

Dec. 8, 1953

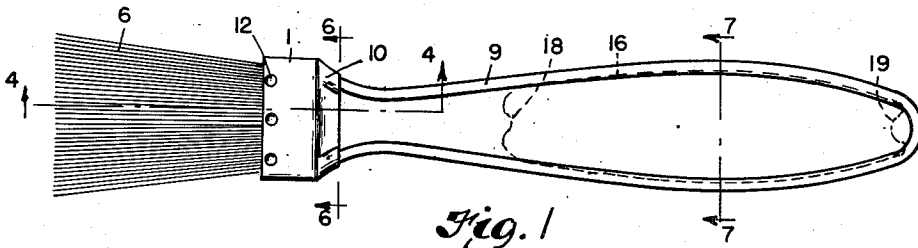
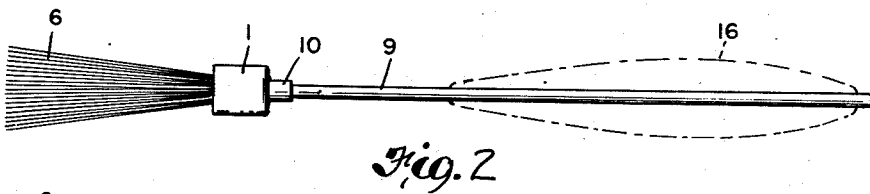
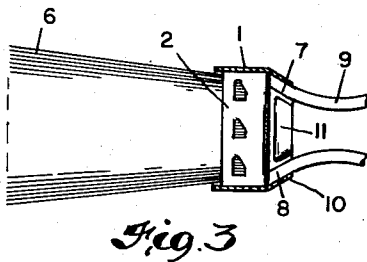
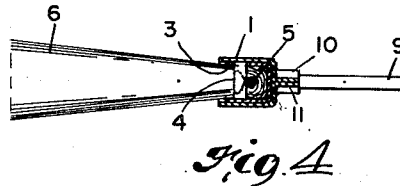
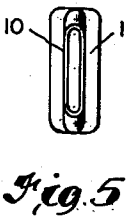
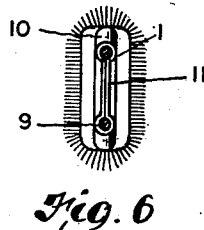
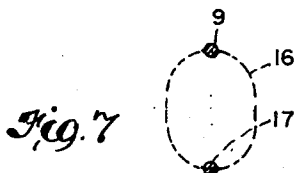
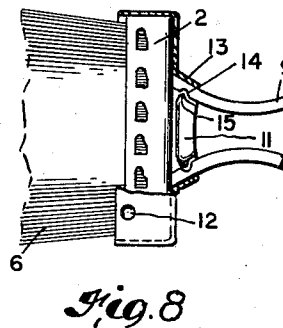
R. O. PETERSON

2,661,491

BRUSH

Filed June 26, 1947

2 Sheets-Sheet 1



INVENTOR.
RUBEN O. PETERSON
BY
Oberlin & Limbach
ATTORNEYS.

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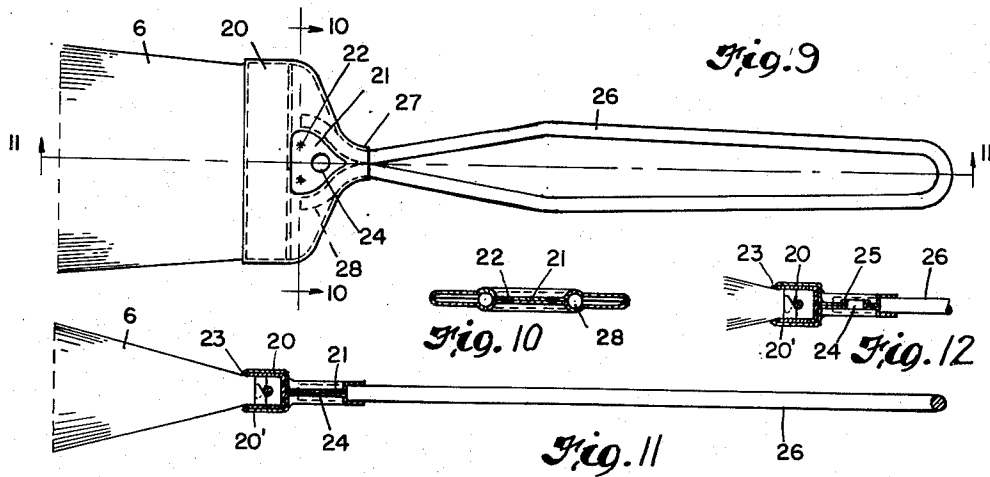
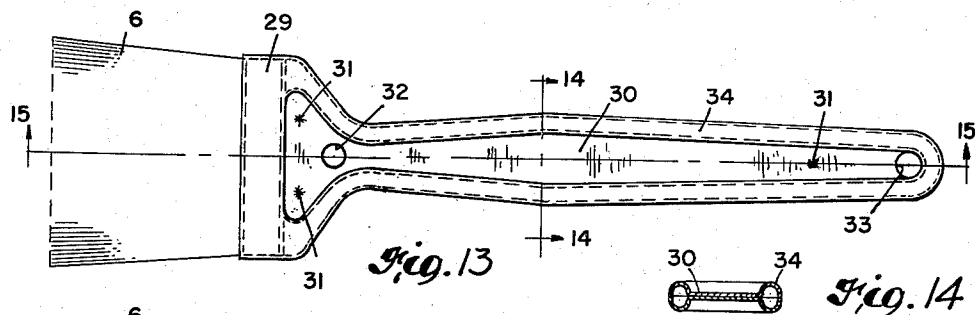
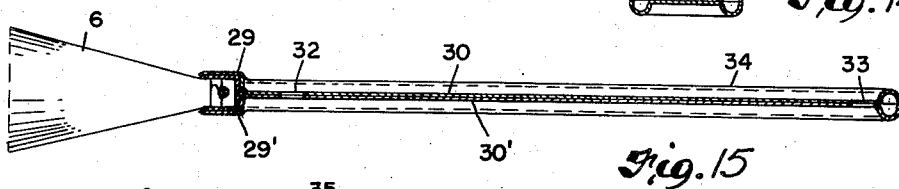
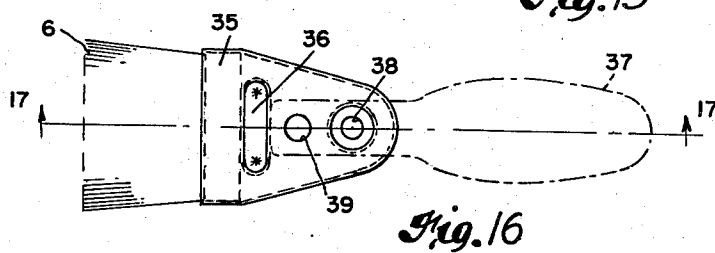
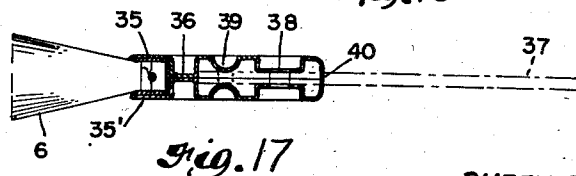
R. O. PETERSON

2,661,491

BRUSH

Filed June 26, 1947

2 Sheets-Sheet 2



INVENTOR.
RUBEN O. PETERSON
BY
Oberlin & Limbach
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,661,491

BRUSH

Ruben O. Peterson, University Heights, Ohio, assignor to The Osborn Manufacturing Company, Cleveland, Ohio, a corporation of Ohio

Application June 26, 1947, Serial No. 757,119

4 Claims. (Cl. 15-143)

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This invention relates, as indicated, to brushes, and more particularly to hand brushes, such as paint brushes, chip brushes, machinists' brushes, and the like.

A large number of forms of hand brushes are manufactured for a variety of different purposes in many shapes and sizes. They have been assembled in one of two ways. Either the brush material is looped about a retaining member and a cap or sleeve slid thereover to hold the material in place, or else straight strands of brush material have been set in a plastic, such as rubber, which is then retained within a ferrule. Both of these processes are slow and expensive if a satisfactory product is to be obtained and even at best the resultant brush will have numerous deficiencies. Where the brush material is looped about the retaining member and merely held in place by a sleeve or bell cap forced down thereover the material soon begins to work loose in use and the brush must be discarded. The other type of brush referred to is expensive to produce and the plastic material in which the bristles are set is affected by certain solvents. It is therefore a primary object of my invention to provide a new type of hand brush, the components of which are susceptible of automatic mass production and which may be assembled into the completed brush in a very short time and at a minimum expense.

A further object of my invention is to provide such brush which will actually be superior in wearing qualities and usefulness to the corresponding types of brushes now available at much greater cost.

Still another object is to provide such brush which may be assembled by unskilled personnel without the necessity of subsequent trimming operations or the like which are normally responsible for the waste of much valuable material.

Other objects and advantages will become apparent as the following 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 drawings 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 drawings:

Fig. 1 is a plan view of one form of brush produced in accordance with my invention;

Fig. 2 is a side view of such brush;

Fig. 3 is a fragmentary view of the brush head with a portion of the holder element broken away to show the internal arrangement thereof;

Fig. 4 is a sectional view taken along the line 4-4 on Fig. 1;

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Fig. 5 is an end view of the holder element adapted to receive the brush and handle elements prior to deformation thereof;

Fig. 6 is a sectional view taken along the line 6-6 on Fig. 1;

Fig. 7 is a sectional view taken along the line 7-7 on Fig. 1;

Fig. 8 is a view similar to Fig. 3 but showing a modified construction where a larger brush element is employed;

Fig. 9 is a plan view of another form of brush embodying the principles of my invention;

Fig. 10 is a sectional view taken along the line 10-10 on Fig. 9;

Fig. 11 is a sectional view taken along the line 11-11 on Fig. 9;

Fig. 12 is a fragmentary view similar to Fig. 11 but showing a different form of holder element;

Fig. 13 is a plan view of another form of hand brush illustrating the principles of my invention;

Fig. 14 is a sectional view taken along the line 14-14 on Fig. 13;

Fig. 15 is a sectional view taken along the line 15-15 on Fig. 13;

Fig. 16 is a plan view of a machinist's brush or the like embodying the principles of my invention; and

Fig. 17 is a sectional view taken along the line 17-17 on Fig. 16.

Referring now more particularly to such drawings, and especially Figs. 1-3 thereof, the brush there illustrated comprises three primary elements; a brush element, a holder element, and a handle element. In this embodiment of the invention the holder element comprises a sleeve in the form of a stamping 1 providing a channel-form socket in which a short length of brush strip 2 is adapted to be inserted. Such brush strip may desirably be produced in the manner described and explained in my prior Patent No. 2,303,386, and instead of being then circularized to form rotary brush elements and the like such strip will be cut into short elements of the desired length to provide the brush element of the hand brush of the present invention. Such brush strip comprises a channel-form brush back 3 having teeth 4 turned in from opposite sides to secure the wire retaining member 5 in place. The brush material 6 which is doubled about such retaining member is thus securely held in such channel-form back 3 and does not tend to work loose even when the strip is cut into short lengths, as taught by the present invention. When the strip is thus cut the ends of the channel-form back 3 will also be somewhat pinched together to ensure that the end bristles will not work loose.

The two outwardly turned ends 7 and 8 of

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looped wire handle member 9 are inserted in the narrower extension or sleeve 10 of holder element 1 and the elements thus assembled are placed between dies operative to deform sleeve 10 of such holder element at 11 between ends 7 and 8 of wire handle element 9 to rigidly secure such ends in such holder with the handle extending generally axially of the brush material 6. At the same time, the lip of holder 1 is deformed as by the formation of dimples 12 therein to lock the brush element comprising the short length of brush strip 2 therein. Alternatively, such lip of holder 1 may be slightly flanged inwardly along its length thus to secure the brush element.

When it is desired to produce a somewhat larger size of brush such as a large paint or calamine brush, for example, the shape of the holder may be somewhat modified, as shown in Fig. 8, with the sleeve portion 13 corresponding to sleeve 10 but not extending the entire length of such holder. The ends of the wire handle member 9 may be nicked as at 14 and when sleeve 13 is subsequently deformed a corresponding extension 15 of the deformed area 11 assists in rigidly securing the ends of the wire handle member in the holder.

When a brush is to be employed as a paint brush the handle may be modified by the insertion of a wooden or plastic member 16 having a peripheral groove 17 whereby such member may be snapped in place within the wire handle loop as shown in Fig. 7. The two ends of such handle insert may be indented as at 18 and 19 respectively (see Fig. 1) to provide means for hanging the brush by the opening at the end of the handle and for suspending the brush by a support through the shank thereof whereby the brush may be suspended in cleaning solution by means of a rod supported on the lip of the container.

Referring now to Figs. 9-12 inclusive, a modified construction is there illustrated employing a similar brush element comprising two identical stampings 20 and 20'. Such stampings are indented at 21 to form a stop or abutment against which the brush back of the brush element rests and the two stampings may be secured together in this area by means of spot welding at 22, for example. The lips 23 of the channel-form socket thus provided by the two cooperating stampings are slightly turned in to secure the brush element in such socket with the brush material 6 protruding therefrom. A hole 24 may be provided in the flats 21 of the holder element for the same purpose as indentation 18 above. Instead of spot welding the two stampings together the same may be riveted together by turning over the lip 25 of one of such stampings about opening 24, as shown in Fig. 12. The wire handle member 26 is generally similar to that of Fig. 1 but the two sides thereof are brought together where they enter neck 27 of the holder element and the ends 28 are recurved to conform to the contour of flats 21 so that such handle will be rigidly held against any movement relative to the holder. The ends of the wire handle element are, of course, inserted between the two stampings comprising the holder prior to assembling such stampings as by spot welding or the like.

Referring now to Figs. 13-15 inclusive, the brush there illustrated employs a brush element of the same type as that described above but in this embodiment the holder and handle elements are integral. Such holder-handle combination comprises two stampings 29 and 29' in

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which the brush element is secured in the same manner as the Fig. 9 embodiment. The two identical stampings have contacting flats 30, 30' whereby such components may be secured together as by spot welding 31. Openings are provided at 32 and 33 to provide for hanging up the brush, and the rib 34 running around the contour of the handle supplies the necessary rigidity.

Referring to Figs. 16 and 17, another special form of brush embodying the principles of my invention is there illustrated. Such figures show a machinist's brush in which a length of brush strip is mounted in a pair of identical metal stampings and a separate handle member is adapted to be inserted if desired. A machinist normally has need of a brush for a variety of purposes, such as removing chips from taps, reamers and drills, and cleaning surfaces during fitting, assembling, and inspection, for example. The brush must be one which may be easily carried in the usual tool kit and which is adapted to be modified to meet the individual mechanic's special requirements. The two metal stampings 35, 35' mount the brush element in the same manner as above described, such stampings being indented at 36 to provide an abutment or back to the socket in which the brush element is secured and also to provide two contacting surfaces where the stampings may be secured together as by spot welding. These same indentations serve as a stop against which the end of a metal handle 37 may abut when inserted through opening 40 in the end of the holder. Such handle may be provided with two holes therethrough, one adapted to register with the holes 38 in the holder and the other to register with the depressions or dimples 39. Such dimples extend inwardly to sufficient depth to snap into the respective ends of the corresponding opening in the handle member. A screw or rivet may be passed through opening 38 to secure the handle in the holder if it is desired to attach the same relatively permanently or such hole may be employed to hang up the brush. It is obvious that this brush may be employed without any separate handle member at all if so desired.

Brush strip of the type described in my aforesaid Patent No. 2,303,386, having a generally flat layer of brush material held in a channel-form back by means of a wire retaining member and intumed teeth is capable of continuous production at a very rapid rate and short lengths may be automatically cut therefrom as it is produced. The brush material may, for example, be Tampico fiber, nylon, or wire, depending upon the use to which the brush is to be put.

Whether using a one piece stamping as a holder (Fig. 1) or a pair of identical stampings (as in Figs. 9, 13 and 16) the assembly of all components may be accomplished in a single operation either on a punch press, in the case of the Fig. 1 embodiment, or by spot welding or the like in the case of the other forms. The handle member may if desired be dispensed with, as in the case of the machinist's brush of Fig. 16, or the holder element may itself be formed to include handle means, as in Fig. 13.

It will be seen from the foregoing that I have provided a novel hand brush which may be manufactured in a variety of shapes and sizes at small expense but which is nevertheless a quality item and designed to outlast more expensive brushes now on the market.

Other modes of applying the principle of the invention may be employed, change being made

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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. A brush comprising a single short, substantially straight length of brush strip having a generally flat layer of brush material secured in a channel-form back; a separate outer channel-form holder member closely enclosing said back, including the ends thereof, and clamping said back therein with such brush material protruding therefrom; and a separate looped wire handle member extending generally axially of such brush material with the two ends of such wire turned outwardly and inserted in said holder member, portions of said holder member being inwardly deformed intermediate said out-turned wire ends to secure such ends in rigid engagement.

2. A brush comprising a substantially straight length of brush strip having a generally flat layer of brush material secured in a channel-form back; a separate outer channel-form holder member closely enclosing both sides of said back, including the ends thereof, and clamping said back therein with such brush material protruding therefrom; and a separate looped wire handle member having the two ends of such wire clamped within said holder by deformation of said holder.

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3. A brush comprising a substantially straight length of brush strip having a layer of brush material secured in a channel-form back; a separate outer channel-form holder member closely enclosing said back, including the ends thereof, and clamping said back therein with such brush material protruding therefrom; and a separate looped wire handle member having the two ends of such wire secured within said holder.

4. A brush comprising a short, substantially straight length of brush strip having a generally flat layer of brush material secured in a channel-form back; an outer holder member enclosing said back comprising a short length of tubing laterally compressed to form a socket at one end in which said back is closely secured; and a separate handle inserted and secured in the other end of said tubular holder member.

RUBEN O. PETERSON.

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