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DEVICE FOR INTRA-CAVITARY INFUSION OF LOCAL ANESTHETIC  
AGENT OR OTHER MEDICINAL SOLUTIONS  
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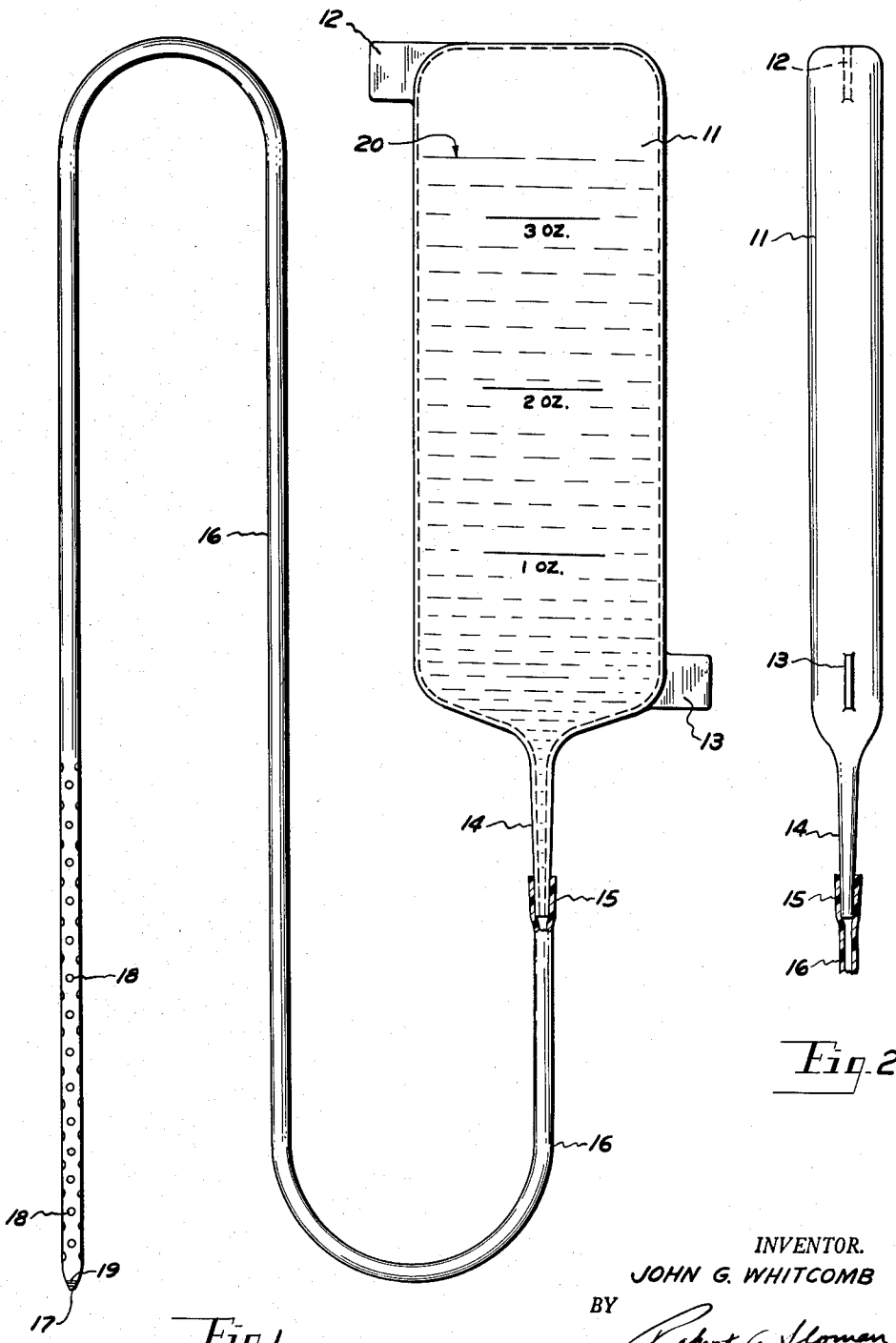


Fig. 1

Fig. 2

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**DEVICE FOR INTRA-CAVITARY INFUSION OF  
LOCAL ANESTHETIC AGENT OR OTHER ME-  
DICINAL SOLUTIONS**

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1 Claim. (Cl. 128—232)

This invention relates to a device for intra-cavitary (i.e., surgical wound, stomach, etc.) infusion of a local anesthetic agent or other medicinal solutions for post-operative pain relief and for other purposes. More particularly the present invention is directed to such infusion device operated by the patient for the intermittent self-administration of these fluids.

Heretofore various means have been employed in post-operative situations for the application from time to time of pain relief or other drugs, normally requiring the attention of a doctor or a nurse. It is an object of the present invention to provide a local anesthetic infusion device for surgical wounds and for use in conjunction with post-operative pain relief, and by which the said drugs may be self-administered by the patient.

It is a further object of the present invention to provide a local anesthetic infusion device in the nature of a flexible plastic container, containing the local anesthetic in conjunction with a flexible tube connected with the container and having a series of outlets which are placed into juxtaposition with respect to the surgical wound so that upon slight manual pressure to the walls of the container intermittent infusion of the anesthetic may be achieved by the patient for the self-administration of anesthetic as needed for elimination or prevention of post-operative pain.

It is another object of the present invention to incorporate in the present infusion device an elongated flexible tube, which is suitably apertured adjacent its one end or free end, and which is adapted for projection into the surgical wound at the time of the operation, and provides a means by which the patient may apply as desired an intermittent quantity of local anesthetic of moderate or long acting character and which does not require the attention of a nurse or physician.

Another object of the present invention is to provide a local anesthetic infusion device with means by which the same may be carried by the patient and preferably mounted upon the patient's garment. This has the further advantage of providing means for the self-administration of pain-relieving drugs from time to time so that the patient is not necessarily confined to his bed, but may move about taking the anesthetic infusion device with him.

It is another object to provide a device of this type for intra-cavity infusion of medicinal solutions generally.

These and other objects will be seen from the following specification and claim, in conjunction with the appended drawing in which:

FIG. 1 is a front elevational view of the present infusion device.

FIG. 2 is a fragmentary side view thereof.

It will be understood that the above drawing illustrated merely a preferred embodiment of the invention and that other embodiments are contemplated within the scope of the claim hereunder set forth.

Referring to the drawing, the present infusion device includes the preferably elongated flexible container 11 of a suitable plastic material, such as polyethylene, which is chemically and biologically inert, which has laterally projecting from at least one end thereof a securing tab 12 by which the container may be attached to some portion of the patient's garment or surgical dressing, using a safety pin or other clipping device.

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A second fastening tab 13 is employed as shown in the drawing, which normally projects laterally from the opposite end of container 11 for additionally mounting the container immovably upon the garment or surgical dressing of the patient.

Container 11 includes an elongated outlet 14, adapted to receive a suitable closure. Apertured fitting 15 for communication with the interior of said container, fits over outlet 14 and has connected thereto an elongated flexible tube 16, or sterile tubing, of a suitable plastic material, also chemically and biologically inert, for transmission of the fluid in said container.

Tube 16 is normally closed at its opposite end as at 17 and has molded or otherwise provisioned upon the interior of the said tube as at 19 an X-ray responsive marker, or lead compound. The advantage of this construction is that an X-ray or fluoroscope taken of the patient will indicate the presence or absence of the end portion 19 of the tube within the surgical wound, and also to verify its complete withdrawal when its purpose has been served.

Adjacent the free end 17 of the tube there are provided through the walls of said tube a series of longitudinally and variably spaced outlet apertures 18, by which the fluid medium 20 stored within the container 11 may be dispensed.

In the normal operation of the present device, the apertured end of the tube corresponding to the outlets 18 is projected into the surgical wound at the time of the operation and at a level corresponding with the main nerve trunks and retained therein by the skin stitching to provide a means whereby upon manual application, or squeezing of the container 11 by the patient, a means is provided for the self-administration of a local anesthetic 20 within the said container.

Novocain is illustrative of one local anesthetic agent which may be employed at 20 within the container. Of course other local anesthetic agents may be employed, which are moderate to long acting and which provide a means whereby, as the patient feels the need therefor, intermittent squeezing of the flexible container 11 will cause the said local anesthetic to be infused through the outlets 18 into portions of the operative or surgical wound for the relief of post-operative pain.

It is contemplated as a part of the present invention that the fluid 20, may in addition to containing an anesthetic agent, contain one or more of the additional following anti-microbial agents; antibiotics, such as Penicillin, Bacitracin, etc., or chemotherapeutic agents, such as the sulfonamides.

It is contemplated also as a part of the present invention that the local anesthetic agent may be omitted entirely and there may be stored within the flexible container 11 one or more of the agents, such as antibiotics, chemotherapeutic agents, or other medicinal solutions for periodic, intra-cavitary, self-administration by the patient, or when indicated by an attendant, merely upon manual squeezing of the plastic container 11.

The present infusion device may have additional applications, such as:

(1) Tubing placed in a surgical wound as for anesthetic administration but a plain, sterile reservoir filled by the physician with an appropriate solution selected by the physician (i.e., ½ hydrogen peroxide and ½ sterile saline) and then this system used for intermittent wound irrigation as prophylaxis or treatment of wound infection.

(2) Tubing placed into stomach via the nasal or oral route in the manner of the conventional stomach tube, i.e., Levin tube. The plain reservoir can then be filled with appropriate medicine, i.e., Maalox, Gastralame, etc., and this attached to the gastric tube to allow intermittent gastric instillation of the anti-acid or other medications.

The same arrangement, with a larger reservoir, could

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be filled with liquefied food (made in a Waring Blendor) and this used as a feeding system for patients unable to partake of food in the normal manner.

(3) A system as described in #2 could be placed via the nasal, oral, or surgically via a gastrostomy or feeding jejunostomy and used to instill either food or medication into the small intestine.

(4) The tubing could be passed through the anus so as to have the openings in the colon, or more specifically, the rectum. An attached reservoir would then supply either medicinal solutions, anesthetic agent, or food such as glucose solutions (feeding by clysis).

(5) Intra-peritoneal placement of the tube could be accomplished at the time of surgery done for infection in the abdominal cavity or in cases where cancer cells were thought to be free in the peritoneal cavity. The tube could also be placed in a percutaneous manner via a large needle or trochar introduced through the abdominal wall with the aid of local anesthesia. Medicinal solutions could then be introduced on a treatment plan to combat infection or spread and implantation of cancer cells.

It is contemplated as a part of the present invention that a flexible plastic material is employed for the container which has the resilient characteristic of reassuming its original shape after it has been squeezed. These are often referred to in the trade at present as "squeeze bottles," or the like.

The present invention may be sterile-packaged and stored in doctor's clinics and hospitals where it is available for use and permits a means for intermittent patient operated local anesthetic infusion into surgical wounds for the primary purpose of post-operation relief.

The advantage of the present invention also resides in the fact that instead of large doses of anesthetic given by a nurse at infrequent intervals for the relief of "high" pain, it is possible to maintain a very low pain level, and accordingly use a less strong anesthetic in a manner which permits the patient to administer the same from time to time with a minimum of effort to thus prevent the pain from ever rising to a high level.

A further advantage lies in the fact that the attendance of a nurse or physician is not required for the applica-

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tion of the anesthetic from time to time, but on the other hand, a means is provided by which the patient may administer the local anesthetic intermittently as desired merely by manually squeezing the walls of the container **11**, or applying pressure thereto.

Another advantage of the present invention is that the patient is free to move about without disconnection of the apparatus, as the same is connected directly to a garment on the patient, as distinguished from other infusion devices which are mounted upon standards, and which must be disconnected from the patient by the nurse or physician, if the patient wants to move around.

The present invention also has the further advantage of providing a means by which additional sterile reservoirs may be made available for substitution with a used reservoir, and wherein the tube need not be removed from the patient's wound.

The local anesthetic agent referred to may be one-half to one percent solution of a moderate to long acting local anesthetic agent, for illustration.

The present device is so constructed that the fluid in the container will not flow by gravity, but will flow on the other hand only when the container **11** is squeezed by the patient.

Having described my invention, reference should now be had to the following claim.

I claim:

An infusion device comprising an elongated flexible container having an outlet, an apertured fitting on said outlet, mounting tabs joined to and projecting from the container, an elongated flexible tube connected at one end to said fitting and perforated at the outer with many side perforations, such end of the tube being formed to be projectible into a surgical wound and containing an X-ray responsive marker.

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