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APPARATUS FOR PURIFYING AND TREATING GASES.

APPLICATION FILED JULY 2, 1920.

1,408,736. Patented Mar. 7, 1922.

Fig. 1

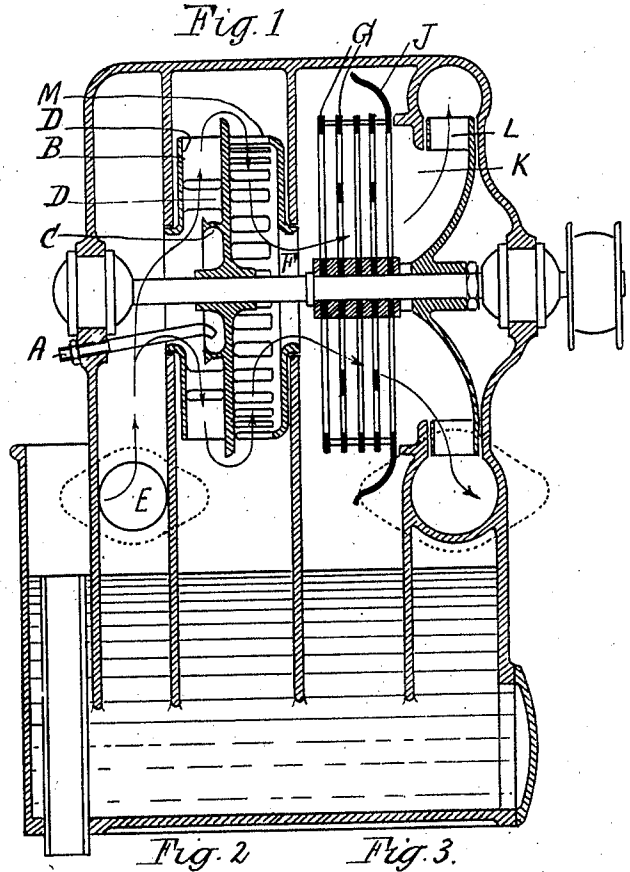



Fig. 2

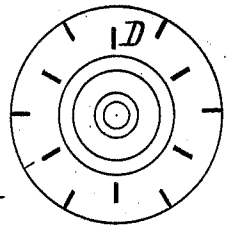



Fig. 3.

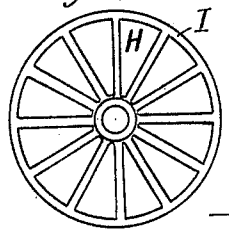



Fig. 5

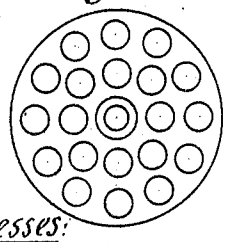
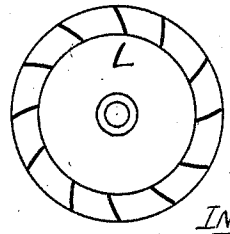


Fig. 4

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR PURIFYING AND TREATING GASES.

1,408,736. Specification of Letters Patent. Patented Mar. 7, 1922.

Application filed July 2, 1920. Serial No. 393,673.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

*To all whom it may concern:*

Be it known that I, HENRI HERNU, a citizen of the French Republic, residing at Meudon, Seine-et-Oise, in the French Republic, have invented new and useful Apparatus for Purifying and Treating Gases, (for which I have filed an application in France Dec. 9, 1918, Patent No. 493,682,) of which the following is a specification.

For this purpose the apparatus comprises a special turbine distributing water from a circular well into wings, or blades of different sizes and staggered on a rotary disk in such a manner as to obtain a preliminary washing and an energetic scrubbing of the gas admitted to the apparatus.

The gas thus washed passes through an open work cage and then through a series of perforated disks which receive a rapid movement of rotation thereby projecting towards the periphery, under the action of centrifugal force, the water which has served for washing and the solid matters or impurities contained in the gas.

The invention is shown, by way of example in the annexed drawing, in which:—

Figure 1 shows, in vertical section the complete purifier; Fig. 2 shows separately, in face view, the washing turbine; Fig. 3 is a face view of one of the purifying disks; Fig. 4 shows, in face view, the drying turbine; Fig. 5 shows a modified form of purifying disk.

As will be seen from the drawing, Fig. 1, the apparatus comprises a water supply pipe A and a gas inlet pipe E.

The water supply is furnished by the tube A to the centre of a turbine B fitted with straight or curved blades D and formed with a circular well C serving the purpose of spreading the water uniformly in a circular sheet which is intercepted by the staggered blades D, see Fig. 2.

The gas arriving by pipe E is thus energetically scrubbed by the water and is cooled.

After having passed around the turbine B it passes from the periphery thereof into the periphery of a rotating cage M having on its outside a series of perforations of suitable shape or longitudinal openings formed as shown and being provided with a series of radial bars connecting the two heads of the cage to form an open work cage which can be lined with metal netting. The gas is thereby partly purified by its passage through the openings in this cage, the plain parts of which separate and throw out by centrifugal force the solid matters or liquids held in suspension.

The gas next passes through a central opening F in the casing and meets a series of perforated disks G whose perforations form radial elements H with or without a rim I as shown in Fig. 3 or they may take the form of circular holes of different size formed in the thickness of the metal. One of these disks forms a bowl J covering the other disks in such a manner that the gas which has a tendency to follow the easiest path to the opening K traverses the disks, while any suspended matter in the gas encounters the plain parts driven at high speed and is projected by centrifugal force to the periphery. The shape of the enveloping bowl further facilities the ejection of separated matter while at the same time opposing the passage of the gas towards the periphery and so cause it to pass through the disks.

When it has passed through the disks the gas passes into a second turbine L the rear face of which has exhaust blades, and outlet passages, for completely drying the gas before distributing it to the apparatus which are to use it.

It is to be well understood that the shape, constructional details, materials and dimensions of the purifier may vary without departing from the nature of the invention.

Thus, for example, the perforations of the disks G may be partly formed with upturned lips so as to form baffles either inclined or perpendicular to the disks; the number of disks can vary and the radial elements may be in the form of a helix.

Again, a certain number of the disks may be fast and the others mobile with the object of varying the speed of the passage of the gas through the orifices to render the action of the disks more efficacious.

Finally, the same arrangement can be adopted for the cooling and purifying of water by causing it to be traversed by pure air instead of gas, or as a refrigerator and purifier for vehicles using poor or other gas.

I claim:

A combined gas purifying, washing and drying apparatus consisting in a casing divided into three compartments, a gas-inlet to the same, a rotary shaft journalled cen-

trally with the gas-inlet, a turbine wheel, having staggered blades, a circular well and an open face, mounted on said shaft close against the gas-inlet, an adjacently placed cage fast on said shaft and having an open-work periphery and perforations in its rear face, a screening wall with central passage in the rear proximity to said cage, a spaced wall with central passage to form intermediate chamber with the screening wall, a plurality of perforated disks and a bowl-shaped disk fast on said shaft within the intermediate chamber, an exhaust and drying drum fast on said shaft to the rear of said spaced wall, and a water-jet tube directed through the gas-inlet towards said circular well.

HENRI HERNU.