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SYRINGE FOR MEDICAL AND DENTAL PURPOSES

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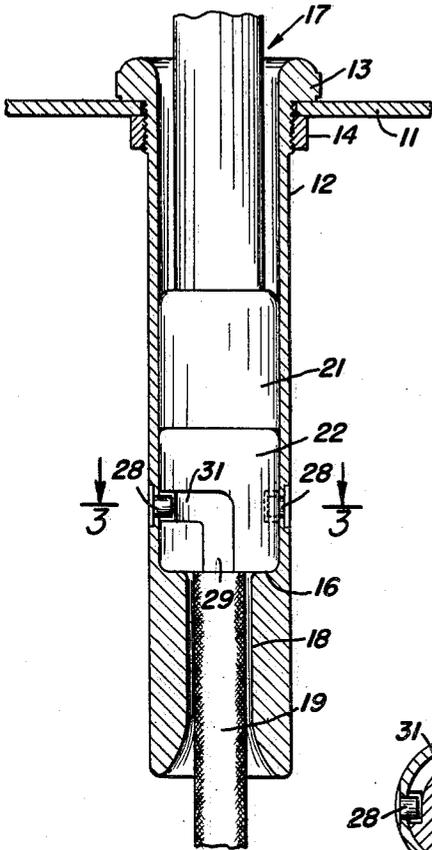


FIG. 1.

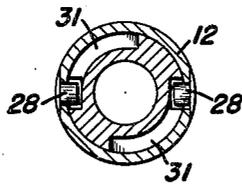


FIG. 3.

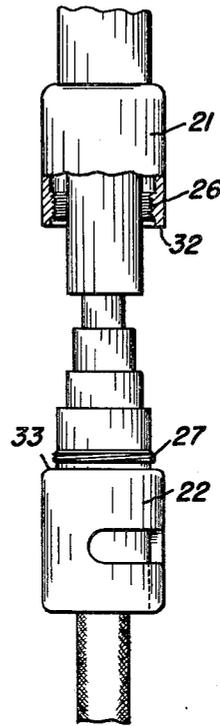


FIG. 2.

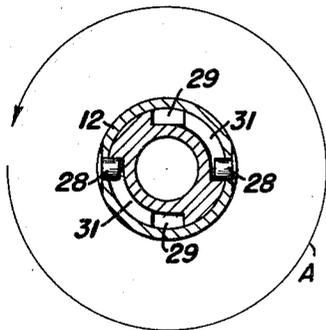


FIG. 4.

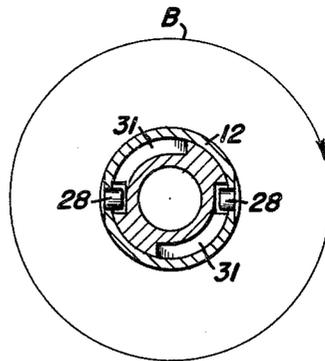


FIG. 5.

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SYRINGE FOR MEDICAL AND DENTAL PURPOSES
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 6 Claims. (Cl. 128—247)

This invention relates to syringes such as are used by the medical and dental profession and more particularly to a sterilizable handle for such syringes.

It has heretofore been the practice in the medical field, particularly the dental branch thereof, to provide dental units with a syringe to enable the dentist to spray the tooth being operated upon with farm water or an atomized spray of water. Such syringes are usually mounted in a dental unit and have a handle including a nozzle which should be sterilized between successive patients. The handle and nozzle in such syringes are removable from the sterilizer body and placed in a steam sterilizer or autoclave.

The syringes of the type described above have been uniformly made so that in order to separate the handle from the syringe body, it was necessary to hold the syringe body with one hand and unscrew the handle. After sterilizing the handle and nozzle, the handle was screwed back on the sterilizer body again requiring a two-hand operation. Thus, the hands of the dentist, washed between patients, can become contaminated by contact with the unsterilized syringe body even though the handle and nozzle have been sterilized. Germs can thus be carried from one patient to another.

An object of my invention is to provide a simple, convenient and inexpensive syringe construction wherein the handle and nozzle may be sterilized and replaced on the syringe body without the necessity of the dentist handling the syringe body.

A further object of my invention relates to the provision of means for enabling the dentist to sterilize the handle and nozzle of a syringe without grasping the syringe body.

More specifically, my invention contemplates the provision of a releasable lock between the syringe body and the syringe holder or socket and a releasable lock between the syringe handle and the syringe body, the two locks being so constructed and arranged that the syringe may be used in the normal manner when in use in connection with a patient but in which, in the act of removing the handle from the sterilizer body, the releasable lock between the syringe body and the socket is automatically established so that the dentist may remove the handle with the use of one hand, and after sterilization, may replace the handle on the syringe body with a one-hand operation, in which operation the releasable lock between the syringe body and the socket is automatically disestablished and the syringe restored for normal use without the necessity of the dentist handling the syringe body.

Other objects and advantages of my invention will be particularly set forth in the claims and will be apparent from the following description, when taken in connection with the accompanying drawings, in which:

FIG. 1 is a vertical view showing a syringe mounted in the socket or holder of a dental unit, the socket being shown in section;

FIG. 2 is a vertical view of the syringe with the handle part and nozzle in a partly removed position with respect to the syringe body;

FIG. 3 is a sectional view taken substantially on the line 3—3 of FIG. 1 in the direction indicated by the arrow but with the syringe body unlocked with respect to the socket;

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FIG. 4 is a sectional view similar to FIG. 3 showing the position of the parts when the syringe body is locked with respect to its holder or socket and indicating by the arrow the direction of rotation of the handle part when the parts are rotated from the unlocked condition of FIG. 3 to the unlocked condition of FIG. 4; and

FIG. 5 is a view similar to FIGS. 3 and 4 showing the direction of rotation, after the handle has been sterilized, during replacement of the handle in assembled relation with the syringe body.

In Bronk Reissue Patent No. 24,087 originally filed December 9, 1950, and issued October 5, 1954, there is disclosed a so-called dental unit or equipment stand in which the device of my invention may be installed. In that patent there is disclosed a number of dental instruments one of which is a syringe. Syringes of the type with which my invention is concerned are also employed in some branches of the medical profession and may be mounted in units or equipment stands or cabinets of constructions other than shown in the above mentioned Bronk patent.

In the drawings I have shown a carrier plate 11 which may be mounted in a dental unit. The plate customarily supports a number of sockets or holders 12. The sockets may be carried by the plate 11 in any suitable manner, for example, by the flange 13 and the nut 14.

The holder 12 is cylindrical in cross-section and is provided at its lower end with a portion of decreased diameter to form a shoulder 16 upon which the syringe, generally indicated by the numeral 17, seats when it is not in use by the dentist. Below the shoulder 16 a passage 18 is provided through which a cable 19 passes. As is well understood in the art, the cable is flexible and provided with retractable means which normally retains the syringe in the seated position on the shoulder 16. In the case of a syringe, the cable 19 carries air and water tubes or passages.

The syringe, generally indicated by the numeral 17, comprises a handle part 21 and a syringe body part 22, both of which are cylindrical in cross-section and preferably of the same diameter. The body part 22 carries the usual valve and switch which have not been shown since they are conventional, well-known in the art to which this invention applies and do not constitute part of the present invention. The cable 19, carrying the air and water tubes, is also rigidly secured to and in the syringe body 22 and the air and water tubes are connected to tubular means extending through the syringe body 22, the handle 21 to the nozzle (not shown) located at the end of the handle.

As shown in FIG. 2 the handle part 21 has threads 26 formed interiorly thereof adapted to be received on threads 27 formed exteriorly on the syringe body part 22.

The holder or socket 12 adjacent the bottom thereof has preferably a pair of pins 28 projecting inwardly beyond the interior wall thereof. The syringe body 22 has a pair of bayonet slots formed therein which include the usual vertical slots 29 and the usual horizontal slots 31. The bayonet slots 29—31 preferably are provided with considerable clearance with respect to the pins to enable convenient entry of the pins in the slots. It is, however, desirable that the handle part 21 and the body part 22 be arranged for threaded assembly so that in normal use, these parts constitute a rigid assembly.

In normal use of the device, the parts are located in the position shown in FIGS. 3 and 5 with the pins 28 in registry with the vertical portions 29 of the bayonet slots. With the pins in this position the handle 21 may be grasped and pulled out for use on a patient against the action of the retractable flexible hose 19. At the termination of work on a patient the dentist usually washes his hands and desires to sterilize the handle 21. For this

purpose he grasps the handle and rotates it in a counter-clockwise direction as indicated by the arrow A. This action rotates the syringe as a whole until the pins 28 engage the ends of the slots 31. The threads 26 and 27 extend in a direction such that when the pins engage the ends of the slots 31, continued rotation of the handle unthreads the handle from the syringe body part 22 and the handle and nozzle may be sterilized in a sterilizer or autoclave in the usual manner. From the foregoing, it will be apparent that the handle 21 may be removed from the body part 22 of the syringe with one hand and the body part remains in the socket locked against axial movement. It is unnecessary for the dentist to grasp the body part 22.

After the handle and nozzle have been sterilized the handle may be replaced and moved into assembled relation with the body part 22 by threading the handle onto the body part. When the lower end of the handle part 21 engages the upper face 33 of the body part 22, continued rotation of the handle part rotates the body part 22 in a clockwise direction, as indicated by the arrow B in FIG. 5, so that the parts are restored to the position indicated in FIGS. 3 and 5 wherein the pins 28 are in registry with the vertical portions 29 of the bayonet slots.

It will now be appreciated that the dentist can sterilize the handle and nozzle without contaminating his washed hands by contact with the non-sterilized syringe body part 22. Moreover, the operation can be carried out with one hand and, after sterilization of the handle part and rotation of the parts to the position of FIGS. 3 and 5, the syringe is ready for use in the normal manner merely by grasping the handle and pulling it outward against the action of the retractable flexible hose 19. The shoulder 16 forms a seat or stop for the syringe and its location with respect to the pins 28 insures that when the syringe is seated on the shoulder 16 the pins will lie at the tops of the slots 29 and in registry with the slots 31.

While I have shown and described the preferred form of my invention, it will be apparent that various changes and modifications may be made therein without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. The combination of a socket rigidly mounted in a dental unit support; and a dental syringe slidably receivable axially in said socket; said syringe including a syringe body part having air and water connections and a detachable sterilizable handle part; means between said parts for releasably locking them together; said parts being movable in relation to each other to a handle part releasing position; means between said socket and said syringe body part for releasably locking said socket and said syringe body part together against movement of said body part axially; said pair of locking means cooperating to move said syringe body part to a locked position, relative to said socket, in response to said parts being moved to said handle part releasing position, thereby enabling removal of said handle part for sterilization purposes while the body part remains in the socket.

2. A syringe construction in accordance with claim 1 wherein the locking means between the socket and the

body part is a pin and groove connection, with the pin being carried by one of the mating walls of the socket and body part, and the groove connection being on the other of the mating walls.

3. A syringe construction in accordance with claim 1 wherein the locking means between the handle part and the body part is a threaded connection, and movement of the handle part to unthread it from the socket automatically locks the body part with respect to the socket.

4. A syringe construction in accordance with claim 1 wherein the locking means between the socket and the body part is a bayonet type lock and the locking means between the handle part and the body part is a threaded connection, said parts being threaded in a direction for moving said bayonet lock to a locked position upon rotation of the handle part in an unthreading direction, to enable removal of the handle part by the use of one hand while the body part remains in the socket.

5. The combination of a socket rigidly mounted in a dental unit support; and a dental syringe slidably receivable axially in said socket; said syringe including a substantially cylindrical syringe body part having air and water connections and a substantially cylindrical handle part having threaded connections to the body part; means for releasably locking said body part in said socket against withdrawal of said body part axially from said socket; said locking means being normally in a released position when the syringe is to be removed from the socket for use; said handle part being unthreaded from the body part when the handle part is to be sterilized; and said locking means being moved to a locked position in response to relative rotation between said parts in a direction of unthreading the handle part, thereby preventing removal of the body part; and the handle part has been sterilized, threading of the handle part back into the body part moves said locking means to said released position.

6. The combination of a socket rigidly mounted in a dental unit support; and a dental syringe slidably receivable axially in said socket; said syringe having a body part carrying air and water connections and a detachable handle part telescopically mating with said body part; locking means between said parts releasably locking them together upon relative rotational movement between said parts; and locking means between said socket and body part for automatically locking said body part in said socket upon relative rotation between said body and handle parts to an unlocked position and for automatically unlocking said body part from said socket upon relative rotation between said body and handle parts to a locked position.

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