

W. M. RICHARDS.
 NASAL INHALER.
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1,009,180.

Patented Nov. 21, 1911.

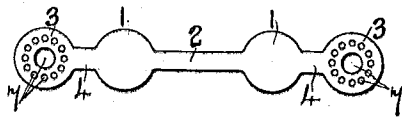


Fig 1.

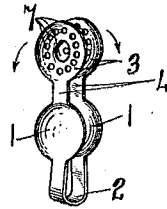


Fig 1a.

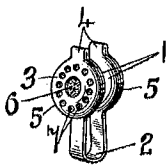


Fig 2.

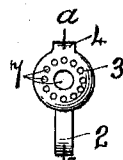


Fig 3.

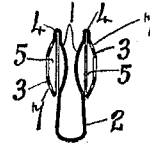


Fig 4.

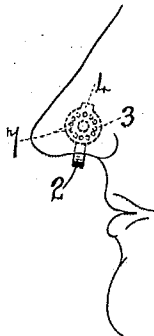


Fig 5.

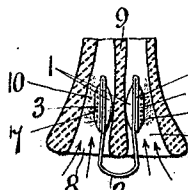


Fig 6.

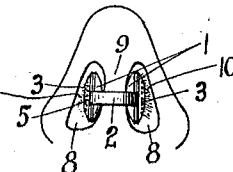


Fig 7.

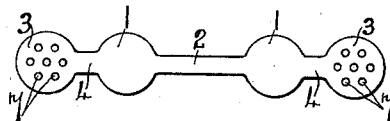


Fig 8.

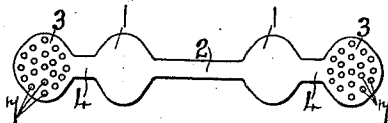


Fig 9.

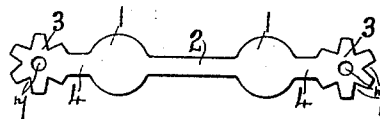


Fig 10.

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NASAL INHALER.

1,009,180.

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Application filed November 21, 1910. Serial No. 593,494.

To all whom it may concern:

Be it known that I, WILLIAM MARSDEN RICHARDS, subject of the King of Great Britain, residing at Leicester, in the county of Leicester, England, have invented certain new and useful Improvements in or Relating to Nasal Inhalers, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to nasal inhalers and has for its object the provision of an improved device for facilitating the inhalation of volatile matter.

15 The invention refers to an inhaler of the type adapted to be inserted into the nostrils and according to the preferred construction comprises two receptacles or containers to hold the volatile matter or medicament, the said containers being connected by a bridge 20 or spring member adapted to clip the device on to the septum of the nose.

The invention is only applicable to nasal inhalers which are intended for insertion into the nostrils and it does not concern inhalers or respirators which are used exteriorly.

25 The known forms of inhaling devices, upon which the present invention is an improvement, possess certain disadvantages, for example, the receptacles or containers 30 practically fill the nasal passages and consequently obstruct or interfere with respiration, and further the bulk of the ingoing air is compelled to pass through the receptacles and the medicament contained 35 therein, the result being that the passage of the cold air through the medicament does not facilitate, but rather retards volatilization of the latter. In these constructions 40 also it is to be observed that the nature of the receptacles and their arrangement within the nostrils does not permit sufficient heat to be conducted from the nose to the medicament to effect quick and ready volatilization 45 of the medicament, hence the inhaler has to be worn a considerable time before any benefit is experienced. These and other disadvantages are entirely obviated by the present invention as will be hereinafter described.

50 The improved form and construction of

an inhaler according to this invention provides for a maximum volatilization of the medicament, antiseptic, disinfectant, or like matter while additionally, the nasal passages are only obstructed to a minimum degree and the ingoing air is not drawn through the receptacles only but has a clear passage past the containers where it can mingle and combine with the volatile matter 60 as it is given off by the containers. The said containers are of a novel construction which render them capable of imparting considerable volatilization to the medicament or other substance, but at the same 65 time the volatile matter is held therein in such a manner that it cannot make contact with, or come into sufficiently close proximity to, the membrane or lining of the nose to irritate or otherwise affect it. 70

An important feature of this invention is that the improved device is constructed of a single piece of material, preferably stamped out at one operation and afterward fashioned or bent up to form the complete inhaler. 75

The inhaler is preferably made of a non-metallic substance or of material which is not liable to oxidation, rust or which will not be affected by the medicament or volatile matter 80 so that the membrane of the wearer's nose will not be liable to receive any injury or be irritated in any way by the presence of the device in the nostrils when it is in use. The receptacles or containers on the improved 85 inhaler are each in the form of a pair of disks or curved plates preferably concaved and located with their concavities opposite each other thereby forming a partial or complete 90 inclosure for the volatile medicament. The receptacles are arranged side by side on the connecting bridge and are inserted vertically into the nostrils the two inner disks gripping the septum of the nose. 95 Each receptacle may have a perforated and an unperforated side or disk the latter being located on the inside of the device to protect the membrane of the septum from the volatile matter. 100

When the device is in position in the nose a passage is left between the receptacle and

outer wall of the nostril, through which respiration may take place, and the unperforated disk of each container forms a heat conducting surface maintained in contact with the septum for the purpose of causing ready volatilization of the medicament or other substance which evaporates through the perforated sides of the containers and becomes impregnated with the ingoing air as the latter passes up the nostrils past the receptacles.

The invention will now be described in detail and in order that it may be clearly and readily understood reference will be made to the accompanying drawing, wherein:—Figure 1 is a plan view showing the cut out blank from which the improved device of this invention is subsequently formed. Fig. 1^a is a perspective view showing the blank partly fashioned or bent into shape. Fig. 2 is a perspective view of a complete inhaler. Fig. 3 is a side view thereof. Fig. 4 is a vertical front section taken on the line *a—b* of Fig. 3. Fig. 5 is a side view showing the inhaler in position in the nose for use. Fig. 6 is a vertical front sectional view of the nose showing the device of this invention in position therein. Fig. 7 is an underside plan view of the nose showing the inhaler in position in the nostrils. Figs. 8 to 10 show modifications in the formation of the receptacles or containers which will be hereinafter described. Fig. 5 is drawn to a smaller scale than the remaining figures and like parts are designated by the same reference characters throughout the drawing. In making the improved inhaler, one example of which is illustrated in Fig. 2, a blank (Fig. 1) is first stamped or cut out of sheet material, the nature of which latter will be hereinafter referred to. The said blank comprises two plain disks or plates 1, 1 joined by a central narrow member or connecting bridge piece 2, and two perforated or reticulated disks 3, 3 connected to the plain disks 1, 1 by short strips, tongues or intermediate bars 4, 4. The parts just described are located in alignment one with another and an important feature of the invention is that they are all integral so that the blank consists of a single piece of material.

The perforation of the disks 3 may be effected either simultaneously with the stamping out of the blank, and in the preferred construction the disks 1 and 3 are pressed or otherwise molded into a concavo-convex form this being accomplished in any suitable manner and either simultaneously with or subsequently to the stamping operation. Either or both the disks 1 and 3 may be concavo-convex section or otherwise bent so as to form the two sides of the receptacles or

containers of the inhaler and the bridge 2 forms the connecting member between the two receptacles.

The complete inhaler is fashioned or bent into proper form by hand or otherwise from the cut out blank and this may be effected in the following manner. The connecting bridge portion 2 may be first bent round so as to bring the convex or exterior faces of the disks 1, 1 and 3, 3 respectively face to face or opposite each other as shown in Fig. 1^a. The next step is to bend the bars 4 so that the perforated or reticulated disks 3 are brought outwardly and downwardly, as indicated by the arrows in Fig. 1^a, until they occupy a position face to face each with its respective plain disk 1 as shown in Figs. 2 and 4. Or alternatively the two disks 1 and 3 may first be placed into juxtaposition and the bridge 2 bent afterward. This completes the inhaler which then comprises the two receptacles or inclosures 5 arranged face to face and connected by the integral bridge piece 2 and each having an unperforated side 1 and a perforated side 3. An important point of the invention is that the two perforated disks 3 are located on the outside of the device so that the plain or unperforated disks 1 are on the inside and consequently these plain disks engage the septum of the nose and protect the membrane of the latter from the volatile matter contained within the receptacles. As clearly shown in Fig. 4, the concave disks 1 and 3 when brought together with their concave faces adjacent, form inclosures or cases of a preferably more or less flattened shape and these receptacles 5 may be filled with wadding, sponge, or any suitable padding or absorbent material 6 adapted to be saturated with liquid volatile matter.

Instead of the padding 6, the receptacles or containers 5 may contain solid or semi-solid volatile medicament, antiseptic, disinfectant or like material and the perforations or reticulations 7 in the disks 3 may be varied considerably in size and pattern if desired. The examples of perforations 7 illustrated in Figs. 1, 8 and 9 are particularly suitable when a liquid medicament is to be used on an inclosed pad or filling 6, while the style of reticulations 7 shown in Fig. 10 is better suited to a receptacle which is to contain solid material.

The reticulations shown in Fig. 10 are formed by notches in the circumferential edges of one or each of the disks or plates and when this construction is employed the perforations in the sides of the disk may be omitted, as the air entering the nostrils can pass between the edges of the disks and make contact with the medicament in the containers.

The configuration of the receptacles 5 may be varied by cutting out the disks 1 and 3 of different shapes such for example as elliptical, as shown in Fig. 9, and it is to be understood that the invention is not limited to any specific shape or style of blank either as regards the shape of the disks or the perforations in the same, except that for obvious purposes they should be curviform and not possess corners or angles which would be liable to injure the nose when the inhaler was being inserted or withdrawn.

The two sides 1 and 3 of each receptacle are preferably held together by the inherent spring or stiffness in the connecting bars 4 and the solid form of medicament may be inserted by raising the outer perforated disks 3 from the plain disks 1 or otherwise forcing them apart, the closing of the same being automatically effected by the resilient uniting member 4.

If desirable, the outer disk 3 may be secured to the inner disk 1 by cement or adhesive or by any other means, in which case the liquid volatile matter would be dropped on to the inclosed pad or filling 6 through the perforations 7.

In using the inhaler, the device is placed in position by inserting one receptacle or container 5 into each nostril 8, as shown in Figs. 6 and 7, the inhaler being kept in place by means of the connecting bridge piece 2 which forms a spring and causes the inner plain sides or disks 1 of the receptacles to lightly press or clip upon the opposite sides of the septum 9, the pressure being so slight that no discomfort is experienced by the wearer.

As clearly shown in Fig. 6, the inner unperforated sides only of the receptacles engage the septum of the nose and not only prevent the cartilage or nose lining from being irritated or injured by the medicament, but these faces act as heat conductors between the nose and the volatile matter in the cases 5 and thereby facilitate the volatilization of the medicament which takes place through the perforated outer sides 3 of the receptacles as represented in Figs. 6 and 7.

The position of the inhaler in the nose leaves a clear passage 10 up each nostril 8 for breathing purposes and as the ingoing air (represented by arrows in Fig. 6) passes up said passage it becomes impregnated with the evaporation from the matter contained in the receptacles for the purposes desired. The leaving of this passage is an important matter as when the inhaler fills the nostril, volatilization is retarded, and with blocked or obstructed nasal passages such an inhaler defeats its own object.

It is preferable that the inhaler should be

made of a non-metallic material or of a material which will not be liable to oxidation, rust or be affected in any detrimental manner by the volatile matter used in the receptacles. Celluloid or equivalent material is convenient and suitable for the construction of the improved device, but the latter may, in some instances, be made in gold, silver or the like.

A modified form of the device may be obtained by dispensing with one of the receptacles so that the inhaler consists of a single container for insertion into one nostril only. In this case the integral bridge piece would be adapted to clip on one side of the septum and the single receptacle on the opposite side.

While the conducting surface 1 of the container is shown in the drawings as convex, it may if desired be formed more or less flat so that a maximum heating and conducting surface is in contact with the warm cartilage of the septum, the object being to induce the speediest possible volatilization of the medicament in the container, this is especially advantageous in cases where solid matter is employed.

The present inhaler is exceptionally adapted for containing solid medicaments as they are retained therein until the last particle exists and not being open at the bottom as is characteristic of some inhalers the solid medicament after having partially evaporated or volatilized, the remnant, fragment or particle cannot drop through and fall out, which is a factor of some importance when sustained medication of the nasal orifice is desired during sleep. Further when solid medicament is employed the wall 1 need not necessarily be blind but may be finely perforated as the possibility of solid particles penetrating these perforations is rather remote.

Claims:

1. An inhaler formed of a single piece of material and comprising two receptacles each consisting of an inclosure or container formed by two adjacent disks and adapted to contain a pad or a filling or solid matter, the inner disks of each case being unperforated and attached to an integral connecting bridge the outer disk of each case being furnished with perforations or reticulations and connected by integral connecting bars to the inner disks, the receptacles being disposed relatively face to face on said bridge piece and adapted to occupy a position approximately parallel with and on opposite sides of the septum of the nose when in position for use and to clip thereon by the inherent spring of the connecting bridge piece substantially as described.

2. A nasal inhaler comprising a receptacle

or container for the medicament such container being formed of two curvilinear plates or disks united by a tongue or connection which maintains them in their closed
5 position and allows them to be sprung or forced open or apart to permit of the insertion or withdrawal of the medicament.

3. A nasal inhaler consisting of a central narrow member or bridge, a pair of plates
10 at opposite ends thereof and a short strip

located between and integrally uniting the members of each pair of plates, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM MARSDEN RICHARDS.

Witnesses:

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O. J. WORTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
