

D. B. NEAL.

Sugar Filter.

No. 62,558.

Patented March 5, 1867.

Fig. 1

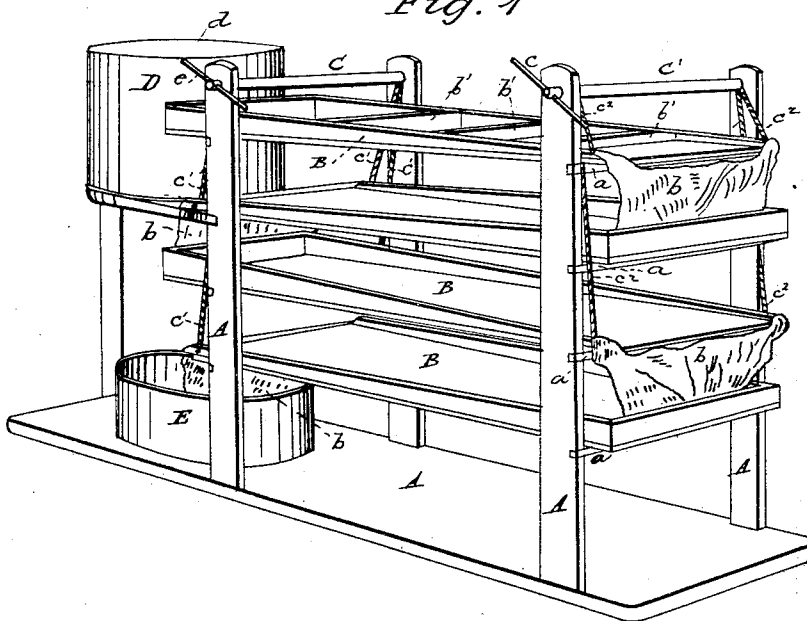
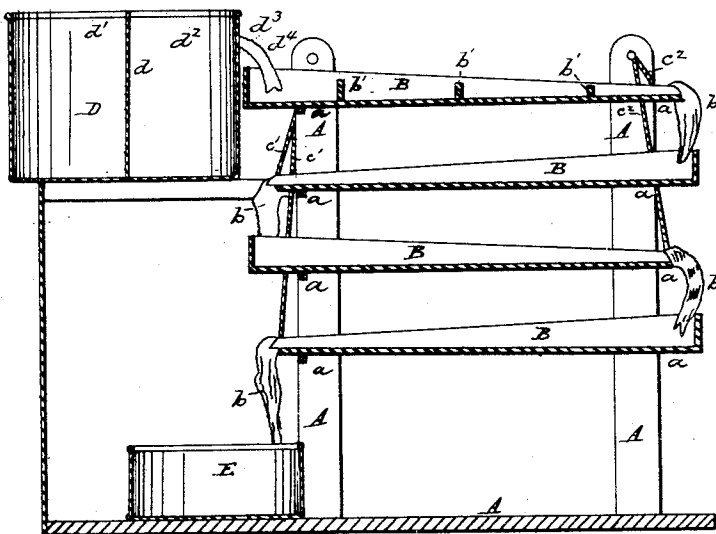


Fig. 2



Witnesses:

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Inventor:

*D. B. Neal*

*By his atty*

*S. M. Randolph & Co*

# United States Patent Office.

DANIEL B. NEAL, OF MOUNT GILEAD, OHIO, ASSIGNOR TO HIMSELF AND  
KINGSLAND, ALLEN & CLARK.

Letters Patent No. 62,558, dated March 5, 1867; antedated February 17, 1867.

## IMPROVED APPARATUS FOR DEFECCATING SORGHUM JUICE AND OTHER LIQUIDS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, DANIEL B. NEAL, of Mount-Gilead, in the county of Morrow, and State of Ohio, have invented a new and useful "Defecator;" and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of this invention consists in the combination of several shallow trays or troughs, the bottoms of which are to be slightly elevated at the discharge end while in use. These troughs may be placed in a frame, one above another, and arranged with their elevated ends alternately in opposite directions, or they may be placed continuously, one in advance of another, with the elevated ends all in one direction, but in either case they will be arranged so that fluid fed into one will find its exit, at the elevated end of each tray, into the one next in advance of it. The fluid will enter the deep end of each tray or trough, when it will stand at the height of three or four inches, and then as it flows toward the other end the sediment will settle and adhere to the inclined bottom, which will oppose considerable frictional resistance to its passage, and the clear liquid will flow off at the elevated end, and be conducted into a suitable receiver. When the trays are to be emptied and cleansed it will be necessary to lower the high end very slowly and easily, in order to save the fluid that may be in the deep end of the tray, without disturbing the sedimentary deposit. This is accomplished by a series of windlasses and cords or ropes as will be hereinafter explained.

To enable those skilled in the art to make and use my improved defecator, I will proceed to describe its construction and operation.

Figure 1 of the drawings is a perspective elevation of the apparatus.

Figure 2 is a sectional elevation of the same.

A is a general supporting frame, of vertical posts connected together by the beams *a*. On these beams there are a series of trays or shallow troughs, B, one end of each of which is closed and the other open. The sides of these trays are some three or four inches higher at the back or closed end than at the open end. Of course this formation of sides is not indispensable, but only presents the most economical construction. C and C' are windlasses, that have their bearings in the tops of the posts A. They are turned by means of the levers *c*, and are connected with the open ends of the trays by means of the cords or ropes *c' c''*. When this apparatus is to be used, the open ends of the troughs are to be raised up by means of the windlasses, so that they will be, say three or four inches higher than the closed end, which is to be allowed to remain on the beam *a*. The liquid that is to be purified is then to be fed in a slow, continuous stream, into the deep or closed end of the topmost tray, and it will then flow over the inclined bottom toward the open end, from which it will be discharged into the deep end of the next lower tray, and so on through the whole series. The number of these trays to be used in a single apparatus is entirely indefinite, and will be dependent entirely upon the character of the fluid to be cleansed, and other contingent circumstances. From four to six will, however, be the proper number to connect together usually. As the fluid flows over the inclined bottoms of the trays, the sedimentary deposits will, by gravitation and friction combined, be compelled to adhere thereto, and the cleaner and lighter liquid will flow smoothly off at the top of each tray. There should be some kind of conductors, *b*, to lead the fluid from one tray into the next so that the fluid may not be agitated, and the sediment thereby stirred up. These conductors may be simply pieces of muslin, or they may be more elaborately constructed. There may or there may not be transverse pieces or ribs *b'* placed in the bottoms of the trays or troughs to impede the progress of the heavy particles and retain them in the trays. When the deposit in the trays is to be removed the windlasses are to be turned down very slowly and gradually so as to draw off the clear liquid from the deep ends of the trays, and allow none but the heavy particles to remain, and these may then be scraped out and thrown away. The reservoir D, from which the fluid is to be fed into the trays, should have a vertical partition, *d*, which will divide the said reservoir into two chambers, *d'* and *d''*. Orifices in the bottom part of the partition will allow fluid to pass from one chamber into the other. Both of these chambers should be filled with some filtering material, such as straw, which may be weighted down with stones. The fresh liquid will then be fed into the chamber *d'*, from which it will pass downward through the filtering material, under the partition *d*, and then up through the filtering material in *d''*, from near the top of which chamber it will find an exit through a strainer

at  $d^3$ , and through the conductor  $d^4$  enter the topmost tray or trough B. After passing through the trays the clear fluid can be discharged into a suitable reservoir, E, at the bottom. Although this defecator may be used to clear any fluid of sedimentary deposit, it is especially valuable in removing the glutinous, mucilaginous matter from sorghum juice previous to the boiling of that liquid, and when the liquid is so freed from such foreign matter, it may be reduced to the consistency of sugar without danger of burning.

Having described my improved defecator, what I claim, is—

1. A series of trays or shallow troughs B, arranged with one end of each tray or trough deeper than the other, and otherwise constructed so that fluid fed into the deeper end of the topmost trough will find an exit at the shallow end, and so on through the whole series.

2. I claim the construction and combination of the trays B, and the windlasses C  $e$  and C'  $e'$ , substantially as described.

3. I claim the reservoir D, when constructed as herein described, and combined with the trays B.

DANIEL B. NEAL.

Witnesses:

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M. RANDOLPH.