June 24, 1969 E. B. MOLLER 3,451,135

AMALGAM CARRIER AND EJECTOR

Filed March 15, 1967

Fig. 1.

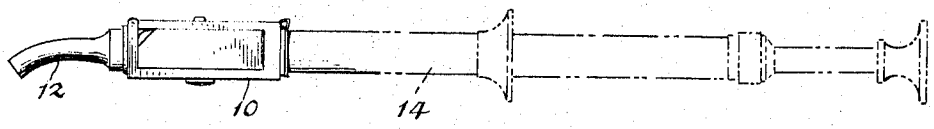
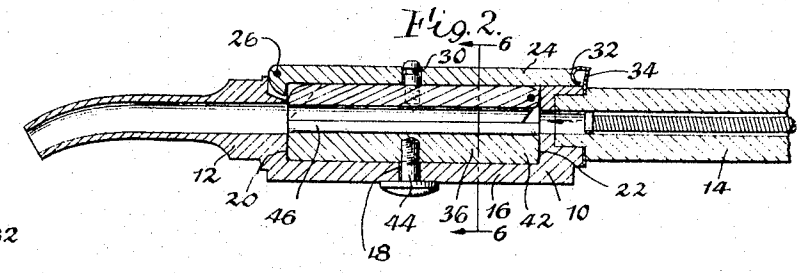


Fig. 2.



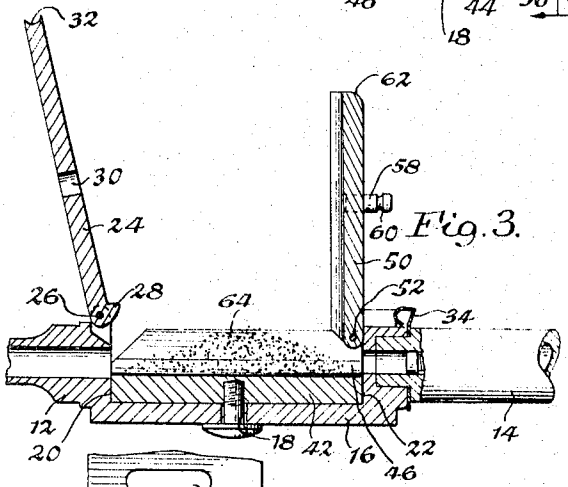


Fig. 3.

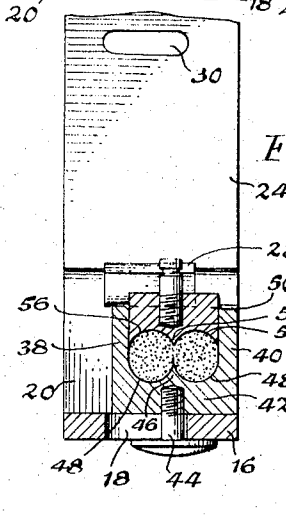


Fig. 5.

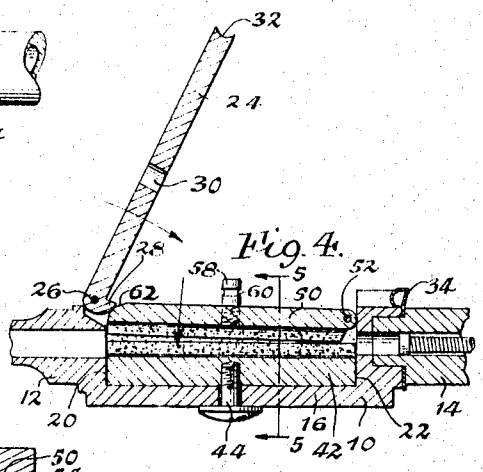


Fig. 4.

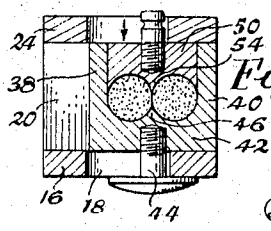


Fig. 6.

INVENTOR.
EDWARD B. MOLLER

BY

Beau, Brooke, Buckley & Beau
ATTORNEYS

United States Patent Office 3,451,135
Patented June 24, 1969

3,451,135

AMALGAM CARRIER AND EJECTOR

Edward B. Moller, 127 Hickory St.,
Falconer, N.Y. 14733

Filed Mar. 15, 1967, Ser. No. 623,259
Int. Cl. A61c 5/06
U.S. Cl. 32—60 6 Claims

ABSTRACT OF THE DISCLOSURE

A preloaded dental amalgam carrier and ejector having an amalgam container in which an end pivoted cover is provided at its free end with a cam surface adapted to be acted upon by a cooperating cam portion of an end pivoted compartment top wall which acts both as a lever to insure closing of the cover and also as a retaining wall to hold the cover closed during use of the ejector.

Brief summary and background of the invention

The following patents are indicative of the state of the art relating to the general subject matter of this invention: 1,066,966, July 8, 1913; 1,852,658, April 5, 1932; 2,837,824, June 10, 1958; France, 613,874, Sept. 6, 1926.

The inventor herein is the patentee of United States Patent No. 2,837,824 listed above, and the present invention is an improvement over the structure described and claimed in said prior patent.

Generally, devices of the type herein involved are intended to provide convenient and accurate means for projecting filling material into the cavities of teeth.

It is well known that instruments of the class of this invention have been available to, and been used by, dentists over quite a period of years and also that such instruments, insofar as being capable of injecting amalgam into a tooth cavity is concerned, has served their purpose. However, several filling materials, in common usage, are difficult to maintain in such condition as to, at all times, be suitable for filling tooth cavities; that is, the tendency of some materials to a separation of their components in a short period of time, requires constant manipulation, the possible addition of an appropriate bonding substance, or the complete replacement with a fresh batch. Without the collaboration of an assistant, it is difficult in the extreme for a dentist to maintain an amalgam in suitable condition to enable filling several cavities. One means of maintaining the amalgam in usable condition is by hand manipulation. This is objectionable in that the material will have a tendency to acquire moisture from the hand and such moisture, when the cavity is filled, may create a painful condition during and after the amalgam has hardened in the cavity.

Most amalgam carriers appear to have a common objection in that they are capable of extruding only a very small quantity of amalgam with each load, and also that the method of loading consists of merely compacting the material into the ejection nozzle by repeatedly pressing the nozzle into a mound of the material when the plunger is withdrawn. Even in filling a single cavity it is necessary for the dentist to repeatedly load or have loaded the amalgam carrier since all of the material cannot be compacted into a given cavity with only one injection from the carrier. Thus, the remaining amalgam is exposed to the air and tends to deteriorate even though manipulated in the manner above mentioned.

My earlier patent is directed to and has for one of its objects the provision of a pre-loaded amalgam carrier that is designed to contain and be capable of repeatedly extruding quantities of material sufficient to fill a number of tooth cavities with only one loading thereof.

While my prior patented structure was a great improvement over still earlier devices, I have made still further material improvements in the compartment and amalgam container portion of the device, whereby a complete division of the amalgam through a cam and leverage operation of the top of the container and top of the compartment is obtained and held with the application of relatively small forces.

In the drawing

FIG. 1 is a side elevational view of the entire amalgam carrier with the conventional ejection plunger portion shown in dotted lines;

FIG. 2 is an enlarged cross-section view of the amalgam container and its compartment;

FIG. 3 is a view somewhat similar to FIG. 2, but showing the container cover and compartment top wall in open position;

FIG. 4 is a view somewhat similar to FIG. 3, but showing the container cover nearly closed and the compartment top wall being pivoted downwardly with a camming extension near its lower end acting on top of the free end of the cover to insure complete closure of the cover;

FIG. 5 is a transverse section taken on line 5—5 of FIG. 4; and

FIG. 6 is a transverse section taken on line 6—6 of FIG. 2.

Referring more particularly to the drawings, the portions of the amalgam carrier and ejector comprising the nozzle, handle portion and ejector plunger and its parts and operation may be the same as described in my prior Patent No. 2,837,824.

The improvement in the present invention resides in the compartment for supporting the amalgam container, the amalgam container, and their closures, which will now be described.

A compartment unit **10** is positioned between the nozzle **12** and handle and plunger portion **14**, and has a bottom wall **16** with a transverse slot **18**, and end walls **20** and **22**. The end walls are provided with aligned openings in registration with similar openings in the adjacent ends of the nozzle and plunger portion.

A compartment top wall **24** is pivotally mounted near the top of end wall **20** by a pin **26** and provided adjacent its pivoted end with a projecting cam surface **28**, a transverse slot **30**, and free end **32** of concave form for snap catch contact with a complemental convex spring **34** mounted on the top of end wall **22**.

An open ended amalgam container **36** is mounted within compartment **10** and has side walls **38** and **40** and a bottom wall **42**. A headed screw **44** extending through slot **18** permits controlled transverse shifting of container **36** in compartment **10**. The bottom wall **42** has a longitudinal rib **46** to assist in forming a pair of semi-circular grooves **48**.

Container **36** has a cover **50** which is pivotally mounted in the container at **52**, and the cover is provided with a longitudinal rib **54** to assist in forming a pair of semi-circular grooves **56**.

When the cover is completely closed as shown in FIG. 6, a pair of circular open ended passageways extending from one end of the container to the other is formed by the inside of the container walls and cover, with the ribs **46** and **54** touching each other throughout their length. The container can then be manually shifted so that either of its passageways are in alignment with the nozzle and the ejector plunger.

Cover **50** may be provided with a pin **58** having an annular notch **60** to permit lifting the cover by a finger nail or other instrumentality, and the free end of cover

50 may be provided with a nose or cam receiving surface 62.

Any desired type of dental amalgam is generally indicated at 64, and may be of flake, granular, or powder mix, or it may be in pellet form. This amalgam may be prepared and placed in the container as shown in FIG. 3, whereupon cover 50 is swung downwardly and such action starts to compact and divide the amalgam. With the cover in substantially closed position as shown in FIGS. 4 and 5, the free end of the compartment top wall may be pressed downwardly, and during such motion its cam surface 28 will act on the cover cam receiving surface 62 with the application of a leverage force, to insure the complete closure of the cover and the division and compacting of the amalgam as shown in FIG. 6.

The compartment top wall may be held in a closed position by coaction of its free end 32 with the spring 34, and in such closed position slot 30, which has received pin 58, permits the pin and the container to be shifted as referred to above.

With a passageway in proper alignment, the ejector can be operated to force a desired amount of the amalgam out of the passageway and through the nozzle.

While my previous instrument has been proven to be perfectly operable and a great advance over earlier instruments, it was found that with only limited available pressure that could be applied, due in part to the relative small size of the container cover, it sometimes proved difficult to compact the amalgam in the container to allow the cover to completely close. The present arrangement permits use of the compartment top wall as a lever acting against the free end portion of the container cover to force the cover to a completely closed position.

It should be understood that while a cam surface has been shown on the compartment top wall near its pivot, and a cam receiving surface is shown on the free end of the container cover, that neither are absolutely necessary and that without them a levering action by the top wall for closing the cover can be obtained just as long as the top wall and the cover are pivoted adjacent opposite ends of the passageway.

What I claim as my invention is:

1. In a carrier and extruding instrument for dental practice having a tubular member enclosing a plunger, a nozzle, a compartment between said member and said nozzle, and an amalgam container including a body and a cover and having cooperating grooved parts providing a passageway and mounted in said compartment for alignment of said passageway with said member and said nozzle, the improvement consisting of:

means pivotally mounting said cover adjacent one end thereof upon said container body, and said cover having a free end,

an elongate top wall for said compartment adapted to overlie said cover,

and means pivotally mounting said top wall adjacent the opposite end of said compartment whereat said cover is pivotally mounted, whereby upon substantial closure of said cover, said top wall is manually levered to exert pressure downwardly on the free end portion of said cover thereby forcing said cover into a completely closed position.

2. The instrument of claim 1 wherein the free end of said cover is tapered to provide a cam surface.

3. The instrument of claim 1 wherein said top wall is provided adjacent its pivot with a cam projection for contact with the free end of said cover.

4. The instrument of claim 1 wherein the free end of said cover is provided with a cam receiving surface and said top wall, adjacent its pivot, is provided with a cam projection for cooperative contact with said cam receiving surface during closure of the cover and the top wall.

5. The instrument of claim 1 wherein said top wall when closed is releasably held by a spring catch.

6. In a carrier and extruding instrument for dental practice having a tubular member enclosing a plunger, a nozzle, a compartment between said member and said nozzle, and an amalgam container positioned in said compartment, the improvement consisting of:

said container having a bottom provided with a longitudinal groove and a cover provided with a longitudinal groove, the grooves being adapted to provide a passageway in alignment with said member and said nozzle when said cover is in fully closed position,

means pivotally mounting said cover in said container adjacent an end of said passageway for movement between an open and said fully closed position,

a compartment top wall,

means pivotally mounting said top wall in said compartment adjacent the opposite end of said passageway,

whereby upon substantial closure of said cover, manual closing of said top wall exerts a leverage force on the end of said cover opposite the means pivotally mounting said cover, thereby moving said cover to said fully closed position.

References Cited

UNITED STATES PATENTS

2,837,824 6/1958 Moller ..... 32—60

F. BARRY SHAY, *Primary Examiner.*

C. R. WENTZEL, *Assistant Examiner.*