

(No Model.)

O. E. WALL.
DENTAL PLUGGER.

No. 558,443.

Patented Apr. 14, 1896.

Fig. 1.

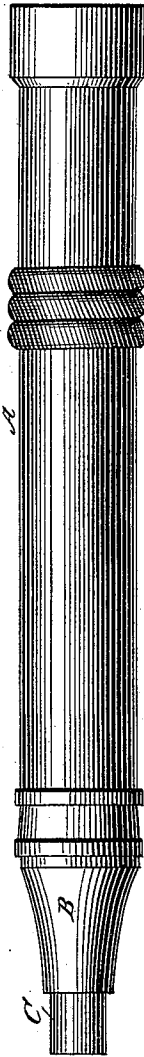


Fig. 2.

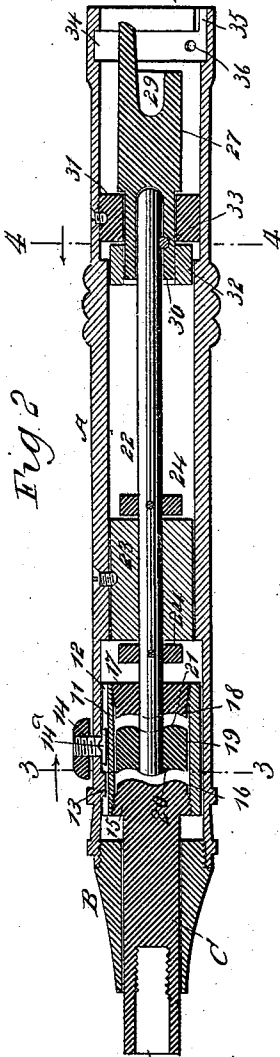


Fig. 3.

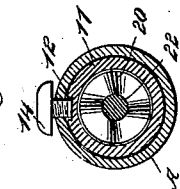


Fig. 4.

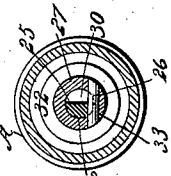


Fig. 5.

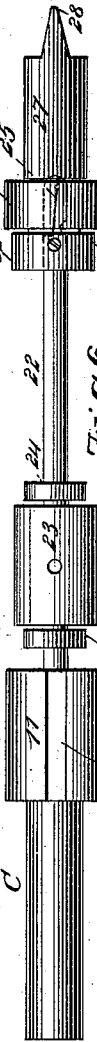
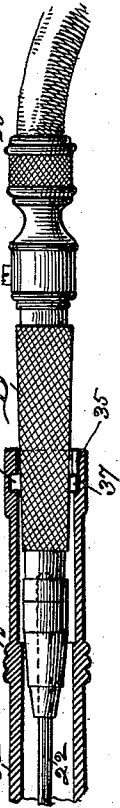


Fig. 6.



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ORMOND EDGAR WALL, OF HONOLULU, HAWAII.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 558,443, dated April 14, 1896.

Application filed June 20, 1895. Serial No. 553,433. (No model.)

To all whom it may concern:

Be it known that I, ORMOND EDGAR WALL, of Honolulu, Hawaii, have invented a new and Improved Dental Plugger, of which the following is a full, clear, and exact description.

My invention relates to an improvement in dental pluggers; and it has for its object to construct a plugger in a simple, durable, and economic manner, and one which will have a double action, being able to strike a number of blows with the point at one revolution of the driving-shaft, and whereby the point may be brought into action either when its working surface is pressed against an object or when backward pressure is exerted thereon, or the point pulled in a rearwardly direction, and whereby also the point may be held stationary for any given time when desired, no matter whether pressure is exerted on the point or not.

Another object of the invention is to so construct the plugger that fillings of any shape, or to be located in any position, can be perfectly placed in any tooth of a person's head, usually several tools being necessary to accomplish this work.

Another object of the invention is to provide a dental plugger fitted for both slip-joint connection and chuck-handpieces.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved plugger. Fig. 2 is a longitudinal vertical section through the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2. Fig. 4 is a similar section on the line 4 4 of Fig. 2. Fig. 5 is a side elevation of the interior mechanism of the plugger, the shell or barrel having been removed; and Fig. 6 is a longitudinal vertical section through a portion of the plugger-barrel, showing a handpiece in position in the end of the barrel.

In carrying out the invention the barrel or shell A of the plugger is usually made cylindrical, and may be of any desired length, one

end being open and the other end provided with a plug B, screwed or otherwise fastened therein, and the said plug is bored to receive the point-chuck C, which slides loosely in the plug, extending beyond its outer end and likewise within the barrel. This chuck is provided at one end with a socket 10, into which the plugger-point is secured in any known manner, and within the barrel A, adjacent to the inner end of the plug B, a cylinder 11 is mounted to have sliding or longitudinal movement. This cylinder has a longitudinal groove 12 made externally therein to receive a projection 13 on the inner face of the barrel, whereby the cylinder is prevented from revolving, and the cylinder may be at any time prevented from having even longitudinal movement by pressing a button 14, located exteriorly on the barrel, the shank of the button extending through an opening in the barrel, being provided at its inner end with a shoe 14^a, usually wedge-shaped and loosely entered in the groove 12 of the cylinder, as by pressing the button inward and slightly turning it when so pressed, the shoe will jump into the aforesaid slot 12 and hold the cylinder fast.

The point-socket is fitted at its inner end with a head 15, and this head is screwed into the outer end of the cylinder, being provided with a left-hand thread. The inner face of the chuck-head 15 has a ratchet-surface 16, composed of two or more, usually four, teeth, similar to those shown in Fig. 3, and in the opposite end of the cylinder a plug 17 is entered, being provided with a right-hand thread, and the inner face of the plug 17 has a ratchet-surface 18 formed thereon, corresponding substantially to the ratchet-surface of the head of the chuck. Between these two ratchet-faces a piston 19 is held to revolve within the said cylinder 11, having a ratchet-surface 20 (shown in Fig. 3) on its outer face for engagement with the opposing ratchet-surface of the head of the chuck, and a second ratchet-surface 21 is formed on the inner face of the said piston, to be engaged by the ratchet-surface of the plug 17.

The piston 19 is firmly secured to one end of a drive-shaft 22. This shaft is carried loosely through the cylinder-plug 17, and is held to turn loosely in a guide-block 23, lo-

cated within and secured to the barrel A, while collars 24 are secured on the shaft at each end of the said bearing-block 23, to prevent the shaft from having longitudinal movement.

5 The shaft may be rotated in various ways. In Fig. 2 of the drawings the plugger is shown as adapted to receive a slip-joint, and when this is employed the inner extremity of the shaft 22 is provided with a flattened longitudinal surface 25 and a circumferential groove 26, adjacent to the said surface.

10 In order to facilitate the attachment of the slip-joint, a rod 27 is provided, having a spur 28 at its outer end and located adjacent to the rear end of the barrel, the rod being furthermore provided at this end with a cavity or socket 29. A socket 30 is likewise formed at the inner end of the rod, which receives the grooved and flattened end of the driving-shaft 22. The rod is reduced in diameter near its inner end, and the reduced portion is passed through a sleeve 31, located within the barrel A and secured thereto, while a collar 32 is formed on the rod or secured thereto just forward of the sleeve, to prevent the rod from having longitudinal movement, yet permitting it to freely turn; and a pin 33 is made to cross the bore or socket 30 at the inner end of the attaching-rod 27, the pin being located quite close to the side wall thereof, as shown in Figs. 2 and 4. The shaft is entered in the inner end socket 30 of the said attaching-rod 27 with its flattened surface presented to the pin 33, whereupon by turning the attaching-rod slightly the pin 33 will be made to enter the groove 26 in the shaft, firmly connecting the two and causing them to revolve in unison, since the applied power will be in a direction to revolve the rod and shaft, so that the pin 33 will remain in clamping position with the latter.

15 In the rear end of the barrel a circumferential groove 34 is produced in its inner face, and a slot 35 is run from the extreme rear end of the barrel into the said groove 34, as shown in Fig. 2; and a pin 36 is placed in the groove 34, one at each side of the slot 35.

20 The slip-joint connection as ordinarily made is provided with a spring-catch, and when the joint is applied to the plugger this spring-catch will be brought into the circumferential groove 34, the plugger-barrel being kept from turning by the catch engaging with the pin 36 at each side of the entering slot 35. It will be understood that when the slip-joint connection is employed the end of the power-conveyer shaft is connected by a clutch mechanism with the end of the rod 27 to rotate the plugger-shaft. Instead of using the slip-joint connection for connecting the plugger with the source of power the ordinary drill-handpiece may be employed for this purpose, as shown in Fig. 6. As ordinarily constructed the handpiece D is provided with a button 37 on the external surface. When the handpiece is employed, the rod 27, the sleeve 31, and the collar 32 are removed and the hand-

piece is inserted into the barrel of the plugger, the button 37 on the handpiece engaging the slot 35, preventing the plugger-barrel from turning when in use, and the chuck being secured directly to the plugger-shaft 22. It will be understood, however, that power may be applied to the shaft 22 in any desired manner.

25 In the operation of the device the point is screwed or otherwise secured to the chuck C. By pressing on the point the ratchet-teeth on the chuck will be brought in contact with the ratchet-teeth 20 on the outer face of the rotating piston 19, and the said piston will force the cylinder 11 forward, but continued pressure on the point will force the ratchet-teeth on the chuck to again come in contact with the opposing ratchet-teeth of the piston, causing a second blow; and it is therefore evident that when four ratchet-teeth are formed on each ratchet-surface four blows will be struck at each revolution of the piston 19. The same description answers practically for the back action.

30 By pulling on the plugger-point the cylinder 11 is moved forwardly, thereby causing the teeth of its inner ratchet 18 to engage with the inner ratchet of the rotating piston. The cylinder will now be forced backward, but continued pulling-strain on the point will rapidly force these two ratchet-surfaces in contact, producing a series of rapid back-acting blows.

35 When the dental engine is running, if any of the ratchets are in contact, they will be forced out of engagement without operating the point unless there is pressure on the point in either way; and if pressure is brought to bear on the button 14, the cylinder will be held stationary, no matter whether pressure is on the point in either direction. By this means the operator is enabled to pick up gold, carry it to the cavity, and place it in position without the plugger causing any blows and without stopping the machine.

40 The chuck is screwed into the cylinder in a left-handed manner, because when the engine is turning in a right-hand direction it will have a tendency to screw the chuck but the tighter in the cylinder, and the ratchet-faced plug 17 is screwed in the cylinder in a right-hand manner, because in the back-action, when the engine is turning over to the right, it will have a tendency to screw the plug tighter in the cylinder.

45 Among the many advantages that may be named for this invention, it may be mentioned that the plugger has a double action; it will not operate the point until the operator pushes or pulls thereon; it can be stopped when the engine is in motion; it may be made to give as many blows to the revolution of the driving-shaft as needed by increasing or diminishing the number of ratchets; it is fitted for slip-joint and for other handpieces; the force of the blow is regulated by the pressure on the point; there is an entire absence of

springs, and the plugger will operate efficiently no matter which way the engine may be revolved.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dental plugger, a casing, a head-block, a point-chuck provided with a head, the said head-block and chuck-head being spaced apart and connected together and having sliding movement in the casing, a piston held to rotate between the head-block and chuck-head, and a shaft driving said piston, the opposing surfaces of the piston and chuck and piston and head-block being undulating, the said piston being of less thickness than the distance between the chuck-head and head-block, whereby either the undulating surface of the chuck-head or the undulating surface of the head-block may be brought into contact with an undulating surface of the piston to impart forward or back blows, as and for the purpose set forth.

2. In a dental plugger, the combination with a casing, of a cylinder having sliding movement within the casing, a point-chuck connected with one end of the cylinder and provided with a toothed surface within the cylinder, a head-block connected with the opposite end of the cylinder and provided with an inner toothed surface, a piston held to rotate within the cylinder between the toothed surfaces of the chuck and head-block and having its opposite faces likewise toothed, the said piston being of less thickness than the distance between the toothed surfaces of the chuck and head-block, whereby either the toothed surface of the chuck or the toothed surface of the head-block may be brought into contact with a toothed surface of the piston,

and means whereby both of said toothed surfaces may be held out of engagement with the piston, as and for the purpose set forth.

3. In a dental plugger, a casing, a chuck, a cylinder in which the head of the chuck is secured, the said cylinder being likewise provided with a head-block facing the head of the chuck, a piston mounted to revolve within the cylinder and attached to a shaft loosely passed through the head-block, opposing surfaces of the said head-block and piston and piston and chuck-head being undulating, means for preventing a rotary movement of the cylinder, and guiding the same in an end-wise movement, and a brake whereby the sliding movement of the cylinder may be checked, as and for the purpose specified.

4. In a dental plugger, a casing, a point-chuck having sliding movement in the casing, a cylinder to one end of which the head of the chuck is secured, the said cylinder being provided with an external longitudinal groove and having sliding and guided movement within the casing and provided with a head-block at its inner end, a piston mounted to revolve between the head-block and the chuck-head, the opposing faces of the piston, head-block and chuck-head being provided with ratchet-teeth, a shaft passed through the head-block and secured to the piston, means, substantially as described, for driving said shaft, and a brake adapted to enter the said longitudinal groove of the cylinder whereby the cylinder may be held rigid within the casing, as and for the purpose specified.

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Witnesses:

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