Dec. 7, 1943. H. P. SIEGEL 2,336,132

DENTAL TUMBLER SUPPLY VALVE PART

Filed Sept. 24, 1941

Fig.1.

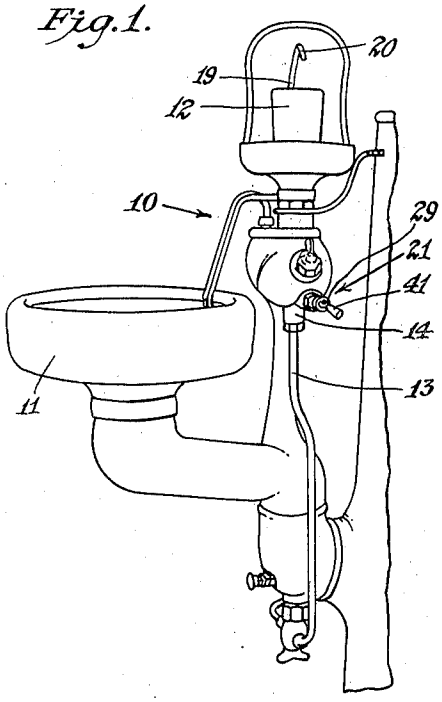


Fig.4.

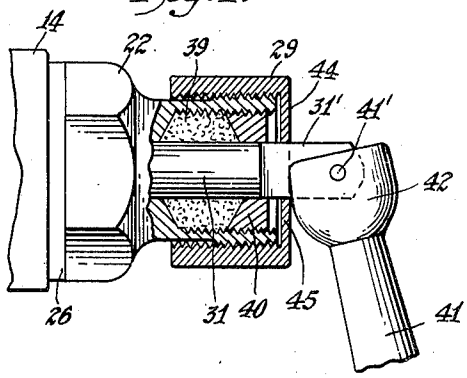


Fig.5.

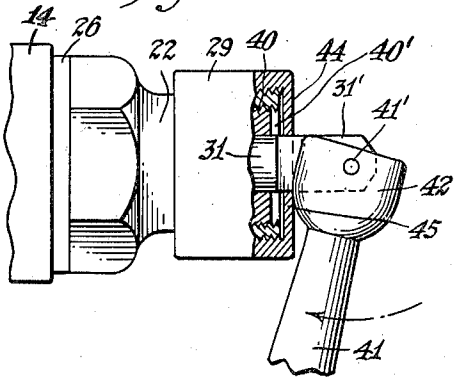


Fig.2.

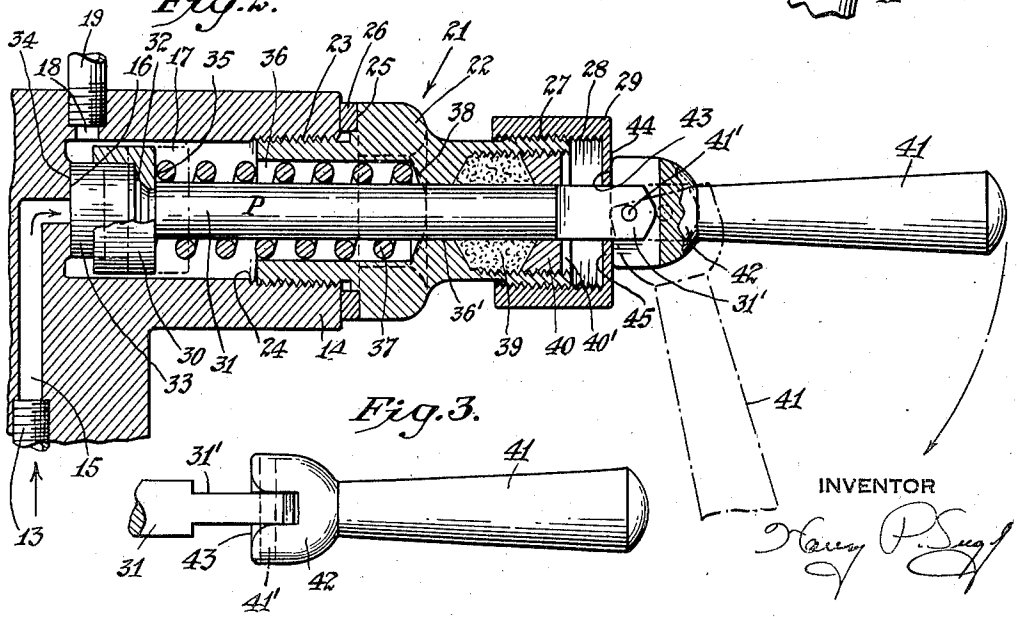


Fig.3.

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DENTAL TUMBLER SUPPLY VALVE PART

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Application September 24, 1941, Serial No. 412,114

1 Claim. (Cl. 251—132)

This invention relates to dental tumbler supply valve part for use on a dental cuspidor fixture, and an object of the invention is to provide an improved valve part which is more convenient to use, and which can be instantly closed or likewise opened to its full capacity. Another object of the invention is to provide simple means for changing the extent of the opening movement of the valve part to vary its capacity, and without interfering with the aforesaid instantaneous operation.

A further object of the invention is to provide a valve part structure having a double acting handle capable of being manually moved into a fixed position at which the flow through the device will be continuous, or of being manually operated in one direction only with automatic cut-off when intermittent flow is desired. Another object of the invention is to provide a control handle for a tumbler supply valve part that can be actuated by a dentist without the use of his fingers, such as by his wrist, or the handle of an instrument.

Heretofore tumbler supply valves have been constructed to be opened and closed by means of a threaded part turned by the fingers of a dentist or his patient, and which is operative to regulate the rate of flow of water to the tumbler of the fixture. Such flow regulating means are unsatisfactory, as they are not only slow acting with respect to full on or off positions, but are awkward for a patient to manipulate, and are also potentially unsanitary for the dentist.

Means are provided for effectively packing the valve part of this invention against external leakage when in use, and without interference with the aforesaid capacity adjusting means. The structure illustrated is particularly adaptable for replacement purposes where other slow operating valve parts are already in use.

Other features and advantages of the invention will be hereinafter described and claimed.

The invention will be more fully understood by reference to the drawing forming a part of this specification, and in which,

Fig. 1 is a perspective view of a portion of a dental cuspidor fixture showing my improvement applied thereto.

Fig. 2 is an enlarged longitudinal section of my improved valve part shown attached to a broken away portion of the dental fixture.

Fig. 3 is a top plan view of the handle of the device, and the end of the attached plunger stem, and

Figs. 4 and 5 are detail views showing the handle in closed and open positions respectively, following certain adjustments for intermittent operation of the mechanism.

Referring to the drawing, and particularly to Fig. 1, the numeral 10 represents a dental cuspidor fixture having the customary waste bowl 11, tumbler 12, and water supply inlet pipe 13 leading from a service line (not shown) to a fitting 14 having a port 15 (Fig. 2) extending from pipe 13 through a valve seat 16 to a chamber 17 in said fitting. Another port 18 leads from chamber 17 to a tumbler supply pipe 19 extending upwardly within the fixture, and terminating in a goose neck 20 directly above the tumbler 12.

Referring more particularly to Fig. 2, the numeral 21 designates in general my improved valve part, which is adapted to be operatively secured to the fitting 14 and provide more efficient means for controlling the flow of water to the tumbler 12. It comprises a housing member 22 with exterior threads 23 formed thereon at one end for engagement with interior threads 24 provided in the adjacent end of the fitting 14. A shoulder 25 is arranged to overlie the outer end of the fitting, and a gasket 26 therebetween provides for a tight joint upon tightening of the threads.

The other end of the housing 22 is provided with exterior threads 27 for engagement with the internal threads 28 of a fulcrum cap 29. Intermediate its threaded ends, and adjacent the shoulder 25, the housing 22 may be of a configuration suitable for the application of a wrench or other tool appropriate for tightening the joint at the gasket 26.

The valve part 21 includes a plunger element P extending through the housing 22 beyond either end thereof, and consists of a cylindrical head 30, and an elongated stem 31. The head 30 is recessed at 32 for the snug reception therein of a disk 33 made of rubber or other suitable elastic material, which projects from the head 30, and is provided wtih a flat surface 34 constituting a valve face for engagement with the flat seat 16 of the fitting 14. Stem 31 is less in diameter than the head 30 to form a shoulder 35.

Housing 22 is provided with a cylindrical recess 36 sufficiently larger in diameter than the stem 31 to snugly accommodate a helical spring 37 closely surrounding the stem 31, and abutting the rear wall 38 of recess 36. Thus the spring, the stem, and the walls of the recess 36, cooperate to assist in guiding and aligning the plunger

P in respect to its proper engagement with seat 16.

The other end of spring 37 bears against shoulder 35 of head 30, and is thus effective to urge the plunger P in a direction in which the face 34 will be pressed tightly against the seat 16. The strength of spring 37 is far greater than the pressure of the water effective over the restricted area of the port 15 where it passes through seat 16, so that the disk 33 when seated will not only provide a tight joint, but one in which the sealing pressure will be uniform, to minimize wear or other effects tending to mutilate or distort the disk 33. Also the plunger being confined to reciprocal movement rather than rotational as well, prolongs the useful life of the disk, and reduces wear on the packing.

Forwardly of the recess 36 the housing 21 is bored at 36' for a relatively short distance, and stem 31 is slidingly fitted therethrough for the further guidance of the stem. The outer end of the housing is recessed and internally threaded for the accommodation of a gland consisting of metallic packing material 39, and an externally threaded nut 40, slotted at 40' for the application of a tool to turn the nut and force the packing tightly about the stem. In this manner leakage around the stem is prevented when the plunger is in an unseated position, but without interfering with the functioning of the fulcrum cap 29 to be presently described. It will be noted that stem 31 also has a sliding fit through the nut 40 which adds to its desirably rigid support and guidance in order to counteract components set up across its axis when the handle is actuated.

A handle or lever 41 is provided for operating the plunger when a supply of water is required for the tumbler. For this purpose the handle is provided with an enlarged cylindrical bifurcated end 42 within which the flattened end 31' of the stem 31 is pivoted, as at 41'.

Normally the handle 41 is in the position shown in full lines in Fig. 2, with the flat surface 43 of the end 42 bearing against the contiguous surface 44 on the end wall 45 of the fulcrum cap 29. When the handle is now rotated about the pivot 41' into the position shown in dot and dash lines, the plunger will be moved to the right because of the leverage exerted against the fulcrum, and consequently water from pipe 13 will then be free to flow through port 15 into the chamber 17 from which it cannot escape except through port 18 and pipe 19 leading to the tumbler 12. And because the handle is then in a position in which its point of contact with the fulcrum cap is slightly over center, or beyond the axis of stem 31 at which point the pivot 41' is located, the handle will remain so fixed, and water will flow continuously through the described system. The handle may be easily flicked from either position to the other without necessarily using the fingers, as will be readily understood.

Because the fulcrum cap 29 is adjustably mounted by reason of its threaded connection to housing 22, it may be turned to move it toward the left from the position shown in Fig. 2 when a diminished flow of water is desired. It will then be further away from the pivot 41', and the handle will fall into a somewhat lowered position, with the result that when the handle is again operated to open the plunger the stroke of the latter will be shorter, and the continuous flow of water will also be correspondingly lessened.

Referring to Figs. 4 and 5, it will be seen that the fulcrum cap 29 has been adjusted into an extreme position, directly opposite to that shown in Fig. 2, for the purpose of operating the plunger in a manner in which the handle will not assume an over-center position, and therefore will not lock the plunger unseated, so that when released from the position shown in Fig. 5 in which the tumbler is being supplied with water, the plunger will be free to automatically cut off the water by resuming the position shown in Fig. 4 due to the urge of spring 37.

It will thus be apparent that my improved valve part is adapted to meet the requirements stated when used on the dental fixture as shown and described herein. There are doubtless other purposes for which it would be equally useful as a part of, or as embodied in an integral valve structure. Therefore I do not wish to be understood as limiting myself to the exact form of construction shown. Various modifications within the scope of the appended claim may be made without departing from the spirit of my invention.

I claim:

A dental tumbler supply valve part for use on a dental cuspidor fixture having a valve body member provided with inlet and outlet ports and a valve seat therebetween, comprising a housing member attachable to said valve body member, a plunger slidable in said housing member and having a valve face at its inner end, spring-means for urging said plunger toward said valve seat, a fulcrum cap adjustably threaded to the outer end of said housing member, the outer end of said plunger protruding from said cap, a handle provided with a head pivoted to said outer end of said plunger and adapted to engage said fulcrum cap to unseat said plunger, packing-means for said plunger within the outer end of the housing member and covered and concealed by the fulcrum cap, said head being fashioned to provide a surface engageable with said fulcrum cap when the latter is in an outwardly adjusted position and operative when said handle is actuated to unseat said plunger, and to provide another surface engageable with said fulcrum cap when the latter is in an inwardly adjusted position and operative when said handle is actuated to unseat said plunger and when said handle is released to restore the same and thereby provide for automatic reseating of said plunger.

HARRY P. SIEGEL.