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(54) **Auxiliary device for realising round masonry and a method for producing such masonry**

(57) Auxiliary device for realising round masonry, characterised in that it consists of at least one guiding element (3-4), as well as means (5) to move the guiding

element (3-4) according to a bent, in particular a circular path.

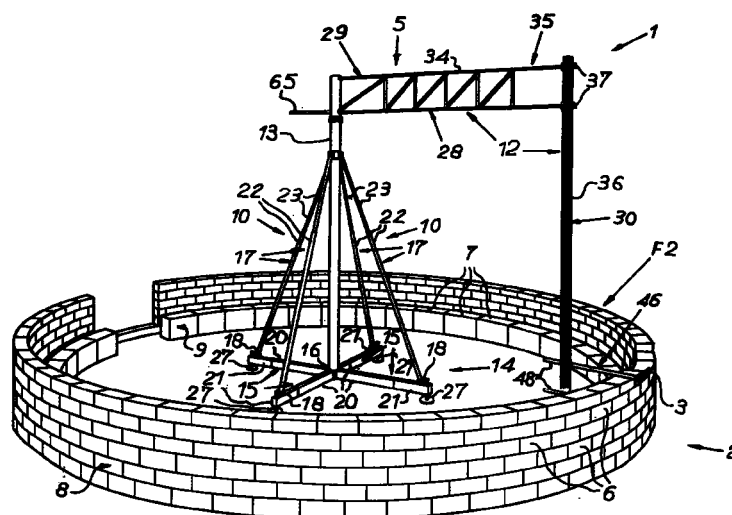


Fig. 1

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Description

[0001] The present invention concerns an auxiliary device for realising round masonry, as well as a method for producing such masonry.

[0002] As is known, when making straight masonry, use is made of a mason's line to lay the bricks in a straight line, as well as horizontally.

[0003] It is clear that such a mason's line cannot possibly be used as a guiding means when realising round masonry.

[0004] The invention concerns an auxiliary device which from now on makes it possible, when realising round masonry, to provide means which make it possible to align the bricks while laying them.

[0005] To this end, the invention concerns an auxiliary device for realising round masonry, characterised in that it consists of at least one guiding element, as well as means to move the guiding element according to a bent, in particular a circular path. This auxiliary device makes it possible for the guiding element to be systematically turned as a row of brickwork is realised. By correctly erecting the means which make it possible for the guiding element to be moved according to a bent path, one moreover obtains that the path of the guiding element is situated in a horizontal plane, so that not only an alignment according to a circular path, but also an alignment in a horizontal plane is obtained.

[0006] Preferably, the means for moving the guiding element at least consist of supporting means and a supporting structure carrying the guiding element which can rotate along an axis of rotation defined by the supporting means.

[0007] The supporting means are hereby preferably provided with adjusting means to adjust these supporting means in relation to the underlying bottom, such as for example supporting points which can be adjusted in height, in particular adjusting screws which can be turned in and out.

[0008] These adjusting means make it possible for the auxiliary device to be erected in a stable manner on an uneven bottom, and for the supporting means to be vertically aligned with the above-mentioned axis of rotation, so that the guiding element can rotate in a horizontal plane.

[0009] According to the most preferred embodiment, the rotatable supporting structure will mainly consist of a part which extends laterally, preferably horizontally, which is coupled to the above-mentioned supporting means in a rotatable manner on one end, and a downward directed part situated at a distance from the supporting means which carries the above-mentioned guiding element. Thus is obtained so to say a bridge-shaped construction, under which there is a certain free space, so that the latter, while the rotatable supporting structure is being rotated, is not hindered by objects situated on the bottom or by unevennesses in the bottom.

[0010] In particular, the laterally extending part is preferably situated at such a height above the bottom that when it is rotated over a person, in particular the mason laying the bricks in question, it can be moved and thus is not hindered by it. In principle, the height can be restricted when the above-mentioned part only has to be moved over a squatted person or a person bending down, but preferably the height is such that this part can be freely moved over a standing person. Practically, this part will be situated at a height above the ground of at least 1.5 m and better still of at least 1.8 m.

[0011] Preferably, the auxiliary device also contains adjusting means to adjust the radius of the turning circle of the guiding element, such that this radius can be selected as a function of the required radius of the bent masonry.

[0012] As will become clear from the following description, these adjusting means can be of different nature and can be either or not combined.

[0013] Further, the auxiliary device preferably also contains adjusting means to adjust every guiding element that is part of it in height as the masonry is put up. These adjusting means make it possible for the guiding elements to be systematically moved.

[0014] The auxiliary device is preferably also equipped with adjusting means or regulating means to adjust the tangential position of every guiding element concerned. These regulating means make it possible, in case of a correct setting, for the bricks which are laid along the guiding element to be situated with their outer angular points on one and the same radius.

[0015] Finally, the invention also concerns a method for realising a round masonry, characterised in that it consists of erecting a device as described above and of systematically laying bricks in a circle, whereby these bricks are positioned by means of the guiding element, the guiding elements respectively, of the above-mentioned device, whereby these guiding elements are rotated and adjusted in height as a function of the laying of the bricks.

[0016] In order to better explain the characteristics of the invention, the following preferred embodiment is described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 represents an auxiliary device according to the invention while being used;

figure 2 represents a view to a larger scale of the arrow F2 in figure 1;

figure 3 represents the auxiliary device from figure 1;

figure 4 represents a section according to line IV-IV in figure 3;

figure 5 represents the part which is indicated by F5 in figure 3, when disassembled;

figure 6 shows a view in perspective of the part which is indicated by F6 in figure 3, as it is when it

is loose;

figure 7 represents a local section according to line VII-VII in figure 3;

figure 8 shows the part of the auxiliary device which is indicated by arrow F8 in figure 2 to a larger scale; figure 9 shows a section according to line IX-IX in figure 2;

figure 10 shows a section according to line X-X in figure 3;

figure 11 represents a local section of the part which is indicated by arrow F11 in figure 3;

figure 12 represents a variant of the device from figure 3;

figure 13 represents a section according to line XIII-XIII in figure 12 to a larger scale.

[0017] As represented in figure 1, the invention concerns an auxiliary device 1 for realising round masonry 2, in this case a rotunda.

[0018] According to the invention, this auxiliary device 1 consists of at least one, but in the given example two guiding elements 3-4, as well as means 5 to move every guiding element 3, 4 respectively, according to a bent, in particular a circular path.

[0019] As represented in figure 2, the guiding elements 3-4 preferably consist of straight elements, such as laths or such, which extend horizontally, and along which the bricks 6-7 are placed during the bricklaying. In the given example, the guiding elements 3 and 4 are used for building an outer wall 8 with bricks 6 and an inner wall 9 with bricks 7 respectively.

[0020] The means 5 for moving the guiding elements 3-4 at least consist of supporting means 10 and a supporting structure 12 carrying the guiding elements 3-4 which can rotate along an axis of rotation 11 defined by the supporting means 10.

[0021] The supporting means 10 consist of a standing element 13 in the shape of a mast, as well as a foot 14 for this element 13.

[0022] As represented in figure 4, the foot 14 in the given example consists of four arms 15 erected in the shape of a cross, which are preferably telescopic. The standing element 13 is preferably put loose in the foot 14, in particular in a seating 16 provided to this end, and it is held up by means of lateral supports 17. These lateral supports 17 are preferably telescopic and are provided with their respective ends between coupling points 18 and 19, in place of the free ends of the arms 15 and the element 13 respectively.

[0023] The telescopic parts 20 and 21 of the arms 15, as well as the telescopic parts 22 and 23 of the lateral supports 17 can be locked in the required extended position by means of clamping screws 24 and 25.

[0024] The foot 14 is provided with adjusting means to adjust the whole in relation to the bottom 26, which consist of supporting points which can be set in height, in particular adjusting screws 27 which can be turned in and out.

[0025] Both the adjusting screws 27 and the extending lateral supports act as adjusting means which make it possible for the element 13 and thus also for the axis of rotation 11 to be positioned vertically.

[0026] The above-mentioned rotatable supporting structure 12 consists of a part 28 which extends laterally, preferably horizontally, which is coupled to the above-mentioned supporting means 10 in a rotatable manner on one end 29, and a downward directed part 30 which is situated at a distance from the supporting means 10, carrying the above-mentioned guiding elements 3-4.

[0027] As mentioned in the introduction, the laterally extending part 28 is situated at a height H above the bottom 26 of at least 1.5 m and better still of at least 1.8 m.

[0028] The laterally extending part 28 is made as a horizontal arm which can rotate around the top end 31 of the above-mentioned element 13.

[0029] As represented in figure 5, the rotatable part 28 is preferably shifted loosely over the top end 31, so that it can be easily mounted and dismounted. Use can hereby be made of a spindle 32 or such with bearings 33 which make sure that the rotatable supporting structure 12 can be easily rotated.

[0030] The length of the horizontal arm, or thus of the part 28, can be adjusted by means of removable and replaceable connecting pieces 34 on the one hand, and by making use of a telescopic piece 35 on the other hand, which is represented as such in figure 6. Figure 5 shows that the replaceable connecting piece 34 can be disassembled, whereas the telescopic U-movement of the piece 35 is indicated in figure 3.

[0031] The downward directed part 30 mainly consists of a standing profile 36 which is attached to the free end of the part 28, in seatings 37 provided to this end in the part 28, in particular in the telescopic piece 35.

[0032] For this profile 36, use can be made of a profile which is provided with one or several longitudinal profilings in the shape of seatings 38-39-40-41, which are preferably dovetailed as represented and with which, as will be described hereafter, can be realised several clamped joints. Such a profile is known as such from the Belgian patent No. 1.010.223.

[0033] As is represented in figure 7, the seatings 38 and 39 make it possible for the profile 36 to be clamped in the seatings 37 of the telescopic piece 35 by means of clamped joints 42 and 43. The clamped joints 42 and 43 hereby consist of clamping pieces 44 which can be shifted in the seatings 38 and 39, in the shape of nuts with at least two bevelled sides, and bolts 45 meshing therein with heads which can be tightened manually, for example as they are provided with wings.

[0034] As the profile 36 can shift up and down in the clamped joints 42 and 43 in the non-tightened situation, the profile 36 can be clamped in the seatings 37 at any height whatsoever.

[0035] The guiding elements 3 and 4 are attached to the profile 36 by means of connecting pieces 46 and 47. These connecting pieces 46 and 47 are preferably made such and are connected to the profile 36, as will be described hereafter, such that they allow for a fine adjustment of the position of the guiding elements 3 and 4 in the radial direction, as well as an initial fine adjustment in height, and a systematic shift in height as the rows of bricks 6-7 are finished.

[0036] The connecting pieces 46 and 47, which are represented in detail in the figures 2 and 8 to 10 are built up in an identical manner, but they are attached to the front and backside of the profile 36 respectively.

[0037] These connecting pieces 46 and 47 each mainly consist of a horizontal bar 48, a vertical bar 49 onto which the guiding element 3-4 concerned is attached and a clamp coupling 50 with which the whole is secured to the profile 36.

[0038] Each of the above-mentioned clamp couplings 50 consists of a support 51 which, by means of clamping pieces 52 and 53, which fit in the seating 38 concerned, 39 respectively, and by means of clamping bolts 54 and 55, can be fixed to the profile 36 at the desired height.

[0039] The horizontal bar 48 is carried by the support 51 as it is provided in a horizontally shifting manner to a seating 56 which is fixed to the support 51. Thus are offered fine-adjustment means which make it possible for the guiding means 3 concerned, 4 respectively, to be set in the radial direction. The bar 48 can be secured in the seating 56 by means of a tightening screw 57.

[0040] The vertical bar 49 can be displaced in height in a seating 58 which is provided crosswise on the end of the bar 48 and which can be clamped by means of a tightening screw 59. Thus are offered fine-adjustment means which make it possible to initially set the guiding element 3 or 4 concerned in height. In this way are also formed control means which make it possible to set the tangential position of the guiding element 3-4 concerned.

[0041] In the seatings 40 and 41 are fixed measuring rods 60 and 61 by means of tightening screws 62 and 63. These measuring rods 60-61 make it possible for the connecting pieces 46-47 to be moved upward all the time over certain distances, which distances coincide with an interval in between two rows.

[0042] The calibration on the measuring rods may consist of a conventional meter system, but it may also consist of special marks which are provided at distances from one another coinciding with each time the height of the bricks 6, 7 respectively that are being laid, increased by the thickness of the joints to be realised.

[0043] The use of the auxiliary device 1 can be derived from the figures 1 to 3. First, the foot 14 with the element 13 provided therein is put in the middle of the construction to be realised. By means of the adjusting screws 27, the foot 14 is adjusted in relation to the

underlying bottom 26, and by adjusting the lateral supports 17, the element 13 is placed vertical.

[0044] Next, the rotatable supporting structure 12 is provided on the element 13, either or not provided with one or several connecting pieces 34.

[0045] Afterwards, the profile 36 is fixed in the seating 37, and the guiding elements 3 and 4 are in turn provided to the profile 36 by means of the above-described connecting pieces 46 and 47.

[0046] It should be noted that the profile 36 is preferably mounted in a freely floating manner above the bottom 26. In order to keep the whole in balance, a counterweight 64 can be provided to the construction, for example to means which are specially provided to this end, such as the protruding arm 65 which is represented.

[0047] In order to make sure that the guiding elements 3-4 are moved in horizontal fields, a control can be exerted thereupon by turning the rotatable supporting structure 12 and by checking whether for example the lower side of the profile 36 moves in a horizontal field, for example by means of a number of direction points situated on the perimeter which have been measured out beforehand by means of a spirit level. Deviations can then be adjusted by means of the adjusting screws 27.

[0048] Subsequently, the guiding elements 3 and 4 are precisely set by means of the connecting pieces 46 and 47, both in the horizontal and in the vertical direction.

[0049] Then, the mason may start, whereby the guiding elements 3-4 are turned and the bricks 6-7 are laid along these guiding elements, for example at a very short distance thereof, or possibly against them.

[0050] After a row of bricks has been laid, the guiding elements 3-4 are each time moved up over one row, by clamping them at a higher point on the profile 36 by means of the supports 51, whereby the exact movement in height can be checked by means of the measuring rods 60 and 61.

[0051] It is clear that, depending on the application, it is also possible to use only one guiding element instead of the two above-mentioned guiding elements 3-4, or, in special applications, even more than two, which are each situated on a different radius.

[0052] The guiding elements 3-4 do not necessarily need to be carried by one and the same supporting structure 12. Thus, it would be possible for example to apply different supporting structures which can move along one another and which each carry a guiding element. Nor is it excluded to use two laterally extending parts, situated radially on either side of the supporting means 10, which make it possible to simultaneously lay bricks in two places which are diametrically opposed.

[0053] According to an embodiment which is not represented, instead of the telescopic piece 35, use can also be made of a downward directed part 30 which is slidable and/or which can be attached in different points

along the rotatable supporting structure 12, to thus change the radius.

[0054] It is clear that the couplings between the connecting pieces 46-47 and the profile 36 may also be of a different nature.

[0055] Instead of clamp couplings, use could be made for example of a support 51 which can be moved up and down by means of a turning knob.

[0056] Figures 12 and 13 represent yet another variant. Hereby, the laterally extending part 28 consists of a frame with a triangular section, guaranteeing more stability. As a result of this, also the height H1 of this part 28 can be restricted, whereby for the same height H as in figure 1, the total height of the auxiliary device 1 can be restricted, or vice versa, for the same total height as in figure 1 can be obtained a larger height H.

[0057] Moreover, the triangular construction makes it possible to easily span large distances.

[0058] Figure 12 also shows that extra supporting profiles 66, 67 and 68 can be used.

[0059] In general, it should be noted that the auxiliary device 1 is preferably made such that, by means of a foot 14 or such, it can be independently erected on a base, without any anchorages having to be provided in the base or without any lateral supports towards other structural members being required. The whole is preferably designed as a bridge-shaped construction under which one can easily move, whereas the lower end of the downward directed part floats freely at a short distance above the ground, or at least can be brought at a short distance above the ground.

[0060] It should be noted that the auxiliary device 1 can be made heavier so that it will not topple, for example by putting a weight 69 on the foot 14.

[0061] Finally, it should also be noted that the guiding elements 3-4 must not necessarily be made as laths or such along which the bricks 6-7 can be laid, but that, in principle, they may have any shape whatsoever and may for example consist of a radially protruding pen whose end represents the radius upon which the bricks 6 or 7 should be placed.

[0062] The present invention is by no means limited to the above-described embodiments represented in the accompanying drawings; on the contrary, such an auxiliary device can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Auxiliary device for realising round masonry, characterised in that it consists of at least one guiding element (3-4), as well as means (5) to move the guiding element (3-4) according to a bent, in particular a circular path.
2. Auxiliary device according to claim 1, characterised in that the means (5) for moving the guiding ele-

ment (3-4) at least consist of supporting means (10) and a supporting structure (12) carrying the guiding element (3-4) which can rotate along an axis of rotation (11) defined by the supporting means (10).

3. Auxiliary device according to claim 2, characterised in that the supporting means (10) consist of a standing element (13), as well as a foot (14) for this element (13).
4. Auxiliary device according to claim 2 or 3, characterised in that the supporting means (10), and in particular the foot (14), is provided with adjusting means to align the supporting means (10) in relation to the bottom (26) and/or of adjusting means to adjust the supporting means (10) such that the axis of rotation (11) is situated vertically.
5. Auxiliary device according to any of claims 2 to 4, characterised in that the rotatable supporting structure (12) mainly consists of a part (28) which extends laterally, preferably horizontally, which is coupled to the above-mentioned supporting means (10) in a rotatable manner on one end, and a downward directed part (30) which is situated at a distance from the supporting means (10), carrying the above-mentioned guiding element (3-4).
6. Auxiliary device according to claim 5, characterised in that the laterally extending part (28) is situated at a height above the ground (26) of at least 1.5 m and better still of at least 1.8 m.
7. Auxiliary device according to claim 5 or 6, characterised in that the downward directed part (30) mainly consists of a standing profile (36) which is provided with longitudinal profilings forming seatings (38-39-40-41) which make it possible to realise several clamped joints (42-43), clamp couplings (50) respectively, with the other components.
8. Auxiliary device according to any of the preceding claims, characterised in that it contains adjusting means to adjust the radius of the turning circle of the guiding element (3-4) around the supporting means (10).
9. Auxiliary device according to claim 8, characterised in that the above-mentioned adjusting means contain one of or a combination of two or more of the following features:
 - a laterally extending part (28) whose length can be adjusted;
 - a laterally extending part (28) containing at least two parts (34-35) which can be pulled out in relation to one another;
 - a laterally extending part (28) containing

replaceable and/or removable connecting pieces (34);

- a downward directed part (30) which can be adjusted along the laterally directed part (28), such that the radius upon which the downward directed part (30) is attached to the laterally directed part (28) can be changed; 5
- fine-adjustment means which allow for the radial adjustment of the guiding element (3-4) in relation to the downward directed part (30). 10

10. Auxiliary device according to any of the preceding claims, characterised in that it contains adjusting means to adjust every guiding element (3-4) concerned in height and/or to adjust it as the masonry is put up. 15

11. Auxiliary device according to claim 10, characterised in that the adjusting means to set the guiding element (3-4) concerned in height consist of one or several of the following features: 20

- a coupling between the laterally extending part (28) and the downward extending part (30) which makes it possible to attach the downward extending part (30) at different heights on the laterally extending part (28); 25
- a connecting piece (46-47) between the guiding element (3-4) and the downward extending part (30), so that the guiding element (3-4) can be moved up and down in relation to the downward extending part (30) and can be set at the required height. 30

12. Auxiliary device according to any of the preceding claims, characterised in that it has at least two guiding elements (3-4), for building an outer wall (8) and an inner wall (9) respectively. 35

13. Auxiliary device according to any of the preceding claims, characterised in that every guiding element (3-4) concerned mainly consists of a straight element which extends horizontally. 40

14. Auxiliary device according to any of the preceding claims, characterised in that it contains adjusting means to adjust the tangential position of every guiding element (3-4) concerned. 45

15. Auxiliary device according to any of the preceding claims, characterised in that it is provided with a foot (14), so that the auxiliary device (1) is independently supported, simply by placing it on a base. 50

16. Auxiliary device according to any of the preceding claims, characterised in that it is designed as a bridge-shaped construction with a downward directed part (30) which floats freely above the 55

ground.

17. Auxiliary device according to claim 16, characterised in that the lower end of the downward directed part (30) is situated at a short distance above the ground, or at least can be set at a short distance above the ground.

18. Method for realising a round masonry, characterised in that it consists of erecting an auxiliary device (1) as described in any of the preceding claims, whereby this auxiliary device (1) is erected loosely on the ground, and of systematically laying bricks (6-7) in a circle, whereby these bricks (6-7) are positioned by means of the guiding element (3-4), the guiding elements (3-4) respectively of the above-mentioned auxiliary device (1), whereby these guiding elements (3-4) are rotated and are adjusted in height as a function of the laying of the bricks (6-7).

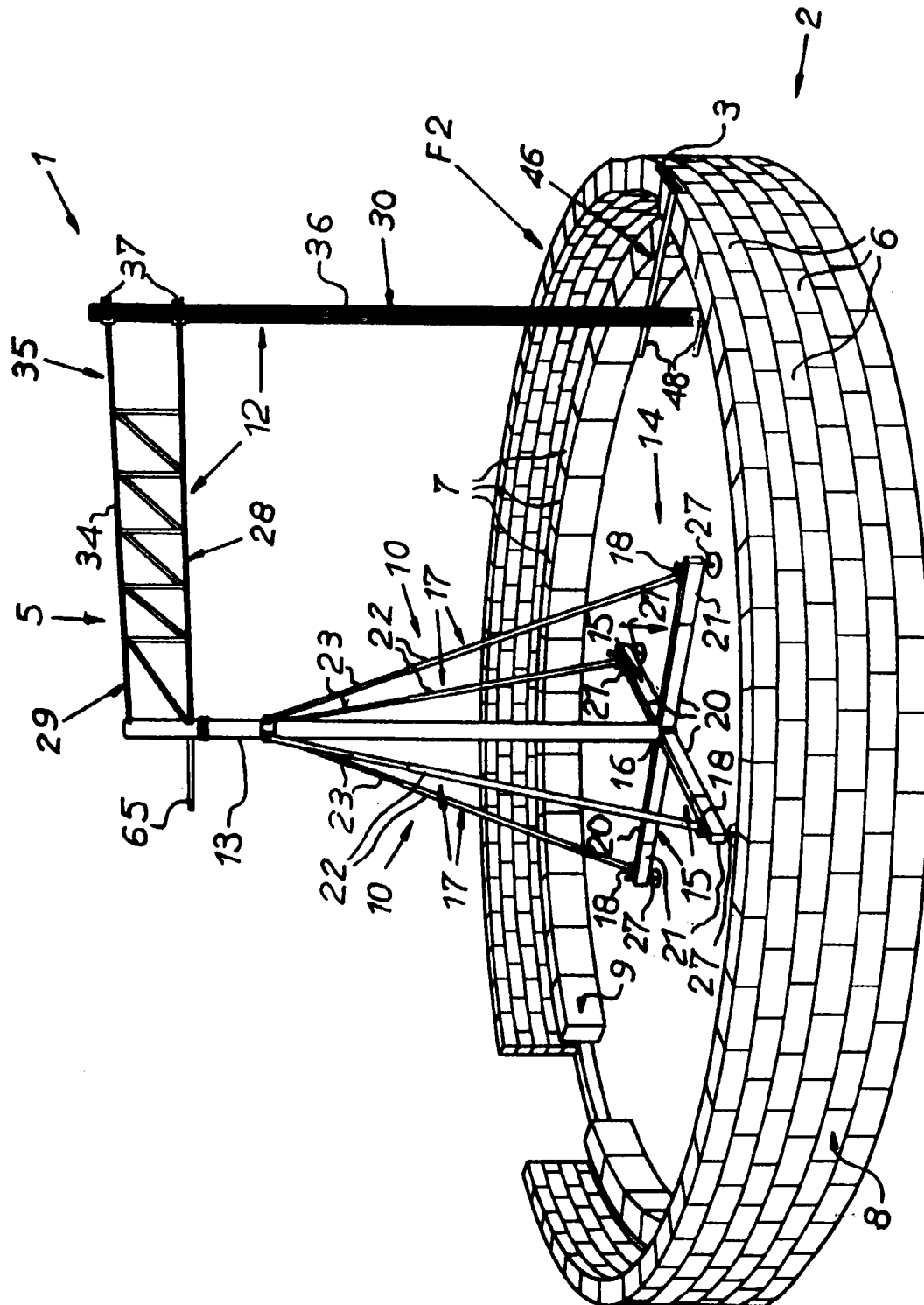


Fig. 1

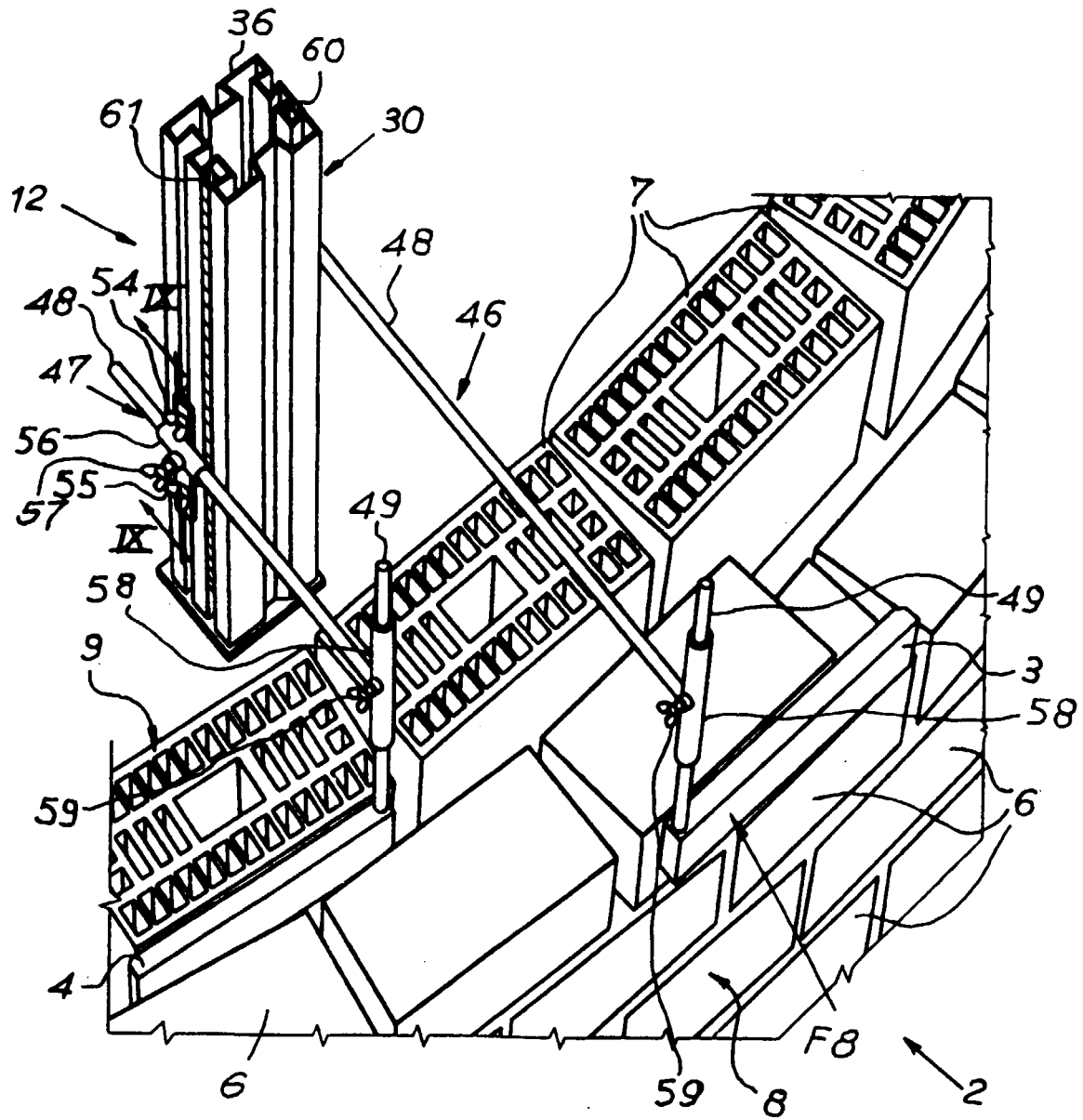
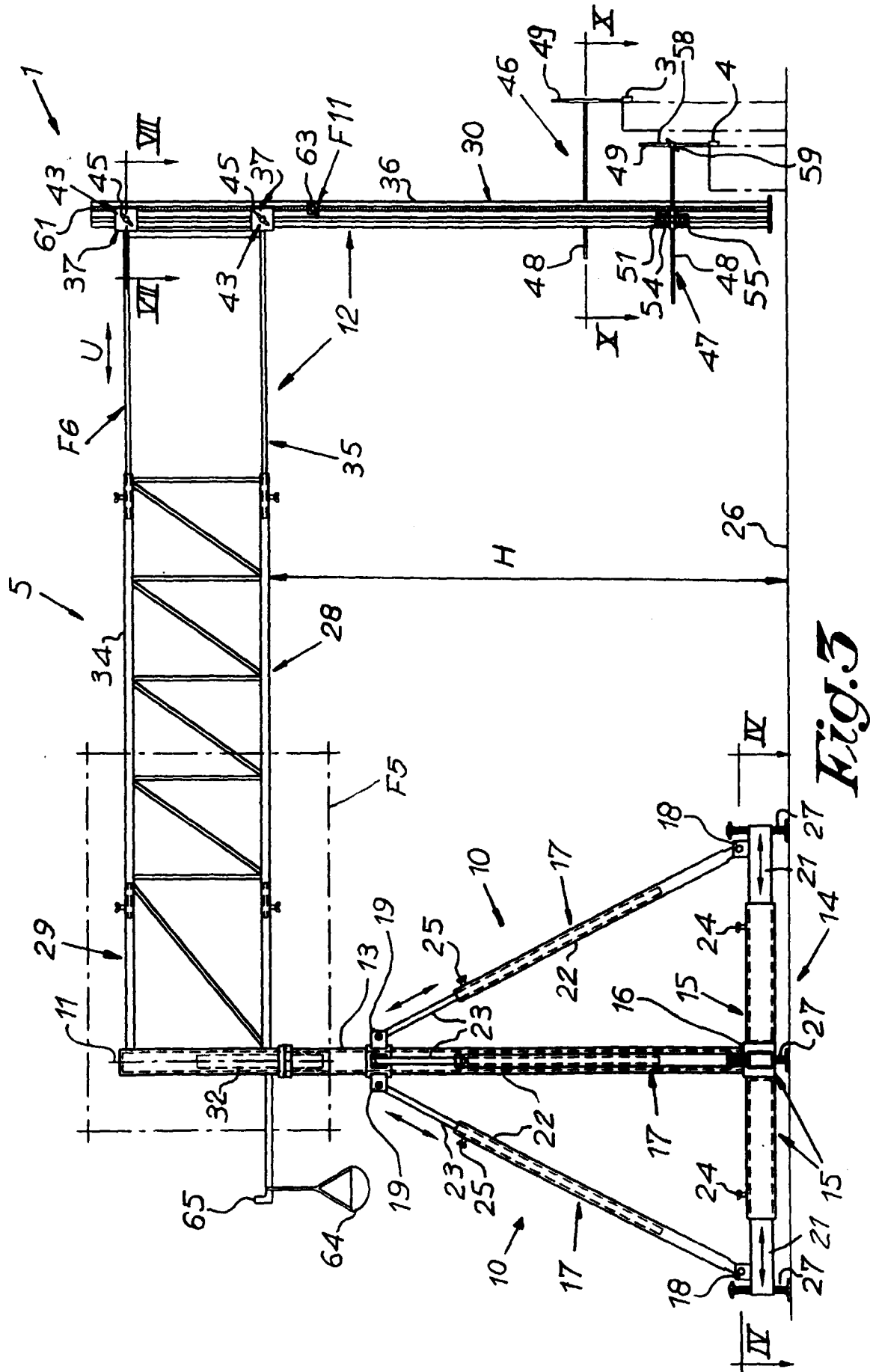
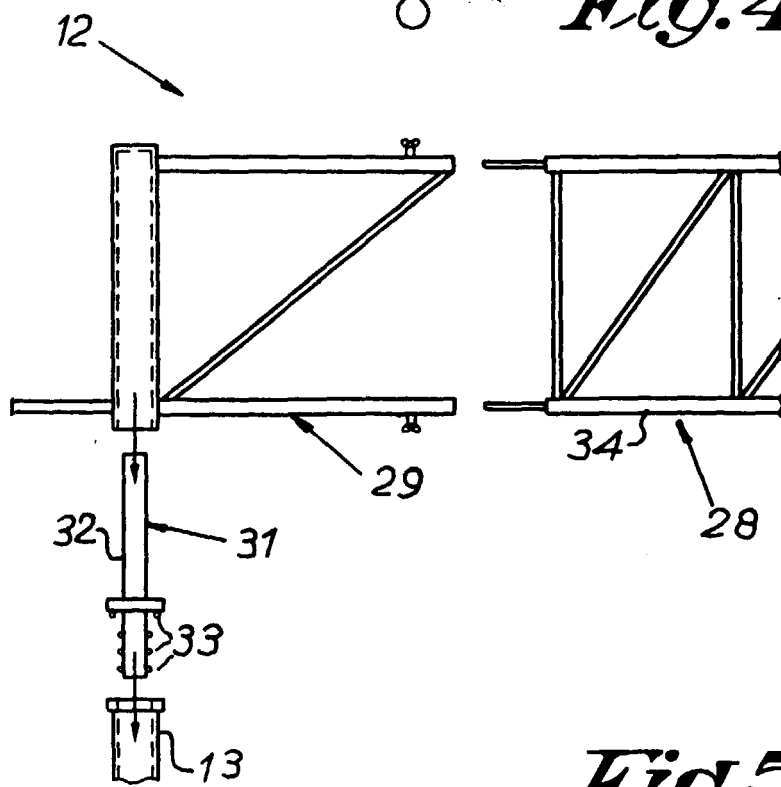
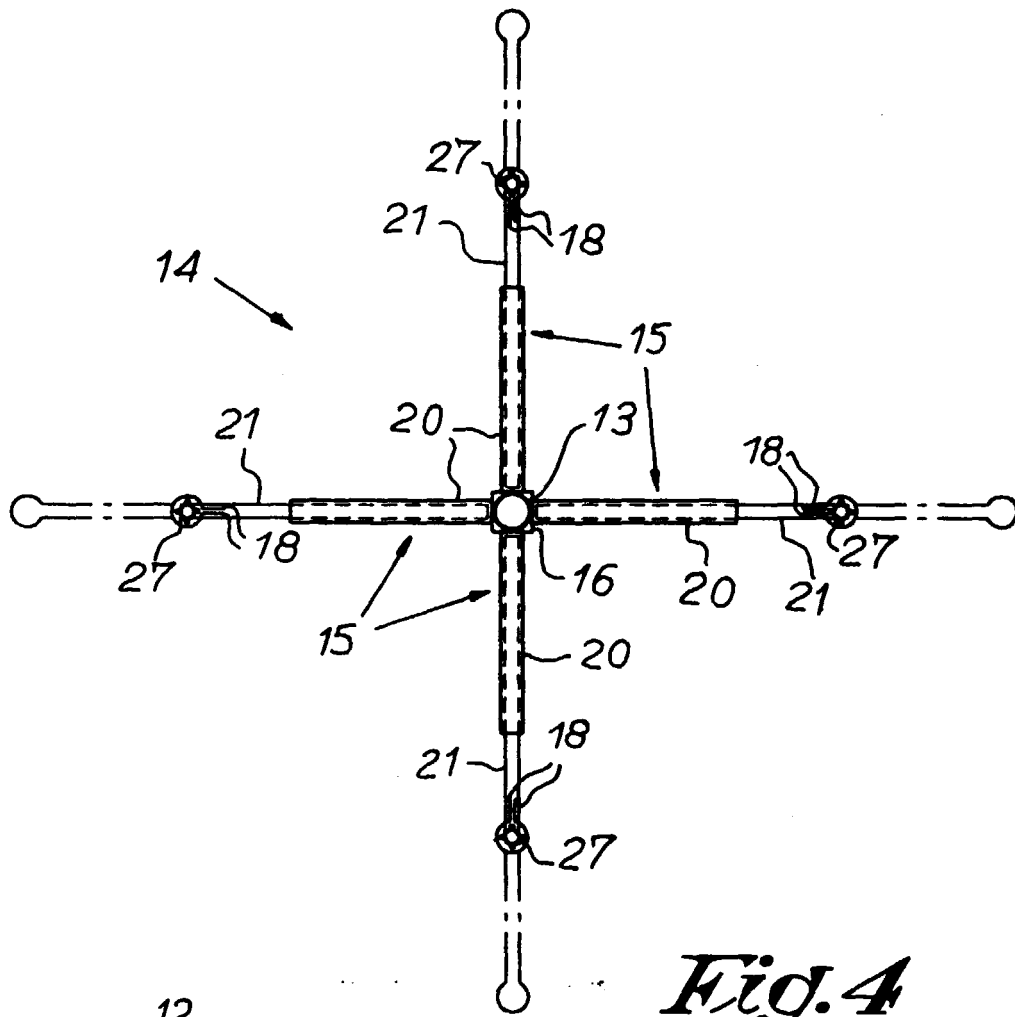
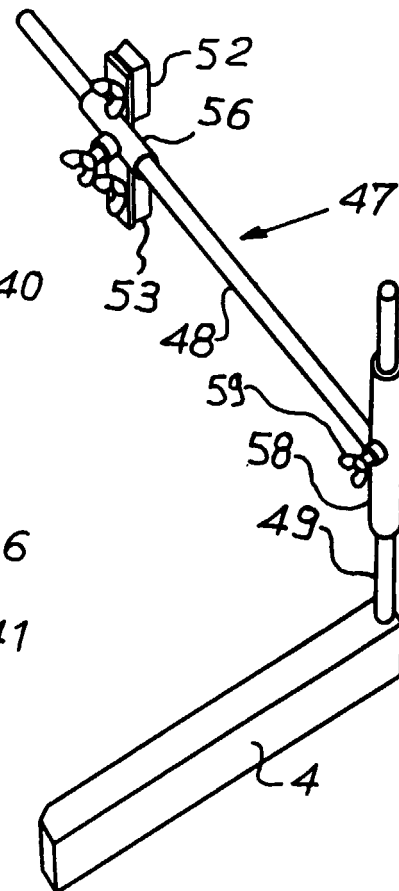
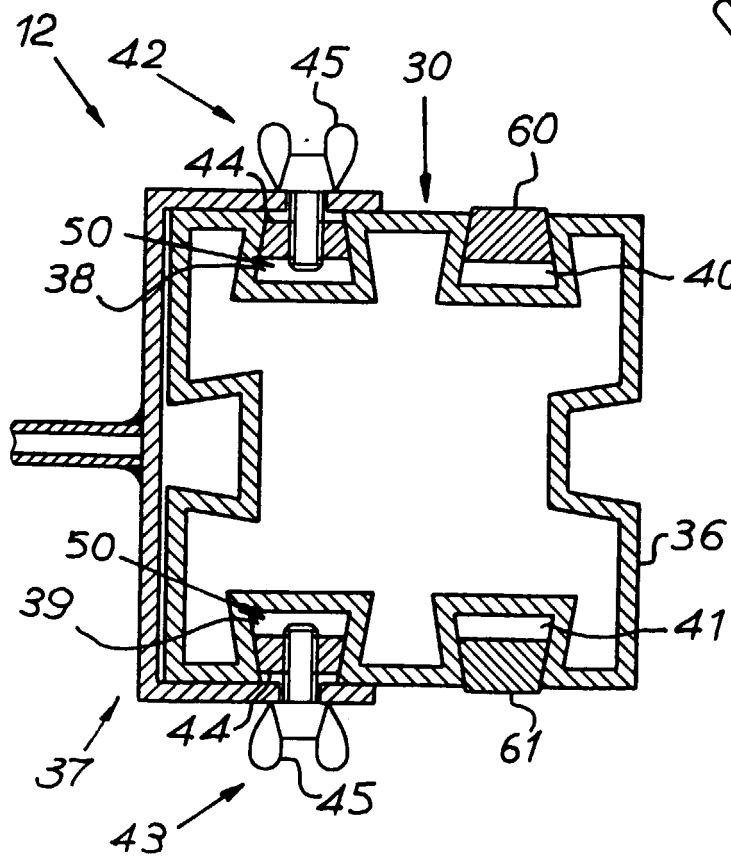
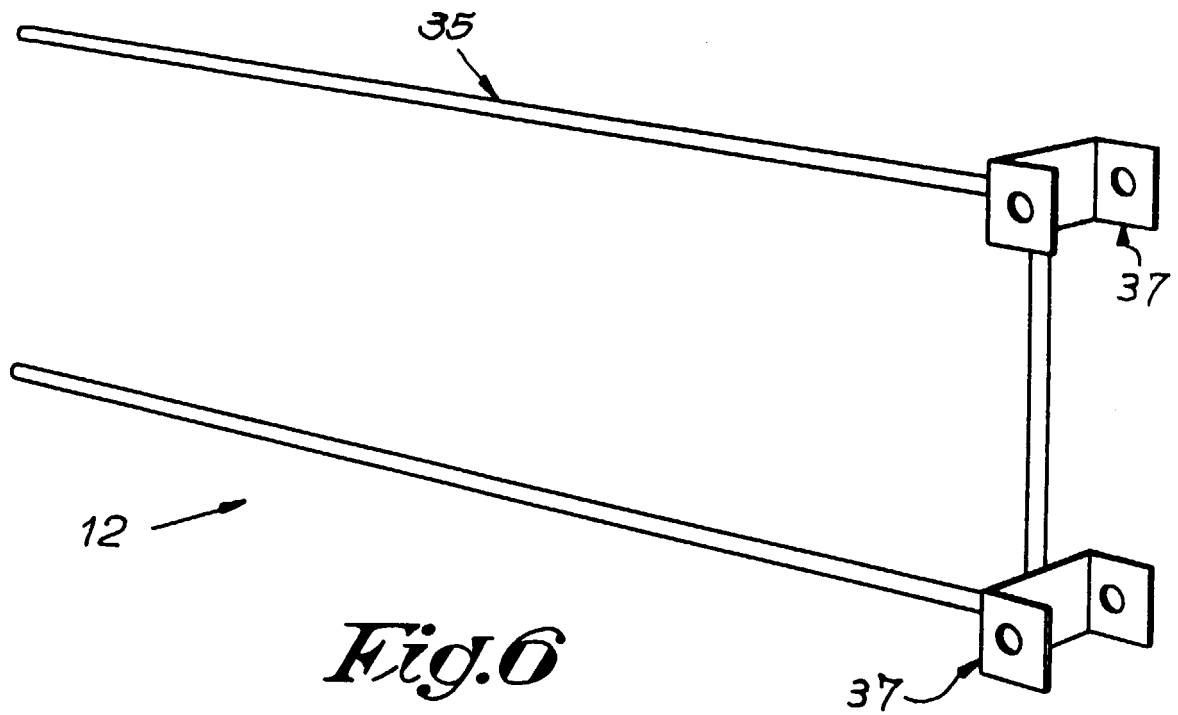


Fig. 2







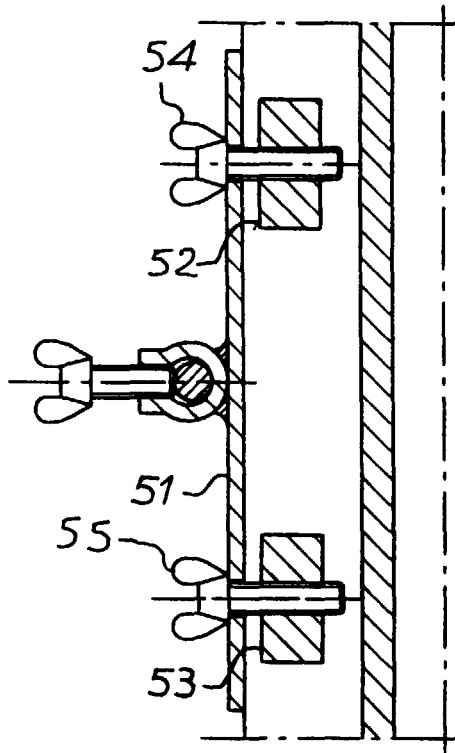


Fig. 9

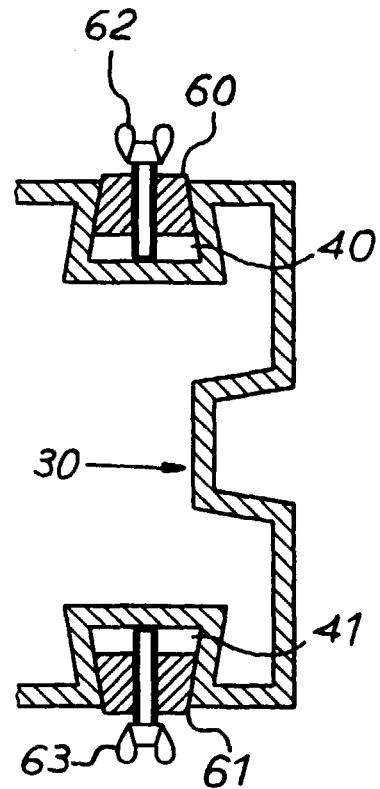


Fig. 11

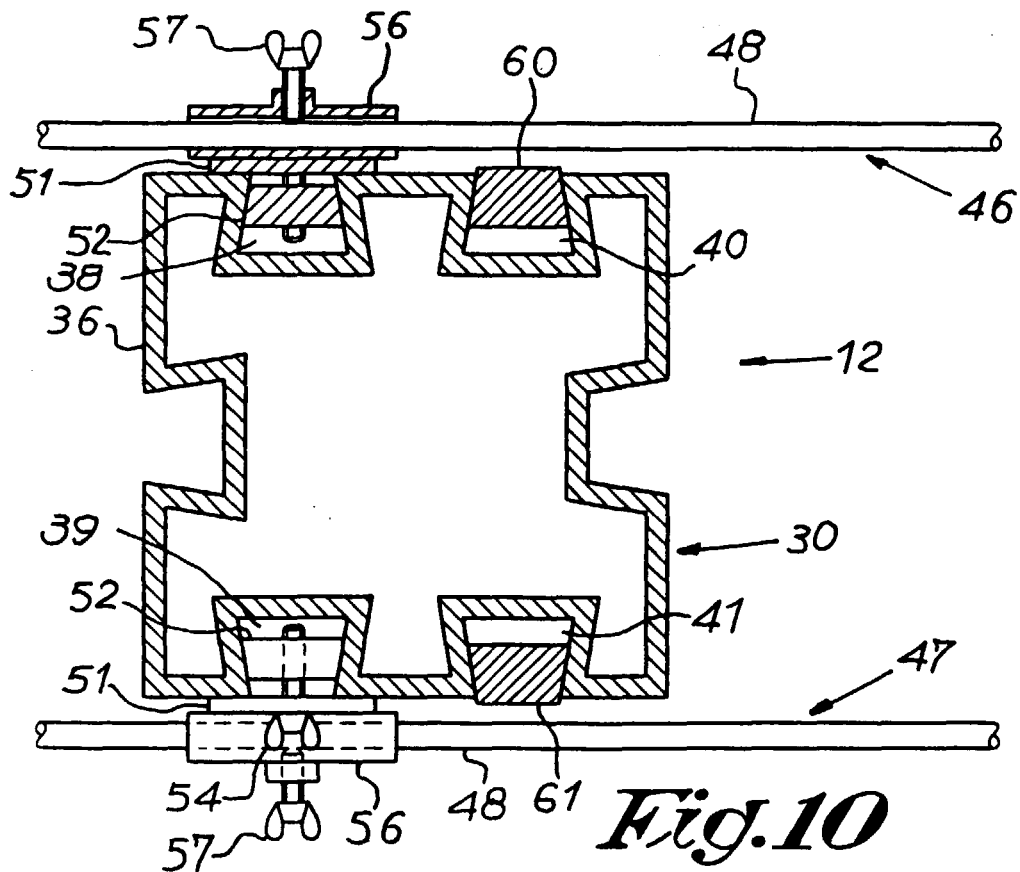
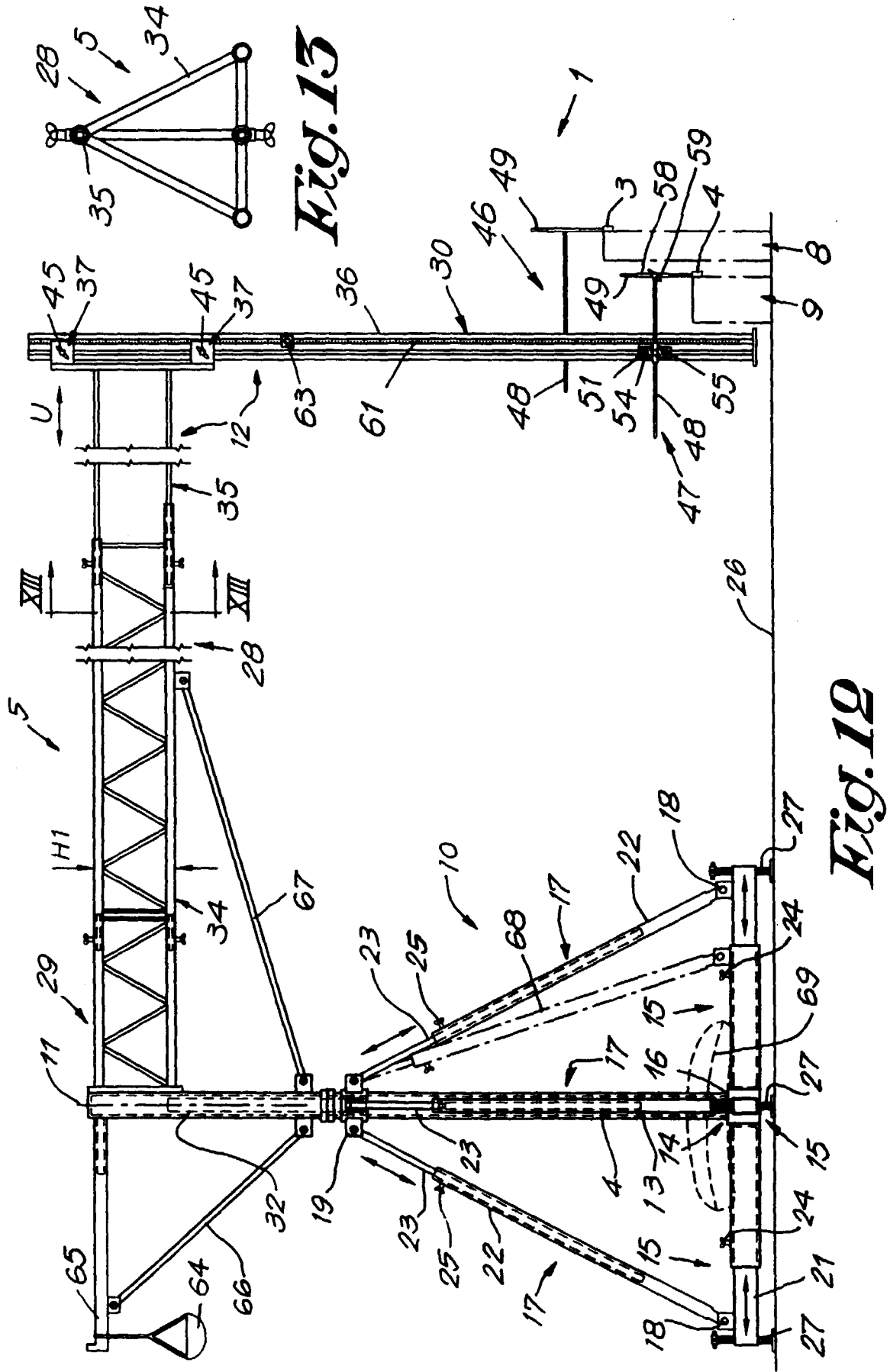


Fig. 10





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 3484

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)
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A	* column 2, line 32 - column 4, line 51; figures *	6,14	
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A	BE 880 974 A (DI-LILLO) 16 April 1980 (1980-04-16)		TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 2 February 2000	Examiner Vijverman, W
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 03.82 (P4/C01)

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

EP 99 20 3484

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