

Dec. 13, 1938.

H. L. WOODRUFF

2,139,924

TANK

Filed July 16, 1936

2 Sheets-Sheet 1

Fig. 1

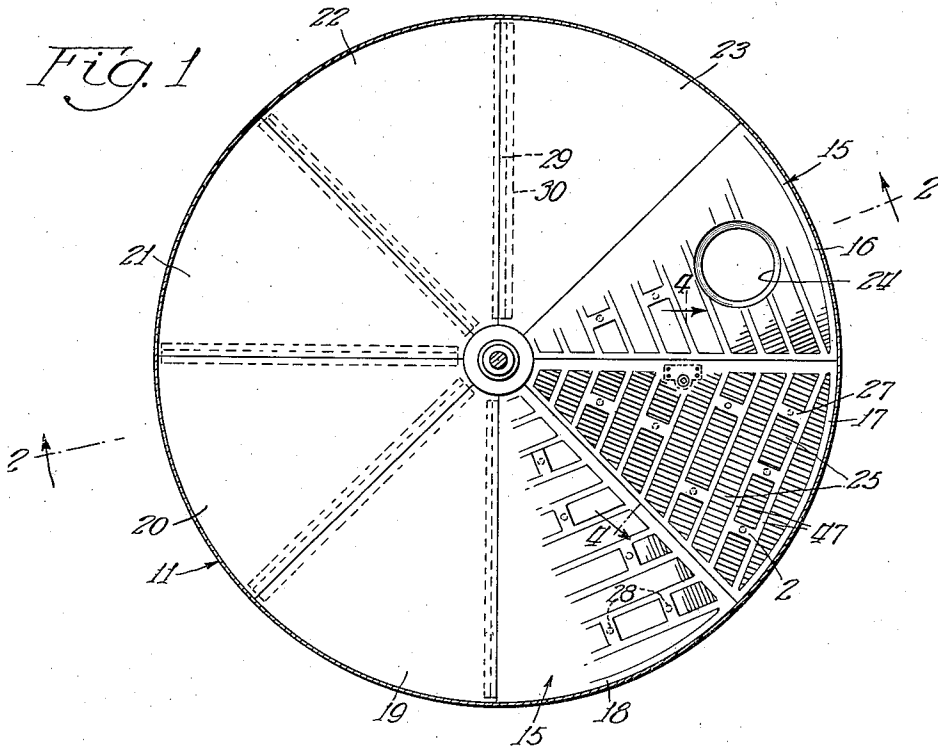


Fig. 2

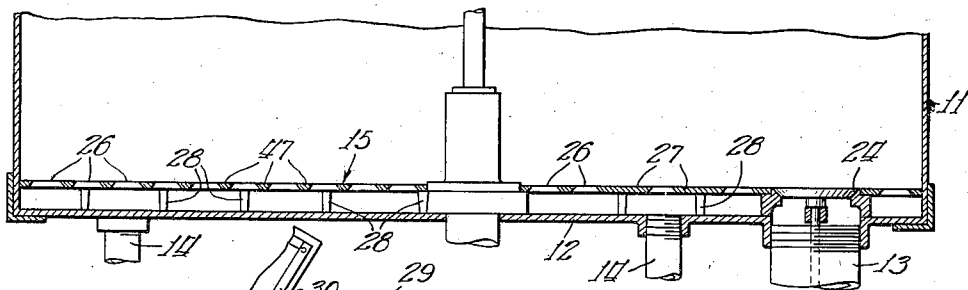
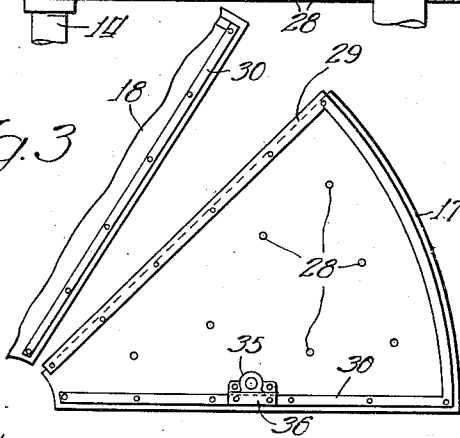


Fig. 3



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2 Sheets-Sheet 2

Fig. 4

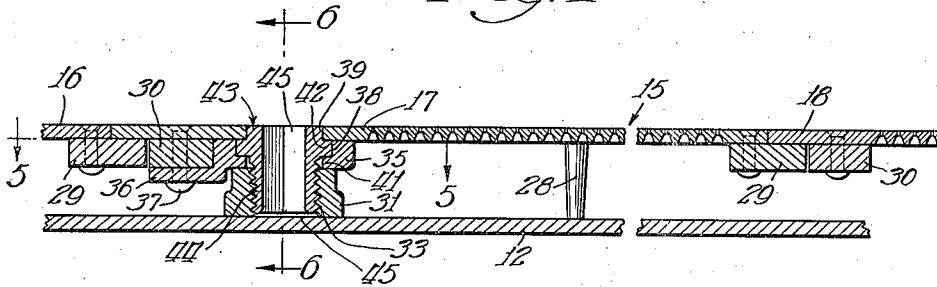


Fig. 5

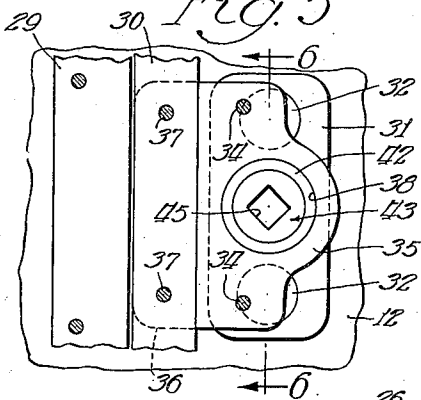


Fig. 6

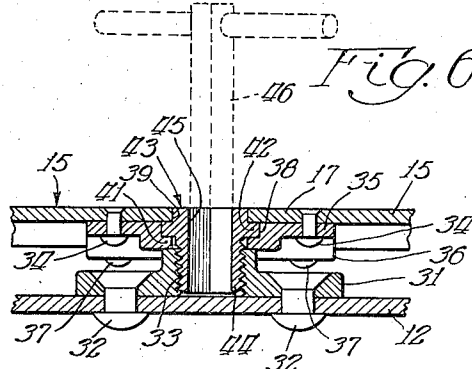


Fig. 8

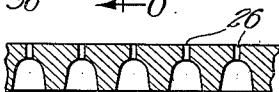
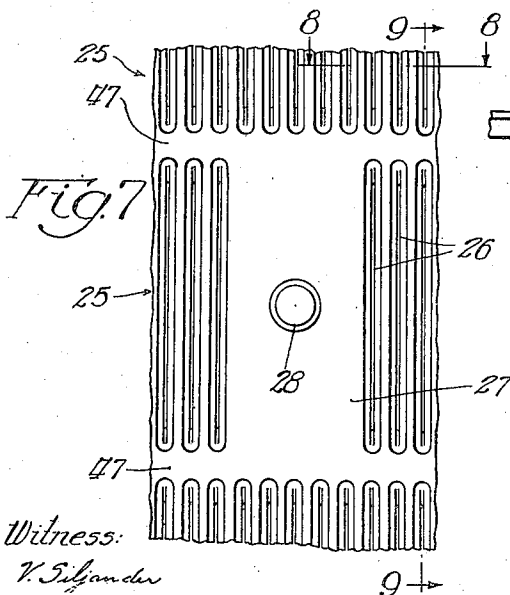


Fig. 9



Fig. 7



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UNITED STATES PATENT OFFICE

2,139,924

TANK

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Application July 16, 1936, Serial No. 90,934

3 Claims. (Cl. 210—149)

This invention relates to filtering or straining tanks, and particularly to false bottoms therefor adapted for use in filtering and/or straining of the material placed in the tank.

One object of the present invention is to provide a false bottom of novel construction, which may be readily and conveniently positioned in a tank, and which may be as conveniently removed therefrom for cleaning.

Another object of the invention is to provide greater filtering area, thereby obtaining faster filtering and a consequent saving of time.

Another object of the invention is to provide a false bottom structure wherein the filtering slots are closely positioned with respect to each other and in groups or series, and the series so arranged that greater strength and resistance to sagging or bending of the elements comprising the bottom is obtained, and wherein the supporting legs of the false bottom may be more equally and uniformly spaced throughout the false bottom structure.

A further object of the invention is to provide a novel construction and arrangement for maintaining the respective segments comprising the false bottom in horizontal alignment, and to provide novel locking means for securing the false bottom as a whole against relative displacement with respect to the tank structure and main bottom thereof.

A still further object of the invention is to improve devices of the character described in sundry details hereinafter referred to and particularly pointed out in the appended claims.

One embodiment of the present invention is shown for illustrative purposes in the accompanying drawings, in which:

Fig. 1 is a plan sectional view of a tank showing my improved false bottom structure positioned therein;

Fig. 2 is an enlarged sectional elevational view of the structure illustrated in Fig. 1, and taken substantially as indicated by the line 2—2 thereof;

Fig. 3 is a bottom plan view of a false bottom segment and a fragment of an adjacent segment illustrating the aligning means at adjacent edge portions of adjacent segments;

Fig. 4 is a further enlarged fragmentary sectional elevational view through the false bottom locking device and bottom structure taken substantially as indicated by the line 4—4 of Fig. 1;

Fig. 5 is a fragmentary plan sectional view taken substantially as indicated by the line 5—5 of Fig. 4;

Fig. 6 is a sectional elevational view taken substantially as indicated by the lines 6—6 of Figs. 4 and 5;

Fig. 7 is an enlarged fragmentary bottom plan view of a portion of one of the false bottom seg-

ments illustrating the arrangement of some of the slots formed therein;

Fig. 8 is a further enlarged fragmentary sectional elevational view of a portion of a segment taken transversely of the slots and substantially as indicated by the line 8—8 of Fig. 7; and

Fig. 9 is a fragmentary sectional elevational view of a portion of a segment taken longitudinally of the slots and substantially as indicated by the line 9—9 of Fig. 7.

In the drawings, 11 indicates a filtering or straining tank having a main bottom 12 and provided with grains chute 13 and drain pipes 14 positioned therein. Positioned in the tank 11 in spaced relation to the main bottom 12 is a false bottom indicated, as a whole, by the numeral 15 and comprising a plurality of elongated segments, indicated in the present instance by the numerals 16, 17, 18, 19, 20, 21, 22 and 23, the segment 16 being provided with the grains valve opening 24 adapted to be positioned in register with the grains chute 13 as clearly shown in Fig. 2.

As clearly illustrated in Fig. 1, each of the segments is provided with a plurality of elongated series or groups 25 of elongated closely positioned slots 26, the series 25 of the respective segments being shown, in the present instance, as spaced radially with respect to the center of the tank 11 and longitudinally of the respective segments. The series 25 of the respective segments being shown, in the present instance, as extending substantially transversely to the longitudinal center line of the respective segments, and the slots 26 comprising the respective series being shown, in the illustrative embodiment, as extending substantially parallel to the center line of the respective segments as clearly illustrated in Fig. 1.

It will be noted also by reference to Fig. 1 that the series 25 of the respective segments are longitudinally spaced with respect to each other in a manner to provide imperforate portions 27 on which are formed supporting legs 28 for spacing and supporting the false bottom 15 and segments thereof with respect to the main bottom 12, thereby providing a space for the passage of extract or the like to the drain pipes 14 positioned in the main bottom 12.

For positioning the respective segments and retaining them in substantially a horizontal plane with respect to each other, each of the segments is provided adjacent one of its longitudinal edges with a retaining strip 29 projecting a suitable distance beyond said longitudinal edge and adapted to underlie an adjacent edge portion of an adjacent segment in close proximity to a reinforcing strip 30 extending along said adjacent edge of the adjacent segment and positioned inwardly from the edge thereof a distance substantially equal to the projecting portion of the re-

taining strip 29 as clearly illustrated in Figs. 3 and 4.

Thus it will be observed that each of the segments is provided adjacent its longitudinal edge portions with supporting means adapted to maintain the respective segments with respect to each other and in substantially a common horizontal plane.

For securing the bottoms 12 and 15 in relatively fixed position with respect to each other, a plate 31 is rigidly secured to the main bottom 12 by means of rivets 32 and is provided with a screw-threaded recess 33, and secured to a portion of the false bottom 15, for example, to the segment 17 thereof, by means of rivets 34 is a bracket 35 having a laterally extending flange 36 adapted to embrace a portion of the reinforcing strip 30 on the segment 17, and to be secured thereto and to the false bottom 15 by means of rivets 37. The bracket 35 is provided also with an aperture 38 adapted to register with an aperture 39 formed in the segment 17 of the false bottom 15 and is provided also with a shoulder 41 adjacent the lower end of the aperture 38 adapted to be engaged by a head 42 of a bolt indicated, as a whole, by the numeral 43, having a screw-threaded shank portion 44 engaging the screw-threaded recess 33 of the plate 31, the bolt 43 being provided, in the present instance, with a square socket 45 adapted to receive a squared end socket-wrench 46, shown by dotted lines in Fig. 6, by which the bracket 35 may be drawn snugly against the plate 31 in a manner to securely retain the false and main bottoms 15 and 12, respectively, in relatively fixed position with respect to each other.

It will be observed that by reason of the arrangement and spacing of the series 25 of slots 26 that a plurality of supporting bars 47 are formed between the spaced series 25 and, in the present instance, extend across and to approximately the longitudinal edge portions of the respective segments in a manner to reinforce the segments and prevent sagging thereof between their respective edge portions when the weight of an attendant is on a segment, as has been the case in drainage plates heretofore employed. This sagging of the plates seriously interferes with the operation of the tank as a whole, and particularly with the efficient operation of the drainage slots, and it will be apparent that the present arrangement of the supporting bars 47 permits the positioning of the slots 26 closer together and prevents sagging of the segments in a manner to retain the slots in their normal condition, thereby accelerating the drainage of extract or other fluid from the material in the tank and materially improving the operation thereof.

Obviously, the present invention is not limited to the precise construction and arrangement shown and described as the same may be variously modified. Moreover, all the features of the invention need not be used conjointly as the same may be used to advantage in variously different combinations and subcombinations.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the class described, the combination of a tank having a main bottom, a false bottom positioned in said tank in spaced relation to said main bottom, said false bottom comprising a plurality of segments, one of said

segments having an aperture therein, and each segment having a plurality of substantially parallel series of substantially parallel elongated slots formed therein, certain of said series being longitudinally aligned and spaced to provide imperforate portions between adjacent ends of the aligned series, means on the respective segments for positioning and aligning the segments horizontally and in a common plane with respect to each other, a plate having a screw-threaded recess formed therein rigidly secured to said main bottom, a bracket rigidly secured to one of said segments and having an aperture in register with the aperture formed in said one of said segments, and a bolt positioned in said apertures and recess and having a head engaging said bracket for securing said bottoms in relatively fixed position with respect to each other.

2. In a device of the class described, the combination of a tank having a main bottom, a false bottom positioned in said tank in spaced relation to said main bottom, said false bottom comprising a plurality of segments, one of said segments having an aperture therein, and each segment having a plurality of substantially parallel series of substantially parallel elongated closely positioned slots formed therein, means on the respective segments for positioning and aligning the segments horizontally and in a common plane with respect to each other, a plate having a screw-threaded recess formed therein rigidly secured to said main bottom, a bracket rigidly secured to the underside of one of said segments and having a shoulder formed thereon and an aperture formed therein adjacent said shoulder and in register with the aperture formed in said one of said segments, and a bolt having a head engaging said shoulder and a screw-threaded shank portion extending through the aperture formed in said bracket and into the screw-threaded recess of said plate for securing said bottom in relatively fixed position with respect to each other.

3. In a device of the class described, the combination of a tank having a main bottom and a grains chute and drain pipe positioned therein, a false bottom positioned in said tank in spaced relation to said main bottom, said false bottom comprising a plurality of segments, each having a plurality of radially spaced elongated series of elongated slots formed therein, said series in the respective segments extending substantially transversely to the radial longitudinal center line of the respective segments and the slots in the respective segments extending substantially parallel to the respective center lines of the respective segments, the radial spacing of said series of slots providing a plurality of radially spaced supporting bars between the respective radially spaced series and extending substantially transversely to the radial longitudinal center line of the respective segments, certain of said series being longitudinally aligned and spaced to provide imperforate portions between adjacent ends of the aligned series, supporting legs on said portions, one of said segments having a grains valve opening formed therein in register with said grains chute, and means operatively related to the respective bottoms for securing the said bottoms in relatively fixed position with respect to each other.

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