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(54) Heater, in particular for treatment of cork by boiling, method relating thereto

(57) A heater (1) comprises a chamber (4) bounded by walls (10) suitable for containing products (2) to be treated, heat exchange means (7) having exchanging surfaces suitable for transferring heat to a mass of liquid for the treatment of said products (2); said exchanging surfaces are disjoined from said walls (10).

A method for treating products (2) by a heater (1) comprises: loading said products (2) into a treating chamber (4) bounded by walls (10) suitable for containing said products (2); treating said products (2) by a mass of liquid; unloading said products (2) from said chamber (4); said loading and said unloading take place through a closable opening (9) obtained in a side part (10) of said walls.

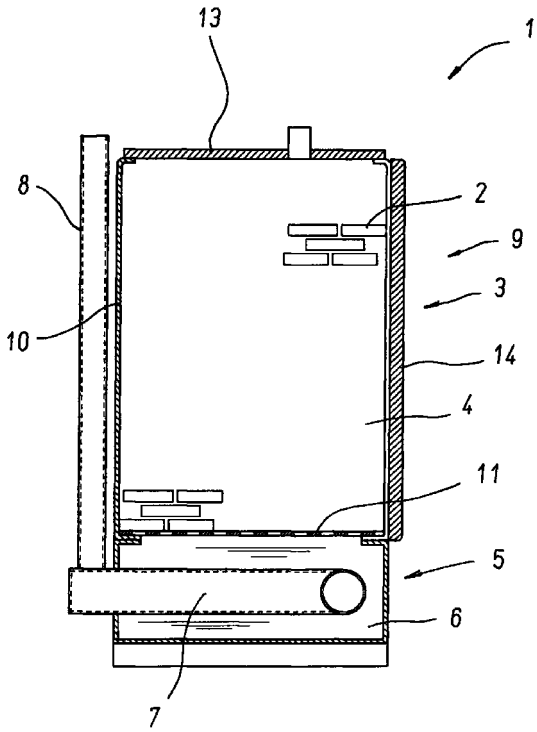

Fig.5

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Description

[0001] The invention concerns a heater, in particular for treatment of the cork by boiling.

[0002] The prior art comprises apparatuses provided with a heater, for example a container containing a liquid, located onto a heater which produces a flame suitable for heating the bottom of the container. The heater is located into a hole of suitable depth and peripherally provided with containing walls. The width of the hole is such as to provide an interspace between the side walls of the hole and those of the heater, for the circulation of the steam. The boiling is performed introducing the cork inside the heater from the top, using a bridge crane and make some water boil inside the heater for a predetermined interval of time sufficient to eliminate the impurities of the cork. Then the cork is unloaded from the top of the heater, again by means of the bridge crane.

[0003] A first drawback of such an apparatus arises from the small efficiency of heat exchange caused by the type of coupling between the heater and heater.

[0004] A second drawback is observed in the cork loading and unloading operations: such operations are very uncomfortable because the moving of the cork takes place from the top of the heater and needs the use of the bridge crane.

[0005] A third drawback is constituted of the difficulties of transport of the heater, it being composed of bulky parts which are disjoined from each other.

[0006] A further drawback arises from the need of performing excavations to produce the hole and of execution of the work for the walls: such operations implies waste of time and great cost.

[0007] An aim of the present invention is to improve the preexistent boiling systems.

[0008] A further aim is to provide a heater for boiling the cork, whose producing is relatively economic.

[0009] A still further aim of the present invention is to provide a heater which implies relatively small running costs, in particular because of a waste heat less than that of the devices of the prior art.

[0010] Another aim of the present invention is to provide a heater wherewith the loading and unloading of the products to be boiled are particularly comfortable and economic.

[0011] Still another aim is to provide a heater whose transport is relatively simple.

[0012] In a first aspect of the present invention, there is provided a heater comprising a chamber bounded by walls suitable for containing products to be treated, heat exchange means having exchanging surfaces suitable for transferring heat to a mass of liquid for the treatment of said products, characterized in that said exchanging surfaces are disjoined from said walls.

[0013] In this way it is possible to improve considerably the efficiency of heat exchange.

[0014] Furthermore, since the heat exchange means may be inside of the heater, the location of the heater into a hole is no longer necessary and, therefore costs relative to excavations and producing of walls are avoided.

[0015] In a second aspect of the present invention, there is provided a heater comprising a products treating station, a heat supplying station for supplying heat to said products treating station, characterized in that said products treating station and said heat supplying station are contained in a same unit transportable in a single block.

[0016] In a third aspect of the present invention, there is provided a heater comprising a chamber bounded by walls suitable for containing products to be treated, characterized in that said walls have a closable opening at a lateral part thereof for the loading of said products into, and unloading of said products from, said chamber.

[0017] In a forth aspect of the present invention, there is provided a method for treating products by a heater comprising:

- loading said products into a treating chamber bounded by walls suitable for containing said products;
- treating said products by a mass of liquid;
- unloading said products from said chamber;

characterized in that said loading and said unloading take place through a closable opening obtained in a side part of said walls.

[0018] Therefore, the loading and the unloading of the products are particularly simple and do not need the use of a bridge crane; this allows a considerably reduction of cost. In a fifth aspect of the present invention, there is provided an apparatus for closing an opening of wall means comprising closing means suitable for rotating about pivot means and axial sliding means which allow said closing means to slide far away from, and towards, said opening, characterized in that it further comprises fixing means suitable for blocking said axial sliding means.

[0019] In a sixth aspect of the present invention, there is provided a method for closing an opening of wall means by closing means comprising:

- rotating said closing means about pivot means;
- translating said closing means towards said opening by axial sliding means;
- blocking said axial sliding means by fixing means.

[0020] In this way, it is possible to obtain a system for closing the opening wherein the closing means exert, by the fixing means, a pressure against an edge zone of the wall in which the opening is obtained; therefore a hermetical closing is obtained.

[0021] In a particularly advantageous embodiment, at the edge zone of the wall against which the closing means are pressed, there is located a liquidtight ring.

[0022] The invention will be better understood and

carried into practice with reference to the enclosed drawings, showing some exemplary but not restrictive embodiments of it, wherein:

Figure 1 is a vertical section of a heater according to the invention;
Figure 2 is a section taken along line II-II of Figure 1;
Figure 3 is a section taken along line III-III of Figure 1;
Figure 4 is a detail of a device for closing an opening in a wall according to the invention;
Figure 5 is a section as in Figure 1, but relative to a further embodiment of heater according to the invention.

[0023] Referring to Figures 1 to 3, a heater 1 for the treatment of cork 2 by boiling thereof, comprises a treating station 3 provided with a chamber 4 suitable for receiving the cork 2 to be treated, and susceptible to be filled with water to be boiled. A heat supplying station 5 located below the treating station 3 comprises a tank 6 full of water and crossed by a heater 7. Inside the tank 6, the heater 7 has an "U"-like extension, to increase the area of the external surface thereof in contact with the water to be heated, and is coupled with a flue 8 for exiting the steam produced by it.

[0024] An opening 9, obtained in a side wall 10 of the chamber 4, allows the introduction of the cork 2 into the chamber 4. A lower grill 11 located in a bottom zone of the chamber 4, prevent the cork 2 from falling into the tank 6. An upper grill 12, located in an upper zone of the chamber 4, maintains the cork 2, during the treatment by boiling, under the level of the water which is boiled. Bar means 13 coupled with upper edges of the wall 10 constitute a reinforcement of the structure, but let the steam pass during the boiling of the water. A discharging outlet 30 located in a bottom zone of the tank 6, allows the discharge of the water from the chamber 4 after the treatment of the cork 2. A door 14 is suitable for hermetically closing the opening 9 to prevent leakages of water therefrom during the treatment of the cork 2.

[0025] Referring to Figures 3 and 4, the door 14 has a first edge zone 15 and a second edge zone 16 opposite to the first zone 15. At the first edge zone 15, the door 14 is integral with bush means 18 slidable along guide means 19. The guide means 19 are coupled with pivot means 20 about which they may rotate bringing the door 14, by means of the bush means 18, from an opening position 21 (shown with broken line in Figure 3) to a closing position 22 (shown with continuous line). A first wing nut 23 which screws on the guide means 19, is suitable for fixing the door 14 in its closing position, acting on the bush means 18. Further bush means 24, coupled with the door 14 at the second edge zone 16, are suitable for sliding along further guide means 25 coupled with further pivot means 26, and for being fixed by a second wing nut 27.

[0026] The further bush means 24 have a longitudinal groove 28 such as to allow the further guide means 25 to be uncoupled therefrom; this occurs, partially unscrewing the wing nuts 23 and 27, and rotating, about the further pivot means 26, the further guide means 25 far away from the door 14. Therefore, the door 14 may be rotated about the pivot means 20 to open completely the opening 9, and allow the loading or the unloading of the cork 2. In the closing position 22, when the wing nuts 23 and 27 act on the respective bush means 18 and 24, the door 14 is maintained pressed against portion of edge of the wall 10 defining the opening 9, wherein a watertight ring 29 prevents from water leakages during the treatment of the cork 2.

[0027] A process of treating of the cork 2 takes place loading such product into the chamber 4 through the opening 9, hermetically closing the opening 9 with the door 14 as described above, filling the chamber 4 with water (introduced from the top of the chamber 4 which has openings for the passing of the steam during the treatment), making the water boil by the heater 7 for a predetermined interval of time, eliminating the water from the chamber 4 by the discharging outlet 30, opening the door 14 as described above and discharging the cork 2.

[0028] The embodiment of heater 1 of Figure 5 is different from that described above because the treatment of the cork 2 at the station 3 takes place through the steam produced by the boiling of the water contained into the tank 6; as a consequence the chamber 4 is not filled with such liquid.

[0029] Therefore, there are not performed the discharging of water before the elimination of the cork 2 from the chamber 4 after the treatment, and the filling of water before the treatment.

[0030] This allows a considerable saving of such liquid during the running of the heater 1. Furthermore the upper grill 12 and the discharging outlet 30: therefore the whole structure of the heater 1 is simplified.

Claims

1. Heater (1) comprising a chamber (4) bounded by walls (10) suitable for containing products (2) to be treated, heat exchange means (7) having exchanging surfaces suitable for transferring heat to a mass of liquid for the treatment of said products (2), characterized in that said exchanging surfaces are distinct from said walls (10).

2. Heater (1) comprising a products treating station (3), a heat supplying station (5) for supplying heat to said products treating station (3), characterized in that said products treating station (3) and said heat supplying station (5) are contained in a same unit transportable in a single block.

3. Heater (1) comprising a chamber (4) bounded by

walls (10) suitable for containing products (2) to be treated, characterized in that said walls (10) have a closable opening (9) at a lateral part (10) thereof for loading of said products (2) into, and unloading of said products (2) from, said chamber (4).

4. Apparatus for closing an opening (9) of wall means (10) comprising closing means (14) suitable for rotating about pivot means (20) and axial sliding means (18, 24) which allow said closing means (14) to slide far away from, and towards, said opening (9), characterized in that it further comprises fixing means (23, 27) suitable for blocking said axial sliding means (18, 24).

5. Heater (1) according to any preceding claim, wherein said heat exchange means (7) crosses a tank (6) full of said liquid and located below said chamber (4).

6. Heater (1) according to claim 5, wherein said heat exchange means (7) have a "U"-like extension inside said tank (6).

7. Heater (1) according to claim 5, or 6, wherein said heat exchange means (7) are coupled with exiting means (8) for exiting steam produced by them.

8. Heater (1) according to any preceding claim, and further comprising a lower grid (11) located in a bottom zone of said chamber (4) and suitable for preventing said products (2) from falling into said tank (6).

9. Heater (1) according to any preceding claim, and further comprising an upper grill (12) located in an upper zone of said chamber (4) and suitable for maintaining said products (2) under the level of said liquid.

10. Heater (1) according to claim 9, and further comprising a discharging outlet (30) located in a bottom zone of said tank (6) and suitable for eliminating said liquid from said chamber (4).

11. Heater (1) according to any preceding claim, wherein said axial sliding means comprisees bush means (18) integral with said closing means (14) in a first edge zone (15) thereof.

12. Heater (1) according to claim 11, and further comprising guide means (19) along which said bush means (18) may slide.

13. Heater (1) according to claim 11, or 12, wherein said axial sliding means comprise further bush means (24) integral with said closing means (14) in a second edge zone (16) thereof opposite to said first edge zone (15).

14. Heater (1) according to one of claims 11 to 13, and further comprising further guide means (25) along which said further bush means (18) may slide.

15. Heater (1) according to one of claims 11 to 14, wherein said guide means (19) may rotate about said pivot means (20).

16. Heater (1) according to one of claims 11 to 15, and further comprising further pivot means (26) about which said further guide means (25) may rotate.

17. Heater (1) according to claims 13, 14 and 16, wherein said further bush means (24) have a longitudinal groove (28) such as to allow said further guide means (25) to be unengaged from said further bush means (24) rotating about said further pivot means (26) far away from said closing means (14).

18. Heater (1) according to any preceding claim, and further comprising a liquidtight ring (29) located in an edge zone of said lateral surface (10) defining said closable opening (9) and which has to be pressed by said closing means (14).

19. Method for treating products (2) by a heater (1) comprising:

- loading said products (2) into a treating chamber (4) bounded by walls (10) suitable for containing said products (2);
- treating said products (2) by a mass of liquid;
- unloading said products (2) from said chamber (4); characterized in that said loading and said unloading take place through a closable opening (9) obtained in a side part (10) of said walls.

20. Method according to claim 19, and further comprising, before said treating, and after said loading, filling said chamber (4) with said liquid.

21. Method according to claims 19 and 20, and further comprising, after said treating, and before said unloading, discharging said liquid from said chamber (4).

22. Method for closing an opening (9) of wall means (10) by closing means (14) comprising:

- rotating said closing means (14) about pivot means (20);
- translating said closing means (14) towards said opening (9) by axial sliding means (18, 24);
- blocking said axial sliding means (18, 24) by

fixing means (23, 27).

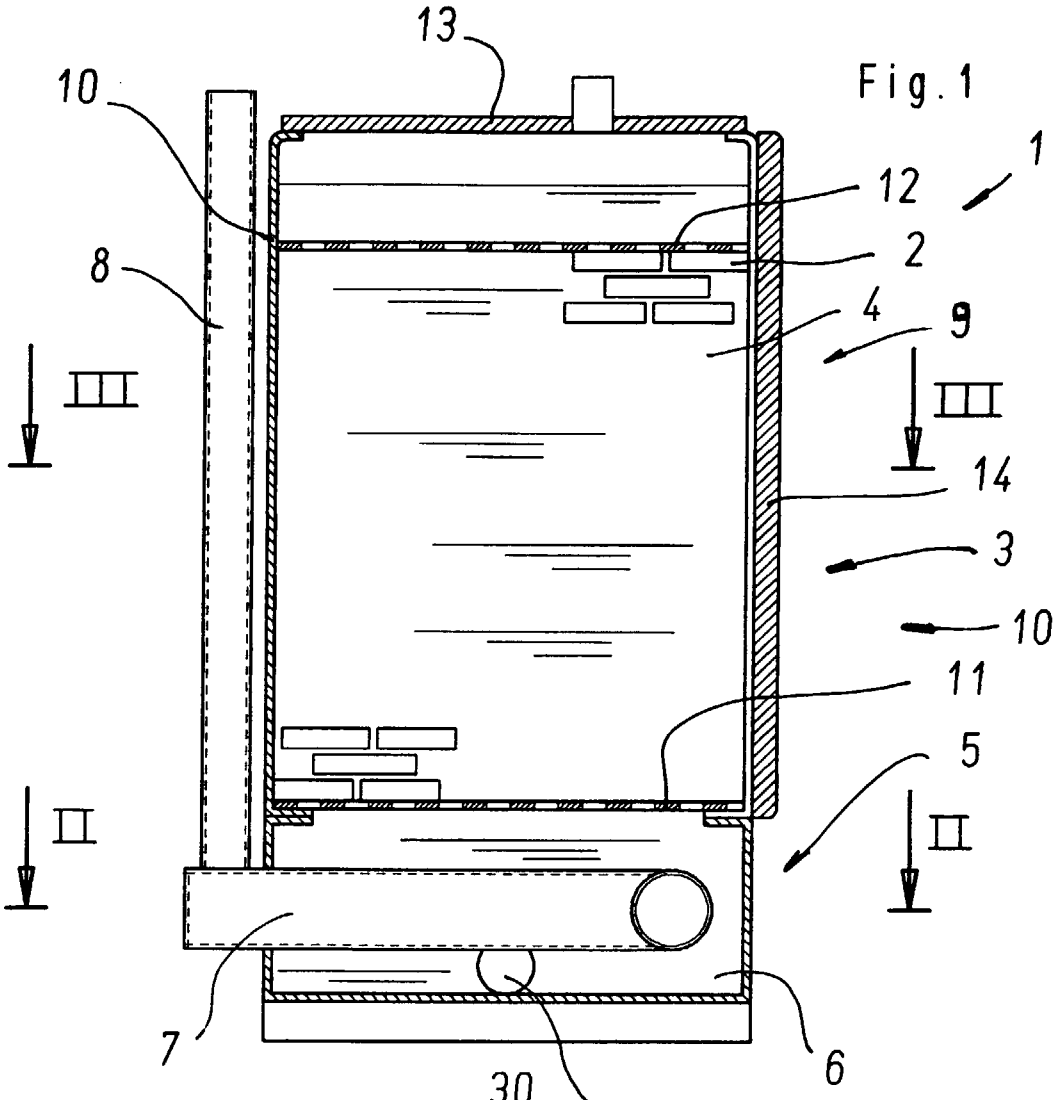

Fig.1

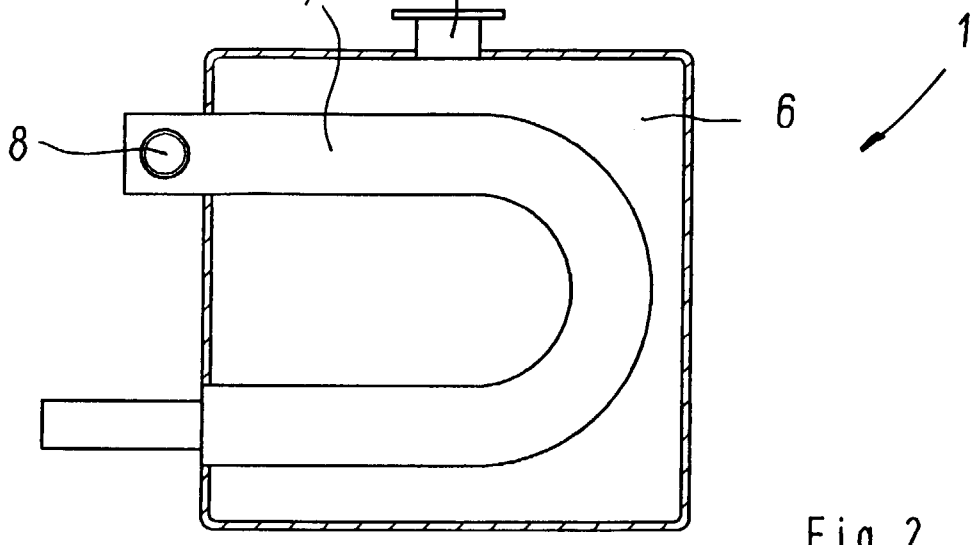

Fig.2

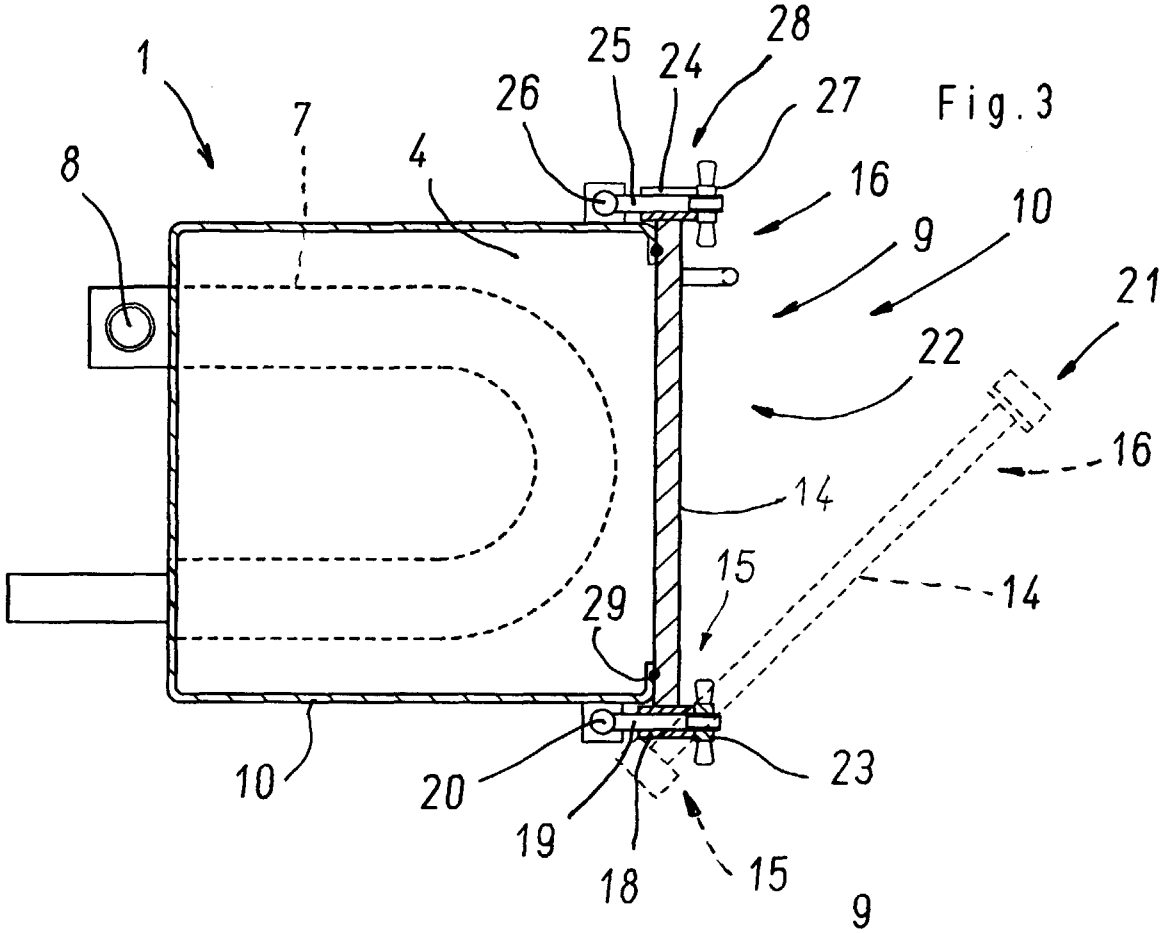
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Fig.3

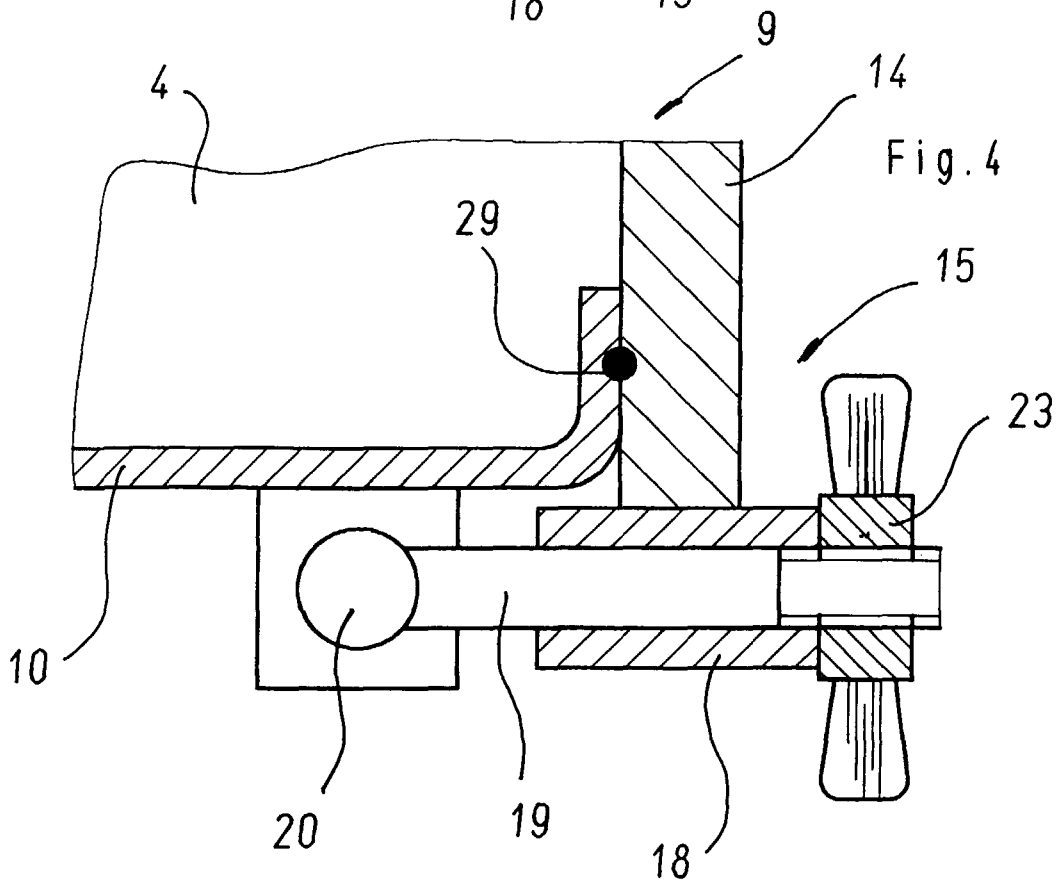
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Fig.4

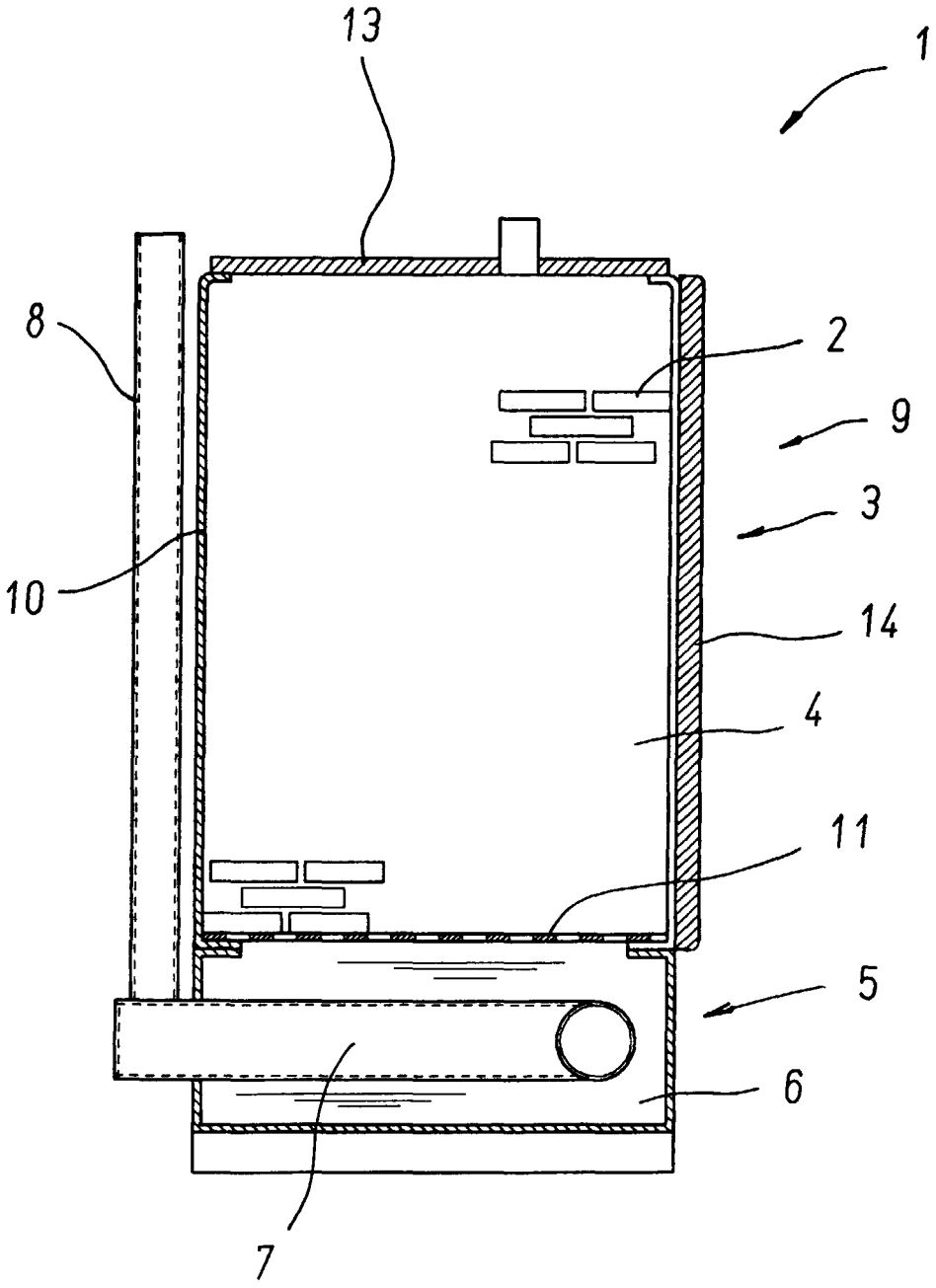

Fig.5