

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 43

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** HUNG T. DU and TODD A. HAGAN

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Appeal No. 2003-0025  
Application No. 09/019,871

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Heard : July 16, 2002

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Before RUGGIERO, DIXON, and SAADAT, **Administrative Patent Judges**.  
DIXON, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is a decision on appeal from the examiner's final rejection of claims 1, 5-9, 11, 12, and 17-20. Claims 3, 4, 14, and 15 are objected to by the examiner as allowable if rewritten. Claims 2, 10, 13 and 16 have been canceled.

We AFFIRM.

## BACKGROUND

Appellants' invention relates to a brush assembly for a power tool to apply bias at substantially constant force directly onto a brush surface. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A brush assembly for an electric motor comprising:
  - a base, said base including a member for securing said base with a motor spider assembly;
  - a brush housing associated with said base, said housing having first and second open ends;
  - a brush, defining a longitudinal axis, movably positioned in said housing between said first and second open ends, and said brush extending from one of said open ends of said housing, said brush including a surface, and a recessed portion, said recessed portion including said surface, said surface being at a desired angle with respect to the brush longitudinal axis;
  - a biasing member exerting a substantially constant force directly on said brush surface in the direction of the longitudinal axis for biasing said brush into electrical contact with a commutator; and
  - an electrical connector electrically coupled with said brush for electrical connection between the commutator and a power supply.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Sekyra	2,194,620	Mar. 26, 1940
Cousins et al. (Cousins)	4,593,220	Jun. 03, 1986
Peot et al. (Peot)	5,907,207	May 25, 1999

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Sugai et al. (Sugai)

6,031,313

(Filed Nov. 7, 1997)  
Feb. 29, 2000  
(Filed Dec. 8, 1997)

Claims 1 and 5-8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sugai in view of Peot. Claims 9, 11, 12, 17, 18, and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sugai in view of Peot and Sekyra. Claim 19 stands rejected under 35 U.S.C. § 103 as being unpatentable over Cousins in view of Sugai and Peot.

Rather than reiterate the conflicting viewpoints advanced by the examiner and appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 32, mailed Jun. 21, 2002) for the examiner's reasoning in support of the rejections, and to appellants' brief (Paper No. 31, filed Mar. 25, 2002) and reply brief (Paper No. 33, filed Aug. 26, 2002) for the appellants' arguments thereagainst.

### **OPINION**

In reaching our decision in this appeal, we have given careful consideration to appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by appellants and the examiner. As a consequence of our review, we make the determinations which follow.

At the outset, we note that appellants have elected to group all of the dependent claims with their respective independent parent claims. (See brief at page 3.) Additionally, appellants' include the claims objected to in their second group as standing

or falling with independent claim 9. We will not include these claims in the second group since they have not been rejected by the examiner and this issue is not before us. Therefore, we will address claims 1, 9, and 19 as the representative claims for each of the three groups and address appellants' arguments thereto.

### **35 USC § 103**

To reject claims in an application under section 103, an examiner must show an unrebutted *prima facie* case of obviousness. **See In re Deuel**, 51 F.3d 1552, 1557, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995). In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. **See In re Oetiker**, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness. **In re Rouffet**, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1455 (Fed. Cir. 1998).

The examiner maintains that Sugai teaches the claimed invention, but for the biasing member exerting a substantially constant force on the brush surface and that Poet teaches a biasing member exerting a substantially constant force on the brush surface for increasing the brush life. The examiner maintains that both references are "from the same field of endeavor" and that the "purpose disclosed by one inventor would have been recognized in the pertinent art of the others." (See answer at pages 4-5.) While we are not exactly sure what the examiner means by the second part of the motivation statement, we are of the reasoned opinion that optimizing the electrical and mechanical life of the brush would have been quite a desirable goal as taught by Poet

at columns 1 and 2 and in Fig. 2. We agree with the examiner that it would have been obvious to one of ordinary skill in the art in light of the teachings of Poet regarding the use of a constant or substantially constant force in the longitudinal direction to optimize the life of an electric motor brush.<sup>1</sup> Here, we find that the examiner has addressed the limitations of independent claim 1, identified the deficiencies in the prior art and provided a convincing line of reasoning why it would have been obvious to one of ordinary skill in the art to combine the teachings of Poet with Sugai. Therefore, we find that the examiner has established a *prima facie* case of obviousness and the burden shifts to appellants.

The examiner maintains that the motivation to apply the constant force in Poet is that Poet teaches exerting a substantially constant force (Fig. 3) directly on the brush for the purpose of increasing the brush life. (See answer at pages 4, 6, and 9.) The examiner relies on Figures 1 and 3 of Poet to teach this substantially constant force, but neither of these figures provides any clear teaching or suggestion of increasing the life of the brush. We do find that Figure 2 teaches the use of an optimal pressure  $P_0$  which reduces the rate of total (mechanical and electrical) brush wear and col. 2 teaches that “maintaining of a constant optimal pressure between the brush and the commutator of an electric motor, resulting in longer life for the brush of the electric motor.”

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<sup>1</sup> We note that claim 1 does not recite any specific details or specifications of the motor or its specific field of use.

Appellants argue that the combination of prior art references does not teach or suggest the claimed invention and the examiner is misapplying the references and applying hindsight to reconstruct applicants' invention. (See brief at page 4.)

Appellants argue that claim 1 requires that the biasing member exerts a substantially constant force directly on the brush surface in the direction of the longitudinal axis of the brush. Appellants argue that Sugai teaches that the spring force applied on the compound angled surface is to prevent wild behavior of the brush to prohibit chatter or noise of the brush. (See brief at page 4.) Appellants argue that the examiner relies upon the teachings of Poet to teach the use of a constant force on the brush and that this constant force would minimize the wear on the brush. (See brief at page 4.)

Appellants argue that the two references are directed to different problems and that the examiner has merely extracted the one element from Poet concerning constant force and applied it using hindsight in combination with Sugai. (See brief at page 5.) We do not find appellants' arguments to be persuasive since we find that optimizing the operational life of electrical motor brushes would have been desirable in all electrical motors even those that also try to reduce brush noise or sound.

At the oral hearing appellants' representative embellished upon the above arguments and emphasized that Sugai teaches that the forces ( $f_1$  and  $f_2$ ) are applied in both the direction of the commutator and in the direction of the side of the holder to

prevent brush sound. Appellants' representative further argued that the teaching of Poet merely teaches the use of a constant force to the commutator without regard to the force on the side of the brush housing and that the combination would not apply the side force to reduce the brush sound. While we would tend to agree that the disclosure of Poet does not disclose any concern for a lateral force being applied to force the side of the brush to contact the holder, we note that in Figure 3, element  $F_x$  has both longitudinal and lateral components which make up the force applied to the brush due the angled portion which the biasing spring contacts. Therefore, there would have been both longitudinal and lateral components of the forces in both Sugai and Poet. Hence, we do not find appellants' argument, that the examiner has merely picked from Poet the use of a constant force and translated that teaching into use in the system of Sugai in hindsight, persuasive. Appellants' representative at oral hearing argued that the teaching of a constant longitudinal component in Poet would have been a teaching away from the combination with Sugai since Sugai is concerned with reducing the brush noise/sound by the application of a lateral force to maintain the side of the brush in contact with the holder. We disagree with appellants as discussed above since we find that both Sugai and Poet teach both longitudinal and lateral components of the forces.

Appellants argue that the two references solve different problems and that nowhere does Sugai suggest that he needs a different type of spring for applying a constant pressure. (See brief at page 5.) While we agree with appellants that the two

references solve different problems, we do not find that this means that the examiner relied upon impermissible hindsight. Therefore, this argument is not persuasive.

Appellants argue that the longitudinal axis is the lengthwise axis on the brush and not the widthwise or lateral axis which the force (f1) is applied upon. (See reply brief at page 2.) We disagree with appellants and find that Fig. 1(c) of Sugai clearly teaches that the force (f1) acts along the axis towards the commutator 23. Therefore, this argument is not persuasive. Appellants again emphasize the individual teachings of the two references and conclude that there is no motivation to combine these teachings. (See reply brief at page 2.) We disagree with appellants as discussed above. Therefore, we will sustain the rejection of independent claim 1 and its dependent claims 5-8 and 20 which appellants elected to group therewith.

With respect to independent claim 9, the examiner additionally relies upon the teachings of Sekyra to teach the use of a unitary stop in the brush. (See answer at pages 5-7.) Appellants argue that claim 9 requires that the spring moves on the angled surface as the brush wears and there is a unitary stop. (See brief at page 6.) Additionally, appellants argue that the examiner's rejection is based upon hindsight since the examiner has not provided a logical nexus as to the combination of the three references. (See brief at page 6.) The examiner essentially repeats the motivation for the combination as discussed with respect to independent claim 1. As discussed above, we found a convincing motivation to combine the teachings of Sugai and Poet.

Additionally, we find that the examiner's reliance upon the teachings of Sekyra to teach and suggest the use of a unitary stop for the brush would have been obvious to those skilled in the art since the stop prevents the brush from advancing further than desired. Therefore, we find a motivation to combine the three references. Appellants argue that the examiner's failure to provide a common strand in the three references further indicates the use of impermissible hindsight. (See brief at page 6.) We disagree with appellants as discussed above. Therefore, we will sustain the rejection of independent claim 9 and its dependent claims 11, 12, 17, and 18 which appellants elected to group therewith.

With respect to independent claim 19, appellants again argue that the examiner has failed to show a logical nexus and that there is no logical connection that the constant force in Poet would be used for in Sugai alone or in combination with Cousins. (See brief at pages 6-7.) As discussed above, we disagree with appellants. Appellants argue that there is no need for a constant force in Sugai as suggested by the examiner. As discussed above, we find sufficient motivation for optimizing the brush life in the system of Sugai as taught and suggested by Poet and as discussed above. Therefore, we will sustain the rejection of independent claim 19.

### **CONCLUSION**

To summarize, the decision of the examiner to reject claims 1, 5-9, 11, 12, and 17-20 under 35 U.S.C. § 103 is affirmed.

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No time period for taking any subsequent action in connection with this appeal  
may be extended under 37 CFR § 1.136(a).

**AFFIRMED**

JOSEPH F. RUGGIERO	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
JOSEPH L. DIXON	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
MAHSHID D. SAADAT	)	
Administrative Patent Judge	)	

JD/RWK

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