

No. 706,472.

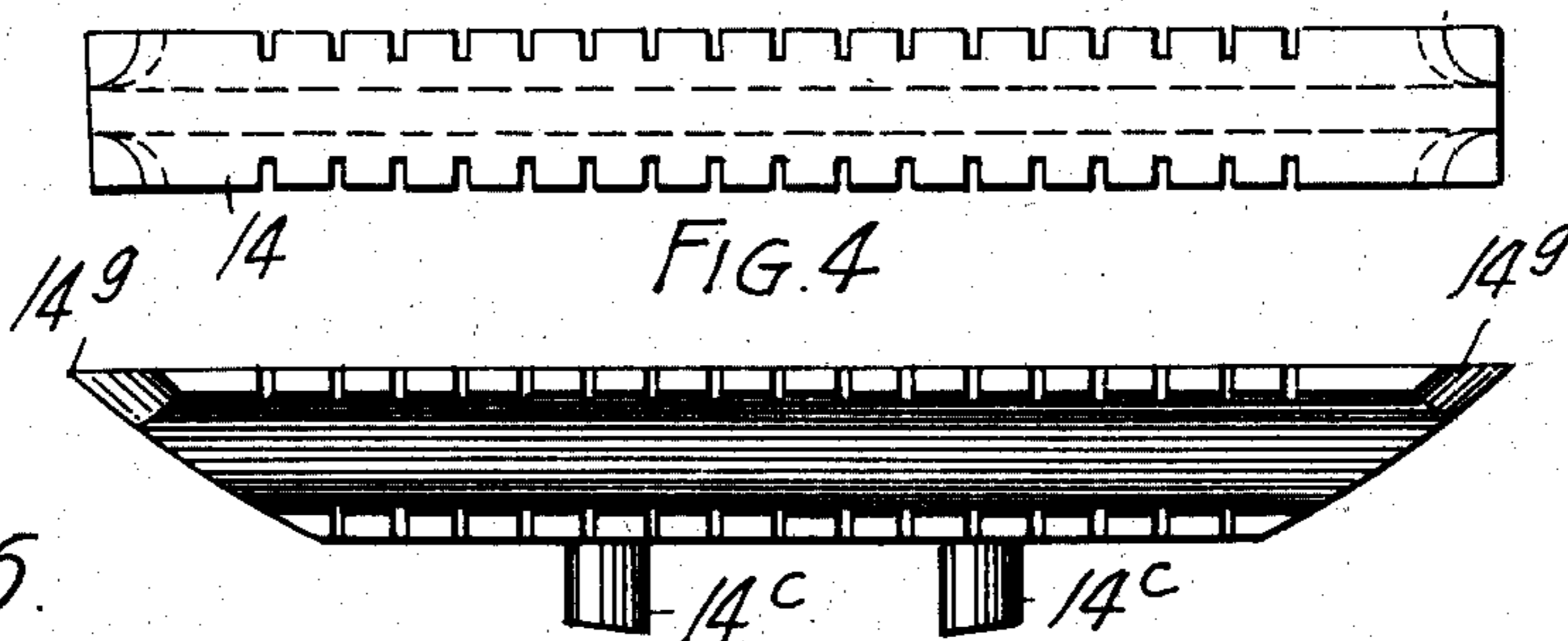
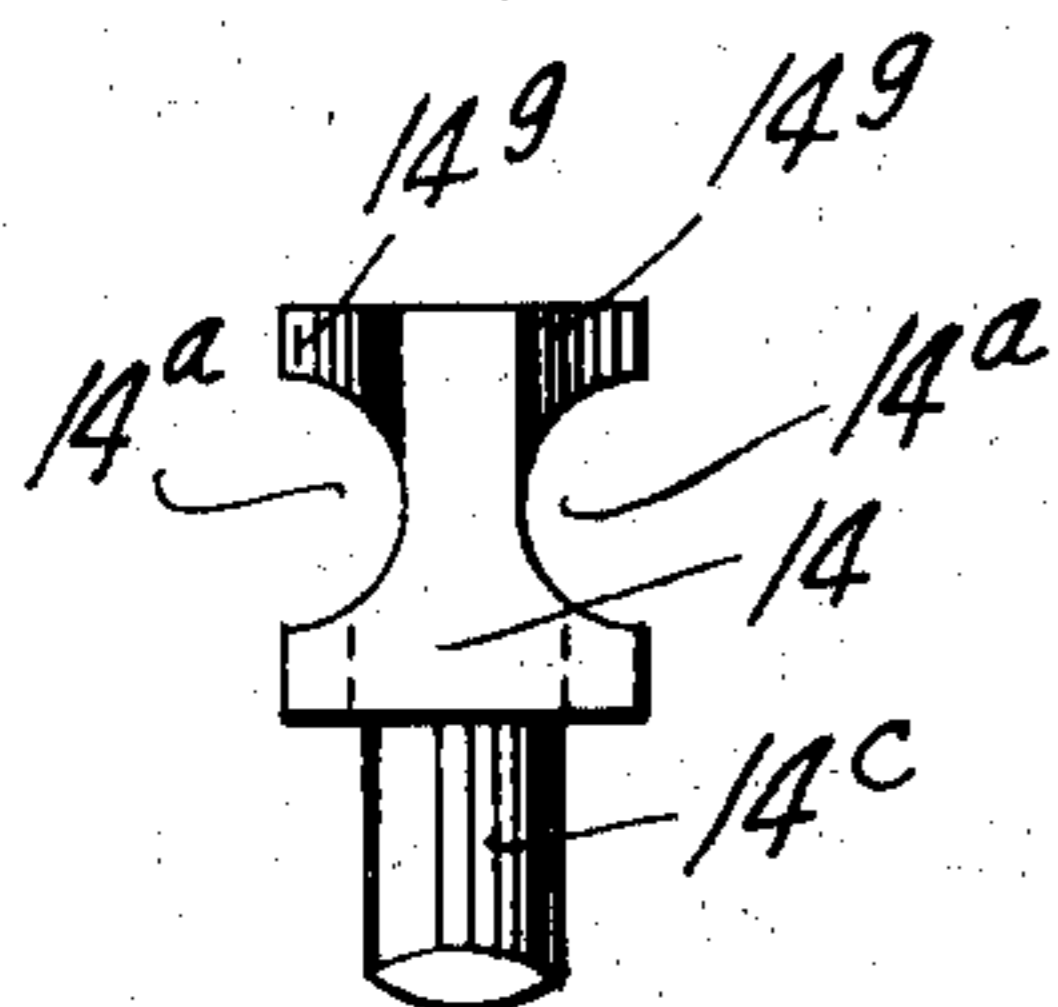
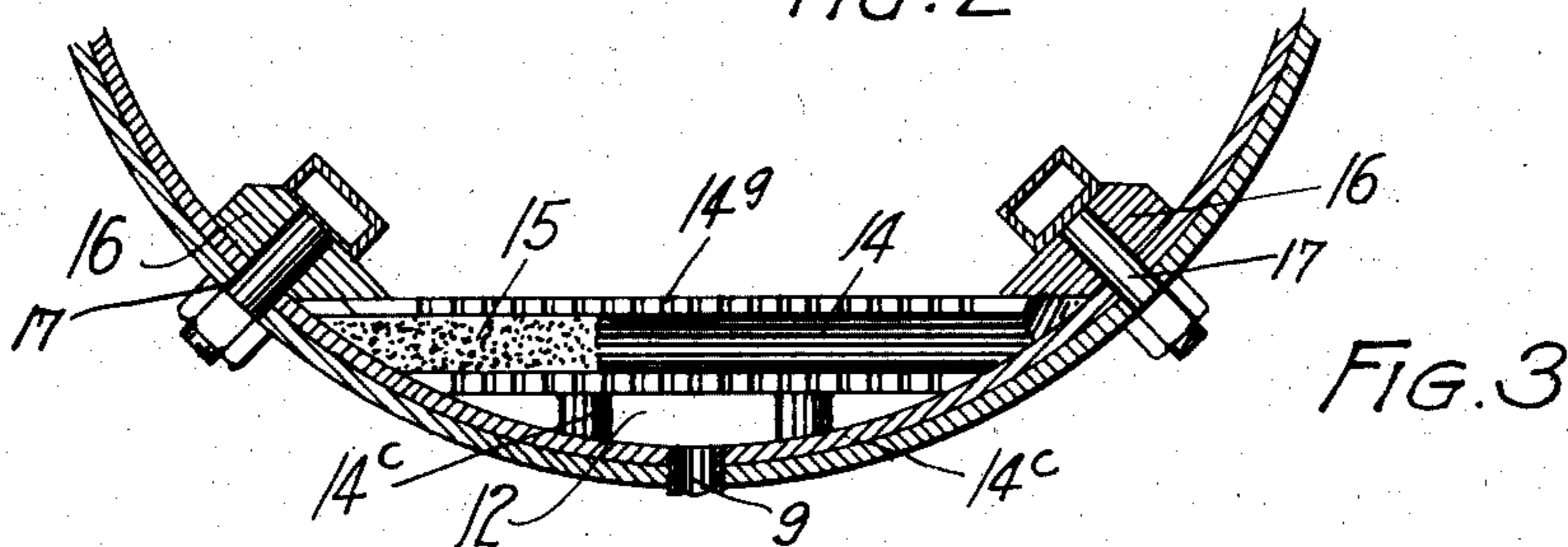
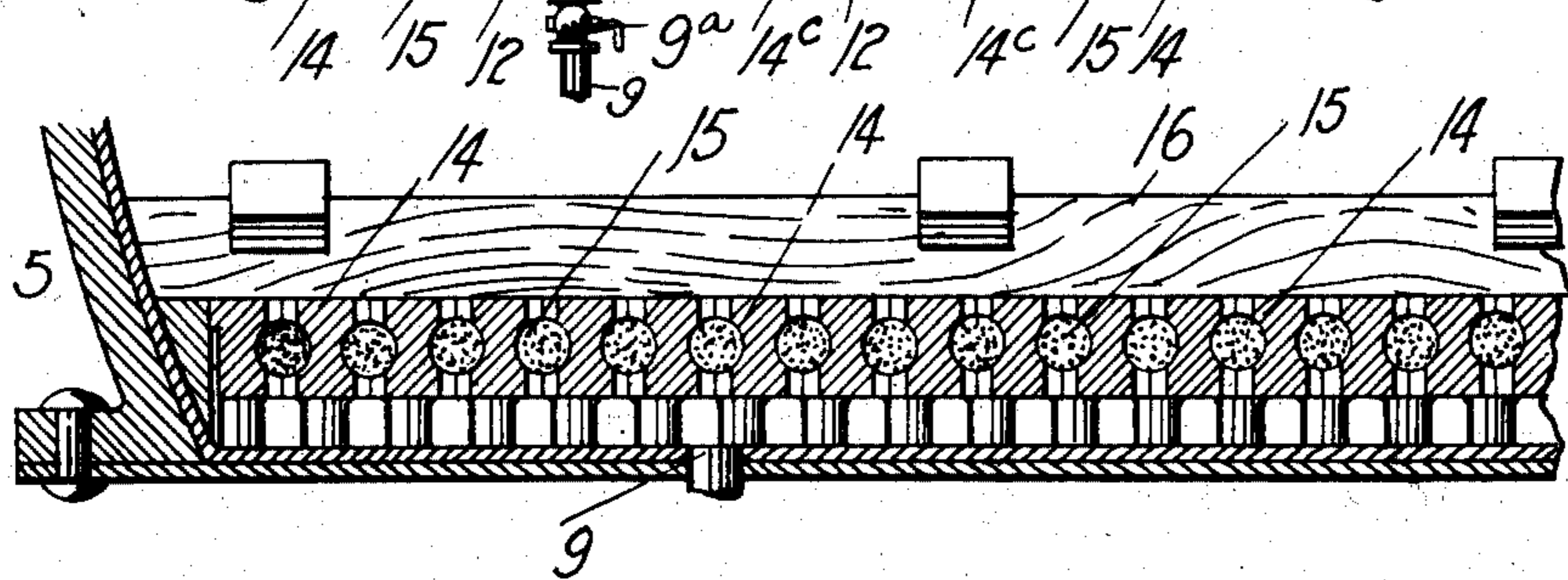
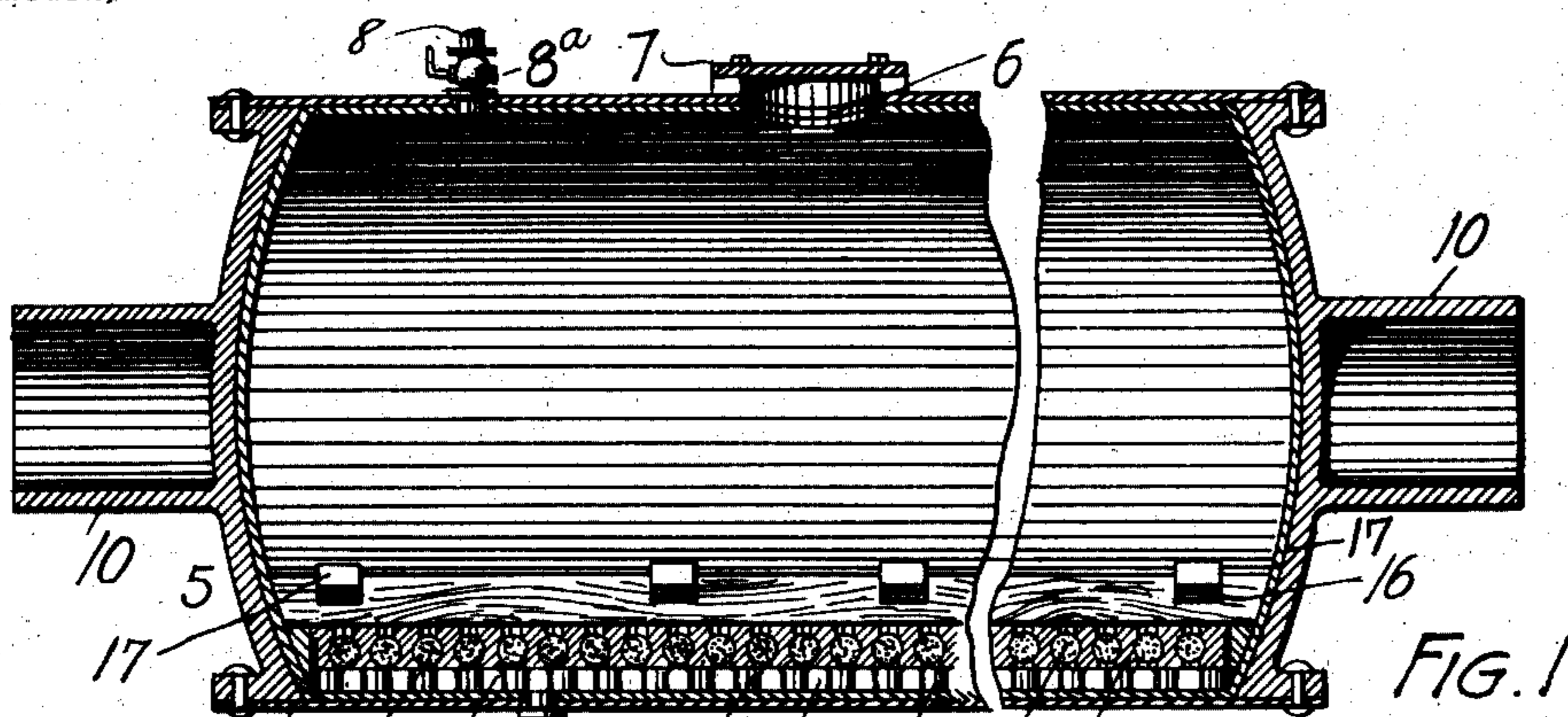
Patented Aug. 5, 1902.

A. E. JOHNSON.

FILTER BED FOR CHLORINATION BARRELS.

(Application filed May 17, 1902.)

(No Model.)



WITNESSES:

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FILTER-BED FOR CHLORINATION-BARRELS.

SPECIFICATION forming part of Letters Patent No. 706,472, dated August 5, 1902.

Application filed May 17, 1902. Serial No. 107,809. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. JOHNSON, a citizen of the United States of America, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented certain new and useful Improvements in Filter-Beds for Chlorination-Barrels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in filter-beds for chlorination-barrels, in which gold and other precious metals are extracted from pulverized ore.

My object is to provide an apparatus of this class which shall be simple in construction economical in cost, reliable, durable, and thoroughly practicable in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a section taken through the axis of a chlorination-barrel, cutting the trunnions or the trunnion-bearings, my improved filter-bed being shown in place and the barrel being partly broken away. Fig. 2 is a fragmentary view of the same, shown on a larger scale. Fig. 3 is a section taken through the filter-bed at right angles to the sections in Fig. 1. Fig. 4 is a top view of one of the filter-bars shown in detail. Fig. 5 is a side view, and Fig. 6 an end view, of the same.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a chlorination-barrel, which is provided with a manhole 6, normally closed by a head 7. The top of the barrel is provided with an inlet-pipe 8 and its bottom with an outlet-pipe 9 below the filter-bed. These inlet and outlet pipes are controlled by valves 8^a and 9^a, respectively, which are normally closed. On opposite sides of the barrel are located trunnion sockets or bearings 10. These features are characteristic of the ordinary chlorination-barrel, in

the use of which the pulverized ore with the chemicals and water are charged through the manhole, the barrel being in the position shown in Fig. 1. The manhole is then closed, making the barrel perfectly tight, after which the latter is caused to revolve on trunnions until the gold or other metal is dissolved. It is then stopped in the position shown in Fig. 1 and a hose or pipe (not shown) connected with the outlet-pipe 9, whereby the solution is carried away for further treatment. The inlet-pipe 8 is also connected with a water-pressure source.

In all common forms of chlorination-barrels, as well as the one herein shown, some form of filter is interposed between the pulverized ore and the outlet for drawing off the solution, and the usual construction of these filters is such that when the barrel is in the position shown in Fig. 1 the filter supports the ore charge upon its upper surface, while the lower surface covers a space or opening 12, that extends longitudinally under the filter and communicates with one or more discharge-openings, as at 9. The filters ordinarily employed are of various construction—as, for instance, sheet metal formed with perforations that will allow the fluid portion to pass through, but will prevent the escape of the pulverized ore. Another form consists of metal tubes or sections of tubes with perforations. Still another form of filter is composed of woven asbestos supported from below by a form of grating and partially protected on its upper surface by bars or grates. One of the difficulties of maintaining all the common forms of chlorination-barrel filters is that while the charge of ore is being revolved in the barrel, which operation may take several hours, the ore, which is of the nature of sand, acts to grind away the surface of the filter, thus requiring very frequent renewals. It is mainly to overcome the injurious effects of this wear that I have designed the form of filter shown in the accompanying drawings and which will now be described.

The framework of the filter is composed of bars 14, formed of metal or earthenware, which resists the action of the chemicals used. These bars are of the general shape shown in the drawings, their sides being formed with semicircular grooves 14^a, so that when a series of the bars is placed side by side a cylin-

drical opening is formed between each pair of bars. These cylindrical openings are filled with filtering material 15, which is confined therein and protected from the erosive or wearing action of the ore during the necessary rotation of the barrel in order to dissolve the precious metallic values, as heretofore explained. The extremities of these bars 14 are made to conform to the curve of the barrel, and they are provided with lugs or short legs 14^c to support the filter from the pressure due to the gravity of the ore and water in the barrel and make provision for a free circulation of the filtered solution while flowing to the discharge-pipe 9. As shown in the drawings, notches 14^d are formed in the sides of the grate-bars 14 in order to expose the filtering material confined between the bars to the solution in the barrel. The notches shown are not absolutely essential, as the bars may be placed a short distance apart and accomplish the same purpose by forming narrow spaces between them, which must not, however, be wide enough to permit the filtering material to escape. The corners of the bars 14 are cut away, as shown at 14^e, to allow the filling in of the filtering material after the bars are in place in the barrel. After this is done binding-strips 16 are put in place at the ends of the filter-bars. These strips 16 are secured by bolts 17, passing through the barrel and held by nuts applied to their extremities, which protrude on the outside. These binding-strips perform two functions—namely, that of holding the filter in place and closing the filling-openings 14^f to prevent the escape of the filtering material. The filtering material employed in this construction may be any fibrous or granulated substance—such as asbestos, mineral wool, lead-shavings, or suitably-broken stone—which will resist the action of the chemicals, and when loosely packed, as described, shall be sufficiently open or porous to allow a clear liquid to freely pass and at the same time catch or stop the solid particles of the ore.

In the practical operation of barrels equipped with my improved filter if the filtering material becomes filled up or clogged with the fine or slimy portion of the ore the water connection may be changed and water under pressure introduced by way of the pipe 9 into the space 12 underneath the filter, whereby the fine material which has clogged the filter may be forced back into the ore above.

It must be understood that in the construction of my improved filter I do not limit myself to the use of any particular filtering material. Neither do I limit the invention to the details of construction set forth, as many modifications may be employed without departing from the spirit of the invention.

Having thus described my invention, what I claim is—

1. The combination with a barrel or tank of the class described, of a filter-bed located

therein and composed of a number of bars arranged side by side and having their sides grooved or hollowed out, and filtering material filling the spaces between the bars, substantially as described. 70

2. The combination with a chlorination barrel or tank, of a filter located therein and composed of a series of bars placed side by side and having grooves in their sides, and filtering material filling the spaces between the bars which are notched at the top to allow the solution to enter and at the bottom to allow it to escape after passing through the filtering material, and suitable means for holding the filter in place. 75 80

3. The combination with a chlorination barrel or tank, of a filter-bed placed therein and composed of a series of bars placed side by side and having grooves in their sides forming spaces for filtering material, the corners of the bars being cut away to permit insertion of the filtering material after the bars are placed side by side, and binding-strips located at the ends of the bars and covering the filling-openings, the said strips being secured to the barrel to hold the filter in place, an outlet being formed in the barrel below the filter, substantially as described. 85 90 95

4. The combination with a tank or barrel of the class described, of a filter located therein and composed of bars arranged side by side and having grooves formed in their sides, filtering material filling the spaces between the bars which are arranged to expose the said material to the solution and to allow the filtered solution to pass through the filtering material between the bars, the latter being provided with lugs or short legs to support the filter in place. 100 105

5. A filter composed of a number of bars having grooved sides, said bars being arranged side by side and filtering material filling the spaces between the bars, openings being left at the top and bottom to permit the entrance and escape of the solution, substantially as described. 110

6. The combination with a tank or barrel of the class described, of a filter located therein and comprising grooved bars arranged side by side so that the grooves in the adjacent sides of any two bars register, filtering material placed in the spaces between the bars, openings being left at the top and bottom to allow the solution to pass through the filter, the filter-bars being provided with lugs to support the filter, the corners of the bars being cut away at their ends forming openings for the insertion of the filtering material, and binding-strips covering the end openings and secured to the tank to hold the filter in place, substantially as described. 115 120 125

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED E. JOHNSON.

Witnesses:

JOHN JACOB,

J. ELMER PARKISON.