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Slater et al.

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[54] DENTAL SYSTEM

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[52] **U.S. Cl.** **32/22**

[51] **Int. Cl.** **A61c 19/02**

[58] **Field of Search** 32/22, 28, 33; 222/76, 136, 222/145, 144.5, 395; 259/107, 108; 137/624.2, 624.18

[56] **References Cited**

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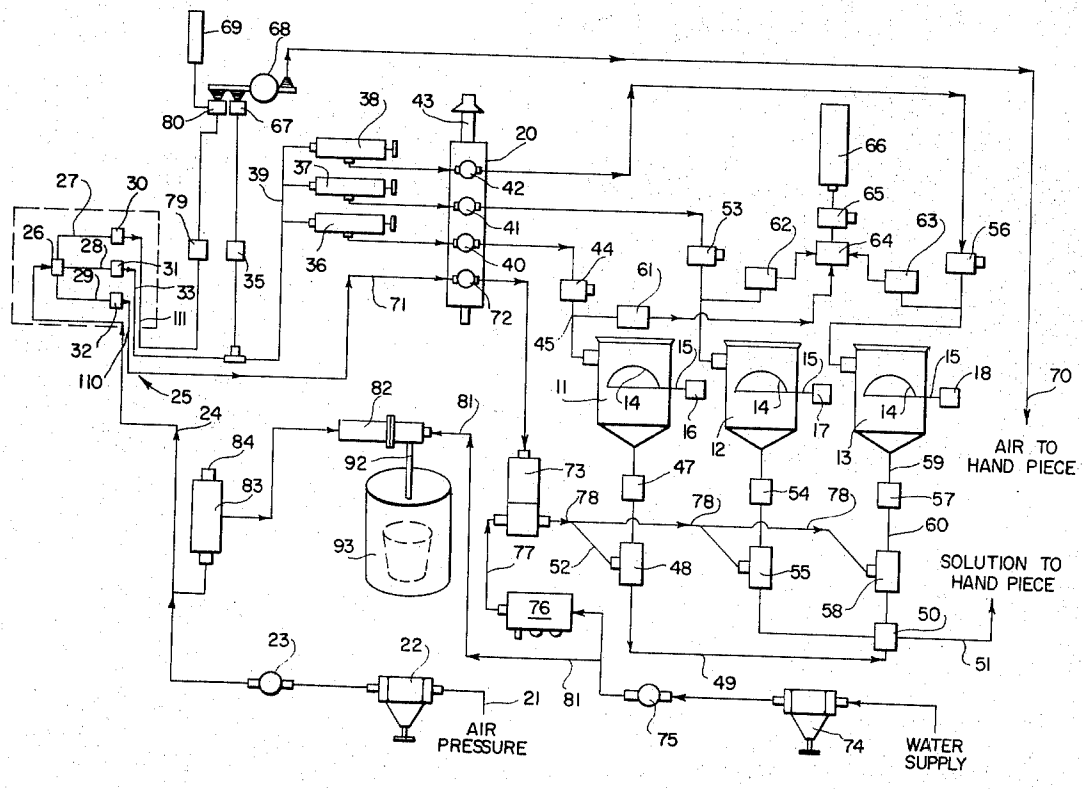
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[57] **ABSTRACT**

The specification discloses a system for use in dental prophylaxis. Containers of pumice, fluoride, and a polishing agent are provided with a discharge means to force these dental solutions from their respective containers and through a flexible conduit to a dental hand piece. The hand piece is equipped with a rotating applicator for applying the dental solution to a dental patient. A selector control valve means is provided to select the appropriate container and the solution therein.

29 Claims, 6 Drawing Figures



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SHEET 1 OF 3

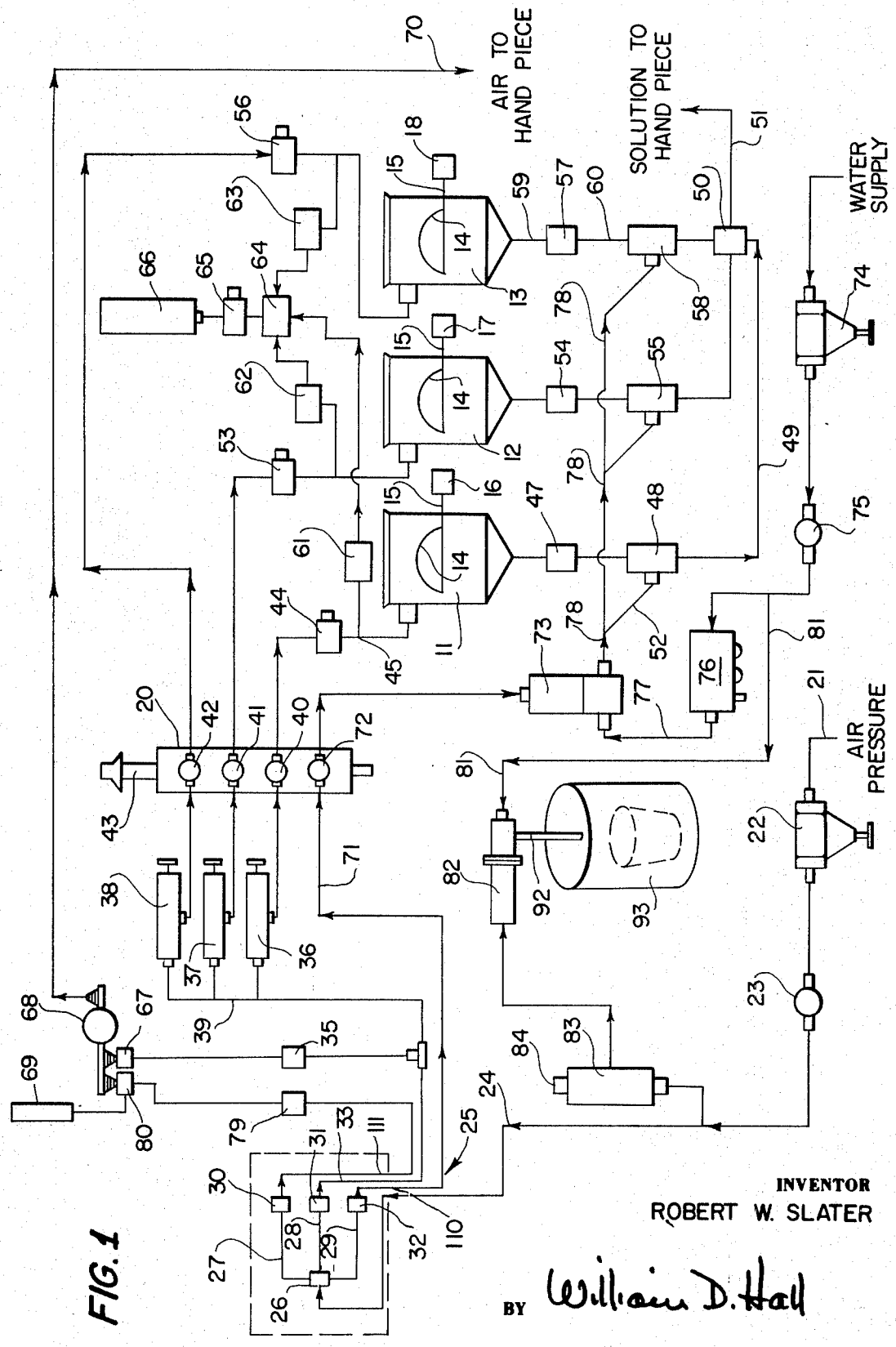


FIG. 1

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FIG. 2

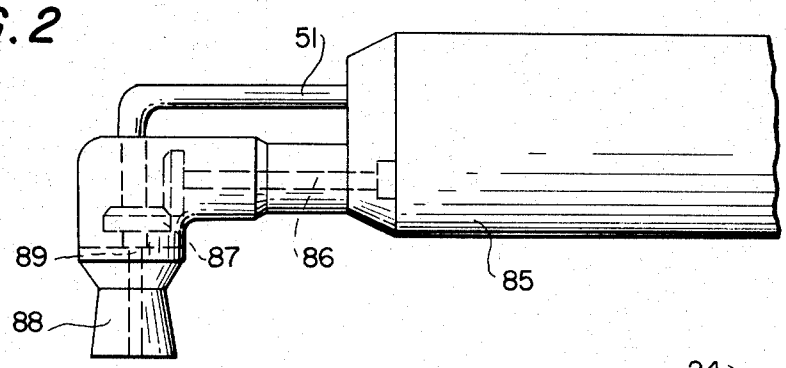
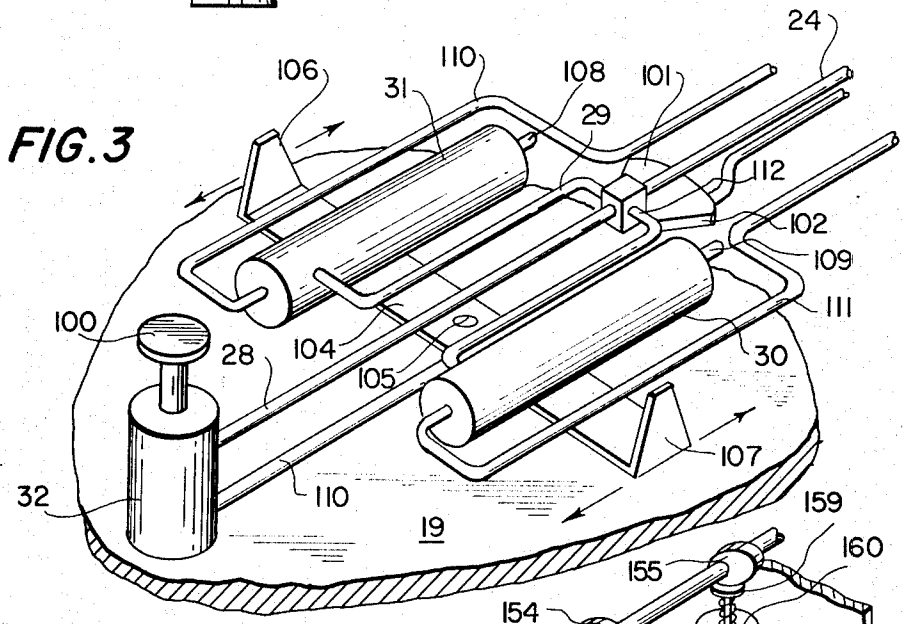


FIG. 3



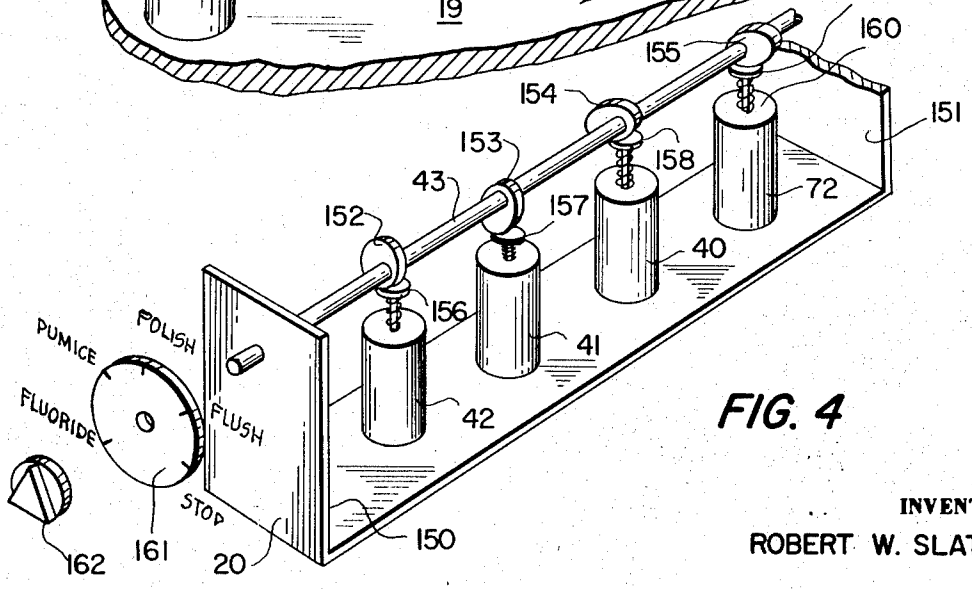
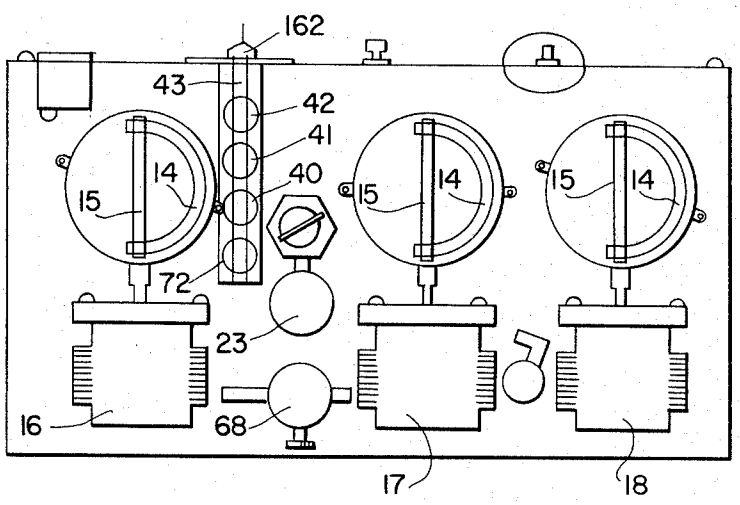


FIG. 4

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FIG.5



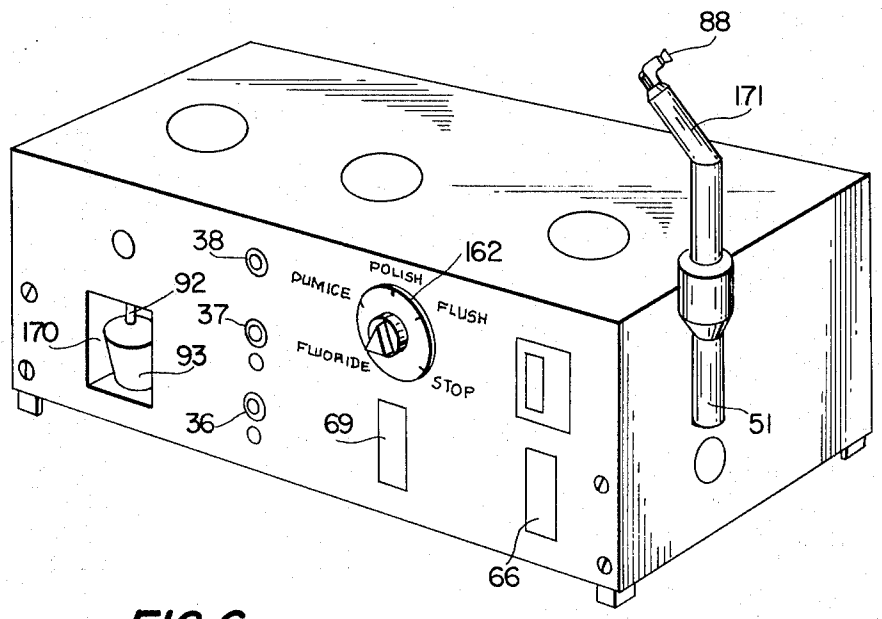


FIG.6

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DENTAL SYSTEM

BACKGROUND OF THE INVENTION

In the present art of dental prophylaxis, it is common for a dental hygienist to use a dental hand piece with a rotating rubber applicator cup mounted on the end of a rotating drive shaft. This cup may be driven by an air motor, or by means of a plurality of belts and pulleys. The dental hygienist then uses the rubber cup on the hand piece to scoop up a dental cleaning or polishing agent such as pumice from a bulk supply. The applicator cup is then placed in the patient's mouth near the teeth to be polished and the drive means for the applicator cup is energized and the applicator begins to rotate. The rotating cup is then applied to the patient's tooth as a cleaning instrument, with the pumice actually scouring the surface of the tooth. When the initial supply of pumice is exhausted, the operator stops the instrument, withdraws the hand piece from the patient's mouth, and scoops up another load of pumice and returns the hand piece to the patient's mouth to continue the cleaning operation. This scooping operation may be repeated many times throughout the course of the cleaning treatment, and with each scoop, saliva from the patient's mouth is deposited in the raw supply of pumice as the applicator cup traverses back and forth.

After the initial cleaning operation, it is also quite common to polish the teeth and restoration using a polishing agent such as tin oxide or flour pumice or any one of a number of commercial preparations such as "amolgloss". For each, the manner of application is quite the same as that used for the pumice. The applicator cup is used as a scoop to scoop up portions of the polishing agent and carry it to the patient's mouth for the polishing operation. It will be noted, of course, that the saliva present in the patient's mouth contaminates the instrument and with each return pass, additional saliva is deposited in the bulk supply of the polishing agent.

For the foregoing reasons, it is customarily the practice to employ an assistant, or to require the patient to assist by holding a small intermediate supply of pumice or polishing agent in a container so that when the dental treatment is completed, the remainder of the intermediate solution may be discarded, and a fresh intermediate solution be prepared for the following patient.

One of the newer dental treatments in dental prophylaxis involves the application of fluoride to the surface of the patient's teeth after the teeth have been cleaned and polished. This is commonly done with a cotton swab, by spraying the fluoride onto the teeth with a spray applicator, or with the aforementioned rubber cup. Again, this involves the use of separate instruments, or a cleaning operation for the instrument between the polishing step and the application of the fluoride.

It should also be noted that during the many trips between the patient's mouth and the supply of material, the applicator cup will discharge bacteria from the patient's mouth into the air as it traverses back and forth.

Air and water have commonly been supplied through conduits to individual instruments for application in a patient's mouth. In most instances, these applicators comprise a hand piece, control valve, and a flexible conduit for transmitting the air or water to the patient's mouth. In some instances, these individual applicators have been mounted alongside a rubber cup used in dental prophylaxis to provide air or water for use in the cleaning operation. To this date, the cleaning agents themselves have never been supplied because of the highly abrasive and viscous nature of pumice and the highly reactive nature of fluoride compounds.

OBJECT OF THE INVENTION

It is therefore an object of the present invention to provide a dental system to continuously apply dental solutions through the applicator cup.

It is another object of this invention to provide for the remote location and storage of the dental solution whereby they may be preselected and automatically conveyed to an applicator placed at or near the patient's mouth.

It is another object of this invention to provide a hand piece for use in dental prophylaxis that will selectively discharge pumice, a polishing agent, and a prophylaxis treating material such as fluoride.

It is another object of the present invention to provide a flushing system to remove the remainder of the cleaning or polishing agent present in the applicator prior to the application of another dental solution.

It is another object of the present invention to provide a dental system whereby the dental hygienist may clean the patient's teeth with pumice, flush the instrument, apply a polishing agent, flush the instrument, and apply a prophylaxis treatment treating material such as fluoride automatically from a single applicator.

It is another object of this invention to provide a dental system which may be energized by means of a foot control, thereby leaving the operator's hands free for holding other instruments or a mirror.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of our dental system;

FIG. 2 is an enlarged view of our dental hand piece and rotating applicator cup;

FIG. 3 is an isometric view of the foot control selector valve means;

FIG. 4 is an isometric view of the second selector control valve means;

FIG. 5 is a top view of the dental system as assembled for operation; and

FIG. 6 is an isometric front view of the dental system of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The design of any system to automatically convey dental cleaning materials and prophylaxis materials to a dental hand piece is immediately met with two difficulties. The first is the viscosity of pumice, flour pumice, and tin oxide, three of the most widely used abrasive ingredients. When the three are mixed in solution, and the solution is diluted enough to make it flow easily, the cleaning value of the abrasive material is diminished, and if the consistency of the material is left high, it becomes almost impossible to force the material through the flexible conduit, that must necessarily connect the system with the applicator.

The highly reactive chemical nature of fluoride compounds is another problem which must be taken into consideration in designing such a system.

Another problem that must be considered is the prevention of cross-contamination to prevent the application of the improper material at the wrong time.

Referring to FIG. 1, the preferred embodiment of the present invention utilizes three separate containers 11, 12 and 13 for storage. In the preferred embodiment, a coarse cleaning agent such as pumice is stored in container 11, a polishing agent such as flour pumice or tin oxide in the second container 12, and stannous fluoride or other prophylactic agent in container 13. Although the prophylactic agent is generally a liquid, the pumice and tin oxide are generally supplied in powder form and must be mixed with an appropriate carrier such as glycerin so it may be pumped through the system. To prevent the glycerine and pumice from separating or the pumice from settling out, agitator means 14 are provided for each container and are rotated on shaft 15 by electric motors 16, 17 and 18. It should be pointed out that while electric motors have been used in a preferred embodiment, a pneumatic motor could be used equally well.

A foot control selector valve 19 generally regulates the supply of fluid to the system. The fluid from the foot control selector valve means generally is then passed to a selector valve 20 which selects the appropriate container to be pressurized. The fluid pressure then drives the cleaning solution or prophylactic solution through the lower outlet of the tank and into the manifolding and conduit means leading to the dental applicator.

Specifically, fluid pressure enters the system at point 21, and is regulated by regulator 22 to a maximum of 60 pounds per square inch. Although it has been found that a higher pressure could be utilized, it is not necessary to the system and causes unnecessary wear and stress on the piping and other components. A minimum of 45 pounds is required for the efficient operation of the air turbine located on the dental hand piece. The fluid pressure at regulator 22 is normally regulated at 45 pounds for the efficient operation of the air turbine, but it may be set as high as 60 pounds to allow for pressure drops throughout various orifices and conduits. The fluid pressure is then filtered by a filtering means 23 and passes onward through appropriate piping 24, through flexible conduit means 25 to the foot control selector valve means 19. The fluid pressure enters the foot control selector valve means and is apportioned three ways by X-fitting 26. The fluid is then routed through the three manifolding means 27, 28 and 29 to control valves 30, 31 and 32. This allows the foot control selector valve means, generally indicated as 19, to select any one of three selective modes of operation. In the first selective mode, valve 31 is energized and allows fluid pressure to pass through flexible conduit 33 and into the system to T-fitting 34. Although the valves 30, 31 and 32 have been arranged in a certain configuration for the purposes of clarity in FIG. 1, it should be understood that the actual arrangement of valves and piping is as illustrated in FIG. 3 and the location of the valves may be arranged somewhat differently.

At T-fitting 34 fluid pressure is routed upwards to one-way valve 35 and then on to the air turbine in the applicator, as will be explained later. The fluid pressure is also routed to the fluid regulating means 36, 37 and 38, through appropriate manifolding 39. These regulators 36, 37 and 38 allow an individually regulated amount of fluid pressure to be applied to containers 11, 12 and 13. From the fluid regulators 36, 37 and 38, the fluid pressure passes to the second selector control valve means 20 and the individual valves 40, 41 and 42. Valves 40, 41 and 42 are normally closed valves that are selectively operated by the position of control shaft 43 through appropriate cam means as will be discussed with respect to FIG. 4.

When control valve 43 is rotated to its first orientation, individual valve 40 will be actuated and allow fluid pressure to pass therethrough to container 11. The fluid pressure passes from control valve 40 through quick exhaust valve 44 and T-fitting 45 into container 11 to pressurize the container when the foot control selector valve is energized. In operation, when the foot control selector valve is released, quick exhaust valve 44 will immediately exhaust the pressure in container 11 to prevent the continued extrusion of material through the outlet 46 in the lower portion of the container. The material discharged from container 11 passes through one-way valve 47 and into a shuttle valve 48. From shuttle valve 48, the material flows on through manifolding means 49 to X-fitting 50 and from there to a flexible conduit 51 leading to the applicator. Valves 47 and 48 provide a double safety feature to prevent the cross-contamination of materials between the tanks 11, 12 and 13. Valve 47 is a one-way valve and prevents the flow of any material, be it pumice, flushing solution, or prophylactic solution back into tank 11. Shuttle valve 48 also prevents the backflow of solution into tank 11, but also allows the flow of a flushing solution through line 52 when the flushing means is appropriately energized.

In beginning a dental prophylactic treatment, the basic cleaning is usually done with pumice and the first orientation of control shaft 43 is to selectively allow valve 40 to be energized and pumice to be driven from container 11 through the manifolding means 49 and into the dental hand piece through conduit 51. The second stage of the prophylactic treatment would be the polishing of the teeth with tin oxide or flour pumice generally stored in container 12. When control shaft 43 is placed in its second orientation, valve 41 is selectively energized and the fluid pressure from regulator 37 passes through quick exhaust valve 53 and into container 12. From container 12, the tin oxide passes through one-way valve 54 and shuttle valve 55 to X-fitting 50 and from there to the hand piece through flexible conduit 51. Again, when the foot control selector valve means is energized, fluid pressure forces the polishing agent from container 12 and when the foot control selector valve means is deenergized, exhaust valve 53 releases the pressure in container 12.

During the third stage of the prophylactic treatment, the application of stannous fluoride to the teeth is accomplished by rotating control shaft 43 to its third orientation to energize valve 42, whereby fluid pressure will be allowed to pressurize container 13 through quick exhaust valve 56. It should be pointed out again that the only time fluid pressure is present in any one of containers 11, 12 and 13 is when the foot control selec-

tor valve means is energized as the quick exhaust valves **44**, **53** and **56** exhaust the pressure in the containers immediately after the foot control selector valve means is released. The fluoride present in container **13** passes through one-way valve **57** and shuttle valve **58** to X-fitting **50** and thereon to the hand piece through flexible conduit **51**. It should be pointed out that due to the corrosive nature of fluoride compounds, the tank **13** is teflon-coated, and the conduits **59**, **60** and **51** are constructed of teflon tubing to prevent the interaction of the corrosive fluoride compound with the system. Valve means **58** is a Buta-N-valve to protect the operating mechanism of the valve from the corrosive prophylactic material.

Mounted above each of the tanks **11**, **12** and **13** are one-way valves **61**, **62** and **63** which feed to X-fitting **64**, exhaust valve **65** and fluid pressure gauge **66**. The one-way valves **61**, **62** and **63** are inserted to prevent the pressurization of the other containers when one of the tanks is energized. In operation, fluid regulator **36** is adjusted to provide approximately **40** pounds of pressure to drive the pumice from container **11**. This fluid pressure will pass through one-way valve **61**, X-fitting **64**, and quick exhaust valve **65** and be reflected on fluid pressure gauge **66**. When the foot control selector valve means is deenergized, the fluid pressure present in the fluid pressure gauge system will be exhausted through quick exhaust valve **65**.

Fluid pressure regulator **37** is generally adjusted to approximately 25 pounds per square inch to force the polishing agent from container **12**. In a similar manner, the fluid pressure passes through the one-way valve means **62** and is reflected on gauge **66** when the foot control selector valve means is energized. After deenergization, the fluid pressure is bled from the system by means of quick exhaust valve **65**.

In a similar manner, air pressure regulator **38** is adjusted to approximately 2 to 6 pounds of pressure, with **4** pounds being the desired operating pressure for pressurizing the fluoride container **13**. This pressure is again reflected on gauge means **66** through one-way valve **63**, X-fitting **64**, and quick exhaust valve **65**.

Thus it can be seen that the fluid gauge means **66** reflects the pressure present in any one of the tanks **11**, **12** or **13** when they are selectively pressurized.

Returning to T-fitting **34**, the fluid pressure present when valve **31** is energized by the foot control selector valve means **19**, is piped through one-way valve **35** into T-fitting **67** and oiler means **68**. The other side of the T-fitting passes to fluid pressure gauge means **69**. Oiler **68** sprays a very small amount of oil in a very fine mist into the fluid as it passes through oiler **68** into conduit **70**. The fluid pressure, with its oil lubrication is then forced through conduit **70** to the dental hand piece to operate an air turbine and thereby rotate an applicator cup present on the hand piece. At this point, it should be pointed out that when the foot control selector valve means **19** is energized, air pressure is released to line **70**, and the appropriately selected dental solution is discharged through line **51**. This insures that the applicator cup will be continually rotating when the solution is applied thereto. When the foot control selector valve means is deenergized, the applicator cup stops rotating, and the quick exhaust valves **44**, **53** and **56** exhaust the pressure present in the supply system to thereby prevent the extrusion of any additional cleaning material from the applicator cup.

In the second mode of operation, foot control selector valve means **19** energizes valve **32**, and the fluid pressure is then routed directly through flexible conduit **110** into the system and passes directly through line **71** to the control valve **72**. Control valve **72** is also normally closed and is actuated by a fourth orientation of shaft **43**. The fluid pressure then passes from valve **72** to pilot actuator **73**. Pilot actuator **73** is actually a water control valve actuated by air pressure supplied from valve **72**.

The water for the dental system and this valve is supplied through pressure regulator **74** and is regulated at approximately 40 to 45 psi and passes through filter **75** to an emersion heater **76**. This water heater tempers the temperature of the water and raises it to a maximum of 180°, although it may be altered to a much lower temperature if the operator of the dental system desires to use this water supply in the patient's mouth. From emersion heater **76**, the water passes through conduit **77** into the pilot actuator valve **73**. When the foot control selector valve means **19** is actuated to energize valve **32**, and second selector control valve means **20** is energized to activate valve **72**, the fluid pressure will open the pilot actuator **73** allowing water to flow therethrough into the manifolding system **78**. From manifold **78**, the water pressure would then flow through intermediate manifold **52** and into the shuttle valve **48**. As pointed out before, the shuttle valve **48** will block the flow of water attempting to flow towards container **11**, and will force the water into manifold means **49**, and on through X-fitting **50** into the flexible conduit **51** leading to the hand piece. In this manner, any pumice present in manifold **49**, fitting **50**, or in flexible conduit **51** would be flushed by the flow of hot temperature tempered water. If desired, the operator can reduce the temperature of the water by the appropriate thermostatic setting of water heater **76** to provide a solution on the order of 100° to 120° for use in the patient's mouth. The operator would also be able to utilize the pumice present in manifold **49** and line **51** to complete the last portion of the cleaning operation by rotating the selector knob **43** to the flush orientation and alternating the foot control valve between the second and third selective modes, allowing the water pressure to drive the remaining portions of the pumice into the patient's mouth. At that time, he could then use the water supply to rinse the patient's mouth before beginning the polishing operation.

It should be noted that the water flow through manifold **78** also passes through shuttle valves **55** and **58** in the same manner to flush the system of the polishing agent, and the prophylactic agent respectively.

In the third mode of operation, foot control selector valve **19** energizes third selector control valve **30**, and the fluid pressure is then conducted generally through conduit means **111** to one-way valve **79**. From there, it passes to T-fitting **80** and into the oiler **68**. T-fitting **80** is also connected to gauge **69** and in operation, the gauge **69** will reflect the fluid pressure present in the oiler and air turbine system. Thus, it will be noted that the oiler **68** and the air turbine system are pressurized in both the first and third selective modes of operation by the foot control selector valve means **19**. In the

latter or third mode of operation, only the turbine is energized, and no solutions are discharged from containers **11**, **12** and **13**. One-way valves **35** and **79** allow gauge means **69** to reflect the pressure present in oiler **68** without allowing any backfeed of fluid pressure into other parts of the system.

The water supply coming into the system is also diverted along conduit **81** prior to its arrival at the emersion heater and directed to the pilot actuator **82**. Pilot actuator **82** is again a water control valve actuated by fluid pressure present from pressure control switch **83**. Thus, when pressure control switch **83** is energized by depressing button **84**, the pilot actuator **82** allows a flow of water from conduit **81** into dispensing spout **92** to fill a paper cup or other container **93**. If desired, a timer or weight sensing means may be utilized to fill the cup of water automatically so that it will not be necessary to continually depress button **84**.

Referring to FIG. **2**, it will be noted that the fluid pressure from conduit **70** passes to air motor means **85** wherein the energy is converted to rotating mechanical power to rotate shaft **86**. The rotation is then translated 90° through transmission means **87** to thereby rotate rubber applicator cup **88**. At the same time, during the first mode of operation for the foot control selector valve means, a dental solution is applied through conduit **51** and is dispensed through an opening **89** defined in the applicator cup **88**. This allows the operator of the dental system to keep the dental hand piece in the patient's mouth at all times during the cleaning operation, and obviates the necessity for pausing to scoop up portions of pumice or other cleaning agents used in the cleaning treatment. As pointed out earlier, when the cleaning step is nearing its completion, the operator may desire to flush the remaining pumice into the patient's mouth by alternating the foot control between valves **30** and **32**, and thereby complete the cleaning operation by utilizing the remaining portion of pumice present in conduit **51**. When the pumice is exhausted, the operator may thereafter flush the patient's mouth with the tempered water supplied from the water supply system. Alternately, the solution in conduit **51** could be flushed into a cuspidor, or other waste disposal system.

Referring to FIG. **3**, the foot control selector valve means is shown in isometric with the first selective mode valve **31** and the third selective mode valve **30** aligned horizontally. The second selective mode valve is aligned vertically and equipped with a foot pedal **100**. Valve means **30** and **31** are actuated by means of cam surfaces **101** and **102**. This cam is actuated by lever **103** which is fixedly attached to cross arm **104**. Cross arm **104** and lever **103** rotate about pivot point **105** when the operator rotates cross arm **104**. Cross arm **104** is rotated by pushing the pedals **106** and **107** in a clockwise or counterclockwise motion to alternately energize valve means **30** and **31**. In operation, the operator desiring to utilize foot control selector valve in the first selective mode of operation would rotate cross arm **104** in a counterclockwise direction by pushing forward on pedal **107** or back on pedal **106**. This would cause cam surface **101** to depress the plunger **108** and thereby activate valve means **31**. The system would then be energized as was discussed previously for the first selective mode of operation. The second selective mode of operation would be effected by depressing the foot pedal **100** which would in effect energize valve means **32** to flush the system of accumulated cleaning agents or prophylactic solutions. The third mode of operation would be effected by rotating the cross arm **104** in a clockwise manner to bring cam surface **102** against plunger **109** to activate valve means **30**. In actual practice, the general conduit means **25** contains four individual flexible conduits to supply air to the foot control valve and to return it in one of the three selective modes of operation. The incoming air in conduit **24** is directed through X-fitting **112** into inlet manifolding means **27**, **28** and **29** to the control valves **30**, **31** and **32**, respectively.

Referring to FIG. **4**, the second selector valve means **20** is illustrated in an isometric manner with the central rotatable shaft **43** being mounted for rotation in brackets **150** and **151**. Individual valves **40**, **41** and **42** and **72** are positioned adjacent the shaft to be selectively energized by cam means **152**, **153**, **154** and **155**. Valves **40**, **41**, **42** and **72** are normally closed valves that are actuated from their normally closed mode to their open state when cam followers **156** through **159** are depressed. These cam followers are equipped with spring means as illustrated on valve **72** at **160** to force the cam followers against the cam surfaces **152** through **155**. As is illustrated by name plate **161**, the rotatable shaft **43** has five orientations, allowing the operator to select a fluoride orientation, a pumice orientation, a polish orientation, a flushing orientation, or stop. Cam lobes **152** to **153**, **154** and **155** are positioned about the shaft **43** to selectively actuate the appropriate control valves **40**, **41**, **42** and **72**. As illustrated, the control knob **162** and shaft **43** have been oriented in their polish orientation to selectively energize valve means **41** by means of cam **153**. As pointed out previously, this would allow fluid pressure to pass through to container **12**, driving the polishing agent through the manifolding means and into the dental applicator.

As noted earlier, FIG. **1** is a diagrammatic or schematic representation of the piping involved in our dental system. FIGS. **5** and **6** illustrate the actual construction of a representative prototype. Containers **11**, **12** and **13** are illustrated as upright cylindrical tanks mounted vertically on the chassis. In FIG. **5**, these tanks are shown from a top view of the system. Drive means **16**, **17** and **18** are utilized to rotate shafts **15** and the agitator means **14**. The agitator means **14** are curved and contoured to follow the shape of the cylindrical containers, and to enable a maximum of agitation during normal operational. It would also be possible to provide a single drive means to rotate the three shafts **15** and the agitating means **14** but the present system has been adopted for the sake of reliability. The selector knob for the second selector valve means is mounted on the front face of the panel as illustrated in FIG. **6**, with the shaft **43** extending over the top of control valves **40**, **41**, **42** and **70**. FIG. **6** illustrates positions of gauge means **56** and **69**, the cup receptor **170**, and fluid pressure regulators **36**, **37** and **38**. The dental hand piece **171** is mounted on the side of the unit with flexible conduit **51** extending from the hand piece to the unit.

While the preferred embodiment of the invention has utilized pumice, tin oxide, and stannous fluoride as the

preferred cleaning, polishing, and prophylactic solutions, it is quite apparent that many other abrasive and cleaning solutions can be utilized in the system. It should also be noted that although we have utilized air as the fluid pressure, other fluid discharge means such as nitrogen, or even a light non-viscous liquid could be utilized. Alternately, the containers **11**, **12** and **13** could be supplied in a variety of forms and shapes. Electric, hydraulic, or solenoid valve systems could also be utilized rather than the pneumatic system employed herein.

While specific means have been illustrated in specific examples and mentions given herein, it is to be understood that various modifications of this system or the operation thereof would occur to one skilled in the art. Accordingly, it is understood that the present invention is not limited to these illustrations and examples, but is to be limited only in accordance with the appended claims.

We claim:

1. A dental system for storing and selectively discharging relatively viscous and abrasive cleaning agents during a dental prophylaxis comprising:

a. first control valve means to receive a fluid pressure and control the supply of said fluid pressure to said system,

b. at least two containers adapted to receive and store relatively viscous and abrasive cleaning agents for use in dental prophylaxis, each of said containers discharging into a single discharge means when supplied with said fluid pressure,

c. a single discharge applicator means for discharging said viscous and abrasive cleaning agents at or near the patient's mouth during a dental prophylaxis,

d. second selector control valve means to selectively direct fluid pressure from said first control valve means to one of said containers to selectively discharge said viscous and abrasive cleaning agent from any one of the selected containers into said single applicator means.

2. A dental cleaning system as claimed in claim **1** wherein said single applicator means further comprises a dental hand piece, said hand piece having a rotating applicator and a single discharge opening defined within said applicator for discharging dental cleaning agents therethrough.

3. A dental system as claimed in claim **1** which further comprises flushing means to provide a supply of flushing solution to said discharge means when said flushing means is energized, said flushing means being energized by said second selector control valve means.

4. A dental system as claimed in claim **2** which further comprises an air turbine drive means for rotating said applicator.

5. A dental system as claimed in claim **3** wherein a flexible conduit supplies said dental cleaning agent under pressure to the opening defined in said applicator.

6. A material dispensing system comprising:

a. fluid pressure supply means to provide a supply of fluid pressure to said system,

b. first control valve means to receive said fluid pressure and control the supply of fluid pressure to said system,

c. at least two supply containers to furnish materials for dispensing in said system, each of said containers discharging into a single discharge means when supplied with said fluid pressure,

d. flushing means to provide a supply of flushing solution to said discharge means when said flushing means is energized,

e. second selector control valve means to selectively direct fluid pressure from said first control valve means to each of said containers or to energize said flushing means,

whereby said second selector control valve means will selectively direct fluid pressure received from said first control valve means to one of said containers, or to energize said flushing means, causing said container or flushing means to discharge materials into said discharge means.

7. A material dispensing system as claimed in claim **6** wherein said supply container further comprises agitating means to continually agitate materials stored in said containers.

8. A material dispensing system as claimed in claim **7** wherein said supply container and agitating means further comprise:

a. a cylindrical tank,

b. a rotatable shaft extending through the side wall of said container in a radial direction,

c. a curved and contoured agitating member mounted on said shaft for rotation within said container to agitate said solution stored therein, and

d. drive means to rotate said shaft and said curved and contoured agitator member.

9. A material dispensing system as claimed in claim **6** wherein said discharge means comprises a common manifold connecting the outlet of each of said supply containers and the outlet of said flushing means to a flexible conduit which terminates in a dental hand piece.

10. A material dispensing system as claimed in claim **6** wherein said flushing means further comprise a continuous supply of filtered and temperature tempered water and a pneumatically operated control valve, wherein fluid pressure selectively directed from said second selector control valve means will energize said pneumatic control valve to supply said filtered tempered water to said discharge means.

11. A material dispensing system as claimed in claim **6** wherein said second selector control valve means further comprise:

a. a rotatable control shaft having at least three orientations;

b. at least three valves mounted adjacent to said control shaft, each of said valves having a first normally closed mode and a second open mode, and

c. at least three cam means mounted on said shaft to selectively open each of said valves when said shaft is rotated to each of its orientations.

12. A material dispensing system as claimed in claim **6** wherein said first control valve means further comprise a foot control selector valve means to selectively supply fluid pressure to said material dispensing system, said foot control selector valve means having a first, second, and third selective modes.

13. A dental system comprising:

a. fluid pressure means to provide a supply of fluid pressure to said system;

b. first selector control valve means to receive said fluid pressure and control the supply of fluid pressure to said system;

c. at least two supply containers to furnish materials for use in said dental system, each of said containers discharging into a single discharge means when supplied with said fluid pressure,

d. flushing means to provide a supply of flushing solution to said discharge means when said flushing means is energized, and

e. a second selector control valve means having a rotatable control shaft having at least three orientations, at least three valves mounted adjacent to said control shaft, each of said valves having a first normally closed mode and a second open mode, and at least three cam means mounted on said shaft to selectively open each of said valves when said shaft is rotated to each of its orientations, wherein the orientation of said control shaft will selectively direct fluid pressure from said first selector control valve means to each of said containers or to energize said flushing means.

14. A dental system as claimed in claim **13** wherein said flushing means further comprises a continuous supply of filtered and temperature tempered water and a pneumatically operated control valve, wherein fluid pressure selectively directed from said second selector control valve means will energize said pneumatic control valve to supply said filtered temperature tempered water to said discharge means.

15. A dental system as claimed in claim **13** wherein at least one of said supply containers is adapted to receive and discharge a dental polishing agent or pumice.

16. A dental system as claimed in claim **15** wherein said supply container containing said dental polishing agent or pumice is equipped with an agitating means to continually agitate the polishing agent or pumice stored in said supply container.

17. A dental system comprising:

a. fluid pressure means to provide a supply of fluid pressure to said system;

b. a foot control selector valve means to receive fluid pressure from said fluid pressure supply means and selectively supply said fluid pressure to said dental system, said foot control selector valve means having first, second, and third selective modes,

c. at least two supply containers to furnish dental solutions for use in said dental system, each of said containers discharging into a single discharge means when supplied with fluid pressure,

d. flushing means to provide a supply of flushing solution to said discharge means when said flushing means is energized, and

e. a second selector control valve means having a rotatable control shaft, said shaft having at least three orientations, at least three valves mounted adjacent to said control shaft, each of said valves having a first normally closed mode and a second open mode, and at least three cam means mounted on said shaft to selectively open each of said valves when said shaft is rotated to each of its orientations, whereby said second selector control valve means will selectively direct fluid pressure received from said first selector control valve means to one of said containers or to energize said flushing means, causing said container or flushing means to discharge dental solutions into said discharge means.

18. A dental system as claimed in claim **17** wherein said discharge means comprises a common manifold connecting the outlet of each of said supply containers and the outlet of said flushing means to a flexible conduit which terminates in a dental hand piece, said dental hand piece having a turbine mounted therein which is rotated by fluid pressure supplied from said dental system, said turbine adapted to rotate a solution applicator mounted on said dental hand piece.

19. A dental system as claimed in claim **17** wherein said first selective mode of said foot control selector valve means will supply air pressure from said fluid pressure means to said second selector control valve means and said dental hand piece to energize said turbine whereby the solution directed by said second selector control valve means is furnished to said dental hand piece while said air turbine is rotating said solution applicator.

20. A dental system as claimed in claim **17** wherein said second selective mode of said foot control selector valve means will supply fluid pressure received from said fluid pressure means to said selector control valve means to energize said flushing means.

21. A dental system as claimed in claim **18** wherein said third selective mode of said foot control selector valve means will supply fluid pressure from said fluid pressure means to said dental hand piece to rotate said turbine without the discharge of any dental solution.

22. A dental system as claimed in claim **17** wherein said flushing means further comprises a continuous supply of filtered and temperature tempered water and a pneumatically operated control valve, wherein fluid pressure selectively directed from the second selector control valve means will energize said pneumatic control valve to supply said filtered and tempered water to said discharge means.

23. A dental system as claimed in claim **17** wherein said supply containers further comprise agitating means to continually agitate dental solutions stored in said containers.

24. A dental system as claimed in claim **17** wherein said supply container and said agitating means further comprise:

a. a cylindrical tank,

b. a rotatable shaft extending through the side wall of said container in a radial direction,

c. a curved and contoured agitating member mounted on said shaft for rotation within said container to agitate said solution stored therein, and

d. drive means to rotate said shaft and said curved and contoured agitator member.

25. A method of dental prophylactic treatment comprising:

a. selectively applying fluid pressure to a dental cleaning system,

b. receiving and storing at least two dental agents, at least one of which is viscous and abrasive, in at least two separate containers, said containers being positioned in a location remote from the patient's mouth,

c. conveying said relatively viscous and abrasive dental cleaning agent through a flexible conduit to a rotating dental applicator means,

d. applying said viscous and abrasive dental cleaning agents for a dental prophylaxis within a patient's mouth, said agent being applied as it is discharged through an opening defined in a rotating dental applicator means,

e. selectively applying fluid pressure by means of a selector control valve to selectively direct fluid pressure from said source of fluid pressure to any one of said containers, said pressurization conveying said viscous and abrasive agent from said remote location to said rotating applicator within the patient's mouth.

26. A method of dental prophylactic treatment as claimed in claim **25** wherein said viscous and abrasive cleaning agent contains an ingredient selected from the group consisting of pumice, flour pumice, tin oxide, or mixtures thereof.

27. A method of dental prophylactic treatment as claimed in claim **25** which further comprises selectively discharging a prophylactic solution from said second container after selectively discharging a dental cleaning solution from said first container.

28. A method of dental prophylactic treatment as claimed in claim **26** which further comprises the step of flushing said flexible conduit with a flushing solution between the step of discharging cleaning solution and the step of discharging said prophylactic solution.

29. A method of dental prophylactic treatment as claimed in claim **27** wherein said prophylactic solution contains a fluoride compound.

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