

Nov. 21, 1933.

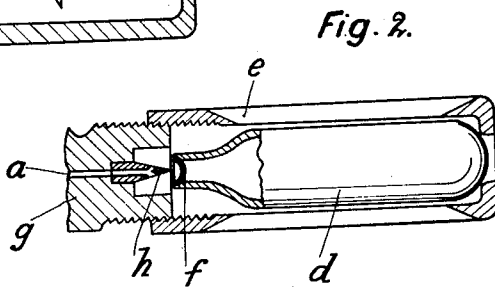
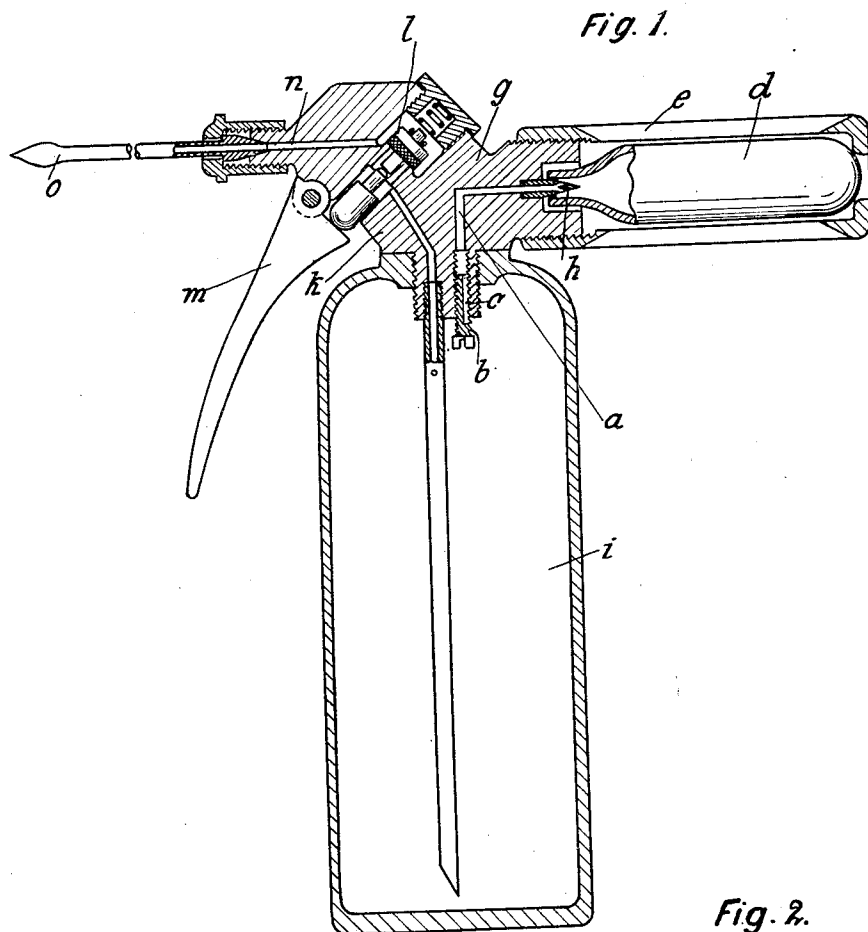
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1,935,973

HAND APPARATUS FOR MOUTH OR DENTAL TREATMENT

Filed June 10, 1929

2 Sheets-Sheet 1



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Fig. 3.

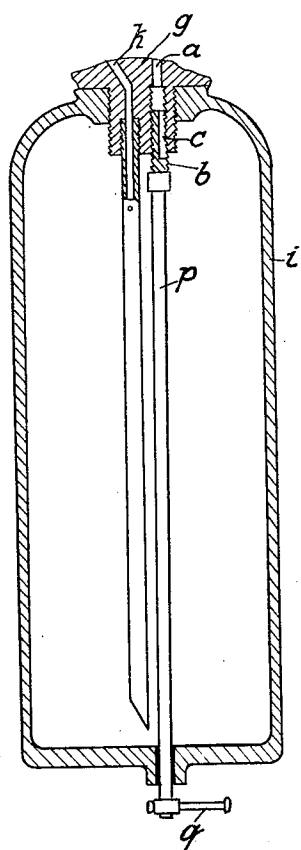
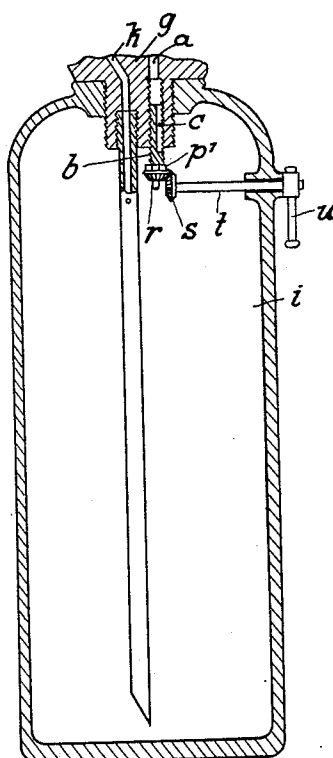


Fig. 4.



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UNITED STATES PATENT OFFICE

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HAND APPARATUS FOR MOUTH OR DENTAL TREATMENT

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in Germany March 18, 1929

3 Claims. (Cl. 299—95)

This invention relates to hand apparatus, more particularly for medicinal and dental purposes, in which a container for a treatment liquid is combined both with an atomizing nozzle and with a holder for a small bulb containing a pressure medium (carbonic acid gas, oxygen or the like), a so-called "sparklet bulb", in such a manner as to constitute a single apparatus capable of being held in the hand and conveniently applied by any person for private use.

In known devices of this kind the whole quantity of pressure medium, immediately after the sparklet bulb had been pierced, had been forced into the liquid container and, when opening the outlet had escaped very rapidly and completely through the nozzle, thus producing an effect which had lasted only for a few seconds. In contradistinction to this, the present invention is characterized in that throttling means are interposed in the passage leading from the sparklet bulb to the liquid container. The characteristic feature of the invention thus consists therein, that the relatively small quantity of the pressure medium contained in the bulb is consumed in an economical manner to last over an extended period. At the same time the contents may be withdrawn in definite doses.

These are various possible ways of carrying out the idea underlying the invention. According to one such way of carrying the invention into effect the passage leading from the sparklet bulb is capable of being closed, where it enters the liquid container, by a screw, the threaded part of which is provided with a groove, such that the flow of gas must force its way through the groove before passing into the container. According to how far the screw is inserted the pressure medium must travel along a greater or less length of the groove, so that by adjusting the screw the desired degree of throttling can be varied.

If the arrangement be such that the closing screw can be adjusted from the outside, measured quantities of the pressure medium may be withdrawn while the apparatus is in use, and the supply of pressure medium may be interrupted when the screw is displaced to such an extent that the groove is closed.

The invention is illustrated in the accompanying drawings, various constructional forms being shown diagrammatically.

Fig. 1 represents a cross-section through an arrangement, in which the screw inserted into the passage acts as a throttling device.

Fig. 2 shows a detail.

Figs. 3 and 4 are cross-sections through arrangements (the head parts being omitted), in which the screw inserted in the passage can be adjusted from the outside to act both as a throttling and as a dosing device.

In Fig. 1 the sparklet bulb *d* contains the pressure medium. The sparklet bulb is mounted within a casing *e* which is screwed onto the head *g* of the apparatus. At first, as shown in Fig. 2, the sparklet bulb is closed by the seal *f*. A piercer *h* is provided within the head *g*, said piercer being adapted to penetrate into the seal of the bulb *d*. The piercer *h* is provided with bores which inside of the head *g* of the apparatus merge into the passage *a* leading to the liquid container *i*.

At the end of the passage *a*, where it enters the liquid container *i*, the screw *b* is inserted, the threaded part of which has a longitudinal groove *c*, through which the gas must flow in order to reach the liquid container *i*.

Pressure medium and liquid pass through the siphon tube and its head *k* through an outlet valve *l* which is operated in a known manner by the trigger lever *m*. The mixture passes thence through the passage *n* into the atomizing nozzle *o*.

In Figs. 3 and 4, which for the rest correspond to Fig. 1, the screw *b* provided with the groove *c* is capable of being adjusted from the outside by suitable means.

In Fig. 3 the arrangement is such that the screw *b* is provided with an extension in the form of the rod *p* which passes through a gland in the bottom of the container. The rod *p* can be turned by the lever *q* in such a manner that the screw *b* will be inserted to a greater or less extent into the passage, so that, according to the depth to which the groove extends into the head of the apparatus, the pressure medium will be more or less throttled or, when the entire cross-sectional area of the groove is covered by the outer threaded portion, the admission of pressure medium will be entirely cut off.

The same effect is obtained with the arrangement shown in Fig. 4, the only difference being that the rod *p'* leads to a bevel wheel *r* which meshes with a second bevel wheel *s*. The shaft of this second bevel wheel also passes through a gland, but in the side wall of the liquid container *i* where it can be turned by the lever *u* in such a manner that the turning motion is transmitted over the bevel wheels to the screw *b* in the above sense.

I claim:

1. An atomizing apparatus for mouth and den-

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- tal purposes, comprising in combination a receptacle of such a size as to be adapted to be held in a hand; another receptacle smaller than the first-mentioned receptacle and adapted to hold a fluid under pressure; an attachable and detachable head on said first-mentioned receptacle and so designed as to allow of connecting the two receptacles with one another and having two passages, of which one is adapted to establish a communication between the interior of said two receptacles; an atomizing nozzle also projecting forth from said head and being connected with the interior of the first-mentioned receptacle by the other passage of the said head; an outlet-valve in this other passage; a screw inserted into the first-mentioned communication where this latter terminates into the said first-mentioned receptacle and having in its threaded portion a longitudinal groove for throttling the flow of the fluid under pressure according to the position of said screw, this latter being independent of said outlet-valve.
2. An atomizing apparatus for mouth and dental purposes, comprising in combination a receptacle of such size as to be adapted to be held in a hand; another receptacle smaller than the first-mentioned receptacle and adapted to hold a fluid under pressure; an attachable and detachable head on said first-mentioned receptacle and so designed as to allow of connecting the two receptacles with one another and having two passages, of which one is adapted to establish a communication between the interior of said two receptacles; an atomizing nozzle also projecting forth from said head and being connected with the interior of the first-mentioned receptacle by the other passage of the said head; an outlet-valve in this other passage; a screw inserted into the first-mentioned communication where this latter terminates into the said first-mentioned receptacle and having in its threaded portion a longitudinal groove for throttling the flow of the fluid under pressure according to the position of said screw, this latter being independent of said outlet-valve.
3. An atomizer for dental and medical uses comprising a sealed receptacle containing a medium under high pressure, a liquid container and an atomizing nozzle, means for securing the receptacle in fluid-tight relationship to the liquid container, means for unsealing the said receptacle and for providing a passage connecting the interior thereof with the interior of the liquid container, means arranged in said passage and partly obstructing the same and having means whereby the degree of said obstruction may be set to a proper value to cause the pressure medium to escape from the receptacle at any desired, pre-set, suitably low rate of flow, a tube extending from the interior of the container to the nozzle and a manually controllable valve arranged in said tube.
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