Jan. 11, 1944. H. E. MELTZER 2,339,092

AMALGAM MIXING MACHINE

Filed Dec. 13, 1941

Fig. 1.

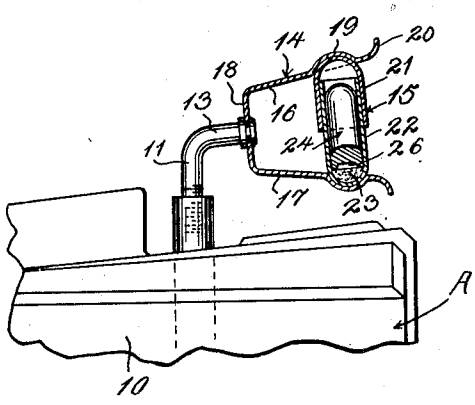


Fig. 2.

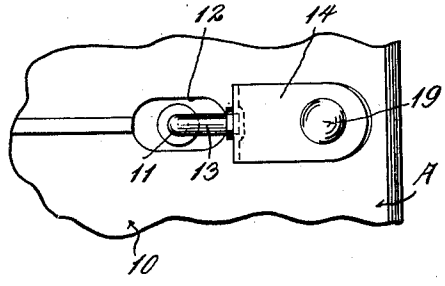


Fig. 3.

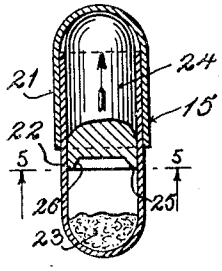


Fig. 4.

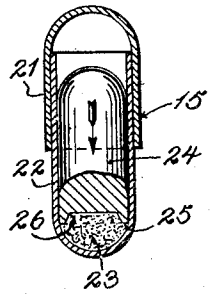
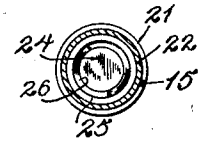


Fig. 5.



INVENTOR
HENRY E. MELTZER

BY

ATTORNEYS

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AMALGAM MIXING MACHINE

Henry E. Meltzer, Racine, Wis.

Application December 13, 1941, Serial No. 422,825

2 Claims. (Cl. 259—91)

This invention appertains to mixing and agitating devices, and more particularly to a novel amalgam mixing machine.

In mixing amalgam for the filling of tooth cavities, it is highly essential that the mercury and silver be thoroughly unionized. Otherwise the proper plastic mix will not be had, and a poor filling will result.

It has heretofore been proposed to vibrate a capsule containing a ball and the desired quantity of mercury and silver. The function of the ball is to strike the mercury and silver to bring about the trituration thereof. Actually, however, the round face of the ball allows the free flowing mercury to ride up around the curved face thereof, resulting in poor unionization, and often the mercury creeps past the ball due to the slight (if any) engagement of the ball with the inner face of the capsule.

Therefore, one of the primary objects of my invention is to provide a capsule having an elongated cylindrical hammer slidably mounted therein and snugly engaging the walls thereof, whereby the desired blows will be given the mercury and silver, due to the rapid reciprocation of the capsule, so that the proper amalgamation will take place without danger of the mercury separating from the silver or creeping past the hammer.

Another salient object of my invention is to provide an amalgam mixing machine embodying a capsule and a cylindrical hammer having its striking face provided with a depression or cavity, whereby the mercury and silver will be effectively crowded into a confined space and thereby thoroughly mixed to bring about the unionization thereof, the cavity forming a scraping edge about the lower end of the hammer for removing particles of mercury and silver from the sides of the capsule.

A further important object of my invention is the provision of a novel spring clamp for receiving the capsule, whereby the capsule will be resiliently mounted on the machine, and whereby the capsule can be quickly removed from and associated with the machine.

A still further object of my invention is the provision of a clamp for detachably supporting the capsule having spring arms provided with seats in which the ends of the capsule are adapted to fit, the spring arms functioning not only to hold the capsule on the machine, but to hold the sections of the capsule in correct telescoping position against accidental displacement.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a fragmentary side elevational view of an amalgam mixing machine showing my invention incorporated therewith, parts of the view being shown broken away and in section to illustrate structural detail.

Figure 2 is a fragmentary, top, plan view of the amalgam mixing machine, showing my invention incorporated therewith.

Figure 3 is an enlarged, detail, longitudinal, sectional view through the capsule, showing the hammer in a raised position, parts of the hammer being shown broken away and in section.

Figure 4 is a view similar to Figure 3, but showing the hammer in its lowered striking position.

Figure 5 is a transverse sectional view through the capsule, taken on the line 5—5 of Figure 3, looking in the direction of the arrows.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates an amalgam mixing machine of the vibrating type, and the same includes a casing 10 and a vibrating rod 11. This rod extends through a slot 12 formed in the top wall of the casing. Any preferred means can be utilized for actuating the rod, and this operating means is housed within the casing 10.

The upper end of the operating rod 11 has formed thereon a substantially right-angularly extending arm 13, and this arm has secured thereto the resilient clamp 14 for detachably receiving the capsule 15.

The clamp 14 is preferably formed from spring steel and is of a substantially U-shape in side elevation and includes diverging resilient arms 16 and 17 and a connecting bight portion 18. The arm 13 of the rod 11 is rigidly secured to the central portion of the bight 18. The spring arms 16 and 17 adjacent their forward ends are provided with struck-out seats 19 for receiving the ends of the capsule 15. The extreme outer ends of the arms 16 and 17 forwardly of the seats 19 can be provided with outturned arcuate lips 20 for facilitating the guiding of the ends of the capsule between the spring arms and into the seats 19.

The capsule 15 can be of any preferred character or size and includes telescoping companion half-sections 21 and 22 for receiving the amalgam mix 23 and the hammer 24.

The hammer 24 forms an important feature of the invention and includes an elongated cylindrical body having a lower substantially flat face 25. This flat face 25 is provided with a recess or cavity 26, and the side walls of the cavity terminate close to the lower peripheral edge of the hammer, for a purpose which will be later set forth.

The outer diameter of the elongated cylindrical hammer 24 is substantially equal to the interior diameter of the capsule, so that the hammer will have snug sliding contact with the inner wall of said capsule. The upper end of the hammer 24 can be rounded, if so desired, so as to conform to the configuration of the upper end wall of the capsule.

In use of my device, the desired quantity of the amalgam mix 23 is placed within the capsule, after which the hammer 24 is slid in the capsule on top of the mix, with the striking end of the hammer facing the mix. The sections of the capsule 21 and 22 are now placed together, and the capsule is slid between the arms 16 and 17 of the clamp 14 until the ends of the capsule are received within the seats 19.

The machine can now be set in operation for vibrating the capsule, and the hammer 24 will be given a reciprocatory motion, so that the striking end thereof will be rapidly brought into striking contact with the amalgam mix. On each blow of the hammer, the amalgam mix will be crowded into the depression or cavity 26 of the hammer, and, consequently, the mix will be quickly and expeditiously unionized to bring about the making of the proper plastic mass. Due to the cavity or depression 26, the mercury does not tend to separate from the silver and cannot creep past the hammer, and, consequently, the desired unionization of the amalgam mix is assured. Due to the cavity, a scraping lower peripheral edge is formed around the bottom of the hammer, and this edge scrapes off particles of mercury and silver from the sides of the capsule during the reciprocation of the hammer. After the mix is amalgamated, the capsule can be quickly removed from the clamp.

Due to the fact that the spring arms engage the ends of the capsule, the sections of the capsule are firmly held in their telescoping operative position during the rapid vibration of the clamp.

While I have referred to the amalgam mix as being mercury and silver, it is to be understood that this is merely by way of example, and that other metals can be used with the mercury.

Changes in details may be made without departing from the spirit and scope of my claims, and what I claim as new is:

1. In an amalgam mixing machine, a capsule for receiving the amalgam mix, and an elongated cylindrical hammer slidably mounted in said capsule having its outer surface snugly engaging the inner face of the capsule, said hammer having a lower substantially flat striking face, said striking face being provided with a cavity into which the mix is crowded during the reciprocation of said hammer.

2. In an amalgam mixing machine, a capsule for receiving the amalgam mix, and an elongated cylindrical striking hammer slidably mounted in said capsule having a lower substantially flat striking face, said striking face being provided with a cavity, the walls of which terminate adjacent the lower peripheral edge of said hammer.

HENRY E. MELTZER.