H. E. RICE, JR.

TOOTHBRUSH.

APPLICATION FILED MAY 9, 1921.

1,404,141.

Patented Jan. 17, 1922.

2 SHEETS—SHEET 1.

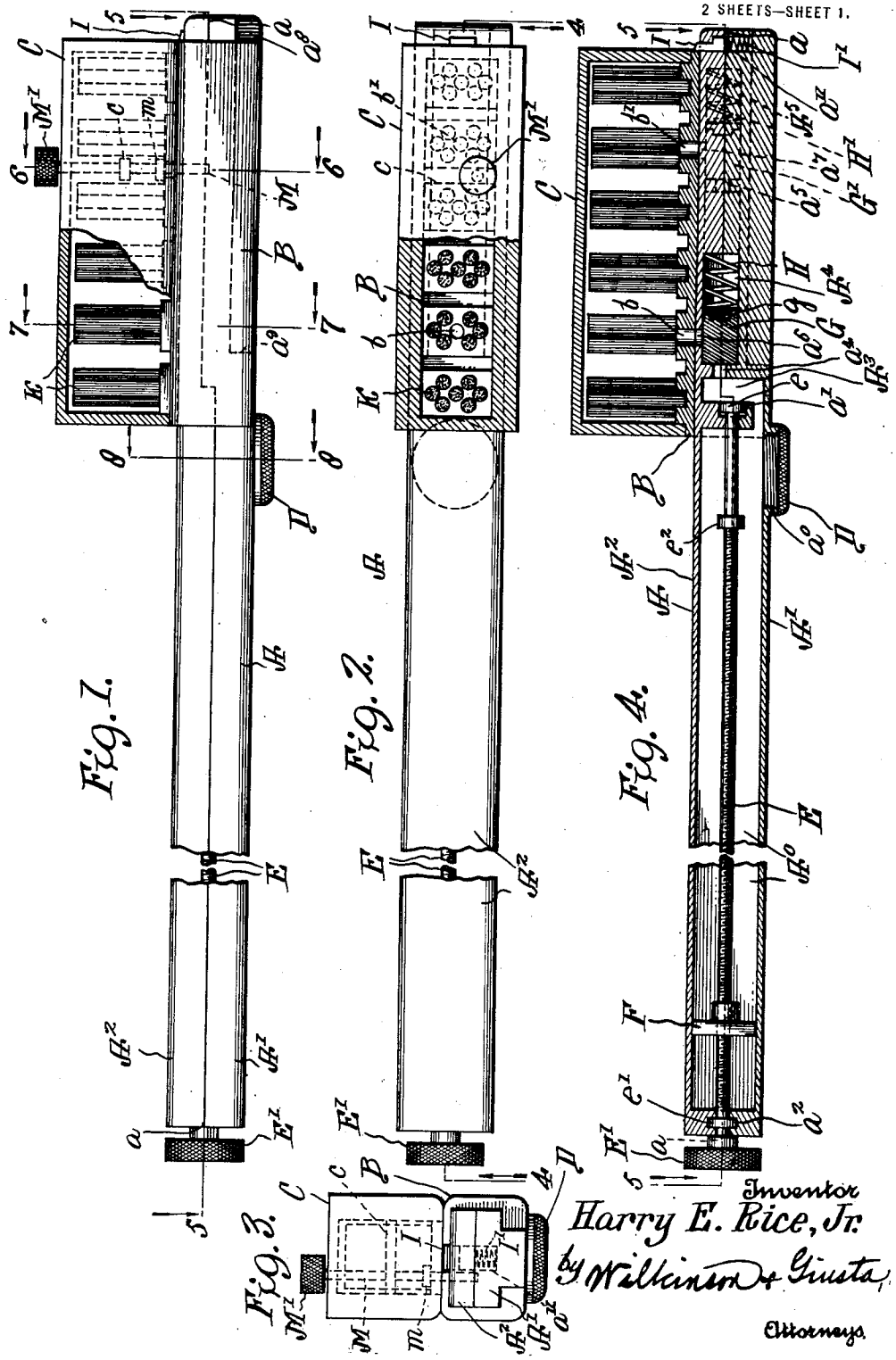


Fig. 1.

Fig. 2.

Fig. 4.

Fig. 3.

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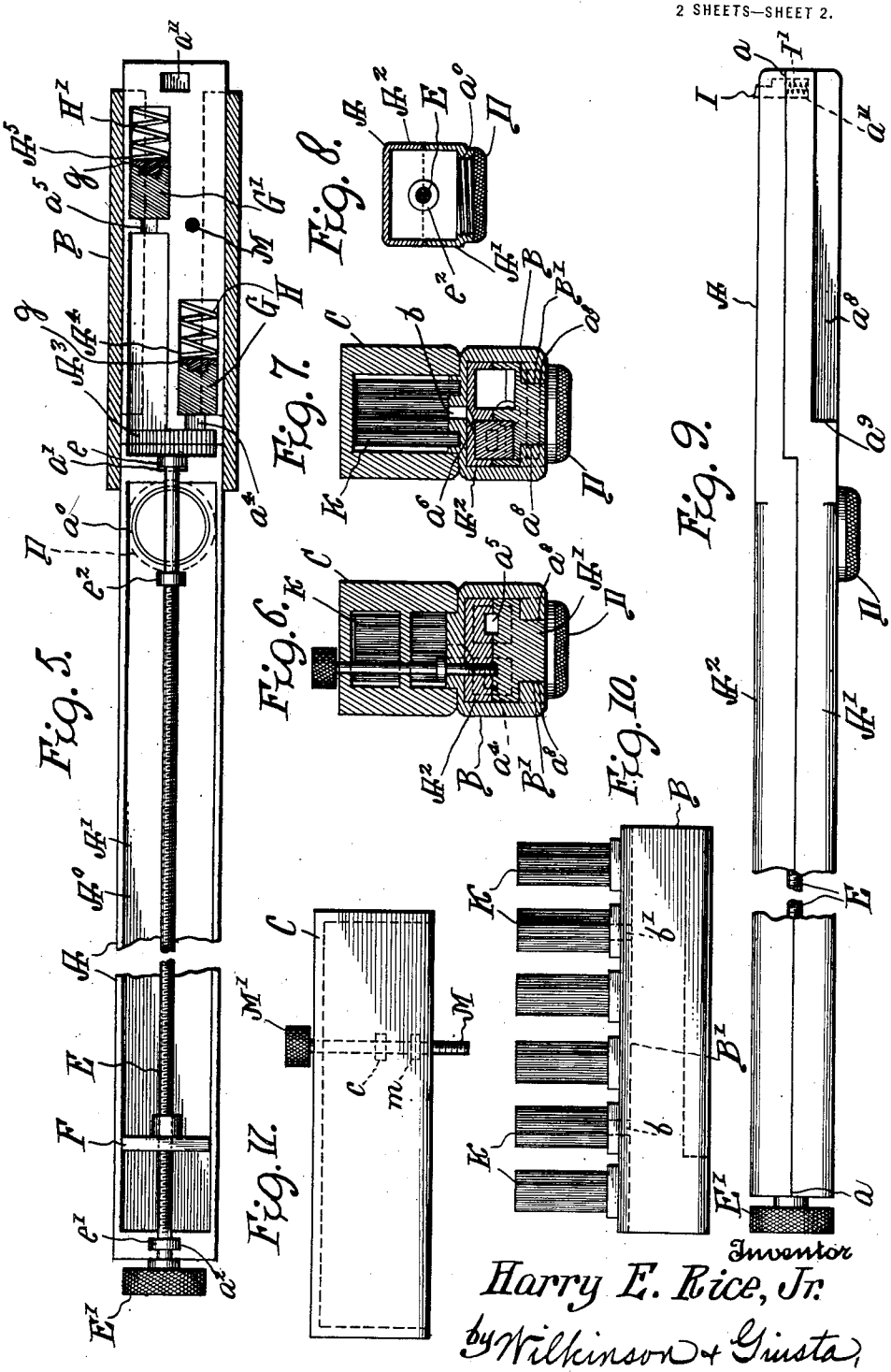


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

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UNITED STATES PATENT OFFICE.

HARRY EDGAR RICE, JR., OF SPRINGFIELD, OHIO.

TOOTHBRUSH.

1,404,141. Specification of Letters Patent. Patented Jan. 17, 1922.

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To all whom it may concern:

Be it known that I, HARRY EDGAR RICE, Jr., a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Toothbrushes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in appliances for brushing and cleansing the teeth, and it is intended to provide a convenient package suitable for carrying in the baggage or even in the pockets of the user, which will comprise a suitable brush adapted for use in cleansing the teeth, and a suitable container for coacting with said brush for supplying tooth paste, or a suitable viscous or semi-viscous cleansing compound to the roots of the bristles in the brush; and also in providing a convenient shield for covering the bristles of the brush when not in use, and in keeping the same clear of dust or other foreign matter, and at the same time preventing the wet bristles from moistening the baggage or the clothing of the user.

My invention will be more fully understood after reference to the accompanying drawings, in which like parts are indicated by similar reference symbols throughout the several views, and in which:—

Figure 1 is a side elevation of the complete device with the brush cover applied, parts being broken away.

Figure 2 is a plan view of the device shown in Fig. 1, parts being broken away.

Figure 3 is an end view as seen from the right of Figures 1 and 2.

Figure 4 shows a longitudinal sectional along the broken line 4—4 of Figure 2, and looking in the direction of the arrows.

Figure 5 shows a longitudinal section along the broken line 5—5 of Figure 1, and looking in the direction of the arrows.

Figure 6 shows a section along the line 6—6 of Fig. 1, and looking in the direction of the arrows.

Figure 7 shows a section along the line 7—7 of Fig. 1, and looking in the direction of the arrows.

Figure 8 shows a section along the line 8—8 of Fig. 1, and looking in the direction of the arrows.

Figure 9 is a similar view to Figure 1, except that the brush and cover are removed;

Figure 10 is a detail showing the brush removed from the handle; and

Figure 11 is a detail showing the brush cover attached.

In the drawings the hollow handle of the brush is shown empty of the paste, and the other parts are shown in the position that will be assumed when the container is empty.

The device consists primarily of three parts: (1) a combined handle, brush holder and container A; (2) a brush B detachably connected to said holder; and (3) a cap C removably mounted over said brush and enclosing the bristles when the brush is not in use. In addition to these parts are the several operating parts and fastening means which will be hereinafter described.

The combined handle, brush holder and container A is preferably made of two superimposed portions A' and A^2, which may be made of celluloid, or the like, secured together in any convenient way along the line a—a to form a hollow structure in which the several parts hereinafter mentioned are assembled before the two parts A' and A^2 are secured together.

It will be noted that the combined handle, brush holder and container comprises a body portion having at the forward end a brush holder provided with suitable guides to receive the brush, and also provided with valve chambers and with passages for the plastic mass, while the rear end is hollow and adapted to contain the charge of plastic composition; the whole body portion being substantially straight axially.

The interior of this container is provided with a main chamber A^0, which may be filled with paste by means of the opening a^0 closed by the cap D. Projecting down into this chamber from the part A^2 is a bearing a' engaging the end e of the screw E, which screw carries on its outer end a milled head E', and is provided with a set collar e' engaging in an annular groove in the rear end a^2 of the handle A. This screw E

therefore rotates in the bearings e and e', but without longitudinal movement.

Mounted on the screw E is a nut F which is shaped to fit the interior of the chamber A^0, and is fed forward or drawn backwards by turning the head E′ of the screw E. The forward travel of this nut F is limited by the set collar e^2 carried by the screw E, as shown in Figs. 4 and 5.

Forward of the chamber A^0 the container is provided with an auxiliary chamber A^3 connected by the passages a^4 and a^5 to the valve chambers A^4 and A^5, see Fig. 5. In these valve chambers are mounted suitable sliding valves G and G′, which are pressed forwards by the springs H and H′. An intermediate ferrule, such as g, may be provided between the springs and valves, respectively, as shown in Fig. 5, or this ferrule may be omitted if desired.

The valve chambers A^4 and A^5 are provided with inclined ports a^6 and a^7, through which the paste exudes as it is fed to the brush, as will be hereinafter described.

The brush B consists of a hollow body portion B′ provided on its interior with a T-shaped port into which slides the front end of the brush holder, which holder is T-shaped in cross section at its forward portion, as shown in Figs. 6 and 9, being provided on each side with grooves a^8 terminating in the shoulders a^9. These shoulders serve as stops to limit the rearward travel of the brush body, and the brush body is held in place on the holder by means of a spring latch I mounted in a socket a^{11} of the brush holder, and pressed into the engaging position shown in Fig. 4 by the spring I′.

The brush is provided with bristles K, arranged in suitable groups, and the back of the brush body is provided with ports b and b' which register with the ports a^6 and a^7 already described and permit the exuding of the paste under pressure from the interior of the container to the base of the bristles, as will be hereinafter described. The arrangement as hitherto described discloses an operative structure which could be used as such; but for convenience in transportation or storage, or the like, I provide a detachable cap C which is arranged to fit over the body of the brush and is held in place by a screw M, having a milled head M′. This screw preferably passes through not only the back of the brush body, but also engages in the body of the container, as shown in Figs. 5 and 6. This screw not only serves to lock the cap in place, but also serves as an additional lock to prevent the brush from being removed except when the screw is released.

In order to prevent the screw from being lost I preferably provide a bearing rib c in the cap, through which the stem of the screw passes, as shown in Fig. 6, and I secure on the screw a set collar m which will engage said rib c when the screw is released.

The operation of the device is as follows:

Suppose the parts to be in the position shown in Figures 1, 4 and 5 of the drawings, first unscrew the screw M and remove the cap C. The container may be filled with paste either before or after the cap has been removed, and this may be done by taking off the screw cap D, turning the screw until the nut F is towards the rear of the chamber A^0, and then filling the chamber A^0 and the contiguous passages with the paste. The valves G and G′ will normally remain in the position shown in Fig. 4, when the container is filled with paste. After the container is nearly or partly filled with paste, replace the screw cap D and the device is ready for use.

The brush may be used as an ordinary tooth brush without supplying any paste at all if desired; but if desired to supply paste to the brush turn the milled head E′ in the direction to move the nut F forward. This will force the paste to exude through the passages a^4 and a^5, pressing back the valves G and G′, and exposing the ports a^6 and a^7. The paste will continue to exude through these ports and through the corresponding ports in the brush so long as the pressure is maintained on the paste by the nut F. As soon as pressure is released on this nut the springs H and H′ will force the valves G and G′ backwards, closing the ports and preventing any further exudation of the paste. Thus it will be seen that by greater or less turning motion imparted to the head E′ more or less paste may be applied to the base of the brush. Moreover, this supply of paste will be automatically cut off when the pressure applied to the paste is released.

It will be noted that there will be very little tendency to use more than the desired quantity of paste, and very little tendency to waste the same, and the apparatus will be always ready for use so long as the supply of paste is maintained in the chamber A^0.

It will be a very simple matter to fill said chamber, or partly fill it, with paste from a tube or other package such as are now well known in the art.

It will be noted that the device is arranged so as not to exude either paste or drip water, or soil the garments or the baggage of the user.

It will be noted that the paste, being held in an airtight container, is not likely to harden or oxidize when in use, or to lose the effects of any volatile ingredient, such as ammonia, or the like, which may be contained therein.

I prefer to provide more than one brush for each handle so that the brushes may be changed from time to time for the comfort

of the user, or to supply a new brush for one that is worn or partly worn; thus, for instance, it may be desired to use either a hard brush or a soft one; in any event the handle would usually outlast several brushes.

In order to remove the brush from the handle it will only be necessary to press down the latch I and slide the brush out, when a new one may be inserted in its place. It will be noted that the device is particularly sanitary when either in transport or in use.

These and various other advantages of the herein described construction will readily suggest themselves to those accustomed to the inconvenience and annoyance of the apparatus now generally in use for cleansing the teeth.

It will be obvious that various modifications might be made in the herein described apparatus, and in the construction, combination and arrangement of parts which could be used without departing from the spirit of my invention; and I do not mean to limit the invention to such details except as particularly pointed out in the claims.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. In a tooth brush the combination with a body portion comprising a hollow handle and a head, the said head being provided with a passage therein, and a port opening laterally from said passage, and the said head being also provided on the rear edges with longitudinally disposed guide grooves, of a channeled brush body having upwardly and inwardly directed longitudinal flanges slidably mounted over said head and engaging said guide grooves, said brush body being provided with bristles and with a port between said bristles adapted to register with the port in said head, a check valve mounted in said passage and normally closing said port, and dispensing means in said handle, substantially as described.

2. In a tooth brush the combination with a body portion comprising a hollow handle and a head, the said head being provided with a passage therein, and a port opening laterally from said passage, and the said head being also provided on the rear edges with longitudinally disposed guide grooves, of a channeled brush body having upwardly and inwardly directed longitudinal flanges slidably mounted over said head and engaging said guide grooves, said brush body being provided with bristles and with a port between said bristles adapted to register with the port in said head, a check valve mounted in said passage and normally closing said port, a spring pressed latch adapted to be depressed when said brush is being attached to said handle, and to lock said head to said handle when the ports aforesaid are in registration, and dispensing means in said handle, substantially as described

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