Intellectual Property Office

BL O/0932/24

25 September 2024

PATENTS ACT 1977

APPLICANT	Snap-On Incorporated
ISSUE	Whether application GB2109580.7 complies with Section 1(1)(b) of the Patent Act 1977.
HEARING OFFICER	Dr Andrew Rose

DECISION

Introduction

1 Patent application GB2109580.7 was published as GB 2598195 and has a filing date of 2 July 2021. It claims an earliest priority date of 9 July 2020 from US application US 63/049800 and a later priority date of 15 June 2021 from US application US 17/348050.

2 Despite several rounds of correspondence, the applicant was not able to persuade the examiner that the application provided an Inventive Step, as required by Section 1(1)(b) of the Act. Therefore, the applicant requested a decision by a Hearing Officer, based on the papers on file. The matter has accordingly come before me.

3 The examiner's pre-hearing report of 15 May 2024 indicated that the search was incomplete. I therefore arranged for an examiner to complete the search, which led to two further citations being identified and communicated to the applicant in a letter dated 31 July 2024. On 28 August 2024 the applicant filed amended claims, in response to the new citations, with a covering attorney's letter discussing inventive step. I will decide whether the amended claims filed on 28 August 2024 provide the necessary inventive step over the documents cited in the pre-hearing report of 15 May 2024 and the documents cited in the subsequent letter of 31 July 2024.

The Application

4 This application concerns a hand-held power tool such as a drill or screwdriver. The tool includes a motor (110, Figure 2), which causes an output component of the tool to rotate about an output axis 130. For example, the output component may be a chuck 138 suitable for receiving a tool bit such as a drill bit or driver bit. A housing 102 of the tool includes a handle portion 126. The housing also contains a groove 128, suitable for receiving an index finger of a user, located proximal to the output axis 130. A trigger 116, which controls operation of the motor, is positioned such as to be operable by the user's middle finger. Figure 1 of the application is reproduced below.

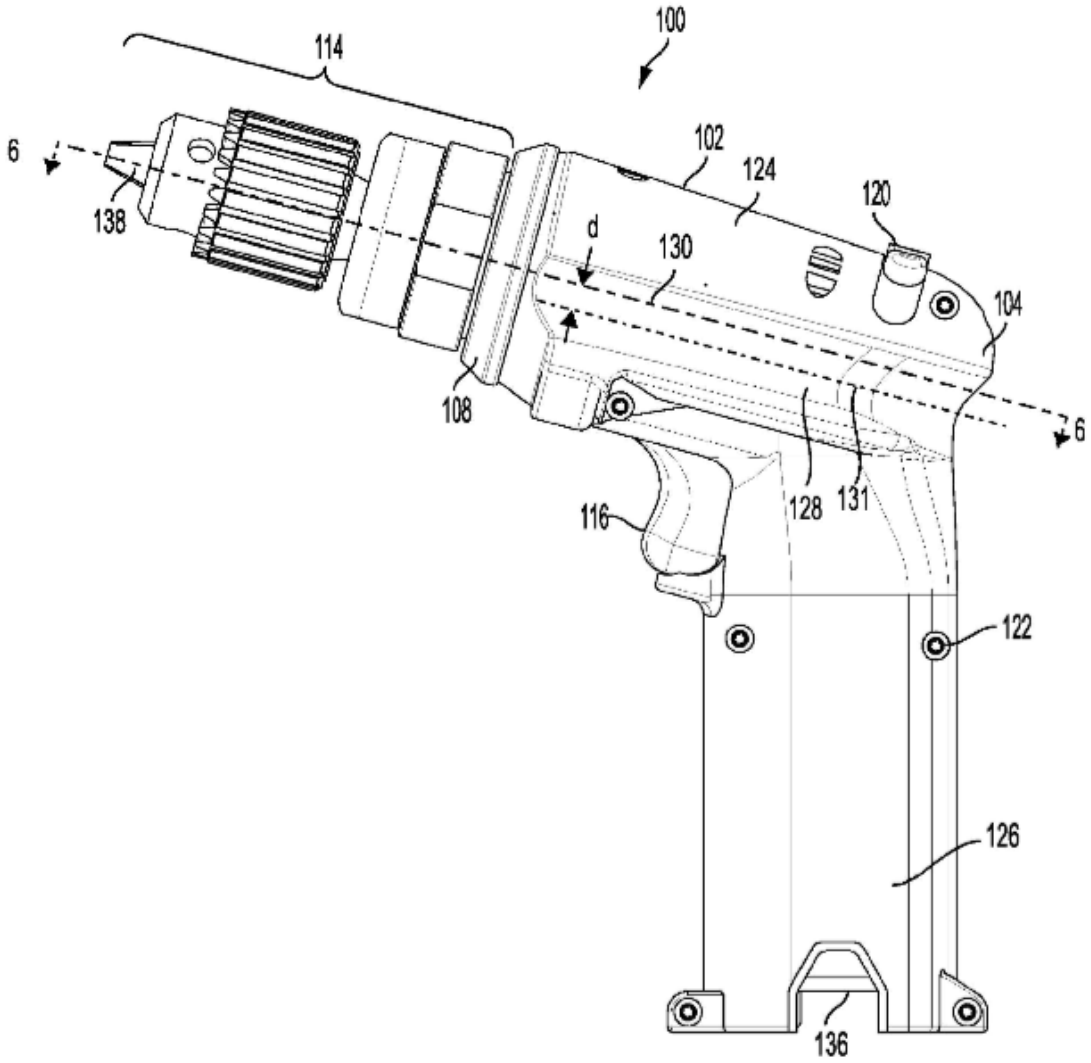

FIG. 1

Figure 1 of the current application

The Claims

The amendments filed on 28 August 2024 comprise a Main Request and an Auxiliary Request, each consisting of one independent claim, and several dependent claims. I will consider claim 1 of the Main Request first. If I find that this lacks an inventive step, I will then proceed to consider claim 1 of the Auxiliary Request and the dependent claims. Claim 1 of the Main Request reads as follows:

1. *A tool having an output longitudinal axis, comprising:*

a housing having a motor housing portion and a handle housing portion;

a motor including a motor shaft and being disposed in the motor housing portion and adapted to selectively rotate the motor shaft in either of first and second rotational directions, wherein the motor shaft is substantially aligned with the output longitudinal axis;

a groove formed in the motor housing portion, wherein the groove has a groove centerline that is parallel to the output longitudinal axis and offset from the output longitudinal axis in a direction towards the handle housing portion by a distance in a range of about 3.18 to 12.7 mm (O. 125 to 0.5 inches); and

a trigger adapted to operate the motor, wherein the groove is adapted to receive an index finger of a user of the tool and the trigger is adapted to be operated by a middle finger of the user.

6 Compared to the previous claim 1 on file, the above claim includes the new limitation that the groove centreline is parallel to the output longitudinal axis. I am satisfied this amendment does not add matter.

The Law

7 Section 1(1) of the Act states:

1(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –

(a) the invention is new;

(b) it involves an inventive step;

8 Sections 2(1) & 2(2) of the Act read:

2(1) An invention shall be taken to be new if it does not form part of the state of the art.

2(2) The state of the art in the case of an invention shall be taken to comprise all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use or in any other way.

9 Section 3 of the Act states:

3 An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

10 In addition to statute, in *Windsurfing*[1] the Court of Appeal held that the question of obviousness

> "has to be answered, not by looking with the benefit of hindsight at what is known now and what was known at the priority date and asking whether the former flows naturally and obviously from the latter, but by hypothesizing what would have been obvious at the priority date to a person skilled in the art to which the patent in suit relates."

The four step test used in *Windsurfing* was reformulated by the Court of Appeal in Pozzoli[2] as follows:

> *(1) (a) Identify the notional "person skilled in the art"*
>
> *(b) Identify the relevant common general knowledge of that person;*
>
> *(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*
>
> *(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;*
>
> *(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?*

Analysis

11 The Examiner cited the following prior art documents in the pre-hearing report of 15 May 2024:

> D1: EP0790697 A1 (ATLAS)
>
> D2: US 5451127 A (CHUNG)
>
> D3: WO 2008/140086 (MAKITA)
>
> D4: JP 2006-123086 A (HITACHI)
>
> D5: US 2003/146008 A1(ANDRIOLO)

The following citations were later identified whilst completing the search:

> D6: US 2014/014385 (KOSUGI)
>
> D7: US 3019673 (SJOTSTRAND)

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[1] *Windsurfing[1] International Inc. v Tabur Marine (Great Britain) Ltd*, [1985] RPC 59,
[2] Pozzoli Spa v BDMO SA & Anor [2007] EWCA Civ 588 [23]

12 Each of these documents was published before the earliest claimed priority date of the current application.

Document D6

13 I will start my analysis by applying the *Pozzoli* test to determine whether the invention of Main Request claim 1 provides the necessary inventive step over document D6.

Step 1: Identify the person skilled in the art and their common general knowledge

14 I consider the person skilled in the art to be a person skilled in designing power tools, with a particular interest in hand-held power tools such as drills and drivers.

15 The skilled person's common general would include typical features of a range of power tools, including common control features (such as providing a switch to control the direction of a motor), typical features of housings (including typical dimensions of different parts of the housing), and an awareness of important ergonomic considerations. For example, the skilled person would appreciate the importance of providing a comfortable and secure means of gripping the tool, and the importance of positioning components of a tool to ensure it feels balanced in a user's hand. The skilled person would, of course, be aware of typical sizes and shapes of human hands.

16 In their pre-hearing report of 15 May 2024, the examiner argued that it would be common general knowledge, to the skilled person, to place a groove for an index finger in the housing of a tool, below a tool's output axis (i.e. on the handle side of the output axis). The examiner suggested the disclosures of documents D1, D2 and D3 support this position. I do not agree that D2 and D3 provide a clear disclosure of such a groove. It is generally accepted that the disclosure of a feature in a single patent document (here D1) is unlikely to provide sufficient evidence that a feature would lie within a skilled person's common general knowledge. Therefore, I conclude that the provision of a housing groove of the type referred to earlier in this paragraph would fall outside the skilled person's common general knowledge.

Step 2: Identify the inventive concept of the claim in question or if that cannot readily be done, construe it

17 I will need to spend some time construing claim 1. Firstly, I will construe the term "output longitudinal axis". The description refers to an "output axis 130 of the tool", which I understand to be synonymous with the "output longitudinal axis" of claim 1. Figure1 shows that output axis 130 is an axis about which a chuck 138 rotates. Paragraph 28 states: *"while the tool 100 is described above as having an output nose mechanism 114 with a drill chuck 138, the tool 100 may have different types of output nose mechanisms. For example, the tool 100 may include a output nose mechanism that includes a router type output or an impact type output with a drive lug*". I therefore construe "output longitudinal axis" to refer to an axis around which an output component (such as a chuck, drive-lug or spindle) rotates.

18 Next, it is necessary to construe the scope of "tool". Paragraph 5 of the description states that the tool is "*a power tool, such as a drill, router, grinder, impact wrench, ratchet wrench, screwdriver, or other powered tool, that is powered by electricity via an external power source (such as a wall outlet and/or generator outlet) or a rechargeable power source, such*

as a battery". Although paragraph 29 states "*the tool 100 can be any electrically powered* ***or*** *hand-held tool*" (emphasis added), I do not believe the description provides sufficient support for such a broad interpretation. Central to the invention, is how the tool is to be held in a human hand, and particularly how index and middle fingers are to be positioned when holding the tool. It thus seems clear to me that the invention must be construed as limited to hand-held power tools. Furthermore, from the above discussion of "output longitudinal axis", it follows that the invention must be limited to tools which have a rotating output component, such as a chuck, drive-lug or spindle. Hand-held drills, routers, grinders, impact wrenches and screwdrivers all fall within the scope of the "tool" of claim 1.

19 Selective rotation of a motor shaft in either of first or second directions is ubiquitous in power drills and drivers. Consequently, I do not consider this feature to form part of the inventive concept.

20 The examiner has construed "*the motor shaft is substantially aligned with the output longitudinal axis*" to mean that the motor shaft and output longitudinal axis are substantially parallel. However, from the discussion of citations provided in the attorney's letter of 12 April 2024, it seems the applicant intended this passage to be interpreted as requiring that the motor shaft and output longitudinal axis are colinear. The description of the current application does not provide any clear guidance on how "aligned" should be construed. However, in Figure 2, the motor shaft 132 appears to be colinear with the longitudinal axis of the output nose mechanism 114, or the "output longitudinal axis", in the language of claim 1. A dictionary definition of "align" is "*place or arrange in a straight line or into correct relative positions*"[3]. The word "align" is often used alongside information on the "correct relative positions" of objects to be arranged. For example, two axes could be said to be aligned in parallel or indeed perpendicular to each other. However, I believe that, in the absence of information on the correct relative positions (e.g., "parallel" or "perpendicular"), the skilled person would interpret "aligned" as "arranged in a straight line", *i.e.,* colinear. Such a construction is consistent with the concept of "shaft alignment" in the field of mechanical engineering. The aim of shaft alignment is to create a straight-through coupling between two shafts. Shafts which are offset relative to each other are said to suffer from "parallel misalignment". Taking all the above into account, and in particular Figure 2 of the current application, I shall construe "*the motor shaft is substantially aligned with the output of the longitudinal axis*" as requiring that the motor shaft and output longitudinal axis are not merely parallel but colinear.

21 The term "groove centerline" requires careful construction. In the embodiment of Figure 1, the groove 128 within the housing has a first portion with a uniform cross section at the end of the groove nearest to the output 114 of the tool, and a second portion at the opposite end of the groove, where the groove widens. The first portion is suitable for receiving an index finger (as claimed in claim 8 of the Main Request) and the second portion is suitable for receiving the part of the hand between index finger and thumb (as claimed in claim 10). The dotted "centerline" 131 sits in the middle of the groove in the first portion but appears to be offset from the middle of the groove in the second portion. So, in the second portion, the "centerline" 131 is not actually in the centre of the groove. To address this inconsistency, I shall construe the "groove" of claim 1 to be a recess in the housing portion,

[3] Concise Oxford English Dictionary, 10e, Oxford University Press, 1999

at least a portion of which is suitable for receiving a user's index finger and the "groove centerline" to be an imaginary centreline, **within the index finger portion of the groove**, which is equidistant from opposing edges of the groove in that portion.

22 I therefore construe "groove centerline that is parallel to the output longitudinal axis" as requiring that, within the index finger portion of the groove, the groove centreline 131 is parallel to the output longitudinal axis 130.

23 Next, I need to construe "groove centerline *offset from the output longitudinal axis in a direction towards the handle housing portion by a distance in a range of about 3.18 to 17.7mm (0.125 to 0.5 inches*)". The first part of this passage is relatively self-explanatory, but it is more difficult to determine precisely how the "distance" is to be measured. Paragraph 21 of the description refers to Figure 1 and states that the distance d should lie within the range of 0.125 to 0.5 inches. A person skilled in the art would therefore understand that, in claim 1, "distance" is intended to refer to the quantity d in Figure 1. I shall therefore construe the above passage as requiring that when the groove centreline is projected into a plane defined by an axis of the handle and the longitudinal output axis[4] the perpendicular distance between the projection and the longitudinal output axis is between 3.18 and 12.7mm (0.125 and 0.5 inches).

24 Finally, I understand that the housing must be suitable to allow an index finger to be placed in the groove at the same time as a middle finger is operating the trigger, both fingers being from the same hand. This construction is consistent with paragraph 5 of the description (which refers to an index finger, a middle finger and "the hand of the user") and Figure 4, which shows the tool held in a user's right hand.

25 Taking all the above into account, I construe the inventive concept of claim 1 to be:

A hand-held power tool including:

i) an output component which, in use, rotates about an output longitudinal axis;

ii) a housing which has a handle portion;

iii) a motor located within the housing;

iv) the motor's axis being colinear with the output longitudinal axis; and

v) a trigger which is operable by a middle finger of a user;

vi) wherein a groove is formed in the housing, at least a portion of the groove being suitable for accommodating a user's index finger, when the user's middle finger (from the same hand as the index finger) is placed over the trigger;

vii) the index finger portion of the groove having an imaginary groove centreline which is equidistant from opposing edges of the index finger portion of the groove, the groove centreline being parallel to the output longitudinal axis;

viii) the groove centreline also being offset from the output longitudinal axis, towards the handle portion; and

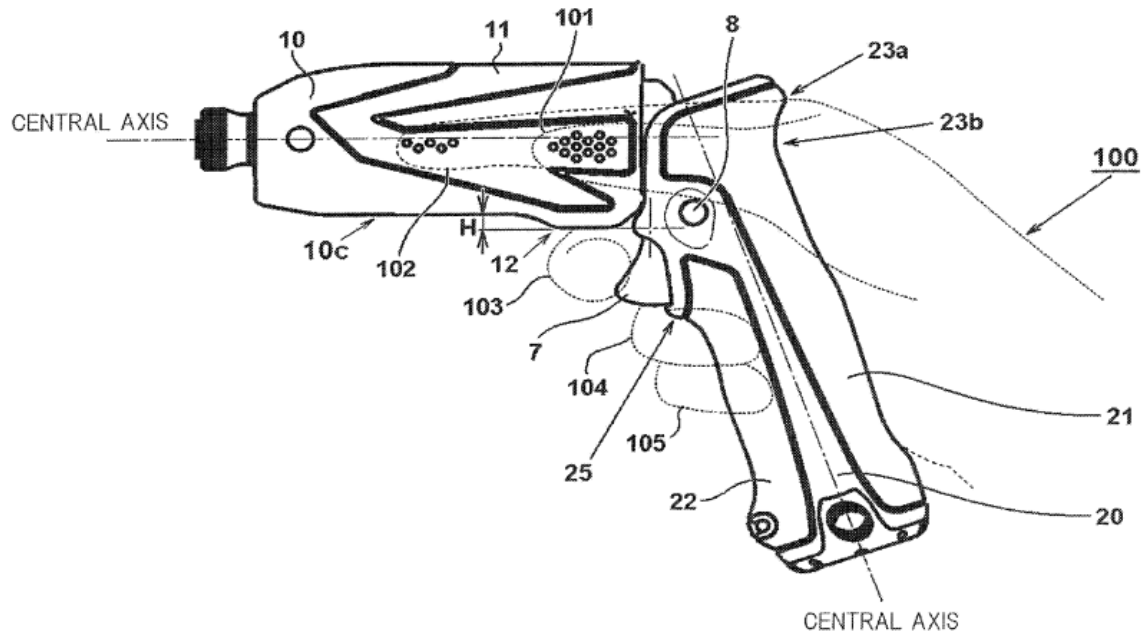
[4] The plane of the page in Figure 1 of the current application.

ix) *when the groove centreline is projected into a plane, defined by an axis of the handle and the longitudinal output axis, its projection lies between 3.18 and 12.7mm from the output longitudinal axis.*

Step 3 - Identify what differences exist between document D6 the and the inventive concept of the claim as construed

26 D6 discloses a drill/driver or impact driver which can be operated in a straight mode (Figure 1) or a gun mode (Figure 8), the latter being relevant to the present application. The apparatus of D6 includes a main housing 10, which houses a motor (4, Figure 2) and a handle housing 20. As shown in Figure 2, an output shaft 56, suitable for receiving a driver bit (58, Figure 1) is colinear with the shaft of motor 4. These shafts define the central axis of the main housing, which is indicated in the figures by a long horizontal dotted line. The central axis is equivalent to the output longitudinal axis of my construction of claim 1 of the present application. Figure 8 shows that a trigger 7 is operated by a middle finger 103 of the user. Figure 8 is reproduced below.

FIG. 8



27 Figures 5 and 8 show the drill/driver being held with a forefinger 101 on one side of the main housing (extended in the direction of the central axis) and a thumb 101 on the opposite side of the main housing. An elastic body 11 is provided on opposing sides of the main housing 10. As most clearly shown in Figure 1, non-slip treated parts 11b, 11a on the elastic body provide a contact surface for thumb 101 and forefinger 102, respectively. The non-slip treated parts 11a, 11b are indicated in the figures by respective groupings of small circles. Non-slip treated parts 11a for a thumb are provided towards the rear (handle end) of the main housing whereas non-slip treated parts 11b for a forefinger are provided further towards the front of the main housing. Figure 6B provides a cross-section through the main housing at the location of non-slip treated part 11b and Figure 6A provides a cross-section

through the main housing at the location of non-slip treated part 11a. Figures 6A and 6B are reproduced below. The elastic body 11 includes arc shaped recesses, discussed in paragraphs 86-89 and shown in Figures 6A and 6B. The arc shaped recesses "*are extended…in the axial direction of the main housing*" (paragraph 87). The arc shaped recesses are for accommodating thumb 101 and forefinger 102; the non-slip treated parts 11a, 11b are provided within the arc shaped recesses. Either of the arc shaped recesses can be considered equivalent to the groove of claim 1 of the present application.

FIG. 6A

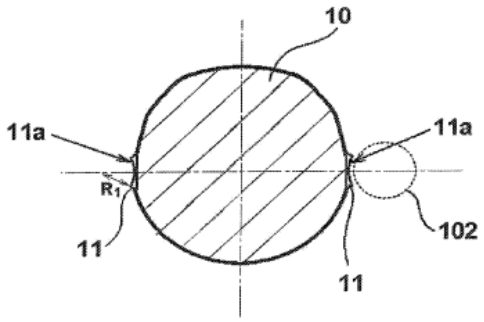
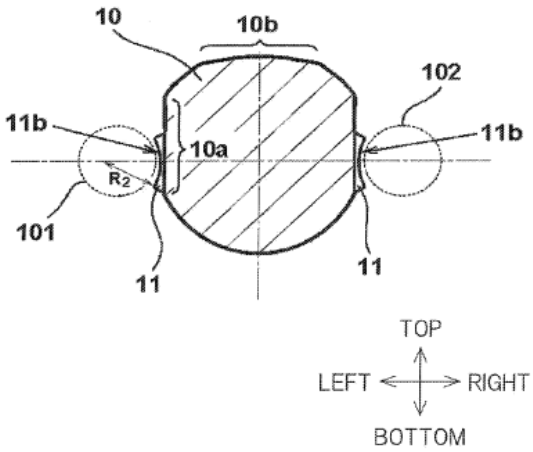


FIG. 6B



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28 The attorney's letter of 28 August 2024 purports that the non-slip treated parts 11a and 11b are clearly oriented at an angle with respect to the output axis. However, I'm afraid I cannot see this. In the case of Figures 1 and 8, it looks to me as if a best fit straight line through the circles representing non-slip treated parts 11a and 11b would be parallel to, and slightly offset below, the central axis/output longitudinal axis indicated by the dashed line. Similarly, a comparison of Figure 6A with Figure 6B suggests the non-slip treated parts 11a, 11b (the arc shaped recesses) each have the same position on the vertical axis. Figures 6A and 6B therefore also point to the non-slip treated parts and grooves being parallel to the longitudinal axis. Furthermore (as noted above) paragraph 87 explicitly states that the arc shaped recesses extend in the axial direction of the main housing. It therefore seems clear to me that D6 does disclose a groove centreline which is parallel to the output longitudinal axis. It should be clear from the above analysis, why I consider D6 to disclose the features of each of parts i-vii of the inventive concept as I have construed it.

29 As alluded to in the previous paragraph, in the Figures of D6, the location of the circles representing the non-slip treated parts would appear to suggest an offset of the groove centreline below the output longitudinal axis in a downward direction, towards the handle. This visual depiction of the embodiment of D6 discloses the additional features of part viii of the inventive concept.

30 The only difference between D6 and the inventive concept, as construed, is that D6 does not explicitly disclose that the offset of the groove centreline from output longitudinal axis lies within the distance range specified in part ix of the inventive concept.

Step 4 - Viewed without any knowledge of the alleged invention as claimed, does this difference constitute a step which would have been obvious to the person skilled in the art or does it require any degree of invention?

31 As discussed above, the skilled person could reasonably be expected to have a good knowledge of typical dimensions of drill/driver components. Taking such dimensions into account, the offset of a best fit straight line through the small circles of Figure 1 or 8 (representing non-slip parts 11a, 11b) from the central axis would appear to be of the order of single digit millimetres. This is consistent with the range of 3.18 to 12.7mm, specified in the inventive concept and claim 1. Given the proportions of the human hand, when implementing or building the disclosure of D6, it would be natural for the person skilled in the art to offset the centre of the non-slip parts 11a, 11b and thus the arc shaped recesses of Figures 6A and 6B from the longitudinal output axis by a distance in the range 3.18 to 12.7mm. In this sense, the invention is lying in the road for the skilled person to reach when presented with D6. In any case, the precise value of the offset is a matter of mere workshop variation rather than invention.

32 The attorney's letter of 28 August 2024 sets out alleged advantages of the invention claimed over the cited prior art. In summary, these are: i) the trigger of a tool can be operated by a middle finger whilst an index finger is disposed in a groove proximate to an output axis of the tool; and ii) the trigger is closer to the output axis than in prior art devices. To my mind advantage ii is corollary of advantage i. Furthermore, each of these alleged advantages are already demonstrated by D6 (see for examples Figures 5 and 8 and paragraph 93).

33 Section 3.82 of the Manual of Patent practice states that where a variation from published matter proposed by the applicant has no advantages, it should be refused on the ground that there is no inventive step, provided the variation is one whose possibility a skilled person would appreciate[5]. That is clearly the situation here: offsetting the centre of the arc shaped recesses of D6 within a specified range of the central axis would fail to provide any further advantage over those already provided by D6. This confirms my earlier decision (from paragraph 31) that the invention of claim 1 of the Main Request does not provide the necessary inventive step over D6. For completeness, I note that even if I was wrong to conclude that D6 discloses the offset of part viii of the inventive concept, claim 1 would still lack an inventive step over D6 because the offset does not confer any advantage.

Document D7

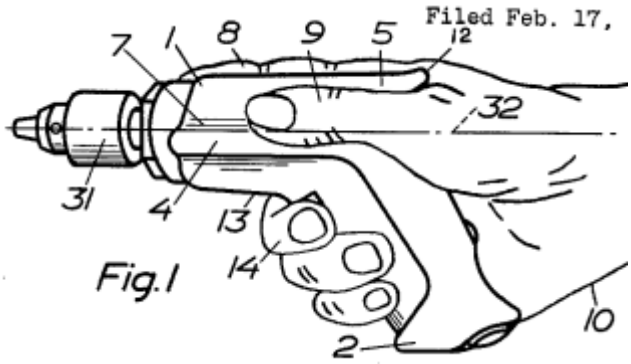
34 I will also apply the principles of the Pozzoli test to determine whether the claims are inventive over document D7. It is noted that steps 1 and 2 are as set out above for D6.

Step 3 - Identify what differences exist between document D6 the and the inventive concept of the claim as construed

[5] Based on the EPO Technical Board of Appeal decision T119/82, OJEPO 5/84.

35 D7 discloses a drill with a rotary air motor or a rotary electric motor (20, Figure 4). The figures show that the motor's shaft and a chuck 31 are aligned, centred on a longitudinal axis 32. Wings 3, 4 are provided symmetrically on each side of a barrel housing 1, the wings "extend longitudinally forwardly". Upper concave portions 6, 7 are formed from the intersection of the wings with the barrel housing. These concave portions are suitable for accommodating an index finger 8 and thumb 9 (see Figures 1-3). I consider each upper concave portion to be equivalent to the groove of the present application. Figures 1 and 2 show the trigger 13 being operated by a middle finger 14. Figure 1 is reproduced below. D7 clearly discloses each of the features of parts i-vi of the inventive concept, as construed.

36



37 The attorney's letter of 28 August 2024 argues that the upper concave portions do not have a groove centreline that is parallel to the output longitudinal axis. However, Figure 1 shows that the top edge of the wings are aligned with the longitudinal axis 32. Therefore, groove centrelines for the concave portions 6, 7 must surely be parallel to the longitudinal axis. D7 thus discloses the features of part vii of the inventive concept.

38 However, D7 does not disclose that the upper concave portions' groove centrelines are offset from the output longitudinal axis 32 towards the handle portion. D7 therefore does not disclose the features of parts viii and ix of the inventive concept.

Step 4 - Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

39 Due to the compact size of the drill, even without an offset of the groove below the output longitudinal axis 32, a forefinger can be accommodated in one of the grooves 6, 7, proximal to the output longitudinal axis, whilst a middle finger 14 operates the trigger. Lines 31-39 of column 1 of D7 identify the following objects / advantages of the invention: "*the twisting moment of a motor provided in the tool body is taken up by the hand holding the tool with as little strain as possible*" and "*thumb and forefinger are used together for guiding the tool towards the work and the other fingers are used for manipulation of the trigger*".

40 There seems little motivation for the skilled person to move the wings downwards towards the handle to offset the groove centreline from the longitudinal axis 32, as this would not provide any further clear advantage. D7 already provides the advantages the applicant

imputes to the invention of the present application, as set out above in my analysis of D6. Even although the skilled person would not be motivated to move the wings downwards the skilled person would, in my view, nevertheless appreciate this as a possibility. Therefore, in the light of Section 3.82 of the Manual of Patent Practice (discussed above) it would be obvious to the skilled person to move the wings of D7 downwards towards the handle and create a groove offset as per parts viii and ix of the inventive concept. D7 does not provide the necessary inventive step over claim 1 of the Main Request.

Document D1

Step 1: Identify the person skilled in the art and their common general knowledge

41 The common general knowledge of the skilled person identified for D6 also applies to D1. Furthermore, I note that there were two common methods of arranging a motor within the housing of a drill or driver, at the priority date: (i) the motor could be aligned on the same axis as the tool's chuck / drive-lug; or (ii) the motor could sit lower in the housing (i.e. towards the handle) than the chuck / drive-lug axis, with a gearing mechanism connecting a shaft of the motor to the chuck / drive-lug. Option (i) is shown in Figure 2 of the present application and option (ii) is shown in in Figure 1 of D1. Each of these alternatives would have formed part of the skilled person's common general knowledge. This much is clear from schematic diagrams of a range of drills and drivers which were widely available at the priority date.

42 Step 2, is as set out above for D6.

Step 3 - Identify what differences exist between document D1 the and the inventive concept of the claim as construed

43 D1 discloses an electric drill or driver which includes a spindle 14 which is equivalent to the output component of the construed inventive concept and the drive-lug of the description of the current application. Figure 1 shows the drill has a housing 1 with a handle portion 2 and an electric motor 5 with a shaft / central axis 7 which sits below an output longitudinal axis, the latter being indicated by a dashed line through the output component 14. Figure 2 shows a trigger 4 and a recess 38 within the housing, which is analogous to the groove of the inventive concept. Figures 1 and 2 of D1 are reproduced below.

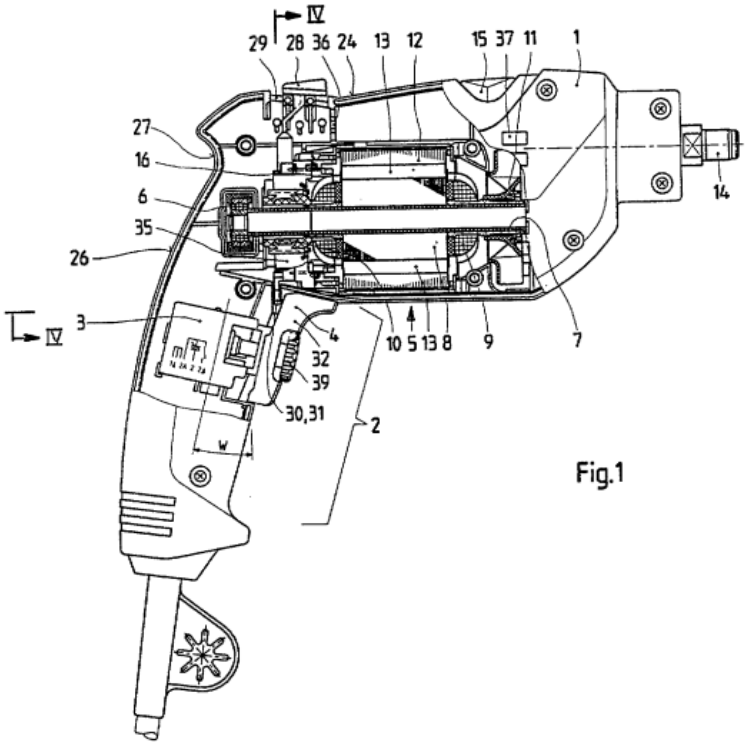


Fig.1

Figure 1 of D1

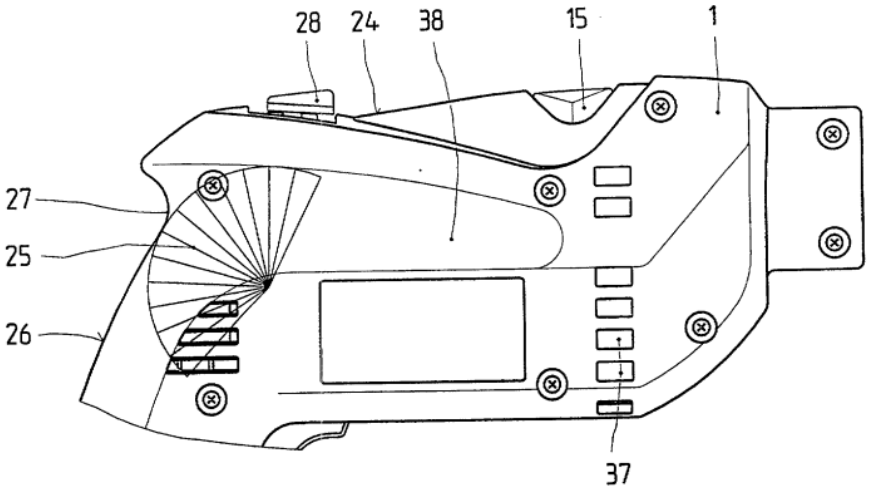


Fig.2

Figure 2 of D1

44 A translation, by the European Patent Office (EPO), is available for the German equivalent to D1, DE 19605202 C1. The EPO translation of lines 41-67 of column 4 of that document read:

"*Due to the lateral arrangement of the brush holders (17, 18), it is possible to make the circumference of the pistol handle (2) - also in the area of the switch button (4) -*

ergonomically small, so that the pistol handle (2) can be easily grasped. In addition, it is possible to select an ergonomically large angle of extension (W) of the pistol handle (2) so that the user's hand supports the machine in a natural position close to the motor shaft (7) and guides it effortlessly perpendicular to the drilling or screwing point .In this position of the machine (underhand grip), the index finger of the user's hand rests on the switch button (4).

In the convex grip area (25) the palm of the user's hand is ergonomically supported when the machine is held in the overhand grip, so that a high drilling or cutting force is achieved. Impact drilling pressure or screwing pressure can be applied to the machine without causing fatigue. With the overhand grip, the little finger or the ring finger of the user's hand reaches over the switch button (4) and the hand area between the thumb and index finger lies in the hollow (27), which is possible due to the ergonomic, hand-friendly small distance between the hollow (27) and the switch button (4).The index finger rests in a recess (38) of the housing (1), which adjoins the convex grip area (25) at the front (cf.Fig. 2).The thumb rests in a corresponding recess on the other side of the case."

45 Thus, the drill / driver of DE 19605202 (and therefore presumably D1) can be held using an underhand grip or an overhand grip. In the case of the underhand grip, a user's index finger operates the trigger 4; in the case of the overhand grip, the user's index finger is located within the recess / groove 38 and fourth or fifth fingers operate the trigger (not the middle finger). Figure 3 appears to show that at least the finger-tip end of the recess / groove 38 is offset from the centre of the nose of the drill (and therefore the output longitudinal axis) towards the handle. There is no explicit indication of possible numerical values for the distance of the offset.

46 D1 differs from the inventive concept, as I have construed it, in that D1 does not disclose (1) that the motor's axis 7 is colinear with the output longitudinal axis 14. Furthermore, (2) neither of the two explicitly disclosed methods of holding the drill involve simultaneously placing an index finger in the recess / groove 38 and operating the trigger with a middle finger; the separation between the recess 38 and the trigger 4 (despite being described as "small") may well be too large to allow the tool to be used in that way, so I think there is likely an additional difference here. Also, (3) the recess/groove fans out across its length, so the groove centreline cannot be parallel to the output longitudinal axis, as in part vii of the inventive concept. Finally, there is no disclosure of the actual distance of the offset of the recess 38 from the longitudinal output axis defined by spindle 14, so D1 additionally differs from the inventive concept in (4) not disclosing the features of part ix.

Step 4 - Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

47 As discussed above, prior to the earliest priority date, it would have been common general knowledge to the person skilled in the art that the motors of electric drills and drivers were often coaxially aligned with the drill/driver's chuck/driver lug. Arguably then, it would be obvious to the skilled person to redesign the drill of D1 to provide such an arrangement. An obvious way of doing so would be to move the cylindrical nose section downwards (with the drill orientated as shown in Figures 1 and 2 of D1) so that the spindle 14 is coaxial with the motor shaft 7. However, in this case, the recess 38 would appear to sit slightly above the

motor shaft, offset in the opposite direction from the handle. Modifying the drill in this way would remove difference (1), as identified above, but would introduce a new difference: (5) the groove centreline would no longer be offset from the output longitudinal axis, towards the handle portion. Furthermore, such an adaption would have no effect on differences (2) and (3) and would appear to make difference (4) more pronounced.

48 In the current application, a key advantage of offsetting the index finger groove towards the handle is that the groove is then close enough to the handle to permit a handle mounted trigger to be operated by a middle finger whilst an adjacent index finger is sited in the groove. D1 does not suggest that the index finger and middle finger should be used together in this way, so I can see no motivation for the skilled person to modify D1 to make this possible, far less to ensure that the recess 38 remains on the handle side of the longitudinal axis defined by the spindle despite modifying D1 to achieve coaxial alignment of motor and spindle. I therefore conclude that the invention of claim 1 of the Main Request provides an inventive step over the disclosure of document D1. As each of the other claims is dependent on claim 1 it follows that they must also be inventive over D1.

Documents D2-D5

49 Applying similar analysis to that for D1, I conclude that claim 1 of the Main Request is also inventive over each of documents D2-D5.

Auxiliary Request

50 Claim 1 of the Auxiliary Request differs from claim 1 of the Main Request only in that it additionally requires that the housing "*includes first and second clamshell-type housing portions coupled together via a housing clamp to cooperatively form the housing*".

51 This feature was previously claimed in claims 5 and 6 as originally filed. I am therefor satisfied that claim 1 of the Auxiliary Request does not add matter.

52 In the embodiments of the invention, the "clamp" refers to annular portion 108 located at the front end of the housing. The description does not explain what is meant by "clamshell-type" and it is not clear to me what limitation is intended by this term, so I will construe the additional part of claim 1 as: *"the housing includes first and second housing portions coupled together using a clamp".*

53 Before I can assess claim 1 of the Auxiliary Request for inventive step, I must decide whether I am dealing with one inventive concept, or a collocation of two separate inventive concepts. The law regarding collocation is set out in the decision in *SABAF*[6]. Briefly, this decision held that if a claim comprises two, or more, integers one must consider if they interact upon each other. If there is synergy between them, then they constitute a single invention, and one considers the combined integers under section 3 of the Act. However, if each integer performs its own function independently of any of the others, then each is considered a distinct invention for the purposes of section 3 and assessed separately.

[6] SABAF SpA v MFI Furniture Centres Ltd [2004] UKHL 45

54 *SABAF* explained that two features are considered to interact synergistically if their functions are interrelated and lead to an additional effect that goes beyond the sum of the effects of each feature taken in isolation. It is not enough that the features solve the same technical problem or that their effects are of the same kind and add up to an increased but otherwise unchanged effect.

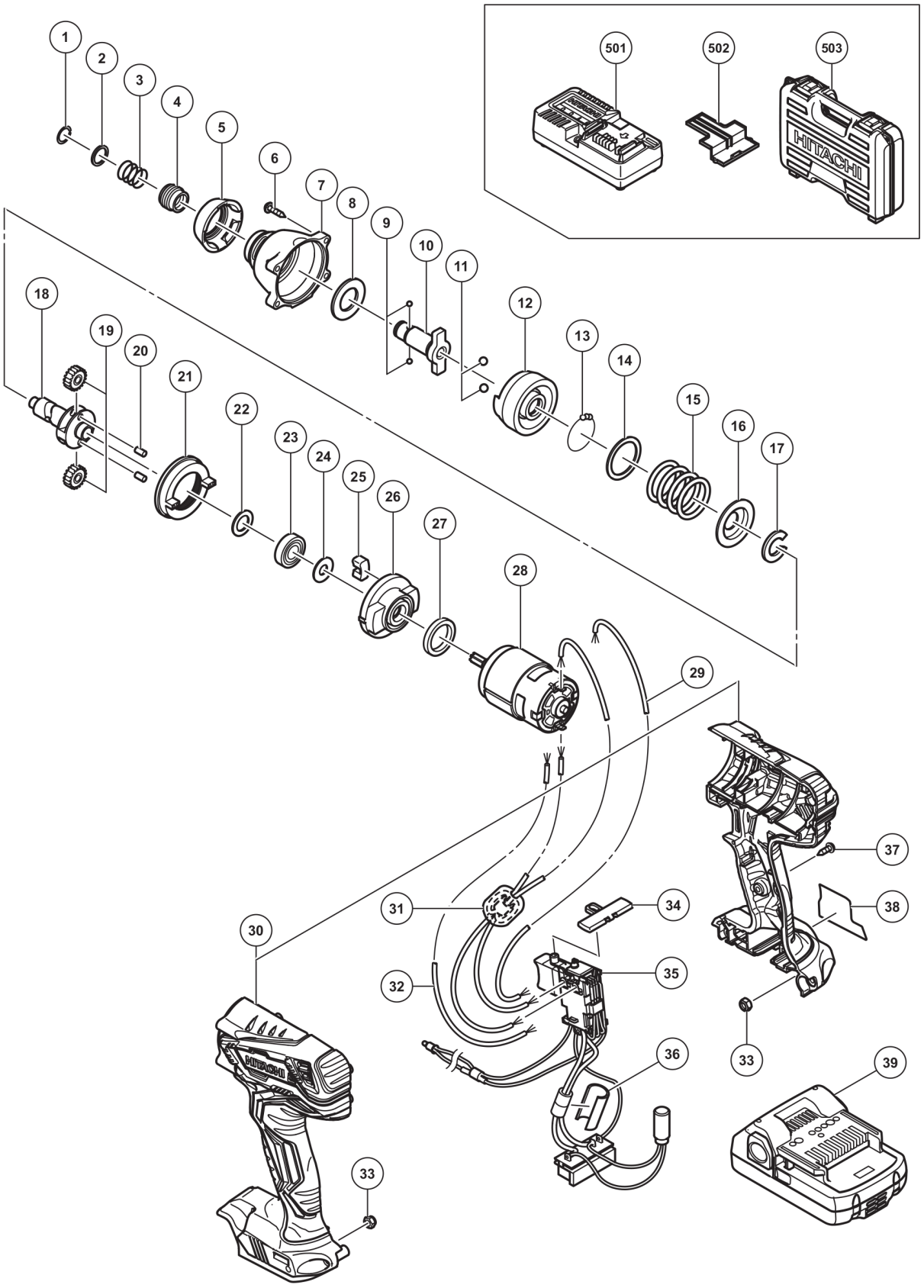
55 Here, I consider my earlier construction of claim 1 of the Main Request as a first integer, and my construction of the additional feature of claim 1 of the Auxiliary Request, as set out in paragraph 52 above, as a second integer. I can see no synergy or interaction between these integers: how the housing is held together does not affect the groove formed on the surface of the housing in any way. Therefore, I must consider each of these integers separately and decide whether each is novel and inventive.

56 Of course, I have already considered the first integer when assessing the Main Request and decided that it does not provide the necessary inventive step over each of documents D6 and D7.

57 The second integer lacks novelty over Hitachi impact driver, WH 18DGL. My hearing assistant purchased a driver of this type, stamped with a manufacturing date of 2015. A schematic diagram of the Hitachi driver is reproduced below.

58 A nose section 7 of the Hitachi driver performs a similar function to the clamp 108 of the present application, clamping together first and second housing portions 30 using screws 6. The Hitachi driver thus demonstrates that integer 2 lacks novelty.

59 As the first integer of claim 1 of the Auxiliary Request lacks an inventive step and the second integer of the claim lacks novelty, I must conclude that the claim lacks an inventive step.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Dependent Claims

60 The above analysis for claim 1 of the Auxiliary Request applies to dependent claims 2 and 3 of the Main Request. Claim 4 of the Main Request requires a groove on each side of the housing, which D6 and D7 both disclose. Claims 6, 10 and 11 relate to extending the groove to the back of the drill. Again, documents D6 and D7 disclose the additional features of these claims. Claim 15 relates to the location of a "direction selector". D6 discloses a forward/reverse switch 8 and I consider the location of the switch on the housing to be a matter of mere workshop variation rather than invention. The remaining dependent claims of the Main Request specify dimensions for various parts of the groove and I have concluded that these do not provide an inventive step either.

61 The above analysis for the Main Request dependent claims also applies to the Auxiliary Request dependent claims.

Decision

62 I have found that the invention set out in claim 1 of the Main Request lacks an inventive step over US 2014/014385 and US 3019673. Furthermore, I have decided that the invention of claim 1 of the Auxiliary Request is a collocation of two non-synergistic integers which each lack novelty or an inventive step. Claim 1 of the Auxiliary Request therefore also lacks an inventive step. I can see nothing that might comprise an inventive step in any of the dependent claims of either request.

63 Having decided that the invention as set out in the claims of the Main Request and the claims of the Auxiliary Request lack an inventive step, as required by Section 1(1)(b), I refuse this application under Section 18(3).

Appeal

64 Any appeal must be lodged within 28 days after the date of this decision.

DR ANDREW ROSE

Patent Examination Group Head