

April 14, 1964

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3,129,033

UTILITY SUPPORTING ATTACHMENT FOR DENTAL CHAIRS

Filed Oct. 3, 1960

2 Sheets-Sheet 1

FIG. 1.

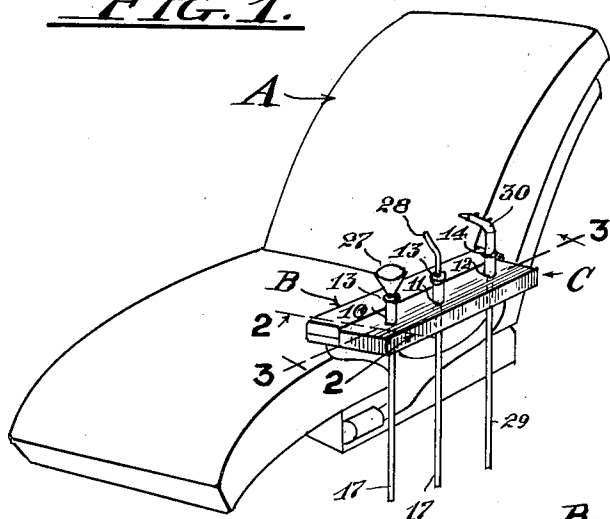


FIG. 2.

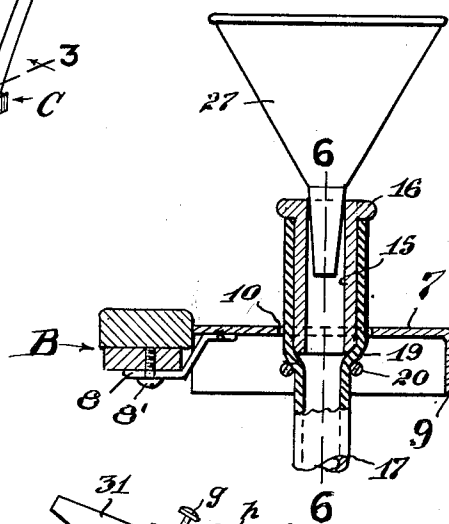
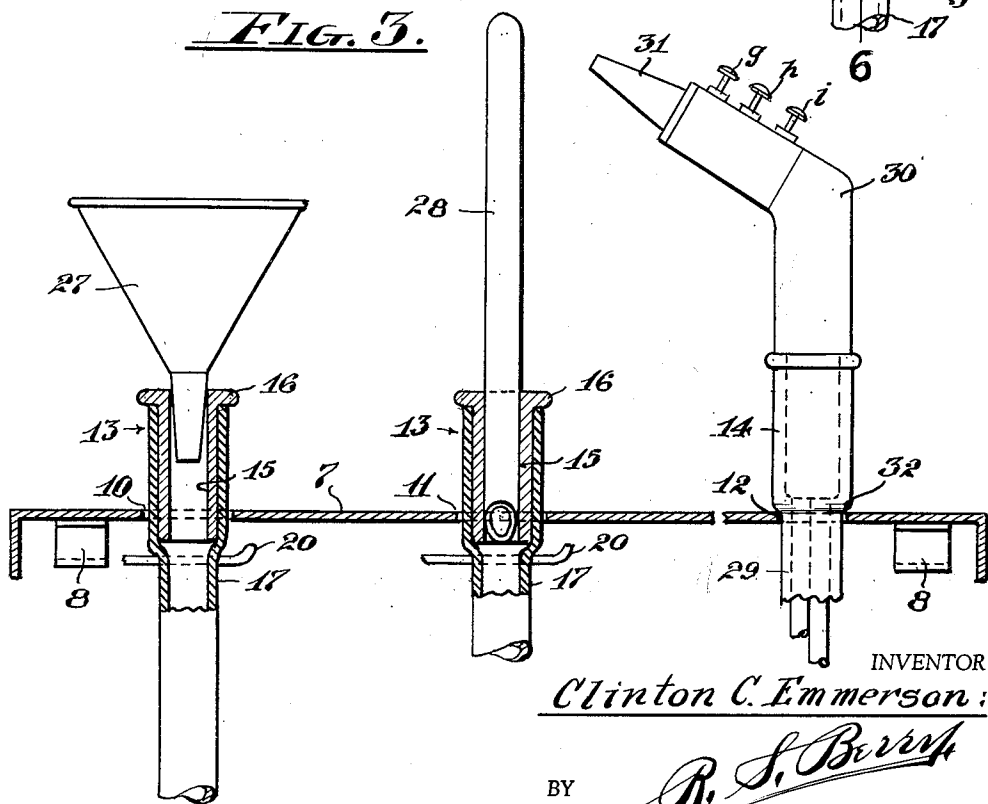


FIG. 3.



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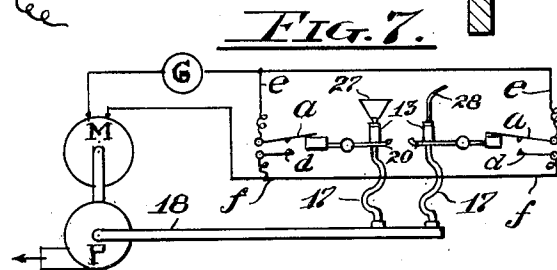
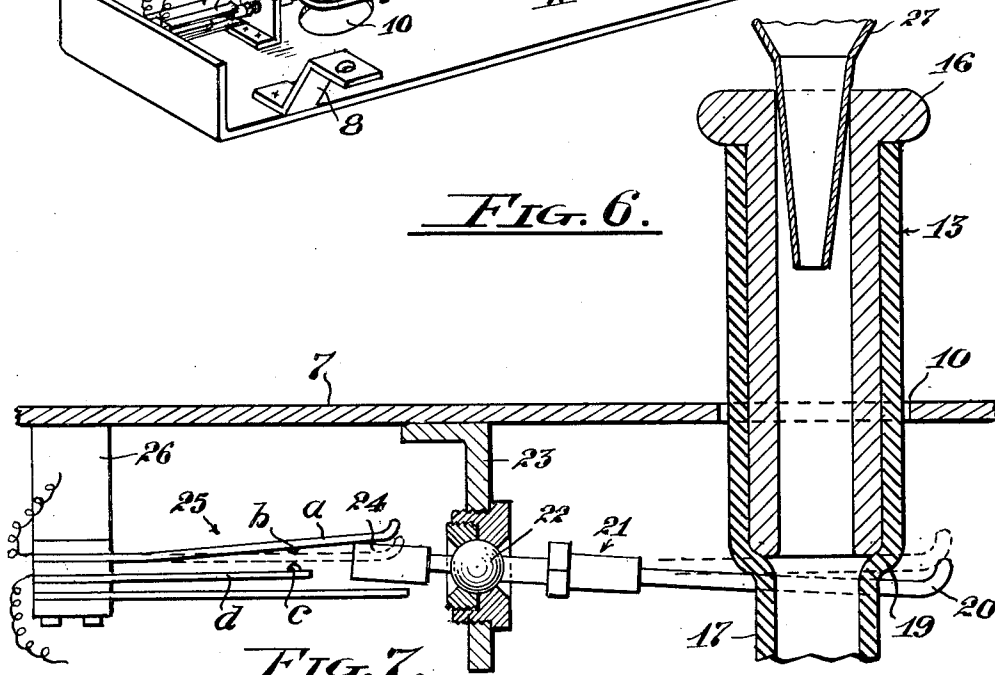
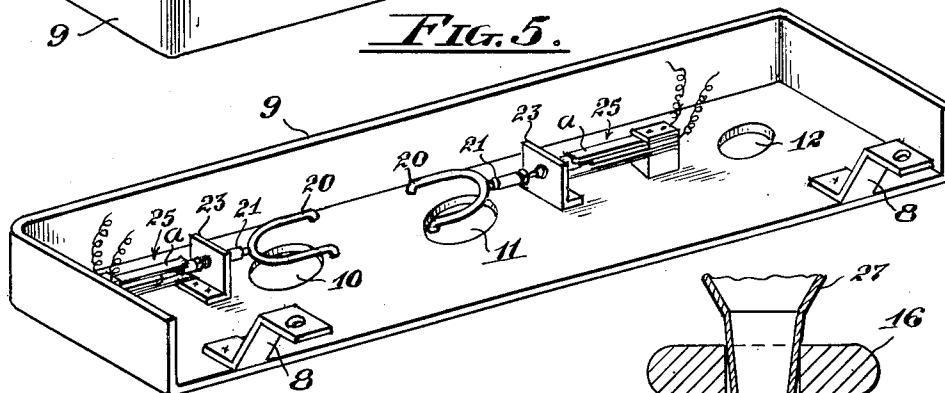
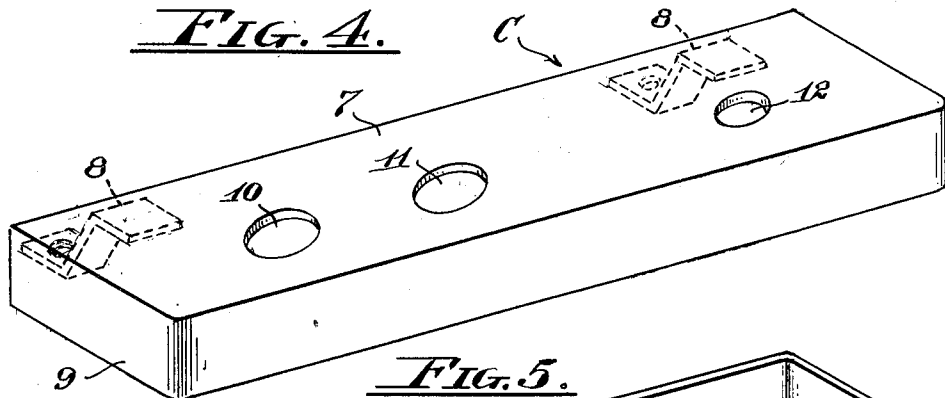
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2 Sheets-Sheet 2



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UTILITY SUPPORTING ATTACHMENT FOR DENTAL CHAIRS

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This invention has as its primary object the provision of an attachment for dental chairs for supporting the utilities used by patients occupying the chair during dental treatment which utilities ordinarily comprise a cuspidor or spittoon, an aspirator and a controllable nozzle for flushing the oral cavity with liquid or air or both.

A particular purpose of the invention is to enable movement of the stated utilities when needed to a convenient position relative to the mouth of a patient while in a semi-recumbent position in the dental chair thereby obviating the necessity of bodily movement of the patient from such position toward the location of the utility as now commonly required, thereby effecting considerable economy in the operator's and attendant's time as well as rendering the use of the utilities more convenient to the patient and attendants.

Another object is to provide an arrangement of the utilities and a support therefor whereby the utilities may be readily mounted on the arm of a dental chair and thereby disposed within easy reach of the patient or attendant, and wherein the utility may be lifted from its support and brought to the mouth of the patient.

Another object is to provide a construction in the attachment whereby power operated suction or vacuum pumps employed in conjunction with certain of the utilities are automatically controlled by movement of such utilities to and from their supports and whereby lifting of the utility from its support will set the pumping mechanism in operation and replacement of the utility on its support will terminate such operation thereby effecting an economy in power consumption.

A further object is to provide an attachment of the above character which is simple in construction and which is adapted to be readily applied to a dental chair.

With the foregoing objects in view together with such other objects and advantages as may subsequently appear, the invention resides in the parts and in the combination, construction and arrangement of parts hereinafter described and claimed, and as illustrated by way of example in the accompanying drawing in which:

FIG. 1 is a perspective view of the attachment showing it as applied to the arm of a dental chair;

FIG. 2 is a view in cross section as seen on the line 2-2 of FIG. 1;

FIG. 3 is a view in longitudinal section partly in elevation as seen on the line 3-3 of FIG. 1 with parts removed;

FIG. 4 is an isometric view of the attachment as seen from the top, front and one end thereof showing it detached;

FIG. 5 is an isometric view of the attachment showing it as inverted;

FIG. 6 is an enlarged view section and elevation as seen on the line 6-6 of FIG. 2 showing a utility supporting switch embodied in the attachment and depicting the operation thereof; and

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FIG. 7 is a diagram of the electrically powered suction apparatus with which the attachment is associated.

Referring to the drawings more specifically A indicates generally a dental chair having an arm B, and C designates the utilities supporting attachment for the arm B.

The attachment C embodies a rectangular flat panel 7 having an inner longitudinal edge shaped to abut the outer side of the arm B. The panel 7 is fitted on its inner margin with a pair of brackets 8-8 which are attached by screws 8' to the underside of the arm B and which brackets 8-8 rigidly support the panel 7 in a horizontally extending position projecting outwardly from the outer side of the arm B. A continuous downwardly extending marginal flange 9 is provided on the outer margin and ends of the panel 7 to impart rigidity thereto and also afford an enclosure for the space on the underside of the panel.

A plurality of circular openings 10, 11 and 12 are provided in the panel 7 spaced apart in a row of which the openings 10-11 are designed to removably receive the lower ends of elongated cylindrical tubular sockets 13-13 constituting utility holders. Each of the sockets 13-13 embodies an upright rigid open ended tube 15 formed of metal or plastic and having a flanged and rounded upper margin 16 and having its lower end encompassed by and engaged in the upper end of a flexible conduit 17 leading downwardly from the panel 7 and connecting with the intake 18 of a suitable powered suction pump P operated by an electric motor M as indicated in FIG. 7.

A shoulder 19 at the lower end of the socket normally seats on a yoke 20 on one end of a switch control arm 21 mounted intermediate its ends to swing vertically on a pivot 22 carried on a bracket 23 depending from and fixed on the underside of the panel 7. The other end of the arm 21 has an insulated head 24 thereon which abuts against the underside of an electrically conductive spring arm a of an electric switch 25 which arm a has a contact point b on its underside normally contacting a point c on a companion switch arm d. The switch arms a-d are insulated from each other and from a post 26 fixed on the underside of the panel 7, and are connected respectively to conductors e-f leading through the terminals of the motor M to a source of electrical supply G as indicated in FIG. 7.

The switch 25 while normally closed is held in its open position by the load imposed on the outer end of the switch control arm 21 by the socket 13 and its connections, but on relieving such load by lifting the socket clear of the switch control arm the latter will be swung by pressure of the switch arm a on the head 24 so as to bring the contact points b and c into their abutting circuit closing position.

As here shown the socket 13 in the opening 10 is fitted with a removable funnel 27 constituting a spittoon and the socket 13 in the opening 11 is fitted with a removable and open ended tube 28 constituting an aspirator which is reversible end to end in the socket in a usual manner.

The opening 12 has a multi-duct flexible conduit 29 leading therethrough which leads from separate suitable sources of water and air supply under pressure in a usual manner (not shown), and connects at its upper end through a socket 14 with a conventional discharge nozzle 30 having a single outlet 31 controlled by valve actuating push buttons g-h and i which operate in a well known manner to deliver to and discharge through the outlet 31 either water, air or a spray mixture of water and air. In this instance a shoulder or collar 32 is provided at the

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upper end of the conduit 29 for effecting seating engagement on the plate 7 around the opening 12.

From the foregoing it will be seen that the utilities comprising the funnel or spittoon 27, aspirator 28 and nozzle 30 with their respective hose connections are supported with the sockets at upper end portions of such connections projecting above the upper surface of the panel 7 in such manner that the sockets will provide hand-holds by which they may be readily grasped by a hand of a patient in the chair A or by a nearby attendant and lifted out of the openings 10 and 11 clear of yokes 20 on the switch control arms 21 to free the latter.

In the operation of the invention, either of the recited utilities is put to its intended use as required by lifting its supporting socket clear of the panel 7 carrying with it the associated conduit connected to the socket, the utility being thus conveyed to the mouth of the patient and employed for its usual purpose. On lifting either of the sockets 13 from its associated opening 10 or 11, the switch 25 controlled thereby will automatically close thereby closing the circuit through the motor M thus actuating the latter and driving the suction pump P so as to evacuate air from the tube 17 and induct air thereinto through the funnel 27 or aspirator 28 as the case may be. On restoring the socket 13 to its seated position on the yoke 20 of arm 21 the latter will be rocked to effect opening of the switch 25 thereby terminating operation of the motor M and pump P.

When it is desired to use the nozzle 30 it is lifted and applied to the mouth of the patient and actuated all in the manner common to such utilities.

The attachment herein set forth is particularly advantageous for use on dental chairs employed in the treatment of children and persons who must necessarily lean over the arm of the chair in order to expectorate into the fixed receptacle ordinarily employed in dental offices which operation is both inconvenient and time consuming. Furthermore the attachment economizes space as compared with the usual fixed cuspidor equipment and facilitates access to the patient by the dentist and assistants.

By the employment of the demountable funnel 27 and aspirator 28 these utensils may be detached and sterilized after serving each patient thus contributing to sanitation.

I claim:

1. The combination of a dental chair having a seat portion supporting a patient in a semi-recumbent position, said chair having an arm at one side of the seat portion, said arm having an upper surface, and an equipment stand secured to the arm of said dental chair at one side of said seat portion and immediately adjacent said arm, said equipment stand having a top portion extending in a horizontal plane above that of the seat portion and substantially coincident with the upper surface of the arm, plural dental utilities of elongated form extending through and projecting above said top portion and being removably supported thereby, each of said dental utilities having a flexible operating connection joined therewith, and extending pendant from said top portion, whereby a patient supported by said seat may utilize said facilities by lifting them from said top portion without required bodily movement from said semi-recumbent position.

2. The combination of a dental chair having a seat portion supporting a patient in a semi-recumbent position, said chair having an arm at one side of the seat portion, said arm having an upper surface, and an equipment stand secured to the arm of said dental chair at one side of said seat portion and immediately adjacent said arm, said equipment stand having a top portion extending in a horizontal plane above that of the seat portion and substantially coincident with the upper surface of the arm, plural dental utilities of elongated form extending through and projecting above said top portion and being removably supported thereby, whereby a patient supported by said seat may utilize said facilities by lifting them from said top portion without required bodily movement from said

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semi-recumbent position and a spring closed power-actuating switch in said equipment stand adjacent certain of said facilities held open by the presence of an associated facility on said top portion and being closed when said associated facility is lifted therefrom.

3. The combination of a dental chair and an equipment stand, the dental chair having a seat and at least one elongated arm having an upper surface, said arm extending laterally adjacent said seat and lying in a horizontal plane higher than that of said seat, said equipment stand having a plane top portion secured to said chair arm and lying substantially in the same horizontal plane as the upper surface of said arm, and plural dental operating instruments extending through and supported by the top portion of the instrument stand with an upper portion of each of said operating instruments extending above the plane of said top portion of the instrument stand within easy reach of a patient seated in said dental chair, each of said dental utilities having a flexible operating connection joined therewith, and extending pendant from said top portion.

4. The combination of a dental chair and an equipment stand, the dental chair having a seat and at least one elongated arm having an upper surface, said arm extending laterally adjacent said seat and lying in a horizontal plane higher than said seat, said equipment stand having a plane top portion secured to said chair arm and lying substantially in the same horizontal plane as the upper surface of said arm, plural dental operating instruments extending through and supported by the top portion of the instrument stand with an upper portion extending above the plane of said top portion of the instrument stand within easy reach of a patient seated in said dental chair, and a spring closed power-actuating switch in said equipment stand adjacent certain of said facilities held open by the presence of an associated facility on said top portion and being closed when said associated facility is lifted therefrom.

5. An equipment stand for dental tools and facilities adapted for mounting upon the arm of a dental chair, said arm having an outer surface, an upper surface and a lower surface, said equipment and stand comprising a frame member having a top member having one edge conforming to the outer surface of said arm and constituting an upper horizontal work surface panel, detachable means for securing said frame member to the under surface of said arm with the upper work surface panel projecting outwardly from said arm and lying in the same general plane as that of the upper surface of said arm, plural separated holders carried by said top member, and dental tools and facilities each selectively and removably supported by an individual holder, a pump and a motor operatively joined to said pump, an elongated flexible conduit joining certain of said dental tools and facilities individually with said pump, a control circuit for said motor, make-and-break elements each having a control element actuated when a selected dental tool or facility is lifted with its holder, and being inactivated when it is returned with its holder.

6. An equipment stand for dental tools and facilities adapted for mounting upon the arm of a dental chair, said arm having an outer surface, an upper surface and a lower surface, said equipment stand comprising a frame member having a top member, having one edge conforming to the outer surface of said arm and constituting an upper horizontal work surface panel, detachable means for securing said frame member to the under surface of said arm with the upper work surface panel projecting outwardly from said arm and lying in the same general plane as that of the upper surface of said arm, plural separated holders carried by said top member, dental tools and facilities each selectively and removably supported by an individual holder, a pump and a motor operatively joined to said pump, an elongated flexible conduit joining certain of said dental tools and facilities individually with said pump, control circuits for said motor and make-and-break elements each having a control element actuated when a selected dental

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tool or facility is lifted with its holder, and being inactivated when it is returned with its holder, and said control element including an arm pivoted for vertical movement with respect to said panel.

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