

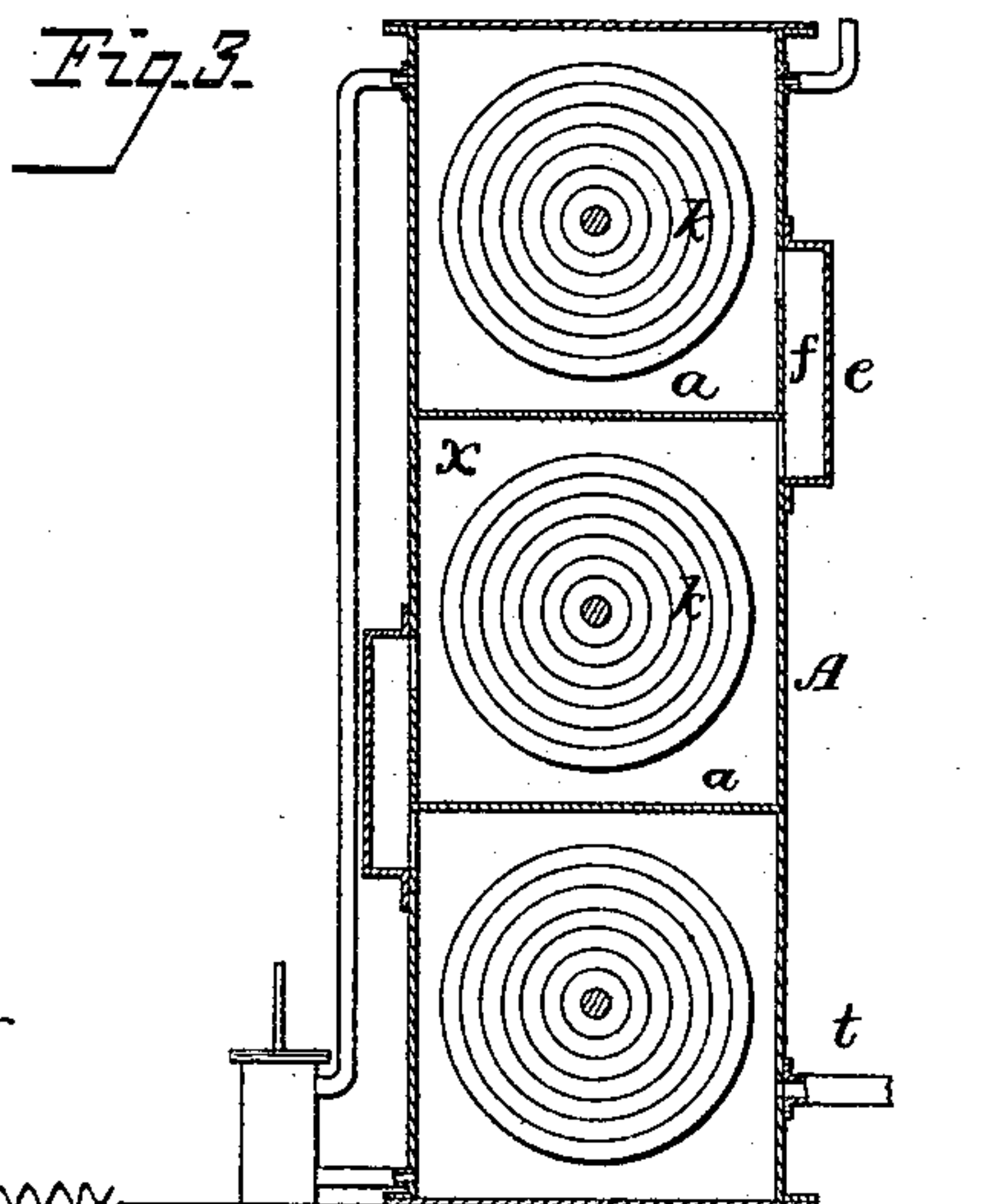
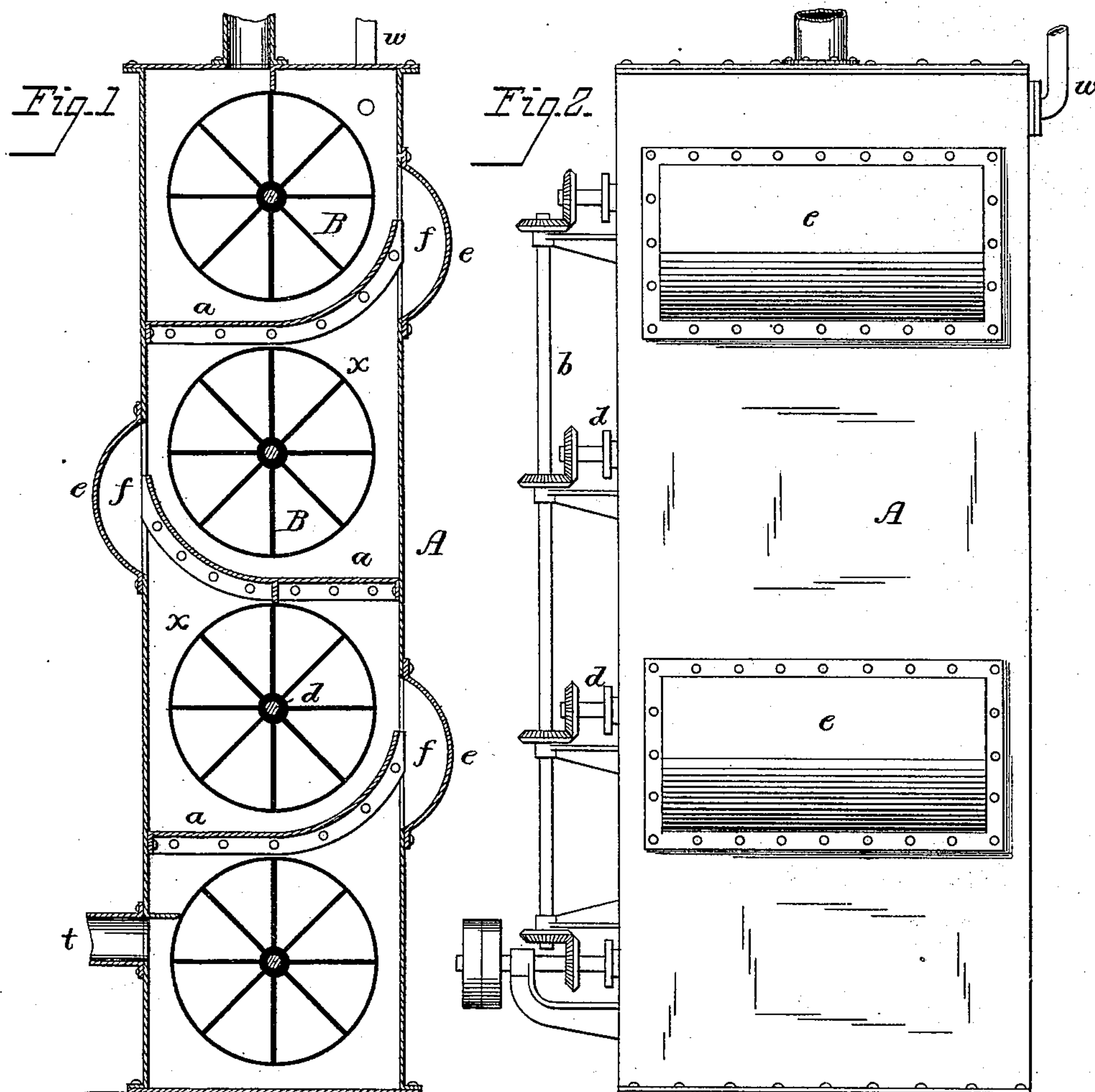
(No Model.)

W. R. BEAL.

APPARATUS FOR WASHING GASES.

No. 250,775.

Patented Dec. 13, 1881.



Attest:-

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UNITED STATES PATENT OFFICE.

WILLIAM R. BEAL, OF NEW YORK, N. Y.

APPARATUS FOR WASHING GASES.

SPECIFICATION forming part of Letters Patent No. 250,775, dated December 13, 1881.

Application filed April 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. BEAL, of the city, county, and State of New York, have invented certain Improvements in Apparatus for Washing Gases, &c., of which the following is the specification.

My invention relates to those processes or operations in which it is necessary to bring an aeriform fluid into contact with a liquid—as in washing gases, manufacture of wood-spirit, &c.; and my invention is a simple, compact, and effective apparatus whereby any gas may be brought intimately into contact with water or any desired solution.

In the drawings, Figure 1 is a sectional elevation of the improved apparatus; Fig. 2, a side view; Fig. 3, a view illustrating a modification.

The apparatus consists, essentially, of a series of superposed boxes or tanks, each containing an agitator, with communications arranged to permit the downward passage of the liquid and the upward flow of the gas.

The devices alluded to may be differently constructed. In Figs. 1 and 2 the tanks are formed in a single casing, A, by transverse partitions *a*, and in each compartment *x* is a paddle-wheel, B, mounted upon a shaft, *d*, having its bearings in the sides of the casing, all the shafts being driven by gears from a vertical shaft, *b*. Each compartment *x* communicates with that below it by means of an overflow-pipe (or shield, *e*, forming a passage, *f*), so arranged that the water cannot flow from the upper to the lower chamber until it has reached a certain height, determined in this instance by the curved-up edges of the partition *a*, the outlet to the passage being arranged directly opposite one side of the paddle-wheel. With the lower compartment, *x*, communicates an inlet-pipe, *t*, and from the upper end a pipe, *w*, leads to any suitable receptacle containing the liquid to be used for washing, as water, milk of lime, or other liquid or solution. The inlet-pipe is put into communication with the retort, holder, still, or other vessel containing the gas to be washed or treated, and the agitators are put into operation. As the gas flows from chamber to chamber it is agitated in contact with the liquid, and also meets the descending particles of liquid thrown by the agitators into the passages *f*, so that a most ex-

tended surface of liquid is presented to the gas, and the two are brought into that intimate contact which will thoroughly and quickly wash the gas or combine it with the matters in solution.

The agitators may be made in any form that will thoroughly agitate, divide, and throw up the liquid. In Fig. 3 they consist of a series of annularly-corrugated disks, *k*, secured to each shaft *b*.

Where the operations are to be continuous for any length of time the liquid may be pumped back from the lower to the upper compartment, or it may be discharged at a bottom outlet.

I am aware that in the manufacture of sulphuric acid it has been common to pass the gases through a series of agitating-troughs containing liquid; but the latter has been drawn off through separate pipes, so that there is no contact of gas and liquid in the passage between the receptacles. By arranging the overflow and gas passages peripherically opposite the agitators the latter throw the finely-divided fluid into the passages through which the gas flows upward, bringing the two together in a manner to most effectually secure the desired result.

I claim—

1. An apparatus for washing gases, consisting of a series of cases or receptacles with upper and lower inlets and outlets, and an agitator in each receptacle, and provided with overflow-channels arranged to open into each case opposite the periphery of the agitators, each channel arranged to serve as a conduit for the descending liquid and ascending gas, substantially as set forth.

2. The case A, divided into superposed receptacles communicating through overflow-pipes, constituting channels for the passage of both gas and liquid, in combination with the shafts *b* and *d*, agitators, and gears, arranged substantially as set forth.

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

WM. R. BEAL.

Witnesses:

WILLIAM F. BLIERS,
JOHN L. BURNETT.