Oct. 14, 1958 L. E. JONES 2,855,618

BRUSH CONSTRUCTION

Filed Aug. 18, 1955

FIG. 1.

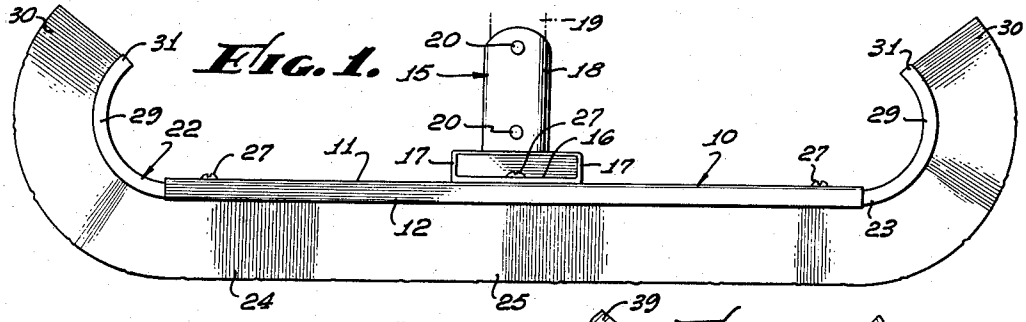


FIG. 2.

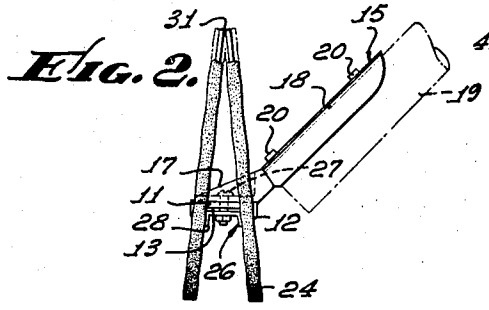


FIG. 5.

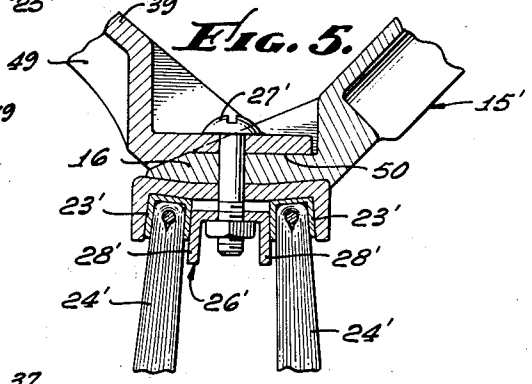


FIG. 3.

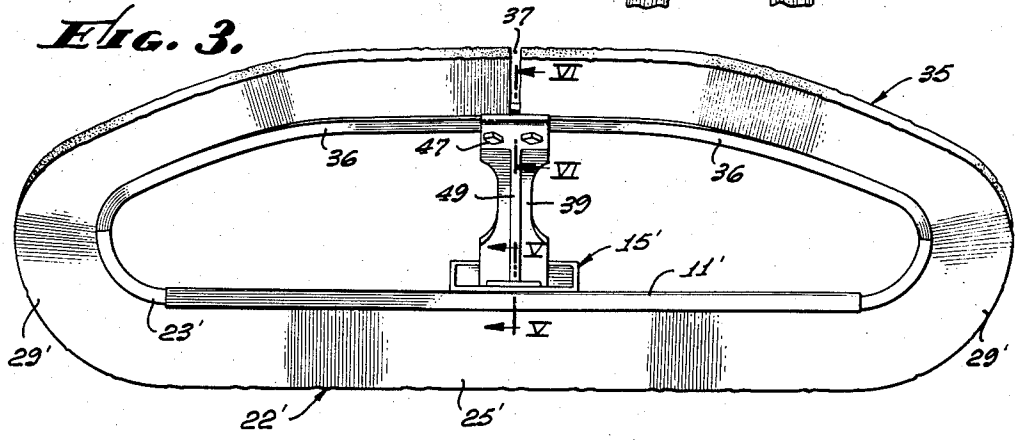


FIG. 4.

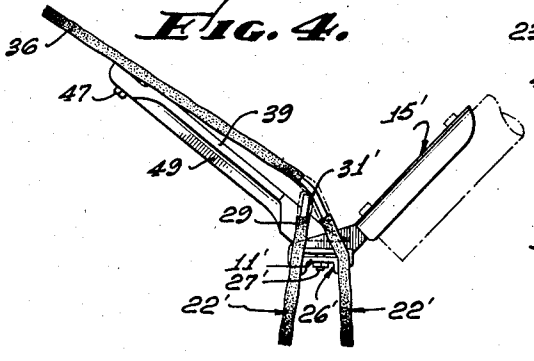
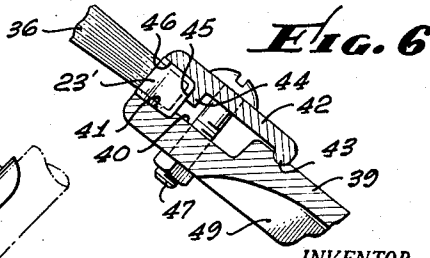


FIG. 6.



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BRUSH CONSTRUCTION

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12 Claims. (Cl. 15—106)

This invention relates to a brush construction and more particularly to a brush for cleaning planar and curved surfaces and especially adapted for use in swimming pools.

Prior proposed brushes for cleaning swimming pools include the usual form of push brushes in which the bristles are arranged in a straight line and supported from a rigid backing member. When such brushes are used to clean a swimming pool, ends of the backing member are often bumped against walls of the pool and mar or scratch surfaces of the walls. Some swimming pools are constructed with nonrectilinear walls and corners as where side and bottom walls are joined together by smoothly curved surfaces. Obviously, with present proposed brushes for cleaning swimming pools such curved surfaces and corners are difficult to sweep clean, and gutters provided around edges of the pool must be cleaned by other means.

It is the purpose of this invention to provide a novel brush construction for cleaning a swimming pool which obviates the disadvantages of prior brush constructions mentioned above and which affords a brush which is conveniently and readily handled to efficiently and effectively clean virtually all of the surfaces of walls in a swimming pool.

The main object of this invention therefore is to design and provide a novel brush construction adapted to effectively clean planar and curved surfaces such as are found in swimming pool construction.

An object of this invention is to design and provide a brush construction having a straight brush portion with upwardly curled end portions which protect and shield a rigid backing or support base member to which the straight brush portion is secured.

Another object of this invention is to disclose and provide a brush construction having such curved end portions wherein the curved end portions are arranged to afford mutual lateral support and do not require attachment to a backing or support means.

A further object of this invention is to disclose and provide a novel brush construction including a straight brush portion supported by a base member, curved brush end portions, and a convex brush portion spaced from said straight portion and interconnecting the curved end portions, said convex brush portion being adapted to contact curved surfaces to be cleaned.

A still further object of this invention is to disclose and provide a brush construction wherein a straight brush portion is formed by a pair of parallel brush strips, ends of said brush strips extending beyond a supporting base member and curled upwardly and inwardly in converging relation to provide end portions laterally supporting each other in spaced relation to the base member.

Generally speaking, this invention contemplates a brush construction including a rigid base member which carries a pair of parallel straight brush strip portions, said pair of straight brush portions terminating in curved end portions which are brought together in pressure contact at points spaced from the rigid base member. In one embodiment of this novel brush construction, one of said brush strips is provided with convexly curved portions extending beyond said points of contact and terminating with ends in adjacent relation. Means are provided for securing these ends together so as to form a brush having a continuous periphery with outwardly extending brush bristles, said periphery being generally semi-oval in form and including straight, curved, and convex brush portions.

These and many other advantages and objects will be readily apparent from the following description of the drawings in which exemplary embodiments of this invention are shown:

In the drawings:

Fig. 1 is a front view of a brush construction embodying this invention, the handle being only fragmentarily shown.

Fig. 2 is an end view of the brush construction shown in Fig. 1.

Fig. 3 is a back view of a different embodiment of a brush construction embodying this invention, the handle not being shown.

Fig. 4 is an end view of the brush construction shown in Fig. 3, a portion of the handle being fragmentarily shown.

Fig. 5 is an enlarged sectional view taken in the plane indicated by line V—V of Fig. 3.

Fig. 6 is an enlarged sectional view taken in the plane indicated by line VI—VI of Fig. 3.

In the embodiment shown in Figs. 1 and 2 which comprises the basic feature of this invention there is shown a brush means generally indicated at **10** which includes an elongated rigid base member **11** formed of extruded channel section of a suitable metal alloy such as aluminum. The base member **11** includes depending downwardly directed flanges **12** extending for the entire length thereof and defining a downwardly facing groove **13** therein.

Attached to the center portion of base member **11** may be a handle bracket **15** provided with a flat mounting wall **16** reinforced by triangular stiffening flanges **17** at each end thereof. The bracket **15** includes a partially cylindrical sleeve **18** extending at an angle to wall **16** and adapted to receive a handle **19** which may be secured to sleeve **18** by suitably spaced bolts **20**. It is understood other suitable means may be employed for mounting or for attaching a handle to the base member.

A pair of brush strips **22** may be positioned in parallel spaced relation in said groove **13**, each brush strip including a U-section anchor member **23** for tightly retaining a plurality of outwardly extending brush bristles **24** of suitable material such as nylon. The construction of brush strip **22** is well known, said anchor member **23** being of metal material which is normally stiff, but which may be bent under sufficient pressure.

Each brush strip **22** includes a straight brush portion **25** which is secured in base member **11** by an elongated U-section clamping member **26** with slightly outwardly flared flanges **28** positioned between said anchor members **23** and drawn toward the base member by a plurality of spaced bolt and nut assemblies **27**. It will be apparent from a consideration of Figs. 2 and 5 that as said bolt and nut assemblies are tightened the clamping member **26** is tightly wedged between anchor members **23** and tightly clamps throughout their length the straight brush portions **25** in base member **11**. It should be noted that the center nut and bolt assemblies **27** also serves to secure the handle attaching bracket **15** to the base member, said bolt **27** extending through mounting wall **16**.

Each brush strip **22** extends beyond rigid base member **11** and provides upwardly curved or curled brush

end portions 29 which form outwardly directed curved bristle portions 30 which shield and protect ends of rigid base member 11 from contact with surfaces to be cleaned. As illustrated, the curved end portions 29 may be part circular subtending an angle of less than 180° and more than 90°. Each end portion 29 converges towards the corresponding end portion 29 on the adjacent brush strip 22 as best shown in Fig. 2 and meet at their extremities as at 31 in pressure contact. It will thus be noted that the metal anchoring members 23 of the curved end portions 29 thus mutually laterally support each other beyond the ends of the rigid member 11. Thus when brush means 10 is being used to clean a gutter, for example, the rigid construction of the ends 29 prevents bending or misalignment of the curved end portions 29.

The embodiment of this invention shown in Figs. 3 to 6 inclusive includes parts similar to those described and shown in Figs. 1 and 2 and such similar parts will be given like reference numerals with a prime sign.

In Fig. 3 a brush means generally indicated at 35 includes a rigid channel section base member 11' which carries a pair of brush strips 22' in parallel relation. The strips are held by a clamping member 26' secured to the rigid member and drawn tightly thereagainst by spaced nut and bolt assemblies 27'. The brush strips 22' include a straight portion 25' and curved end portions 29'. The brush strips converge and are in pressure contact at 31' in a manner similar to the prior embodiment. A handle bracket 15' is secured to the rigid base member 11' in a manner similar to that previously described.

In this embodiment, one of the brush strips 22' is not terminated adjacent the point of pressure contact 31' but instead is continued at each end by convex brush portions 36 to form a generally semi-oval brush having a continuous periphery provided with outwardly extending bristles. The convex portions 36 lie in substantially the same plane, said plane being disposed at an angle to the planes of the brush strips 22' at their straight portions. Ends of convex portions 36 meet in adjacent relation as at 37 opposite the approximate center of the rigid base member 11' and in spaced relation thereto.

Means to interconnect the adjacent ends of convex portions 36 and to rigidly support said ends from said base member 11' may comprise a transversely disposed connecting member 39 having at one end a depressed face 40 provided with a shallow recess 41 within which may seat one side of anchor members 23'. A clamp 42 may be provided with a transverse bead 43 at one end seated in a complementary positioning recess in connecting member 39. The clamp 42 includes at its other end an inwardly directed transverse rib 44 providing a seat as at 45 for clamping members 23' and may engage the other side walls of clamping members 23' as at 46. A pair of screw bolt assemblies 47 extending through clamp 42 and aligned ports in connecting member 39 may be tightly drawn to securely clamp ends of convex portions 36.

The connecting member 39 may include a central, longitudinally extending reinforcing rib 49 providing a generally T-cross section. The connecting member 39 includes (Fig. 5) an angularly disposed end wall 50 adapted to seat on mounting wall 16 of member 15, said wall 50 being ported to receive the nut and bolt assembly 27'. It will thus be readily apparent that the connecting member 39 rigidly supports the ends of convex portions 36 in spaced relation to the rigid base member 11'.

The embodiment of this invention shown in Figs. 3 and 6 inclusive thus provides a brush means having a straight brush portion 25', curved end portions 29', and convex portions 36 which connect said end portions 29' to provide a continuous peripheral brush means. On flat surfaces, it will be readily apparent that the straight

portions 25 and 25' will be used for sweeping. On concave curved surfaces, the convex portions 36 will be employed for cleaning and while a relatively shallow convexity is shown, it is understood that such convex curvature may be changed as desired. The convex end portions 29' are so designed by the convergence of the brush strips 22' that ends of the brush means 35 are laterally supported to afford rigidity to outer ends of convex portions 36. The curved end portions 29 and 29' may be employed for cleaning wall surfaces of relatively great concavity.

It will thus be noted that in each embodiment the brush means is so designed that in no position of the brush will a metal rigid surface or edge of the brush construction be capable of contacting a wall surface, and marring or scratching of such a surface during cleaning is prevented. The construction of the brush means described above is simple and effective. Since the brush means are of light weight, they may be readily handled.

It is understood by those skilled in the art that various forms or degrees of curvature may be used in forming the brush means described in the above embodiments of this invention, and all such changes and modifications coming within the scope of the appended claims are embraced thereby.

I claim:

1. A brush construction for cleaning planar and curved surfaces including: an elongated rigid base member of channel section; a pair of brush strips provided with bristles positioned in parallel spaced relation along said base member in said channel, the brush edge defined by said bristles lying in a plane adapted to contact a surface to be cleaned; and means between said brush strips to secure said strips to said member, said brush strips having corresponding end portions extending beyond the ends of said base member and curved upwardly and inwardly to form curved brush strip ends with bristle ends lying in a curved edge extending upwardly above said plane, said end portions lying in converging planes and meeting in pressure contact above said base member to afford lateral stability to the end portions.

2. In a brush construction, the combination of: a rigid base member; a pair of brush strips provided with bristles normally upright with respect to a surface to be cleaned; and means to secure said brush strips in spaced relation on said base member along a major portion of their length, said brush strips including correspondingly upwardly directed curved end portions extending beyond the base member and converging to meet in pressure contact at points spaced from and above ends of said rigid base member whereby said end portions mutually laterally support each other and bristles on said upwardly directed curved end portions extend endwise of the base member.

3. A brush construction as stated in claim 2 wherein the end portions of one brush strip extends beyond said points of contact and terminate with their extremities adjacent; and means to interconnect said extremities.

4. In a brush construction, the combination of: a rigid base member; a pair of brush strips provided with bristles; means to secure said brush strips in spaced relation on said base member along a major portion of their length; and end portions of both brush strips extending beyond ends of said member and converging to meet in pressure contact at their extremities to afford lateral stability of said end portions.

5. In a brush construction, the combination of: a continuous endless brush strip provided with outwardly extending bristles and including a straight longitudinal portion, curved end portions, and a convex longitudinal portion joining said curved end portions; a rigid base member supporting said straight longitudinal portion; and means interconnecting said base member and said convex longitudinal portion of said brush strip.

6. A brush construction as stated in claim 5 including

a second brush strip supported by said base member in parallel relation to said first mentioned brush strip.

7. A brush construction as stated in claim 6 wherein said second brush strip includes curved end portions corresponding to said curved end portions of said first mentioned brush strip, said curved end portions of both brush strips converging for contact at points spaced from the ends of said rigid base member.

8. In a brush construction, the combination of: a continuous endless brush strip arranged with bristles extending outwardly and including a straight longitudinal portion; curved end portions and a convex longitudinal portion joining said curved end portions in spaced relation to said straight portion; a rigid base member supporting one of said longitudinal portions; and means interconnecting said base member with a central section of the other longitudinal portion.

9. A brush construction as stated in claim 8 wherein said convex longitudinal portion lies in a plane disposed at an angle to said longitudinal straight portion.

10. A brush construction as stated in claim 8 including a second brush strip carried by the base member in spaced relation to the longitudinal portion supported by said base member, said second brush strip having curved end portions with extremities thereof in pressure contact against curved end portions of the first mentioned brush strip.

11. In a brush construction, the combination of: a rigid base member; a main brush portion secured to said

base member along its length and having normally downwardly directed bristles; and end brush portions curling upwardly and inwardly with respect to ends of said rigid base member to shield ends of said rigid base member, said end brush portions having bristles disposed endwise of said main brush portion.

12. A swimming pool brush construction adapted to simultaneously contact surfaces lying in non-coplanar relation comprising: a brush strip having a layer of bristles lying in a planar zone normally upright with respect to a surface to be cleaned, said layer of bristles having a longitudinally extending straight edge portion lying in a plane intersecting said planar zone and having curved end portions lying in a planar zone of said layer of bristles, a second brush strip having a layer of bristles lying in a planar zone placed from and extending alongside the planar zone of the first mentioned brush strip, curved end portions of each brush strip converging and terminating in mutual supporting contact.

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