W. S. GIELE.

WEIR PLATE.

APPLICATION FILED SEPT. 14, 1914.

1,190,400. Patented July 11, 1916.

FIG. 1.

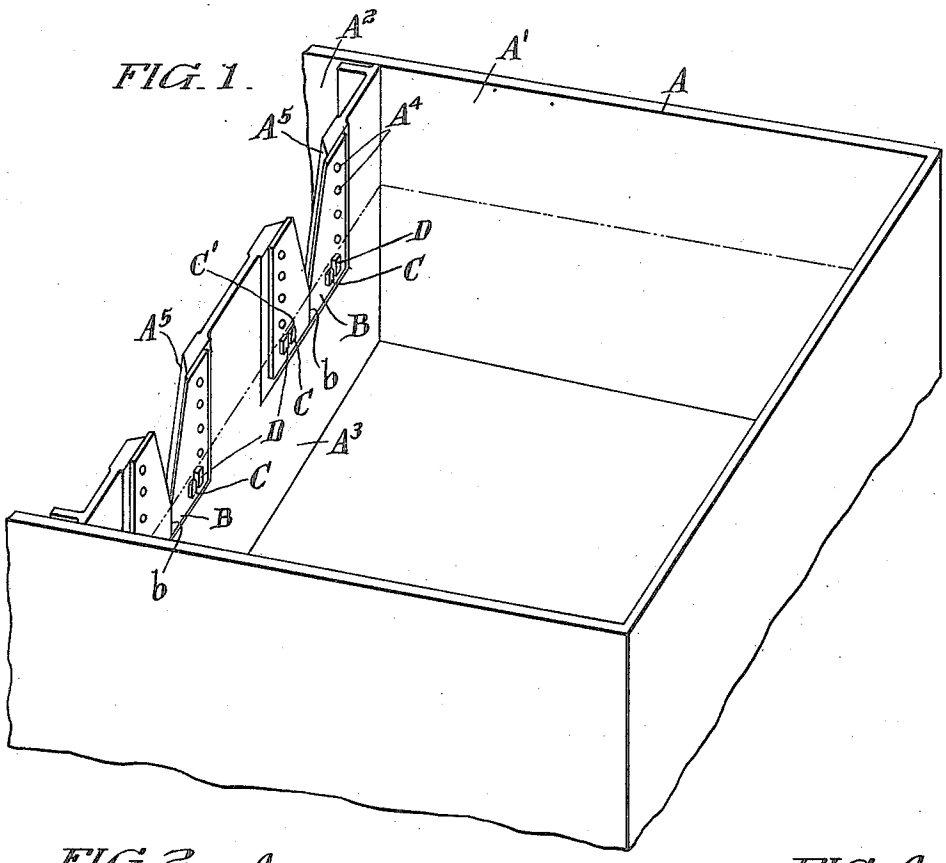


FIG. 2.

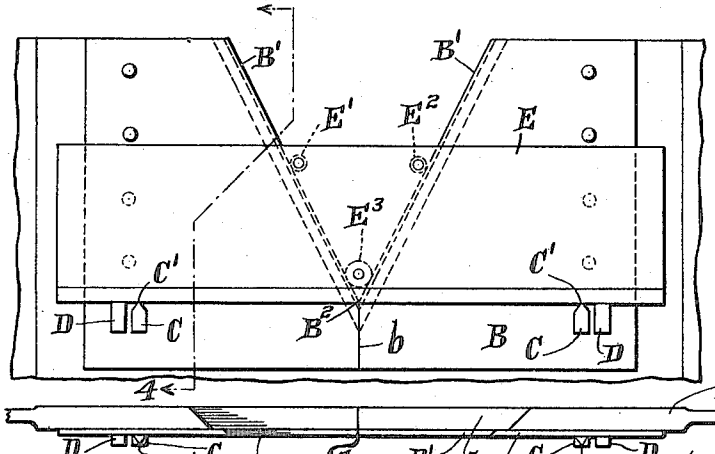
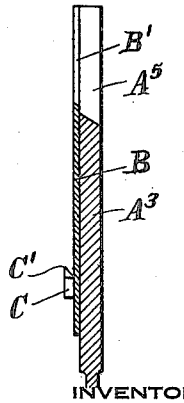


FIG. 3.

FIG. 4.



WITNESSES

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WALTER S. GIELE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOSEPH S. LOVERING WHARTON, WILLIAM S. HALLOWELL, AND JOHN C. JONES, ALL OF PHILADELPHIA, PENNSYLVANIA, DOING BUSINESS UNDER THE FIRM-NAME OF HARRISON SAFETY BOILER WORKS, OF PHILADELPHIA, PENNSYLVANIA.

WEIR-PLATE.

1,190,400. Specification of Letters Patent. Patented July 11, 1916.

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To all whom it may concern:

Be it known that I, WALTER S. GIELE, a citizen of the United States, residing in the city and county of Phiadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Weir-Plates, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My present invention relates to liquid measuring apparatus of the type in which the quantity of liquid passing over a weir is determined from the varying accumulation of liquid on the supply side of the weir; and the invention consists in a notched weir plate possessing certain novel features of construction and arrangement, devised to insure a high degree of accuracy in the formation of the weir notch while permitting a comparatively low cost of construction, and to facilitate the accurate setting of the weir.

The various features of novelty characterizing my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and of the advantages possessed by it, reference should be had to the accompanying drawings and descriptive matter, in which I have illustrated and described one form in which my invention may be embodied.

Of the drawings: Figure 1 is a perspective view, with parts broken away, of a weir measuring tank provided with notched weir plates constructed in accordance with the present invention; Fig. 2 is an elevation, on a larger scale than Fig. 1, of one of the weir plates shown in Fig. 1; Fig. 3 is a plan view of the weir plate shown in Fig. 2; and Fig. 4 is a section on the broken line 4—4 of Fig. 2.

The somewhat conventionally illustrated weir measuring tank A of Fig. 1 is divided into an inlet compartment A' and an outlet compartment A^2 by a transverse partition A^3, which is provided, as shown, with two V-notch weirs. The weirs proper are not formed by the partition A^3, but by weir plates B, each formed with a V-weir notch and each secured to the partition A^3 as by bolts A^4. Actually, the partition A^3 is formed with notches A^5, somewhat larger than the weir notches proper. Each weir plate B is formed in two symmetrical parts, the meeting edges uniting to form a joint *b*, which is advantageously brazed to secure the two halves of the weir plate together, and extends vertically downward to the bottom edge of the plate from the apex B^2 of the weir notch.

When a weir notch is formed in a one piece weir plate, it becomes necessary to finish the notch by hand; and it is very difficult to finish the beveled edges B' of the notch, and especially the portions adjacent the notch apex B^2, with sufficient accuracy. It is a comparatively simple matter, however, to accurately machine the marginal edges of a plate, such as each of the two sections out of which each weir plate is made in the construction illustrated, with a high degree of accuracy, both with respect to the straightness of the individual edges and with respect to the angular relation of the edges to one another.

In the practical use of ordinary notched weir measuring apparatus, it is essential that the weir plates should always be installed with the side edges of the notches making predetermined angles with the horizontal, and the ordinary conditions of practical use require that each weir plate be assembled with the line bisecting the angle of the weir notch extending vertically. It is also practically essential, of course, for the calibrating of the apparatus, that the integrating or recording instrument should be correspondingly set or adjusted when the liquid level on the supply side of the weir is at a predetermined or datum level with reference to the weir plate. To insure the proper setting of the weir plate and to permit an accurate determination of the datum level, I provide the weir plate with lugs C, which have their upper ends shaped to provide upwardly projecting points C'. The latter are horizontally displaced from the adjacent side of the weir plate, and lie in a plane which is perpendicular to the plane of the weir plate in the normal operating position of the weir and passes through the apex B^2 of the weir notch. When a plate thus provided with the points C' is secured in place in a measuring tank, as, for instance,

the tank A shown in Fig. 1, the setting of the tank to obtain the proper weir disposition may readily be effected by adjusting the tank until the liquid level on the supply side of the weir coincides with th plane passing through the points C′, and the apex B^2 of the weir notch. The accuracy with which a point extending upward from beneath the surface of a body of liquid can be brought to the exact surface level is familiar to all those skilled in the art.

The lugs C are advantageously formed separately from the weir plate and brazed in position. The proper setting of the lugs C, when secured to the plate in this manner, is readily obtained by means of a gage E, formed with three cylindrical lugs E′, E^2 and E^3 on one side, as shown in Fig. 2. These lugs E′, E^2 and E^3 engage the side edges B′ of the weir notch at four points only, when the gage is put in place as shown in Fig. 2. The gage E also furnishes an effective means for determining the accuracy with which the weir plate has been formed, for a very minute error in the angle between the two side edges B′ of the weir notch will permit an appreciable and easily detected rocking movement of the gage plate E, when the latter is put in place as shown in Fig. 2. When the gage plate is thus put in place in a properly formed weir, the lugs C are brazed in place with their points C′ engaging the straight edge formed at the under side of the gage plate E. Lugs D, having flat upper ends are also advantageously secured to each weir plate, one adjacent, but on the outer side of each lug C. The lugs D are secured in place with their upper ends in engagement with the under side of the gage plate E. The lugs D are intended to support a straight edge on which a surface level may be mounted to obtain an approximate setting of the weir tank, and also form a means by which the different weir plates may be set relatively to the partition A^3, when a plurality of weir plates is employed, as in Fig. 1, with the apices of the different weir notches all at the same level, and with the corresponding side edges of the weir notches all at the proper angle to the plane normal to the plane of the weir plates and passing through the different weir notch apices. The lugs D save the lugs C from being put to uses which would tend to blunt the points C′.

While in accordance with the provisions of the statutes, I have illustrated and described the best form of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of apparatus disclosed without departing from the spirit of my invention, and that under some conditions certain features of my invention may be used without a corresponding use of other features.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A V-notch weir plate comprising two sections secured together and each formed with an elongated straight edge fitting against the corresponding edge of the other to form a tight joint intersecting the apex of the weir notch.

2. A V-notch weir plate provided with laterally projecting positioning lugs terminating in upwardly extending points which are located in the same horizontal plane in the normal operating position of the weir plate.

3. A V-notch weir plate provided with positioning lugs terminating in upwardly extending points located in a horizontal plane transverse to the weir plate and passing through the apex of the weir notch in the normal operating position of the weir plate.

4. A V-notch weir plate having lugs secured to one side thereof and terminating in upwardly extending points displaced from the said side of the weir plate and located in the same horizontal plane in the normal operating position of the weir plate.

5. A V-notch weir plate provided with a pair of spaced apart positioning lugs terminating in upwardly projecting points, and a second pair of lugs one adjacent each of the first mentioned lugs and each having a flat upper end lying in the same plate transverse to the weir plate with said points.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."