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I-33100 Udine (IT)(54) **Cover for drainage pits and the like.**

(57) Cover for drainage pits and the like, consists of a first stationary frame (11) made of L-shaped elements fixed to each other and of a second removable frame (12) made of a base (14) and of sidewalls (15) advantageously inclined to the vertical, the sec-

ond removable frame (12) being inserted into the first stationary frame (11) and comprising at least one engagement and lifting means (16) of a handle type, which is solidly fixed to the second removable frame (12).

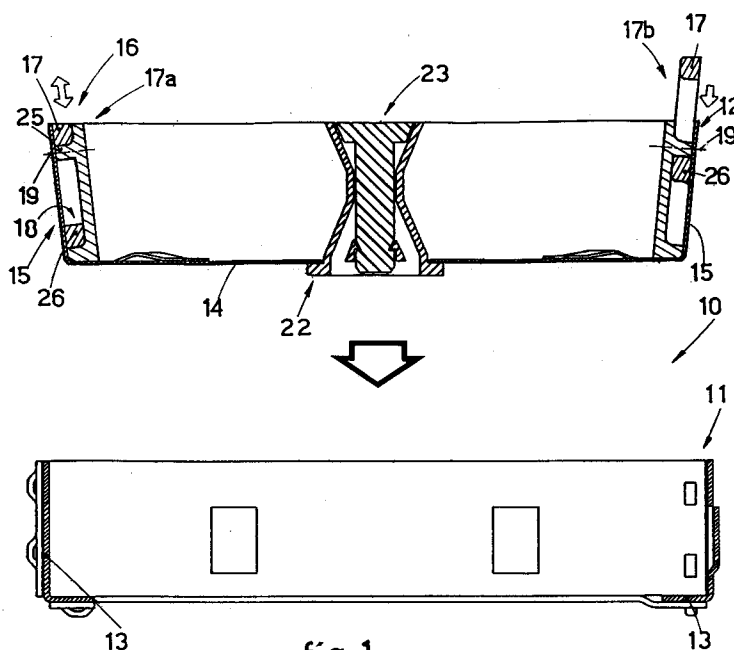


fig.1

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This invention concerns a cover for drainage pits and the like, as set forth in the main claim.

The cover for drainage pits and the like is used advantageously in the field of paving and flooring so as to close a discharge hole positioned below the cover and possibly also to restrict the emerging of smells from water drainage and sewerage systems in general.

The cover for drainage pits according to the invention may be of a type with a packing to provide a hermetic seal and of a light or heavy type without packings.

The cover according to the invention may be made of galvanized steel or of brass or of another metallic material suitable for the purpose.

The cover according to the invention is advantageously, but not only, of the type disclosed in Italian patent IT-B-1.226.186 in the name of the present applicants.

The cover according to the invention may be of a type including an extractable central plug.

Covers have been disclosed which are employed in particular in the building field but which may also serve for the closure of cesspits and the like.

These covers of the state of the art normally consist of a first stationary metallic containing frame with which a second removable metallic frame forming the framework of the cover cooperates.

This first stationary containing frame is secured to the ground or floor and is positioned at the same level as the ground or floor so as to form a continuous surface together with that ground or floor. The second removable frame is generally filled with a pouring of cement, with washed gravel or with porphyry tiles or concrete blocks or other analogous materials.

These covers of the state of the art generally include attachment holes positioned in at least two opposed sidewalls of the removable frame; appropriate hook-shaped means cooperate with these holes in the lifting and displacement and are often found to be not very practical nor easy to handle.

Moreover, this hook-type system entails the problem that, as it requires an accessory separate from the cover, this accessory is not always supplied by the producer and has to be produced by the user as and when required.

A material suitable to form the accessory is often not available and the hook-shaped means have to be replaced by substitutes such as cables, bent iron rods and other substitutes, which may be the cause of accidents inasmuch as they are found unsuitable for the purpose.

Even where these hook-shaped means are supplied by the producer, the operation of lifting the cover is only carried out very seldom at long

intervals of time, and it often happens that the hook-shaped means cannot be found when required for use.

According to another form of embodiment of the state of the art the covers of the state of the art may include a central extractable plug, which acts as a grip for raising the second removable frame when it is necessary to have access to the zone below the cover.

The operations to displace this second removable frame so as to open and close the covers of the state of the art entail great difficulties inasmuch as the central plug does not provide an easy and safe engagement and involves resulting difficulties in the work of the lifting of the second removable frame by the operator.

This work is also made burdensome by the considerable weight of this second removable frame when the latter has been filled with the filler material, which is generally of the same type as that of the surrounding flooring or ground.

Moreover, the lifting of the second removable frame by means of the central plug meets with greater resistance on all its sidewalls owing to the effect of the friction between the sidewalls of the removable frame sliding against the sidewalls of the stationary frame and owing to the suction effect created by the fact that the removable frame is lifted while remaining substantially horizontal.

At the present time the user has to displace the removable frame in some way so as to overcome partly this resistance against the sidewalls.

In any event the user has to apply a great effort since he has to lift completely the whole removable frame which, when filled, can have a considerable weight.

Moreover, there are many cases where the central plug remains slightly raised from its seating and thus creates a cause of accidents inasmuch as the persons concerned may trip over the end of this plug, which protrudes from the surface of the flooring.

The present applicants have designed, tested and embodied this invention to overcome the shortcomings of the state of the art, and thus to meet the repeated requests submitted for sometime now by users and to achieve further advantages. This invention is set forth and characterised in the main claim, while the dependent claims describe variants of the idea of the main embodiment.

The cover for drainage pits and the like according to the invention is advantageously, but not only, of the type disclosed in patent IT-B-1.226.186 in the name of the present applicants.

The cover according to the invention may also include lifting plug means and also lateral holes for use in lifting with the help of the hook-shaped means already disclosed in the prior art.

The cover according to the invention comprises a first stationary metallic containing frame with which a second removable metallic frame forming the framework of the cover cooperates.

This second removable metallic frame comprises at least one engagement and lifting means of a handle type, which has a first inactive retracted position and a second engagement position, in which it protrudes upwards from the second removable frame.

The engagement and lifting means normally stays in the inactive position, in which it is positioned by gravity when it has been released by the operator.

According to a variant the engagement and lifting handle means is brought back to its lowered inactive position by a light pressure applied by the operator. This engagement and lifting handle means is lodged by sliding in a seating associated with the interior of the second removable metallic frame.

This seating is advantageously positioned in cooperation with one of the sidewalls of the second removable frame but is suitably separated from that sidewall so as to prevent the filling material entering the seating.

According to a variant the cover according to the invention includes two engagement and lifting means positioned in opposed sidewalls of the second removable metallic frame acting as a cover so as to make possible the lifting and subsequent movement of that cover while keeping the cover always in a substantially horizontal position.

The engagement and lifting handle means may consist of a metallic or a plastic material, which is advantageously of a type resistant to chemical agents and/or weathering, which would impair a reasonably long working life.

These engagement and lifting handle means may be conformed with a "D" shape or a "T" shape.

According to a variant, which is especially suitable where the cover has a modest height, the handle means are of an articulated type and the seating is positioned in cooperation with one of the sidewalls and with the bottom of the second removable frame.

The engagement and lifting handle means includes advantageously attachment means of a claw-type, for instance, which enable the operator to engage the handle and to lift the handle so as to bring it from its inactive position to its engagement position.

According to a variant the cover according to the invention includes both the engagement and lifting handle means and the central lifting plug.

By means of the engagement and lifting handle means according to the invention the operations to

lift and displace the removable frame are much more simple and easy to carry out.

Moreover, these operations require a much less great effort since it is enough to lift the second removable frame laterally by means of the handle and to draw it out of the first stationary metallic containing frame so as to uncover the drainage pit below the cover according to the invention.

The lateral lifting of the removable frame reduces considerably the resistance generated by the reciprocal friction between the respective sidewalls of the stationary and removable frames and also substantially eliminates wholly the suction effect.

Moreover, with the cover according to the invention the work to lift the removable frame requires less effort since this work can be carried out in two consecutive steps, namely a first partial lifting of the removable frame on one side and a simultaneous lateral sliding of that removable frame in such a way as to place the removable frame on the stationary frame, and a second final lifting of the removable frame by means of two engagement points.

These two engagement points may consist of two engagement and lifting handle means associated with two opposed sidewalls of the removable frame, or may consist of one engagement and lifting handle means and of the opposed sidewall itself.

As an alternative, which is advantageous where the weight of the removable frame is especially burdensome for the operator, the engagement and lifting handle means according to the invention may be used to carry out the sliding of the removable frame on the stationary frame until the latter has been fully uncovered.

The cover according to the invention thus makes possible the reduction of the possibility of accidents or distress for the operator during the operations of uncovering and covering the underlying drainage pit.

The attached figures are given as a non-restrictive example and show some preferred embodiments of the invention as follows:-

Fig.1

shows a lengthwise section of a cover for drainage pits according to the invention, the cover not having been assembled;

Fig.2

is a plan view of a cover for drainage pits according to the invention;

Fig.3

is a view in an enlarged scale, according to the arrow A of Fig. 2, of a first form of embodiment of the engagement and lifting handle means according to the invention of Fig. 1;

Fig.4a

shows in an enlarged scale a lengthwise section of a second form of embodiment of the engagement and lifting handle means;

Fig.4b

shows a rear view of the engagement and lifting handle means of Fig.4a according to the arrow B;

Fig.4c

shows a plan view of the engagement and lifting handle means of Fig.4a according to the arrow C of Fig.4b;

Fig.5

is a front view of a variant of the handle means of Fig.4b;

Figs.6a and 6b

show cross-sections of the handle means of Fig.5 in their retracted inactive position and their engagement position respectively.

The reference number 10 in the attached figures denotes generally a cover for drainage pits according to the invention.

The cover 10 for drainage pits according to the invention is used in the building field to close drainage pits and the like in the ground.

These covers 10 for drainage pits consist of two frames, namely a first stationary frame 11 and a second removable frame 12 respectively.

The first stationary frame 11 in this case has a square shape and is fitted securely in the ground or flooring over the pit and consists of four L-shaped metallic elements 13 welded to each other.

The second removable frame 12 acts as a cover and cooperates with the inside of the first stationary frame 11.

The second removable frame 12 is formed as a container, that is to say, with a base 14 and with sidewalls 15, which are advantageously inclined at an angle to the vertical.

The frames 11 and 12 are normally made of metallic plate, which is galvanized and/or coated with a protective varnish resistant to weathering and chemical attack.

The second removable frame 12 according to the invention comprises at least one engagement and lifting means 16 of a handle type 17 which is associated with a sidewall 15.

To be more exact, the engagement and lifting means 16 includes a containing seating 18 to permit sliding and also handle means 17.

The containing seating 18 to permit sliding is associated, by means of a screw 19 for instance, with the inner surface of the sidewall 15 and has the purpose of positioning within itself the handle means 17.

The handle means 17 have a first inactive retracted position 17a, in which they are wholly contained within the containing and sliding seating 18, and a second engagement position 17b, in

which they protrude upwards from the containing and sliding seating 18 and therefore from the cover 10.

According to a first form of embodiment shown in Fig.3 the handle means 17 are conformed as a "D".

According to the variant of Figs.4 the handle means 17 are conformed as a "T".

In the engagement position 17b retaining means 26 included in the handle means 17 cooperate with mating travel-limiting means 25 located in the containing and sliding seating 18.

The handle means 17 may be made of a metal or of a plastic material resistant to chemical agents and weathering.

According to a particular form of embodiment the containing and sliding seating 18 includes at its lower end discharge holes 24, through which are discharged the dust and dirt which may be introduced into the seating 18.

So as to assist withdrawal of the handle means 17 from the containing and sliding seating 18, the upper part of the handle means 17 includes lateral claws 20, which cooperate with mating hollows 21 included in a coordinated position in the upper part of the containing and sliding seating 18.

According to a variant the cover 10 according to the invention includes two engagement and lifting means 16 of a handle type, which are associated respectively with two opposed sidewalls 15 of the second removable frame 12.

According to yet another variant the base 14 of the second removable frame 12 forming the cover 10 according to the invention includes an aperture 22 with which a plug 23 cooperates.

According to still another variant the second removable frame 12 includes at least in one sidewall 15 two attachment holes with which the lateral claws 20 cooperate during the step of lifting the second removable frame 12.

According to a further variant shown in Figs.5 and 6 the handle means 117 are of an articulated type.

To be more exact, in this case the articulated handle means 117 comprise an upper element 27a and a lower element 27b joined together with an articulated joint 28.

In this case the articulated joint 28 consists of an intermediate pivot 29 substantially positioned at a right angle to the direction of movement of the articulated handle means 117.

According to a variant which is not shown here, the articulated handle means 117 are replaced by a plurality of elements positioned in line and joined together, two by two, by a relative articulated joint.

The containing and sliding seating 118 extends partially in the sidewall 15 of the second removable frame 12 and partially in the base 14 of the second

removable frame 12 without a break in continuity.

The articulated handle means 117 have a first retracted inactive position 117a (Fig.6a), in which the two respective upper 27a and lower 27b elements are positioned at an angle to each other, and a second engagement position 117b, in which the two respective upper 27a and lower 27b elements are aligned with each other.

In the engagement position 117b the upper element 27a protrudes at least partly from the second removable frame 12.

This further variant is applied advantageously where the covers 10 for drainage pits have a modest height.

Claims

1. Cover for drainage pits and the like, which is advantageously, but not necessarily, of the type disclosed in IT-B-1.226.186 and consists of a first stationary frame (11) made of L-shaped elements fixed to each other and of a second removable frame (12) made of a base (14) and of sidewalls (15) advantageously inclined to the vertical, the second removable frame (12) being inserted into the first stationary frame (11), the cover being characterised in that the second removable frame (12) comprises at least one engagement and lifting means (16) of a handle type, which is solidly fixed to the second removable frame (12).
2. Cover for drainage pits as in Claim 1, in which the engagement and lifting means (16) comprises a containing and sliding seating (18) solidly associated with the second removable frame (12), the containing and sliding seating (18) lodging the handle means (17) having a first inactive retracted position (17a) and at least one second engagement position (17b).
3. Cover for drainage pits as in Claim 1 or 2, in which the engagement and lifting means (16) is associated with a sidewall (15) of the second removable frame (12).
4. Cover for drainage pits as in any of Claims 1 to 3 inclusive, in which the handle means (17) consist of a metallic material.
5. Cover for drainage pits as in any of Claims 1 to 3 inclusive, in which the handle means (17) consist of a plastic material.
6. Cover for drainage pits as in any claim hereinbefore, in which the handle means (17) have a substantially **D**-shaped conformation.
7. Cover for drainage pits as in any of Claims 1 to 5 inclusive, in which the handle means (17) have a substantially **T**-shaped conformation.
8. Cover for drainage pits as in any claim hereinbefore, in which at least the terminal sides of the handle means (17) cooperate by means of claws (20) for their engagement.
9. Cover for drainage pits as in any claim hereinbefore, in which the containing and sliding seating (18) has an at least partially box-shaped conformation.
10. Cover for drainage pits as in any claim hereinbefore, in which the containing and sliding seating (18) includes travel-limiting means (25) cooperating with mating retaining means (26) included in the handle means (17).
11. Cover for drainage pits as in any claim hereinbefore, in which the handle means (117) are of an articulated type and comprise at least one upper element (27a) and at least one lower element (27b), these elements (27a-27b) being associated with each other by an articulated joint (28).
12. Cover for drainage pits as in Claim 11, in which the containing and sliding seating (118) is associated partly with a sidewall (15) and partly with the base (14) of the second removable frame (12) without a break in continuity.
13. Cover for drainage pits as in Claim 11 or 12, in which the respective upper (27a) and lower (27b) elements in the inactive position (117a) of the handle means (117) are positioned at an angle to each other, whereas in the engagement position (117b) of the handle means (117) the respective upper (27a) and lower (27b) elements are substantially aligned with each other.

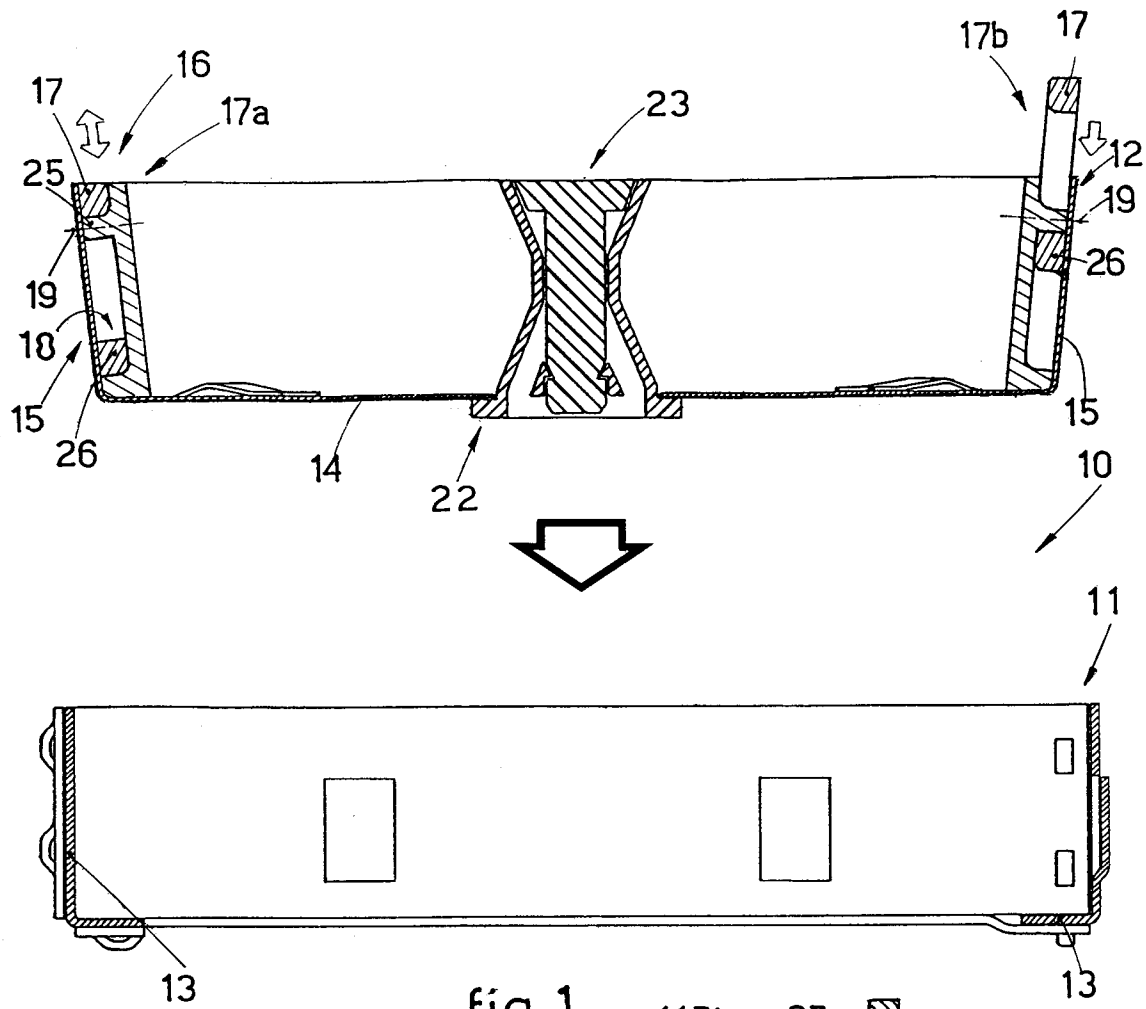


fig.1

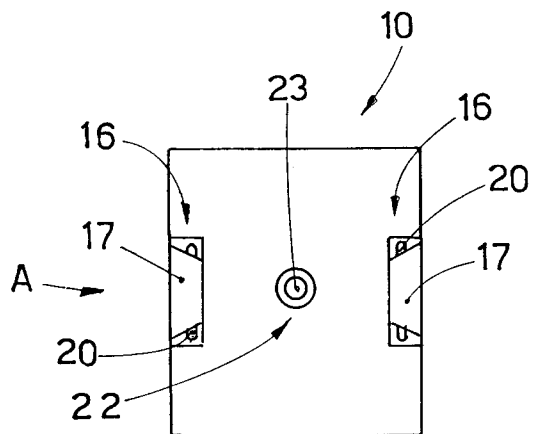


fig.2

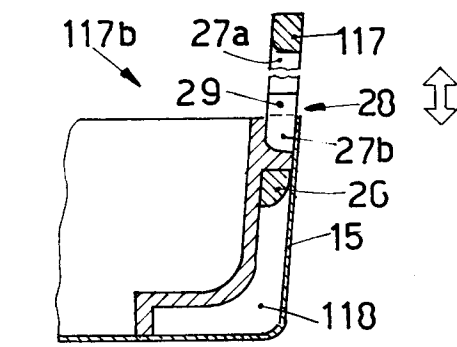


fig.6b

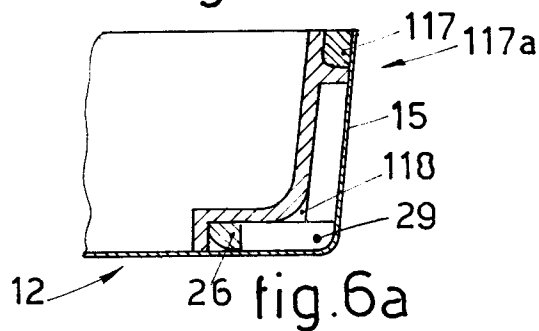


fig.6a

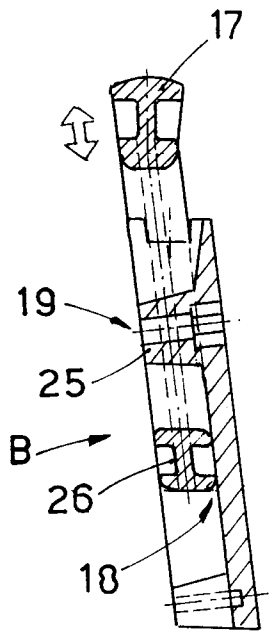


fig. 4a

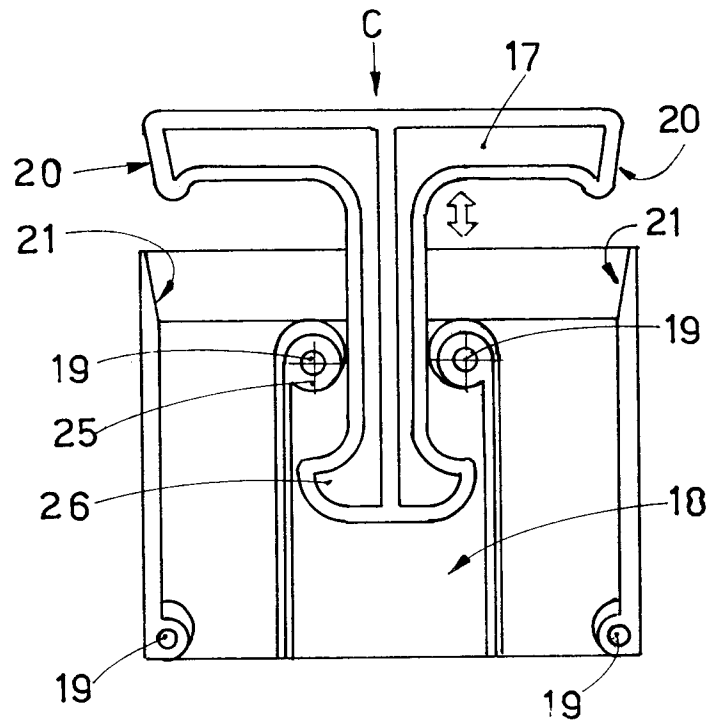


fig. 4b

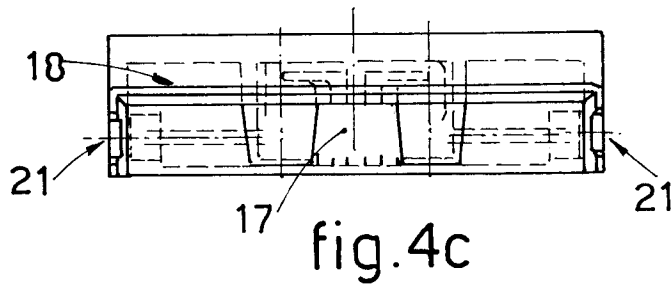


fig. 4c

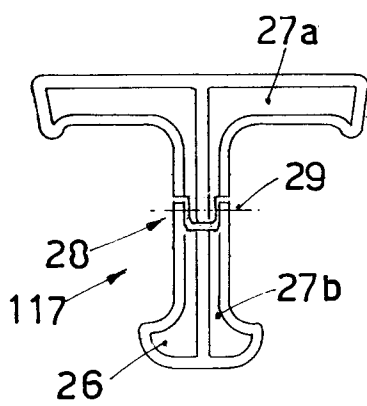


fig. 5

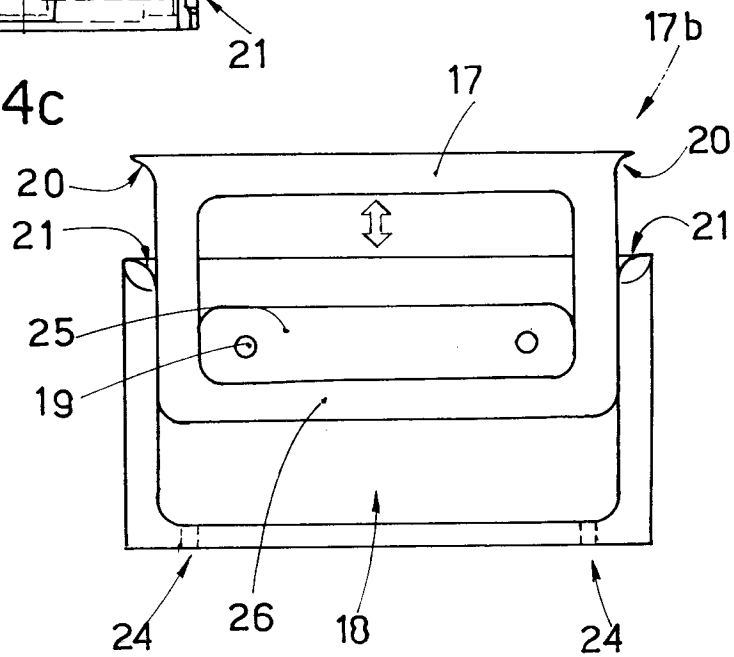


fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 0078

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.6)
X Y	US-A-5 123 776 (LANG ET AL.) * column 2, line 57 - column 4, line 45; figures 1-10 * ---	1,2,4,10 8,9	E02D29/14 E05B1/00
X Y	EP-A-0 475 225 (KESSEL) * column 4, line 7 - column 6, line 7; figures 1,3 * ---	1,3,4,9 9	
X	FR-A-2 597 900 (BERNA DE LA CALLE) * page 2, line 24 - page 6, line 10 * ---	1	
Y A	US-A-3 975 870 (NAKA) * column 2, line 60 - column 4, line 49 * * column 11, line 22 - line 57; figures 1,2,17,18 * -----	8 1,2,4,6, 11-13	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E02D E05B E03F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 May 1995	Examiner Tellefsen, J
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