March 11, 1930. J. R. SMITH 1,750,062

ROTARY BRUSH

Filed July 25, 1927

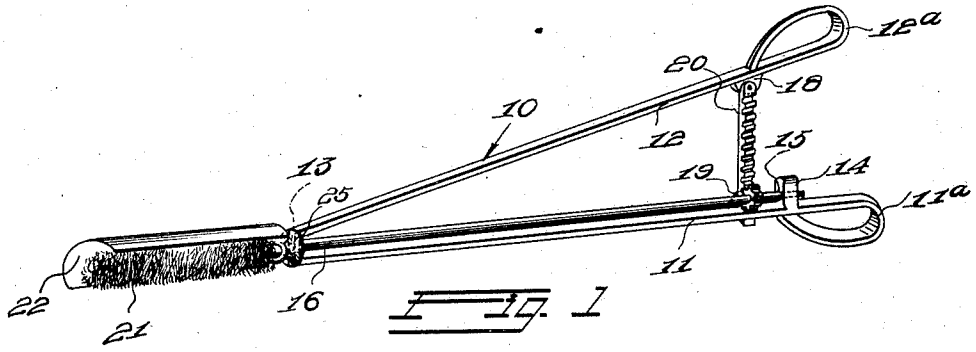


Fig. 1

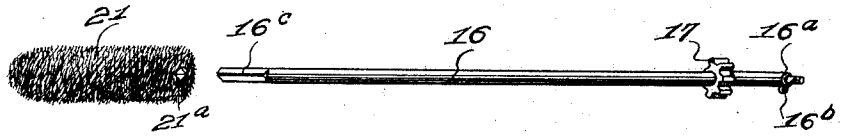


Fig. 2

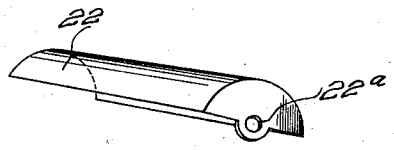


Fig. 3

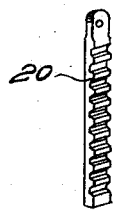


Fig. 4

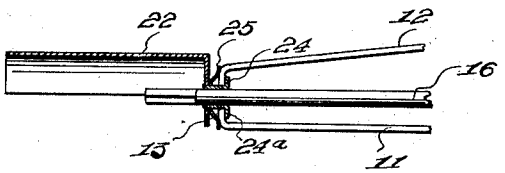


Fig. 5

Inventor

Jesse R. Smith

By William A. Strauch

Attorney

Patented Mar. 11, 1930 1,750,062

# UNITED STATES PATENT OFFICE

JESSE R. SMITH, OF BENTON, ILLINOIS

## ROTARY BRUSH

Application filed July 25, 1927. Serial No. 208,245.

The present invention relates to a rotary brush structure. More particularly the invention relates to a rotary hand operated brush structure adapted for use for cleaning operations in places to which access may be had only with difficulty, and which is especially adapted for use as a tooth brush.

A primary object of my invention is to provide a rotary tooth brush which will clean teeth and stimulate gums more thoroughly and in less time than can be done with the common form of tooth brush.

Another object of my invention is the provision of a rotary tooth brush which is more sanitary and more easily cleaned than the common form of tooth brush.

A further object of my invention is the provision of a hand operated rotary cleaning brush structure which is simple, rugged, and efficient and can be manufactured at relatively low cost.

Further objects of my invention are such as will appear in the following detailed description thereof and as are defined in the terms of the appended claims, it being understood that changes in the details of construction hereinafter set forth may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. Referring to the accompanying drawings, in which similar reference characters indicate corresponding parts,

Figure 1 is a perspective view of a preferred form of my invention.

Figure 2 is a perspective view of the brush and brush rotating shaft in disassembled relation.

Figure 3 is a perspective view of a shield which partially surrounds the brush.

Figure 4 is a perspective view of a rack forming one of the elements of the invention.

Figure 5 is a view partially in side elevation and partially in longitudinal section of the brush end of the brush structure.

As shown in the drawings, reference character 10 designates a frame consisting of a rigid member 11 and a spring member 12, the members 11 and 12 being bent upon themselves to provide handles or finger grips as indicated at $11^a$ and $12^a$ respectively.

The frame at the juncture of the members 11 and 12 is provided with an aperture 13, and member 11 is provided with a lug 14 adjacent its free end, the lug 14 being provided with an aperture 15, said apertures 13 and 15 providing bearings for a purpose hereinafter referred to. The numeral 16 designates a shaft which at one end is journaled in the bearing 15 and adjacent its opposite end is journaled in the bearing 13. The end of shaft 16 which is journaled in the bearing 15 is reduced in diameter thus providing a shoulder $16^a$ by means of which a key or similar means $16^b$ the shaft is held against longitudinal movement.

Shaft 16 adjacent the lug 14 has suitably secured thereto a pinion 17. Spring member 12 adjacent the free end thereof is provided with a lug 18 and in vertical alignment therewith the member 11 is provided with a slotted lug 19. Secured at one end to the lug 18 and guided slidably within the slot in lug 19 is a toothed rack 20 meshing with pinion 17. Shaft 16 adjacent aperture 13 is squared and provided with a longitudinal split or kerf as indicated at $16^c$. Numeral 21 designates a brush of suitable form and size and is provided with a square aperture $21^a$ by means of which the brush is detachably secured to the shaft by frictional engagement of the split squared end of the shaft and walls of the square aperture in the brush.

A shield 22 made of suitable thin material is shaped to partially surround the brush to protect the cheek and gums when using the brush. The shield 22 as shown is substantially semi-cylindrical in form, open at the front end and closed at the rear end which closed end is provided with an aperture $22^a$. Rigidly secured within the aperture $22^a$ is an end of a tubular supporting and limiting member 24, the opposite end of which extends through aperture 13 of the frame member and is flanged over within the frame member as indicated at $24^a$.

The supporting and limiting member connects the shield 22 with the frame member preventing longitudinal separation thereof but allowing the shield to be turned about its longitudinal axis relative to the frame

member and further provides a bearing for the end of shaft 16, as is clearly indicated in Figure 5.

Interposed between the closed end of the shield and the frame member is a disk spring member 26 which is centrally apertured to receive the member 24 and frictionally engages the opposing faces of the frame member and closed end of the shield to hold the shield in any adjusted position.

The member 24 allows the closed end of the shield to approach the frame member against the action of the spring member 25.

In using the brush the handles 11ª and 12ª are grasped preferably with adjacent fingers and member 12 is pushed toward member 11 which will cause the rack 20 to move toward member 11 and the teeth thereof engaging the teeth of the pinion 17 will cause the pinion to rotate. Pinion 17 will rotate shaft 16 which in turn will impart rotation to the brush 21.

When member 12 has been pushed down adjacent the member 11 pressure thereon is relieved and the spring member 12 will immediately move outward thus imparting rotation to the brush in the opposite direction. It will accordingly be seen that by pressing member 12 downward and releasing it in quick succession the brush will be caused to rotate rapidly and alternately in opposite directions corresponding to the movement of the member 12.

By rotatably mounting the shield on the shaft the shield can be turned about the axis of the shaft to expose different portions of the brush and thus adapt it to any particular place desired to have cleaned, while the shield will protect the cheeks against the action of the brush. After using the brush it can be quickly and thoroughly cleaned by immersing the brush in clean water and rotating it rapidly.

It will be seen that a brush and operating structure therefore is provided which will quickly and thoroughly clean a surface which is sanitary in that it can be quickly and thoroughly cleaned, and in which a new brush can be conveniently substituted when necessary due to the removability of the brush.

Having described a preferred embodiment of my invention, what is desired to be secured by Letters Patent and is claimed as new is:

1. A rotary tooth brush comprising a frame member having an aperture therein, a shield having an aperture therein, a tubular supporting and limiting member adapted to receive a shaft, said supporting and limiting member being rigidly secured within one of said apertures and loosely extending through the other aperture, said supporting and limiting member provided with means to prevent separation of said frame member and shield, and a yieldable member surrounding said supporting and limiting member in frictional engagement with said frame member and shield.

2. In a rotary tooth brush, a frame member having an aperture therein, a substantially semi-cylindrical shield provided with a tubular member extending outwardly therefrom and loosely engaged within said aperture, said tubular member provided with means to retain same within said aperture, and a disked spring member surrounding said tubular member and yieldably engaging said frame member and shield.

In testimony whereof I affix my signature.

JESSE R. SMITH.