April 23, 1957 R. O. PETERSON 2,789,298

BRUSH UTILIZING REMOVABLE LENGTHS OF BRUSH STRIP

Filed Sept. 8, 1950 2 Sheets-Sheet 1

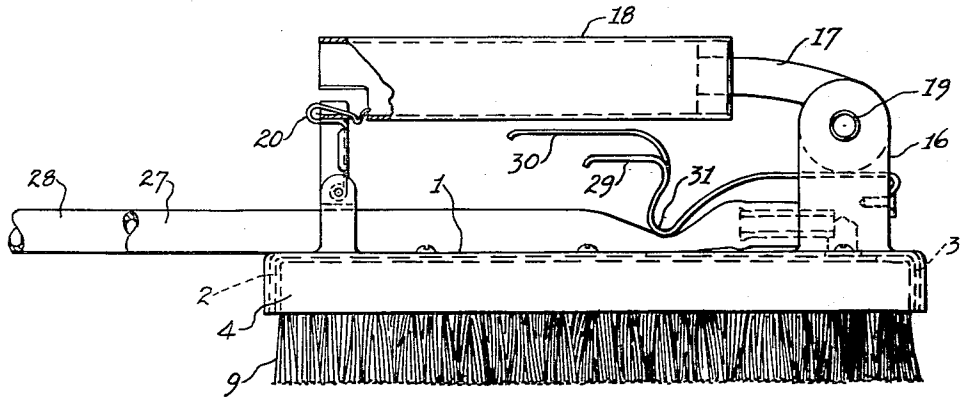


Fig. 1

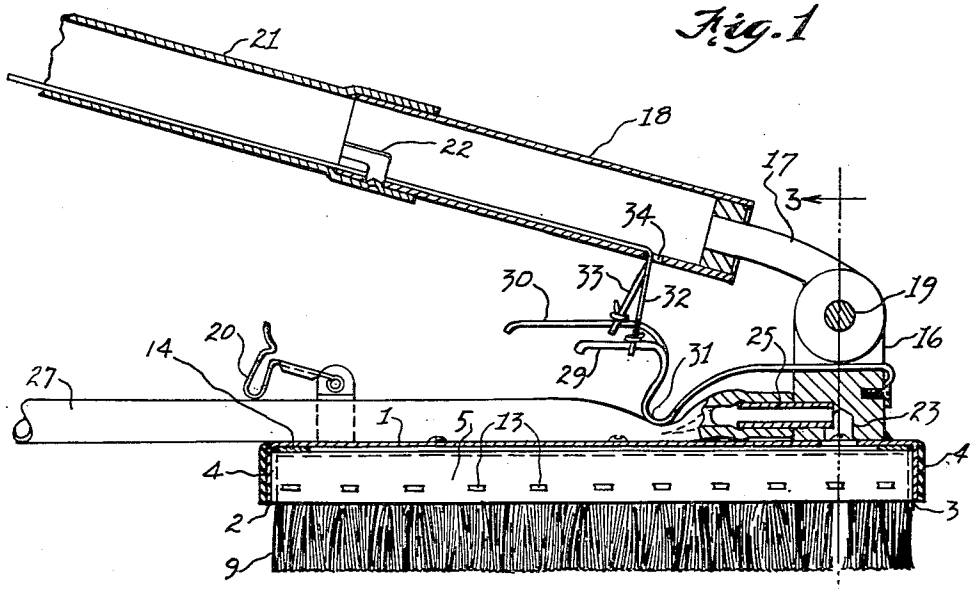


Fig. 2

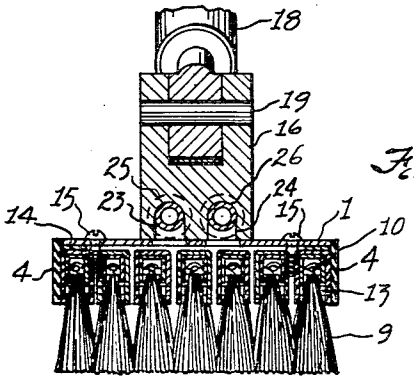


Fig. 3

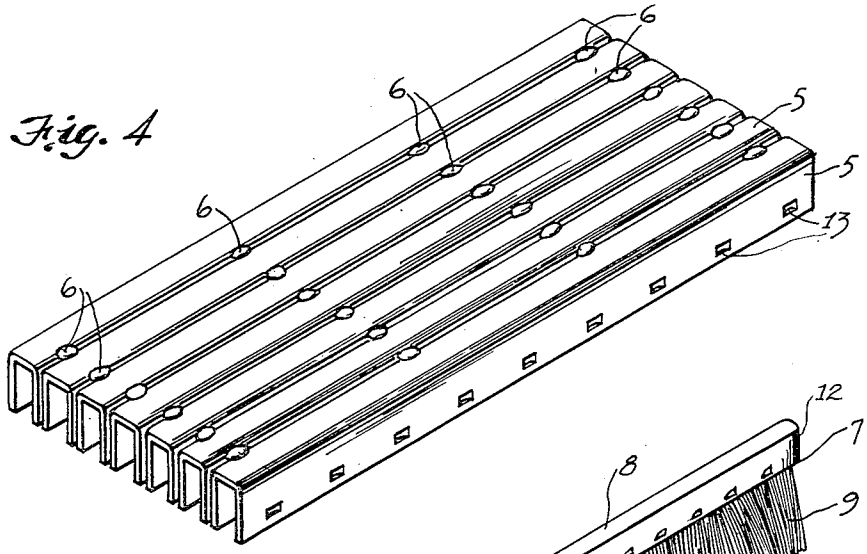
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Fig. 4



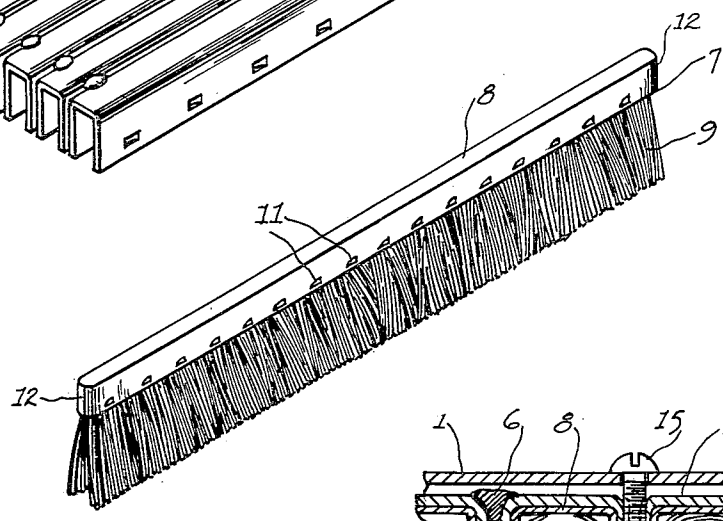


Fig. 5

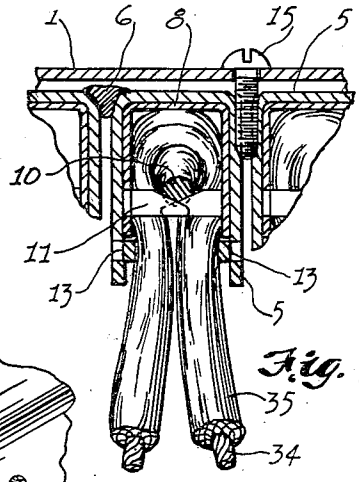


Fig. 7

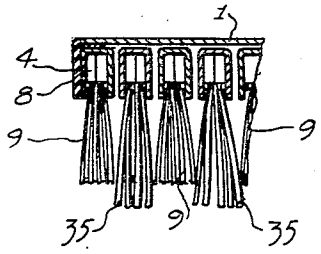


Fig. 6

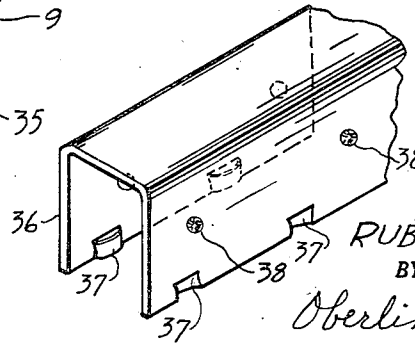


Fig. 8

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BRUSH UTILIZING REMOVABLE LENGTHS OF BRUSH STRIP

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Application September 8, 1950, Serial No. 183,749

10 Claims. (Cl. 15—128)

This invention relates as indicated to a novel scrubbing brush and, more particularly, to a scrubbing brush which may be of the fountain type adapted to have cleansing and other fluids delivered thereto.

The usual scrubbing brushes employed for the purpose of cleaning walls, floors, windows and the like generally comprise blocks of wood having tufts of bristles set therein, and modified forms of such brushes are also known provided with central orifices for delivery of water thereto, generally through a hose or elongated tubular handle, for the purpose of flushing the surface being scrubbed. Similar brushes are also known having hollow backs or containers which may be filled with a suitable detergent solution which escapes to the brush face through a plurality of small orifices intermediate the tufts of bristles.

The usual wooden backed scrubbing brushes are, however, susceptible to warping and checking, considerably reducing the useful life of the same. Furthermore, the tufts of bristles inserted therein tend to loosen and fall out so that such brushes tend quickly to become rather ragged in appearance and inefficient in operation. The fountain types of brushes are, of course, relatively expensive and may include valve means and the like for admitting the fluid to the brush face. Their use, while convenient, has nevertheless been uneconomic for many purposes due to the fact that it is generally necessary to discard the entire assembly when the brush material has become worn down.

When employing a solution of detergent or the like, previous types of fountain brushes have, moreover, been quite wasteful of such solutions even when provided with valving means since the usual brush material will absorb or retain only a limited amount of the same for efficient application to the surface being scrubbed, the excess fluid running out over the surface and requiring a subsequent mopping-up operation.

It is accordingly a primary object of my invention to provide a brush assembly particularly suited for use as a scrubbing brush.

A further object is to provide a scrubbing brush assembly adapted to utilize a plurality of lengths of brush strip mounted therein for removal and replacement as required.

Still another object is to provide a novel fountain brush designed for efficient employment of cleansing fluids and the like delivered thereo.

A further object is to provide such fountain brush which will be relatively inexpensive of manufacture and in which the brushing elements are readily replaceable.

Other objects of my invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, said invention then comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a side elevation partly in section of one form of fountain brush embodying the principles of my invention;

Fig. 2 is a vertical longitudinal sectional view of such brush also illustrating the manner in which the same may be mounted on an elongated handle member or the like;

Fig. 3 is a vertical sectional view taken along the line 3—3 on Fig. 2;

Fig. 4 is a detail perspective view of an assembly of brush strip retaining members adapted to be replaceably mounted in the back of the fountain brush assembly illustrated in Figs. 1–3 inclusive;

Fig. 5 is a perspective view of a length of brush strip adapted to be inserted and retained in the retainer assembly of Fig. 4;

Fig. 6 is a fragmentary sectional view similar to Fig. 3 but showing the employment of modified brush material therein;

Fig. 7 is an enlarged fragmentary detail view showing such modified brush material and the manner of securing the brush strip retainer assembly within the brush back; and

Fig. 8 is a fragmentary perspective view of a modified retainer element adapted to receive the brush strip of Fig. 5.

Referring now more particularly to said drawing and especially Figs. 1–3 thereof, the embodiment of my invention there illustrated comprises a flat sheet metal back 1 having downturned flanges 2 and 3 at each end thereof. A rubber strip 4 encircles such back being bonded to such flanges 2 and 3 and preferably also the side edges of the back 1 to form a downturned socket or receptacle for the brush assembly described below and also to provide a bumper guard.

A plurality of elongated sheet metal channel members 5 are assembled in slightly spaced side-by-side relationship, as shown in Fig. 4, and arc welded together as at 6 to form a rigid unit wherein lengths of brush strip 7 are adapted to be removably inserted and retained. Such brush strip will desirably be of the type disclosed in my prior Patent No. 2,303,386 comprising a sheet metal channelform back 8 having brush material 9 secured therein by means of an elongated wire retaining element 10 held in place by teeth 11 punched in from the respective sides of such back. Such brush strip will be severed into the desired lengths 7 and the ends 12 of the channel back 8 preferably pinched together to prevent the escape of any brush material doubled about the retaining wire 10 adjacent such ends.

The channelform retainer elements 5 which thus receive the individual lengths 7 of brush strip have a row of arcuately shaped protuberances 13 punched in from the sides thereof slightly spaced from the longitudinal edges of such elements. As best shown in Fig. 7, such protuberances are positioned to overlie the respective edges or lips of the back 8 of such brush strip 7 to secure the length of brush strip firmly seated within its respective retaining element 5, the length of brush strip being inserted lengthwise within such element. The arcuate contours of such protuberances 13 permit the same to ride over the brush material where the latter emerges from back 8 without catching on the same.

The globules of metal 6 deposited by the arc welding electrode to tack the plurality of retainer elements 5 together as shown in Fig. 4 will ordinarily extend slightly above the back of the resultant assembly so that when such retainer assembly is inserted within the holder 1 the same will be held slightly spaced from the back of such holder thereby. I generally prefer, however, also to provide thin spacer strips 14 within such holder adjacent its outer periphery uniformly to space the back

of such assembly of retainer elements 5 from the flat sheet metal back of holder 1 (see Figs. 2 and 3). As best shown in Figs. 3 and 7, self-tapping screws 15 may be employed thus removably to secure the assembly of retainer elements 5 within holder 1, such screws being positioned to engage in the slots between adjacent retainer elements 5.

A solid stud 16 is welded to the back of holder 1 adjacent one end thereof with an extension 17 carrying a tubular handle member 18 hingedly mounted thereon at 19. Such handle member 18 may be secured in fixed position parallel to the back of holder 1 as shown in Fig. 1 by means of a spring clip 20 or may be released from such spring clip and mounted on a tubular extension handle 21 by means of a bayonet lock 22 (Fig. 2) if desired.

Stud 16 is cored at 23 and 24 to form two passages communicating with the space between the inner side of sheet metal holder 1 and the back of the assembly of retainer elements 5 afforded by the interposed spacer strips 14. Tubular fittings 25 and 26 communicate with such respective passages 23 and 24 and are adapted to have corresponding rubber tubes 27 and 28 joined to their outer extremities through which fluids may be delivered. Valve means in the form of leaf springs 29 and 30 are mounted on stud 16 beneath hinged member 17 and include downwardly arcuate portions 31 normally operative to engage the respective rubber tubes adjacent fittings 25 and 26 to pinch off such tubes and prevent the delivery of fluids therethrough. The operator, when holding the brush by handle 18, may readily selectively grip such respective valve members to control delivery of fluids to the brush (Fig. 1). When the brush is carried on the end of a long tubular handle extension 21 (Fig. 2), cords 32 and 33 may be connected to such respective valve members 29 and 30 to operate the same, such cords being passed through an aperture 34 in handle 18 and then conducted through tubular extension 21 to the end of the latter.

It will thus be seen that I have provided a fountain brush assembly to which desired fluids may be delivered, such fluids entering the space between holder 1 and the back of the assembly of retainer elements 5 and escaping between the slightly spaced component retainer elements to the brush face. Commonly, a detergent solution may be delivered to the brush through one of the hoses and water delivered through the other hose for flushing purposes. The particular fluid or fluids employed, however, will be a matter of choice and may include compressed air or other gases carrying entrained antiseptics, insecticides, etc.

While the brush material 9 of the lengths of brush strip 7 may ordinarily comprise the usual bristle materials such as tampico fiber, nylon and the like, I prefer also to employ certain absorbent materials in conjunction therewith to assist in more efficient application of the fluids to the work surface. While such absorbent materials may be in the form of strips of cellulose sponge or cotton mop yarn, for example, I prefer to employ stranded absorbent materials adapted to be secured in the channelform back 8 in the usual fashion of my brush strip and to afford a degree of brushing action itself. Referring now more particularly to Figs. 6 and 7 of the drawing, such stranded absorbent brush material may consist of cotton cord 34 having an outer relatively thick coating or layer of cellulose sponge material 35, composite stranded material of this type now being commercially available. While in fragmentary Fig. 7 such cellulose sponge material is shown broken away to expose the inner cotton core 34, it will be appreciated that in use these two components will be coextensive. Moreover, as shown in Fig. 6, it will be desirable that the layer of such absorbent stranded material extend somewhat further from the back 8 in which it is secured than is the case with the usual bristle material 9. This is for the reason that, when wet, such absorbent stranded material tends to shrink longitudinally and thus, if originally of the proper additional length, will shrink to the same length as such bristle material 9, affording a uniform brush face.

As illustrated in Fig. 6, it will ordinarily be preferred to employ alternate lengths of brush strip utilizing bristles 9 and absorbent material 35 inserted in the assembly of retainer elements 5. It will be appreciated, however, that the number and arrangement of such different types of strip may be varied as appropriate for the particular use in hand.

In Fig. 8 there is illustrated an alternative form of retainer element 36 adapted to receive the lengths of brush strip in the same general manner as elements 5. In this embodiment, the opposed inwardly arcuate projections 37 corresponding to projections 13 are struck in from the edge portions of the channel sides permitting the employment of somewhat more shallow channel elements to receive and hold the lengths of brush strip, such projections 37 overlying the channel edges of the brush strip back 8 in the same manner as projections 13. The sides of retainer elements 5 and 36 may also be dimpled to provide outwardly projecting protuberances such as 38 which serve uniformly to space adjacent retainer elements one from the other when the latter are welded together to form a unitary assembly as above described and illustrated in Fig. 4.

When the lengths of brush strip 7 employing the desired type or types of selected brush materials have been inserted lengthwise in the respective adjacent retainer elements 5, the unitary assembly of such retainer elements will itself be inserted in the receptacle formed by sheet metal back 1 with its downturned flanges 2 and 3 and peripheral rubber bumper guard 4 and secured therein by means of self-tapping screws 15 or any other convenient means. End flanges 2 and 3, of course, prevent lengthwise withdrawal of the brush strip from the retainer assembly when the latter is thus mounted within holder 1. On the other hand, when it is desired to replace the lengths of brush strip when the brush material has become worn or when a different type of brushing action is desired, it is only necessary to remove the retainer element assembly from holder 1 whereupon the lengths of brush strip 7 may readily be withdrawn from the channelform retainer elements 5 and new lengths of brush strip substituted. Access is also thereby afforded to the inner surface of holder 1 permitting cleaning of the same in the event this should become necessary.

It will be appreciated that while a preferred embodiment of my invention in the form of a fountain brush has been described above, the unit comprising holder 1 with the retainer assembly and lengths of brush strip therein may be employed in the same manner as an ordinary scubbing brush without the fountain feature, the fluid delivery hoses, pinch valves, etc., being omitted. Such scrubbing brush is not only exceptionally efficient in its action and the brush material thereof readily renewable but also when absorbent material such as that described above is employed the resultant brush is capable of absorbing a relatively large volume of water or cleaning solution and delivering the same to the work surface during the scrubbing operation.

Hinge 19 may be relatively tight and stiff, if desired, so that the brush back or holder will remain at a selected adjusted angle to the handle 18. Side flanges may be turned down on such holder similar to end flanges 2 and 3, although not essential. The rubber bumper strip 4, in the embodiment shown, prevents escape of fluid laterally of the holder and thereby ensures that all such fluid will be delivered between the slightly spaced parallel lengths of brush strip. This rubber strip 4, however, likewise is not essential and may be omitted, particularly if corresponding side flanges are turned down from the holder back in its stead. A wide variety of

means will also be apparent to those skilled in the art for releasably securing the brush unit to the holder, including various clamps, latches, and the like. While a generally rectangular brush unit and holder therefor have been illustrated and described, it will be understood that the conformation of the same may vary within wide limits, although it is much preferred that the individual retainer members 5 be straight to facilitate insertion and replacement of the lengths of brush strip.

When employing generally alternate layers of the absorbent cellulose sponge strands and relatively stiff non-absorbent bristle brush material, such as tampico fiber, the latter material will not only afford the major portion of the scrubbing action but may also give lateral support to such strands which tend to become somewhat flabby when wet. Whether in the form of a fountain brush or of an ordinary scrubbing brush, such absorbent strands will assist in regulating gradual release of cleaning or flushing liquids to the brush face.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a novel fountain brush assembly comprising a sheet metal holder having downturned flanges at opposite ends, a handle member pivotally mounted on the back of said holder for swinging movement toward and away therefrom, and latch means adapted to hold said handle member in fixed position relative to said holder, said holder having two passages through the back thereof; two lengths of tubing respectively connected with such passages for conducting fluids thereto, separate valve means adjacent said handle member for controlling flow of such fluids thereto, a brush unit comprising a plurality of sheet metal channelform retainer members secured together in slightly laterally spaced parallel relationship, said channelform members having projections struck inwardly from their opposite sides of generally arcuate contour longitudinally of the same, lengths of brush strip inserted lengthwise within said respective channelform members, said lengths of brush strip having channelform sheet metal backs the respective edges of which are adapted to engage the inner sides of such projections to secure said strip within said channelform retaining members, said brush unit being releasably secured to said holder with the ends of said channelform retaining members abutting the respective inner faces of said downturned flanges to prevent withdrawal of said lengths of brush strip therefrom, and means spacing said unit from the back of said holder to provide a cavity therebetween connecting with both such passages and adapted to receive fluids from such passages for escape between said slightly spaced brush strip retaining members.

2. In a novel fountain brush assembly comprising a holder member including a receptacle adapted to receive a brush unit removably mounted therein, and handle means on the back of said holder, said holder having a passage through the back thereof communicating with such receptacle and adapted to have a length of tubing connected therewith for conducting fluids to such receptacle; valve means adjacent said handle for controlling flow of such fluid to such receptacle, and a brush unit bodily releasably secured within such receptacle with brush material extending therefrom comprising a plurality of sheet metal channelform retainer members secured together in slightly laterally spaced parallel relationship, lengths of brush strip inserted within said respective channelform members, said channelform members being inwardly deformed adjacent their respective edges to engage and secure said lengths of brush strip, said lengths of brush strip having channelform sheet metal backs the respective edges of which are adapted to engage the inner sides of such deformed portions of said channelform retainer members, and means releasably securing said brush unit within such receptacle with the ends of said channelform retaining members opposed to portions of said holder to prevent withdrawal of said lengths of brush strip therefrom, said unit being spaced from the back of said holder to provide a cavity therebetween adapted to receive fluids from such passage for escape between said brush strip retaining members.

3. In a scrubbing brush comprising a generally flat sheet metal holder having generally parallel downturned flanges at opposite ends thereof, a brush strip retainer assembly comprising a plurality of straight sheet metal channelform retainer members welded together in slightly laterally spaced parallel relationship to provide elongated interstices therebetween, said channelform members having projections struck inwardly from their opposite sides, and lengths of brush strip inserted lengthwise within said respective channelform members, said lengths of brush strip having channelform sheet metal backs the respective edges of which are adapted to engage the inner sides of such projections to secure said strip against outward withdrawal from said channelform retaining members, said retainer assembly with said lengths of brush strip inserted therein being releasably secured to said holder with the ends of said channelform retaining members opposed to the respective inner faces of said downturned flanges to prevent axial withdrawal of said lengths of brush strip therefrom.

4. A brush assembly comprising a plurality of sheet metal channelform retainer members secured together in slightly laterally spaced parallel relationship, said channelform members having longitudinally spaced projections struck inwardly from their opposite sides of generally arcuate contour longitudinally of the same, lengths of brush strip inserted lengthwise within said respective channelform members, said lengths of brush strip having channelform sheet metal backs the respective edges of which are adapted to engage the inner sides of such projections to secure said strip within said channelform retaining members, and detachable means adapted to close the ends of said sheet metal channelform retainer members to prevent axial withdrawal of said lengths of brush strip therefrom.

5. In combination, a brush strip retaining member adapted to be secured in an appropriate holder and a length of brush strip inserted therein, said retainer member comprising a sheet metal channel having a plurality of spaced longitudinal projections struck inwardly adjacent the edges of the opposite sides thereof, such projections being of generally arcuate contour longitudinally of said channel, and a length of brush strip inserted lengthwise within said channel, said length of brush strip having a channelform sheet metal back the respective edges of which are adapted to engage beneath such projections to secure said strip within said retainer member channel.

6. A brush strip retaining member comprising a sheet metal channel having a plurality of longitudinally spaced inwardly extending projections on the opposite sides thereof adapted to engage the lips of a sheet metal channelform back of a length of brush strip to secure such strip in said channel, such projections being inclined longitudinally of said channel to facilitate passage of the brush material of such brush strip when the latter is inserted lengthwise within said channel.

7. A brush strip retainer assembly comprising a plurality of sheet metal channel members welded together in slightly spaced side-by-side relationship affording interstices therebetween, said channel members each having a plurality of longitudinally spaced inwardly extending projections on the opposite sides thereof adapted to engage the lips of a sheet metal channelform back of a length of brush strip to secure such strip in said channel,

such projections being of generally curved profile longitudinally of said channel to facilitate passage of the brush material of such brush strip when the latter is inserted lengthwise within said channel.

8. A brush strip retainer assembly comprising a plurality of sheet metal channel members secured together in slightly spaced side-by-side relationship to afford interstices therebetween, said channel members each having a plurality of laterally outwardly extending projections on the sides thereof to assist in thus properly uniformly spacing said channel members, and said channel members each having a plurality of longitudinally spaced inwardly extending projections on the opposite sides thereof adapted to engage the lips of a sheet metal channelform back of a length of brush strip to secure such strip in said channel, such last-named projections being of generally curved profile longitudinally of said channel to facilitate passage of the brush material of such brush strip when the latter is inserted lengthwise within said channel.

9. A brush strip retainer assembly comprising a plurality of sheet metal channel members secured together in side-by-side relationship, said channel members each having a plurality of longitudinally spaced inwardly extending projections on the opposite sides thereof adapted to engage the lips of a sheet metal channelform back of a length of brush strip to secure such strip in said channel, such projections being of generally curved profile longitudinally of said channel to facilitate passage of the brush material of such brush strip when the latter is inserted lengthwise within said channel.

10. In combination, a brush element support formed to define an outwardly opening channel defining a recess therein, and a brush element in the form of a length

of brush strip having an elongated sheet metal channelform back seated in said recess with a layer of brush material protruding outwardly therefrom, said support channel having a plurality of longitudinally spaced transversely extending projections on the sides thereof overlying and engaging the respective lips of said channelform brush strip back to secure the latter in said channel, said projections being inclined in the same direction longitudinally of said channel to facilitate passage of said layer of brush material therepast when said brush strip back is inserted lengthwise within said channel in such direction.

References Cited in the file of this patent

UNITED STATES PATENTS

719,156	Spence	Jan. 27, 1903
957,078	Miller	May 3, 1910
965,315	Moorhead	July 26, 1910
1,093,114	Corbett	Apr. 14, 1914
1,230,325	Pride	June 19, 1917
1,250,767	Bass	Dec. 18, 1917
1,277,805	Wingers	Sept. 3, 1918
1,583,358	Mayes	May 4, 1926
1,685,328	Kogler et al.	Sept. 25, 1928
1,723,684	Dowd	Aug. 6, 1929
1,942,205	Elnett	Jan. 2, 1934
2,194,916	Somers	Mar. 26, 1940
2,343,604	Wilson	Mar. 7, 1944
2,609,242	Nelson	Sept. 2, 1952

FOREIGN PATENTS

266,464	Italy	July 29, 1929
294,976	Italy	Apr. 9, 1932