of the processes doing this by the aid of nitric acid, with or without the intervention of manganese or other agents; the manufacture of arsenic acid from white arsenic, or of phthalic acid from naphthalene tetrachloride; the manufacture of iron mordant for dyeing purposes; that of blue copperas from metallic copper, and too many other cases to be enumerated here. Formerly, whenever the treatment of nitrous gases was at all attempted, this was done by a string of perhaps a hundred separate receivers, or by a coke tower, the latter being saddled with the great drawback already mentioned, *viz.*, its reducing action, in a case where the very opposite action is called for. In the March number of the *Journal of the Society of Chemical Industry*, Mr. Guttmann mentions the fact that at the works managed by him a small plate tower, ten feet high, performed the work formerly done by a coke tower forty-eight feet high, but much better; for the former made acid of 40°, the coke tower only such of 30°, and the plate tower actually satisfied the requirements of the Government Inspector, concerning the complete condensation of the nitrous gases, better than any other known apparatus.

In conclusion I beg to point out one more interesting use of plate columns. When gases have to be dried, by bringing them into contact with moderately concentrated sulphuric acid, which has generally been done by coke towers, the plate column is most evidently in its proper sphere, on account of its cleanliness, its chemical resistance to any attack, and the inconsiderable height to which the acid has to be pumped.

Many other uses of the plate column will no doubt suggest themselves to the industrial chemist; but I will bring my remarks to a close, and not detain you any longer with my invention.

DESIGN FOR WATER BATH.

By A. W. Nibelius.

THE following is a description of a water bath with constant water level, which I have found to be satisfactory in practical work:

Fig. 1 represents a longitudinal and Fig. 2 a transverse section, and Fig. 3 a plan view of the bath. A is a common sheet iron "dripping pan" of the hardware trade, 10 x $6\frac{1}{4}$ inches at the top and three inches deep, transformed by enamelling into so-called agate ware. C is a brass tube $\frac{1}{4}$ inch outside and $\frac{1}{8}$ inch inside diameter, and $3\frac{1}{2}$ inches long, soldered fast near the bottom of the pan and connected by a $\frac{3}{16}$ inch rubber tube with the constant water level apparatus. The tube is inclined somewhat, so as to prevent steam bubbles remaining therein and thus interfering with the siphon action. On the pan is loosely laid a $\frac{1}{4}$ inch thick china plate,

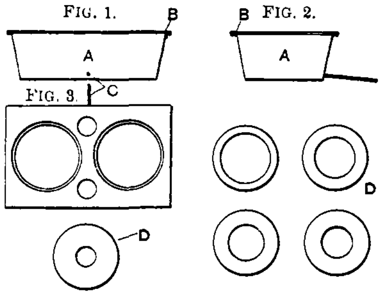

FIG. 1. FIG. 2. FIG. 3.

B, in which are two 4 and two 1 inch holes, the latter, when not in use, to be covered with china crucible covers. In the former fit five china rings (D) with holes of the following diameters: 3, $2\frac{5}{8}$, $2\frac{5}{16}$, 2, and $1\frac{9}{16}$ inches, into which will fit respectively No. 3, No. 2, No. 1, No. 0, and No. 00 Griffin's low wide shaped beaker glasses. On the rim of the three inch hole in the china ring a No. 4 and a No. 5 beaker can be placed, and on the rim of the four inch hole in the plate can rest a No. 6 and a No. 7 beaker. Of course, only one ring at a time can rest on the flange of the large holes in the plate.

By means of the constant water level apparatus the water in the pan is kept at a uniform depth of $1\frac{1}{2}$ inch, and in order to keep this quantity of water constantly boiling it will be necessary to employ the flame of a kerosene oil stove having a four inch wick, or one Bunsen burner.

I have found this water bath to be clean, of reasonable price and sufficiently large for one laborant doing ordinary laboratory work.

Messrs. Eimer and Amend, of New York City, will furnish the above described water bath, they having arranged to have the china plate and rings made by the Royal China Works, of Berlin.

LABORATORY, HACKETTSTOWN ZINC CO.,
HACKETTSTOWN, N. J., JULY, 1893.