No. 740,678. PATENTED OCT. 6, 1903.

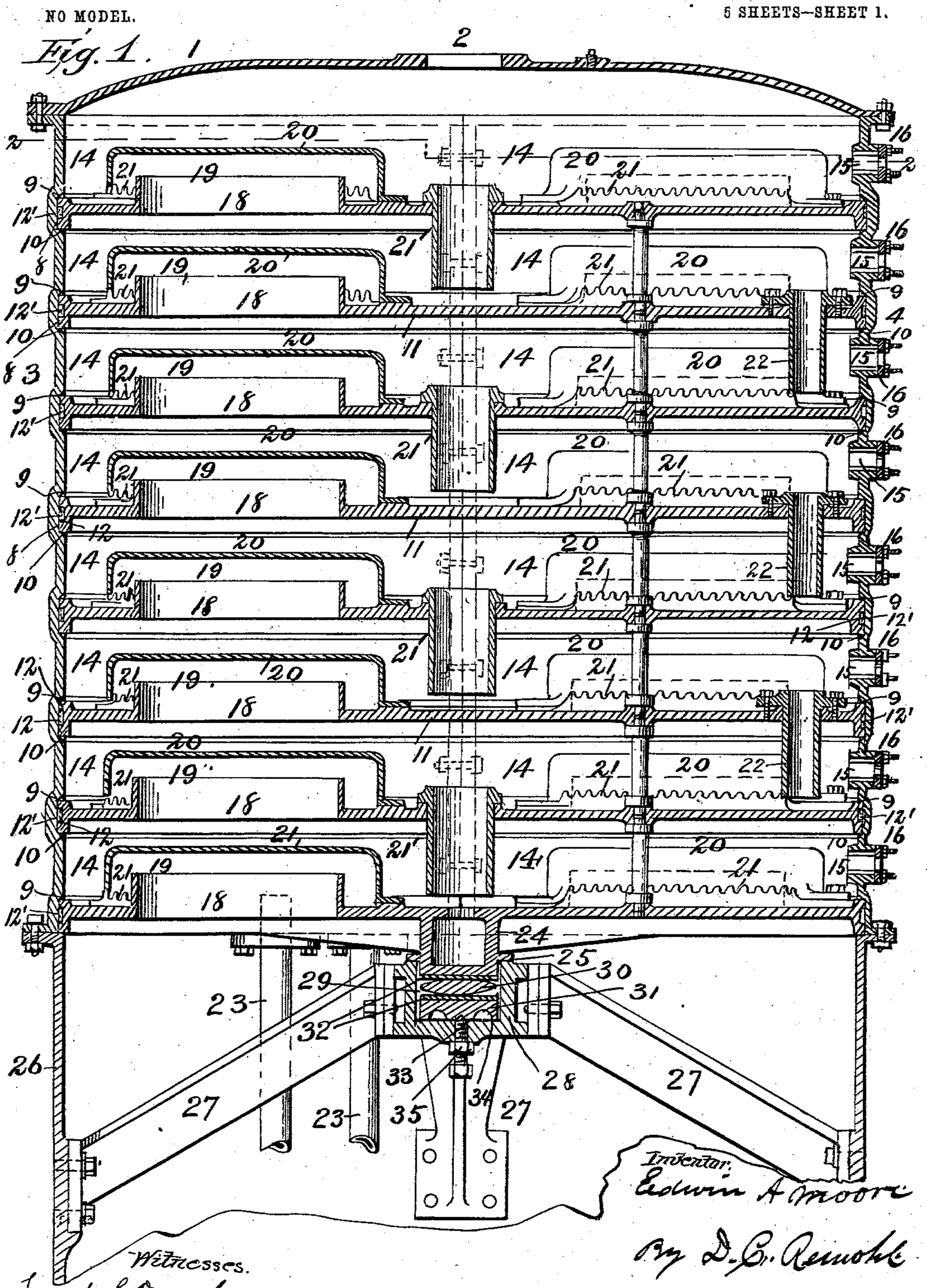
E. A. MOORE.

AMMONIA STILL.

APPLICATION FILED MAR. 11, 1903.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 2.

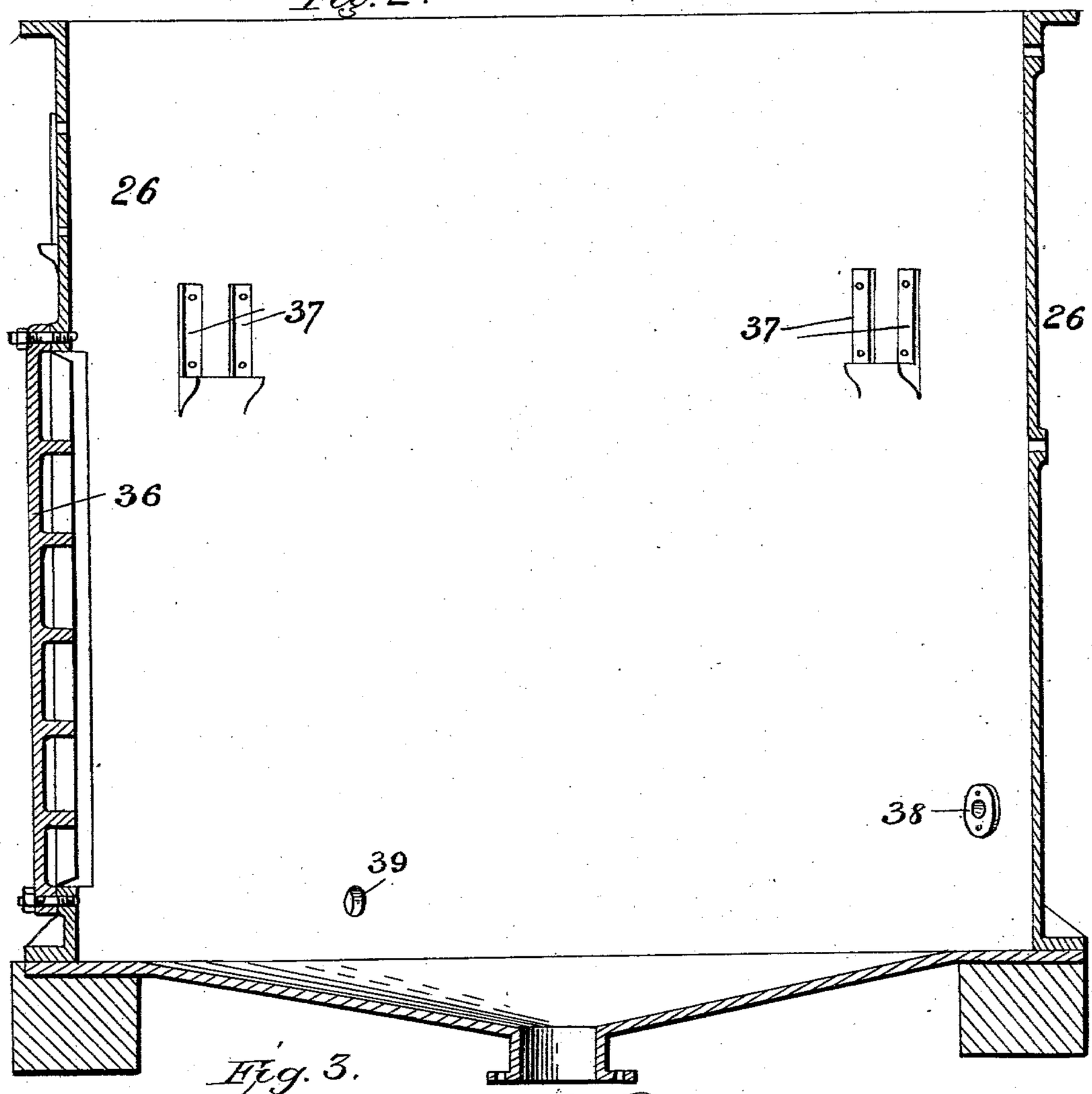
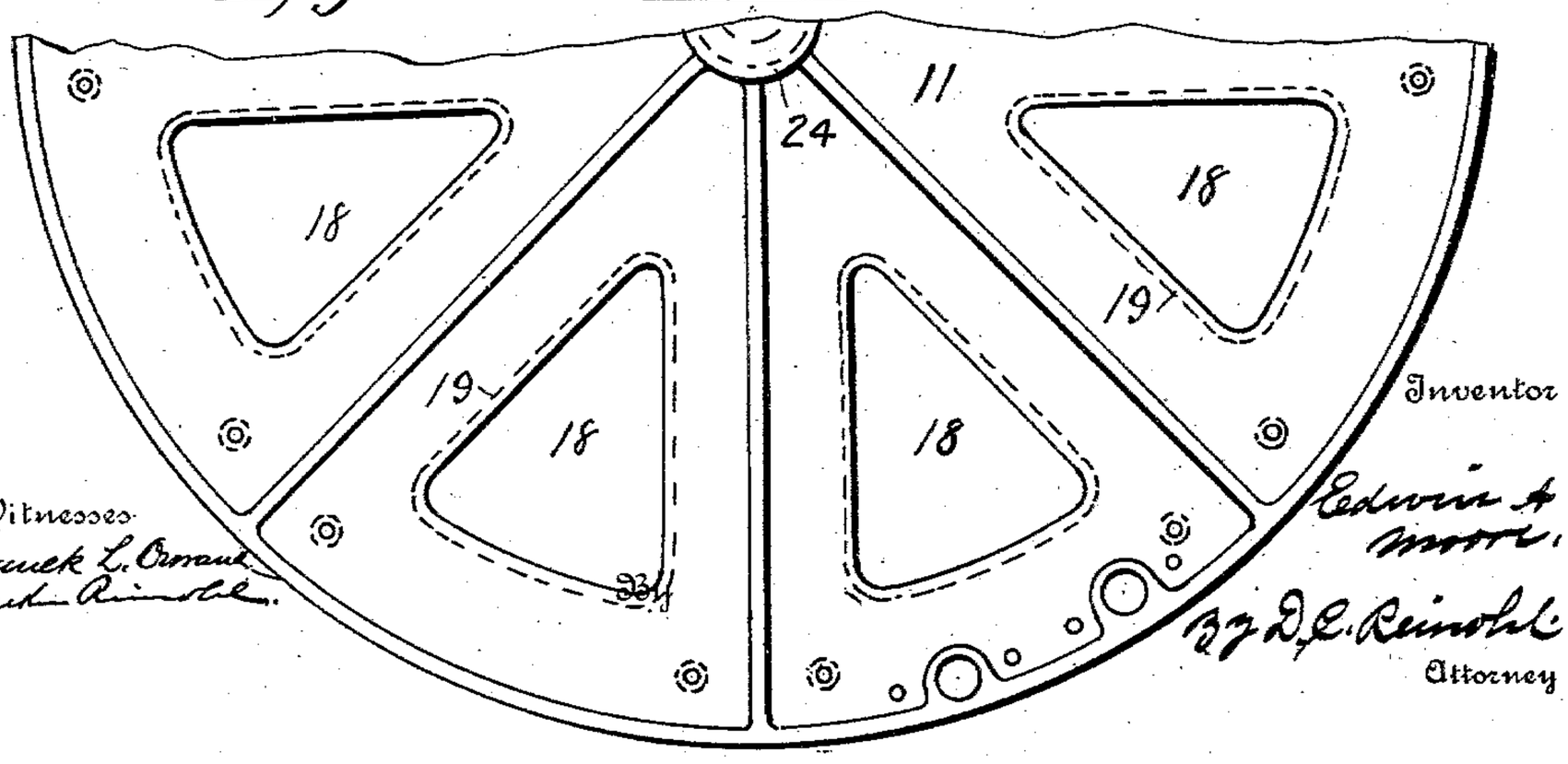


Fig. 3.



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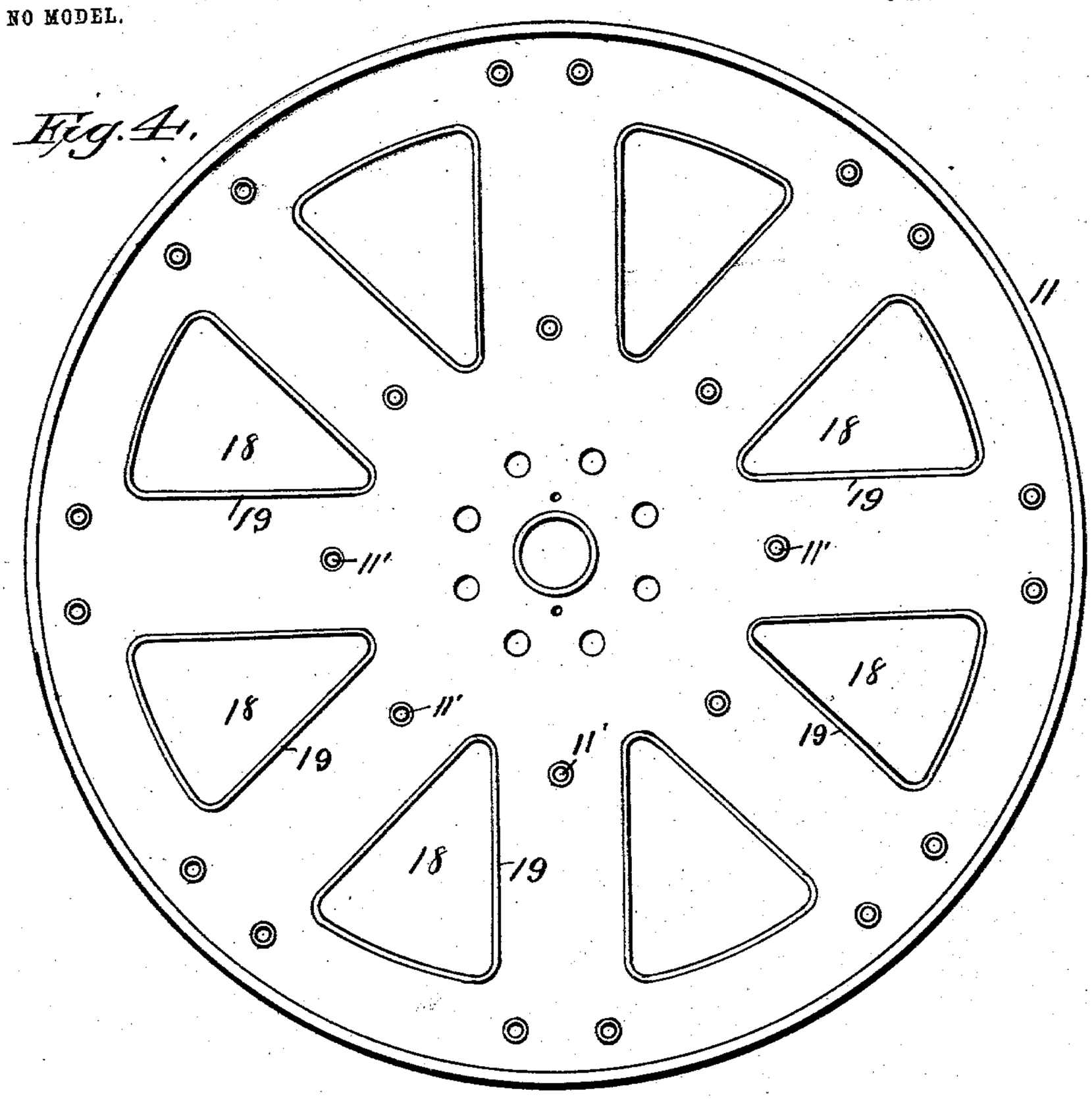
NO MODEL. 5 SHEETS—SHEET 3.

Fig. 4.



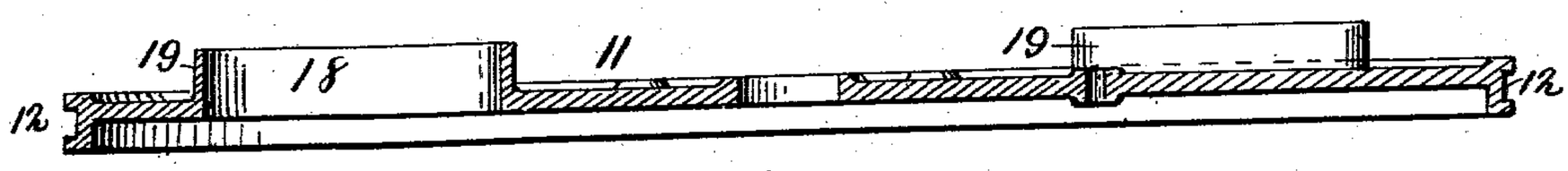


Fig. 5.

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NO MODEL. 5 SHEETS—SHEET 4.

Fig. 6.

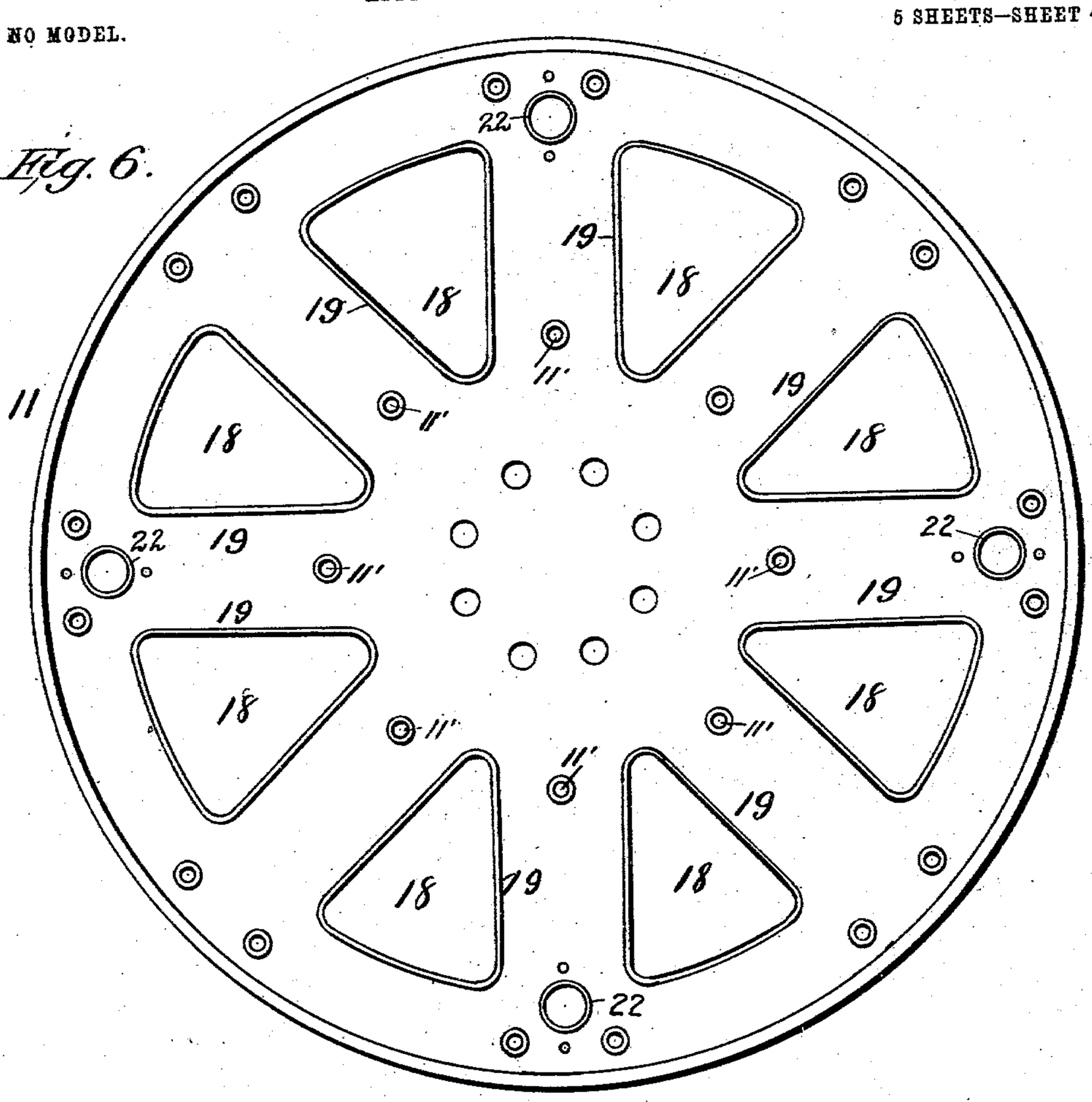

Fig. 7.

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APPLICATION FILED MAR. 11, 1903.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 8.

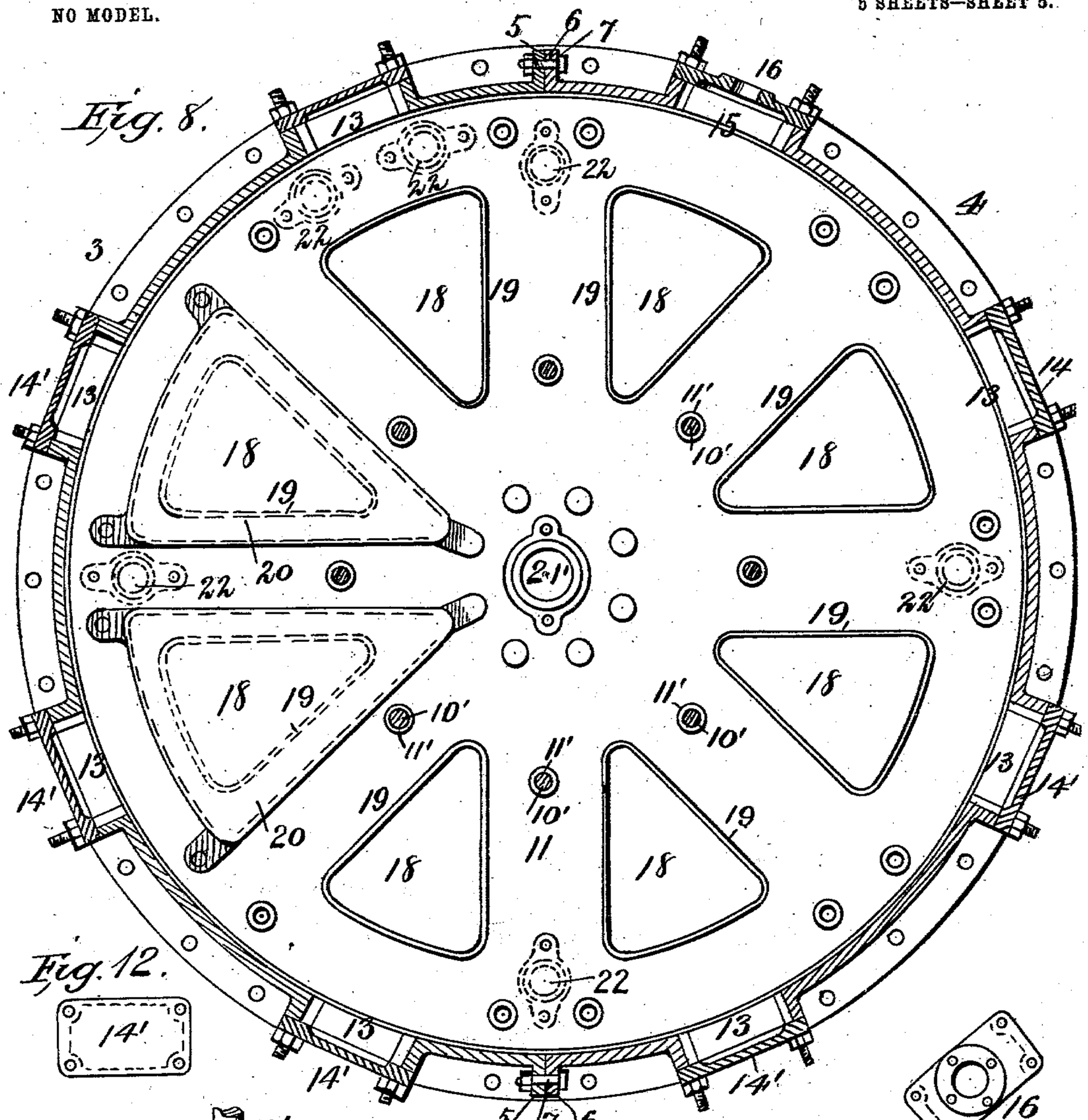
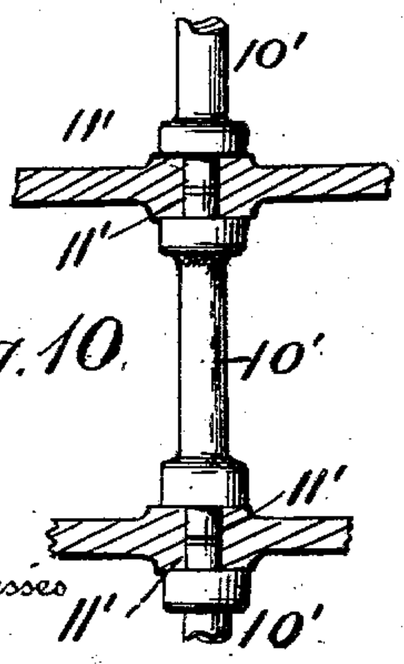


Fig. 12.

Fig. 10.



Witnesses
Franck L. Orrand
W. Parke Reinohl.

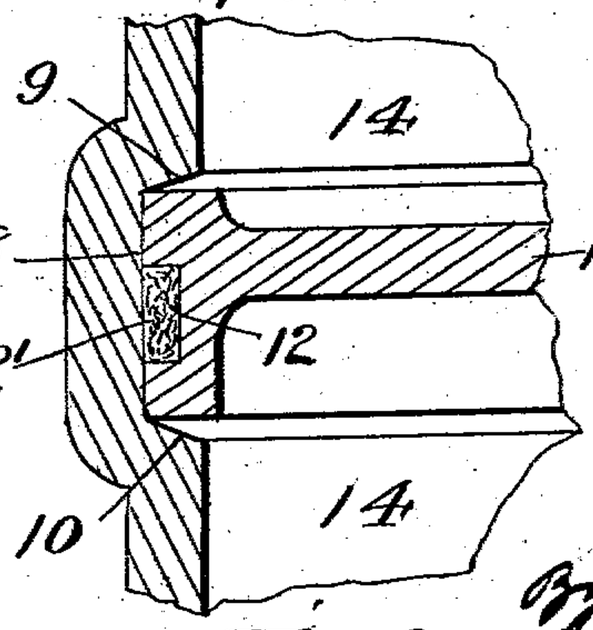
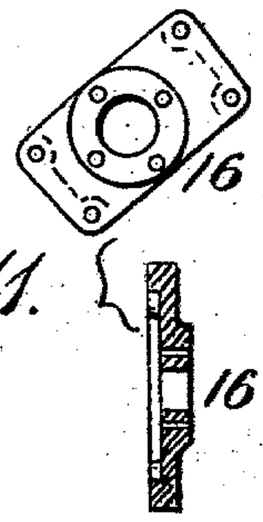


Fig. 9

Fig. 11.



Inventor
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No. 740,678. Patented October 6, 1903.

UNITED STATES PATENT OFFICE.

EDWIN A. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

AMMONIA-STILL.

SPECIFICATION forming part of Letters Patent No. 740,678, dated October 6, 1903.

Application filed March 11, 1903. Serial No. 147,271. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. MOORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ammonia-Stills; and I do hereby 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.

My invention relates to the distillation of ammoniacal liquors, has especial reference to devices used to liberate the ammonia from the ammoniacal liquor derived from gas evolved by the distillation of coal in the production of coke, and consists in certain improvements in construction, which will be fully disclosed in the following specification and claims.

Ammonia-stills have heretofore been constructed in separable horizontal sections which in the cleaning of the still have had to be removed bodily one from the other to afford access to the interior of the chamber formed in each section, entailing great labor and the expenditure of time in removing the bolts by which the sections are connected, then removing the loosened sections one by one from their adjacent sections for cleaning, and then restoring the sections to their places, and then inserting the bolts and applying the nuts thereto.

By my invention one section of the liquor-still only is removed, when access is afforded to all the compartments of the still and every part thereof brought into position for the removal of all incrusted sediment and other impurities by revolving the horizontal partitions and bringing them to the opening in the casing.

In the accompanying drawings, which form part of this specification, Figure 1 represents a vertical transverse section of the liquor-still and part of the lime-box; Fig. 2, a like view of the lime-box; Fig. 3, an inverted plan view of a section of the bottom plate of the liquor-still; Fig. 4, a top plan view of one of the transverse partitions; Fig. 5, a vertical transverse section of the same; Fig. 6, a top plan view of the other transverse partitions; Fig. 7, a vertical transverse section of the same; Fig. 8, a top plan view on the line 2 2, Fig. 1; Fig. 9, an enlarged detail sectional view showing the outer wall of the liquor-still and one of the transverse partitions in engagement therewith; Fig. 10, an enlarged detail showing the studs or posts between the transverse partitions; Fig. 11, a plan view and a vertical longitudinal section of one of the hand-hole covers through which liquor is admitted to the liquor-still, and Fig. 12 an inverted plan view of one of the solid hand-hole covers.

Reference being had to the drawings and the designating characters thereon, 1 indicates the top or cover of the liquor receptacle or still, which is provided with an egress-opening 2. The body of the receptacle or still is made in sections 3 4 in this instance; but the number may be increased to suit the diameter of the still, and the sections are provided with flanges 5 6, by which they are separably connected together by bolts 7, so that either or any section may be detached without disturbing the other section or sections. The sections are provided with grooves 8, arranged in different horizontal planes, and the walls 9 10 of the grooves (see Fig. 9) are preferably beveled to facilitate the entrance of the detached horizontal partitions 11, and in the periphery of each partition is a groove 12, filled with a suitable packing material 12′, to make a tight joint between the partition and the face of the groove 8. The partitions also rest upon posts 10′, interposed between the partitions, and which engage holes 11′ in the partitions to hold them in place. The sections are provided with openings 13 (see Fig. 8) opposite each hood, bell, or cover in the chambers 14, between the partitions, to afford access to the chamber for adjustment or cleaning any of the parts therein without separating the sections, and these openings 13 are provided with suitable detachable covers 14′, and one of said openings (indicated by 15, see Fig. 1) is provided with a cover 16, with which a liquor-supply pipe (not shown) is attached for supplying liquid ammonia to the still.

The partitions 11 are provided with openings 18, having a vertical flange 19 on the upper sides of the partitions, and a hood, cover, or bell 20, having serrations 21 in the flange thereof, as is usual in this class of stills.

The upper partition 11 is provided with a discharge-pipe 21′, leading into the chamber below it, and each alternate partition is provided with a like pipe 21′, while the intermediate partitions are provided with a plurality of smaller discharge-pipes 22, leading into the chamber below them for conducting the liquor from one chamber to another successively until the ammonia has been liberated or extracted. The bottom partition is provided with pipes 23 for supplying steam to the still, and in the center of the partition is a projection 24, on which is a horizontal flange 25.

26 indicates the lime receptacle or box, on which the ammonia-still is supported and at whose upper end are brackets 27, which support a box or step 28 by being bolted thereto, and in the chamber 29 of the box are disks 30 and 31, which may be of cast-steel or other suitable metal, and on top of each of said disks is a plate 32, of chilled or tempered steel. The projection 24 extends into said chamber and rests upon the disks and plates, and the flange 25 rests upon the upper surface of the box to protect the bearing-surfaces by preventing lime entering the chamber 29.

The partitions are revoluble on the projection 24, and to raise the weight of the interior structure of the still, off the casing and the bearings at the bottom of the still, a screw 33 is projected through the bottom 34 of the box 28, engages the lower disk 31, and as the screw is revolved by a suitable wrench it constitutes a "jack-screw" and raises the whole of the interior structure just sufficient to relieve it of friction. This screw 33 is preferably provided with a lock-nut 35.

The lime-box is provided with a door 36, through which access to the interior thereof may be had for removing the lime and adjusting the jack-screw, and is provided with seats 37 for the lower ends of the brackets 27 and with a supply-opening 38 for lime in solution and a like opening 39 for the connection of a pipe to supply steam.

Having thus fully described my invention, what I claim is—

1. A receptacle composed of semicylindrical and detachable sections connected by flanges, and horizontal partitions having openings therein, whereby communicating chambers are formed between the partitions, means for supporting said partitions, and means for supplying a liquid and a fluid to said receptacle.

2. A receptacle composed of semicylindrical and detachable sections connected by flanges and having grooves in their walls, horizontal partitions engaging said grooves and having openings therein, whereby communicating chambers are formed between said partitions, and means for supplying a liquid and a fluid to said receptacle.

3. A receptacle composed of semicylindrical and detachable sections connected by flanges, and horizontal and revoluble partitions having openings therein, whereby communicating chambers are formed between the partitions, means for revolubly supporting said partitions, and means for supplying a liquid and a fluid to said receptacle.

4. A receptacle composed of semicylindrical and detachable sections connected by flanges and having grooves in their walls, horizontal partitions engaging said grooves and having openings therein, whereby communicating chambers are formed between said partitions, means for revolubly supporting the partitions, and means for supplying a liquid and a fluid to said receptacle.

5. A receptacle composed of semicylindrical and detachable sections having grooves in their walls, horizontal partitions provided with packing in their peripheries and engaging said grooves and having openings therein, whereby communicating chambers are formed between the partitions, and means for revolubly supporting said partitions.

6. A receptacle composed of semicylindrical and detachable sections having concentric grooves provided with beveled walls, detached horizontal partitions having packing in their peripheries and engaging said grooves and having openings therein, whereby communicating chambers are formed between the partitions, and means for revolubly supporting said partitions.

7. A receptacle composed of vertically-separable sections, detached horizontal partitions having openings therein, whereby communicating chambers are formed between said partitions, columns between the partitions, and means for revolubly supporting the partitions.

8. A receptacle composed of vertically-separable sections, detached horizontal partitions having passages therein, whereby communicating chambers are formed between the partitions, means for revolubly supporting the partitions, and means for raising the partitions.

9. A receptacle composed of vertically-separable sections, detached horizontal partitions having openings therein, whereby communicating chambers are formed between said partitions, a concentric projection of the bottom of the receptacle, and a step or support for said projection.

10. A receptacle composed of vertically-separable sections, detached horizontal partitions having openings therein, whereby communicating chambers are formed between said partitions, a projection on the bottom of the receptacle, a step or support for said projection, and means for raising the partitions.

11. A receptacle composed of vertically-separable sections, and detached horizontal partitions having openings therein, whereby communicating chambers are formed between the partitions, a projection on the bottom of the receptacle having a horizontal flange, a step or support whose upper end is engaged by said flange, and means for raising the partitions.

12. An ammonia-still composed of vertically-separable sections, detached horizontal partitions provided with passages for liquor and vapor, whereby communicating chambers are formed between said partitions, a liquor-supply opening in each chamber, means for supplying steam to the still, and means for revolubly supporting the partitions.

13. An ammonia-still composed of vertically-separable sections, revoluble horizontal detached partitions provided with passages for liquor and vapor, whereby communicating chambers are formed between the partitions, and a liquor-supply opening in each chamber; in combination with a lime-receptacle connected to the still and provided with a support for said partitions.

14. An ammonia-still composed of vertically-separable sections and detached revoluble partitions provided with liquor and vapor passages, whereby communicating chambers are formed between the partitions, and means for supplying liquor thereto; in combination with a lime-receptacle supporting the still, and provided with a support on which said partitions are revoluble.

15. An ammonia-still composed of vertically-separable sections, detached and revoluble horizontal partitions provided with liquor and vapor passages, whereby communicating chambers are formed between the partitions; in combination with a lime-receptacle under the still and having a support for said partitions, and provided with means for raising the partitions, means for supplying liquor to the still, and means for supplying steam thereto.

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

EDWIN A. MOORE.

Witnesses:

F. M. STEARNS,

C. W. METCALFE.