(No Model.) 2 Sheets—Sheet 1.

# G. M. NEWHALL.

## CENTRIFUGAL MACHINE.

No. 278,260. Patented May 22, 1883.

FIG. 1.

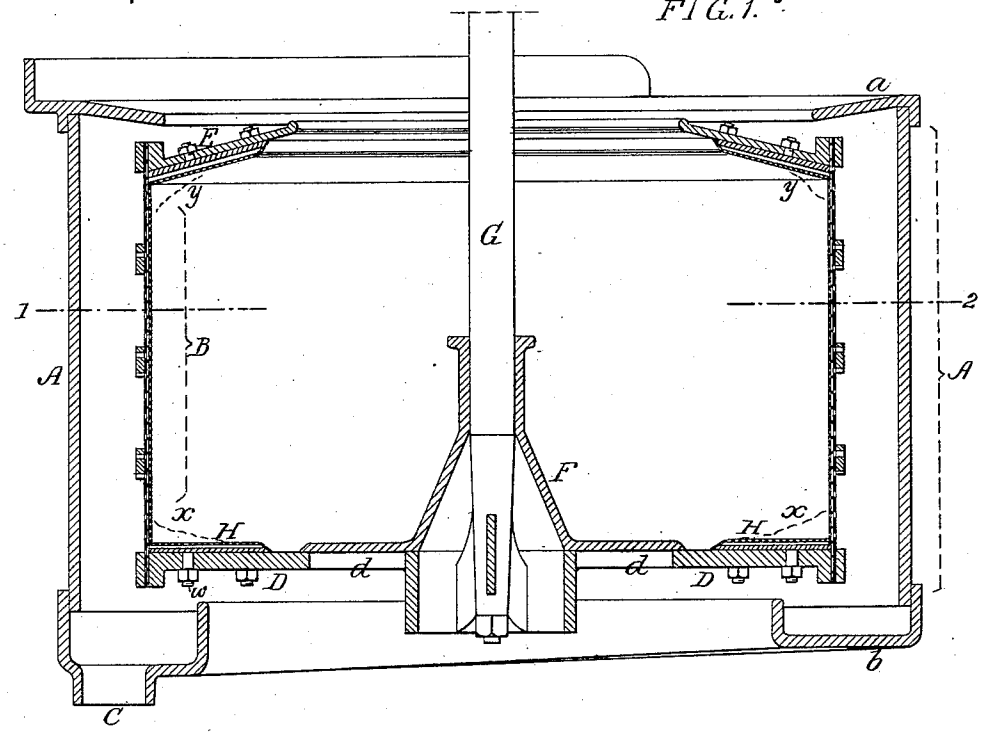
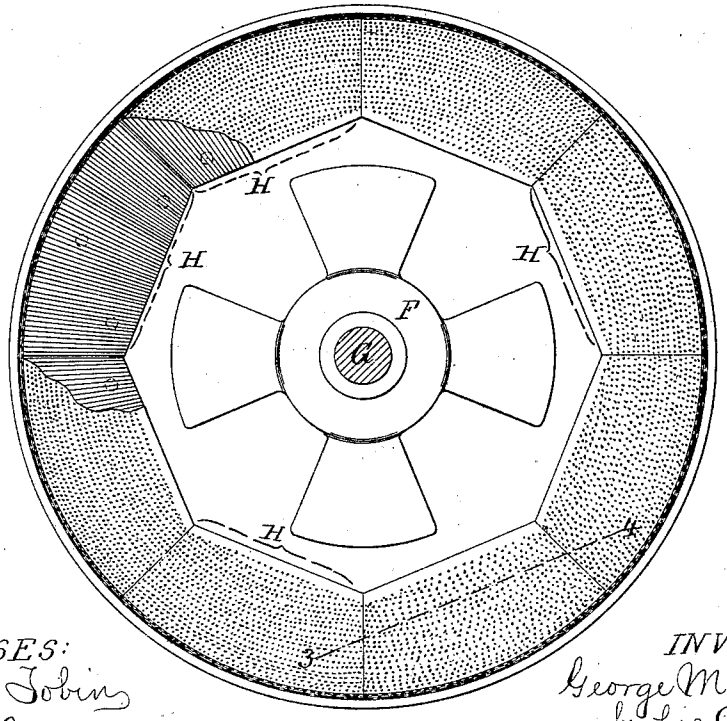



FIG. 2.




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(No Model.) 2 Sheets—Sheet 2.

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## CENTRIFUGAL MACHINE.

No. 278,260. Patented May 22, 1883.

FIG. 3.

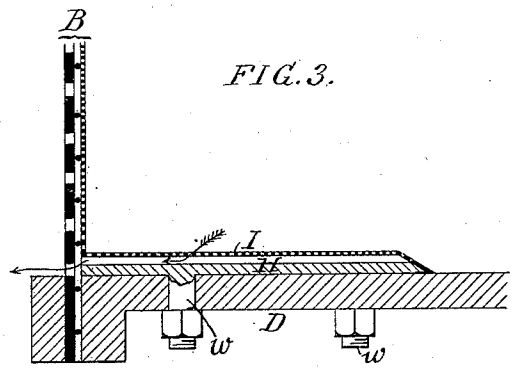



FIG. 4

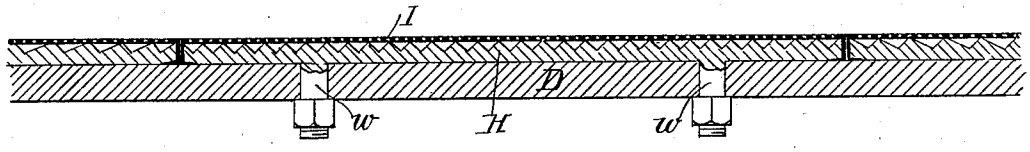
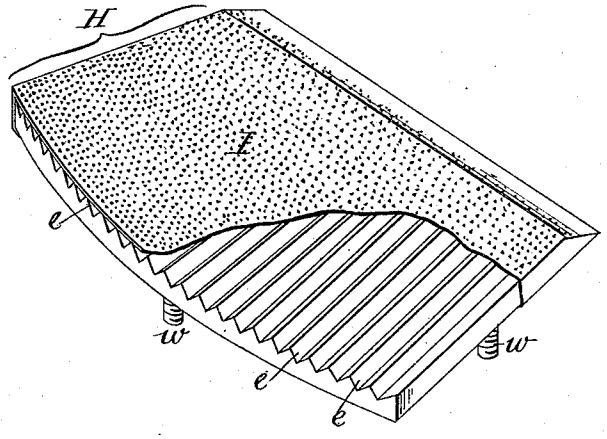



FIG. 5




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# UNITED STATES PATENT OFFICE.

GEORGE M. NEWHALL, OF PHILADELPHIA, PENNSYLVANIA.

## CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 278,260, dated May 22, 1883.

Application filed April 2, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE M. NEWHALL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Centrifugal Machines, of which the following is a specification.

My invention relates to certain improvements in centrifugal machines used in sugar-houses; and the object of my improvements is to insure the thorough draining of the sugar at points in the cage where in ordinary machines of this class it has usually accumulated in partly-undrained masses.

In the accompanying drawings, Figure 1, Sheet 1, is a vertical section of a centrifugal machine illustrating my improvement; Fig. 2, a sectional plan on the line 1 2; Fig. 3, Sheet 2, a vertical section of part of the machine; Fig. 4, a section on the line 3 4, Fig. 2; and Fig. 5, a perspective view, affording a further illustration of my improvement. Figs. 3, 4, and 5 are drawn to an enlarged scale.

As regards the general construction of the centrifugal machine, it does not differ, excepting in the particulars explained hereinafter, from ordinary machines of this class. There is the usual outer casing composed of the hollow cylinder A, cap-ring *a*, and base *b*, having an outlet, *c*. The cage has the usual screen, B, secured at the top to the ring E and at the bottom to the plate D, to which the central shaft, G, is attached in the ordinary manner, openings *d* in the plate being closed by the usual valve, F, excepting when the contents of the cage have to be discharged through the said openings.

In draining sugar by ordinary centrifugal machines a portion of the mass at the lower corner of the cage, and indicated by the dotted lines *x x* in Fig. 1, always retains more or less sirup, and this is a source of inconvenience in sugar-houses. The same thing also occurs, but to a less extent, at the upper corner, as indicated by the dotted lines *y y*. This is owing to the fact that there are not the same avenues for the free escape of the sirup at these points that the main body of the screen affords.

My improvement, which I will now proceed to describe, has been designed for the purpose of obviating this difficulty.

To the plate D, I secure a number of plates, H, preferably of cast-iron, the plates being substantially of the form shown in Fig. 2, and being in contact, or nearly so, with each other, and extending all around the cage, with their outer edges in contact with the screen. Each plate has its outer edge made in the arc of a circle, so as to fit to the screen, and each plate has in its upper surface numerous radial grooves, and has a perforated cover, which may be of gauze or a perforated plate. One of these grooved plates is shown on an enlarged scale in the perspective view, Fig. 5, *e* being the radial grooves, and I the perforated cover, which may be attached thereto by turning the edges under the plate, as shown in Fig. 4.

In the vertical section, Fig. 3, I have shown on an enlarged scale the relation of the plate and its perforated cover to the ordinary screen, B.

The mode which I prefer of securing the grooved plates to the plate D is by stud-bolts *w*, passing through holes in the said plate D and provided with nuts beneath the same.

It will be seen that whatever sirup may be induced, through the action of centrifugal force, to pass through the interstices of the cover I will be directed through the channels formed by the grooves *e* to the screen B, and will pass through the same, so that there can be no such accumulation of coagulated or partially-drained sugar as I have referred to above.

The grooves may be made directly in the plate D, and the perforated cover attached directly thereto; but I prefer the plates H, constructed for attachment to the said plate D, mainly because they can be readily applied to the cages of existing centrifugal machines. The same system of plates and perforated covers may be applied to the under side of the cap-ring E of the cage, or the under side of the said ring may be grooved and provided with a perforated cover; but, as before remarked, there is not the same necessity for the drainage of the upper corner of the cage as there is for draining the lower corner.

I claim as my invention—

1. A centrifugal-machine cage in which the lower plate provided with grooves and with a perforated cover are combined with the screen B, substantially as set forth.

2. The combination of the plate D and screen

B of the cage of a centrifugal machine, with grooved plates H, constructed for attachment to the said plate D, and with perforated covers, substantially as herein specified.

3. The combination of the grooved cap-ring E of the cage of a centrifugal machine, and a perforated cover therefor, with the screen B, substantially as described.

4. The combination of the screen of the cage of a centrifugal machine, with the cap-ring E, grooved plates constructed for attachment to the ring, and perforated covers for the plates, substantially as set forth.

5. A grooved plate having its outer edge made in the arc of a circle, and having a perforated cover, the whole being constructed for application to the cage of a centrifugal machine, and for combination with similar grooved and covered plates, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE M. NEWHALL.

Witnesses:

HARRY L. ASHENFELTER,

HENRY HOWSON, Jr.