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Fremdragne publikationer:
GB-A- 2 147 835
NL-C1- 1 010 783
US-A- 3 186 674
US-B1- 6 553 601
DESCRIPTION
FIELD OF THE DISCLOSURE

[0001] The present disclosure relates generally to power tool attachments. More particularly, the present disclosure relates to a rotary brush attachment adapted for use with a power tool.

BACKGROUND OF THE DISCLOSURE

[0002] Fasteners and other parts used in construction, automotive applications, and industrial applications often accumulate debris such as dirt, corrosion, paint, and other unwanted matter on their surface over time due to their exposure to the elements. For example, trucks and trailers with steel wheels are often fastened with longer studs that are typically used for aluminum wheels. The longer studs offer the advantage of accommodating the possible future use of aluminum wheels. However, the excess length of the stud protrudes beyond the lug nut and can accumulate rust and debris. Likewise, studs used in construction and industrial applications can accumulate corrosion, paint and other unwanted debris. If left uncleared, the accumulated debris can cause damage to the fasteners and tools during maintenance and repair operations. For example, using an air wrench to remove a fastened nut from an uncleared stud can cause the debris to become impacted in the thread causing the nut to grind the thread and potentially damaging the air wrench.

[0003] Currently, the use of wire brushes to remove debris from fasteners and other parts is known in the art. However, this approach can be time-consuming, labor-intensive or may be ineffective in removing particularly stubborn debris.

[0004] It is, therefore, desirable to provide an improved means for quickly and effectively removing unwanted accumulation debris on fasteners and other parts.

[0005] US 3 188 674 A is directed at a rotary tube end cleaner which includes a sleeve for receiving a wire brush. When prepared for use, the elongated wire brush is coiled and then fit within the sleeve so that under compression, its flexible backing made of cloth makes frictional contact with the inner surface of the sleeve which resists rotation of the brush relative to the sleeve.

[0006] US 2004/200018 A1 is directed at a pipe cleaning and deburring tool including a front shell with inwardly protruding bristles and a rear shell which refractably receives the bristles of an interior wire brush. The interior wire brush includes a shaft portion which extends out of the rear shell to be connected with an electric motor, such as a conventional electric power drill.

[0007] NL 1010783 C1 is directed at a friction tool to prepare the end of a copper pipe for soldering or some other treatment. The friction tool includes a wire brush on an inner surface of the tool. The wire brush of the tool is a part of the whole tool.

[0008] GB 2 147 835 A is directed at a tool for preparing pipe ends. The tool includes two cylindrical housings arranged back-to-back, each housing having an opening and abrasive means within the housing to engage the surfaces of a pipe introduced into the housing(s).

[0009] US 6 553 601 B1 is directed at a pipe cleaning device which is formed in a set of sizes to mount to the church of an electric drill for cleaning the end of pipes.

[0010] US 2004/031112 A1 is directed at a bolt cleaning system which includes a shaft member, an inner member attached to the shaft member, a first cleaning unit removably positionable within the inner member, a connector member connectable to the inner member, an outer member connectable to the connector member, and a second cleaning unit removable positioned between the connector member and the outer member.

SUMMARY OF THE DISCLOSURE

[0011] There is provided a rotary brush attachment according to appended claims.

[0012] In operation, the rotary brush attachment is attached to a power tool and rotated about its longitudinal axis by the action
of the power tool. The rotating engagement of the bristles with the part to be cleaned removes unwanted accumulations from the surface of the part.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0013] Embodiments of the present disclosure and reference embodiments will now be described, by way of example only, with reference to the attached Figures, wherein:

[0014] Figure 1 is a perspective view showing the brush portion of an embodiment the rotary brush attachment (not according to present invention)

[0015] Figure 2 is a perspective view showing the engagement portion of an embodiment of the rotary brush attachment (not according to present invention); and

[0016] Figure 3 is an exploded perspective view showing an alternative embodiment of a rotary brush attachment (not according to present invention).

[0017] Figure 4 is a front view of the embodiment according to present invention, of a rotary tool brush attachment; and

[0018] Figure 5 is a cut away view of the rotary tool brush attachment of Figure 4.

**DETAILED DESCRIPTION**

[0019] Generally, the present disclosure provides a rotary brush attachment for removing debris such as rust, or other unwanted matter from the surface of a fastener, such as a stud, or other part. The rotary brush attachment finds particular application in the automotive industry for cleaning tire studs, but can also be used for fasteners or other parts where debris may collect over time such as in construction, industrial machinery, and other applications.

[0020] Figures 1 and 2 are perspective end views of an embodiment not according to present invention of a rotary brush attachment 10. The rotary brush attachment 10 includes a body 12 having a longitudinal axis 14 with a brush portion 16 at one end (Figure 1), and an engagement portion 18 at an opposite end (Figure 2) for attaching the brush attachment to a power tool (not shown) such as a rotary tool, an air wrench, a power drill or the like. In the preferred embodiment, the body 12 is formed of a resilient material, such as steel, which is suitable for use with the power tool and to handle the torque and other pressures applied by the power tool during the cleaning of the fastener.

[0021] The end with the brush portion 16 includes an opening or hollow portion 20 that extends at least partially into the body 12 along the longitudinal axis 14 where a set of bristles 22 general extending from the surface of the hollow portion 20 toward the centre of the body 12. The shape of the hollow 20 and the profile of the bristles 22 are adapted to facilitate cleaning of the part, such as the fastener.

[0022] The material used for the bristles 22 is chosen according to the intensity of cleaning required and the material and finish of the part to be cleaned. For example, a rotary brush attachment having wire bristles may be used for a fastener made of a very durable material and covered with significant corrosion and resilient debris while a brush attachment with soft nylon bristles may be used for a relatively fragile part with a delicate finish. In some cases, the bristles 22 may include a heterogeneous mixture of bristles made of different materials.

[0023] Referring to Figure 2, engagement portion 18 engages a power tool to allow the rotary brush attachment 10 to provide the necessary torque or rotation to be applied to the brush attachment 10 for cleaning the part. In the preferred embodiment, the brush attachment can be removably attached to the power tool and is adapted to engage the retaining means of a standard power tool. Once the brush attachment has been attached to the power tool, the power tool may be activated to rotate the rotary brush attachment 10 about its longitudinal axis 14. The brush portion 16 can then be placed over the part to be cleaned and the rotary brush attachment 10 advanced so that the bristles 22 surround the part to be cleaned, and the rotation of the bristles 22 around the part allows the part to be cleaned by removing the unwanted debris.

[0024] The rotary brush attachment body 12 is generally cylindrical while the bristles 22 are formed from a resilient wire, and the
shape of the hollow portion 20 and the profile of the bristles 22 are adapted for the cleaning of automotive fasteners, such as studs. The engagement portion 16 is sized to quickly connect to and be disconnected from a standard ½ inch, ¾ inch, or 1 inch drive of a power tool.

[0026] The brush insert body 38 and the socket recess 48 fittingly correspond to each other so that the body 38 fits within the recess 48. Although an octagonal profile is shown, other cross-sectional profiles are contemplated, such as, but not limited to, square, pentagonal, hexagonal, heptagonal, or the like. Standardizing the dimensions of the cross-sectional profiles of the brush insert body 38 and the socket recess 48 enables interchangeability between brush inserts portions 32 and socket casings 34.

[0027] Cap portion 36 comprises a cap body 52 with a cap hole portion 54 in the cap body 52, and a threaded rim 56 for cooperating with the casing thread 50 of the socket casing 34. In one embodiment, threaded rim 56 can be screwably mounted to casing thread 50 to secure the brush insert portion 32 within the socket casing 34. Once a brush insert portion 32 has been placed in socket casing 34, the part may be cleaned by the bristles 42 whereby the part is inserted into the assembly 30 via the cap hole 54. It will be understood that other suitable means can be used to secure cap portion 36 to socket casing 34.

[0028] Brush insert portion 32 may be removed from the socket casing 34 by unscrewing the cap portion 36 from the socket casing 34 thereby providing access to subsequently remove brush insert portion 32 from socket recess 48. This arrangement enables convenient and flexible swapping of brush insert portions 32 and socket casings 34, facilitating the use of several specialized brush insert portions 32 with a particular socket casing 34, replacement of a brush insert portion 32 with worn-out bristles 42 or the use of a particular brush insert portion 32 with different socket casings 34. For example, a set of brush insert portions 32 having specialized bristles 42 could be combined with a set of socket casings 34, each adapted for a different power tool, to enable the use of any of the specialized brush insert portions 32 with any power tool.

[0029] On Figures 4 and 5, the rotary brush attachment includes a replaceable steel brush cartridge according to appended claims. Figure 4 provides a front view of the rotary brush attachment while Figure 5 provides a cut-away view of the brush attachment. The rotary brush attachment 60 includes a brush portion end 62 having a set of protrusions 64 located around a circumference of the brush portion end 62. The brush portion end 62 also includes a set of bristles 66 located on an inner circumference of the brush portion end 62 with the ends of the bristles 66 defining a space whereby a part to be cleaned can be inserted. In one embodiment, the space has a diameter of about 15 mm in order to accommodate a ¾ inch stud while a diameter of about 12 mm may be used to accommodate a 5/8 inch stud.

[0030] Turning to Figure 5, further details of the rotary brush attachment 60 can be seen. Opposite the brush portion end 62 is an engagement portion end which includes a quick connect mechanism 68 for attachment with a power tool, such as an air wrench. In this embodiment, the attachment 60 includes a body portion 80, preferably made of steel or carbon fiber, which acts as a housing for a steel brush cartridge 82. In one embodiment, the steel brush cartridge is integrated within the housing and in another embodiment, the cartridge is replaceable. In the embodiment, of Figure 5, the cartridge 82 is replaceable. After the cartridge 82 is inserted into the body portion 80, a cap 84 may be connected to the body portion 80 such as via a threaded connection. Alternatively, the cap may also be connected via a set of snaps or locking grooves.

[0031] The above-described embodiments of the disclosure are intended to be examples only. Alterations, modifications and variations can be effected to the particular embodiments by those of skill in the art without departing from the scope of the disclosure, which is defined solely by the claims appended hereto.

Reference numbers:

[0032] rotary brush attachment

10
body
longitudinal axis
brush portion
engagement portion
hollow portion
bristles
rotary brush attachment assembly
brush insert portion
socket casing
cap portion
brush insert body
hollow portion
bristles
body
longitudinal axis
socket recess
casing thread
cap body
cap hole portion
threaded rim
rotary brush attachment
brush portion end
protrusions
bristles
quick connect mechanism
body portion
cartridge
cap
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US3188674A [0005]
- US20042003104A1 [0006]
- NL1010785C1 [0007]
- GB2147835A [0008]
- US5534601B1 [0009]
PATENTKRAV

1. Roterende børsteudstyr (10, 30, 60) til rengøring af en tap, omfattende:
en aflang stålbørstepatron (82), som omfatter en børsteende (62) til at modtage tappen;
og
en kropsdel (12, 44, 80) til at indeholde den aflange stålbørstepatron (82), idet
kropsdelen (12, 44, 80) også omfatter en indgrebsende til at montere udstyret (10, 30,
60) på et drivværktøj, idet indgrebsenden er placeret modsstående børsteenden når den
aflange stålbørstepatron er indsat i kropsdelen; og
børsteenden har en hul del (20, 40), som strækker sig langs en langsgående akse (14,
46) for kroppen (12, 44, 80) og et sæt børster (22, 42, 66), som strækker sig fra en
indvendig omkreds imod den langsgående akse.

2. Roterende børsteudstyr ifølge krav 1, hvor den aflange stålbørstepatron (82) er
udskiftelig.

3. Roterende børsteudstyr ifølge krav 2, som yderligere omfatter en hætte (84), som kan
forbindes med kropsdelen for at fastholde den aflange stålbørstepatron (82) i kropsdelen
(80).

4. Roterende børsteudstysarrangement ifølge krav 3, hvor hættedelen (52, 84)
indgriber med kropsdelen (44, 80) via en gevindforbindelse.

5. Roterende børsteudstysarrangement ifølge krav 3, hvor hættedelen (52, 84)
indgriber med kropsdelen (44, 80) via et sæt snaplåse.

6. Roterende børsteudstysarrangement ifølge krav 3, hvor hættedelen (52, 84)
indgriber med kropsdelen (44, 80) via et sæt låseriller.

7. Roterende børsteudstyr ifølge ethvert af kravene 1 til 6, hvor indgrebsenden omfatter
en hurtig-forbindelsesmekanisme (68).

8. Roterende børsteudstyr ifølge ethvert af kravene 1 til 7, hvor indgrebsenden omfatter
en slids til at modtage et drivværktøj.
9. Roterende børsteudstyr ifølge ethvert af kravene 1 til 8, hvor børsteenden omfatter et sæt børster (22, 42, 66).

10. Roterende børsteudstyr ifølge krav 9, hvor sættet af børster (22, 42, 66) er fremstillede af enten stål eller nylon.

11. Roterende børsteudstyr ifølge krav 1, hvor den aflange stålborstepatron er integreret med kropsdelen.
FIG. 1