

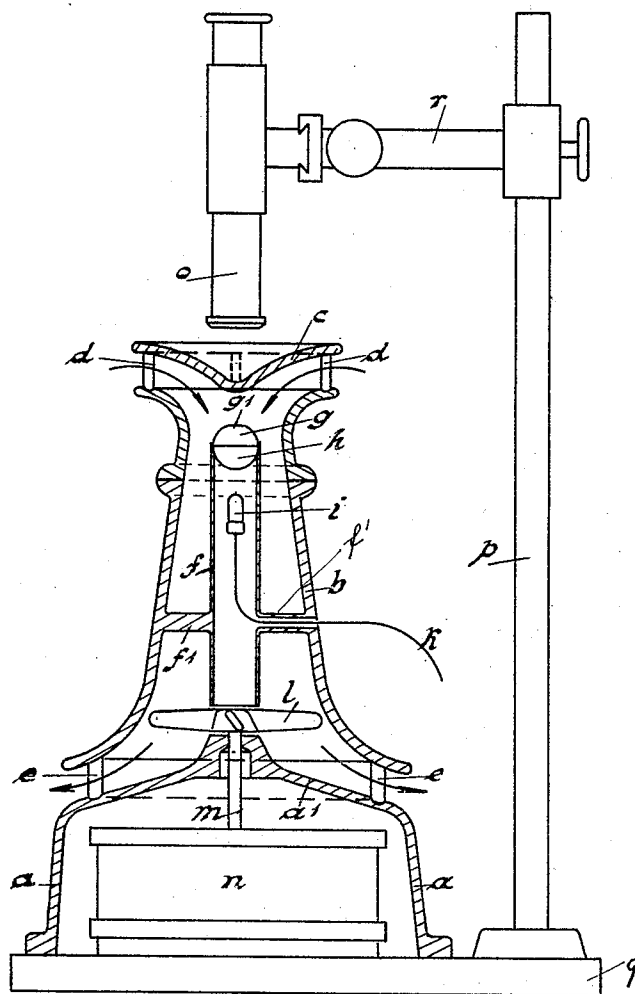
March 7, 1933.

H. WITTEMEIER

1,900,477

OPTICAL GAS TESTER

Filed Aug. 13, 1930



Inventor:

Hans Wittemeier

by Karl Wismar

Atty.

UNITED STATES PATENT OFFICE

HANS WITTEMEIER, OF BERLIN-GRUNEWALD, GERMANY, ASSIGNOR TO MIDWEST MANUFACTURING COMPANY, INC., OF LOUISVILLE, KENTUCKY, A CORPORATION OF NEW YORK

OPTICAL GAS TESTER

Application filed August 13, 1930, Serial No. 474,947, and in Germany July 5, 1930.

My invention relates to gas testers, and more particularly to testers for ascertaining the character and the percentage of dust in air and gas.

Numerous methods and apparatus for chemical or physical dust testing have already been proposed but they are all more or less defective, partly because they are imperfect and yield incorrect results, and partly because the methods or apparatus are too complicated and therefore too expensive.

It is an object of my invention to provide a tester which is without the above-said drawbacks. My apparatus is a microscopic tester which is suitable for frequent testing on account of its simple and readily inspected design. Notwithstanding its simplicity it permits exact testing by ascertaining the character and percentage of the dust in air and gas.

In the drawing affixed to this specification and forming part thereof a tester embodying my invention is illustrated diagrammatically by way of example in elevation, partly in axial section.

Referring now to the drawing, g is a base plate, n is a motor, for instance clock work, on the base plate g , a is a dome-shaped base, with a top a' which surrounds the motor n , b is a suction tube which is placed on the top of the dome a and may be divided as shown, and c is a detachable cover plate or deflector on the top of the suction tube.

The upper and lower ends of the suction tube b are flared and pitched apart from the top a' of the dome a , and from the cover plate or deflector c , respectively, so as to form inlet ports or openings d at the top and outlet ports or openings e at the bottom of the tube.

f is a tubular support arranged within the tube b and connected to the tube by any suitable means, for instance, by ribs f' . g is a dust collector at the top of the support f . The dust collector g is a hemispherical element of glass or other transparent material, and is flattened at the top so as to provide a small plane face g' where a dust-binding liquid is applied to the dust-collector. h is a base for the reception of the body g which is also hemispherical and transparent. The

parts g and h make up a complete sphere together, with the flat face g' at the upper pole of the sphere. i is a source of light, for instance, an incandescent lamp which is secured below the sphere g, h . k is a cable for supplying current to the lamp i which is threaded through a cavity in one of the ribs f' . The sphere is illuminated from below, its base h acting as a condensing lens.

The configuration of the dust collector g as a hemi-spherical or, more broadly expressed, a revolution body defined by a curve, with a flattened end facing the flow of the air, is important as an undisturbed flow of the air about the collector is necessary for permitting settling of the dust. In a dust collector having projections, nooks or corners, and edges, eddies will form and interfere with the settling of the dust. The spherical or otherwise substantially regular configuration of the base h is also important, since, as mentioned, it acts as a condenser for the collector g and effects uniform illumination of the collector which is very desirable for obtaining exact test results.

m is a shaft extending upwardly from the motor n through the top a' of the dome and l is an impeller at the upper end of the shaft.

p is an upright on the base plate g , r is a bracket on the base plate and o is a microscope on the bracket which is adjusted so as to be exactly vertical above the plane face g' of the collector g .

In operation the impeller l is rotated by the motor n , and air is drawn into the suction tube b through the slots d at its top, and discharged through the slots e at its bottom, as indicated by the arrows. Preferably the motor n is clock work which runs down after a predetermined period. When the impeller l ceases rotating, the cover plate or deflector c is removed to expose the dust which has collected on the moistened face g' of the collector g , for microscopic inspection. This arrangement enables the collector to be exposed to view without being removed or otherwise handled.

Obviously not only air but any other dust-laden gas may be tested in the manner described.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled
5 in the art.

In the claims affixed to this specification no selection of any particular modification of the invention is intended to the exclusion of other modifications thereof and the right to
10 subsequently make claim to any modification not covered by these claims is expressly reserved.

I claim:

1. An optical gas tester comprising a substantially hemispherical dust collector of transparent material with its pole flattened, means for generating a flow of gas about
15 said collector, and means for illuminating said collector.

2. An optical gas tester comprising a substantially hemispherical dust collector of transparent material with its pole flattened, means for generating a flow of gas about said collector, a substantially hemispherical condenser arranged below said collector, and
25 means for illuminating said condenser.

3. An optical gas tester comprising a suction tube, means for generating a flow of air in said tube, a detachable deflector at the
30 inlet end of said tube, a support arranged axially within said tube, a source of light in said support, a condenser at one end of said support, and an exchangeable transparent dust collector in the shape of a revolution
35 body defined by a curve with a flattened end facing the flow of the gas and adapted to be seated on said condenser.

4. An optical gas tester comprising a dust collector of transparent material in the shape
40 of a revolution body defined by a curve with a flattened end facing the flow of the gas, means for generating a flow of gas about said collector, and means for illuminating said collector.

5. An optical gas tester comprising a base, a substantially hemispherical dust collector supported on said base, said collector having its pole flattened and means for directing
45 a flow of gas about said collector, said directing means including a removable wall member which is in line with the pole of said collector and which when removed exposes said collector to view.
50

In testimony whereof I affix my signature.
55 HANS WITTEMEIER.