

No. 775,758.

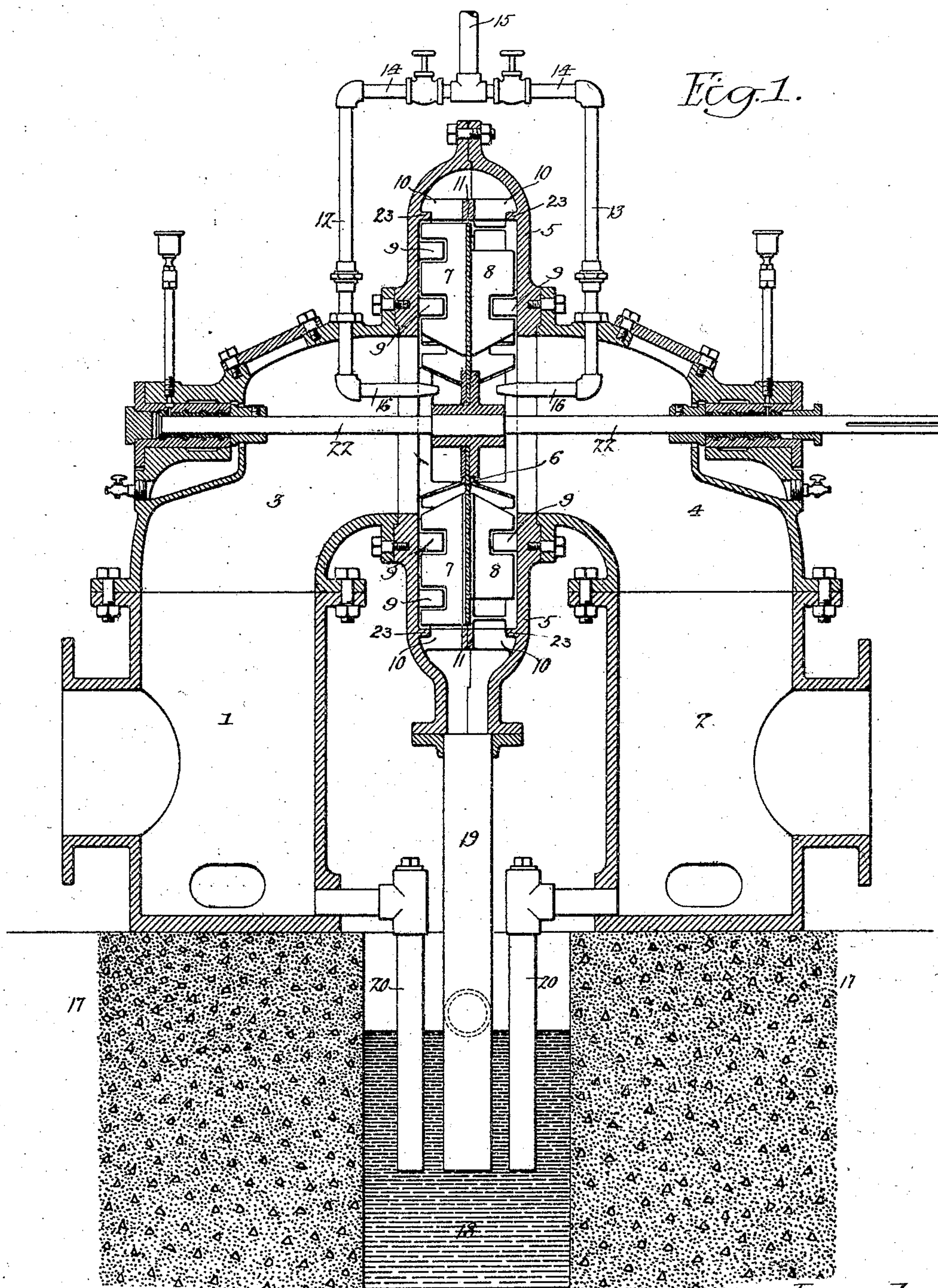
PATENTED NOV. 22, 1904.

F. V. MATTON.
CENTRIFUGAL GAS PURIFIER.

APPLICATION FILED MAR. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
Frank L. A. Graham
Titus H. Irons.

Inventor,
Frederick Matton,
by his Attorneys,

Howson & Howson

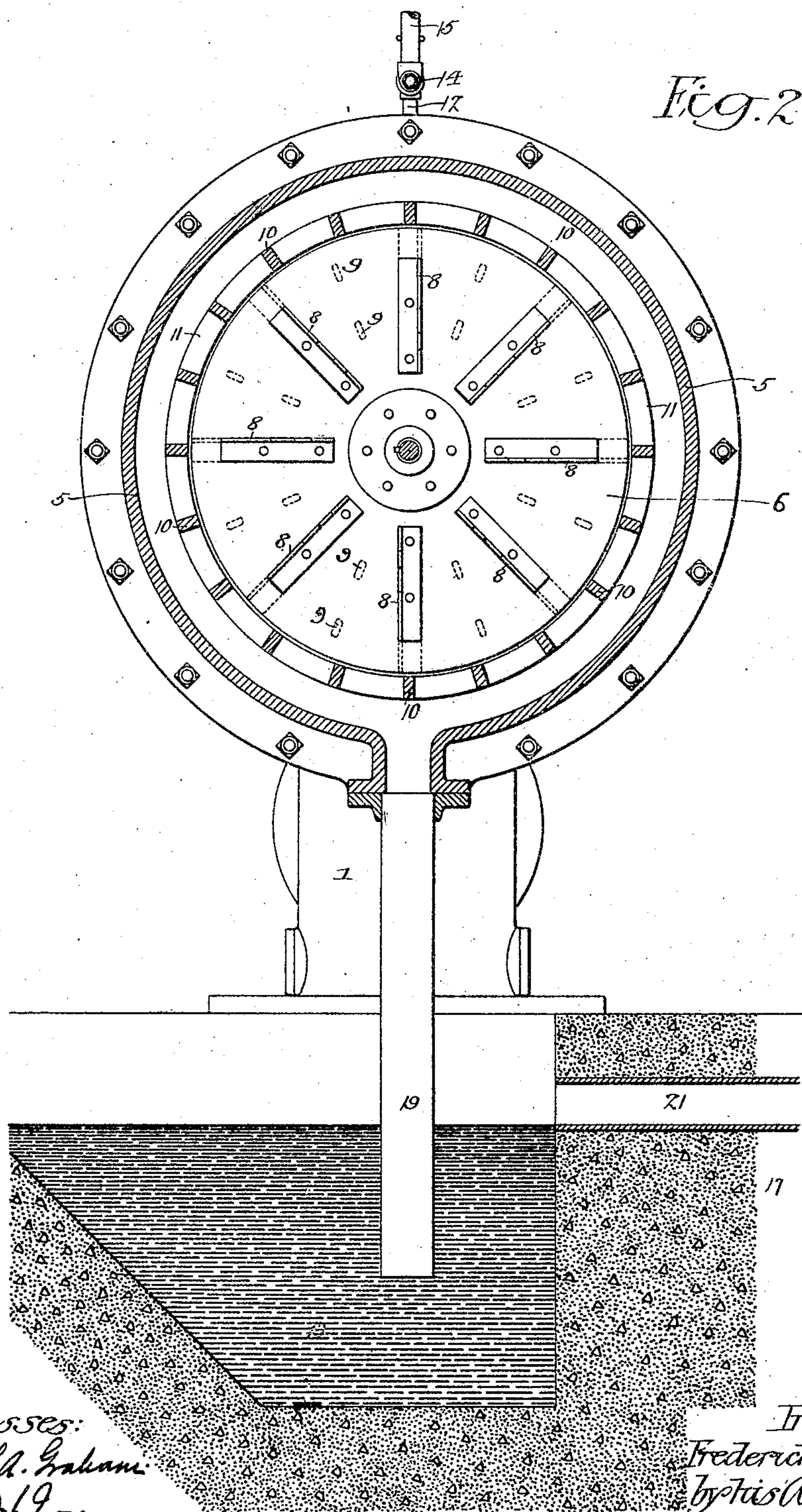
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UNITED STATES PATENT OFFICE.

FREDERICK V. MATTON, OF RIVERTON, NEW JERSEY, ASSIGNOR TO
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CENTRIFUGAL GAS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 775,758, dated November 22, 1904.

Application filed March 18, 1904. Serial No. 198,713. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK V. MATTON, a subject of the King of Sweden and Norway, residing in Riverton, New Jersey, have invented certain Improvements in Centrifugal Gas-Purifiers, of which the following is a specification.

The object of my invention is to so construct a centrifugal gas-purifier as to effect the removal of the tar or other impurities from the gas more readily and to a greater extent than in devices of this class as previously constructed. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a centrifugal gas-purifier constructed in accordance with my invention; and Fig. 2 is a view of the same, partly in transverse section and partly in elevation.

1 represents the inlet-chest of the purifier, and 2 the outlet-chest of the same, these chests being surmounted by elbows 3 and 4, respectively, which support and communicate with the interior of the casing 5, which contains the rotary fan employed for effecting the removal of the tar or other impurities from the gas, said casing 5 being preferably made in two parts separable on the central longitudinal line of the casing, so as to facilitate the manufacture of the same and the assembling of the various parts of the apparatus. The fan consists of a disk 6, mounted upon a shaft 22, which is adapted to suitable bearings on the elbows 3 and 4, and said disk 6 carries on each side radially-disposed blades 7 and 8, recessed, as shown in Fig. 1, for the reception of lugs 9, projecting inwardly from the opposite sides of the casing 5 in circular series and adapted to register with said recesses as the fan rotates. The casing 5 also has beyond the fan-chamber inwardly-projecting lugs 10, the inner ends of which are preferably braced and stiffened by means of rings 11, these rings abutting against each other when the two halves of the fan-casing are properly fitted together. Passing through the elbows 3 and 4 are pipes 12 and 13, con-

nected by valved branches 14 to a pipe 15 for supplying water or other fluid under pressure, the pipes 12 and 13 terminating within the elbows 3 and 4 in nozzles 16, which are directed toward the central disk of the fan.

The structure is mounted upon a foundation 17, having a central well 18 into which discharges a pipe 19, leading from the bottom of the fan-casing 5 and also other pipes 20, leading, respectively, from the inlet and outlet chests 1 and 2, said well 18 having a suitable overflow-pipe 21.

The blades 8 of the fan are somewhat shorter than the blades 7. Hence the centrifugal action of the latter blades is somewhat in excess of that of the blades 8, the result being a tendency on the part of the fan to cause flow of gas from the inlet-chest 1 to the outlet-chest 2. In the absence of this provision the fan will have no effect in causing flow of the gas, as both of the elbows 3 and 4 communicate with the eye of the fan-casing 5. Hence the centrifugal action of a fan having blades of equal size on both sides of the central disk would be zero so far as regards any flow or circulation of the gas, and in the latter case such flow or circulation would have to be effected by other means than the fan. If there is a forced flow of the gas through the fan-casing in a direction the reverse of that described, then the effect of the differential blades of the fan will be to retard instead of causing or accelerating the flow.

In the operation of the device the gas entering the chest 1 is directed by the elbow 3 into the fan-casing 5 and is acted upon in the first instance by the blades 7 of said fan, which impart a whirling movement to the gas and cause any particles of liquid, such as tar or other impurities which are held in mechanical suspension in the gas, to be thrown forcibly against the inwardly-projecting lugs 9 and against the lugs 10 of one side of the fan-casing, with the result that the bubbles are broken up and liquid or solid particles are caused to adhere to the lugs, from which when they have accumulated in sufficient volume they drop and finally reach the bottom

of the fan-casing and are thence directed by the pipe 19 into the well 18. After the gas has been subjected to the beating action of the blades and lugs on one side of the fan-casing it passes to the opposite side of the same and is there subject to a repetition of such action, with corresponding results, the purified gas finally escaping through the elbow 4 and outlet-chest 2.

10 In order to prevent flow of gas between the edges of the fan-blades and the walls of the fan-casing, the latter has inwardly-projecting annular flanges 23, which overlap the fan-blades, as shown in Fig. 1, and thereby prevent any of the gas from gaining access to the outer portion of the fan-casing without coming under the influence of the fan-blades.

While I prefer in all cases to employ a fan having a central disk, my invention can also be used to advantage in connection with a fan which is not thus provided.

The jets of water or other fluid projected onto the fan by the nozzles 16 serve to aid in the separation of the tar or other impurities from the gas and wash from the fan-blades and lugs the impurities which have collected thereupon, thus preventing the clogging of the fan by an undue accumulation of such impurities upon the blades and lugs. Although I prefer in carrying out my invention to use both sets of lugs—that is to say, both those projecting into the fan-chamber beyond the fan and those projecting into the recesses of the blades—one or other of these sets of lugs may in some cases be dispensed with.

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

1. The combination, in a centrifugal gas-purifier, of a rotary fan, having blades with recesses in their sides, and a fan-casing having inwardly-projecting lugs arranged in circular series adapted to register with said recesses as the fan rotates, substantially as specified.

2. The combination, in a centrifugal gas-purifier, of a rotary fan, with a fan-casing having transverse lugs outwardly beyond the fan-chamber, substantially as specified.

3. The combination, in a centrifugal gas-purifier, of a rotary fan, and a fan-casing made in longitudinally-separable sections, each with transverse lugs beyond the fan-chamber, the inner ends of said lugs being connected by rings, substantially as specified.

4. The combination, in a centrifugal gas-purifier, of a rotary fan having recessed blades, and a fan-casing having inwardly-projecting lugs in line with said recesses and transverse lugs outwardly beyond the fan-chamber, substantially as specified.

5. The combination, in a centrifugal gas-purifier, of a rotary fan, and a fan-casing having transverse lugs beyond the fan-chamber, and inwardly-projecting flanges overlapping the blades of the fan, substantially as specified.

6. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a disk having thereon blades with recesses in their sides, and a fan-casing having inwardly-projecting lugs arranged in circular series adapted to register with said recesses as the fan rotates, substantially as specified.

7. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a disk having blades thereon, with a fan-casing having transverse lugs outwardly beyond the fan-chamber, substantially as specified.

8. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a disk having recessed blades thereon, and a fan-casing having inwardly-projecting lugs in line with said recesses and transverse lugs outwardly beyond the fan-chamber, substantially as specified.

9. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a disk having blades thereon, and a fan-casing having transverse lugs beyond the fan-chamber and inwardly-projecting flanges overlapping the blades of the fan, substantially as specified.

10. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a central disk having blades on each side, the blades on one side of the disk being shorter than those on the opposite side of the same, substantially as specified.

11. The combination, in a centrifugal gas-purifier, of a rotary fan, consisting of a central disk having blades on each side, the blades on one side of the disk being shorter than those on the opposite side of the same, and a fan-casing having inwardly-projecting lugs against which particles carried by the gas are projected by the action of the blades, substantially as specified.

12. The combination, in a centrifugal gas-purifier, of a rotary fan, a casing therefor, inwardly-projecting lugs against which liquid impurities carried by the gas are projected by the action of the fan, and one or more nozzles for projecting water or other liquid against the fan, substantially as specified.

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

FRED. V. MATTON.

Witnesses:

WILLIAM F. BEATON,
JAMES McMORRIS.