

M. ARRUEBARRENA.

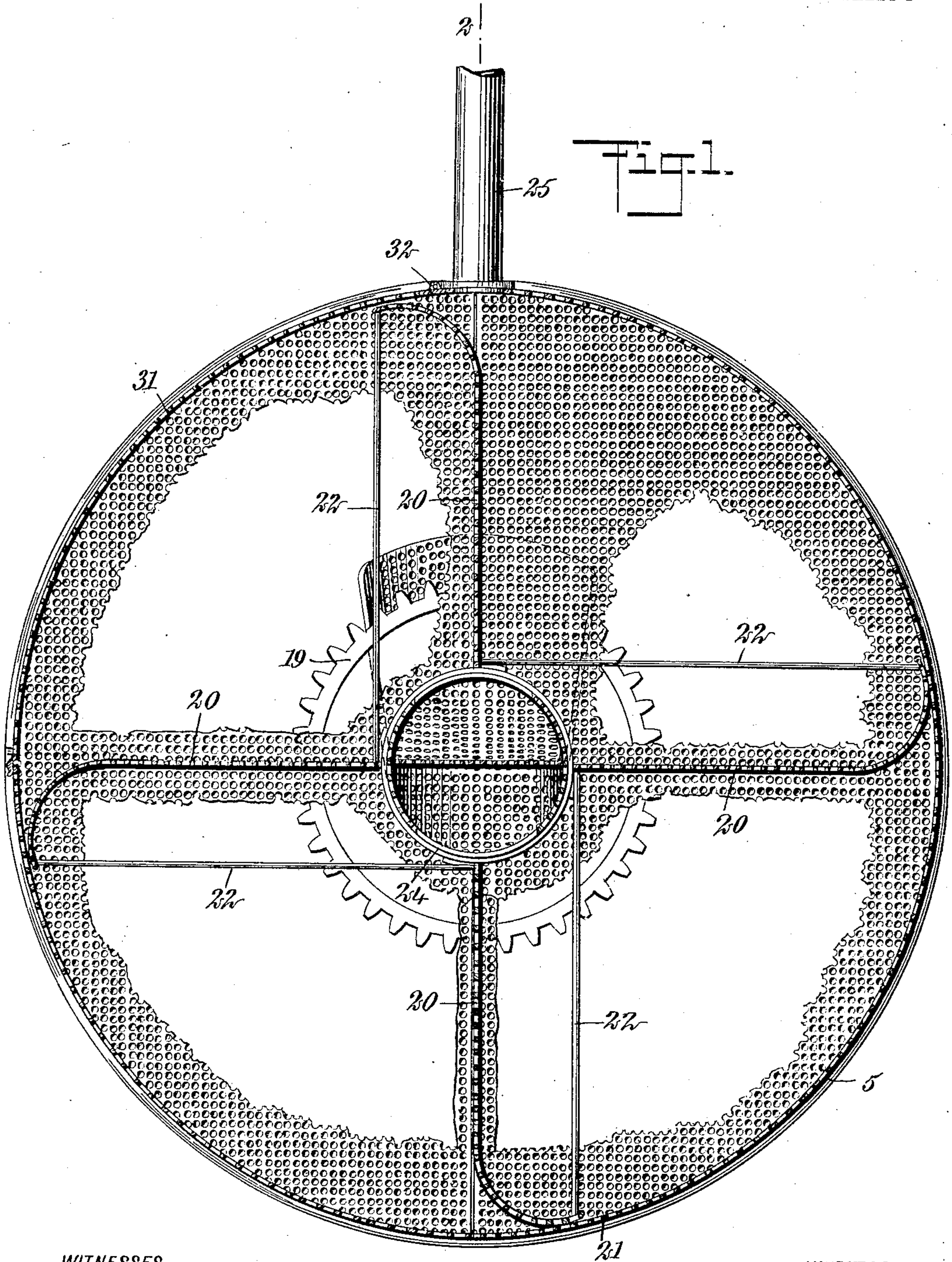
LIQUID STRAINER.

APPLICATION FILED APR. 15, 1909.

932,842.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1



WITNESSES

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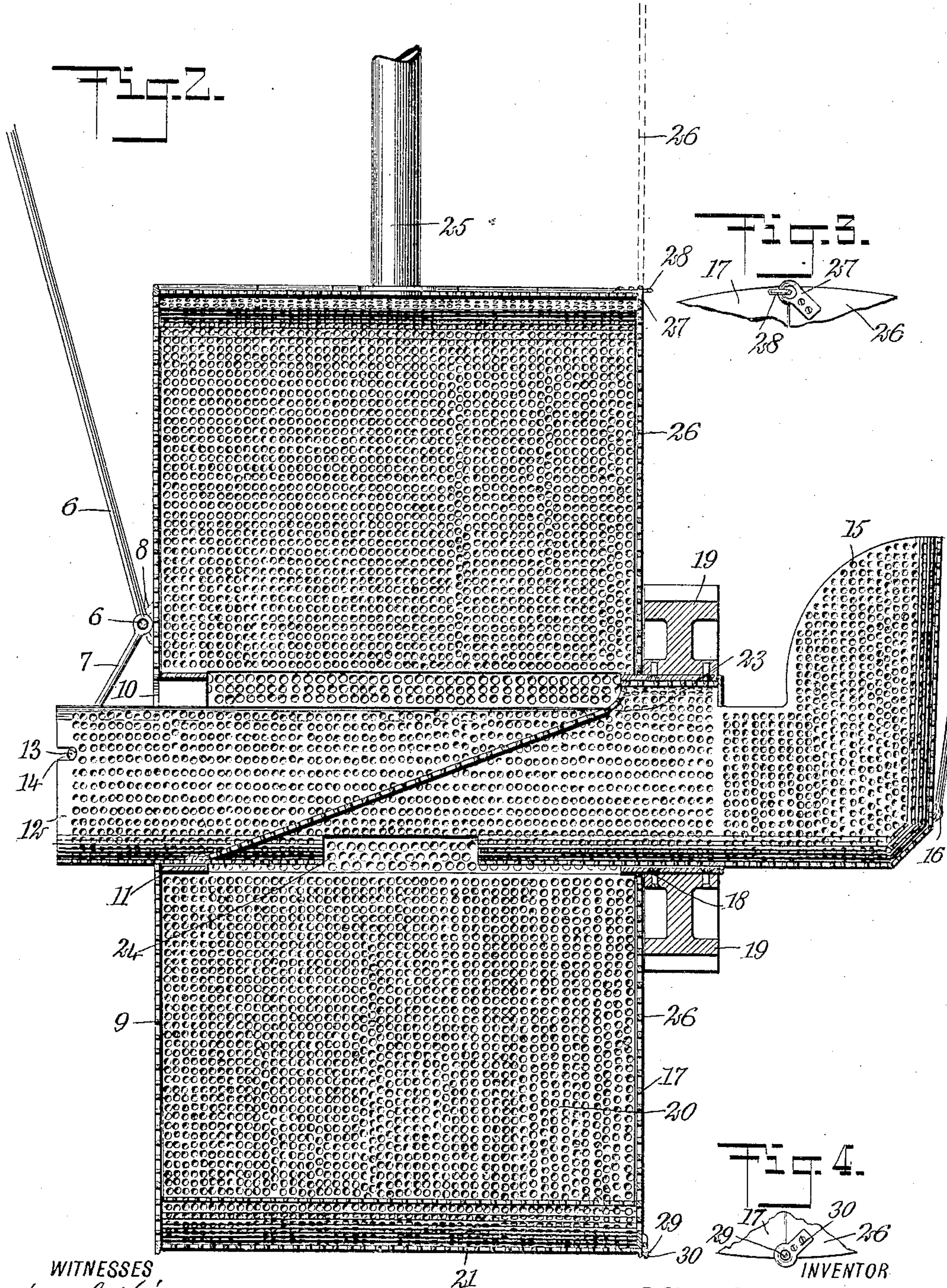
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WITNESSES  
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# UNITED STATES PATENT OFFICE.

MIGUEL ARRUEBARRENA, OF CIENFUEGOS, CUBA.

## LIQUID-STRAINER.

932,842.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed April 15, 1909. Serial No. 490,015.

*To all whom it may concern:*

Be it known that I, MIGUEL ARRUEBARRENA, a citizen of the Republic of Cuba, and a resident of Cienfuegos, in the Province of Santa Clara and Republic of Cuba, have invented a new and useful Liquid-Strainer, of which the following is a full, clear, and exact description.

The principal object which the present invention has in view, is to provide a continuously acting filter for sugar syrup, which may be operated with the minimum of power and which may be readily cleaned.

One embodiment of the invention is shown in the accompanying drawings wherein like characters of reference indicate like parts in all the views.

Figure 1 is a cross section of a filter constructed in accordance with my invention, portions of the side walls being cut away to show the gear wheel at the farther side of the same; Fig. 2 is a longitudinal section taken on the line 2—2 in Fig. 1; Fig. 3 is a detail view of the hinge construction provided for the cleaning door; and Fig. 4 is a detail view of the locking device employed for the cleaning door.

The filter herein described is employed to receive the heavy crude liquor of the first boiling of the sugar cane, there being contained in the heavy, viscous mass, debris and foreign matter of various kinds. The filter herein shown when in use is suitably mounted above a reservoir or suitable receptacle. The major part of each of the members of the filter is constructed from perforated metal, the perforations being formed to a size adapted to pass the liquor and to retain the debris. To assist in the filtration a column of water is introduced into the filter, which dissolves the syrup and prevents clogging of the openings in the metal.

The construction consists primarily of a cylindrical drum held in shape by rings 5, and the drum is rigidly suspended by means of rods 6 and 7, the rods 7 being mounted pivotally on a horizontal extension of the rod 6. The rod 6 passes horizontally between lugs 8 bolted to a side wall 9. The wall 9 is provided with a central opening 10, and extended through the opening 10 is the end of a chute 12. The rods 7 are provided with a horizontal extension 13 adapted

to swing into recesses 14 formed in the end of the said chute 12, and it is by means of this construction that the said chute is prevented from rotating.

It is understood that the drum and the chute heretofore described remain stationary, or fixed in position, the chute extending through and beyond the opposite wall 17 of the said drum. At the opposite end of the chute 12 is formed a hopper 15, to which are secured supporting rods 16, upon which the filter is mounted. The chute 12 is completely cylindrical at the end where it passes through the wall 17 of the filter, and is more than half completely cylindrical for the remainder of its length. The said chute forms a bearing for collars 11 and 18, to the latter of which is bolted a gear wheel 19. The collar 18 and the collar 11 are rigidly secured to the plates 20, there being as many of these plates as it is thought desirable; in the present instance the number selected is four. The outer ends of the plates are curved to form scoops, and these ends move close to the cylindrical wall 21 of the drum, the bent form of the ends of the plates 20 being maintained by tie rods 22.

The chute 12 is divided within the drum by an inclined partition 23, designed to convey the debris beyond the end of the chute 12. Below the partition 23 the wall of the chute 12 is cut away to leave an opening 24, through which the crude syrup with the debris is introduced into the drum to fall upon the wall 21 under the said opening. Directly above the partition 23 is introduced a pipe 25, whereby water is sprayed or otherwise delivered into the drum. The motive power for rotating the gear wheel 19 and the collars 18 and 11 with the plates 20, may be of any desired construction. When thus constructed the operation of the filter is as follows: The heavy liquor is introduced into the hopper 15 and is conveyed downward and longitudinally through the chute 12. On reaching the opening 24 the syrup falls through the same upon the cylindrical wall 21 of the drum, a certain proportion of the syrup passing immediately through the wall 21; the remainder of the syrup together with all debris accumulates. The plates 20 are rotated, and when brought to the accumulation, they by means of their curved ends pick up the syrup and debris and carry it slowly around the



drum. The plates 20 are perforated throughout, hence the filtration or separation of the syrup from the debris continues, as the same is being carried upon the plates 20.

5 After the plates 20 pass the horizontal position, the heavy syrup and debris begin to travel down the incline of the said plate toward the center of the drum, this travel being accelerated as the plate 20 attains the  
10 vertical, and this acceleration is likewise aided by the fact that the plates 20 are presented to the water sprayed from the pipe 25. The pipe 25 introduces water upon the back of the said plates as they pass the vertical  
15 and move from the said pipe, and any adhering materials are, by the water, dislodged from the plates 20.

All of the material delivered from the upper surface of the plates 20 is passed to and  
20 delivered upon the upper surface of the partition 23, which is inclined toward the delivery end of the chute 12. Therefore all materials received upon the said partition which do not pass through the perforations thereof,  
25 are delivered by the said partition to the delivery end of the said chute. The partition 23 receives the water from the pipe 25 at all times when a plate 20 is not interposed, and the immediate effect of this is that all  
30 debris is washed by the water, liberating all adhering syrup therefrom. In its final disposition the debris is delivered from the chute 12 to receptacles designed therefor, or is delivered to a refuse station.

35 It will be noticed that throughout the whole of this construction, the material used is perforated, and therefore filtration is not arrested at any point. Also by reason of this construction the filter may be sprayed or  
40 otherwise washed from any point. As above stated the structure is suspended over a suitable receptacle to catch the drippings from all parts of the filter.

Admission to the interior of the drum is  
45 gained by raising a section 26, hinged upon the filter in any suitable manner, that shown in the drawings being by the use of the two eye-plates 27 and 28. The section 26 may be of any size, that shown in the drawing being one-half of the full size of the drum, and  
50 said section is held in closed position by a pin 29 over which an eye-plate 30 extends.

With the section 26 opened as shown in dotted lines at Fig. 2, and the section 31 of  
55 the cylindrical wall, which is hinged at 32, raised, the plates 20 and the chute 12 may be withdrawn from the drum; by this construction the filter may be kept scrupulously clean.

60 Having thus described my invention, I claim as new and desire to secure by Letters Patent,—

1. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated  
65 material, means for suspending the said drum

in a raised position, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, and means for rotating the said members.

2. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, and means for rotating the said members.

3. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, and means for rotating the said distributing members.

4. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a hopper having a delivery extension to introduce the material to be filtered within said drum, and means for rotating said distributing members.

5. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a hopper having a delivery extension to introduce the material to be filtered within said drum, said hopper and extension being constructed of a suitable perforated material, and means for rotating said distributing members.

6. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, a plurality of plates mounted radially and adapted to be rotated in said drum, said plates being constructed of a suitable perforated material, and means for rotating the said plates.

7. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, a plurality of radial plates having forward curved outward extensions and rotatably mounted in said drum, said plates

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being constructed of a suitable perforated material, and means for rotating the said plates.

8. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, a plurality of radial plates having forward curved outward extensions and rotatably mounted in said drum, said plates being constructed of a suitable perforated material, a channeled member disposed centrally in said plates to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a delivery duct extended from said channeled member to a point outside said drum, and means for rotating the said plates.

9. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, a plurality of radial plates having forward curved outward extensions and rotatably mounted in said drum, said plates being constructed of a suitable perforated material, a channeled member disposed centrally in said plates to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a hopper having a delivery extension to introduce the material to be filtered within said drum, said hopper and extension being constructed of a suitable perforated material, and means for rotating the said plates.

10. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a water delivery device to introduce water into said drum, and means for rotating said distributing members.

11. A liquid strainer, comprising a cylindrical drum formed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated ma-

terial, a water delivery device adapted to deliver water into the said drum at the top thereof, and means for rotating said distributing members.

12. A liquid strainer, comprising a cylindrical drum, a plurality of plates radially mounted in said drum and adapted to be rotated therein, a channeled member disposed centrally of said plates to receive the debris therefrom, a hopper having an extension to deliver the material to be filtered within said drum, all of said parts being constructed of a suitable perforated material, a washing mechanism embodying a sprinkling device to deliver water upon the said named parts, and means for rotating the said plates in the path of said sprinkling device.

13. A liquid strainer, comprising a cylindrical drum, having a hinged door-like side section, said drum and section being constructed of a suitable perforated material, a plurality of plates mounted radially in said drum and adapted to be rotated therein, said plates being constructed of a suitable perforated material, and means for rotating the said plates.

14. A liquid strainer, comprising a cylindrical drum constructed of a suitable perforated material, distributing members rotatably mounted in said drum, said members being constructed of a suitable perforated material, a channeled member disposed centrally of said distributing members to receive the debris therefrom, said channeled member being constructed of a suitable perforated material, a section of the side wall of the said drum being pivotally mounted on said drum, and a section of the cylindrical wall of said drum adjacent to the said section of the side wall, being pivotally mounted on said drum, the opening of the two sections permitting the passage into and from the said drum of the said distributing members.

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

MIGUEL ARRUEBARRENA.

Witnesses:

RAMON DE LA VEGA,  
ANT. ARGUELLES.