

Specification of Samuel Little Hardy : apparatus for applying chloroform vapour, &c.;

Contributors

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A.D. 1854 N^o 444.

S P E C I F I C A T I O N

OF

SAMUEL LITTLE HARDY.

APPARATUS FOR APPLYING CHLOROFORM
VAPOUR, &c.

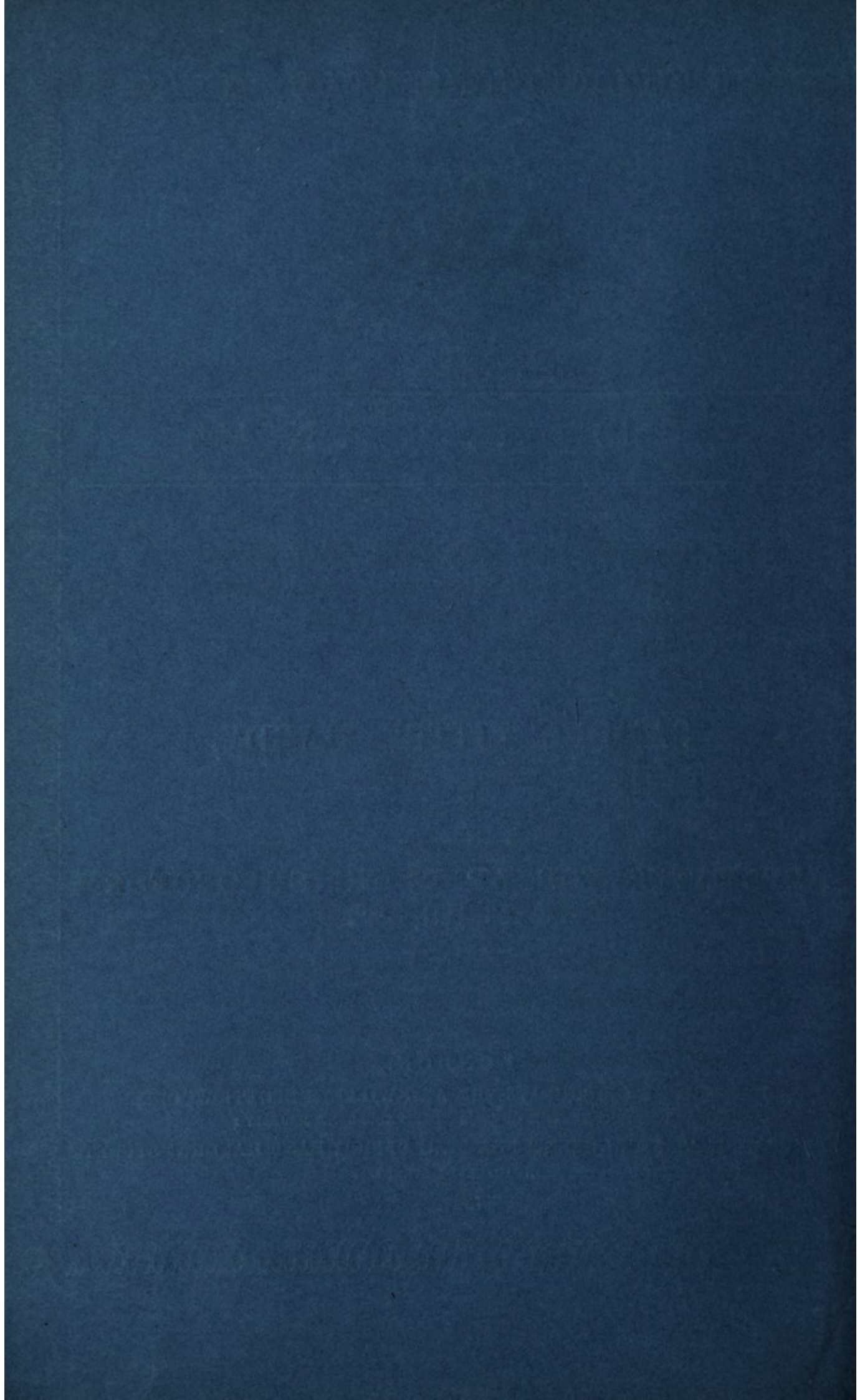
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A.D. 1854 N^o 444.

Apparatus for Applying Chloroform Vapour, &c.

LETTERS PATENT to Samuel Little Hardy, of the City of Dublin, M.D.,
for the Invention of "**AN IMPROVED APPARATUS FOR APPLYING CHLOROFORM
VAPOUR OR OTHER SIMILAR VAPOUR IN CERTAIN CASES.**"

Sealed the 28th April 1854, and dated the 24th February 1854.

PROVISIONAL SPECIFICATION left by the said Samuel Little Hardy at
the Office of the Commissioners of Patents, with his Petition, on the
24th February 1854.

I, SAMUEL LITTLE HARDY, of the City of Dublin, M.D., do hereby declare
the nature of the said Invention for "**AN IMPROVED APPARATUS FOR APPLYING
CHLOROFORM VAPOUR OR OTHER SIMILAR VAPOUR IN CERTAIN CASES,**" to be as
follows:—

My Invention relates to an apparatus commonly called a vapour douche,
and consists in constructing an instrument so contrived and arranged that an
increased or double strength of vapour can be expelled and directed towards
the part desired to be rendered anæsthetic or otherwise affected, with increased
facility, and with arrangements for preventing the evaporation or escape of the
chloroform or other vapour with which the instrument is charged.

The apparatus for this purpose consists of the following principal parts in
combination, viz^t:—

A pair of small bellows or other suitable equivalent. Two chambers con-
taining a small portion of sponge or other substance for receiving the chloro-
form or other vapour, with stoppers for admitting the chloroform and preventing
the escape of the vapour.

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Beneath or external to the valve of the bellows, one chamber containing sponge is screwed or otherwise fastened. The bottom of this chamber consists of a perforated plate for admitting atmospheric air through the sponge into the bellows when it is opened, carrying with it the vapour from the sponge charged with chloroform. Within the bellows is a flapper valve which opens 5 when the bellows is depressed, but shuts when the bellows is opened; thus allowing the draft charged with vapour to proceed and escape only in one direction, viz^t, towards the pipe or tube, between the body of the bellows and the external tube, and at such distance as to allow the valve free play. A second chamber containing a sponge charged with fluid is placed. The draft 10 proceeding through this receives a second supply of vapour, and is then expelled through the external pipe on to the face of the patient, or on to or into any other part desired to be affected.

The perforated plate herein-before mentioned can be provided with a cover or other stopper, as also the nozzle or other parts, to prevent the escape of 15 vapour when the instrument is not in use.

In some cases only one chamber containing sponge may be required.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Samuel Little Hardy in the Great Seal Patent Office on the 17th August 1854. 20

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, SAMUEL LITTLE HARDY, of the City of Dublin, M.D., send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-fourth day of February, in the year of our Lord One thousand eight hundred and fifty-four, in the seventeenth year of 25 Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Samuel Little Hardy, Her special licence that I, the said Samuel Little Hardy, my executors, administrators, and assigns, or such others as I, the said Samuel Little Hardy, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and 30 at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "AN IMPROVED APPARATUS FOR APPLYING CHLOROFORM VAPOUR OR OTHER SIMILAR VAPOUR IN CERTAIN CASES," upon the condition (amongst others) that I, the 35 said Samuel Little Hardy, by an instrument in writing under my hand and

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seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

5 **NOW KNOW YE**, that I, the said Samuel Little Hardy, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawings hereunto annexed, and to the letters and figures marked thereon (that is to say):—

10 My Invention of "An Improved Apparatus for Applying Chloroform Vapour or other similar Vapour in certain Cases," has for its object the more continuous and concentrated application of chloroform or other vapours to any particular part or portion of the human frame which it may be desirable to render anæsthetic or insensible to pain, or to affect in any other manner by
15 the local application of such vapours.

And this object is accomplished by means of a pair of bellows, which I prefer to be constructed partly of vulcanized india-rubber, combined with chambers containing sponge or other substance charged with chloroform, connected therewith in such a manner as to be capable of transmitting to the
20 part requiring to be affected or treated a blast of air impregnated with a supply of vapour from each chamber. One of these chambers is screwed or otherwise fastened beneath or external to the ordinary inward opening valve of the bellows, and the bottom of this chamber is only closed by a perforated
25 plate or wire gauze, the interstices of which admit atmospheric air through the said chamber into the bellows when the latter is opened, the air in its passage through this first chamber having become charged with vapour from the sponge contained therein. Within the bellows and near the second sponge chamber herein-after mentioned, is a valve which opens when the bellows is depressed or closed, and shuts when the bellows is raised or opened; thus
30 allowing the draft charged with vapour to proceed and escape only in one direction, viz., towards the discharge pipe or tube, between the body of the bellows and the discharge pipe, and at such distance as not to interfere with the free action of the valve. A second chamber containing sponge charged with chloroform is placed. The draft proceeding through this receives a second
35 supply of vapour, and is then expelled from this second chamber and directed by a suitable pipe on to the part which it is desired to affect; or it may be collected in a chamber with an elastic casing attached to the pipe, and allowed to issue therefrom in a continuous stream with an intensity proportioned to the elastic force exerted by an elastic band embracing the chamber. Various

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kinds of conveyance pipes or tubes can be attached near either the second sponge chamber when the elastic reservoir is not used, or near the elastic reservoir for the purpose of conveying and directing the charge therefrom to the part required. And in constructing the bellows for this purpose, I prefer to employ an air-tight casing of vulcanized india-rubber, made so as to form a bellows in itself independently of the boards afterwards attached, having openings for the valves, so that the vapour may not in passing from one sponge chamber to the other come in contact with any part of the bellows excepting this interior casing.

By means of this apparatus, with or without the elastic chamber or reservoir, a supply of vapour of chloroform from both the sponge chambers may be applied with concentrated effect on any part desired to be affected thereby, or a whole limb or portion of the body may be surrounded by or incased in any suitable air-tight fabric confined by elastic bands, and a continuous stream of vapour may be thrown in with sufficient power to cause it to pass rapidly over a large space; but being confined by the fabric or casing to the part to be fumigated or vapourized, is made to concentrate its accumulated effect upon such part.

In order, however, that my Invention may be fully understood, I will proceed to describe the accompanying Drawings in which are represented the several parts above referred to.

Fig. 1 is a plan or horizontal view; Fig. 2 is a side elevation, the bellows being shewn open; Fig. 3 is a section taken through the line Y, Z, of Fig. 1, also shewn open. In this view the elastic chamber is omitted, and an ordinary discharge pipe substituted. Figs. 4 to 7, are various forms of conveyance pipes for attaching to the apparatus. Fig. 8 shews a glass or platinum chamber, the uses of which are herein-after explained.

A is the bellows; B¹ and B², chambers containing sponge charged with chloroform. The bottom of chamber B¹ is perforated to allow of the admission of air when the apparatus is ready for use. When not in use the perforated bottom can be protected by a cap or other cover, which is screwed on to prevent the escape of vapour. *b, b*, are stoppers for closing the apertures through which the sponge is inserted into the chambers B¹ and B², and keeping them air tight. C (Fig. 3) is the valve between the bellows and the second sponge chamber; D and E are screws for connecting the various discharge or conveyance pipes; F is the elastic chamber or reservoir in which a quantity of vapour may be collected; *f* is an elastic band passing round the elastic reservoir, which by its contraction commences to expel the vapour in a continuous stream as soon as the stop-cock G is opened. This

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band may be capable of exerting any suitable elastic force. The action of this apparatus is as follows:—

The sponge chambers B¹ and B², being charged with chloroform or other vapour, and the stoppers closed, as soon as the bellows A are opened atmospheric air rushes in through the perforated bottom of the sponge chamber B¹, (the cap or cover being removed) and fills the vacuum in the bellows, having become charged with vapour in its passage through the said sponge chamber. The bellows being then depressed or closed, the air charged with vapour is expelled through the second sponge chamber B², where it receives a second charge of vapour, and thence on thro' the conveying and directing pipe or tube to the part to be fumigated or vaporised; or if the elastic reservoir F be attached, it is collected therein till required for use, the valve C, in the sponge chamber B², preventing its return into the bellows. When a sufficient quantity is collected in the elastic reservoir, the stop-cock G can be opened, and by the contraction of the elastic band *f*, the vapour will be expelled in a continuous stream, with a force dependent upon the pressure of vapour within the reservoir and the elastic power of the band.

I would remark, that although I have in the foregoing description spoken mainly of the application of chloroform vapour, yet it is to be understood that other vapours can be applied by the means of my apparatus, either singly or in combination. For instance, in some cases it may be desirable to combine the vapour of hot water with the vapour of chloroform. For such purpose it will only be necessary to connect the bottom of the sponge chamber B¹, (the cover being removed) to a jar containing hot water and with provision for admitting atmospheric air by means of a tube passing to the bottom of the jar. The sponge chambers being charged with chloroform the two vapours can be applied at the same time. In lieu of hot water, the jar may be charged with liquid chloroform in addition to that in the two chambers, when a very large supply of this vapour is required. Many vapours may in this manner be applied; but when it is desired to use the apparatus to apply the vapour of any substance which would, if passed through the bellows, injure it or some of its fittings, a conveyance pipe of glass or platinum is employed.

Fig. 8, shews a chamber and pipe of this nature; at the neck of the chamber a valve of suitable material is placed to prevent the vapour passing from this chamber into the sponge chamber or bellows. The vapour of iodine, sulphur, mercury, or other substance may be applied in this way, and heat can when required be applied to the glass or platinum to cause volatilization of the contents.

Having thus described the nature of my Invention, and in what manner the

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same is to be performed, I would have it understood that I do not intend to confine myself to the precise forms and details of all the parts shewn and described. Neither do I claim as of my Invention any of the apparatus that may be used to supply any particular vapour to my improved instrument or apparatus, or to direct it when discharged therefrom to the particular part 5 required to be affected thereby or treated therewith.

But what I claim, as secured to me by the above in part recited Letters Patent, is,—

The combination of a pair of bellows with chambers through which in succession air may be made to pass and become impregnated with vapours 10 contained therein, and be ultimately discharged therefrom and directed to particular parts of the human body, as described.

In witness whereof, I, the said Samuel Little Hardy, have hereunto subscribed my name and affixed my seal, the Eleventh day of August, in the year One thousand eight hundred and fifty-four. 15

S. L. HARDY. (L.S.)

Signed, sealed, and delivered by the said Samuel Little Hardy in the presence of

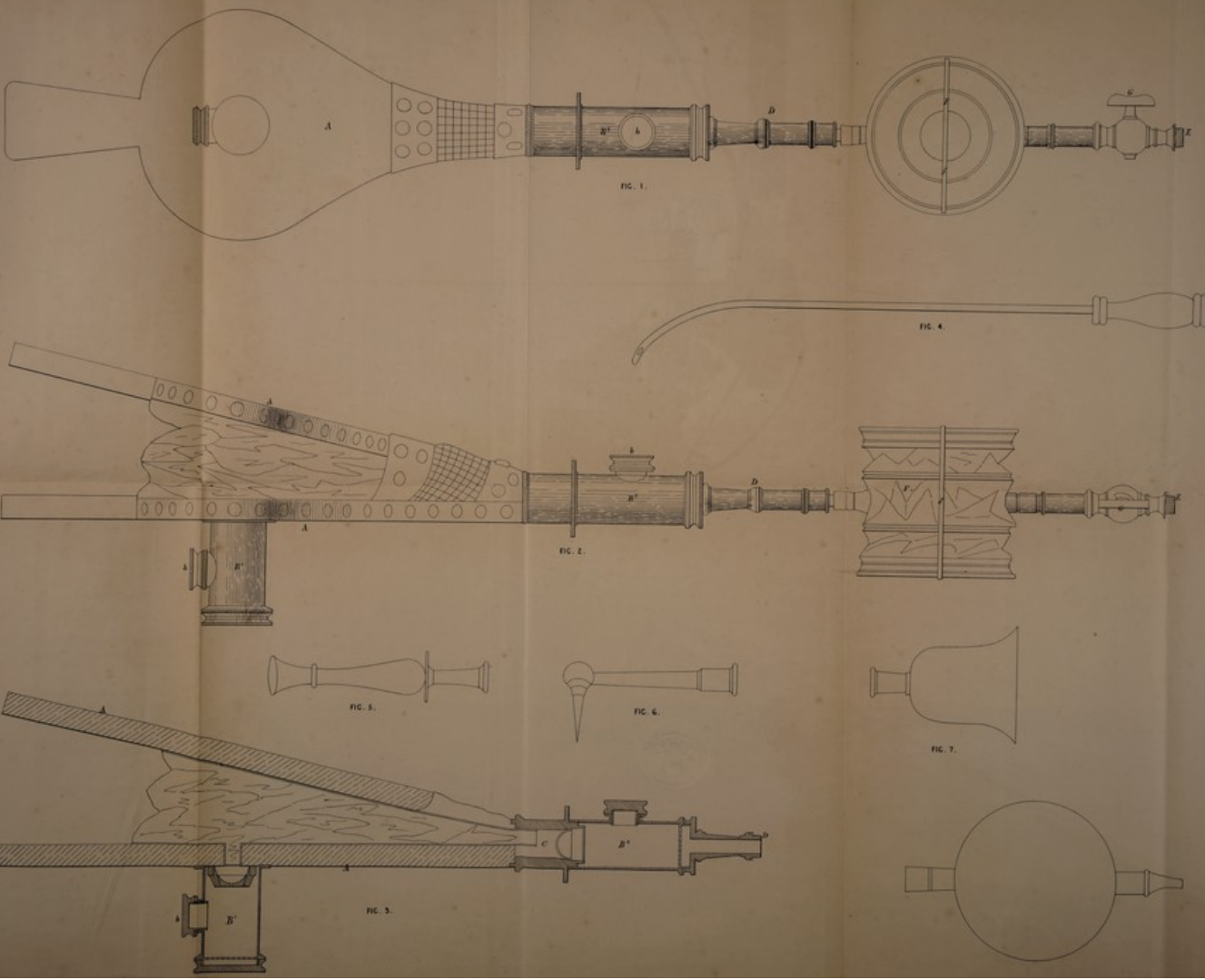
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