

Sept. 26, 1967

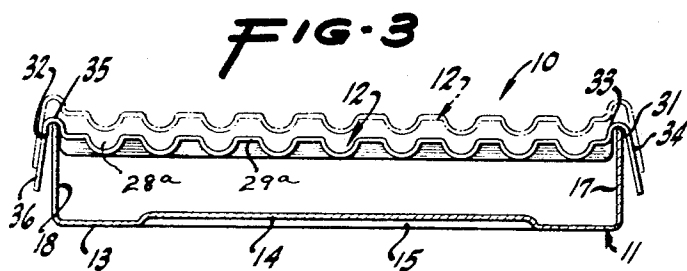
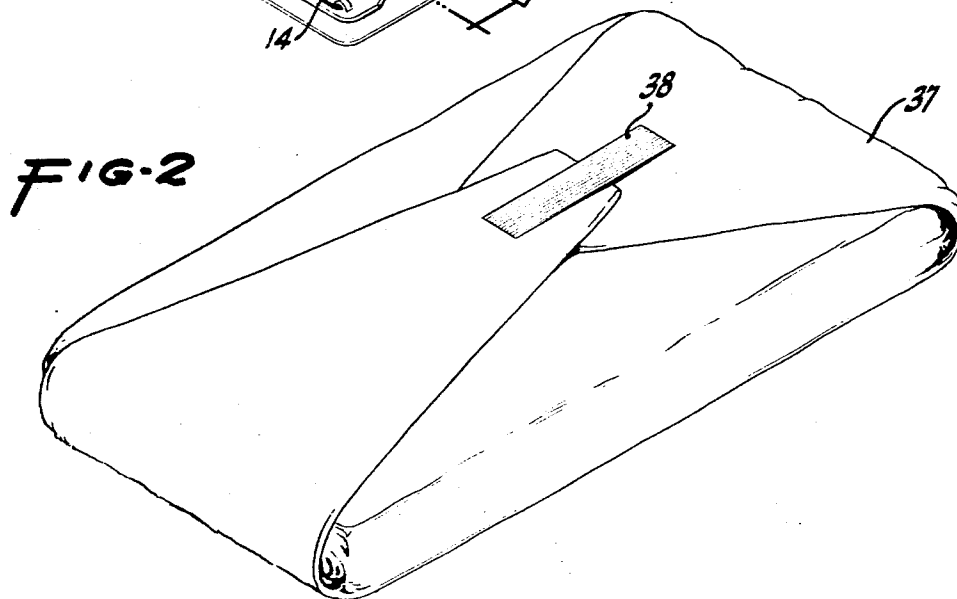
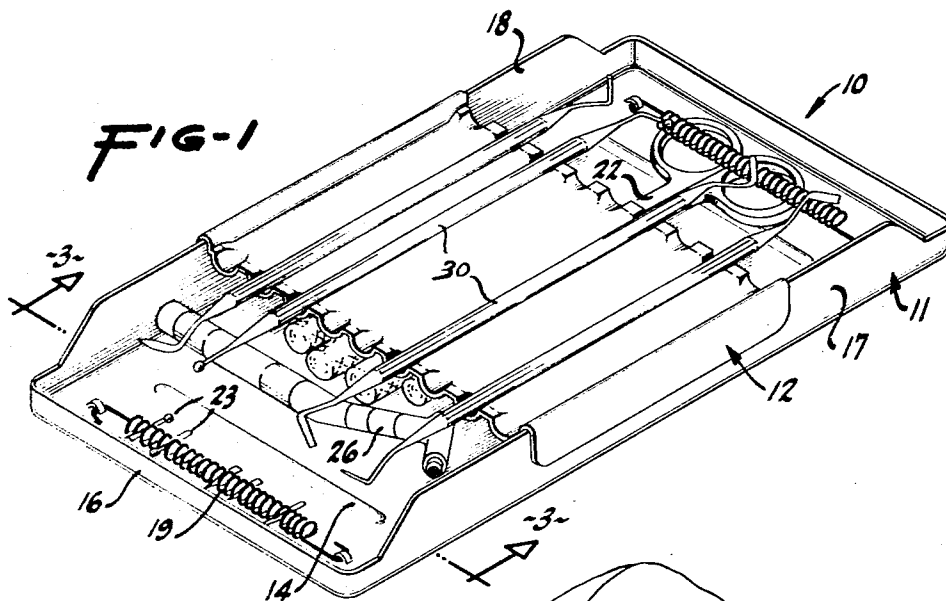
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3,343,669

INSTRUMENT TRAY

Original Filed July 8, 1964

2 Sheets-Sheet 1



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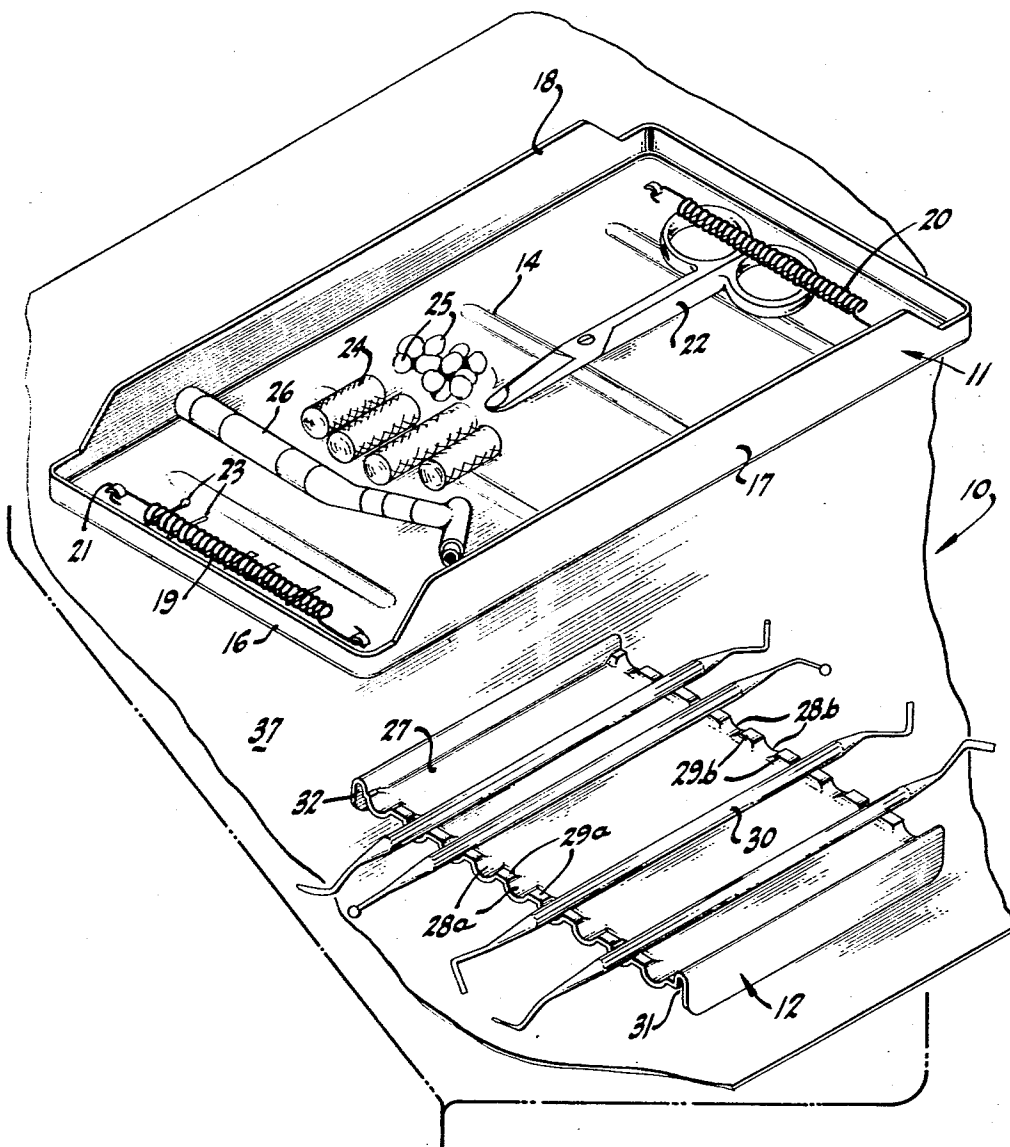


FIG-4

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3,343,669

INSTRUMENT TRAY

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Original applications July 8, 1964, Ser. No. 381,062, now
Patent No. 3,285,409, and Jan. 26, 1966, Ser. No.
523,076. Divided and this application May 2, 1966,
Ser. No. 546,729

4 Claims. (Cl. 206—63.5)

This application constitutes a division of my copending patent application Ser. No. 381,062, filed July 8, 1964, now Patent No. 3,285,409 and also of my copending patent application Ser. No. 523,076, filed Jan. 26, 1966. Such prior applications are directed generally to an instrument tray and, more particularly, are concerned with a set-up tray for dental instruments and the like and with a method of sterilizing and storing the same. The present application is similarly directed to such subject matter and is especially concerned with the method of sterilizing and storing the set-up tray and instruments package therein.

Although "set-up" dentistry is taught as a part of all dental school curricula, for a variety of reasons the order of instruments when stored by the dental student is only incidentally related to the order in which he uses his instruments. Consequently, the dentist carries to private practice the habit of storing instruments in an order not completely organized for operating procedures, thereby causing substantial waste in the time required for gathering instruments from and replacing them in storage areas. In addition to such waste and the accompanying confusion, it is difficult to avoid instrument contamination since the repeated openings of the storage areas inherent in such lack of orderly organization cause the areas to have questionable cleanliness.

In view of the foregoing, an object of the present invention is to provide a system of storage, transport, sterilization and use in which implements such as dental instruments are arranged in a predetermined order and are maintained therein during such enumerated functions.

Another object of the invention is that of providing an instrument tray adapted to receive and support a plurality of dental instruments and the like in an array convenient for use—such tray being employed during sterilization, storage and use of the instruments.

Still another object is the provision of a system for storage and use of dental instruments in which the instruments are received and supported by such instrument tray, and in which the tray with the instruments thereon is wrapped in a cover and the resultant package sterilized, after which it may be stored in a suitable storage area; and the package subsequently unwrapped to expose the tray and instruments for use, at which time the wrapper may serve as a sterilized support area for the tray and instruments.

A further object is to provide a set-up tray for dental instruments and the like, and in which such tray is comprised of two parts or sections, one thereof being adapted to be removably supported by the other and substantially constrained thereon against lateral displacements, but being movable longitudinally with respect thereto so as to permit such movable part to be centered or otherwise oriented relative to the support section in accordance with the length requirements of instruments supported on the movable section.

Additional objects and advantages of the invention will become apparent as the specification develops.

An embodiment of the invention is illustrated in the accompanying drawings in which:

FIGURE 1 is a perspective view of the instrument tray

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shown in association with a plurality of dental instruments;

FIGURE 2 is a perspective view of the tray enclosed in a wrapper;

FIGURE 3 is a transverse sectional view taken along the plane 3—3 of FIGURE 1; and

FIGURE 4 is a perspective view of the instrument-equipped tray showing the separable sections thereof in spaced apart relation.

The illustrative embodiment of the instrument tray shown in the drawings is a dental set-up tray and is designated in its entirety with the numeral 10. The tray 10 comprises a first tray section 11 and a second tray section 12. The tray section 11 shown is generally rectangular and is provided with a bottom wall 13 having a plurality of longitudinally spaced and upwardly off-set ribs 14 therealong respectively defining recesses 15 along the under surface of such bottom wall.

Extending upwardly from such bottom wall 13 is a perimetric wall or lip 16 that increases significantly in vertical dimension along the longitudinal side walls of the tray, as shown at 17 and 18. Such upwardly enlarged wall portions 17 and 18 are essentially parallel and are adapted to receive and support the second tray section 12 thereon, as shown in FIGURES 1 and 3. The tray section 11 is intended to receive and support a plurality of work implements such as the dental instruments illustrated in FIGURES 1 and 4.

The longitudinally spaced ribs 14 comprise a portion of the means utilized in such receipt and support of the instruments, and are particularly useful in supporting elongated work implements such as scissors, as shown best in FIGURE 4, at spaced apart locations which enables ready grasping of each such instrument when removing it from the tray. Examples of other instruments that might be supported along the spaced apart ribs 14 are a saliva ejector and a rubber dam clamp forceps. The spaced ribs 14 also restrict longitudinal drifting of articles located therebetween.

The tray section 11 is equipped adjacent each end thereof with support structures 19 and 20 which, in the form shown, are helical springs each of which has hook shaped end portions respectively passing through eyes 21 formed in the bottom wall 13. The eyes may be provided in any conventional manner as in a stamping operation, at which time the ribs 14 also may be formed as well as the perimetric wall 16. Thus, the springs 19 and 20 adjacent their opposite ends are anchored to the bottom wall 13 and are adapted to receive and support a variety of instruments such as the dental drills or burs shown in FIGURES 1 and 4. A variety of instruments or work implements may be supported along the bottom wall 13 such as, for example, the cotton rolls and cotton pellets and the amalgam condenser or dental contraangle hand-piece, shown in FIGURE 4. For purposes of identification, the scissors is denoted with the numeral 22, the dental burs with the numeral 23, the cotton rolls with the numeral 24, the cotton pellets are designated 25 and the amalgam condenser is denoted 26. In certain instances, one or both of the springs may be used to clamp a heavy instrument such as the scissors 22 in fixed position along the bottom wall 13.

The tray section 12 is also of generally rectangular configuration and has an essentially planar bottom wall 27 equipped along each of the transverse edges thereof with a plurality of channels or recesses separated from each other by intervening ribs. For purposes of identification, the recesses along one transverse edge of the wall 27 are designated with the numeral 28a and those along the opposite edge with the numeral 28b; and, in a similar manner, the respectively intervening ribs are denoted 29a

and 29b. The recesses 28a and 28b are oriented in aligned pairs for the purpose of receiving and supporting therein the elongated dental instruments 30 which, in the illustrative form shown, comprise two pluggers, one burnisher, and one carver.

The tray section 12 is turned upwardly and is then folded downwardly along each longitudinal edge thereof so as to define a pair of downwardly opening channels 31 and 32 which slidably receive therein the upper edges of the walls 17 and 18 of the support section 11. In that the channel 31 is bordered on each side thereof by generally vertical wall portions 33 and 34, and in a similar manner the channel 32 is bordered by wall portions 35 and 36, the tray section 12 is constrained on the tray section 11 against lateral displacements with respect thereto but is substantially free to slide longitudinally therealong. As a result of such arrangement, the tray section 12 can be appropriately located so that the elongated dental instruments 30 will not project beyond either end of the lower tray section 11. This channel arrangement also permits the tray section 12 to be readily removed from the tray section 11, as shown in FIGURE 4, to permit all of the dental instruments to be available for convenient pick-up by the dentist; and the wall portions 34 and 36 are made shorter than the walls 17 and 18 associated therewith to permit the fingers to get under such shorter wall portions to lift the tray section 12.

All of the dental instruments must be sterilized before use, and necessarily then the instrument tray 10 must also be sterilized to prevent contamination of the instruments supported thereon. The subject instrument tray is particularly suited for the three separate operations of sterilizing the instruments, thereafter storing the same, and then presenting the instruments in a predetermined order for use by the dentist. In this connection, the tray and instruments are washed after each use, the instruments are then placed within the tray as shown in FIGURE 1, and the instrument-equipped tray is then enclosed in a wrapper 37 as illustrated in FIGURE 2. The wrapper 37 may be toweling made of muslin or paper, or it may be formed of any other suitable material. After being wrapped about the tray 10, the wrapper 37 may be maintained in the closed position thereof illustrated in any convenient manner, such as by pins or the tape strip 38 illustrated.

After the package has been formed, the entire unit can be sterilized in the usual manner as, for example, in a dry heat sterilizer or in an autoclave. Following sterilization, the package is placed bodily in a suitable storage area and may be labeled either before or after sterilization so that the precise contents of the package are known. FIGURE 2 is indicative of both the steps of sterilizing and storing as well as of the package per se. When it is desired to use the instruments, the entire package is removed from storage and placed on a work table, the wrapper 37 then opened, and the tray section 12 removed from the section 11, all as shown in FIGURE 4. Since the wrapper 37 has been sterilized, it provides a sterile surface for supporting the tray sections and instruments and also provides a sterile area on which the instruments may be wiped.

The tray 10 may be formed of any suitable material and the two sections 11 and 12 may or may not comprise the same material. A metal such as stainless steel or aluminum has been found especially suitable in that it is a good heat conductor and facilitates the transmission of heat uniformly to the various instruments and work implements in heat-sterilizing the same. The precise configurations of the tray sections can be provided by any suitable and well known fabrication process and, for example, if the tray sections are formed of metal, the illustrated configurations may be provided in a simple stamping operation.

Various types of instrument arrangements may be placed within the tray sections and the choice of instruments and the number thereof will depend upon the particular use intended for the instrument set-up. For example, a typical

arrangement would be a rubber dam set-up in which event the helical springs 19 and 20 might be extended lengthwise of the tray section 11, instead of transversely as shown in FIGURES 1 and 4, and the clamps for such set-up would then be hooked under the springs. The rest of the set-up could include a rubber dam scissors, saliva ejector, rubber dam clamp forceps, punch, beaver tail burnisher, Young frame, etc.

Another typical arrangement would be the amalgam and silicate set-up, and in this event, the included instruments could be burs supported between the coils of the springs 19 and 20, as shown in the drawings, wedges, condensing points, cotton rolls, cotton pellets, amalpack, vacuum tip, matrix device, etc. Other set-ups which might be used are gingivectomy, alveolectomy, suture, etc. Quite evidently, it is not necessary that all instruments needed in an operation be included in each set-up. For example, it might be desirable to omit the mirror, cotton pliers and explorer from each set-up tray and to provide such implements in a separate packet.

The hand instrument tray section 11 illustrated in the drawing is adapted to receive and support thereon a predetermined number of instruments 30 usually sufficient in quantity to satisfy the set-up requirements for treating one patient. However, should a greater number of instruments be required or desired, a second tray section 12 is simply supported upon the first tray section 11 as indicated in phantom in FIGURE 3. It may be noted that the depending legs or wall portions 34 and 36 of the tray section 12 (see FIGURE 3) diverge outwardly and downwardly so that the openings or channels 31 and 32 are slightly larger along the lower open extremities thereof than along their inner closed extremities. Therefore, one tray section 12 may be readily disposed upon another tray section 12. The extra lengths of the wall portions 34 and 36 augment the inherent stability of one tray section 12 upon another.

The instrument tray 10 may be used also as a set-up tray for general medical, ophthalmic and veterinary purposes following the arrangement heretofore described. In such instances, the spring structures 19 and 20 could be used to support and retain relatively small instruments such as needles and scalpels.

In use of the tray, a plurality of instruments which comprise those most frequently used in the examination and/or treatment of a patient or certain class of patients are positioned in the tray sections 11 and 12 after such instruments have been washed. The instruments are arranged in a predetermined order such as the progression of use thereof because this serves as an added convenience for the user of the tray. The tray 10 comprising the section 11 and one or more sections 12 is then enclosed in a wrapper 37 and the entire package placed within a conventional sterilizer for the time period required to effect complete sterilization thereof. The wrapper may first be secured in closed position, if this is desired, as heretofore described.

After the package is removed from the sterilizer, it may be bodily placed within a suitable storage space such as a drawer or canister and remains in such space until used. For use, the package is removed from the storage space and placed upon the usual work table, and the wrapper 37 is then unfolded to expose the tray 10. The wrapper 37 continues to isolate the tray and instruments from any contamination of such support surface and also affords a sterile material on which the instruments may be wiped. After a patient has been treated, the instruments are again washed and located in their appropriate positions on the tray, the instrument-equipped tray is enclosed in a wrapper 37, and the entire package is then sterilized prior to storage.

The tray arrangement described provides a uniform or standardized instrument set-up instantaneously available for each type of operation to be performed. As a result, the dentist or his assistant need no longer search in different rooms or cabinets for required instruments; and it

will no longer be necessary to stop work to search for forgotten instruments. Neither will it be necessary to find an unoccupied storage location for each instrument after use and sterilization thereof and then transfer each instrument thereto with awkward tongs which, along with the storage area, may or may not be sterile. In having all of the instruments sterile and readily available, the operator is able to work at his highest efficiency and the patient gains in having quick, calm attention under as nearly aseptic conditions as possible.

While in the foregoing specification an embodiment of the invention has been set forth in considerable detail for purposes of making an adequate disclosure thereof, it will be apparent to those skilled in the art that numerous changes may be made in such details without departing from the spirit and principles of the invention.

What is claimed is:

1. An instrument package, comprising first and second dissimilar and separable tray sections each having a bottom wall provided with support elements for receiving and supporting elongated dental instruments and the like of various configuration and dimension, support structure removably supporting said second tray section with respect to said first tray section and including upwardly extending side walls provided by said first tray section and terminating a spaced distance above the bottom wall thereof, said support structure also including a pair of downwardly opening longitudinally extending channels provided by said second tray section and being respectively adapted to removably receive said side walls therein, said side walls and channels being cooperatively interrelated to dispose the bottom walls of said tray sections in spaced apart relation to provide a predetermined clearance space therebetween for accommodating dental instruments supported upon the bottom wall of said first tray section, said tray sections having openings therebetween to provide relatively free access to such clearance space between said bottom walls for facilitating admission of a sterilizing atmosphere thereinto, said channels being defined at least in part by wall portions of said second tray section which extend upwardly from the bottom wall thereof to a location a spaced distance above such bottom

wall and any instruments supported thereon, a plurality of instruments supported by said first and second tray sections, and a wrapper enclosing the instrument-equipped tray sections to maintain the same in a substantially aseptic condition subsequent to sterilization of the entire package, said channel-defining wall portions of said second tray section being in engagement with said wrapper and tending to support the same above the elevation of such instruments carried by the bottom wall of said second tray section to provide access to such instruments for facilitating admission of a sterilizing atmosphere to the space thereabout.

2. The instrument package according to claim 1 in which said second tray section is substantially shorter than said first tray section to provide the aforementioned openings therebetween for relatively free access to such clearance space between said bottom walls of the tray sections.

3. The instrument package according to claim 2 in which said first tray section has an upwardly extending perimetric lip enlarging upwardly along the longitudinal edges thereof to provide the side walls of such first tray section, the side walls of said first tray section having a greater height than the end walls thereof defined by said lip whereby dental instrument retrieval from said first tray section is facilitated.

4. The instrument package according to claim 3 in which said wrapper is comprised of a flexible material.

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