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SYRINGE DEVICE

Filed Nov. 21, 1960

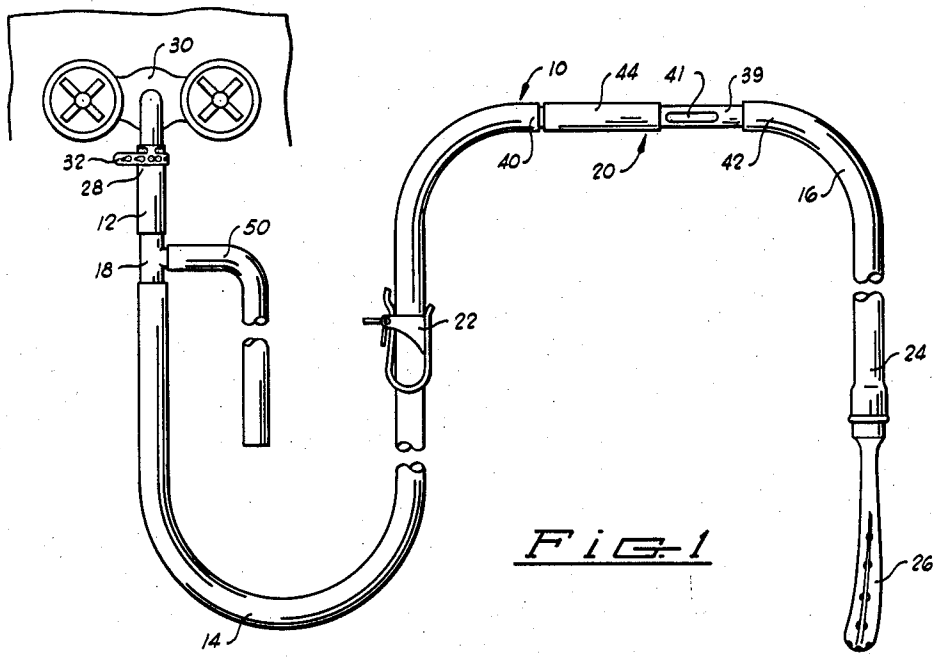


Fig. 1

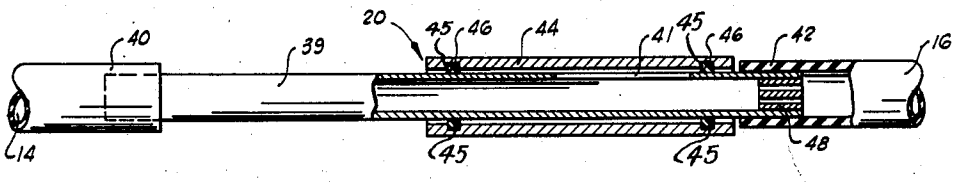


Fig. 2

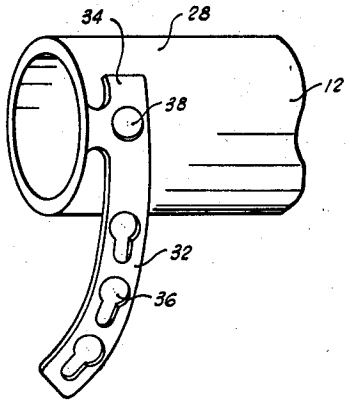


Fig. 3

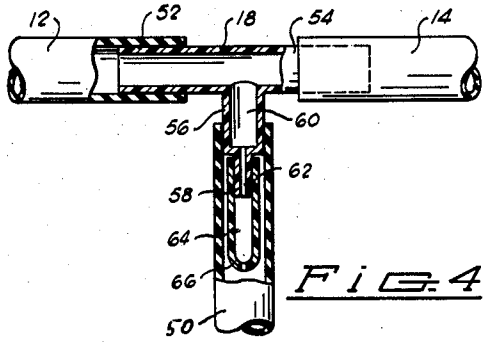


Fig. 4

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SYRINGE DEVICE

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The present invention relates to syringes of the type utilized to introduce liquids into the vaginal and rectal openings of the human body. More particularly, but not by way of limitation, the present invention relates to improvements in syringes of the type which are adapted to be connected to water faucets and the like and to facilitate the introduction of aqueous solutions of certain medicaments to the interior of the body.

Syringes of the type having a discharge head or nozzle upon one end of an elongated, tubular member, and having a fitting on the other end of the tubular member for connecting the syringe to a faucet or the like are well known. Such syringes generally have some form of container for a medicament inserted in the tubular conduit between the end of the conduit which is connected to the faucet and the end which is provided with the discharge or applicator nozzle. Water from the faucet is directed through the medicament container before being applied to the internal organs of the body via the applicator nozzle, so that the medicament is introduced into the body in the form of a rather dilute aqueous solution. Syringe devices of this type, as known to the prior art, have, however, been characterized by at least two undesirable features which have reduced the scope of their acceptance and usage. First, it has previously been cumbersome and time-consuming to properly position the medicament in the medicament chamber preparatory to using the syringe. Additionally, no adequate means has been provided for controlling the pressure at which the medicated solution is discharged into the body, and this lack of control sometimes makes the use of the device extremely painful.

The present invention relates to improvements in syringes of the type described. A particularly important feature of the invention is the incorporation in such a syringe of a novel medicament chamber which permits the medicament to be easily and quickly placed in the path of flow of the water from the faucet to the applicator nozzle of the syringe.

Another important feature of the present invention is the provision of means for controlling the pressure of the solution discharged from the syringe into the body, thereby avoiding injury to the internal organs which might otherwise result from the development of excessive discharge pressure. The pressure control means of the invention comprises a bypass conduit connected to the main tubular conduit of the syringe. The bypass conduit has disposed therein a simple but effective pressure responsive valve, which opens in response to a predetermined maximum pressure to permit a substantial portion of the water from the faucet to be diverted through the bypass conduit.

The present invention also contemplates a novel means for securing the tubular conduit of the syringe device to a water faucet. The securing means comprises a strap of resilient material which is secured at one of its ends to the outer periphery of that end of the tubular conduit which is to be secured to the water faucet. The strap is characterized by a plurality of spaced apertures along its longitudinal axis and is provided with a relatively rigid button at its end secured to the periphery of the tubular conduit. It is thus possible to press the end of the tubular conduit over the water faucet and then hold it securely in place by wrapping the resilient strap around the faucet and inserting the button through one of the spaced apertures.

It is accordingly a major object of the present invention to provide a syringe of the type utilized to introduce an aqueous solution of medicament into the vaginal and rectal openings of the body, which device may be quickly and easily attached to a water faucet or the like and retained securely thereon during operation of the device.

Another object of the present invention is the provision of a medicament-containing chamber in a syringe of the type described which may be quickly and easily opened to permit the placement of a desired medicament in the chamber, and which may be quickly closed following such placement.

A further object of the present invention is to provide a syringe for introducing an aqueous solution of a desired medicament interiorly of the body, and which is characterized by a simple and effective pressure control means for preventing the pressure of the introduced solution from exceeding an optimum value.

Another object of this invention is to provide a simply constructed syringe assembly which is simple to use, will have a long service life and may be economically manufactured.

These advantages and objects will be more clearly understood, and other objects and advantages will become apparent from a reading of the following disclosure, in conjunction with a perusal of the accompanying drawings which illustrate my invention.

In the drawings:

FIGURE 1 is a view in elevation of the syringe of the present invention.

FIGURE 2 is a detailed view of the medication chamber of the syringe device of the present invention. Certain parts of the device have been broken away to better illustrate the construction of the medication chamber and its relation to other elements of the device.

FIGURE 3 is a perspective view of the flexible strap utilized to secure one end of the syringe to a water faucet or the like.

FIGURE 4 is a detailed view with certain portions removed to show the manner in which the bypass conduit is secured to the remainder of the syringe device.

Referring now to the drawings in detail and particularly to FIG. 1, the syringe device of the present invention is designated generally by reference character **10**. The syringe device **10** comprises first, second and third tubular conduits **12**, **14** and **16**, with conduits **12** and **14** being interconnected to each other by means of a T fitting **18** and with conduits **14** and **16** being interconnected to each other by means of a medication chamber **20**. A suitable clamp **22** is located upon a medial portion of the conduit **14** to facilitate the interruption of the flow of water through the syringe. The syringe device **10** is fitted at one of its ends **24** with a suitable discharge head or applicator nozzle **26**. The other end **28** of the syringe device **10** is pressed over a water faucet **30** and is secured thereto by means of a resilient strap **32**.

As shown in FIG. 3, the resilient strap **32** is secured at one of its ends **34** to the outer periphery of the end **28** of the tubular member **12** and is characterized by a plurality of spaced apertures **36**. The apertures **36** are of a size and configuration to permit them to be engaged by a rigid button **38**, which is affixed to the strap **32** near its end **34**. It will be apparent that to secure the end **28** of the syringe device **10** to a water faucet or the like, the end **28** of the tubular member **12** is pressed over the faucet and the resilient strap **32** is wrapped tightly around the faucet with the button **38** engaging one of the apertures **36**. The tension in the resilient strap **32** may thus be varied to alter the tenacity with which the syringe device **10** is retained upon the faucet **30** by simply changing the aperture **36** which is engaged by the button **38**.

The novel medication chamber 20 of the present invention is illustrated in detail in FIG. 2. The chamber comprises an elongated, rigid tubular member 39 which is characterized by an axially extending slot 41 in its peripheral wall. The ends of the medicament chamber 20 are inserted in the ends 40 and 42 of the tubular conduits 14 and 16, respectively, so that the medicament chamber forms a bridge or splice between these two tubular members. A rigid, elongated tubular sleeve 44 is positioned around the medicament chamber 20 and is sufficiently larger in inside diameter than the outside diameter of the medicament chamber that the sleeve 44 may slide freely in an axial direction with respect to the medicament chamber. The sleeve 44 defines a pair of annular grooves 45 adjacent each of its ends in which are located a pair of annular sealing rings 46. The distance separating the sealing rings 46 is greater than the dimension of the slot 41 measured in an axial direction along the medicament chamber 20 so that the rings 46 provide an effective barrier preventing the escape of water or medicament through the slot 41 to the outside of the syringe device when the sleeve is in its closed position as shown in FIG. 2. It will be noted that the slot 41 is of such dimensions that a medicament in the form of a tablet or capsule may be inserted through the slot into the medicament chamber 20 when the sleeve 44 is moved to the position shown in FIG. 1.

A suitable foraminous plug 48 is pressed into the end of the medicament chamber 20 which is inserted in the conduit 16. The plug 48 prevents the medicament tablet or capsule from moving downstream in the syringe 10 under the influence of water pressure, and thus assures that ample opportunity is afforded for the medicament to become properly dissolved in the water prior to the discharge of the medicated solution through the applicator nozzle 26.

In syringe devices of the type with which the present invention is concerned, it is necessary to provide means for maintaining the pressure of the medicament solution which is ejected from the applicator nozzle 26 below a certain maximum value in order to avoid injury or pain to the person using the device. For this purpose a bypass conduit is usually provided to accommodate a portion of the flow of water from the faucet when the pressure of the water in the syringe increases above the desired maximum limit. Such a bypass conduit is provided in the present invention and is indicated by reference character 50. The conduit 50 is secured around the third end of the T fitting 18, and may be constructed of a flexible material to permit it to be led to a sink or other suitable location for the disposal of water which is bypassed therethrough.

A novel pressure control means is provided in the present invention for maintaining the discharge pressure of the syringe within optimum limits, and is best illustrated in FIG. 4 of the drawings. The pressure control means may be said to generally comprise the T fitting 13, having opposed ends 52 and 54 which are connected to the tubular conduits 12 and 14, respectively, and a third end 56 which has a tubular projection 58 extending therefrom, and which is characterized by a large diameter bore 60 communicating with a small diameter counterbore 62 formed in the tubular projection 58. A nipple 64 is pressed over the tubular projection 58 in a tight frictional fit and is partially closed at its end opposite the end connected to the tubular projection 58 by converging lips 66. The nipple 64 is preferably constructed of a plastic material and the lips 66 are made sufficiently resilient to permit the opening in the end of the nipple 64 to be enlarged as the pressure of the water in the syringe increases. The degree of resiliency of the lips 66 is preferably such that the maximum volume of water ordinarily delivered by a standard household water faucet will not result in the development of a discharge pressure at the applicator nozzle 26 in excess of 25 p.s.i.g.

From the foregoing description, it will be apparent that the present invention provides a syringe which may be safely utilized when connected at one of its ends to a standard household water faucet for the purpose of applying a solution having medicinal properties internally in the body. The novel medicament chamber of the syringe is designed to permit solid medicaments of varying sizes and shapes to be quickly and easily inserted in a stream of aqueous diluent without the occurrence of undesirable leakage of solution from the medicament chamber during use of the device. The syringe of the invention may be quickly and easily attached to, or detached from, the discharge end of a standard household water faucet, and the device is provided with a simple and effective means for preventing the development of excessive discharge pressure at the applicator nozzle of the syringe.

Changes may be made in the location and arrangement of parts or elements as heretofore set forth in the specification and shown in the drawings, it being understood that changes may be made in the precise embodiment disclosed without departing from the spirit and scope of the invention as defined in the following claims.

I claim:

1. A syringe for dispensing medicated water from a faucet, comprising a first flexible tubular conduit having first and second ends; means secured to said first conduit adjacent its first end for adjustably constricting the bore through said first flexible tubular conduit when said first end is pressed over a faucet; a bypass tube in communication with and branching off said first conduit from a medial portion thereof; pressure responsive control means in said bypass tube adapted to permit the flow of a quantity of water therethrough when the pressure exceeds a predetermined value; a second flexible tubular conduit having first and second ends; a tubular chamber telescoped into said second end of said first tubular conduit and said first end of said second tubular conduit to splice said conduits together, said chamber having a slot in one wall thereof to facilitate the insertion of a medicament in said chamber; a generally cylindrical sleeve around said chamber and axially slidable on said chamber to cover and uncover said slot; a pair of spaced sealing rings around said chamber between said sleeve and said chamber; said sealing rings being adapted to prevent the medicated water from flowing through said slot when said cylindrical sleeve is covering said slot; and a nozzle on said second end of said second tubular conduit.

2. A syringe for dispensing medicated water as claimed in claim 1 wherein said pressure responsive control means includes a pressure responsive nipple in said bypass tube, said pressure responsive nipple having a bore therethrough, and having a resilient portion partially closing said bore adjacent one end of said nipple.

3. In a syringe of the type utilized for injecting a medicament into the vaginal and rectal openings of the body having a delivery tube for delivering water from a faucet to such openings and adapted to be connected at one of its ends to a faucet, an improved container for the medicament to be injected comprising an elongated tubular chamber spliced into the delivery tube of said syringe, said tubular chamber having a slot in the peripheral wall thereof to permit said medicament to be inserted in said tubular chamber; a foraminous plug in the bore of said tubular member adjacent the end thereof fartherest removed from the faucet; a sleeve around said tubular member and axially slidable relative thereto; and a pair of sealing members mounted on the internal periphery of said sleeve and bearing against the outer periphery of said chamber, said sealing members being spaced from each other by a distance which is greater than the dimension of said slot measured axially along said chamber.

4. A syringe comprising a first flexible tubular conduit having a first end and a second end; a strap of resilient material secured at one of its ends to the periphery of said first tubular conduit adjacent said first end and having a plurality of spaced apertures therein; a button on said strap adjacent its point of securement to said first tubular conduit; a second flexible tubular conduit having a first end and a second end; a plastic T-fitting joining the second end of said first conduit to the first end of said second conduit; a pressure responsive nipple on the third end of said T-fitting, said nipple having converging resilient lips at one end thereof adapted to be opened away from each other upon the impress of a predetermined hydraulic pressure thereto; a bypass tube secured around the third end of said T-fitting and enclosing said pressure responsive nipple; a third flexible tubular conduit having a first end and a second end; a rigid tubular chamber partially inserted in the second end of said second conduit and partially inserted in the first end of said third conduit to splice said second and third conduits together with a portion of said tubular chamber remaining exposed, said chamber having a slot in one wall thereof to facilitate the insertion of a medicament in said chamber; a sleeve around said chamber and axially slidable on said chamber between said second and third tubular conduits to permit said slot to be opened and closed by said sleeve; a pair of annular sealing members mounted on the internal periphery of said sleeve and bearing against the outer periphery of said chamber, said sealing members being spaced from each other by a distance which is greater than the dimension of said slot measured axially along said chamber; and a discharge head on said third tubular conduit at its second end.

5. A syringe for dispensing medicated water from a faucet, comprising a first flexible tubular conduit having first and second ends; means secured to said first conduit adjacent its first end for adjustably constricting the bore through said first flexible tubular conduit when said first end is pressed over a faucet; said means including a strap of resilient material secured at one of its ends to the periphery of said first tubular conduit and having a plurality of spaced apertures therein, and a button on said strap adjacent its end secured to said first tubular conduit and projecting radially outward from the periphery of said first tubular conduit whereby said first tubular conduit may be attached to a faucet by sliding said first end thereof over the faucet and encircling said first end with said band under tension; a bypass tube in communication with and branching off said first conduit from a medial portion thereof; a second flexible tubular conduit having first and second ends; a tubular chamber telescoped into said second end of said first tubular conduit and said first end of said second tubular conduit to splice said conduit together; said chamber having a slot in one wall thereof to facilitate the insertion of a medicament in said chamber; a generally cylindrical sleeve around said chamber and axially slidable on said chamber to cover and uncover said slot; a pair of spaced sealing rings around said chamber between said sleeve and said chamber, said sealing rings being adapted to prevent the medicated water from flowing through said slot when said cylindrical sleeve is covering said slot; and a nozzle on said second end of said second tubular conduit.

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