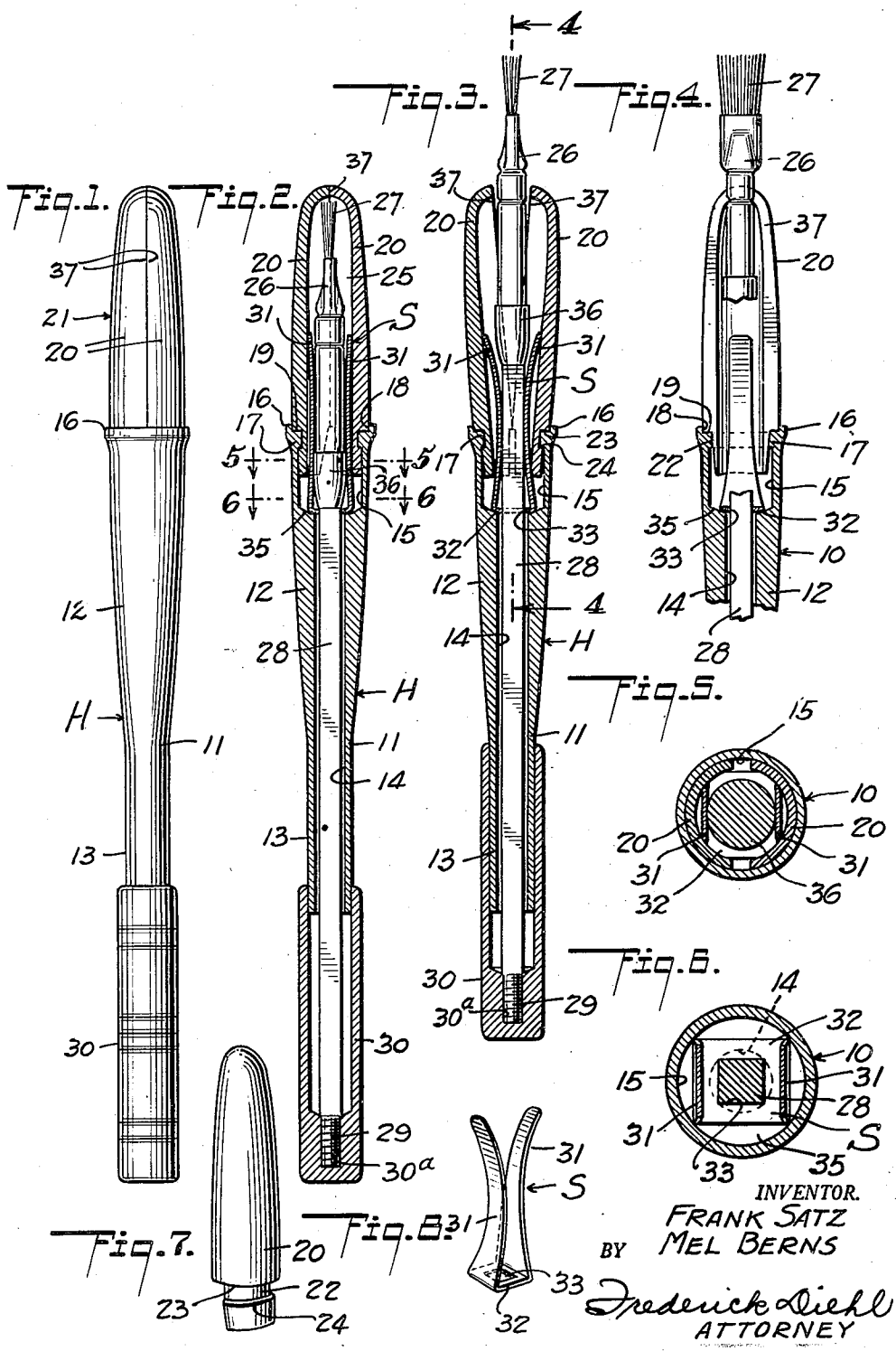
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SANITARY BRUSH

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SANITARY BRUSH

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This invention relates to sanitary brushes of the general character embodied in our United States Patent No. 2,205,601, issued June 25, 1940, and wherein is disclosed and claimed a brush holder by which the brush bristles can be protected against contamination during periods of non-use of the brush.

An object of the present invention is to provide a sanitary brush having all the structural and functional advantages of the patented brush above identified, and, in addition, embodies novel actuating means for the brush bristles by which the housing sections on the handle can be operated to enclose the brush bristles or expose same for use in a maximum projected position with a minimum amount of movement of the actuating means and effort on the part of the operator, while affording maximum space for the brush bristles in the compact housing-forming sections when closed, as well as eliminating in the handle, any exteriorly visible mounting means for the housing sections which might collect foreign substances, whereby to further promote the sanitary advantage of the brush.

Another object of the invention is to provide a sanitary brush of the above described character in which the actuating structure for the housing sections includes resilient means normally urging the housing sections to open position, with an axially movable actuating member carrying the brush bristles and correlated with the resilient means and housing sections to positively move the latter to, and maintain them in closed position against the biasing action of the resilient means, according as the actuating member is moved to one or the other of its extreme positions of axial adjustment, all in such manner that with the sections of the housing closed, initial movement of the actuating member from one extreme position will render the resilient means free to open the housing sections so that the brush bristles will not be obstructed or deformed by the housing sections, and will be concurrently projected from the housing a maximum amount in response to a minimum axial movement of the actuating member.

With these and other objects in view, the invention resides in the combinations and arrangements of elements as set forth in the following specification and particularly pointed out in the appended claims.

In the accompanying drawing,

Figure 1 is a view showing in side elevation, one form of sanitary brush embodying this invention;

Figure 2 is a longitudinal axial sectional view of the sanitary brush with the brush bristles retracted into, and sealed by the housing;

Figure 3 is a view similar to Figure 2 and showing the brush bristles projected from the housing for use;

Figure 4 is a fragmentary longitudinal sectional view taken on the line 4—4 of Figure 3;

Figures 5 and 6 are transverse sectional views taken on the lines 5—5 and 6—6, respectively, of Figure 2;

Figure 7 is a perspective view of one of the sections of the housing; and

Figure 8 is a perspective view of the resilient urging means common to the housing sections.

Referring specifically to the drawing, the invention in its illustrated embodiment comprises a handle designated generally at H and consisting of shank 11 having a tapered portion 12 merging at its smaller end into a cylindrical portion 13. The shank 11 is provided with a circular, longitudinally extending bore 14 opening at one end to the free end of the portion 13, and at its other end to a cylindrical pocket 15 opening to the larger end of the portion 12.

The free end of the tapered portion 12 is provided with an annular lip 16 and with an internal annular rib 17 co-acting with said lip to define axial and radial shoulders 18 and 19 respectively, for the mounting of two identically constructed housing sections 20 of a housing 21. Each of said housing sections 20, which is semicircular in radial or cross section, is provided with an arcuate groove 22 (Figure 7) adapted to freely receive the rib 17, and forming axially spaced shoulders 23 and 24 co-acting with the rib 17 to rockably mount the housing sections on the handle H for movement laterally towards and away from each other to occupy either the closed position shown in Figure 2, or the open position shown in Figure 3.

In closed position, the housing sections 20 coact to define a closed chamber 25 (Figure 2) for a brushing element 26 having bristles 27 and secured to one end of a mounting and actuating member 28 in the form of a non-circular rod which is square in cross section in the present instance. The member 28 extends freely through the bore 14 of the handle H and is shouldered down and externally threaded at its other end as indicated at 29.

A cup-shaped cap 30 which telescopically receives the cylindrical portion 13 of the handle, is provided at its bottom or closed end with a threaded socket 30a to enable the cap to be

screwed onto the threaded portion 29 of the actuating member 28 for axial adjustment of the latter by the cap, from the extreme position shown in Figure 2 wherein the brushing element 26 is retracted into and enclosed by the housing 21, to the extreme position shown in Figure 3 wherein the brushing element is projected from the housing for use.

To normally and yieldingly urge the housing sections 20 to their open position shown in Figure 3, a resilient means in the form of a generally U-shaped spring S is provided and is constructed from flat strip stock to provide two oppositely curved and relatively flaring arms 31 connected at one end by a substantially square base or plate 32 having a square opening 33 therethrough slidably receiving the square actuating member 28 to prevent relative rotation between the latter and spring.

The spring S has its spring arms 31 projecting into the housing sections 20 so as to be interposed between the latter and the actuating member 28 while the base plate 32 rests against the bottom wall 35 of the pocket 15, to the end of normally urging the housing sections away from each other, all as clearly shown in Figures 3 and 4.

The actuating member 28 is provided with means for positively moving the housing sections to closed position in opposition to the spring S, which comprises a conoidal-shaped cam 36 bearing against the confronting sides of the spring arms 31 at a point substantially opposite to the fulcrum points of the housing sections upon the handle H so as to react upon the housing sections through the medium of the spring arms, in positively maintaining the housing sections closed with their confronting flat faces 37 in tightly sealed engagement as shown in Figure 1.

In operation, and with the housing sections 20 in their closed position shown in Figure 2, initial axial motion of the handle H to project the brushing element 26 from the housing sections will release the latter from the positive action of the cam 36 in maintaining the housing sections closed, thus rendering the tightly contracted arms 31 of the spring S free to expand and rock the housing sections about the rib 17 as a fulcrum, to the open position shown in Figure 3. During this movement, the brushing element is advanced between the open housing sections and clear of the latter to its fully projected position shown in this figure, for use of the brushing element as desired.

Upon reversely moving the cap 30 axially of the handle H, the brushing element 26 will be retracted between the housing sections 20 and will be disposed wholly between the latter before the cam 36 has reached a position approaching the rib 17, wherein the cam will begin to exert outward pressure upon the spring arms 31, which latter react by transmitting this force to the housing sections at a point beyond the fulcrum points of the housing sections, thus reversing or nullifying the normal urging action of the arms 31 upon the housing sections. Thus the housing sections will be positively moved to and then locked tightly in closed position with the brushing element adequately protected against contamination.

It will be noted that by virtue of the outward force exerted by the arms 31 against the housing sections, the latter will be urged firmly into engagement with the rib 17 and the fulcrum-forming shoulders 18 and 19 so as to be securely held against axial displacement outwardly from the handle, yet will be free to rock upon the latter under the actions of the spring S and the cam 36, all without presenting any exteriorly visible fulcrum structure on the handle which might collect dirt and detract from the smooth, streamlined appearance of the handle. Furthermore, as the square actuating member 28 and the spring S cannot relatively rotate, and as the spring is confined under stress in operative relation to the handle and housing sections, and thus does not turn, the brush head is maintained with its width parallel to the joint between the housing sections as shown in Figures 3 and 4, so as to move clear of the housing sections during axial movement of the brushing element by the cap 30.

We claim:

1. A device of the class described comprising: a handle; a plurality of housing sections rockably mounted on the handle to occupy open and closed positions; means adapted to mount a brush from the handle for movement to occupy retracted and projected positions; means co-acting with said mounting means and housing sections to yieldingly urge the latter to open position; and means carried by said mounting means by which the housing sections will be positively moved to closed position against the action of said urging means, or will render the latter free to move the housing sections to open position according as the brush is moved to retracted or projected position.

2. A device of the class described comprising: a handle; a plurality of housing sections rockably mounted on the handle to occupy open and closed positions; an actuating member reciprocably mounted in the handle and adapted to support a brush for movement to occupy a retracted position within the housing sections when closed, and a projected position exposed for use when the housing sections are open; a generally U-shaped spring having a portion with an opening through which the actuating member passes, and arms on opposite sides of the actuating member engaging the housing sections to urge the latter to open position; and means on the actuating member adapted to bear against said arms to positively move the housing sections to closed position or render said arms free to move the housing sections to open position according as the actuating member is operated to retract or project the brush.

3. A device of the class described comprising: a handle; a plurality of housing sections rockably mounted on the handle to occupy open and closed positions; an actuating rod of non-circular cross section reciprocably mounted in the handle and adapted to support a brush for movement to occupy a retracted position within the housing sections when closed, and a projected position exposed for use when the housing sections are open; a generally U-shaped spring having a base plate with a non-circular opening non-rotatively and slidably receiving said actuating rod, and arms on opposite sides of the latter urging the housing sections to open position; and a cam on the actuating rod adapted to bear against said arms to move the housing sections to closed position; or render said arms free to move the housing sections to open position according as the actuating rod is operated to retract or project the brush.

4. A device of the class described comprising: a handle; a housing on the handle composed of a plurality of sections; means defining fulcrums on the handle mounting the housing sections for rocking movements to occupy open and closed po-

sitions; an actuating member reciprocably mounted in the handle and adapted to support a brush for movement to occupy retracted and projected positions; spring means in the handle engaging the housing sections to urge same to projected position; and means on the actuating member movable by the latter to one side or the other of said fulcrums to accordingly close the housing sections as the brush is retracted, or render the spring means free to open the housing sections as the brush is projected.

5. A device of the class described comprising: a hollow handle having an annular lip at one end and an internal annular rib defining fulcrum-forming shoulders in the handle; housing sections having grooves receiving said rib and bearing upon said shoulders to movably mount said sections in the handle to occupy open and closed positions; means adapted to reciprocably mount a brush from the handle for movement to occupy retracted and projected positions; resilient means for yieldingly urging the housing sections to open position in response to projecting movement of the brush so as to expose the brush for use; and means for positively moving the housing sections to closed position against the opening action of said resilient means to enclose the brush, during retracting movement of the brush.

6. A device of the closs described comprising: a handle; housing sections fulcrumed in one end of the handle for movement to occupy open and closed positions; an actuating member reciprocably mounted in the handle and supporting a brush for movement from retracted to projected position; spring means including arms interposed between said actuating member and housing sections to urge the latter to open position when the brush is projected; and a cam on said actuating member disposed to engage and reverse the functioning of the arms by forcing the latter to move the housing sections to closed position when the brush is retracted.

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