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APPARATUS FOR USE BY PERSONS WORKING IN IRRESPIRABLE ATMOSPHERES OR UNDER WATER.

APPLICATION FILED DEC. 30, 1912.

1,077,181.

Patented Oct. 28, 1913.

2 SHEETS—SHEET 1.

Fig. 3

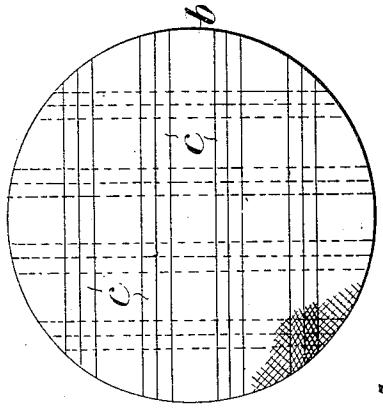


Fig. 2

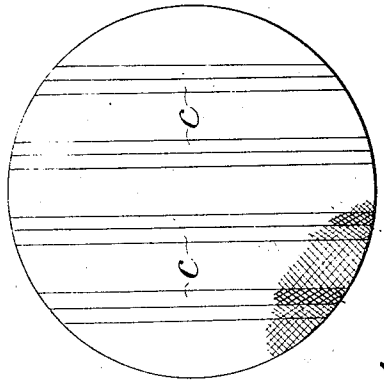


Fig. 1

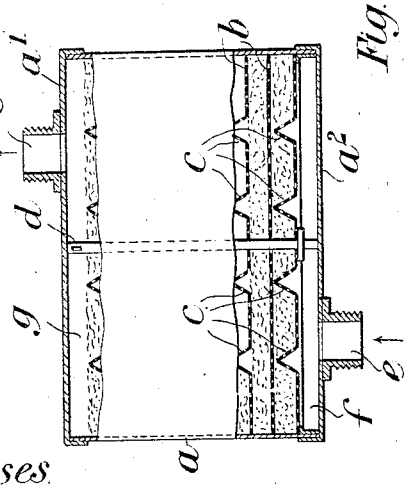


Fig. 5

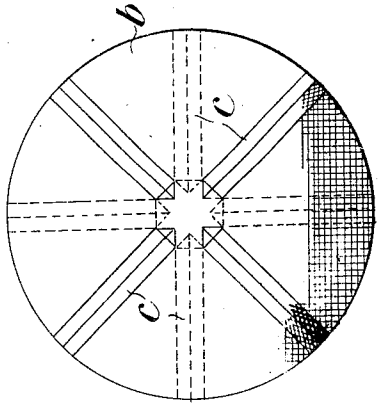
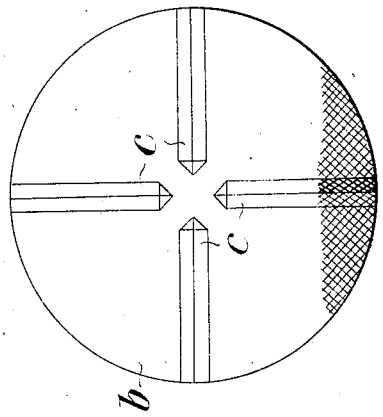


Fig. 4.



Witnesses.

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2 SHEETS—SHEET 2

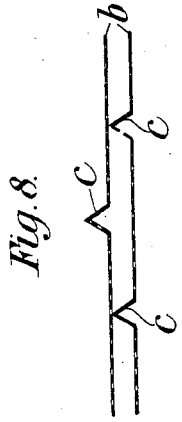


Fig. 8.

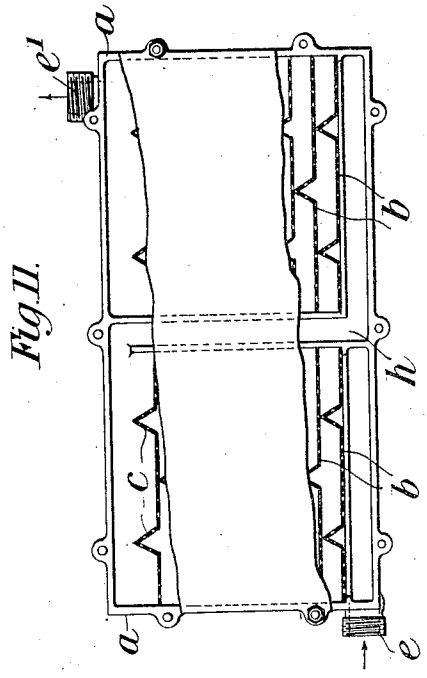


Fig. 11.

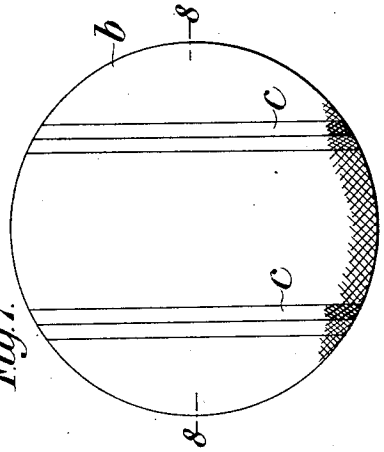


Fig. 7.

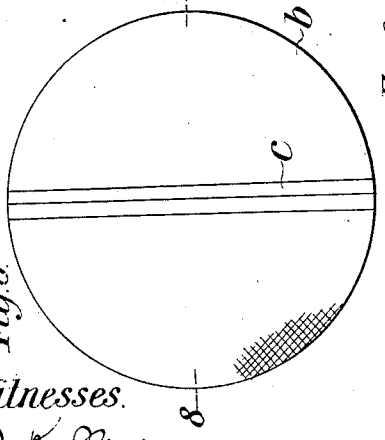


Fig. 6.

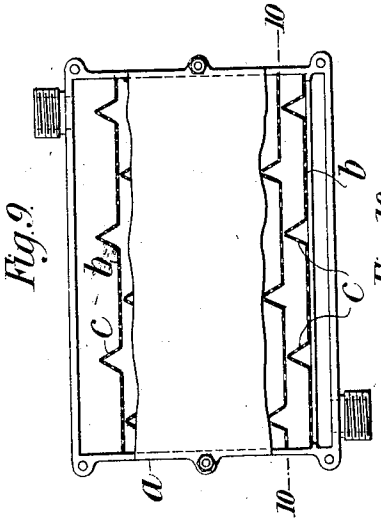


Fig. 9.

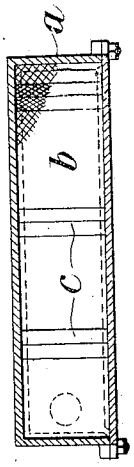


Fig. 10.

Witnesses.

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UNITED STATES PATENT OFFICE.

ARTHUR THOMAS WINBORN, OF CRUMLIN, WALES.

APPARATUS FOR USE BY PERSONS WORKING IN IRRESPIRABLE ATMOSPHERES OR UNDER WATER.

1,077,181. Specification of Letters Patent. Patented Oct. 28, 1913.

Application filed December 30, 1912. Serial No. 739,355.

To all whom it may concern:

Be it known that I, ARTHUR THOMAS WINBORN, a subject of the King of Great Britain, residing at Rescue Training Station, Crumlin, Monmouthshire, Wales, have invented new and useful Improvements in Apparatus for Use by Persons Working in Irrespirable Atmospheres or Under Water, of which the following is a specification.

This invention relates to apparatus designed for use by persons working in irrespirable atmospheres or under water and particularly to that class of self-contained rescuing and diving apparatus in which granulated caustic soda or caustic potash is used for regenerating air by absorbing the carbonic acid gas contained in the exhaled breath of the wearer of the apparatus and in which the caustic soda or potash is carried upon trays arranged in such a manner that the exhaled breath is caused to pass over or through the granulated caustic soda or potash in a radial, lateral or other direction.

The object of my invention is to simplify the construction of such apparatus and to this end I provide an apparatus comprising a casing or chamber of any suitable shape the said chamber being provided with a series of superposed wire-gauze trays having ridges which form passages for the exhaled breath the recesses or cavities between the ridges serving to hold the caustic soda or potash through and over which the exhaled breath is caused to pass.

To enable the invention to be fully understood, I will describe the same by reference to the accompanying drawing, in which:—

Figure 1 is a sectional elevation of one form of apparatus constructed according to my invention. Fig. 2 is a plan of one of the wire gauze trays shown in Fig. 1. Fig. 3 is a similar view indicating the position of a tray immediately above that shown in Fig. 2. Fig. 4 is a plan of a modified form of a tray. Fig. 5 is a plan showing the position of adjacent trays such as those shown in Fig. 4. Fig. 6 is a plan of a further modified form of tray. Fig. 7 is a plan of a tray for use with that shown in Fig. 6. Fig. 8 is a section on the line 8—8 of Figs. 6 and 7. Fig. 9 is a sectional elevation of a further modification of my invention. Fig. 10 is a section on the line 10—10 of Fig. 9, and Fig. 11 is a sectional elevation illustrating a further modified form of my invention.

Referring first to Figs. 1, 2 and 3 a is the casing or chamber which is here shown of a circular form and a^1 is a removable cover with which the casing is provided, the said cover being fixed in position by any suitable means. The bottom a^2 of the casing is also made removable. b, b are the wire-gauze trays fitting within the casing and provided with parallel ridges c, c forming passages the trays being so placed relatively to each other that the ridges of one tray are at right angles to those of each adjacent tray. d is a rod which passes through holes in the trays and serves to remove the whole of the trays from the chamber together. e, e^1 are the usual inlet and outlet fittings for the attachment of the apparatus to the breathing appliance. These fittings open respectively into the spaces f and g at the bottom and top of the casing.

In Figs. 4 and 5 I have shown a modified form of tray in which the ridges c, c are arranged radially.

Fig. 6 illustrates a further modified form of tray which has a single ridge extending from edge to edge and Fig. 7 shows a form of tray designed to be used with that shown in Fig. 6 in which two ridges, also extending from edge to edge, are employed and when placed in position the said ridges lie parallel to each other as shown in section at Fig. 8.

In Figs. 9 and 10 I have shown a rectangular form of apparatus in which the trays are arranged as shown in Figs. 6, 7 and 8.

The apparatus operates as follows, that is to say, the exhaled breath of the wearer enters through the fitting e to the space f, whence it passes upward through the wire gauze-trays being thoroughly distributed so that it comes into contact with a large surface of the caustic soda or the like and is thoroughly purified when it reaches the space g before leaving the apparatus through the outlet e^1.

Fig. 11 shows a modification of the arrangement shown in Figs. 9 and 10 which consists of a duplication of such arrangement, namely, two casings a and contained trays b, b, the said casings communicating with each other through a passage h so that the air to be regenerated entering through the inlet e at the bottom of the left hand

casing passes upward through the trays thence through the passage h to the lower part of the right hand casing whence it rises through the trays and leaves by the outlet e^1.

Claims—

1. In an apparatus of the kind described, the combination with a casing having an inlet and outlet, of a number of superimposed perforated trays having ridges forming passages for the exhaled air and containers for a purifying agent, the ridges of one tray being at right angles to those of each adjacent tray.

2. In an apparatus of the kind described, the combination with a casing provided with a removable top and bottom, an inlet provided in said bottom and an outlet provided in said top, of a number of superposed perforated trays having ridges forming passages for the exhaled air and containers for a purifying agent, the ridges of one tray being at right angles to those of each adjacent tray, and means connecting said trays whereby the trays may all be removed from the casing at one time.

3. In an apparatus of the kind described, the combination with a casing provided with an inlet and outlet, of a number of superposed perforated trays having ridges forming passages for the exhaled air and containers for a purifying agent.

4. In an apparatus of the kind described, the combination with a casing provided with an inlet and outlet, of a number of superposed wire gauze trays having ridges forming passages for the exhaled air and containers for a purifying agent between said ridges.

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