

H. NELSON.
BRUSH.

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969,075.

Patented Aug. 30, 1910.

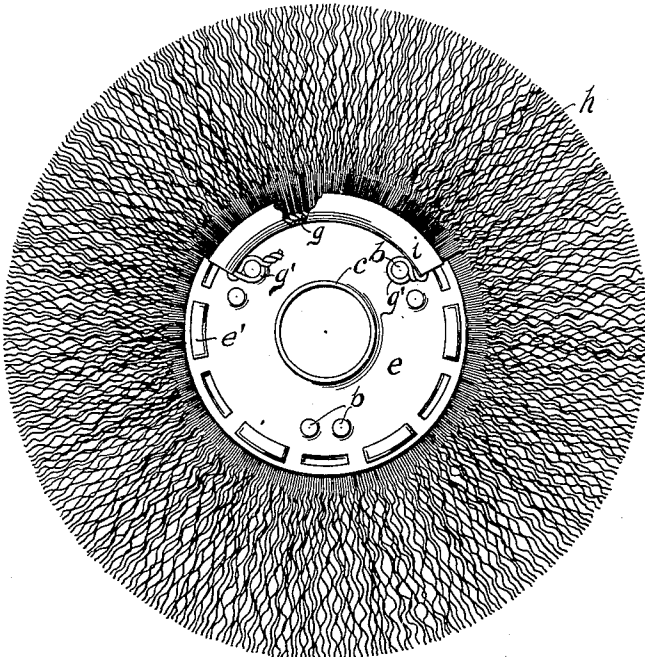


Fig. I.

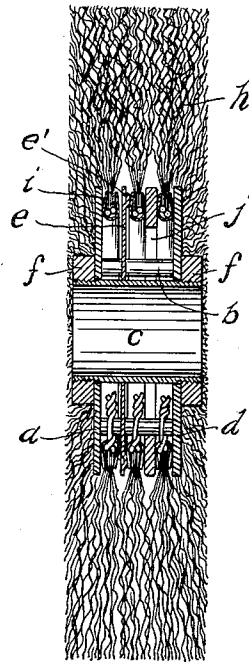


Fig. II.

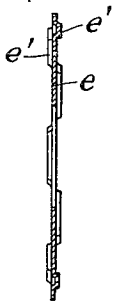


Fig. IV.

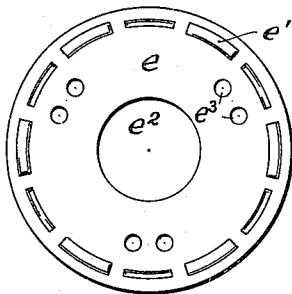


Fig. III.

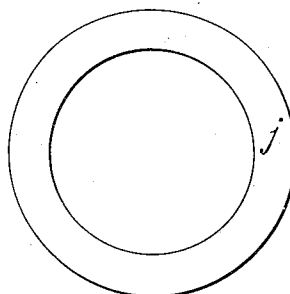


Fig. V.

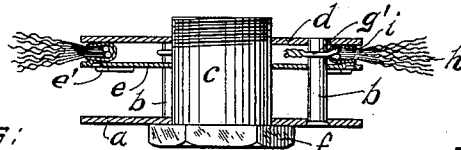


Fig. VI.

Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY NELSON, OF CLEVELAND, OHIO.

BRUSH.

969,075.

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To all whom it may concern:

Be it known that I, HENRY NELSON, a subject of the King of Denmark, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Brushes, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in brushes, and is herein shown and described as embodied in a sectional rotary brush especially adapted for the purpose of cleaning scale or rust from castings.

The object of my invention has been to produce a brush wherein the sections are readily renewable, yet are firmly secured against displacement, while maintaining the cost of manufacture of such renewable sections at a minimum.

Further features and advantages will be gathered upon considering the specification and drawings hereto annexed.

It has been found that the sectional-brushes hitherto constructed for the use of removing scale are subjected to such wear throughout the permanent portions thereof, as to render them liable, when run at high speed, to the accidental displacement of the sections, with the possibility of injuring the user and damaging the machinery. Moreover, in this type of apparatus it has been found that the brush-sections ordinarily constructed of crimped wire, are very difficult to secure in place through the natural spring of the wire and the tension under which the sections must be placed. Accordingly, recourse is had in these prior structures to such means as relatively long telescoping hub-members which are drawn together by means of co-acting threaded-parts requiring considerable labor and time for the assemblage of these brushes.

With these features in mind, I have improved upon the sectional-brush to the end that the renewable sections shall contain all of the wearing parts and may be securely anchored within the brush structure, and readily assembled to complete or renew the improved sectional-brush of my invention. This preferably consists of a plurality of segmental brush-sections which are anchored upon a central hub-member, and secured thereon against displacement. The segmental brush-section of my invention consists of a doubled twisted wire base wherein the

strands of fine crimped wire are twisted; the ends of the base wires being brought out to engage suitable anchorage-members. A metal stamping is placed about the base wire, bent into segmental form, and the stamping is closed upon the crimped wires, or "bristles" to retain them against their natural tension in approximately the desired plane.

These, and other features, will be more readily gathered by making reference to the accompanying sheet of drawings, wherein:—

Figure I, is a plan view of my improved rotary sectional-brush, partially assembled and broken away. Fig. II, is a vertical sectional view of the brush. Figs. III and IV, respectively are plan and sectional views of a separating disk. Fig. V, is a plan view of an alternative separating-ring or washer, and Fig. VI, is a top view showing the hub-member and anchorage-parts partly broken away and in section.

Throughout the several figures of the drawings, I have indicated similar parts by the same character of reference.

Brief consideration of Figs. II and VI will readily disclose the hub-structure, comprising a bottom plate *a* wherein some six posts or anchorage members *b* are vertically secured in pairs. The central threaded sleeve *c* extends through a circular opening in this base plate *a*, while the upper plate *d* fits over said sleeve and posts; being suitably bored or pierced with holes disposed at intervals to register with these posts as is the stamped separating disk *e* of Fig. III. Exterior hexagonal nuts *f f* are adapted to be screwed upon the tapped ends of sleeve *c*, and secure the assembled structure firmly together so that the brush-sections may present a unitary circular brush. One of these brush-sections is shown above the separating plate *e* in the upper portion of Fig. I, while three identical brush-sections are similarly mounted, or assembled upon the base plate disposed beneath the separating disk *e*. Some nine segmental brush-sections are required to complete the rotary brush herein shown, but it will be understood that a greater or less number of sections may be assembled to complete any desired brush.

Each of the segmental brush-sections comprises a doubled twisted wire *g* wherein the fine crimped wires or "bristles" *h* are twisted in doubled loops. The ends of the base

wire are formed with suitable anchorage-
parts or loops g' adapted to slip over the
posts b . A segmental sheet-metal stamping
 i shown partially broken away in Fig. I, is
5 then clamped tightly about the bases of the
bristles to take up their natural spring or
tension, to securely assemble these otherwise
divergent crimped wires, and serve to
strengthen or stay the individual brush-
10 section. In the size of brush shown, each
segmental brush-section spans approxi-
mately an arc of some 120° , but obviously
the length or shape of the brush-section may
be altered as required.

15 The separating disk e , which may well
be used in place of the plain annular washer
 j , and with a saving in cost and weight of
metal, is stamped out with alternating
bosses e' , and with suitable central and an-
20 nularly disposed holes e^2 e^3 for accommodat-
ing the hub-member c and posts b . In Fig.
II, I have shown the alternative use of the
separating disk e , or the washer j , for spac-
ing adjacent sets of brush-sections, arranged
25 in different planes to form my improved
brush, but preferably the separating disk
 e is employed when it is desired that the
sets of brush-sections shall be slightly sepa-
rated. It will be perceived that the crimped
30 wires will be more closely matted, and
placed under great tension, should the
brush-sections be assembled without the use
of separating parts, but their replacement
would not be as readily accomplished as in
35 the structure shown.

Having explained above the preferred
structure of my improved rotary brush, I
may now call attention to the fact that
therein each of the brush-sections is securely
40 and positively anchored upon the posts, and
that any wear resulting from the flexure of
the bristles, or wires in use, (which action
is very considerable when the brush is worn
down) is sustained by the closely engaging
45 sheet metal stamping i forming part of the
brush-section. Were the exterior disk and
separating-rings alone relied upon for re-
taining and compressing the brush-sections,
I may point out that this constant flexure
50 of the brushes would result in wearing away
these retaining parts, so that accidental dis-
placement of the brush-sections is more and
more liable to occur. Still another, and
highly important advantage obtained by my
55 structure herein shown, is that of closely
binding the interlocking crimped wires, or
bristles together, so that the brush-sections
may be laid one upon the other in assem-
bling the complete brush, and the several
60 parts may then be secured together without
first strongly compressing the assembled
brush-sections; this being provided against
by inclosing the bases of the crimped wires
firmly in the sheet metal stamping. The

wire loops of the base wires herein shown 65
are adapted to embrace any two correspond-
ingly positioned posts, but other suitable
anchorage means may be employed for the
purpose of securing the individual brush-
sections firmly in place. 70

The recited improvements, it will be un-
derstood, are not all limited to the particu-
lar type of brush shown, nor to the specific
means set forth for practicing my inven-
tion, and I accordingly claim as new, and 75
desire to secure by Letters Patent, the fol-
lowing:—

1. In a segmental rotary brush of the
class described, the combination with a hub-
member, of a plurality of transverse an- 80
chorage-parts provided thereon, a plurality
of segmental brush sections having co-acting
anchorage-parts adapted to be assembled
thereon and form a circular brush, metal
stampings embracing the bases of said brush 85
sections to reinforce the same and assemble
the bristles thereof, spacing-parts therebe-
tween for engaging said stampings, and
means for uniting the members to form the
complete rotary brush, substantially as set 90
forth.

2. In a rotary brush, the combination with
an outer plate of a plurality of posts rigidly
secured to said plate, a plurality of sets of
segmental brush-sections removably fitting 95
over said posts, each set of segmental brush-
sections forming a complete circular bristle-
section, spacing-parts separating the adja-
cent sets of brush-sections, an outer plate fit-
ting over the assembled spacing-parts and 100
brush-sections, and means for uniting the
whole to form a circular-brush, substantially
as set forth.

3. In a rotary brush, the combination with
an outer plate of a plurality of posts rigidly 105
secured to said plate, a plurality of sets of
segmental brush-sections removably fitting
over said posts, each set of segmental brush-
sections forming a complete circular bristle-
section, metal disks interposed between the 110
adjacent sets of brush-sections, the same hav-
ing openings fitting over the posts and an-
nular series of bosses for engaging and sepa-
rating the bases of the brush-sections, an
outer plate disposed exteriorly of the as- 115
sembled parts, and means for securely unit-
ing the members to form a circular brush,
substantially as set forth.

In testimony that I claim all of the fore-
going as my invention, I have subscribed my 120
name and taken the statutory oath at Cleve-
land, this second day of November, A. D.
1906, in the presence of two subscribing wit-
nesses.

HENRY NELSON.

Witnesses:

V. G. ARMSTRONG,
ALBERT LYNN LAWRENCE.