



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.11.2004 Bulletin 2004/48

(51) Int Cl.7: **E04H 4/10**

(21) Application number: **04076447.4**

(22) Date of filing: **17.05.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL HR LT LV MK

(72) Inventor: **De Jong, Leonardus Johannes
5152 RX Drunen (NL)**

(74) Representative: **Griebling, Onno
Octrooibureau Griebling BV
Sportweg 10
5037 AC Tilburg (NL)**

(30) Priority: **19.05.2003 NL 1023456**

(71) Applicant: **Pooltechnics B.V.
5145 PE WAALWIJK (NL)**

(54) **Swimming pool covering assembly, and method for covering a swimming pool with a swimming pool covering assembly**

(57) A swimming pool covering assembly (1) is described, comprising:

a covering tarpaulin (2), supported by a system of at least two mutually substantially parallel support beams (3, 13, 43) which are intended to have their ends resting on a swimming pool edge; and at least one tightening belt (14) attached or attachable to an end beam (13).

The tightening belt (14) serves for fastening a free end of the cover to a swimming pool edge, and for accomplishing a tension in the covering tarpaulin.

The tightening belt is fastened to a fastening point (16); at that moment there is no tension in the covering tarpaulin yet. Then, with the help of tightening means (50), the end beam (13) is rotated around its longitudinal axis in order to tighten the tightening belt (14).

The position of the end beam (13) in the tightened state is locked by locking means (40).

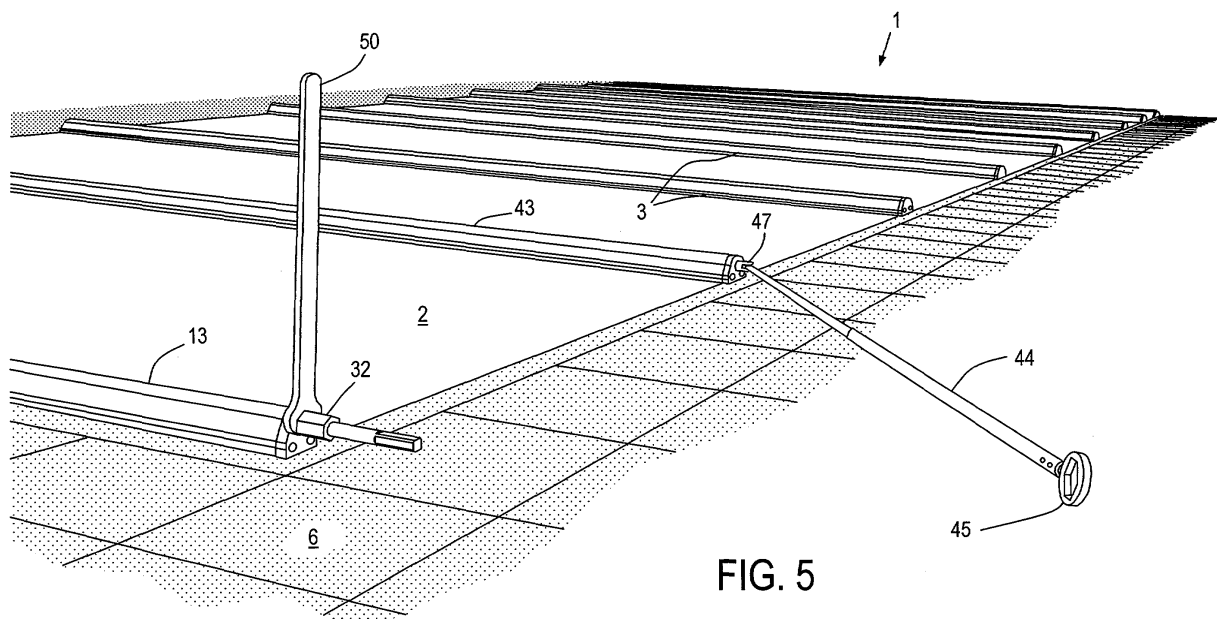


FIG. 5

Description

[0001] The present invention relates in general to a swimming pool covering assembly, for covering a swimming pool when it is not in use, e.g. in the evening or in winter. Such a covering assembly generally comprises a covering tarpaulin, usually made of synthetic material, which is supported by a system of mutually substantially parallel support beams installed at regular distances, the ends of which rest on the edge of the swimming pool.

[0002] Such swimming pool covering assemblies are known per se in practice. When the swimming pool is going to be used, the covering assembly is removed, e.g. by rolling it up.

[0003] When in use, the covering assembly has different functions. One function is to prevent dirt and leaves from ending up in the swimming pool. The swimming pool covering assembly also has a safety function: although it is not intended that people walk over the swimming pool covering assembly, it must be able to withstand that; particularly, the swimming pool covering assembly must prevent playing children from falling into the water. In this context, it is of importance that the free end of the swimming pool covering assembly is fastened under tension to the fixed world. In practice, it often appears to be difficult to fix the swimming pool covering assembly correctly to the fixed world.

[0004] Therefore, it is an important objective of the present invention to provide a swimming pool covering assembly wherein correctly fastening the free end of the covering assembly has been simplified.

[0005] These and other aspects, features and advantages of the present invention will be further explained by the following description of a preferred embodiment of a swimming pool covering assembly according to the present invention with reference to the drawings, in which equal reference numbers indicate same or similar parts, and in which:

figure 1 schematically shows a top view of a swimming pool covering assembly;
 figure 2 schematically shows a side view of the free end of the swimming pool covering assembly;
 figure 3 schematically shows a perspective view of an end of an end beam;
 figures 4A and 4B show schematic longitudinal sections of a hollow support beam with a locking bar, wherein figure 4A illustrates the situation that the locking bar is located inside the support beam, whereas figure 4B illustrates the situation that the locking bar has been pulled out of the support beam for the greater part;
 figure 5 shows a perspective view of the end beam and the locking bar in a non-locked state;
 and the figures 6A-B show different perspective views of the end beam and the locking bar in a locked state.

[0006] Figure 1 schematically shows a top view of a swimming pool covering assembly 1, comprising a covering tarpaulin 2 which is supported by a plurality of support beams 3, which are substantially parallel and which have their ends resting on an edge of a swimming pool, which is not shown in figure 1 for the sake of simplicity. The covering tarpaulin 2 can be made out of one piece, or can be formed by separate strips having their side edges attached to the support beams.

[0007] When the covering assembly 1 is not in use, it is rolled up in a roll-up direction which is perpendicular to the longitudinal direction of the support beams 3, which usually is the longitudinal direction of the swimming pool. The roll-up direction is indicated in figure 1 by the arrow 4. At 8, a storage space for storing the rolled-up tarpaulin is schematically indicated. In a possible embodiment, a drum for rolling up the tarpaulin 2 is present in that storage space. In another embodiment, the tarpaulin is rolled up from the opposite free end 5. In both cases, the covering assembly has a fixed end in or near the storage space 8, i.e. the righthand end of the covering assembly in figure 1, it is to say that, at this fixed end, the covering assembly is permanently attached with respect to the fixed world. In order to be able to handle forces in the roll-up direction 4, the opposite free end 5 must be fastened to the swimming pool edge when the swimming pool covering assembly 1 is going to be used, and there must be a bias tension in the covering tarpaulin 2.

[0008] Figure 2 schematically shows a side view of the free end 5 of the swimming pool covering assembly 1. The last support beam, which is indicated as end beam 13, lies entirely on the swimming pool edge 6. In the example shown, the end beam 13 has a substantially triangular transverse contour with rounded corners. One or more tightening belts 14 are attached to the end beam 13. Each tightening belt 14 has a fastening bracket 15 or the like at its free end, by which that tightening belt 14 can be fastened to a fastening point 16 attached to the swimming pool edge 6 or to the floor. In the example shown, this fastening point 16 is implemented as a hook. Preferably, the fastening point is countersinkable in the floor or swimming pool edge, or attached in a space countersunk in the floor or swimming pool edge, which can be covered by a removable lid, which however is not shown in figure 2 for sake of simplicity.

[0009] According to an important aspect of the present invention, the tightening belt 14 is attached without tension to the fastening point 16, i.e. at the time of fastening there is no tension in the tightening belt 14.

[0010] After the tightening belt 14 has been fastened to the fastening point 16, the tightening belt 14 must be put under tension. To that end, according to a further aspect of the present invention, one rotates the end beam 13 around its longitudinal axis, in the same direction as one would rotate the end beam 13 for rolling up the swimming pool cover in order to remove it, as indicated by the arrow P1 in figure 2. However, this rolling-

up is now counteracted by the fastened tightening belt 14, which winds itself around the end beam 13 and therewith becomes taut, whereby the covering tarpaulin 2 also becomes taut, as indicated by the arrow P2 in figure 2.

[0011] In order to simplify rotation of the end beam 13, the end beam 13 is at least at one end thereof provided with an engagement part for a power tool 50 (figures 5 and 6A-B). Figure 3 schematically shows a perspective view of an end of the end beam 13, the head-end face of which is indicated with the reference number 31. In the example shown, the engagement part 32 is implemented as a hexagonal profile, onto which an open-end wrench or the like can engage. Instead of an engagement part with an external engagement profile an engagement part with an internal engagement profile could also be used. Furthermore, instead of a hexagonal profile, a tetragonal profile or an octagonal profile could be used, or a profile with even more side faces, but as the number of profile faces increases, the profile faces become smaller and the chance of damaging the profile corners is greater when exerting a great force.

[0012] Furthermore, in figure 3 is shown that the end beam 13 is provided with a driving shaft 33, in this case concentric with the engagement part 32, which driving shaft 33 is provided with key ways 34 on which a known per se roll-up machine can engage in order to roll up the swimming pool cover, which roll-up machine is however not shown in figure 3. Alternatively, the end beam 13 could be provided with a tetragonal hole, and the driving shaft could be part of the roll-up machine (male/female reversal).

[0013] In order to keep the end beam 13 in its rotated, tightened position, and thus to let the tension in the tightening belt 14 and the covering tarpaulin 2 continue, the swimming pool covering assembly according to the present invention further comprises coupling means 40 accomplishing a rotation-locking coupling between the end beam 13 and one of the other support beams 3, in the example shown the next support beam 3 neighbouring the end beam 13. That next end beam will hereinafter also be referred to by the phrase neighbour beam 43. The figures 4A and 4B show schematic longitudinal sections of the neighbour beam 43. The neighbour beam 43 is at least partly hollow, and has a head-end face 42 with a hole 41. The locking means 40 comprise a telescopic locking bar accommodated in the neighbour beam 43, reaching through the hole 41 in the end face 42 of the neighbour beam 43. At its outward projecting end, the locking bar 44 is provided with a coupling member 45, which is suitable for coupling with the engagement part 32 of the end beam 13. In the example shown, the coupling member 45 is implemented as a ring with an internal hexagonal profile, fitting to the hexagonal profile of the engagement part 32 of this exemplary embodiment. The ring-shaped coupling member 45 is permanently attached on this end of the locking bar 44, in such a way that the centre line of the coupling

ring 45 is substantially perpendicularly directed with respect to the centre line of the locking bar 44.

[0014] The locking bar 44 is implemented telescopically, with which is meant that the locking bar 44 contains at least two bar parts 44a and 44b fitting into each other, which can move with respect to each other in the longitudinal direction. In the exemplary embodiment of figure 4A, a first locking bar part 44a is at least partially hollow, whereas the second locking bar part 44b is located inside the first hollow locking bar part 44a, and, if desired, can be implemented hollow or solid. Preferably, the two locking bar parts 44a and 44b can also rotate with respect to each other around the longitudinal axis.

[0015] At its other end, opposite the coupling member 45, the locking bar 44 is provided with a transverse plate 46 projecting beyond the contour of the locking bar 44, the transverse dimension of this plate 46 being larger than that of the hole 41. At a small distance from this end plate 46, the locking bar 44, i.e. in this case the second locking bar part 44b, is provided with a knee joint 47.

[0016] Figure 4A shows the locking bar 44 in a stowed-away state, wherein the locking bar 44 is located entirely inside the hollow neighbour beam 43, wherein only the coupling eye 45 projects outside the hollow neighbour beam 43. The locking bar 44 is in this stowed-away state when the swimming pool covering assembly is fully rolled up. When the swimming pool covering assembly is used to cover the swimming pool, and has been brought under tension in the way as described before by rotating the end beam 13, the locking bar 44 is pulled out from the hollow neighbour beam 43. As soon as the knee joint 47 has passed the hole 41 in the end face 42 of the hollow neighbour beam 43, the locking bar 44 can be pivoted with respect to the neighbour beam 43, as illustrated in figure 4B and in figure 5. The end plate 46 prevents the locking bar 44 from being completely pulled out from the neighbour beam 43.

[0017] The coupling eye 45 at the end of the locking bar 44 can now be applied over the engagement part 32 of the end beam 13. In this case, the precise mutual distance between the end beam 13 and the neighbour beam 43 plays no role, because the locking bar is telescopic.

[0018] Once the coupling eye 45 has been applied around the engagement part 32 of the end beam 13 (see figures 6A-B), the open-end wrench 50 (or other tool) can be taken away from the engagement part 32. The tension force in the tightening belt 14 wants to make the end beam 13 rotate, but the end beam 13 cannot rotate because then the long locking bar 44 would have to rotate along, and this is counteracted by the weight of the neighbour beam 43.

[0019] In figure 3 is further shown that in the engagement part 32 a transverse hole can be made through which a lock, such as a padlock or the like, can be arranged to prevent the coupling eye 45 from being pulled off the engagement part 32 at an unexpected moment by a not-anticipated force acting on the locking bar 44

from the outside.

[0020] Thus the present invention succeeds in realizing the said objectives by providing a swimming pool covering assembly, comprising:

a covering tarpaulin, supported by a system of at least two mutually substantially parallel support beams which are intended to have their ends resting on a swimming pool edge; and at least one tightening belt attached or attachable to an end beam. The tightening belt serves for fastening a free end of the cover to the swimming pool edge, and for accomplishing a tension in the covering tarpaulin. The tightening belt is fastened to a fastening point; at that moment there is no tension in the covering tarpaulin yet. Then, with the help of the tightening means, the end beam is rotated around its longitudinal axis in order to tighten the tightening belt. The position of the end beam is locked in the tightened state by the locking means.

[0021] It shall be clear to a person skilled in the art that the invention is not limited to the exemplary embodiments discussed above, but that several variations and modifications are possible within the protective scope of the invention as defined in the appending claims.

[0022] For instance it is also possible that the tightening belt 14 is a loose tightening belt, which in use has to be fastened to the fastening point 16 and to the end beam 13; a disadvantage of loose tightening belts, however, is that they tend to get lost.

[0023] In another variation, it is possible that the tightening belts 14 are permanently mounted in a space sunk in the floor or swimming pool edge 6, and that, in use, they have to be fastened to the end beam 13.

[0024] In a further embodiment variation, it is possible that the coupling member 45 is connected to the locking bar 44 by means of a ratchet mechanism, or that the coupling member 45 itself is provided with a ratchet mechanism. When using the locking bar 44, the coupling member 45 can then be coupled to the engagement part 32 of the end beam 13 before the tarpaulin is tightened (force P1 in figure 2) with the tool 50. Depending on the ratchet mechanism, the end beam 13 then has more freedom than 60° rotational positions.

[0025] In the above, the power tool 50 has been described as a loose open-end wrench for acting on an engagement part 32 implemented as a hexagonal profile. In a further embodiment variation, also the end beam 13 is hollow, provided with an end plate with a hole in it, and in the end beam 13 a shaft is accommodated, which is provided with a knee joint at an end, all these issues in a similar way as described with reference to the neighbour beam 43 and the locking bar 44, on the understanding that the shaft in the end beam 13 does not need to be telescopic. In order to rotate the end beam 13, this shaft is pulled out from the end beam, pivoted over approximately 90° by means of the knee

joint in it, and then this end beam can function as lever for rotation of the end beam. For rotation coupling, said shaft and the hole in the end plate of the end beam 13 can be provided with corresponding profiles, or a stop for said shaft can be arranged on that end plate.

Claims

1. Swimming pool covering assembly, comprising:
 - a covering tarpaulin (2), supported by a system of at least two mutually substantially parallel support beams (3, 13, 43) which are intended to have their ends resting on a swimming pool edge;
 - at least one tightening belt (14) attached or attachable to an end beam (13);
 - tightening means (50), adapted to rotate the end beam (13) around its longitudinal axis in order to tighten the tightening belt (14) when it is fastened to the end beam (13) and to the fixed world;
 - locking means (40), adapted to lock the position of the end beam (13) in the tightened state.
2. Swimming pool covering assembly according to claim 1, wherein the tightening means comprise an engagement part (32) for a power tool, fixed with respect to the end beam (13).
3. Swimming pool covering assembly according to claim 2, wherein the engagement part (32) comprises a profile piece, preferably a tetragonal profile or a hexagonal profile.
4. Swimming pool covering assembly according to claim 3, wherein the profile piece (32) has an external polygonal profile, and wherein furthermore a power tool (50) is provided, in this case implemented as open-end wrench.
5. Swimming pool covering assembly according to claim 3 or 4, wherein the engagement part (32) is provided with a transverse hole (35).
6. Swimming pool covering assembly according to any of the previous claims, wherein the locking means (40) are adapted for accomplishing a coupling between the end beam (13) and a support beam (43).
7. Swimming pool covering assembly according to claim 6, wherein the locking means (40) comprise a locking bar (44), with a first end which is suitable for a rotation locking engagement on the end beam (13), and a second end which is suitable for engagement on the said other support beam (43).

8. Swimming pool covering assembly according to claim 7, wherein the end beam (13) is provided with a profile piece (32) at an end, and wherein the said first end of the locking bar is provided with a counter-profile piece (45) which fits on the said profile piece (32). 5
9. Swimming pool covering assembly according to claim 8, wherein the counter-profile piece (45) on the said first end of the locking bar (44) comprises a ring with an inner profile. 10
10. Swimming pool covering assembly according to claim 8 or 9, wherein the counter-profile piece (45) is coupled to the locking bar (44) by means of a ratchet mechanism. 15
11. Swimming pool covering assembly according to any of the claims 6 to 10, wherein the said other support beam (43) is hollow and is suitable for accommodating the locking bar (44) in it. 20
12. Swimming pool covering assembly according to claim 11, wherein the said other support beam (43) has a head-end plate (42), wherein the locking bar (44) extends through a hole (41) in that end plate (42), wherein the second end of the locking bar (44) situated opposite the counter-profile piece (45) is located in an inner space (48) of the said other support beam (43), and is provided with an end piece (46) with a diameter larger than that of the hole (41). 25 30
13. Swimming pool covering assembly according to claim 12, wherein the locking bar (44) is provided with a knee joint (47) at a short distance from the said end piece (46). 35
14. Swimming pool covering assembly according to any of the claims 6 to 13, wherein the locking bar is a telescopic locking bar. 40
15. Method for covering a swimming pool with a swimming pool covering assembly (1), which swimming pool covering assembly comprises: 45
- a covering tarpaulin (2), supported by a system of at least two mutually substantially parallel support beams (3, 13, 43) the ends of which rest upon a swimming pool edge (6);
- and at least one tightening belt (14) attached or attachable to an end beam (13); 50
- the method comprising the steps of:
- attaching the end beam (13) to a fixed fastening point (16) by means of the tightening belt (14) in a tensionless state; rotating the end beam (13) around its longitudinal axis, in such a way that effectively the tightening 55
- belt (14) is being tightened; locking the position of the end beam (13) in the tightened state.
16. Method according to claim 15, wherein locking the position of the end beam (13) takes place by accomplishing a coupling between this end beam (13) and another support beam (43).

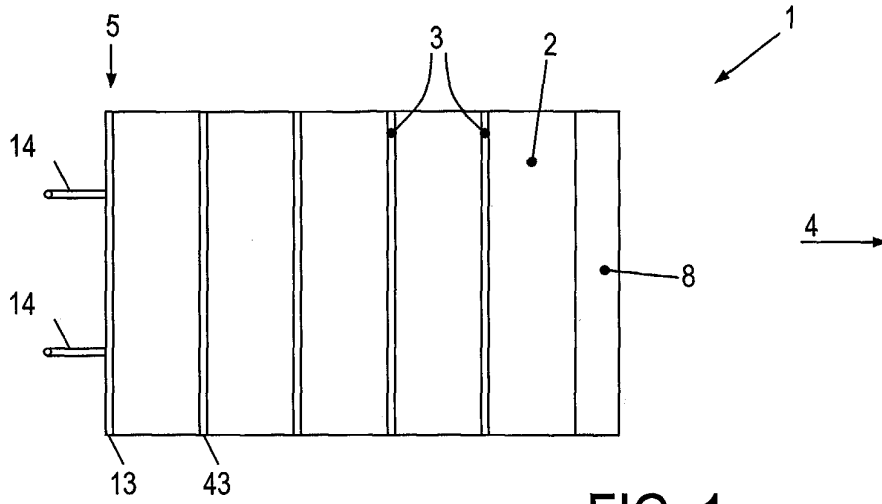


FIG. 1

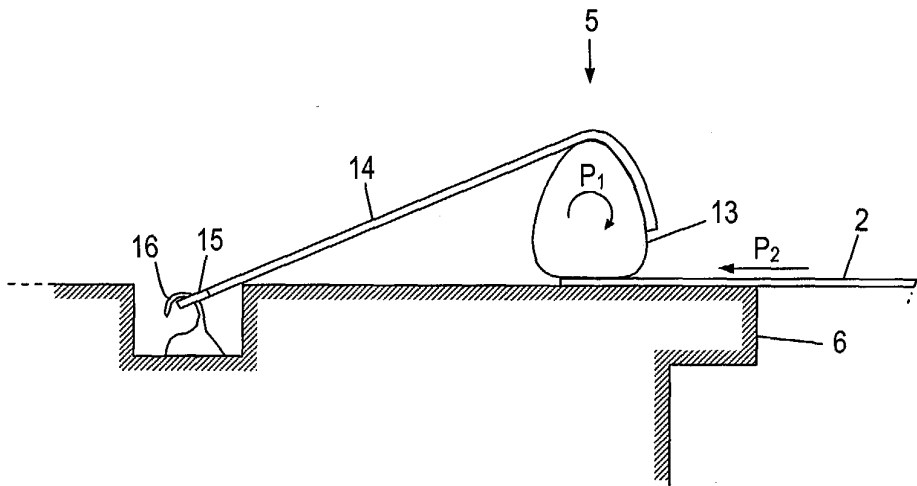


FIG. 2

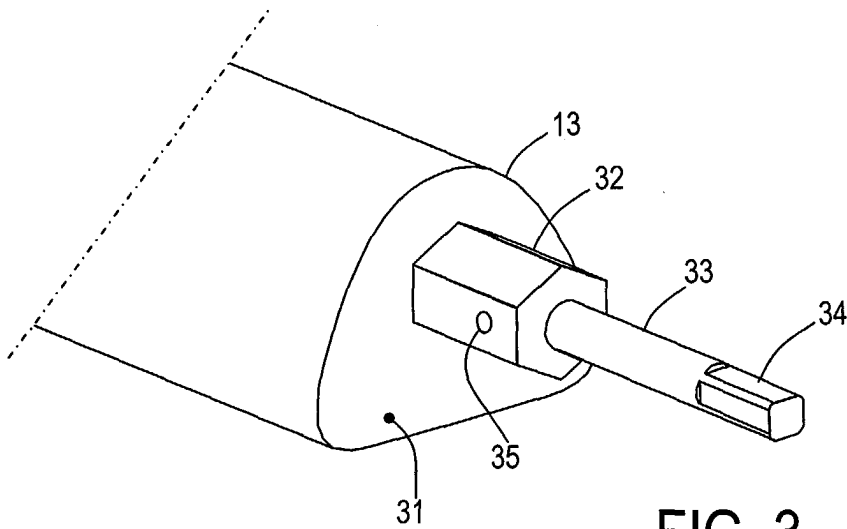


FIG. 3

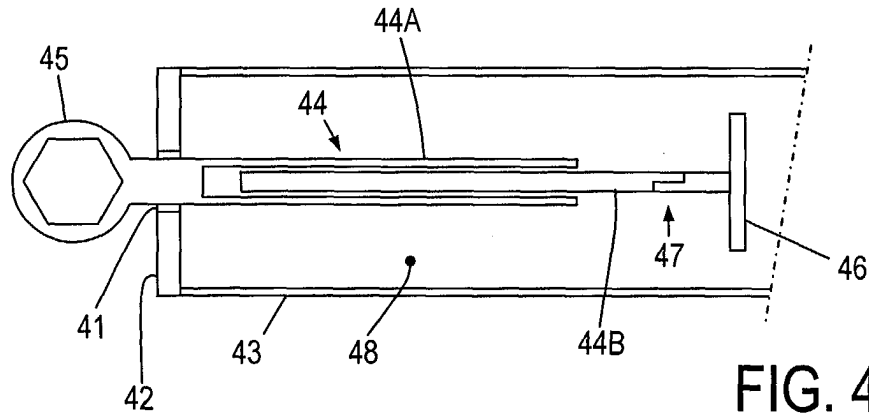


FIG. 4A

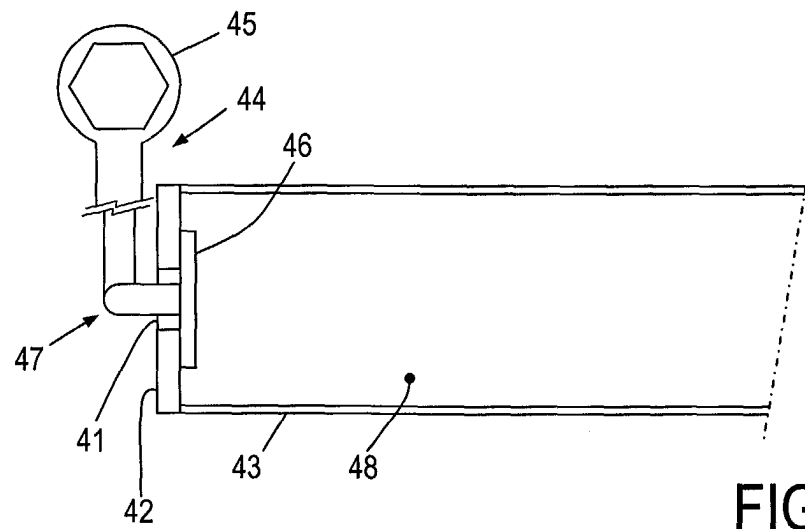


FIG. 4B

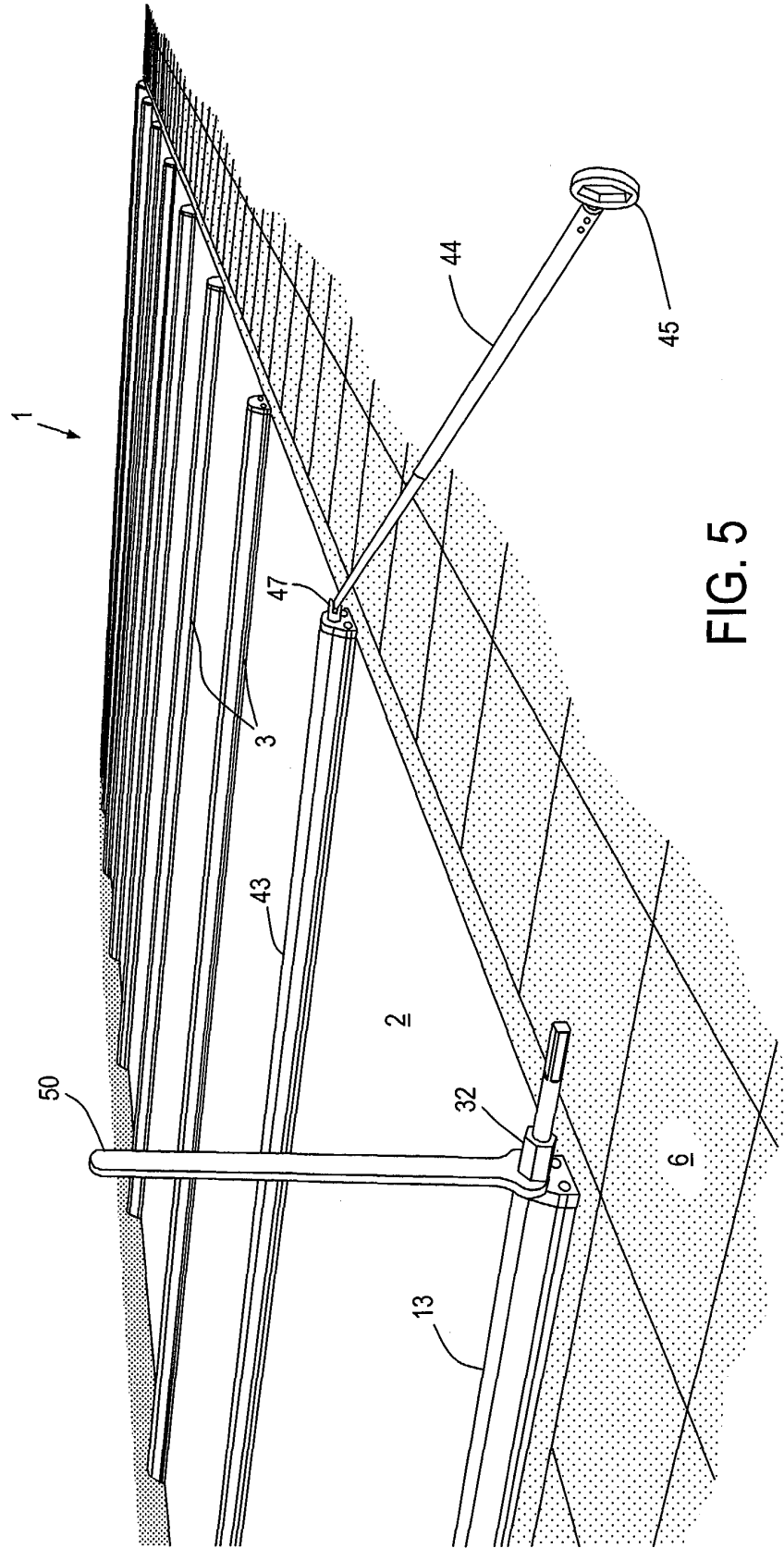


FIG. 5

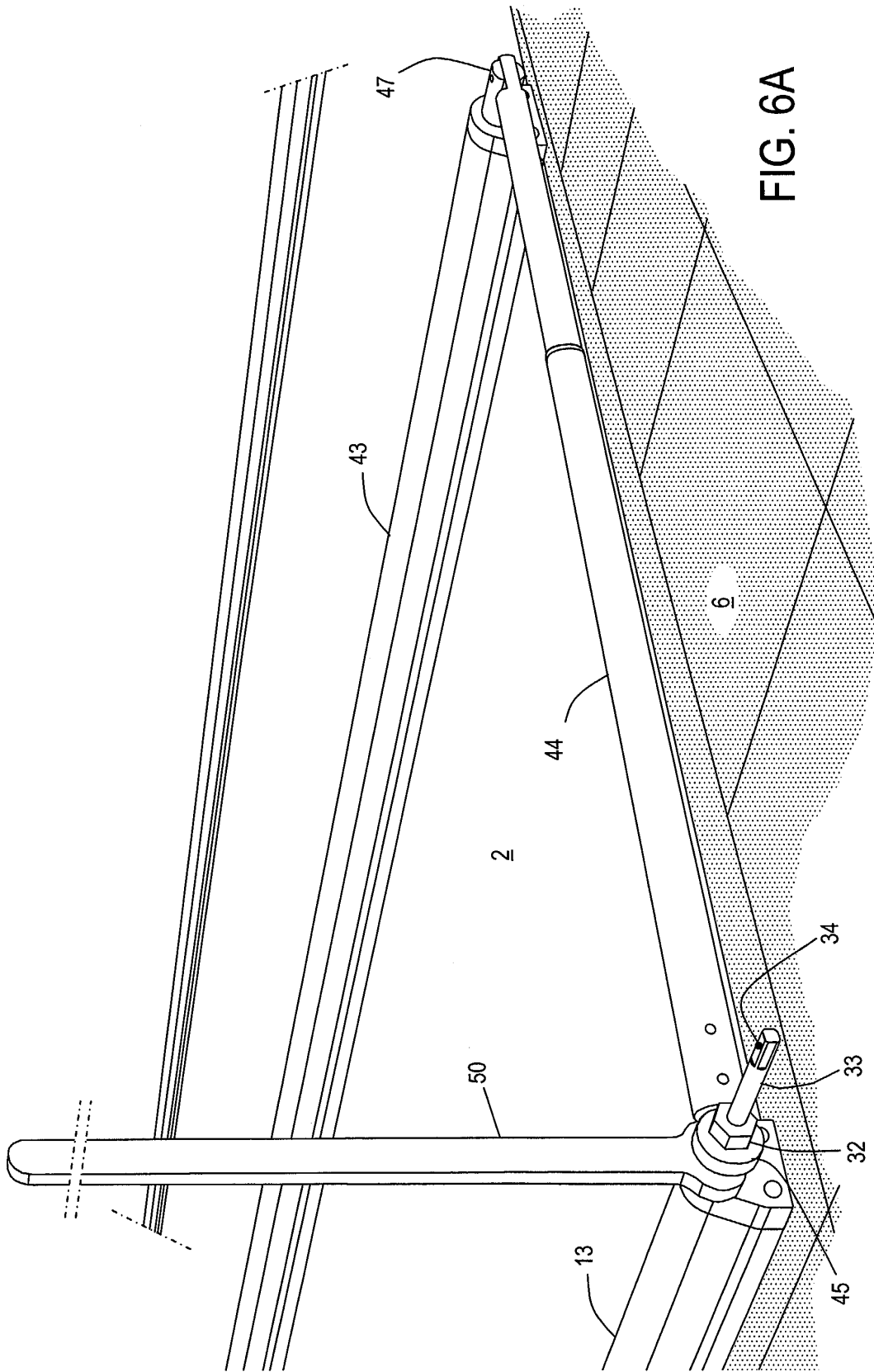


FIG. 6A

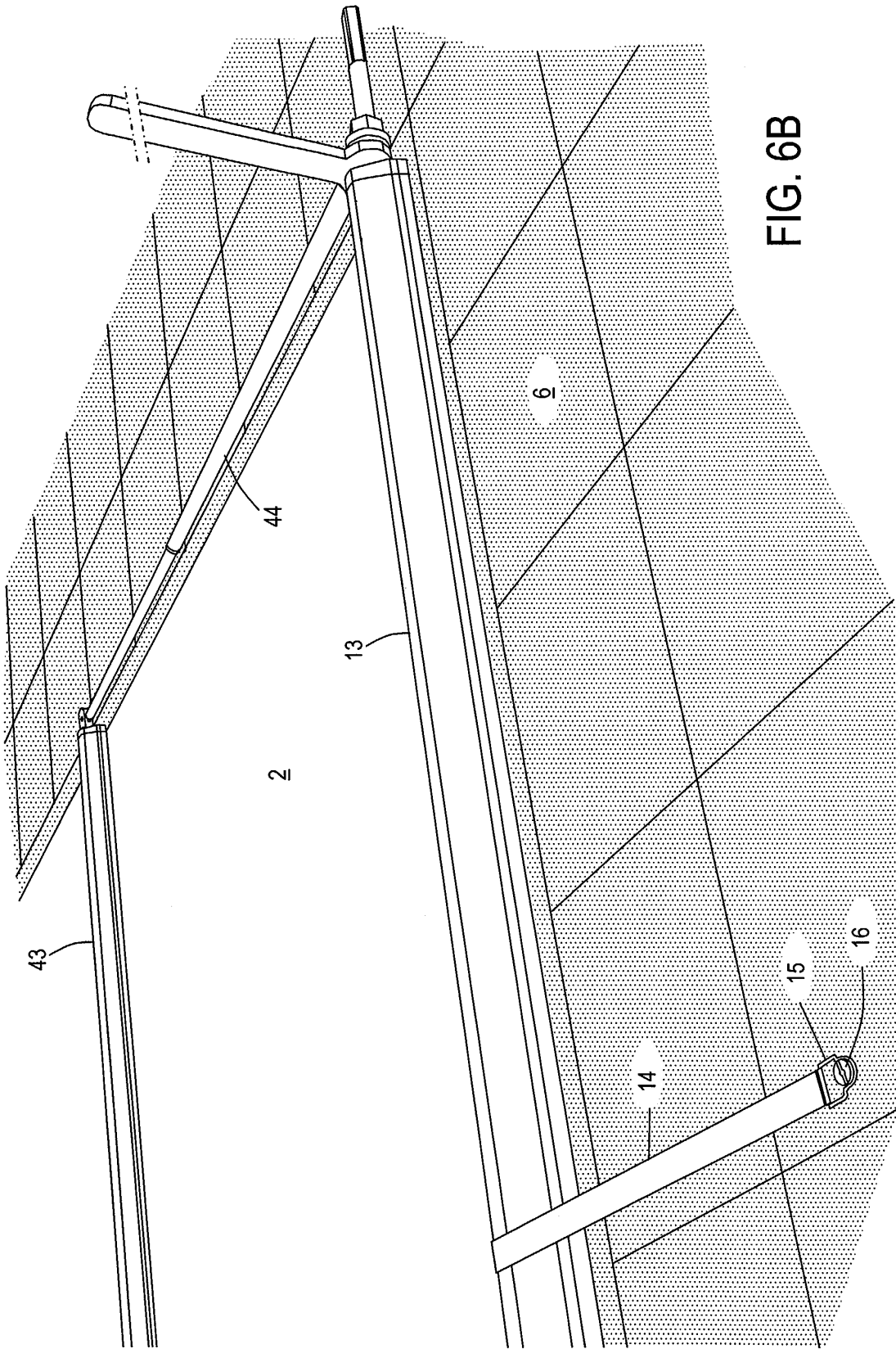


FIG. 6B



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 07 6447

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.7)
A	DE 26 27 738 A (GLATZ AG) 23 December 1976 (1976-12-23) * page 4, line 13 - page 5, line 6; figure 1 *	1	E04H4/10
A	EP 0 724 049 A (LUCIEN WALTER SOCIETE ANONYME) 31 July 1996 (1996-07-31)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E04H
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		22 September 2004	Porwo11, H
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	

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 07 6447

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-09-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 2627738	A	23-12-1976	CH 584827 A5	15-02-1977
			AT 347644 B	10-01-1979
			AT 450076 A	15-04-1978
			DE 2627738 A1	23-12-1976

EP 0724049	A	31-07-1996	FR 2729992 A1	02-08-1996
			FR 2729993 A1	02-08-1996
			AT 192820 T	15-05-2000
			DE 69608143 D1	15-06-2000
			EP 0724049 A1	31-07-1996
