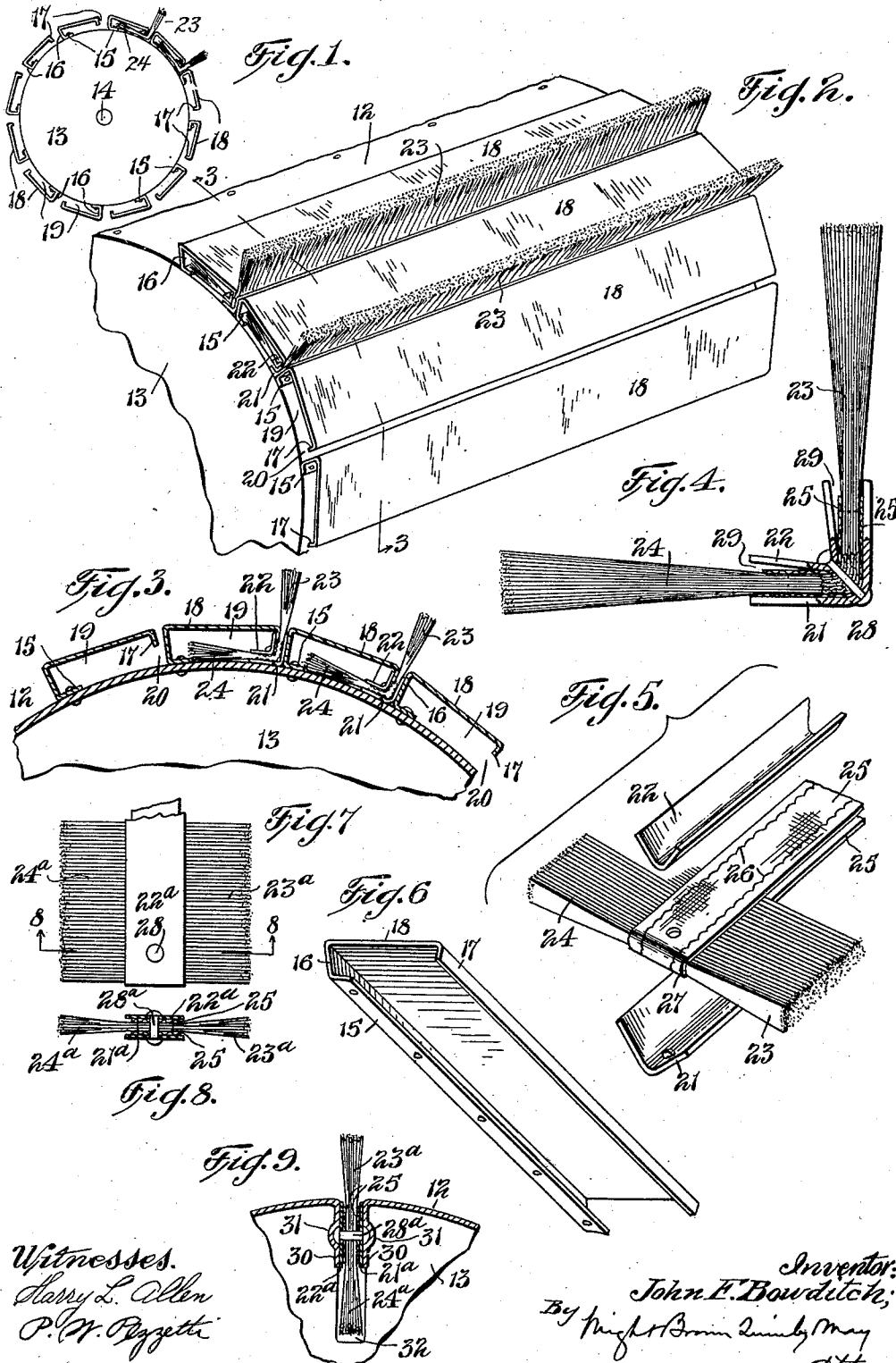


J. F. BOWDITCH.
BRUSH.
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Patented Mar. 14, 1911.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN F. BOWDITCH, OF BOSTON, MASSACHUSETTS.

BRUSH.

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To all whom it may concern:

Be it known that I, JOHN F. BOWDITCH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

This invention relates chiefly to a rotary brush or brush cylinder composed of a carrier formed as a rotary drum and a plurality of rows or series of brush filaments such as bristles projecting radially from the perimeter of the drum.

The invention has for its chief object to enable a carrier to be provided with brush filaments at relatively small expense and in such manner that when the filaments have been rendered useless by wear, fresh filaments may be quickly and economically substituted for them.

The invention is embodied in a brush strip composed of a layer of bristles clamped together centrally and having two acting portions each composed of a series of brush filaments and projecting in different directions from the central portion of the layer, each series of filaments being adapted to use interchangeably with the other, so that when one series is worn the other may be substituted for it by the simple operation of removing the brush strip from the carrier and engaging it therewith in a different position.

The invention is also embodied in a carrier having means for holding a brush strip of the character described with one series of brush filaments in its operative relation to the carrier, and the other series stored inoperatively.

Of the accompanying drawings which form a part of this specification—Figure 1 represents an end view of a rotary brush embodying my invention. Fig. 2 represents a perspective view of a portion of the brush. Fig. 3 represents a section on line 3—3 of Fig. 2. Fig. 4 represents an end view of one of the brush strips, the same being shown partly in section. Fig. 5 represents in perspective portions of the brush strip shown by Fig. 4 separated from each other. Fig. 6 represents a perspective view of one of the angular members attached to the perimeter of the drum. Fig. 7 represents a side view of a portion of a brush strip constituting a modification of my invention. Fig. 8 represents a section on line 8—8 of Fig. 7.

Fig. 9 represents a view corresponding to Fig. 3 and showing a portion of a modified form of carrier adapted to the modified form of brush strip shown by Figs. 7 and 8.

Similar reference characters indicate the same or similar parts in all the figures.

In the embodiment of my invention here shown for purposes of illustration, 12 represents the perimeter and 13 the ends or heads of a drum of substantially cylindrical form, the drum being mounted to rotate on a suitable axis. As shown in Fig. 1, the drum is provided with a shaft 14 which is journaled in suitable bearings.

Referring for the present to Figs. 1 to 6 inclusive, the carrier is provided with a series of sockets extending lengthwise of its perimeter and formed by a series of sheet metal members of substantially the form represented by Fig. 6, each member being a metal strip of angular form in cross section having at one edge a flange 15 which is riveted or otherwise rigidly secured to the perimeter of the drum, a radial inner portion 16 which forms one wall of a socket, a radial outer portion 17 which forms another wall of a socket, and an intermediate portion 18 which connects the portions 16 and 17 and forms the outer side of a storage chamber 19, the inner side of which is formed by the perimeter of the drum. When the said members are assembled on the drum as represented by Figs. 1, 2 and 3 the radial portion 16 of one member and the radial portion 17 of the next member form the sides of a socket extending lengthwise of the drum. The outer radial portion 17 is separated from the perimeter of the drum by a space 20 (Fig. 3) which connects the socket, formed by two adjacent members, with the storage chamber 19 formed by one of said members.

Each of the sockets formed as described is adapted to receive an elongated brush strip which, in the embodiment of the invention now under consideration, is composed of two clamping members 21 and 22 preferably of sheet metal, and a layer of bristles interposed between said members and clamped centrally thereby, the length of the bristles being considerably greater than the width of the clamping members 21 and 22, so that the end portions of the bristles project in different directions from the clamping members and constitute two series of brush filaments 23 and 24. Before as-

sembling the parts, the bristles are preferably connected by two strips 25 of flexible penetrable material such as cloth or stout paper placed on opposite sides of the layer and secured thereto and to each other by suitable means such as stitches 26 passed through the strips 22 and the intermediate portions of the layers of bristles, as clearly shown by Fig. 5. The strips 26 are preferably connected at the ends of the layer of bristles by necks 27 extending across the ends of the layer.

The clamping members 21 and 22 are of angular form, so that when they are pressed together against opposite sides of the layer of bristles, they bend the layer into a corresponding angular form, as shown by Fig. 4, a brush strip being thus produced which is angular in cross section. The members 21 and 22 are connected by suitable means such as rivets 28, as shown by Fig. 4.

The clamping members 21 and 22, and the rivets 28 connecting the same, constitute a binder which is of suitably rigid and substantial construction. The form of the described brush strip is such that the binder is adapted to be inserted by an endwise movement in one of the sockets above described, and when so inserted, one series of brush filaments projects radially from the drum or carrier, the other series at the same time projecting into one of the storage chambers 19. One series of filaments is therefore held by the socket in an operative position, the other being stored inoperatively. When the operatively arranged filaments have been rendered useless by wear, the other series of filaments may be substituted for it by withdrawing the brush strip from the socket and re-inserting it so that the series which was before stored in the chamber 19, is caused to project from the carrier.

The edges of the clamping member 22 are offset from the brush filaments so that spaces 29 (Fig. 4) are formed, each space being adapted to receive one of the outer radial portions 17, said portions 17 being thus interlocked with the brush strip and caused to prevent outward displacement of the same.

Figs. 7, 8 and 9 show a modification in which the brush strip is flat in cross section instead of being angular. In this modification flat clamping members 21^a and 22^a are applied to the central portions of the layer of bristles and secured by rivets 28^a, these clamping members holding the series of filaments 23^a and 24^a in the same plane.

Each strip-holding socket in this modification of the invention is composed of two flanges 30, projecting inwardly from the perimeter 12 of the drum. Said flanges are provided with bosses 31 formed to engage the heads of the rivets 28^a and thus interlock the brush strip with the carrier to prevent outward displacement of the brush

strip. The inoperative filaments are stored in the interior of the drum, one of the heads 13 of the drum being provided with openings 32 (Fig. 9) adapted to permit the insertion and removal of the inoperative filaments.

Either of the above described forms of brush strip with two acting portions, as 23 and 24, or 23^a and 24^a, is adapted to be manufactured at a cost slightly exceeding that of a brush strip having but one acting portion, the increased expense being due only to the increased length of the bristles, and the cost otherwise being no greater than would be involved in making a brush strip with only one acting portion. I am therefore, enabled to practically double the durability of the brush without correspondingly adding to its cost.

While I have shown and described my invention embodied only in a rotary brush, it is obvious that a brush strip having two acting portions, and a carrier having means for holding the strip with one of its acting portions in an operative position and the other stored inoperatively, may be made in various forms, also that the invention may be embodied in one brush strip of the character described, and a carrier having provisions for holding the same.

I claim,

1. A brush comprising a carrier having an elongated socket and a storage chamber communicating therewith, and an elongated brush strip adapted to be detachably held in said socket and having two interchangeable acting portions, one of which is held in the socket in an operative position, and the other in an inoperative position within said chamber.

2. A brush comprising a carrier having a plurality of elongated sockets, and a plurality of elongated brush strips, each adapted to be detachably held in one of said sockets, and each having two interchangeable acting portions one of which is held in an operative position in the corresponding socket, the carrier having means for storing the other acting portions in an inoperative position.

3. A brush comprising a carrier having opposed flanges separated by an intermediate space and forming an elongated socket, a storage chamber communicating with the socket, and an elongated brush strip adapted to be moved endwise into and out of the socket and having two acting portions one of which projects operatively from the socket while the other projects into said chamber, the said brush strip and flanges having interlocking members which prevent outward displacement of the brush strip.

4. A brush comprising a brush strip composed of an elongated binder and two series of brush filaments each projecting from the binder in a different direction from the

other, and a carrier having an elongated socket in which said binder is detachably mounted, and a storage chamber adjacent to the socket and adapted to contain one series of brush filaments in an inoperative position, the other series projecting operatively from the socket.

5. A brush comprising an elongated binder, a layer of bristles confined centrally by the binder, the end portions of the bristles projecting from the binder and forming two series of brush filaments each projecting in a different direction from the other, the binder and the layer of bristles being angular in cross section, and a carrier having an elongated socket in which said binder is detachably mounted, and a storage chamber adapted to receive one series of filaments, the other series projecting operatively from the socket.

6. A brush comprising a plurality of brush strips each composed of a binder and a layer of bristles confined centrally by the binder, the end portions of the bristles projecting from the binder and forming two series of brush filaments each projecting in a different direction from the other, the binder and the layer of bristles being angular in cross section, and a carrier formed as a drum having a plurality of angular members attached to its perimeter, each member being attached at one edge to the drum, and having a radial inner portion adjacent to its attached edge and forming a socket wall, a radial outer portion forming another socket wall which is separated from the perimeter of the drum, and an intermediate portion connecting said inner and outer portions and forming the outer side of a storage chamber,

the said socket walls being arranged in pairs and adapted to detachably engage said binders and hold the brush strips as described, one series of filaments of each strip projecting operatively from the drum, and the other series being stored inoperatively in the corresponding chamber.

7. A brush comprising a series of brush strips each having two acting portions projecting in different directions, and standing substantially at right angles with each other, and a cylindrical carrier having means on its perimeter for detachably engaging the strips and holding one of the acting portions of each strip in an operative position and radiating from the carrier, and the other in an inoperative position, and lying upon the perimeter of the carrier, the said acting portions being interchangeable.

8. As an article of manufacture, a brush strip composed of two narrow elongated clamping members which are angular in cross section, and means for connecting the same, said members and connecting means constituting an angular binder, and a layer of bristles extending crosswise of the binder and clamped centrally between the said members, the end portions of the bristles projecting in different directions from the binder and forming two series of brush filaments standing substantially at right angles with each other and adapted to be used interchangeably.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN F. BOWDITCH.

Witnesses:

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