MEDICAMENT HOLDER FOR NASAL INHALERS

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MEDICAMENT HOLDER FOR NASAL INHALERS

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In certain known types of medicament vaporizers such, for example, as the nasal inhalers described and claimed in my prior application, Serial Nos. 665,965, and my U. S. Patent No. 1,986,247 of January 1, 1935, it is usual to provide a tube or cup as a container or holder for the medicament and to provide electrical means to heat said tube or cup for the purpose of vaporizing the medicament contained therein.

Heretofore the medicaments used in vaporizers of the character referred to usually have been either in the form of a liquid, a powder or a salve, placed either directly in the cup or constituting the impregnating medium of an absorbent cartridge or the like suitably supported within the tube or cup. Now, in order to obtain various advantages respecting packaging and handling of the medicaments, as well as to avoid various disadvantages respecting the use of medicaments of the nature mentioned, it is proposed to supply the medicaments in disk-like solid form.

When a medicament disk is placed within the tube or cup of a vaporizer and is subjected to heat it becomes a liquid prior to being vaporized and must, therefore, be controlled, especially if the container is of the open-bottom design wherein medicament impregnated cartridges have heretofore been used. On the other hand, even in vaporizers where the medicament holder is of closed bottom, cup form it is desirable to provide at the bottom of the cup a pad to absorb the liquid rather than to permit the same to collect directly in the bottom of the cup as otherwise, if the vaporizer should be tilted, there might be danger of the liquid escaping from the cup either into the interior or to the exterior of the vaporizer.

Accordingly, the general object of the present invention is to provide novel means for suspending an absorbent element and a superimposed medicament disk within the tube or cup of a medicament vaporizer so that when the disk is melted and becomes a liquid it is absorbed by the absorbent element and therefore is controlled against flow no matter in what position the vaporizer may be held. Moreover, by the provision of means for suspending an absorbent element and a superimposed medicament disk within the tube or cup of a vaporizer there is obtained the additional important advantage that the absorbent element, when removed from the tube or cup of a vaporizer, may be utilized as a swab for cleaning the tube or cup, thus eliminating any necessity of providing separate tubes or cups as containers or holders for medicaments of different kinds, particularly since an absorbent element individual to each medicament disk may be furnished and used at little or no expense and because the use of such elements avoids the leaving of any residue of medicament within a vaporizer.

Other more particular but special objects of the invention are to provide a simple, inexpensive holder for an absorbent element and a superimposed medicament disk, which holder is of such construction that the absorbent element and medicament disk may readily and easily be placed therein or thereon and equally as readily removed therefrom, and which includes means engageable with the absorbent element in a manner to cause the same to positively be moved into and from the tube or cup of a vaporizer with the holder when the latter is inserted into and removed therefrom.

With the foregoing and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the provision of a holder having the novel features of construction, combination and arrangement as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings, wherein are illustrated different practical embodiments of the invention and wherein like characters of reference denote corresponding parts in related views:—

Figure 1 is a central, longitudinal section through a nasal inhaler of known type illustrating the use therewith of one form of holder constructed in accordance with the invention.

Figure 2 is a view similar to Figure 1 illustrating another known type of nasal inhaler and the use therewith of another form of holder constructed in accordance with the invention.

Figure 3 is a perspective view of the holder shown in Figure 1.

Figure 4 is a perspective view of the holder shown in Figure 2; and

Figures 5, 6, 7 and 8 are perspective views illustrating other forms of the holder.

Referring first to the embodiment of the invention illustrated in Figs. 1 and 2 of the drawings, A designates, generally, a nasal inhaler which is of a type illustrated in my prior application, Serial No. 665,965, and which includes a casing 10 containing a tube 11 open at its top and bottom, an electrical heating coil 12 su-
rounding said tube, and a removable cap 13 closing the upper end of said casing and provided with ducts 14 for the escape of medicament vapors from the tube 11.

The holder illustrated in Fig. 1 and more in detail in Fig. 3 and designated generally as B is formed in the present instance from a single length of wire and comprises a pair of vertical portions 15, 16 which terminate at their upper ends in substantially a ring 16 which is horizontally disposed, and which, near their lower ends are bent first outwardly as at 17, thence downwardly as at 18, thence inwardly as at 18, and thence outwardly as at 16 and finally inwardly as at 15 in a horizontal plane to provide a cage-like structure b at the top of which is constituted by the portions 17, the sides of which are constituted by the portions 18, 19 and the bottom of which is constituted by the oppositely disposed, reversely bent horizontal portions 20, 21 and the portions 19.

As illustrated in Fig. 1 of the drawings, the top of the casing 10 is provided with an annular channel 22 to accommodate the substantially ring-like formation 16 at the top of the holder B and the cap 13 is provided with a shoulder 23 to overlie said ring-like formation 16 thereby to maintain the holder operatively positioned within the inhaler with the cage-like formation 15, 16, 17, 18, 19 of the holder disposed within the tube 11. The wire from which the holder is formed is resilient and the sides 18, 19 of the cage-like structure b preferably are spaced apart normally by an amount slightly in excess of the internal diameter of the tube 11 so that the sides of said cage-like structure which are sprung together when the holder is inserted into the tube 11, spring outwardly against the walls of said tube following insertion of the holder and thereby prevent undesirable lateral movement of the holder within the tube. However, when the cap 13 is removed the holder is readily removable simply by grasping and pulling on the handle-like formation thereof constituted by the loop or ring-like portion 16 and the legs 15, 18.

Before inserting the holder into the tube 27 an absorbent disk-like pad 24 of cotton or other suitable material is placed within the cage-like structure b and upon said pad is placed a medicament disk 25, both the pad and the medicament disk being confined between the bottom of the cage-like structure and the top thereof constituted by the arms 17. Thus, upon insertion of the holder the pad and medicament disk are positively carried by the holder to an operative position within the tube 11, and upon removal of the holder the pad is positively withdrawn therefrom. In this connection it is pointed out that the normal diameter of the pad preferably is in excess of the internal diameter of the tube so that upon insertion of the pad the same becomes slightly compressed and whereby, upon removal of the holder and the pad, the latter acts as a swab to wipe and clean the tube 11.

The drawings illustrated a holder B' which also is formed from a single length of wire and which is generally similar to the holder illustrated in Figs. 1 and 2, but which embodies a slightly different specific construction.

As illustrated in Fig. 5 the holder B' comprises a single vertical leg 15', a ring-like formation 16' at the top of said leg corresponding to the ring-like formation 16 of the Figs. 1 and 2 embodiment of the invention, and a cage-like structure b' at the bottom of said leg formed by bending the wire first outwardly as at 17', thence downwardly as at 18', thence inwardly as at 18', thence into S-form as at 19', thence outwardly in alignment with the portion 19' as at 19', thence upwardly as at 19'' and finally inwardly as at 17''. As is understood, of course, the holder B' is used in the same manner as the holder B.

Referring to the embodiment of the invention illustrated in Figs. 3 and 4 of the drawings, A' designates, generally, a nasal inhaler which is of the type illustrated in U.S. Patent No. 1,892,247, and which includes a casing 10 containing a medicament cup 11' open at its top and closed at its bottom, an electrical heating coil 12' surrounding said cup, a removable cap 13' closing the upper end of said casing and provided with ducts 14' for the escape of medicament vapors from the cup 11', and an air supply tube 26' within and coaxial with said cup.

The holder B' illustrated in Figs. 2 and 4 is in all respects similar to the holder B illustrated in Figs. 1 and 3 except that, instead of providing a ring-like formation at the top thereof to be confined between the top of the casing and the cap, the upper ends of the legs 15', 15'' are joined together by a substantially semi-circular loop 18' which, in the inserted position of the holder within the cup 11', embraces an upper end portion of the air tube 26' and thereby serves to hold the holder properly positioned within the cup.

Of course, used in the same manner as the holders illustrated in Figs. 1, 2 and 5, a large ring-like formation at the top thereof for cooperation with the casing being not required because the cup 11' is closed at its bottom and thereby serves as a stop to limit insertion of the holder. However, whereas the pads and medicament disks 24, 25 used with the holders illustrated in Figs. 1, 2 and 5 are specially formed for use with an inhaler as illustrated in Fig. 1, it is apparent that the holder shown in Fig. 3 may be used with an inhaler as illustrated in Fig. 2.

Referring to the Fig. 6 embodiment of the holder, it will be observed that the same comprises a tube 27 to be telescoped over the air supply tube 26, and a disk-formation 28 at the bottom of said tube 27 constituting a support for the absorbent pad and the medicament disk which are intended to be slipped downwardly over the tube 27 prior to insertion of the holder within the cup 11'. Struck from the disk 28 is a tongue or tongues 29 to engage and hold the absorbent pad against said disk, thus to cause the pad to be positively moved downwardly with the holder into the cup 11'. The disk 28 may or may not be perforated as desired. Preferably it is perforated so that in the event of any medicament falling away to the bottom of the cup 11', the medicament vapors may rise freely to the top of said cup.

As in the Figs. 6 embodiment of the invention, the holder illustrated in Fig. 7 comprises a tube 27' and a perforated disk 28' near the bottom thereof. However, instead of the disk 28' being provided with pad retaining tongues as in Fig. 6, an exteriorly threaded, short tubular formation 30 depends from said disk 28' as a pad engaging and holding means.

In the Figs. 6 and 7 embodiments of the invention the tubes obviously serve as handles to
facilitate insertion and removal of the holders. Referring to the embodiment of the invention illustrated in Fig. 8, it will be observed that the holder is formed from a single length of wire and comprises, as in the Figs. 1 to 4 embodiments of the invention, a pair of vertical legs 15°, 15° which are joined together at their upper ends by a substantially semi-circular loop 16° and which, at their lower ends, are extended first outwardly, as 31, at substantially right angles to the plane of the legs 15°, 16° and then are extended circumferentially and upwardly as at 32, being terminated in finishing eyelets 33. Thus, there is provided at the bottom of the holder a cage-like formation 32, the bottom of which is constituted by the wire portions 31 and the top of which is constituted by the terminal end portions of the circumferentially and upwardly directed portions 32. An absorbent disk having a central opening or a central slit or slits is slidable over the loop 16° and downwardly along the legs 15°, 15° until it comes to rest upon the portions 31, whereupon its marginal portions may be tucked under the terminal ends of the portions 32 to operatively mount the disk on the holder for vertical movements therewith; or, instead of tucking the marginal portions of the disk under the terminals of the portions 32, pressure may be exerted upon the legs 15°, 15° to squeeze them together and to thereby spread the portions 32, 32 apart, so that when the disk is slid to a position against the portions 31, subsequent release of the pressure upon the legs 15°, 15° and consequent return of said legs to their normal parallel or substantially parallel relationship as shown, results in the terminals of the portions 32 being moved inwardly into overlying relationship to the disk.

While a pad and a superimposed medicament disk may be used with the holder shown in Fig. 8 in the same manner as with the other forms of the holder, the holder illustrated in Fig. 8 is especially designed to hold a single absorbent disk which has been impregnated with a medicament. It will be observed that a feature of practical importance in carrying forward the invention is to provide and maintain an air circulating passage throughout the casing, the same being provided at what may be termed its lower end with an air inlet or inlets I and at what may be termed at its upper or nozzle end with air outlets 14 through the nozzle part. Also as a part of the air circulation feature the medicated cartridge or disk 25, as well as the absorbent and swabbing pad 24 (when used) are provided with air passages p therethrough permitting the air to freely circulate and become medicated as it passes through the casing to the point of use.

Furthermore, it will be understood that the medicated disk or cartridge 25 may be employed alone and without the absorbent pad 24, if desired. Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. A medicament element holder for use with a nasal inhaler of the type comprising a casing open at one end and provided with a removable cap and containing electrical heating means and a cup within said heating means having a central air tube; said holder comprising a stem engageable with said tube to hold the holder operatively positioned within the inhaler and to serve as a handle for inserting and removing the holder when the casing cap is removed, and medicament element supporting means at the inner end of said stem.

2. A medicament holder as set forth in claim 1 in which the stem of the holder comprises a pair of wires engageable with opposite sides of the air tube of the inhaler.

3. A medicament holder as set forth in claim 1 in which the stem of the holder is of tubular form for telescopic engagement over the air tube of the inhaler.

4. A medicament element holder for use with a nasal inhaler of the type comprising a casing open at one end and provided with a removable cap and containing a hollow electrical heating element; said holder comprising a stem, a ring-like formation at the top of said stem to be confined between the open end portion of the casing and the cap to support the holder within the hollow heating element of the inhaler, and medicament element holding means at the inner end of said stem of cage-like form open at its sides for insertion and removal of the medicament element.

5. A holder of the character described comprising a single length of wire bent to form a stem, a finger grip formation at one end of said stem, and a cage-like formation at the other end of said stem, said cage-like formation being open at its sides for insertion and removal of an article and having end portions for engagement, respectively, with the ends of the article so that when the holder is moved longitudinally in either direction the article is positively moved longitudinally therewith.

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