

UNITED STATES PATENT OFFICE

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SUCTION DEVICE FOR DIPPING, STRIPPING, OR PLATING TANKS

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This invention relates to a suction system attachment for dipping, stripping or plating tanks for the purpose of preventing the inhalation of injurious fumes by the person operating the tanks.

Various suction systems have been used ever since the introduction of electro-plating, and the use of acids in this art. With some systems a hood is built over the tank and the fumes are directed through said hood into the atmosphere by means of fans. It has been found, however, that such hoods are objectionable for several reasons. First, they constantly interfere with the work of the operator. Secondly, the inhalation of the fumes is unavoidable as while working under said hood the operators head is in the path of the suction. And thirdly, the acid drawn along with the fumes is not recuperable.

The main object of my invention is to provide a suction device whereby the objections mentioned will be entirely obviated.

Furthermore it has the object of providing a device which can be manufactured to fit tanks of different sizes and also to provide a construction that will be simple and comparatively inexpensive. It also has for its object to construct the device so that it can be readily and quickly applied to any existing tank without the necessity of changing the construction of the latter.

My invention will be more fully understood by reference to the accompanying drawing, in which similar references characters denote corresponding parts and in which Fig. 1 is a vertical cross section of a tank equipped with my device and Fig. 2 a top plan view of my device as applied to the tank.

In the drawing, T denotes a tank of the usual rectangular shape as used for electroplating and which is open at its top. The device comprises a rim 10 bent and curved substantially as shown in Fig. 1, so as to form at its lower end a vertical flange 10^a adapted to extend parallel to one of the walls of the tank and bear evenly on the upper portion of said wall to which it may be fixed by welding, screws, or rivets 11 as shown. Beyond this flange portion 10^a the rim 10 has

an outwardly bulging portion 10^b whose lower wall is slanting as at 10^c and upper wall is horizontal as at 10^d. The inner end of said horizontal wall is again bent vertically downwards forming an inner side wall 10^e. This wall is spaced from the flange portion 10^a to form a free passage 10^f. The same is made of sheet material such as sheet metal, hard rubber, fibre or the like and is adapted to be manufactured in long pieces to be subsequently cut to the length of the particular tank for which it is to be used. After the rim is cut to the desired size its ends are tightly closed by end walls 12 thereby forming a hollow body open at its bottom as at 10^g. Suitably fixed in the slanting lower wall 10^c of the bulging portion 10^b are a number of tube sections 13 from one to four feet apart along its length, so as to extend vertically downwards. These pipe sections project with their open ends into the hollow body or rim and with their lower ends outwardly, the latter terminating in an exhaust pipe 14 arranged externally of the tank and leading to a suction pump, exhaust fan or the like (not shown) of any suitable construction. The horizontal wall 10^d of the rim serves to support the anodes A to be used in electroplating. If the rim is made of metal the outer faces of walls 10^d and 10^e are covered with a suitable insulation 15, to prevent contact between the anodes and the body of the rim. The anodes A are fixed by set screws 16 or the like to a bar 17 of brass or the like loosely bearing on the part 10^d of the rim.

C denote the cathode which is supported on the tank in any suitable manner midway between the anode bars at both ends of the tank.

The provision of several pipe sections 13 serves to insure even suction throughout the length of the rim.

In use, the air and fumes are drawn through the passage or open bottom 10^f, into the hollow rim 10 and thence pass out through the pipe sections 13 and exhaust pipe 14.

When passing into the hollow rim, the acid fumes strike the walls of the rim, causing most of the moist particles of the fumes deposited thereon and becoming condensed to flow back along the slanting wall 10^c into

the tank. The upwardly projecting ends of the exhaust pipes 13 act as obstructions preventing the moist particles from being drawn along with the air through the pipe 13.

5 Thereby at least 80% of the acid or solution used in the electro-plating that usually goes to waste, are recuperated.

10 The suction taking place directly over the acid or plating solution, all fumes produced there are caused to be withdrawn, insuring fresh air permitting the operator to work without any danger of inhaling fumes detrimental to his health.

15 This construction is particularly advantageous for chromium plating tanks, since chromium, as is well known, develops obnoxious fumes at the anodes and cathods.

20 It is obvious that the construction may be changed in various ways without departing from the principle of my invention. I therefore, do not wish to restrict myself to the details described and shown.

What I claim is:

25 1. A suction device for withdrawing the fumes developed in an acid or plating tank, consisting of a tubular body attachable to one of the walls of said tank and having a slanting bottom formed with an exhaust passage for the fumes, said slanting bottom causing 30 the condensed particles of the solution to flow back into the tank and having at least one exhaust pipe fixed therein, with its inner end projecting above said bottom, to prevent the condensed solution from being drawn away 35 with the fumes through said pipe.

40 2. A suction device for withdrawing the fumes developed in an acid or plating tank consisting of a tubular body attachable to one of the walls of said tank, and having a slanting bottom formed with an exhaust passage for the fumes, said slanting bottom causing the condensed particles of the solution to flow 45 back into the tank, the upper part of said body overlapping the lower part and being spaced apart therefrom, to prevent the anodes from coming in contact with the wall of the tank.

50 3. A suction device for acid or plating tanks, comprising a hollow body formed of a piece of sheet metal so curved as to form a curved wall having a slanting bottom, a vertical flange extending downwardly from said bottom, a horizontal top wall, a vertical inner wall, the latter being spaced from the bottom to form a free passage therebetween, and end 55 walls, said slanting bottom having at least one opening, a pipe section fixed in said opening, the upper end of which projects into and the lower end of which projects outwardly from said hollow body, and suction means 60 adapted to be connected to said lower end of said pipe.

In testimony whereof I affix my signature.

ERNST KOEPPEN.