(No Model.)

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PROCESS OF AND APPARATUS FOR ABSORBING CHLORIN GAS.

No. 521,629. Patented June 19, 1894.

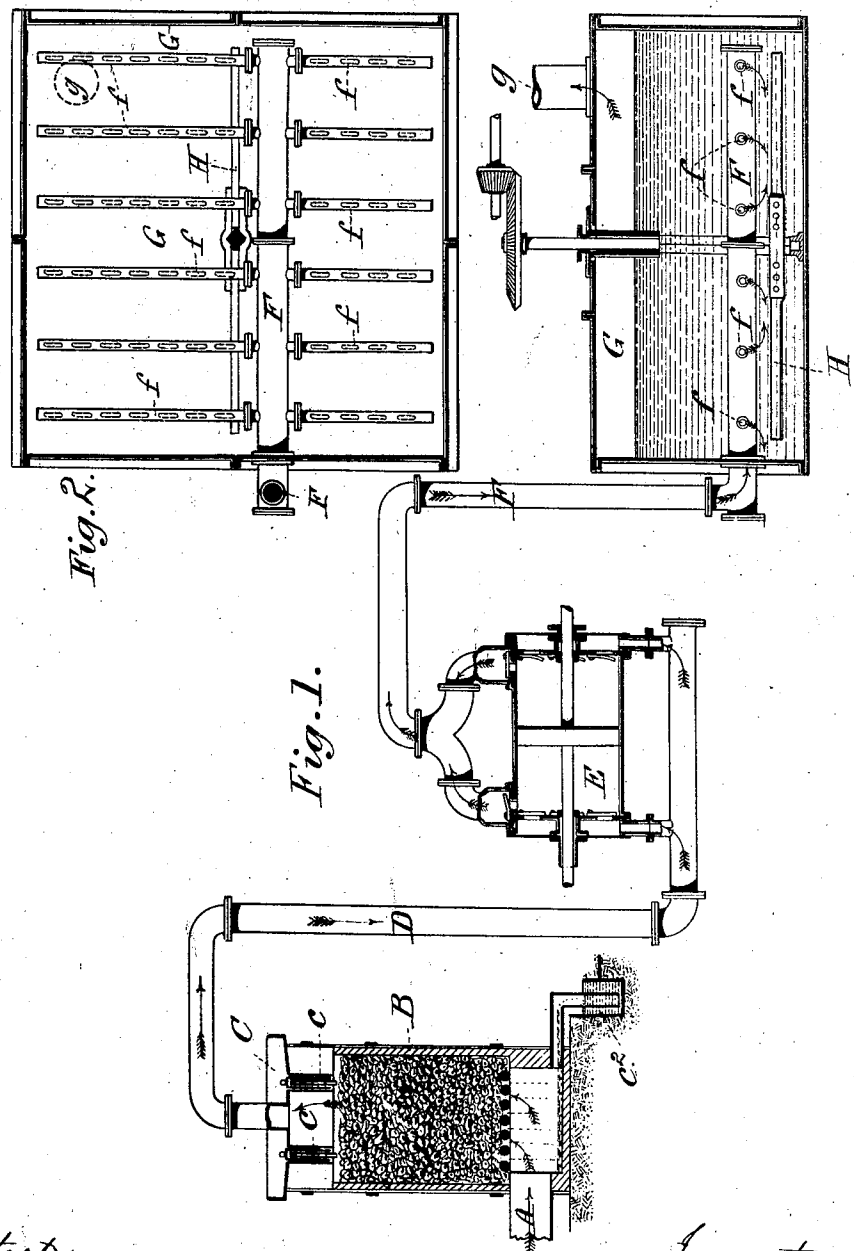

Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

PHILIP J. WORSLEY, WILLIAM WINDUS, AND BENJAMIN BRACEY, OF BRISTOL, ASSIGNORS TO THE UNITED ALKALI COMPANY, LIMITED, OF LIVERPOOL, ENGLAND.

PROCESS OF AND APPARATUS FOR ABSORBING CHLORIN GAS.

SPECIFICATION forming part of Letters Patent No. 521,629, dated June 19, 1894.

Application filed December 11, 1893. Serial No. 493,354. (No model.)

To all whom it may concern:

Be it known that we, PHILIP JOHN WORSLEY, a director of the United Alkali Company, Limited, WILLIAM WINDUS, manager, and BENJAMIN BRACEY, foreman, subjects of the Queen of Great Britain and Ireland, and all of Netham Chemical Works, Bristol, England, have invented certain Improvements in or Connected with Pumping and Absorbing Chlorin Gas and Apparatus for Use Therein, of which the following is a specification.

Chlorin gas, particularly when diluted with air, or other inert gases, such as is obtained by the Deacon process, or other similar processes, is difficult to absorb in milk of lime, or other solutions. The difficulty arises chiefly from the corrosive action of chlorin gas, which renders the use of ordinary metallic pumps and pipes almost impossible, and necessitates the use of very extensive surfaces of the absorbing liquid. The apparatus usually employed is moreover liable to frequent and costly repairs.

By our invention we are able to force the chlorin gas through a considerable depth of milk of lime, or other solution, whereby we obtain complete absorption in a comparatively small apparatus.

We pass the chlorin gas, from whatever source it may be derived, through, or over, a hygroscopic substance exposing a large surface; for instance, coke moistened with sulfuric acid. By this means we obtain the chlorin gas in a dry condition, in which we find it does not act readily on ordinary metals, and can be pumped by means of an ordinary air compressor. We can use an ordinary pump to force the dry chlorin gas through passages, or pipes, which may be metallic pipes under the surface of the absorbing fluid, and at any suitable depth below the surface connect to them a distributer, which causes the chlorin gas to pass in fine streams, or bubbles, through the liquid. As drying apparatus we may employ a lead chamber or tower, or an earthenware vessel filled with pieces of coke or the like over which a steady stream of strong sulfuric acid is kept flowing. The moist gas enters at the bottom and an outlet pipe at the top serves to convey the dry gas to the pump.

The pump we use may be of ordinary construction and may be made of metal for instance of cast iron. The inlet and outlet valves may also be made of metal. Or the pump cylinder and piston may be lined with ebonite or the like materials and the valves may be india rubber valves. We find it advantageous to lubricate the compressor freely with a pure mineral oil, which, besides its use as a lubricant, protects the metallic parts against any slight action the chlorin may have. The oil must be of such quality that it is not acted upon by chlorin gas. The pipes or passages conveying the gas from the drying apparatus to the pump and from the pump to the absorbing apparatus may be made of cast iron or earthenware and the same material may be used for the distributer.

The distributer consists of a system of pipes or passages having slots or the like on the under side which slots prevent the accumulation of solid matter and consequent choking of the distributer. The gas issues from these slots or the like in fine streams or bubbles and rises upward through the absorbing liquid. The pipes or passages of the distributer may pass through the sides of the vessel containing the absorbing fluid and may be provided with flanges and movable covers so as to permit of ready access for cleaning purposes.

Figure 1 of the accompanying drawings represents an arrangement of apparatus suitable for use in carrying this invention into effect and Fig. 2 is a sectional plan of this vessel and its adjuncts.

The chlorin gas enters by the pipe A into the drying apparatus consisting of a vessel B in which coke is supported, the said coke being moistened by sulfuric acid supplied by the hooded pipes *c* leading from the receptacle C for the acid, and the moisture removed from the gas leaving by the liquid seal outlet at c^2. The dried gas then passes by the pipe D to the pump E which is shown as a horizontal double acting pump but it may be a pump or forcing device of any convenient

kind. The gas is forced by the pump through the pipe F into the vessel G containing the absorbing liquid the pipe F having distributing branches *f* perforated on their under sides so that the gas issues in fine streams or bubbles directed downward and then it passes upward through the liquid.

g is the outlet from the vessel G and H is a stirrer situated beneath the pipe F and branches *f*.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. The method of absorbing chlorin gas consisting in dehydrating the gas and pumping the dry product into vessels containing the absorbing liquid, substantially as described.

2. In an apparatus for absorbing chlorin gas, the combination with a dehydrater, of a pump, and an absorbing vessel through which the gas successively passes, and a distributer in said absorbing vessel having slots or small openings on the under side thereof, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PHILIP J. WORSLEY.
WILLIAM WINDUS.
BENJAMIN BRACEY.

Witnesses:

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