Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 30 March 2022

Case Number: T 3091/19 - 3.2.04

Application Number: 05756671.3

Publication Number: 1945937

IPC: F02P5/15, B27B17/10, F02P1/08, F02P11/02, F02P11/04, F02P5/02, F02P9/00, F02P11/00

Language of the proceedings: EN

Title of invention:
START SAFETY IGNITION SYSTEM

Patent Proprietor:
Husqvarna AB

Opponent:
Andreas Stihl AG & Co. KG

Headword:

Relevant legal provisions:
EPC Art. 100(a), 54(2), 111(1)

Keyword:
Novelty - (yes)
Appeal decision - remittal to the department of first instance (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 3091/19 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 30 March 2022

Appellant: (Patent Proprietor)	Husqvarna AB 561 82 Huskvarna (SE)
Representative:	Schröer, Gernot H. Meissner Bolte Patentanwälte Rechtsanwälte Partnerschaft mbB Bankgasse 3 90402 Nürnberg (DE)
Respondent: (Opponent)	Andreas Stihl AG & Co. KG Badstrasse 115 71336 Waiblingen (DE)
Representative:	Wasmuth, Rolf Patentanwälte Dipl.Ing. W. Jackisch & Partner mbB Menzelstrasse 40 70192 Stuttgart (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 30 September 2019 revoking European patent No. 1945937 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. de Vries
Members:	G. Martin Gonzalez
	T. Bokor

Summary of Facts and Submissions

I. The appeal was filed by the appellant (patent proprietor) against the decision of the Opposition Division to revoke the patent in suit.

II. The Opposition Division held that granted claim 1 was not new over D6.

III. In preparation for oral proceedings the Board issued a communication setting out its provisional opinion on the relevant issues. Oral proceedings before the Board were held on 30 March 2022 by videoconference.

IV. The appellant-proprietor requests that the decision under appeal be set aside, and that the opposition be rejected and the patent be maintained as granted (main request), or that the patent be maintained in an amended form on the basis of any of the auxiliary requests 1 to 3, all filed with the grounds of appeal dated 19 December 2019.

The respondent-opponent requests that the appeal be dismissed.

V. Claim 1 of the main request reads as follows:

(Feature numbering in brackets added by the Board)

"(1.1) Method for controlling an ignition system of an internal combustion engine
(1.2) started with a throttle valve positioned in a starting position causing the engine rotational speed

to immediately increase above the clutch-in speed of the tool,
(1.3) the ignition system having a primary firing pulse generator for charging a capacitor and an electronic switch for discharging the capacitor via an ignition coil to generate an ignition voltage,
(1.4) a microcomputer operating the switch to control the ignition timing of said generator,
(1.5) said microcomputer having speed detection means for directly or indirectly detecting the rotational speed of the engine
characterized by
(1.6) using the microcomputer comprising a speed limitation control,
(1.7) limiting the engine speed to a limitation speed situated distanced from and below the clutch-in speed of a centrifugal clutch corresponding to a low speed state
and by
(1.8) activating the speed limitation control by one of switching off the ignition for some cycles and by use of a direct injection system, where the fuel injection is controlled,
(1.9) when starting the engine so as to stop any attempt by the engine or a worker to bring up the speed so that the centrifugal clutch brings the cutting tool into rotation and
(1.10) deactivating when said speed detection means detects the low speed state of the engine lasting for a defined time period."

VI. In the present decision, reference is made to the following document:

(D6) US 2005/0100405 A1

VII. The appellant's arguments can be summarised as follows: The subject-matter of granted claim 1 is new over D6.

VIII. The respondent's arguments can be summarised as follows: The subject-matter of granted claim 1 is anticipated by D6.

Reasons for the Decision

1. Background

The invention relates to a method for controlling an ignition system of an internal combustion engine. Though the method is claimed as generally applicable, its use is intended for portable working machines such as a chain saw, cutting tool or grass trimmer driven by an internal combustion engine. The engine is normally equipped with a centrifugal clutch which engages the tool when the engine exceeds a certain rotational speed. Safety is in this manner improved since the tool does not rotate when the engine speed is reduced below the clutch-in speed. However, a hazard exists when the machine is started. In order to ensure an efficient start-up the throttle valve is normally in a starting position. The valve starting position in turn causes the engine rotational speed to immediately increase above the clutch-in speed of the tool. Since the worker may not hold the machine in such a way so that the security arrangements works as they should, there is a risk of bodily injury, see patent specification paragraphs [0001]-[0004].

The invention aims at reducing that risk by using a speed limitation control that inhibits ignition and so limits the engine speed below the clutch-in speed when

the throttle valve is positioned in the starting position, see claim 1 and paragraphs [0005]-[0006] of the patent specification.

2. Main request - Novelty

2.1 The Opposition Division was wrong to find lack of novelty over D6 in section 3 of the impugned decision. This is because the Board finds that D6 does not directly and unambiguously disclose feature 1.3: discharging a capacitor via an ignition coil to generate the ignition voltage, and feature 1.9: concerning application to a cutting tool.

The Board reads feature 1.3 as defining what is commonly referred to as a *capacitive discharge ignition system* that uses capacitor discharge current to the coil to fire the spark plugs of an internal combustion engine.

2.2 It is not in dispute that D6 discloses a method for controlling an ignition system of an internal combustion engine of a tool, in this case a walk behind trowel as shown in figures 1 and 2. Focus is on its starter module, which is designed to prevent the clutch from engaging at the time of start-up, paragraph [0008]. This is achieved by means of a microcontroller 100 which controls switching of the ignition system 30 via snubbing circuitry 105 inhibiting electrical ignition pulses, paragraph [0036].

The starter module is shown schematically in figure 3 and in greater detail in the circuit diagram of figure 4. It includes what is commonly known as a *magneto ignition system,* which includes a magnet that rotates with the engine (motor) output and generates a magnetic

flux change with every cycle to power an ignition coil to provide an electrical output that is sufficiently strong to power a spark plug, see paragraph [0027]. In the detailed embodiment this is achieved by means of a primary ignition coil 30, 85 configured with a secondary coil (which is not shown) which generates the ignition voltage, see paragraph [0033]. As a magneto ignition system is distinct from the capacitive discharge ignition of feature 1.3, the Board can but conclude that D6 does not disclose that feature.

That the skilled person might read the term *capacitor* is some broad sense as also encompassing a coil, as argued by the respondent, flies in the face of convention and appears to deny the skilled person the normal skills of reading and comprehension. It requires no explanation that even a less than average high school student knows what a capacitor is, and that it is not a coil. The fact that the skilled person might consider capacitive and magneto ignition systems as equivalents also cannot detract from the rather solid fact that D6 does not disclose capacitive discharge ignition. This fact is also not changed by the argument that the D6 starter module may be *suitable* for use with a capacitive discharge ignition. Finally, feature 1.3 may define apparatus features, namely the nature of the ignition system, it is nevertheless a clear limitation of the claimed method in that it specifies the means by which the method is to be carried out, cf. CLBA, 9th edition, 2019, I.C.5.2.5, 2nd full paragraph.

2.3 D6 also does not disclose a cutting tool (feature 1.9). The term *cutting tool* is very commonly used to denote tools that cut. However, the subject of D6, see its title, is a walk behind trowel used to provide a smooth, finished surface on poured concrete, see

paragraph [0004]. Such a finishing tool is not something that would normally be referred to as a cutting tool. Therefore feature 1.9 is also not disclosed in D6.

2.4 The appellant has also contested the following further findings of the Opposition Division. The Board is however unconvinced:

2.4.1 Paragraph [0025] of D6 describes throttle embodiments 52 that include a *governor* for regulating the feeding of fuel to the engine or a carburetor controlling a flow of fuel/air mixture. A governor is effectively a throttle valve. This throttle valve is set at full commanded speed at time of start up, see paragraph [0051]. It is thus positioned in a starting position causing the engine to immediately accelerate above the clutch-in speed, as claimed in feature 1.2.

2.4.2 Microcomputer 100 controls (via snubbing circuitry 105) ignition timing (feature 1.4) in response to detecting the rotational speed of the engine (feature 1.5), namely by measuring the rate or frequency of the electrical pulse signals detected by detection circuit 95, see paragraph [0044]. As described in paragraph [0045], "*the magneto ignition generates electrical pulses... with each cycle or revolution of the engine output*", that is with each cycle of the engine shaft. A measurement of their rate or frequency is thus a measurement of the actual engine shaft's speed of rotation. This is in practice performed by measuring the time period between consecutive electrical pulses, see paragraph [0049]. As the appellant argues, this measurement is not performed on pulses that are snubbed or electrically grounded, see paragraph [0044], and only a portion of electrical pulses are snubbed.

Rotational speed measurements of the engine's actual speed are still carried out when necessary on non-snubbed pulses at act (step) 210 of the flowchart of Fig. 6, see paragraphs [0051]-[0053].

2.4.3 The known method of D6 also limits the engine speed to a limitation speed "situated distanced from and below the clutch-in speed", as required by features 1.6 and 1.7. The known method prevents the engine speed from exceeding the idle range (about 1200-1600 rpm) that is distanced from and below the clutch-in speed or designated threshold (about 1700 rpm), see D6 paragraphs [0029]-[0030], [0036].

The appellant argues that the method of D6 does not anticipate switching off the ignition as required by feature 1.8, since residual voltage remains in the ignition circuit. This is shown on figure 8 for the snubbed pulses 240. The Board, however, interprets this feature differently. Reading the claim with synthetical propensity and with the intent of making technical sense of it, the Board interprets the feature of switching off the ignition for some cycles as suppressing ignition of the engine. This is achieved by the snubbing circuit 105 of D6, as described in paragraph [0036]. Although residual voltage remains in the ignition circuit, it does not suffice to spark the engine. A complete suppression of the electrical pulse in the ignition circuit is not necessary to meet the claimed limitation.

2.4.4 The appellant also puts forward that the circuit of D6 does also not fulfil the feature to stop *any* attempt by the engine or worker to speed up the engine, feature 1.9. This would be so due to a "ServiceMode", see paragraph [0046] and step 220 of the figure 6

flowchart, when the speed limitation is necessarily overridden. However, for the skilled person who reads the claim in context and with a mind willing to understand, the claimed control method clearly concerns normal starting control. Claim 1 does not exclude other exceptional measures or operation modes utside normal operation.

2.4.5 In step 245, figure 6, the controller 100 of D6 determines whether engine speed is below threshold for a predetermined period of one second before allowing the operator to again increase speed, see paragraph [0054], thus effectively deactivating the speed limitation. Below the designated threshold, the clutch does not engage, see D6 paragraph [0029], which corresponds to the claimed low speed state of the engine. This corresponds to feature 1.10. That during this period the controller 100 of D6 adjusts the baseline value for the idling operating range, see paragraph [0056], is immaterial. Firstly, it is not excluded by the wording of claim 1. Moreover, adjustment of the baseline does not modify the designated threshold.

2.5 Since features 1.3 and 1.9 are not disclosed by D6, the Board holds that claim 1 is new over the method disclosed therein. Thus the decision was wrong to conclude that the method of claim 1 of the main request lacked novelty over D6.

3. Remittal

As noted in the Board's communication, the primary object of an appeal is to review the decision under appeal in a judicial manner, Article 12(2) RPBA 2020. In the present case, the decision under appeal decided only on novelty of granted claim 1 in relation to document D6. A special reason in the sense of Article 11 RPBA 2020 thus exists since the Board would have to judge for the first time and at the same time in the final instance the further opposition ground of inventive step against the background of prior art that has not yet been evaluated. At the oral proceedings before the Board both parties declared their agreement to remittal.

In view of the above, the Board has decided to remit the case for further prosecution, Article 111(1) EPC.

Order

For these reasons it is decided that:

1. **The decision under appeal is set aside.**

2. **The case is remitted to the Opposition Division for further prosecution.**

The Registrar: The Chairman:

G. Magouliotis A. de Vries

Decision electronically authenticated