

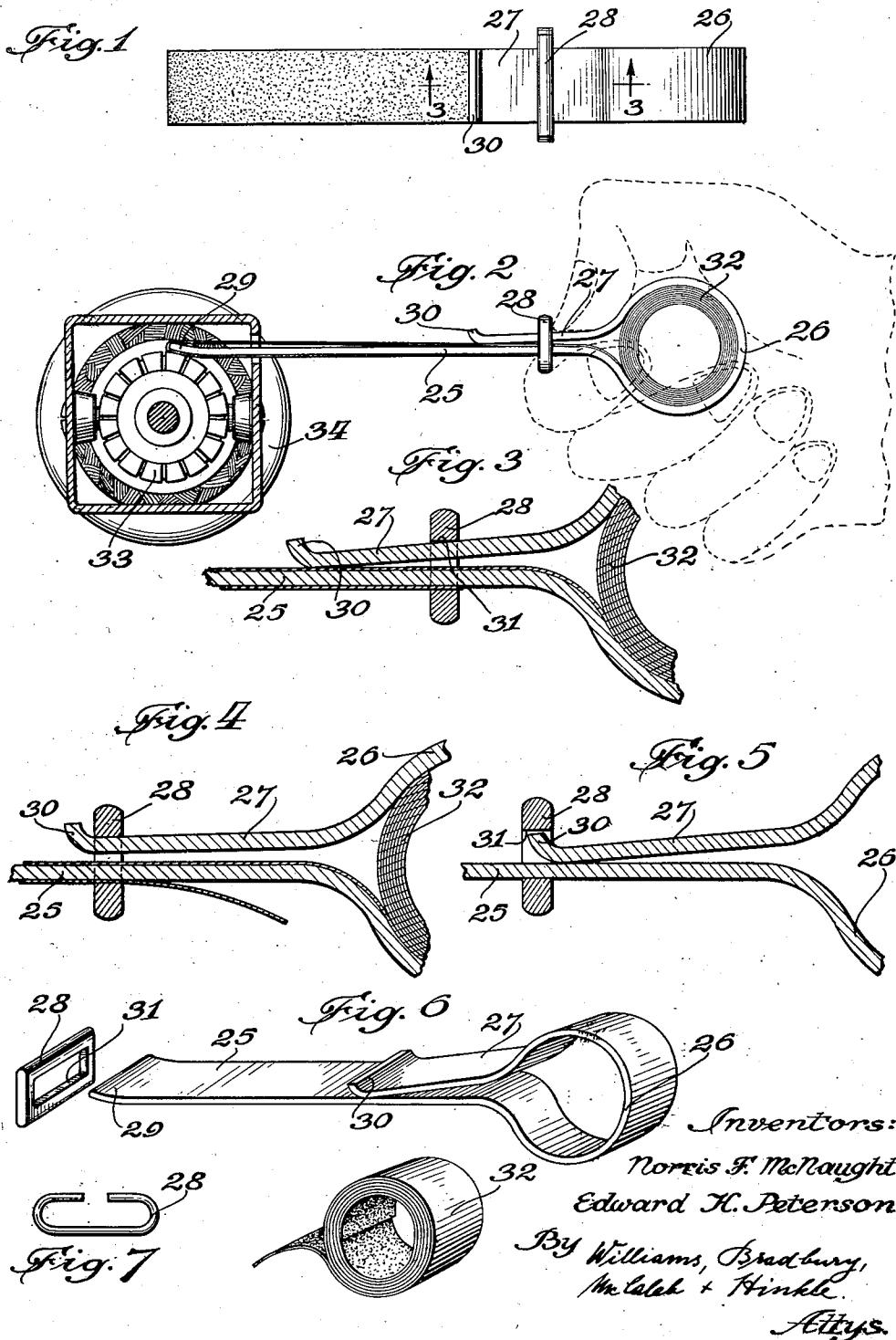
July 31, 1934.

N. F. McNAUGHT ET AL

1,968,215

TOOL FOR CLEANING COMMUTATORS AND THE LIKE

Filed Jan. 8, 1934



UNITED STATES PATENT OFFICE

1,968,215

TOOL FOR CLEANING COMMUTATORS AND
THE LIKENorris F. McNaught and Edward H. Peterson,
Chicago, Ill., assignors to Duro Metal Products
Company, Chicago, Ill., a corporation of Illinois

Application January 8, 1934, Serial No. 705,686

6 Claims. (Cl. 51-187)

Our invention contemplates and provides a handy tool which is peculiarly suitable for cleaning and/or removing rough spots from the commutators of dynamo-electric machines, but which is nevertheless capable of and intended for use in cleaning and smoothing contact rings, distributor points, breaker contacts, etc.

The tool of our invention, as illustrated in the accompanying drawing, comprises an elongated pointer or cleaner arm, preferably constituted by a metal strap which is conformed at one end portion to provide a handle-eye for receiving, carrying and dispensing a supply of abrasive strip to be extended along the upper and lower surfaces of the pointer and around the tip thereof; that end portion of the metal strap which is conformed to provide the handle eye also being conformed to provide a clamping arm which overlies the adjacent portion of the pointer and cooperates with an appropriate shackle to clamp a tautened abrasive strip to the upper and lower surfaces of that portion of the pointer which is embraced by the shackle.

The invention has for its objects to provide a tool of the class mentioned which is of simple construction, comprises a minimum of parts, and which is economical to manufacture and easy to manipulate.

Other features, objects and advantages of our invention will appear from the following detailed description, wherein reference is made to the accompanying drawing, in which

Fig. 1 is a top plan view of a preferred embodiment of our invention;

Fig. 2 is a side elevational view of the tool illustrating how it may be manipulated to effect the cleaning of the segments of a commutator;

Fig. 3 is a fragmentary sectional view taken on the line 3-3 of Fig. 1 and looking in the direction indicated by the arrows;

Fig. 4 is a view generally similar to Fig. 3, but illustrating the parts of the tool in the relative positions which they assume when the clamping shackle is moved to its non-wedging position;

Fig. 5 is a view generally similar to Figs. 3 and 4 illustrating how the clamping shackle may be withdrawn from its embrace of the pointer and clamping arm of the tool when there is no abrasive strip on the pointer;

Fig. 6 is a perspective illustrating the abrasive roll and clamping shackle disassociated from the other parts of the tool; and

Fig. 7 illustrates a modified form of clamping shackle which may be employed if desired.

Similar characters of reference refer to similar parts throughout the several views.

We shall first refer to Figs. 1 to 6, inclusive.

An initially flat and resilient metal strap is conformed to provide a pointer or cleaner arm 25, a handle-eye 26, and a relatively short clamping arm 27. The clamping arm 27 is arranged to lie at an acute angle to the adjacent portion of the pointer 25, even when the said clamping arm is released from the embrace of the clamping shackle indicated at 28.

In some instances the tip of the pointer 25 is curved slightly away from the plane of the rest of the pointer and is there given a permanent set, as indicated at 29. The tip of the clamping arm is turned away from the pointer, as indicated at 30, and is there given a permanent set to serve as a stop for the clamping shackle 28.

The clamping shackle 28 conveniently consists of a generally rectangular metal stamping provided with a rectangular opening 31. The longer dimension of opening 31 is somewhat greater than the width of the strap from which the pointer 25, handle-eye 26, and clamping arm 27 are formed. The shorter dimension of the opening 31 is such that when the shackle is embracing the pointer 25 and clamping arm 27, the upper margin of said opening will barely clear the tip of the clamping arm offset 30, providing there is no abrasive strip carried by the pointer, and provided further that the clamping arm is pressed tightly against the adjacent portion of the pointer, as illustrated in Fig. 5. There is no occasion for removing shackle clamp 28 from its embrace of the pointer 25 and clamping arm 27 after the original assembly of the tool parts has been made.

Indicated at 32 is a roll of a suitable flexible abrading strip. The abrading strip may be formed of cloth, paper or other suitable flexible material, and is preferably provided on but one of its faces with any suitable abrasive such as sand, emery, carborundum, ground glass, or the like. The abrading strip preferably has the same width as the metal strap from which the pointer 25, handle-eye 26 and clamping arm 27 are formed, and is preferably coiled with its abrading face turned inwardly. The abrading strip coil being coreless, it uncoils itself as the strip is progressed outwardly with the result that the outer convolution of the coil exerts a radial force against the inner wall of the eye 26 and thereby maintains a certain frictional engagement between the outer convolution and the eye, which tends to hold the coil against axial displacement from the open faced eye. The strip is pulled out

when the clamping arm 27 is in its released position of Fig. 4, and for that position the coil will have uncoiled itself sufficiently to exert a pressure against the inner wall of the eye. When the strip is clamped in place by sliding the ring 28 to the position of Fig. 3, the eye is somewhat contracted after the manner of a band brake about the coil. This clamping action further holds the coil against lateral displacement.

With the clamping shackle 28 moved to the non-wedging position illustrated in Fig. 4, the roll 32 is placed in the handle-eye 26, and the free end of the abrading strip is led from the roll between the pointer 25 and clamping arm 27, and is passed through the clamping shackle 28. The strip is then drawn over the upper surface of the pointer, around its tip, and thence along the lower surface of the pointer toward the handle-eye 26, being again passed through the clamping shackle 28, as illustrated in Figs. 1 to 4.

The shackle clamp 28 is then moved from the position shown in Fig. 4 to or toward the position shown in the preceding figures. When this movement of the shackle clamp occurs, the upper margin of the shackle clamp opening 31 cooperates with the upper surface of the clamping arm 27 to move the clamping arm toward the adjacent portion of the pointer 25, securely to clamp the abrasive strip where it passes between the point and the upturned extremity of the clamping arm. At the same time, the lower margin of the shackle clamp aperture 31 firmly engages the lower run of the abrasive strip and draws such strip tightly over the upper and lower faces of the pointer, and clamps it in such taut condition. The tool is now ready for use.

By grasping the handle-eye 26, the user may manipulate the abrasive carrying pointer to clean and/or smooth the segments of the commutator 33 of a dynamo-electric machine which is more or less diagrammatically illustrated at 34. During this cleaning and/or smoothing operation, the remainder of the dynamo-electric machine, including the commutator, is rotated either manually or under power, as preferred. The tool of the present invention similarly may be utilized to clean and/or smooth distributor contacts, interrupter contact points, and the like.

When that portion of the abrasive strip which extends over the pointer has fulfilled its usefulness, the shackle clamp 28 is moved to the non-wedging position of Fig. 4, a fresh supply of the strip is drawn from the roll 32 and extended over the pointer, and the shackle clamp is then returned to the wedging position indicated in Figs. 1 to 3. The replaced or worn portion of the abrasive strip is then removed, conveniently by tearing it along and against the lower margin of the shackle clamp opening 31.

While we prefer to form the shackle clamp 28 of stamped metal, as illustrated in Figs. 1 to 6 inclusive, this shackle clamp may be formed from a single piece of stiff wire having the conformation shown in Fig. 7.

Having thus illustrated and described our invention in a preferred embodiment thereof, what we claim as new and desire to secure by Letters Patent of the United States, is:

1. In a tool of the class described a metal strap having greater width than thickness, said strap being conformed to provide an elongated pointer, a handle-eye and a clamping arm, said clamping arm being angularly disposed with relation to the pointer at a point adjacent the handle end of the latter, a shackle

clamp embracing said pointer and clamping arm to hold upon the pointer a flexible abrasive strip which has been extended from said handle-eye alongside and around the tip of the pointer, the tip of said clamping arm being turned away from the pointer to serve as a stop for said shackle clamp substantially as described.

2. An abrasive tool comprising a holder including a supporting arm, an open faced eye, a clamping arm overlying the supporting arm adjacent the eye, the clamping arm being supported by the eye, and means for locking the clamping arm against the supporting arm, and a strip of abrasive material arranged as a coreless coil within the eye and expanded against the inner surface of the eye, the strip extending outwardly from the coil and passing between the clamping arm and the supporting arm and along and about the opposite end of the supporting arm.

3. An abrasive tool comprising a single length of resilient metal strap bent in a plane perpendicular to its width to form a long work-engaging arm, a short clamping arm overlying the inner end of the working arm at a slight longitudinal inclination thereto and a C-shaped portion forming an open faced eye, the ends of the C-shaped portion continuing into the inner ends of the respective arms, a coreless supply roll of abrasive strip stored within the eye tending to expand against, and thereby frictionally retaining the roll against axial displacement within the eye, the outer convolution of the roll extending outwardly from the eye between the eye arms and in clampable relation therebetween and continuing along the one side of the long arm, around the end thereof and back along the other side thereof to a position beneath the short arm, and a clamping ring embracing the two arms and the superposed reaches of the strip and working against the inclination of the short arm to clamp the two reaches of the strip against the long arm.

4. An abrasive tool comprising a holder including a supporting arm, an open faced eye, a clamping arm overlying the supporting arm adjacent the eye, the clamping arm being supported by the eye, and means for locking the clamping arm against the supporting arm, and a strip of abrasive material arranged as a coreless coil within the eye and expanded against the inner surface of the eye, the strip extending outwardly from the coil and passing between the clamping arm and the supporting arm and along and about the opposite end of the supporting arm, said clamping means being applied to the clamping arm between the region of contact of the clamping arm with the abrasive strip and the connection between the clamping arm and the eye, whereby the application of said clamping means to operate the clamping arm also slightly contracts the eye upon the coil.

5. An abrasive strip holder comprising a metal strap bent in a plane perpendicular to its width into a C-shape forming an eye, the ends of the eye extending in the same direction in spaced relation into an integral supporting arm and clamping arm respectively, the eye adapted to receive a coil of abrasive strip, the outer convolution of which extends outwardly between the clamping arm and supporting arm and along the one side of the supporting arm about the end thereof and back on the other side thereof, a clamping shackle surrounding the two superposed arms, and an offset in the outer end of the clamping arm turned away from the supporting arm and of such dimension as to permit

the passage of the shackle thereover when the clamping arm and the supporting arm are brought into direct contact but preventing the passage of the shackle thereover when the abrasive strip is interposed between the arms.

5 6. An abrasive strip holding tool comprising a metal strap bent in a plane perpendicular to its width into a C-shape forming an eye, the ends of the C continuing into substantially parallel and closely spaced superposed arms, one arm being a short clamping arm and the other a long supporting arm, and a clamping shackle embracing the superposed arms for clamping

them together, the eye being adapted to receive a coil of abrasive strip, the outer convolution of which extends outwardly between the superposed arms in clampable relation thereto and along the respective sides of the supporting arm and about the outer end thereof, the clamping arm, when released by the shackle, being supported and positioned in relation to the supporting arm solely by the eye through the arcuate length thereof.

NORRIS F. McNAUGHT.
EDWARD H. PETERSON.

80

85

90

95

100

105

110

115

120

125

130

135

140

145

150

15

20

25

30

35

40

45

50

55

60

65

70

75