H. A. KAYSAN.

NOZZLE FOR SYRINGES AND THE LIKE.

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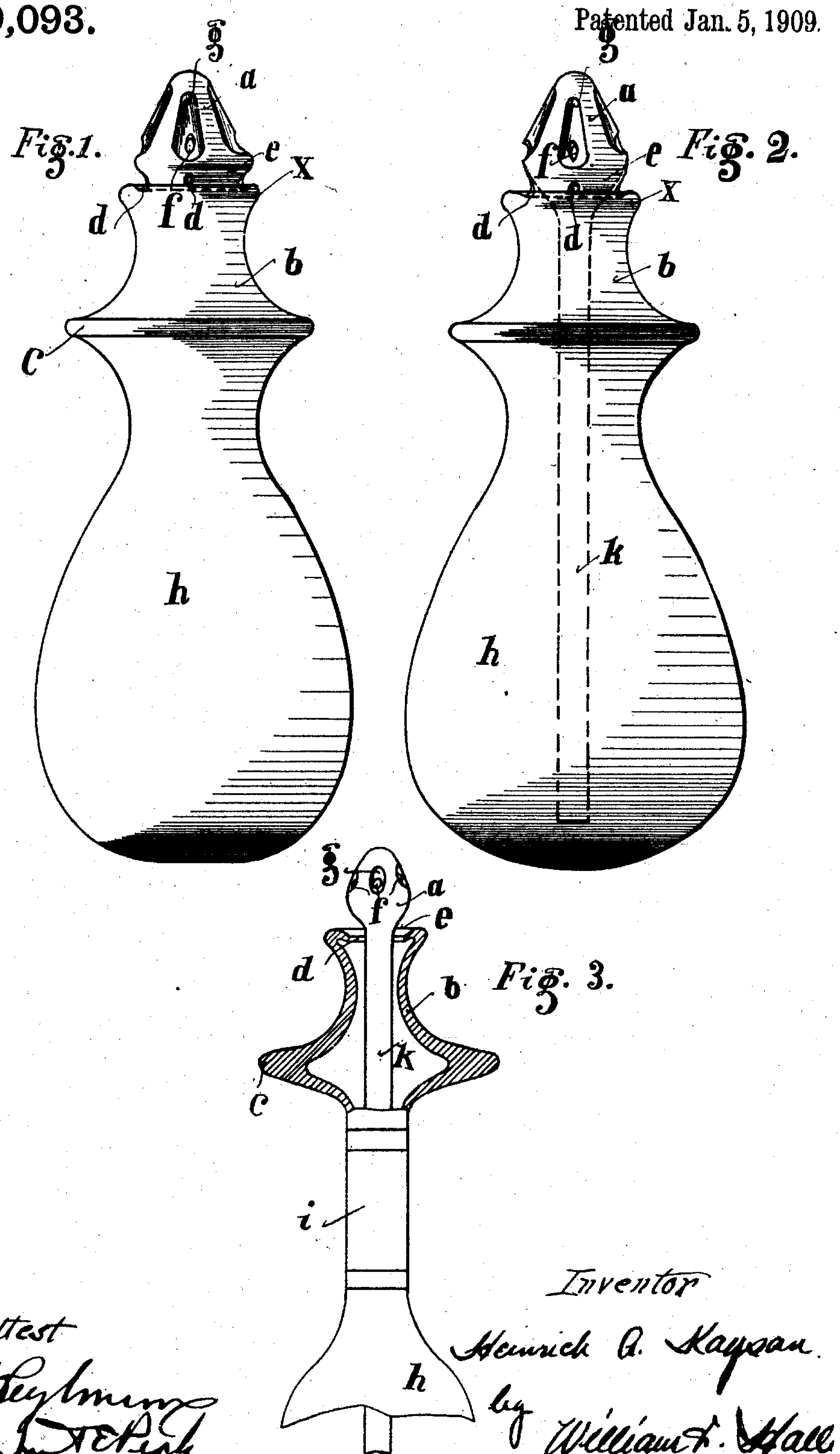
909,093. Patented Jan. 5, 1909.



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HEINRICH AUGUST KAYSAN, OF CASSEL, GERMANY.

NOZZLE FOR SYRINGES AND THE LIKE.

No. 909,093. Specification of Letters Patent. Patented Jan. 5, 1909.

Original application filed January 11, 1907, Serial No. 351,775. Divided and this application filed June 26, 1907. Serial No. 380,979.

To all whom it may concern:

Be it known that I, HEINRICH AUGUST KAYSAN, subject of the Emperor of Germany, residing at Cassel, in the Empire of Germany, have invented certain new and useful Improvements in Nozzles for Syringes and the Like, of which the following is a specification.

My invention relates to nozzles for syringes and the like, which nozzles are adapted to be inserted into the orifices to be treated and to close the passage therefrom. The nozzles are provided with a cone at one end, a large collar at the other end and a small collar intermediate the two ends, the neck between the two collars being adapted to receive the mouth of the orifice. The nozzles may be provided with separate orifices for the introduction and for the discharge of the liquid. The construction of the nozzles may be varied according to the circumstances.

This application is a divisional one covering subject matter divided out of my copending application, Serial No. 351,775 filed January 11, 1907.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation of a nozzle in combination with a compressible liquid reservoir, both parts being made in one piece and forming a syringe, Fig. 2 is an elevation of a modification of the same, an internal tube being added, Fig. 3 shows partly in section a modified nozzle, a part of a liquid reservoir and a connection between them, these parts being made separately.

Fig. 1 illustrates a syringe made in one piece with the nozzle and both made from any suitable flexible material. The nozzle comprises a large collar *c*, a small collar *x* and a conical part *a*. Between the two collars *c* and *x* a neck *b* is formed in which the mouth of the orifice to be treated can engage. Preferably a neck *e* is formed between the collar *x* and the conical part *a* and in this neck *e* several perforations *d d* are disposed, through which the liquid can be expelled from the syringe *h* into the orifice. The conical part *a* is provided with several suitable recesses *g* in which perforations *f* for the return of the spent liquid are disposed. For operating this syringe, its nozzle is so introduced into the orifice to be treated, that the mouth of the latter engages in the neck *b*, when the inner surface of the orifice will in general cover the neck *e* and parts of the cone *a* and its recesses *g*. If necessary, the syringe *h* may be gently pressed on the mouth of the orifice while it is being compressed in the usual manner for forcing out the liquid through the holes *d* and *f* into the orifice. The liquid passing through the holes *d* will force its way through between the cone *a* and the inner surface of the orifice. On releasing the syringe it will expand and produce a vacuum in the groove *e*, so that the inner surface of the orifice will bear on the collar *x* and the rim of the cone *a* and thus prevent the liquid from passing from the orifice. The several recesses *g* however being but partly covered, the liquid will be permitted to return from the respective cavity through the remaining perforations *f* to the syringe *h*.

Where so preferred, the admission orifices *d* may be divided from the discharge orifices *f* by means of a tube *k* indicated at Fig. 2, so as to force out fresh liquid from the syringe *h* and to return the spent liquid to the rear part of the syringe and to store it up there.

The nozzle and the syringe may be made separately, more particularly if they are to be made from different materials. In this case for example the nozzle shown at Fig. 3 may be made from ebonite or the like and the liquid reservoir *h* from soft india rubber. The two parts may be connected by means of a suitable connection *i*, which may be straight as shown or bent and may be made from a stiff or a flexible material. The cone *a* is shown as made separate from the remaining part of the nozzle and made in one piece with the tube *k*, so that the several admission perforations *d* in Fig. 2 are replaced by an annular orifice *d* shown. The lower end of the tube *k* may in a known manner be made to normally close and to open only if liquid is sucked in from the respective cavity. Or it may be provided with an automatically closing valve of any known construction. Thereby the fresh liquid is prevented from passing through the tube *k* and mixing with the spent liquid. The tube *k* shown in Fig. 3 may be secured in the liquid reservoir *h* in any known manner.

The nozzles described may be connected

with the liquid reservoirs either direct as in vaginal syringes or by means of connections (hoses and the like) as in irrigators.

I claim.

1. In a syringe, a nozzle comprising an apertured cone at one end and an enlarged collar at the other end, a neck adjacent the collar adapted to receive the orifice of the part to be treated an intermediate collar adjacent the cone, and a reduced apertured portion between said intermediate collar and cone, said parts being formed integral of flexible, elastic material.

2. In a syringe, a nozzle comprising an apertured cone at one end and an enlarged collar at the other end, a neck adjacent the collar adapted to receive the orifice of the part to be treated, an intermediate collar adjacent the cone, and a reduced apertured portion between said intermediate collar and cone, said parts being formed integral of flexible, elastic material and a liquid receptacle connected to said enlarged collar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HEINRICH AUGUST KAYSAN.

Witnesses:

HANS HEDERICH,

RICH. FRANK.