and apertures 22 play an important part in the locking possibilities of the assembly according to the invention to be further illustrated.

5

It is remarked that usually another flange is applied in the case halfway the height of the side walls 17 for serving as a guiding for half-height drawers 7 (fig. 1).

10

It may be clear that whatever clever locking possibility is applied, it may never be so that the locking units 1-5 and storage units 6 and 7 can simply be lifted off from each other. In order to achieve this holes can be drilled in the cases and thread connections can be applied, but than special tools are necessary for changing the assembly. This has been solved by the application of the snapping tongues 23 shown in figure 3 which fit in the rectangular holes 24 arranged in the flanges 15 and 16.

20

The snapping tongue 23 of figure 3 consists of plastic and has a U-shaped appearance, the pointed legs 24 being provided with barbs 25 and 26 on the outer side. Recesses, such as recess 37 of figure 2 must be arranged in the flanges in order not to impede the free running of the drawer.

25

30

Cases 14 are provided with ribs 28 which are visible more in detail in the locking unit of fig. 5 where they have also been arranged and which serve for making an interconnection in horizontal direction between the various units.

Now the locking mechanism will be dealt with more in detail with the aid of fig. 4-15.

5 With key 8 of fig. 5 a lock axis 29 can be rotated. To this lock axis 29 a disc 30 shown more in detail in fig. 6 and 7 is mounted, which carries two pins, to wit on one side a drive pin 31 which can cooperate with a drive slot 32 (fig. 11) of a slide member 33, and on the other side a coupling pin 34 which can cooperate with one end of the coupling rod 12 already shown in fig. 1, the other end of which can cooperate with an identical coupling pin of the disc of an adjacent converting mechanism 11.

15 The end of the lock axis 29 turned away from the lock 9 in fig. 4 and 5 is bearing in a lock frame 5 which will further be discussed with the aid of fig. 8-10, said lock frame also cooperating with slide members 33 already mentioned and to be further elucidated with the aid of fig. 11 and 12.

The lock frame 35 consists of a front wall 36, two side walls 37 and 38, a top wall 39 and a bottom wall 40. The side wall 38 is provided with an outwardly directed flange 41 having two raised holes 42, as is usual in plastic injection moulding technique for making a thread or clamp connection 43 with the rear wall of the locking units 1-5.

30 The thread connection has the drawback that in principle the possibility exists to open the assembly illegally without leaving any traces, but may be handy from a point of view of repairing.

The front wall 36 of the lock frame carries an inwardly directed bearing sleeve 44 which can receive a (non-represented) pin which also fits in a stub 45 of the disc 30 (fig. 6 and 7). Said disc also carries a cam 46 which serves as a stop for a helical spring 47 (fig. 5), whose other leg can bear against a cam 48 on the front wall 36 of the lock frame. This spring 47 is only absolutely necessary in cases that the lock 9 is of such a type that the key can only be removed in locked position. But also if a so-called "double lock" is applied, where the key can be removed both in opened and in locked position, it is pleasant that by the helical spring 47 the clearance in the bearing of the lock axis 29 is eliminated to one side.

The front wall 36 of the lock frame 35 is furthermore provided with a perpendicularly projecting flange 49 which is spaced from the side wall 37 to such an extent that a correct clearance is present for the width b of the slide member 33 of fig. 11 and 12. In this flange a recess 50 is applied of such a length that the broadening 51 being part of the slide member 33 can reciprocate in the recess so far that the lock rod 13 of fig. 1 to be applied to it moves from open to locked position or vice versa. The details of the cross-section of the slide 33 are substantially identical to those of the lock rod 13 to be described now with the aid of fig. 13-15.

If columns of fixed level were concerned, the lock rods 13 could also be of a fixed length. As, however, there is a need for not only extending the assembly at will in horizontal but also in vertical direction, the lock rods

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are of a length which substantially corresponds with the standard height h (fig. 2 and 14) of a storage unit.

5 To the lock rods two cams 52 and 53 are applied, one of them only functioning if drawers of half height 7 are applied. The lock rods 13 have a U-shaped cross-section and at the upper end in the drawing the legs thereof are provided with apertures 54 in which
10 projections 55 can snap which are disposed on narrowed extensions 56 which also have a U-shaped cross-section but are of such dimensions that they closely fit in the upper end. It is remarked that the slide members 33 of fig. 11 and 12 are also provided with such apertures 54,
15 so that the lock rods 13 can also be coupled therewith.

It is also remarked that coupling will often require some power, which preferably is not to be counteracted on a weak but on a strong spot as reaction force. This
20 is provided for by the contact between the broadening 51 of the slide and the edges of the recess 50 in the flange 49 of the lock frame 35.

Since the lock rods 13 should also be applied easily
25 if the storage units are already interconnected, it is practical to apply guiding strips 57 in the cases on either side of the apertures 22 (fig. 2), which together with the directing edges 58 on the ends of the extensions 56 guarantee a comfortable assembling.

30 It is almost self-evident that the dimensions of the lock rods 13 of fig. 15 and the apertures 22 in the flanges of fig. 2 as well as the recesses 21 in fig. 2

at least correspond with other in order to assure a good operation of the locking mechanism.

5 The number of storage units to be operated with a key is in principle unlimited and is only restricted by the couple which is considered as still acceptable by an employee of the office for opening and locking the assembly. Said couple is dependent on the width of the key 8 which otherwise could also be replaced by a
10 bigger handle.

More or less accidentally it can be remarked that if the user wishes that some storage units should never be locked, this can be realized very easily. To wit
15 by either sawing the cams 52 and 53 from the lock rod 13 in question or by shortening the flange of the drawer 19 in question.

The scope of protection also comprises numerous
20 embodiments which are not represented in the drawing, bearing in mind in particular the cross-section of the lock rods and the slide members.

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CLAIMS:

1. An assembly of storage units provided with drawers and which can be disposed in a series of substantially vertical columns, and a substantially horizontal row of locking units contained in or at each column, the
5 storage units and closing units being interconnectable in such a way that an assembly that can be extended and reduced at will can be obtained, characterized in that some of or all the storage units (6, 7) of a column can be locked by a locking mechanism hidden
10 from sight.
2. An assembly according to claim 1, characterized in that some of or all the storage units (6, 7) of some of or all the columns can be locked by a locking
15 mechanism which can be put into and out of operation by only one lock (9).
3. An assembly according to claim 1 or 2, in which the storage units consist of a case provided with inwardly
20 directed flanges which cooperate with side flanges of the drawers, characterized in that the portion of the locking mechanism of each column of storage units that is contained in the locking unit consists of a converting mechanism (12) disposed in the corner

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between a side and a rear wall, which converting mechanism converts the rotary movement of a lock axis (29) into a substantially perpendicular reciprocating movement of a slide member (33) which can be coupled to lock rods (13) which are provided with cams (52, 53) which can engage and disengage the inwardly directed flanges of the cases (14) and corresponding horizontal flanges of the drawers (19).

4. An assembly according to any of the claims 1-3, characterized in that the converting mechanism (12) substantially consists of a disc (30) fixed to the lock axis (29) and carrying a drive pin (31) which can cooperate with a drive slot (32) of the slide member, and a coupling pin (34) which can cooperate with one end of a coupling rod (11) whose other end can cooperate with the coupling pin of the disc of the converting mechanism of an adjacent column.

5. An assembly according to any of the claims 1-4, characterized in that a helical spring (47) is applied which biases the disc (30) to the open position of the lock.

6. An assembly according to any of the claims 1-5, characterized in that the locking units in which no lock is disposed, are provided with a blindstop (10) which serves as a bearing for the lock axis (29) in question.

7. An assembly according to any of the claims 1-6, characterized in that the lock rods (13) are of a length substantially equal to the standard height (h)

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of the storage units and at their ends are provided with securing means (54-56).

- 5 8. An assembly according to claim 7, characterized in that the lock rods (13) between the securing means (54-56) are U-shaped in cross-section and are provided with two cams distributed over their lengths, so that also so-called half-height drawers can be locked.
- 10 9. An assembly according to any of the claims 3-8, characterized in that between the inwardly directed flanges (15, 16) of a case (13) on either side of the aperture therein for the lock rods (14) a guiding strip (57) is arranged.
- 15 10. An assembly according to any of the claims 3-9, characterized in that at least one of the securing means of the lock rods is chamfered in such a way that directing edges (58) have been obtained which together with the guide strips (57) facilitate interconnection of the lock rods considerably.
- 20 11. An assembly according to any of the claims 1-10, in which the storage units and locking units in the vertical side faces near the corners are provided with fitting ribs and grooves for making a horizontal connection, characterized in that the inwardly directed flanges (15 and 16) of the cases (14) are provided with apertures (24) in which U-shaped snapping tongues (23) with barbs (25 and 26) can be disposed in order to impart also a vertical connection to the system.
- 25 30 12. An assembly according to claim 11, characterized in

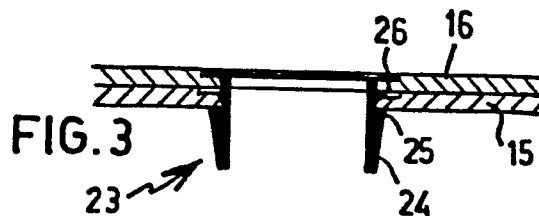
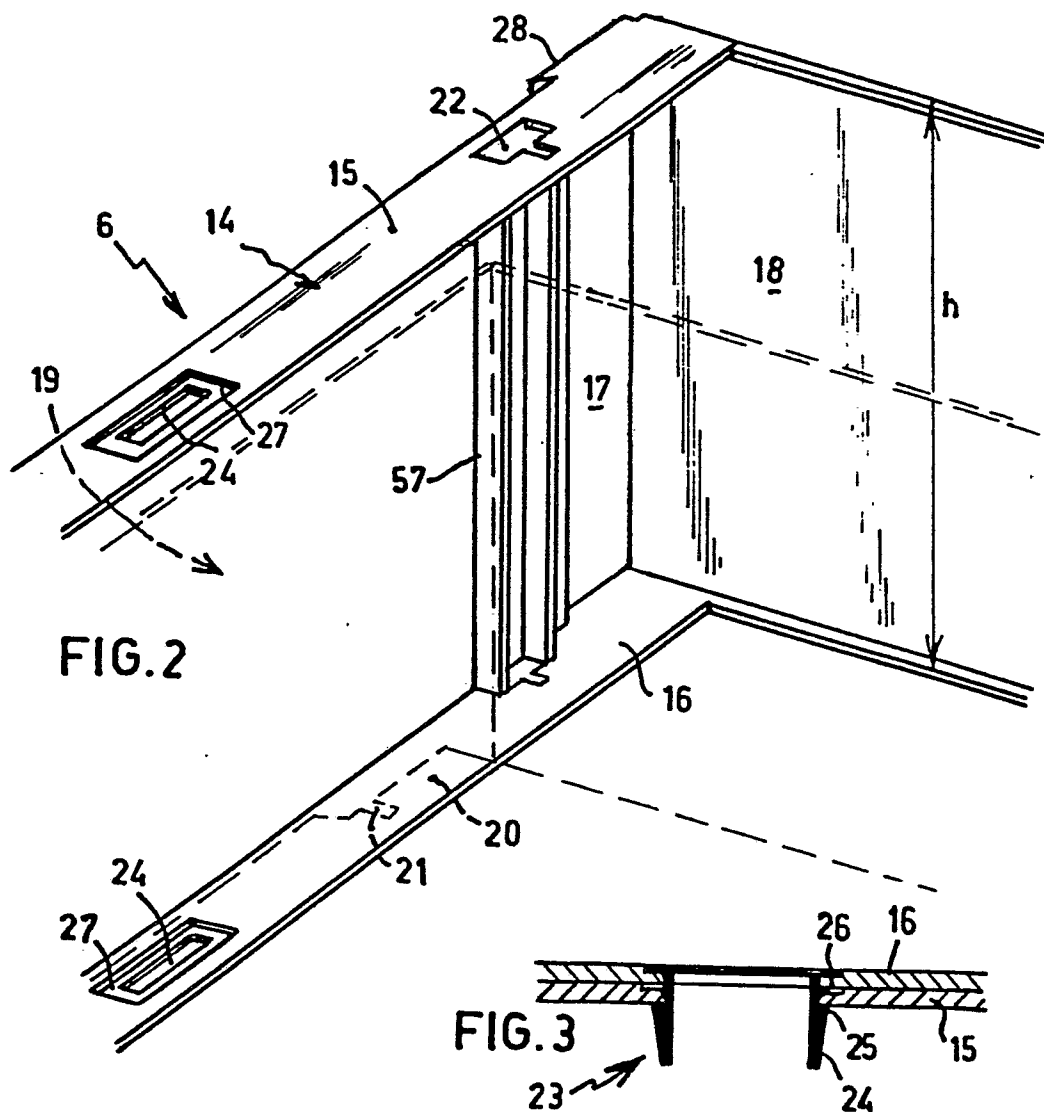
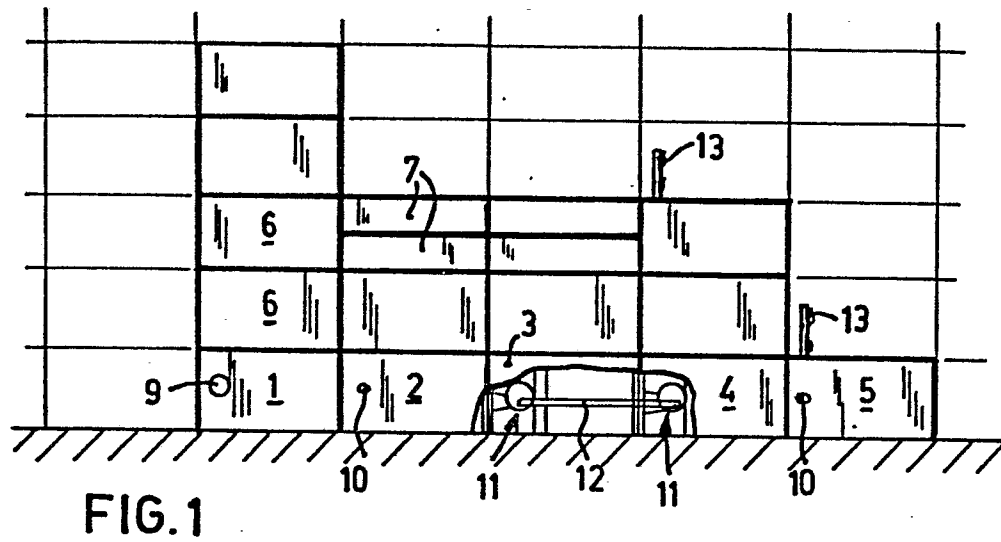
that the apertures (24) are recesses in order not to impede the sliding movement of the drawers and any sheets of arrow mechanisms.

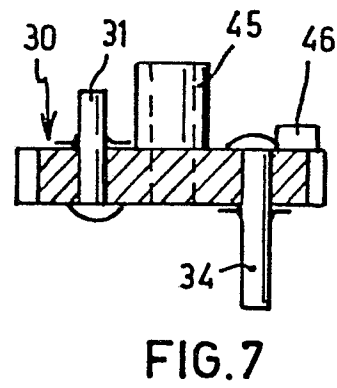
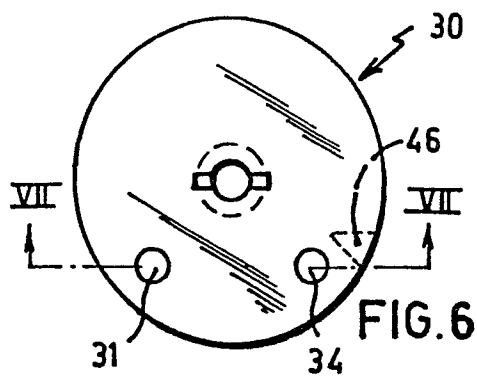
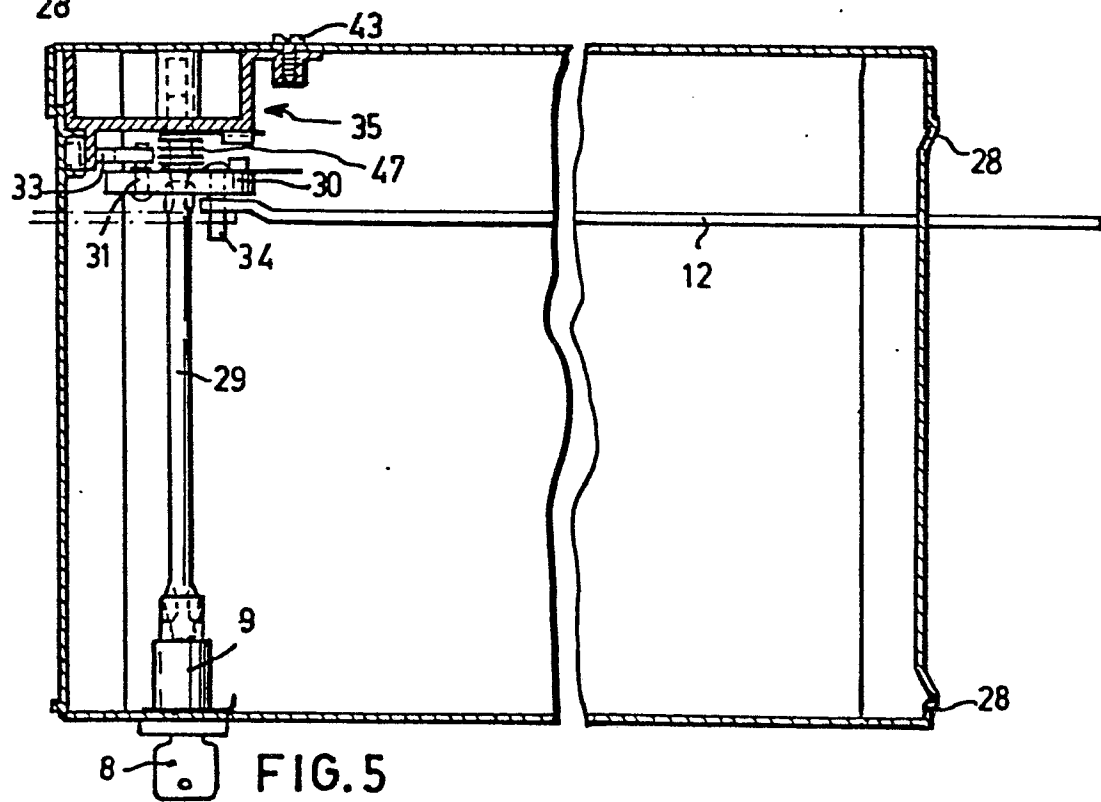
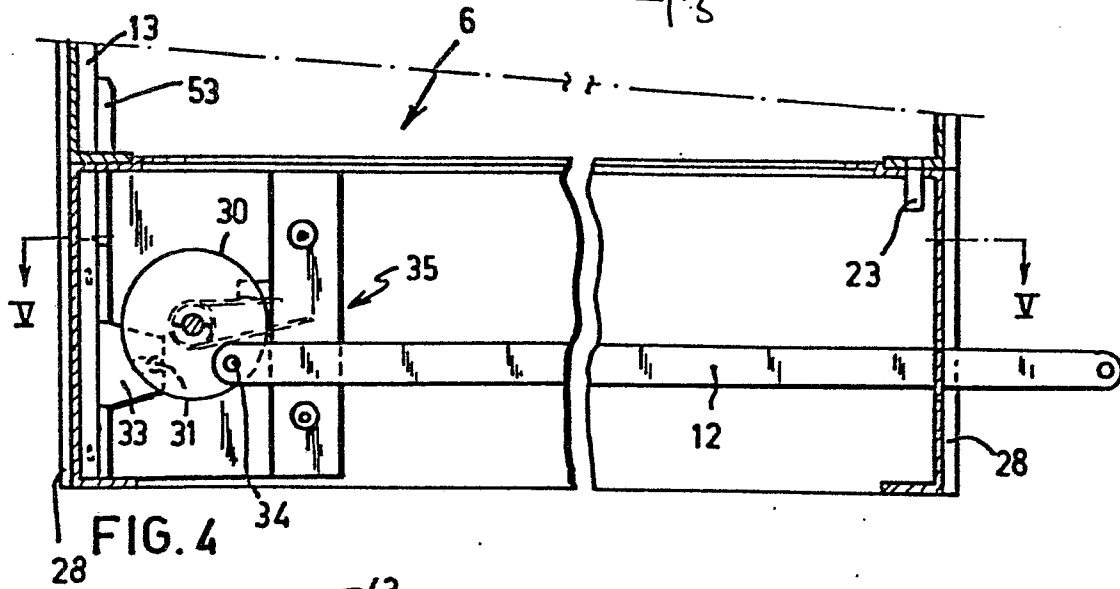
- 5 13. An assembly according to any of the claims 3-12,
characterized in that the lock axis (29) at the end
turned away from the lock (9) resp. the blindstop (10)
bears in a lock frame (35) which is provided with
guidings (49) and recesses (50) for the slide member
10 (33).

14. An assembly as represented in the drawing and/or
discussed with the aid thereof.

Claim(s) Nr 14 deemed to be abandoned

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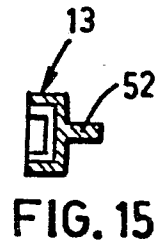
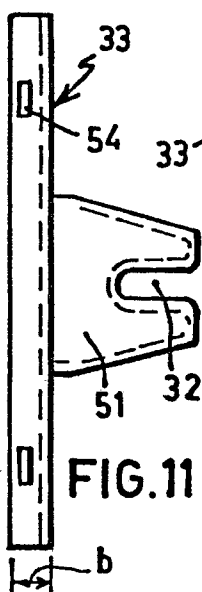
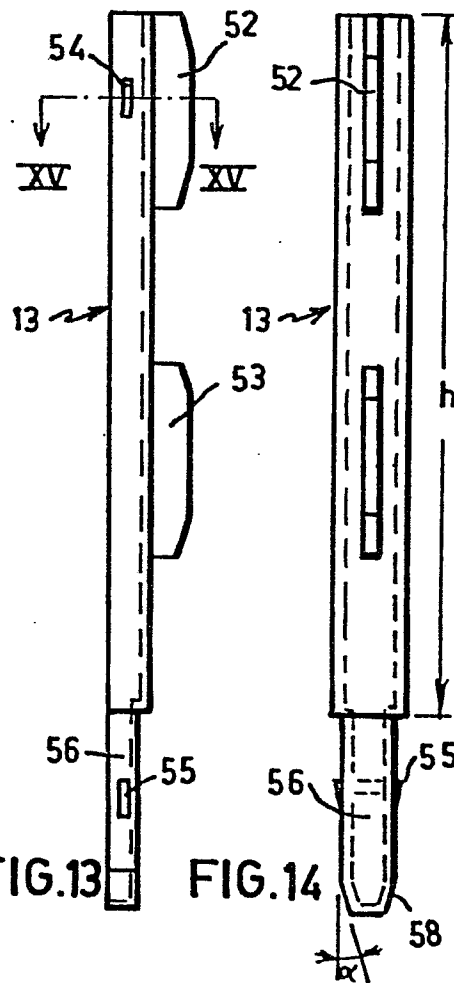
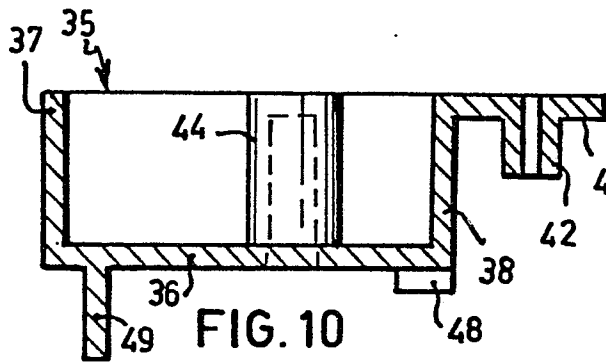
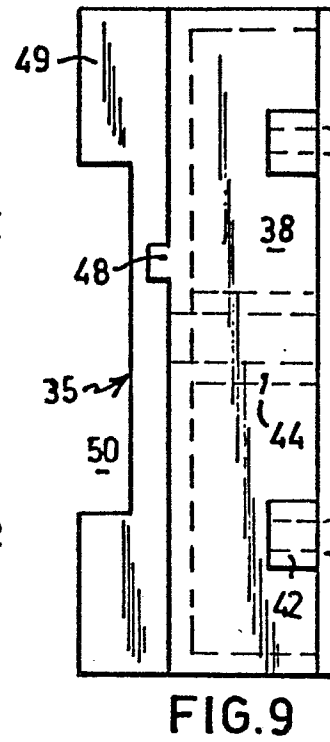
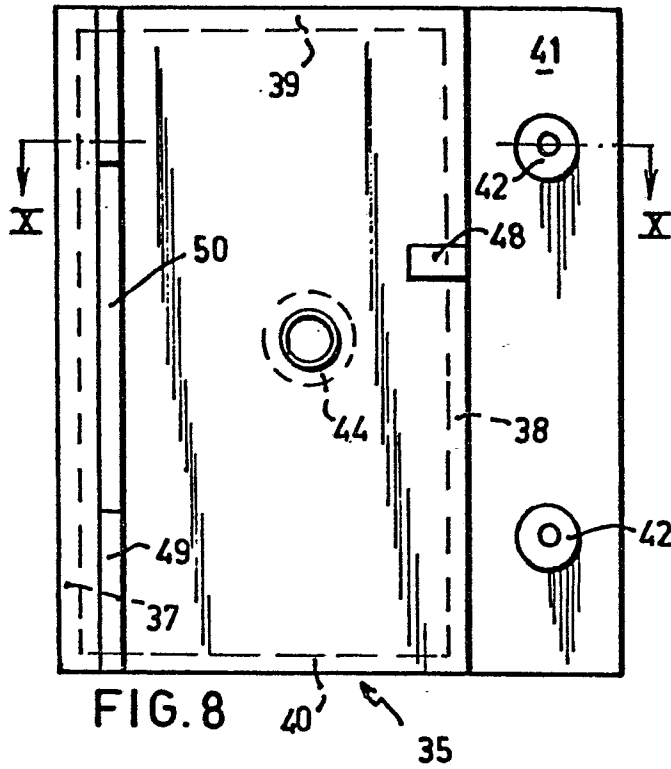
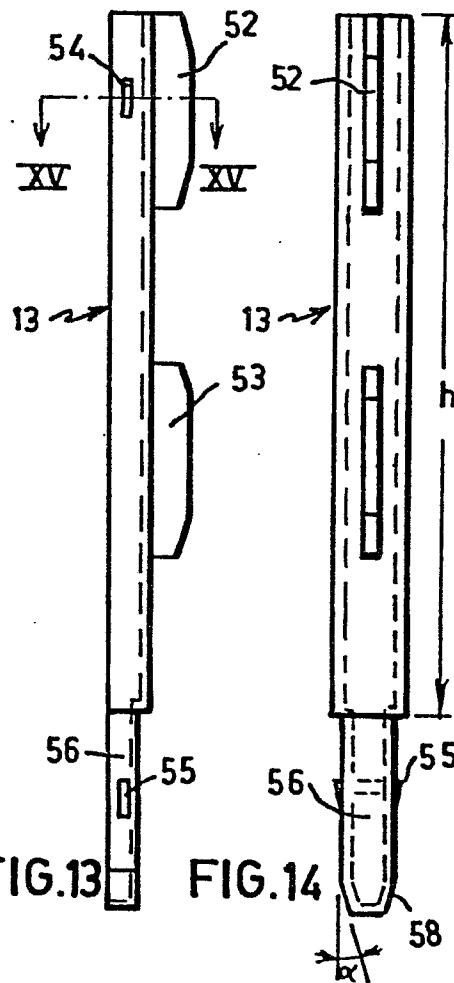


FIG. 15





European Patent
Office

EUROPEAN SEARCH REPORT

0047040

Application number
EP 81 20 0949

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
P	<u>FR - A - 1 265 207</u> (RECH. IND.) * Whole document *	1	E 05 B 65/46
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	<u>GB - A - 12 590 AD 1912</u> (MARKS) * Whole document *	1,2	
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	<u>GB - A - 2 062 081</u> (LAZAROV) -----		TECHNICAL FIELDS SEARCHED (Int. Cl.)
			E 05 B A 47 B
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
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☒ The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	13-11-1981	V. BOGAERT	