No. 853,378. PATENTED MAY 14, 1907.

E. E. RICE.

ROTARY BRUSH.

APPLICATION FILED MAR. 21, 1906.

Fig: 1.

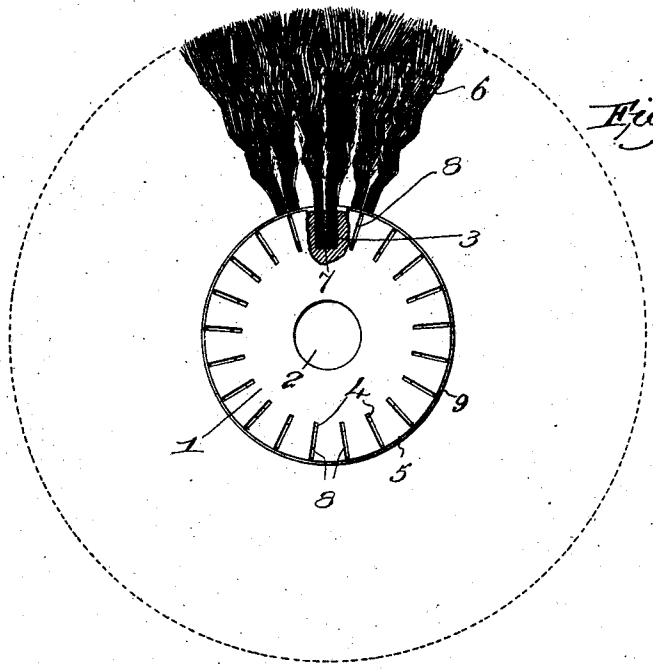



Fig: 2.

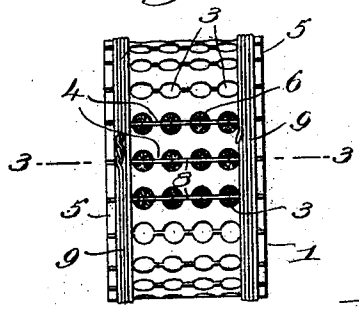



Fig: 3.

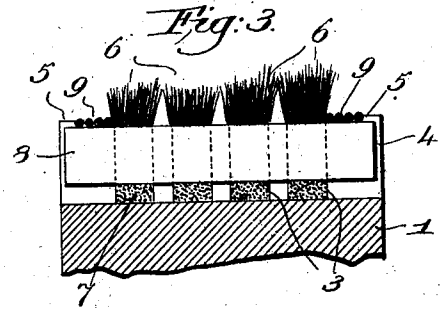
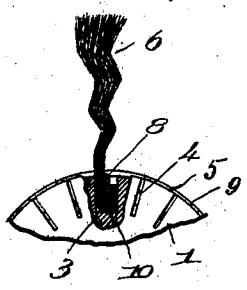



Fig: 4.




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# UNITED STATES PATENT OFFICE.

EDWARD E. RICE, OF NEW DURHAM, NEW HAMPSHIRE, ASSIGNOR TO THE OSBORN MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## ROTARY BRUSH.

No. 853,378. Specification of Letters Patent. Patented May 14, 1907.

Application filed March 21, 1906. Serial No. 307,141.

*To all whom it may concern:*

Be it known that I, EDWARD E. RICE, a citizen of the United States, residing in New Durham, county of Strafford, and State of New Hampshire, have invented an Improvement in Rotary or Wheel Brushes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a novel durable and highly efficient rotary or wheel brush, of a simple and relatively inexpensive construction, and particularly adapted for polishing or cleaning metal, such as castings, and metal articles of various kinds. As will appear hereinafter, however, the construction embodied in my present invention can be readily adapted for rotary brushes designed for other uses.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a rotary brush embodying my invention and particularly adapted for cleaning and polishing metal, a portion of the hub being shown in section, and the brush wires or filaments, being shown fully for only a portion of the circumference; Fig. 2 is a face view of the hub, showing only the lower ends of a number of the groups of wires and the means for retaining the same in the hub; Fig. 3 is an enlarged sectional detail on the line 3—3, Fig. 2, and Fig. 4 is a detail, partly in section, of a modification to be described.

In the present embodiment of my invention I make a cylindrical hub 1, preferably of wood on account of its cheapness and ease of manipulation, and provide it with a central bore 2 to receive the rotatable shaft on which the brush is mounted when in use. The hub is made of suitable width according to the width of the working face desired, and radial sockets or seats 3 are drilled, in the hub, said sockets being preferably arranged in parallel rows or series transverse to the face of the hub. Herein I have shown four seats or sockets in each row. A series of transverse slots or saw-cuts 4 is then formed in the hub, one for each series of sockets, extending from one to the other side of the hub, said slots being in radial planes and intersecting all of the sockets of a row, the depth of each slot being substantially equal to the depth of the sockets. In finishing up the hub, I may and preferably do leave an annular flange 5 at each side thereof, the slots passing through the flanges, as shown in Figs. 2 and 3. The steel wires or filaments, if the brush is for cleaning and polishing metal articles, are now formed into bunches or groups 6, Figs. 1 and 3, and bent or folded over midway between their ends, as at 7, the portion of each group adjacent the fold or bend 7 being forced into one of the sockets or seats 3 and seated therein.

In inserting the bunches of wires the bends are placed in parallelism with the axis of the hub, and when a group of sockets is filled I insert a retainer, shown as a thin, flat bar 8 of suitable metal in the slot 4, the bar dividing or passing through each bunch of wires within the bend 7, as will be clear from an inspection of Figs. 1, 2 and 3. The bar is then forced inward until it holds firmly seated in the sockets all of the wire bunches of a transverse group or series.

Locking means to hold the bar in place against the action of centrifugal force must be provided, and this is conveniently attained by wrapping a wire 9 tightly around the hub a number of times adjacent each flange 5, and fastening the wires by twisting their ends.

Obviously the cross-sectional shape of the bar-locking member is not necessarily circular, as herein shown, the locking means being applied after all of the bars are positioned, the retainers being preferably inserted in the slots 4 with a driving fit. The locking means also acts as a binder for the hub, drawing the sides of the slots tightly against the retainers, the elasticity of the wood of which the hub is made permitting such action.

The walls of the sockets 3 tightly embrace the roots of the bunch of wires and afford a secure and rigid lateral support therefor, while outward radial movement of the bunches is prevented by the retainers.

So long as the locking members hold the retainers cannot work loose, and the retainers maintain the bunches or groups of wires securely seated in their sockets. The flanges 5 prevent any side slip of the locking means.

I have shown the usual form of crimped or waved wires, this being employed to se-

cure a proper abrading or cleaning surface and also to provide a mutual support for the wires of the various groups, preventing separations or voids in the periphery of the brush. I make no claims to the crimped or waved feature, however, as that is a feature in general use in such brushes.

The brush constructed in accordance with my invention is of simple construction and easily produced, it is highly efficient, and very durable.

Instead of using wire filaments I may use horse-hair or other suitable filaments, the mode of construction being equally well adapted therefor.

When the nature of the filaments is such as to preclude folding in the middle one end of each group can be bent or turned over, as at 10, Fig. 4, and inserted in the socket, and held in place by the retainer 8 as before described. This mode of fastening and bending can be used with advantage when the cost of the filaments, if long enough to double in the middle, would preclude their use.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a rotary brush, a cylindrical hub having a peripheral flange at each side of its face, radial sockets in the face and transverse slots intersecting groups of sockets and lying in radial planes, bunches of filaments bent to enter the sockets, flat retaining members inserted in the slots and passing through the bunches of filaments within their bends, to retain the bunches seated in the sockets, and means embracing the face of the hub within the flanges to lock the retainers from displacement by centrifugal action.

2. In a rotary cleaning and polishing brush, a cylindrical wooden hub having radial sockets in its face arranged in transverse rows, and provided with slots in radial planes intersecting the sockets in each row, a bunch of metallic wires bent between its ends and inserted in each socket, flat retaining members inserted in the slots and passing through the bunches of wires in the sockets within the bends, to maintain said bunches seated in the sockets, and wire wrapped around the ends of and to lock all of the retainers in the slots.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD E. RICE.

Witnesses:
JOHN C. EDWARDS,
BERTHA F. HEUSER.