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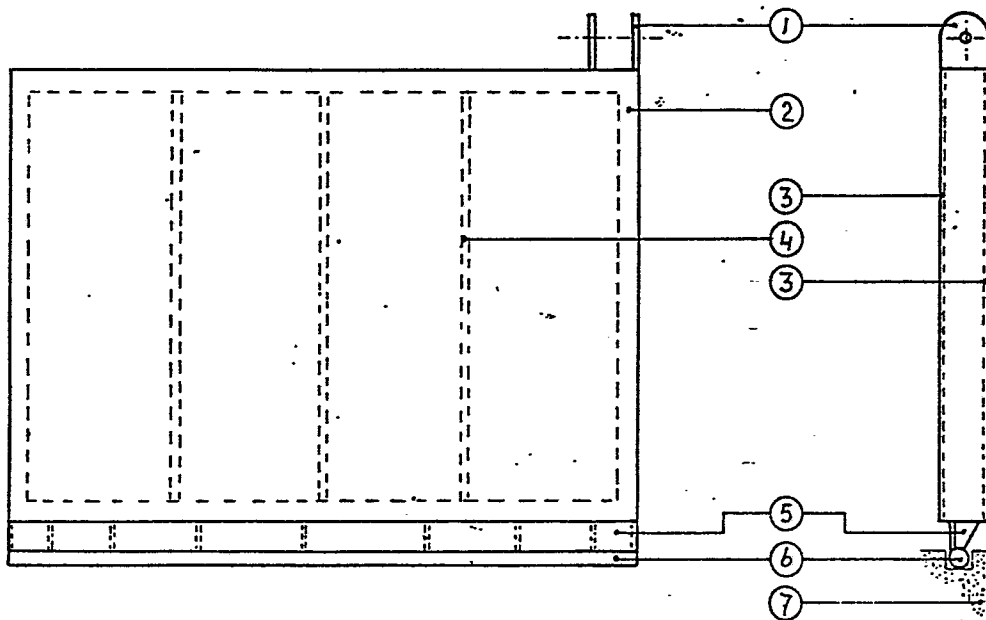
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(54) **Weir baffle.**

(57) The invention provided a weir baffle having a box construction with two main sheets (3) welded at their edges to edge profiles (2). Preferably the baffle is at its lower side provided with a cylindrical bearing member (6), connected to the box construction by means of a support plate strengthened by stiffening plates (5). The baffle can be and preferably is realized in aluminium only.



Weir baffle.**0155732**

The invention relates to a weir baffle provided at its lower side with bearing means, at its upper side with one or more members for attaching adjustment means, with a sheet and with a stiffening construction.

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Such a weir baffle is known from the Dutch Patent Specification NL-A-144 353.

Such a weir baffle has to have a considerable torsion
10 stiffness, which with the known construction is obtained by having a torsion body which is beared immediately in the pivot, which body provides the stiffness and causes the transmission of forces from the torsion body by means of stiffening plates welded to it, which serve as support for
15 the sheet forming the baffle proper.

The invention aims to improve such a weir baffle in several respects.

20 Firstly the invention aims to enable an easier and for that reason cheaper manufacturing because providing a sufficiently torsion stiff member and welding the stiffening plates to it, is relatively labour consuming.

25 A further aim of the invention is to allow for a lighter construction which nevertheless has sufficient torsion stiffness.

More specifically the invention aims therewith to make use in a /
30 of standard materials, such as sheets and profiles, which only need to be cut with respect to length.

Still a further difficulty of the known construction is, that in practice, it is impossible to realize the whole thing
35 in light metal such as aluminium. This is so, because a suchlike torison body of sufficient stiffness is not available for weir baffles of some proportion, or very expensive with individual manufacturing.

A further disadvantage of the known construction is, that the forces for maintaining the weir baffle which apply to the members for attaching the adjustment means firstly have to be transmitted to the torsion body located at the lower side, so that the tubular beam applied therefor has to have considerable dimensions.

According to the invention the above mentioned disadvantages are eliminated by providing that the sheet is part of the stiffening construction, which is formed by a box construction having two sheets running mainly parallel to the main surface of the baffle, which at their edges are connected to each other by means of edge connection members.

Calculation has shown that such a box construction has a high degree of stiffness against ^{the} torsion loads which occur with a weir baffle if only at one side members for attaching the adjustment means are provided.

Preferably and according to the invention it is provided that the edge connection members are provided with surfaces lying flat against the inner side of the sheets.

An embodiment hereof consists in that the edge connection members are U-shaped profiles. These U-shaped profiles can be directed with their open side toward the inner side of the box or toward the outer side. In the latter case they form a groove. Preferably they are welded to the sheets at their end directed toward the outer side.

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According to an other embodiment the edge connection members consist of H-shaped or I-shaped profiles.

According to a constructively attractive embodiment it can be provided that the edge connection members at least partly are formed by angled borders of at least one of the sheets.

According to a still further elaboration of the invention it is provided that at the side edges of the baffle the connection members form an air passage toward the space

behind a layer of water overflowing the weir baffle. When using along the side edges or at least one side edge of U-shaped, H-shaped or I-shaped profiles having their open sides directed outwards, such an air passage is created.

5 This is of great importance because lack of such an air passage can lead to the creation of a sub pressure behind the falling water layer, which induces generation of sound of very low frequency, which is experienced to be extremely disagreeable and insupportable.

10

Though in principle the connection members can be attached to the sheets in different ways a preferred embodiment of the invention provides that the edge connections members are welded to the sheets. Therewith not only a reliable

15 strong connection all along the edge is obtained, but also a high guarantee that the inside of the box construction remains free of water. In this connection it is pointed to the fact that gluing of the edge connection members to the sheets has to be considered very carefully due to the type
20 of load which occurs, because with a so-called peel-off load a glue connection can be loosen progressively.

According to a further elaboration of the invention it is provided that additional connection or support members are
25 mounted between the sheets in the region within the edges. Such connection members, for instance strips or oriented perpendicularly to the sheets generally play no important part with increasing the torsion stiffness of the proper baffle, but can contribute to it that a relatively thin
30 sheet will bend less. For such additional connection or support members it is allowable that they are glued to the sheets.

An other way of mutual support of the sheets can be formed
35 in that the additional connection or support members are formed by set foam.

With the box construction according to the invention the simplest embodiment exists in that both sheets are plane
40 sheets. Moreover the sheets may be mutually parallel. The

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same inventive idea is, however, applicable when the sheets are curved or when the distance between the sheets is not everywhere the same, so that they are not mutually parallel.

5 Though a curvature, for instance in the direction opposite to the deformation to be expected under influence of the water pressure may have certain advantages, it generally is not worth while and does not pay the manufacturing costs associated with it. Also an unequal distance of the sheets
10 may in some cases lead to a somewhat smaller average distance between the sheets and consequently utilisation of less material for the edge connection members, but the associated complications of shape generally make this measure unattractive. Because, however, they give also the possibility to
15 obtain the main advantages of the invention, they are encompassed by it.

With respect to a weir baffle of strongly deviating shape and consequently relatively expensive manufacturing which is
20 very difficultly to be standardized, reference is made to the German Patent Specification DE-A-689.668. From this publication a sort of air plane wing shaped weir baffle is known, which requires, however, important pre-shaping of the sheets to be used, whereas further the edge connection
25 members of the invention lack.

The weir baffle according to the Dutch Patent Specification NL-A-144 353 and the German Patent Specification DE-A-689 668 are both journaled in bearings. Therefor additional
30 sealing means are necessary, whereas further therewith complications arise when building the weir.

The weir baffle according to the invention can be mounted pivotably in a simple and sufficient sealing way by providing
35 that the bearing means are formed by a bearing member which at least at the side directed away from the weir baffle proper is cylindrical, extends itself at the lower side of the baffle and can cooperate with a bearing groove extending itself over the width of the baffle.

The bearing groove can be made for instance in tropical hard wood, for instance red iron wood, but utilization of suitable plastics or metals is not excluded. At the sides of the weir use can be made of an elastical sealing strip
5 as per se is usual and also has been applied with the state of the art. Also the indicated construction is very simple from a builders view, because only in the base construction, which normally is of concrete, it has to be provided that screw bolts are present to fix a wooden beam.

10

According to a further elaboration of the invention therewith it can be provided that the bearing member by means of a support plate is connected to the box construction. This support plate provides the seal, the mechanical support of
15 the box construction and sufficient play to have sufficient room when pivotting the weir baffle.

In order to further strengthen this construction it can be provided that the support place is provided with stiffening
20 plates also connected to the bearing member.

One of the important advantages of the invention is that the weir baffle according to the invention can be carried out in a single metal that nowhere is locally loaded so
25 heavily that a high Young modulus is necessary such as that of steel. Carrying out an object contacting water in one and the same metal has the important advantage to counteract galvanic corrosion. When therewith one can construct easily in aluminium the further advantage is present, that no
30 protective layers need to be applied, which always necessitate service.

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For this reason a preferred embodiment of the invention exists in that it is completely carried out in aluminium.
With application of the invention in the form of an at least partly cylindrical bearing member extending itself over the width with a support place and stiffening plates, wherewith the bearing member lies in a bearing groove, it can be
40 provided according to a preferred embodiment of the invention

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that the bearing groove at one side is provided with slots at the location of the stiffening plates, so that the stiffening plates can be accommodated in the slots when lowering the weir.

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The invention in the following is elucidated on hand of the drawing, in which a frontal view and a side view of a weir baffle according the invention have been shown.

- 10 The weir baffle is at its upper side provided with members 1 for attaching adjustment means such as a cable, which members here consist of ears provided with a hole. Further the weir baffle contains two plane sheets 3 between which at the edges an U-shaped profile 2 has been mounted. These
- 15 U-shaped profiles are welded at their outer edges to the edges of the sheets 3, a connection web between the profile legs being present. Further strips 4 have been mounted between profiles, which are bound to the sheets 3; for instance by means of gluing.

20

- At the lower side a support construction 5 is present, which consists of a support plate and stiffening plates connected to it. These support construction is connected to a cylindrical tube or rod 6, which rests in a groove of a bearing beam 7
- 25 of azobee wood. The right edge of this groove can be provided with slots at the location of the stiffening plates belonging to the construction 5.

- Mostly such a weir has at its upper side such a form, that
- 30 the water flowing over it easily comes off the weir baffle and drops downward. This of course can also be realized when applying the invention.

- Further it is possible, for instance because the edge
- 35 connection members consist of a H- or a I- or a U-profile with the open side directed outwardly, that a groove at the side gives a connection between the atmosphere and the space between the down falling water and the weir baffle, when the latter has been mounted in a position tilting leftward
- 40 in the drawing.

Calculation has revealed that a weir baffle with a width of 2 m and a possible water height of 2 m at maximum load when carried out in aluminium sheet of a thickness of 6 mm and execution of the edge connection members with an internal
5 dimension of 120 mm and a thickness of 6 mm, will show a bending of 6,8 mm at the corner away from the members 1.

This complies with a rule of thumb, which is usual for weir baffles of this type, that a bending may be 0,03 times the
10 length over which the bending occurs, which in the considered case is approximately the diagonal with a length of about 3 m, so that the found bending of 6,8 mm is amply within the allowable limit.

15 It has appeared that the weir baffle according to the invention can be manufactured cheaper and faster than any other known weir baffle and further can have the advantage of being completely corrosion resistant, because realizing it in exclusively aluminium does not give rise to technical
20 difficulties.

Claims:

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1. Weir baffle provided at its lower side with bearing means (6), at its upper side with one or more members (1) for attaching adjustment means with a sheet (3) and with a stiffening construction (2,4), characterized in that
5 the sheet (3) is part of a stiffening construction which is formed by a box construction (2,4) having two sheets (3) running mainly parallel to the main surface of the baffle, which at their edges are connected to each other by means of edge connection members (2).
- 10 2. Weir baffle according to claim 1, characterized in that the edge connection members (2) are provided with surfaces lying flat against the inner sides of the sheets (3).
- 15 3. Weir baffle according to claim 2, characterized in that the edge connection members are U-shaped profiles.
4. Weir baffle according to claim 2, characterized in that the edge connection members are H-shaped or I-shaped
20 profiles.
5. Weir baffle according to one or more of the preceding claims, characterized in that the edge connection members at least partly are formed by angled borders of at least
25 one of the sheets (3).
6. Weir baffle according to one or more of the preceding claims, characterized in that at the side edge of the baffle the connection members form an air passage toward
30 the space behind a layer of water overflowing the weir baffle.
7. Weir baffle according to one or more of the preceding claims, characterized in that the edge connection members
35 are welded to the sheets.
8. Weir baffle according to one or more of the preceding claims, characterized in that additional connection or

support members (4) are mounted between the sheets in the region within the edges.

9. Weir baffle according to claim 8, characterized in that
5 the additional connection or support members are glued to the sheets.

10. Weir baffle according to claim 8 or 9, characterized in that the additional connection or support members are
10 formed by set foam.

11. Weir baffle according to one or more of the preceding claims, characterized in that the bearing means are formed by a bearing member which at least at the side directed
15 away from the weir baffle proper is cylindrical, extends itself at the lower side of the baffle and can cooperate with a bearing groove extending itself over the width of the baffle.

20 12. Weir baffle according to claim 11, characterized in that the bearing member (6) by means of a support plate (5) is connected to the box construction (3,2).

13. Weir baffle according to claim 12, characterized in that
25 the support plate is provided with stiffening plates also connected to the bearing member (6).

14. Weir baffle according to one or more of the preceding claims 1-13, characterized in that it is completely carried
30 out in aluminium.

15. Weir provided with a weir baffle according to claim 13 or 14, characterized in that the weir member (6) lies in a bearing groove, which at one side is provided with slots
35 at the location of the stiffening plates.

