UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ONE WORLD TECHNOLOGIES, INC.,
D/B/A TECHTRONIC INDUSTRIES POWER EQUIPMENT,
Petitioner,

v.

CHERVON (HK) LIMITED,
Patent Owner.

Case IPR2020-00886

U.S. Patent No. 9,826,686
Issue Date: November 28, 2017
Title: Gardening Tool

PETITION FOR *INTER PARTES* REVIEW

Mail Stop "PATENT BOARD"
Patent Trial and Appeal Board
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

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TTI1004: U.S. Patent No. 3,253,391 ("Meldahl")

TTI1005: Reserved

TTI1006: U.S. Patent No. 8,098,036 ("Matsunaga")

TTI1007: GB 2,386,813 ("Reichart")

TTI1008: 16 CFR Part 1205 – Safety Standard for Walk-Behind Power Lawn Mowers (January 1, 2012)

TTI1009: U.S. Patent No. 1,899,564 ("Frey")

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TTI1011: U.S. Patent No. 4,753,062 ("Roelle")

TTI1012: U.S. Patent No. 5,209,051 ("Langdon")

TTI1013: FR 2,768,300 original French language

TTI1014: FR 2,768,300 certified English translation ("Outils")

TTI1015: WO2013/122266 A2 ("Nakano")

TTI1016: Reserved

TTI1017: Reserved

TTI1018: Reserved

TTI1019: Prosecution History of U.S. Patent 9,596,806

TTI1020: CN202019551U certified English translation

TTI1021-1029: Reserved.

TTI1030: ANSI/OPEI B71.1-2003 (updated version ANSI/OPEI B71.1-2012 revised/issued April 23, 2012) ("ANSI B71.1")

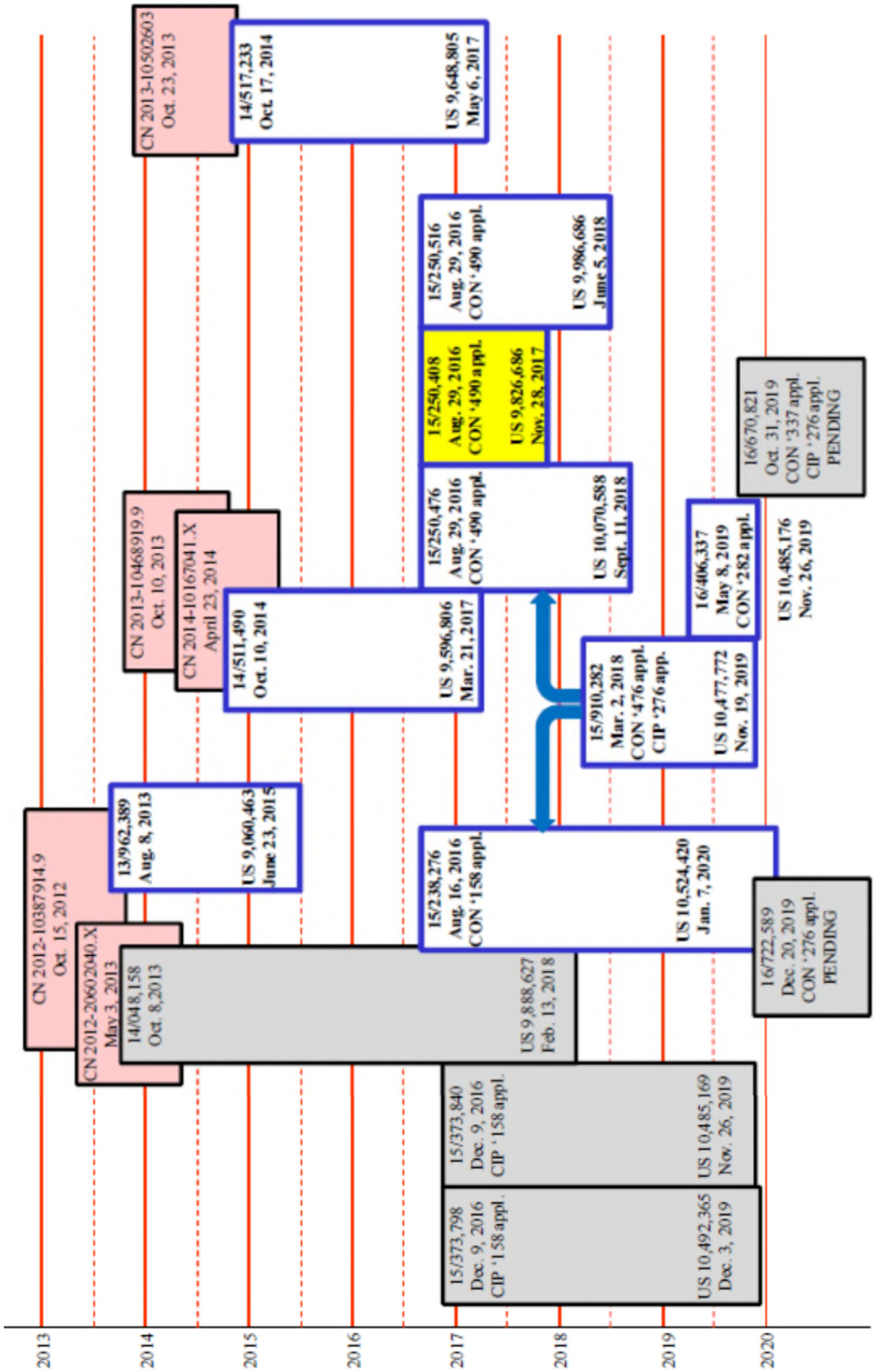
I. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Parties-In-Interest – 37 C.F.R. § 42.8(b)(1)

One World Technologies, Inc., d/b/a Techtronic Industries Power Equipment (collectively, "Petitioner") are the real parties-in-interest, and request *Inter Partes* Review ("IPR") under 35 U.S.C. §§311–319 and 37 C.F.R. §42 of claims 1-20 ("the Challenged Claims") of U.S. Patent 9,826,686 ("the '26686 patent" or "Challenged Patent") assigned to Chervon (HK) Limited ("Patent Owner").

B. Related Matters – 37 C.F.R. § 42.8(b)(2)

U.S. Patent 9,826,686 is the subject of the following lawsuit that may affect or be affected by a decision in this proceeding: *Chervon (HK) Limited and Chervon North America, Inc., v. One World Technologies, Inc., and Techtronic Industries Co. Ltd.*, case no. 1:19-cv-01293-LPS, filed July 11, 2019, in the U.S. District Court for the District of Delaware. The same lawsuit also involves a group of related patents whose family is shown below: U.S. Patents 9,060,463; 9,596,806; 9,986,686; 10,070,588; 10,477,772; 10,485,176 and 10,524,420; and unrelated U.S. Patent 9,648,805. Petitioner is filing IPRs/PGRs against all nine (9) asserted patents.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CON '282 appl.
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CON '276 appl.
PENDING
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Oct. 31, 2019
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CIP '276 appl.
PENDING
2013
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C. Lead And Back-Up Counsel – 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

Lead Counsel	Backup counsel
Edward H. Sikorski (USPTO Reg. No. 39,478) **Ed.Sikorski@dlapiper.com** DLA Piper LLP (US) 401 B Street, Suite 1700 San Diego, California 92101-4297 Tel.: (619) 699-2645 Fax: (619) 764-6645	James M. Heintz (USPTO Reg. No. 41,828) **James.Heintz@dlapiper.com** DLA Piper LLP (US) One Fountain Square, Suite 300 Reston, Virginia 20190-5602 Tel.: (703) 773-4148 Fax: (703) 773-5008 Tiffany Miller (USPTO Reg. No. 52,032) **Tiffany.Miller@dlapiper.com** DLA Piper LLP (US) 401 B Street, Suite 1700 San Diego, California 92101-4297 Tel.: (619) 699-3445 Fax: (619) 764-6445

D. Service Information

Papers should be served to the addresses of all counsel listed above.

Petitioner consents to electronic service by email above.

II. PAYMENT OF FEES – 37 C.F.R. § 42.103

The Patent and Trademark Office is authorized to charge Deposit Account **No. 07-1896** for the fee set in 37 C.F.R. § 42.15(a) for this Petition and any additional fees, referencing Attorney Docket **388291-000013**. This Petition requests review of **20 claims** which should incur **$33,500**.

III. REQUIREMENTS FOR IPR

A. Grounds for Standing – 37 C.F.R. § 42.104(a)

Petitioner certifies that the '26686 patent is available for IPR and Petitioner is not barred or estopped from requesting IPR.

B. Challenge Under 37 C.F.R. § 42.104(b) and Relief Requested

Petitioner requests IPR of the Challenged Claims on the grounds listed below. A declaration from E. Smith Reed accompanies this Petition.

Ground	Claims	Basis	References
1	1-7, 11-17	§103	Outils in view of Roelle and Matsunaga
2	8-10, 18-20	§103	Outils in view of Roelle, Matsunaga, Langdon and Nakano

IV. SUMMARY OF THE '26686 PATENT

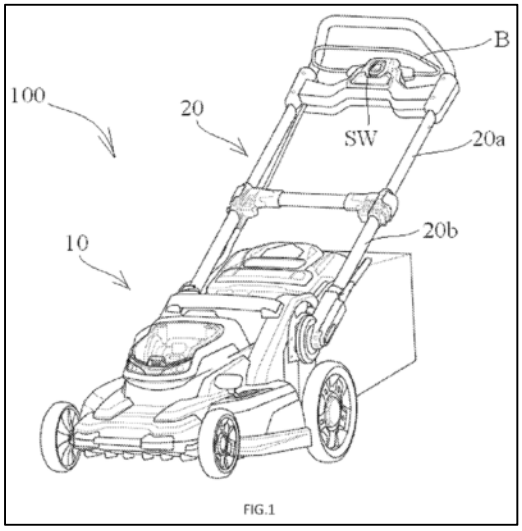
A. Brief Description

The '26686 patent claims priority to U.S. and foreign filing dates later than March 16, 2013, and is therefore subject to the first-to-invent (AIA) provisions of 35 U.S.C. §§102-103. It claims priority to U.S. application 14/511,490 filed October 10, 2014, and Chinese applications CN2013-10468919 filed October 10, 2013, and CN2014-10167041 filed April 23, 2014. TTI1001, 1.

The '26686 patent describes a system to prevent activation of electric gardening equipment, such as an electric walk-behind lawnmower, when its handle

is improperly positioned. A simple electric circuit prevents activation of, and/or halts, the motor for the lawnmower's blade when the handle is rotated out of position or in a collapsed state for storage/shipment. By allowing the equipment to operate only when the handle is in its proper in-use position, the patent purports to reduce the chance of injury to a user.

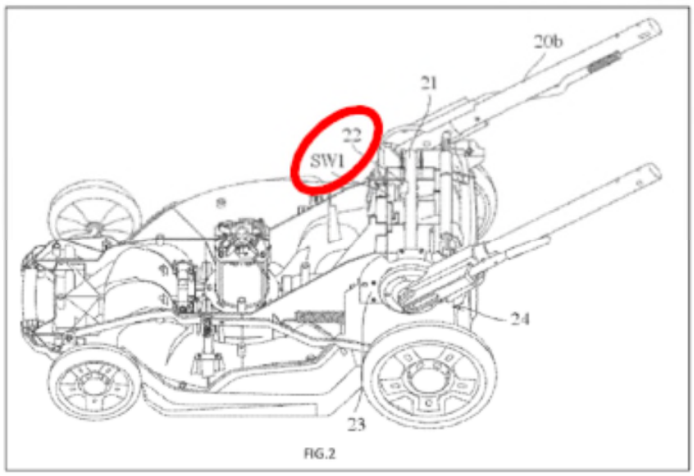
Figure 1 illustrates the walk-behind lawnmower's main body 10 containing an electric motor and cutting blade (not shown). On its handle 20 is a user-operated trigger 'B' that triggers a contact switch 'SW' electrically connected to a controller (not shown) that controls on/off operation of the motor. TTI1001, 6:8-12, 6:29-33.

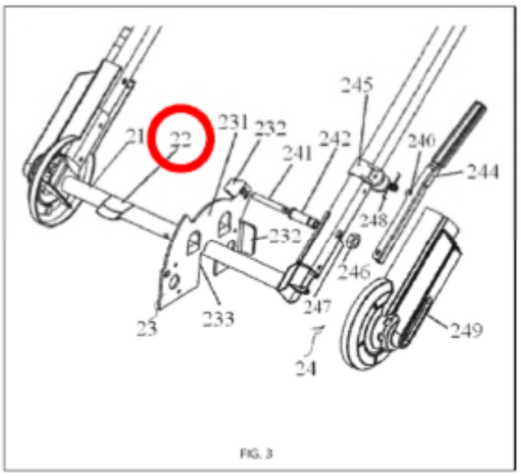


B. Rotatable Handle

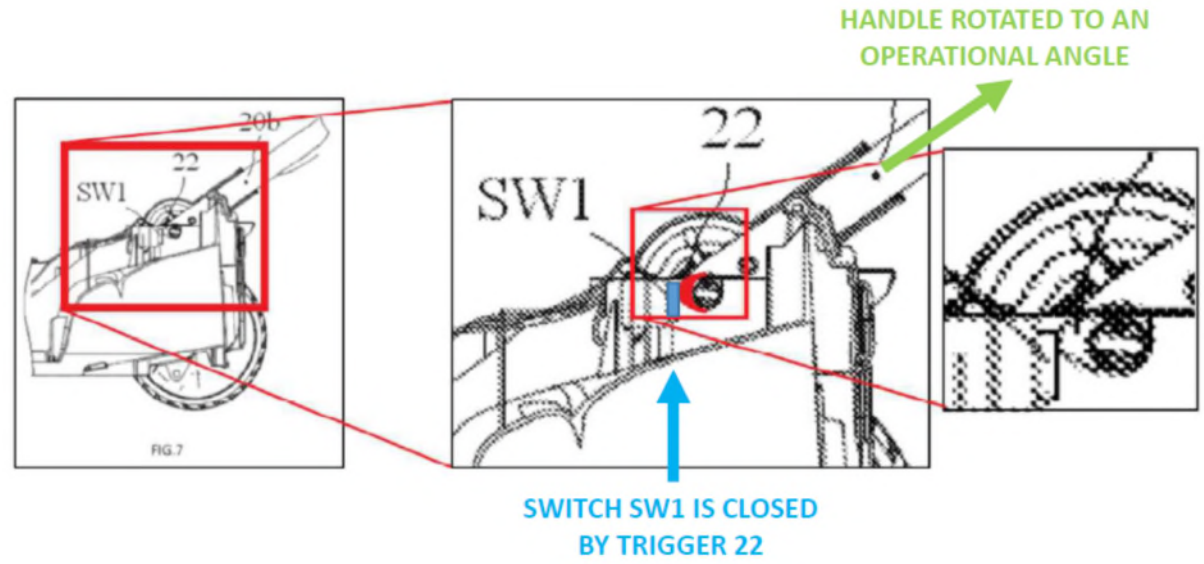
The safety control system can include a contact switch SW1 triggered when handle 20 is at an appropriate angular position relative to main body 10. A rotation shaft 21 for handle 20 includes a protruding, oblong "trigger member 22" (often

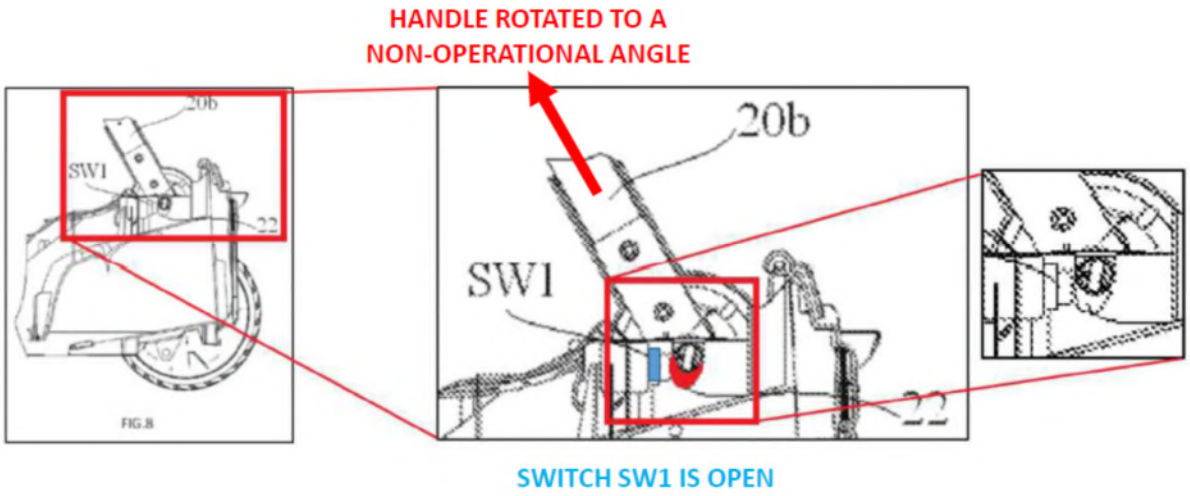
called a "cam") that engages contact switch SW1 on main body 10 when rotated to its operational angle. *See* annotated Figures 2, 3 below. "[T]rigger member 22 triggers the contact of the contact switch SW1 when it rotates to a designated angle (generally, when the handle 20 rotates to a designated secure position)." *Id*., 6:66-7:2. Contact switch SW1, like contact switch SW on handle 20, is connected in series on the same electrical line as the mower's power supply circuit so that, when contact switch SW1 is electrically open or off, the user-operated trigger 'B' and its switch SW cannot activate the motor, thereby achieving safety protection. *Id*., 7:52-60.



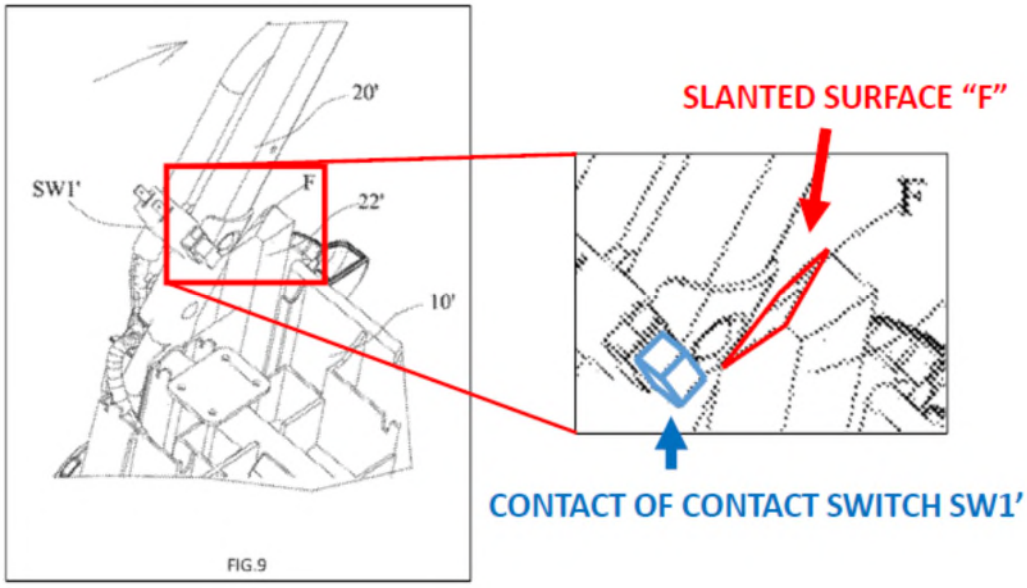


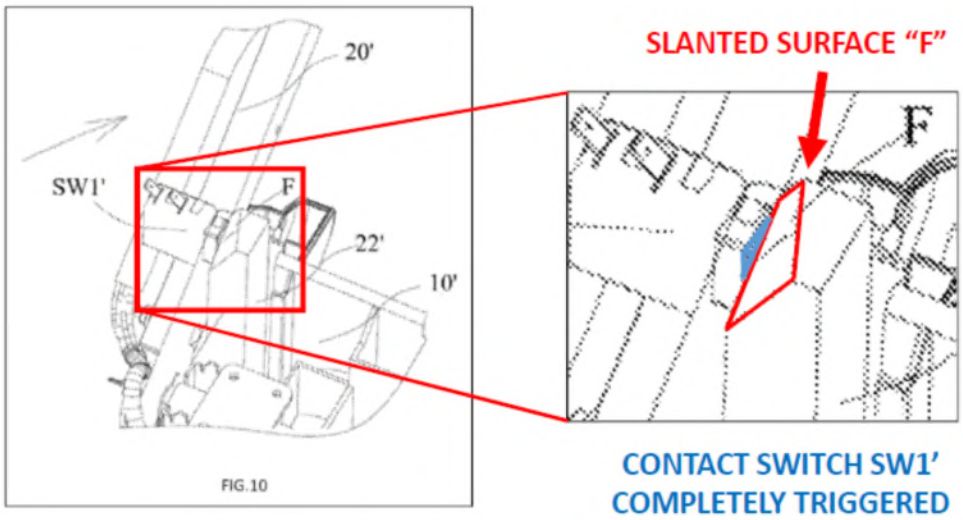
The handle's operational (Figure 7) and non-operational (Figure 8) angles are annotated below.





Another rotation-detecting embodiment is in Figures 9-10. A contact switch SW1' is mounted to handle 20' and is turned 'on' when it encounters a slanted surface F on main body 10'. As handle 20' rotates to its operational angle, "slant surface F gradually presses the contact of the contact switch SW1' along with the rotation [sic], and when the handle 20' rotates to a designated angle, the slant surface F completely triggers the contact switch SW1'." *Id.*, 7:14-18. Annotated Figures 9-10 are below:





The first few columns of the Challenged Patent describe how a manually operated "telescopic pin 241" is inserted into one of several angle-limiting holes 235a, 235b, 235c in a "level change locking plate 231" to adjust handle 20's angular position. *See* TTI1001, 3:3-5:24. Two operational positions are where pin 241 engages hole 235a or 235b (*see* Figures 3-4), and pin 241 engages hole 235c to lay the handle over the mower body. Contact switch SW1 cannot discern between

the operational positions 235a and 235b, so when the claims refer to a "designated position" or similar term, they necessarily encompass a range of locations.

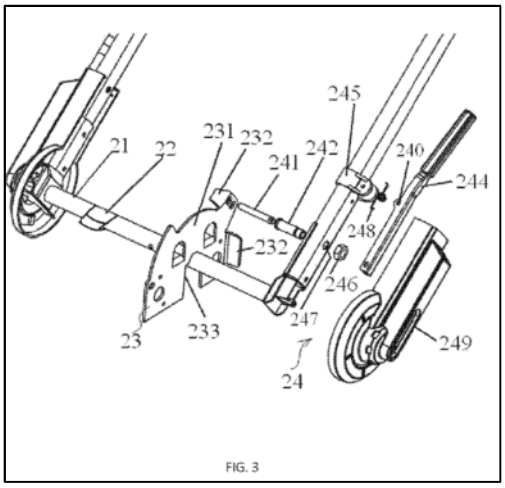


FIG. 3

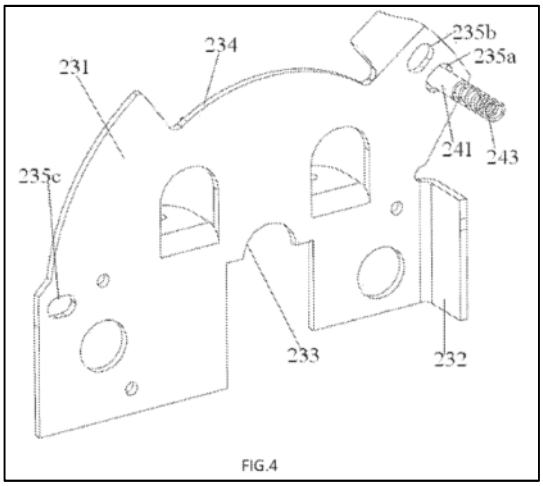


FIG.4

C. Telescopic Handle

Handle 20 includes two telescoping members 20a, 20b that allow inner tube 20a to be slid into or "drawn out of the telescopic tube 20b (*i.e.*, when the handle 20 is in an extended state)…." TTI1001, 7:48-49. In the extended state of Figure 6, a protruding "trigger member 20a' triggers the contact P of the contact switch SW2 via contact." *Id.*, 7:49-51. Contact switch SW2, like switches SW and SW1, is connected in series on the same electrical line of the mower's power supply circuit (*id.*, 7:52-54) such that, in the handle's extended state, switch SW2 is closed and allows electric power to flow from an electric power source to the motor when the user activates trigger 'B'. Conversely, when handle members 20a, 20b move to the more collapsed state of Figure 5, "contact switch SW2 switches off" such that the user-operated trigger 'B' is ineffective "to allow the electric power source to

provide electrical energy to the motor, thereby achieving safety protection." *Id*., 7:52-60. *See* annotated Figures 5 and 6 below.

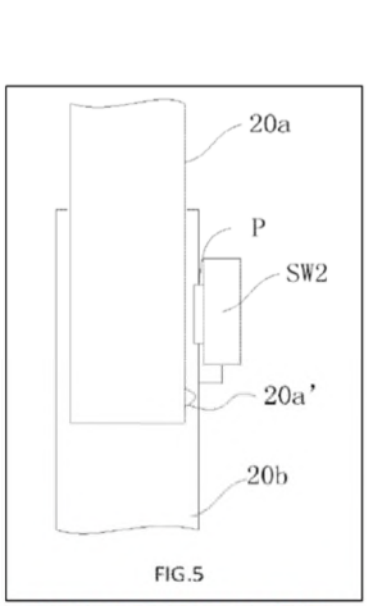


FIG.5

NON-OPERATIONAL STATE
TUBES 20a, 20b COLLAPSED
SWITCH "SW2" = OPEN
MOTOR ACTIVATION DISALLOWED

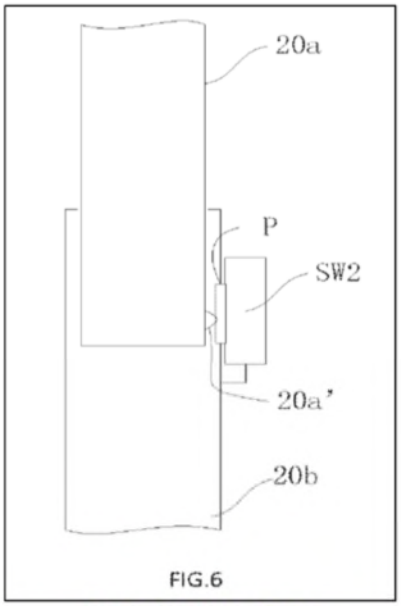


FIG.6

OPERATIONAL STATE
TUBES 20a, 20b EXTENDED
SWITCH "SW2" = CLOSED
MOTOR ACTIVATION ALLOWED

D. Prosecution History of the '26686 Patent

The application for the '26686 patent was filed as a continuation of U.S. application serial no. 14/511,490 which issued as U.S. Patent 9,596,806. It was filed with twenty (20) claims that issued as-is and are now the Challenged Claims.

The USPTO's first Office Action was a Notice of Allowability that included no Reasons for Allowance or other substantive comment. TTI1002, 26-30. The '26686 patent issued June 5, 2018.

E. Prosecution History of the ’806 Patent

The ’806 patent was filed as application SN 14/511,490 on October 10, 2014, with twenty (20) claims. In the first Office Action, the USPTO rejected claims 3-9 and 13-20 under §112(b); claims 1-5 and 11-14 under §102(a) over U.S. 5,203,147 (“Long”); and claim 10 under §103 over Long and U.S. 3,659,170 (“Burkett”). TTI1019, 388-394.

In response, the applicant made substantial amendments to independent claims 1 and 11, revised the language of other claims to address the §112(b) rejection, and canceled seven (7) claims. *Id*., 370-381. The USPTO thereafter issued a Notice of Allowability. *Id*., 352-354.

On or about August 29, 2016, the applicant filed a Request for Continued Examination (“RCE”) together with an Information Disclosure Statement. *Id*., 308-340. The examiner immediately prepared a second Notice of Allowability on or about August 31, 2016. *Id*., 296-302.

On or about October 12, 2016, the applicant filed a second RCE to consider additional Information Disclosure Statements submitted after the second Notice of Allowability. *Id*., 29-30; 38-41; 157-162. The USPTO issued a third and final Notice of Allowability on or about November 3, 2016. *Id*., 11. The ’806 patent issued March 21, 2017.

F. Priority Date of the Challenged Claims

The ’26686 patent claims priority to two Chinese applications filed October 10, 2013, and April 23, 2014, respectively. TTI1001, 1. Petitioner does not believe it is important to this Petition to determine the actual priority date to which each Challenged Claim is entitled because the prior art relied upon herein qualifies as prior art as explained, *infra*.

G. Level of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSITA”) as of October 10, 2013, which is the earliest alleged priority date of the Challenged Patent, would have had at least a bachelor’s degree in mechanical engineering, electrical engineering, or similar technical field, with at least three years of relevant product design experience. An increase in experience could compensate for less education. TTI1003 (Reed Decl.), ¶44.

V. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.104(b)(3)

For the purposes of this IPR, Petitioner submits that the terms of the Challenged Patent should be given their plain and ordinary meaning as understood by a person of ordinary skill in the art at the time of the alleged invention (“POSITA”) in light of the patent’s specification. This is because the elements of the prior art read squarely on the Challenged Claims’ limitations. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need

only be construed to the extent necessary to resolve the controversy."). Petitioner expressly reserves the right to take different claim construction positions in other forums or situations where claim construction standards are different, or to the extent claim construction controversies exist at that time. Moreover, Petitioner believes certain claims of the challenged patent are deficient under 35 U.S.C. § 112.[1]

A. "Power Supply Circuit" (Claims 1, 2, 5, 9-12, 15, 19-20)

The claims recite phrases such as, on the one hand, "a switch connected **in** the power supply circuit to connect the electric power source to the motor" (claim 12, 10:23-24) or, on the other, a "switch connected **to** the power supply circuit to connect the electric power source to the motor" (claim 2, 8:56-58; *see also* claim 11, 10:16) or a "signal source for sending a control signal **to** the power supply circuit to disconnect the electric power source to the motor" (claim 5, 9:2-5; *see also* claim 9, 9:31-32; claim 10, 9:40-41; claim 15, 10:36-38; claim 19, 10:62-63; claim 20, 11:5) making it important to distinguish between, on the one hand, the actual "power supply circuit" and components that are recited as being connected "in" it, versus control-type component(s) that are connected "to" or send signal(s) "to" the power supply circuit. POSITA would accordingly understand "power supply circuit" to mean the electrical path between an electric power source and

[1] The '772, '176 and '420 PGRs have §112 challenges that may affect this patent.

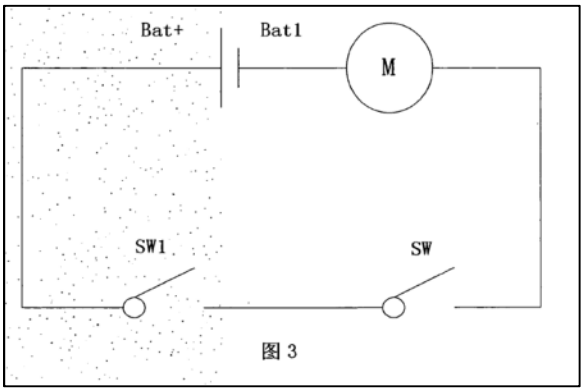
the claimed "motor" taken by (high-power) current that drives the motor. TTI1003, ¶45.

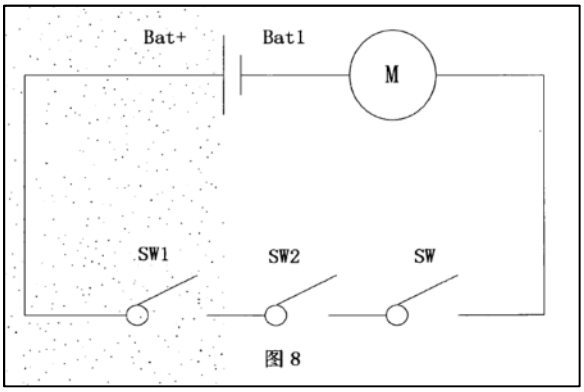
First, this construction is based on the claim term ("***power supply*** circuit"). Second, it reconciles the claims' distinction of a switch "in" the power control circuit (claim 12) from a switch "connected to" or a signal source sending a control signal "to" the power control circuit (claims 1, 2, 5, 9-11, 15, 19-20). Third, it is consistent with the specification's distinction of a switch "in" the power supply circuit from a signal source sending a control signal "to" the power supply circuit. TTI1001, 5:66-67; 6:18-21 ("This first signal source device may be a photoelectric switch which participates in control by sending a control signal to the switch in the power supply circuit."); 6:49-53 ("The second control device comprises a second switch or a second signal source device, or a combination thereof. The second switch is connected in the power supply circuit, and the second signal source device can send a control signal to the power supply circuit."); 7:30-34 ("The third control device comprises a third switch or a third signal source device, wherein the third switch is connected in the power supply circuit, and the third signal source device can send a control signal to the power supply circuit."); 6:7-11 ("[O]ne first switch is a contact switch that can be triggered by the trigger B and connected in series in a power supply circuit of the motor, and the motor is not powered when it is switched off, and it switches on the circuit when it is triggered by the trigger

B"); 6:12-15 ("The other first switch is a position switch which is also connected in series in the power supply circuit of the motor, and it switches on the circuit when it detects that the trigger B moves to a corresponding position."); 6:18-21 ("This first signal source device may be a photoelectric switch which participates in control by sending a control signal to the switch in the power supply circuit."); 6:29-33 ("Referring to FIG. 1, as the simplest solution, the first control device only comprises one first switch which is connected in series in the power supply circuit. The first switch is a contact switch SW that can be controlled by the trigger B."); 6:50-53 ("The second switch is connected in the power supply circuit, and the second signal source device can send a control signal to the power supply circuit."); 7:31-34 ("…the third switch is connected in the power supply circuit, and the third signal source device can send a control signal to the power supply circuit."); 7:52-54 ("Preferably, the contact switch SW, the contact switch SW1 and the contact switch SW2 all are connected in series on the same line of the power supply circuit."). Third, it is consistent with the specification's statements that the "signal source" sending a signal "to" the power supply circuit can be a "switch."[2] *Id.*, 6:27-28 ("the first signal source device is one of a contact switch, a proximity switch, a Hall switch and a photoelectric switch"); :6:56-57 (same for "second" signal source); 7:37-38 (same for "third" signal source). Fourth, it is

[22] *See* PGR §112 challenges.

consistent with circuits in priority application CN2013-10468919 showing two or three switches connected "in" the power supply circuit (the CN application is incorporated by reference by the Challenged Patent (TTI1001, 1:5-11)):





TTI1019 ('806 prosecution), 440, 443.

POSITA would construe "power supply circuit" as ***the path between an electrical power source and the motor taken by current that drives the motor***. TTI1003, ¶47.

B. "Locks" and "Unlocks" (Claims 1, 8, 11, 18)

The verbs "lock" and "unlock" are recited in the independent claims in the context of a control device (un)locking another device such that the latter is allowed or not allowed to start the motor. The Challenged Patent discloses no mechanical lock, so POSITA would interpret "locks" and "unlocks" as, respectively, "electrically disabling" and "electrically enabling" the other device to start the motor. TTI1003, ¶48.

VI. BACKGROUND TECHNOLOGY KNOWN BY PERSONS OF ORDINARY SKILL IN THE ART

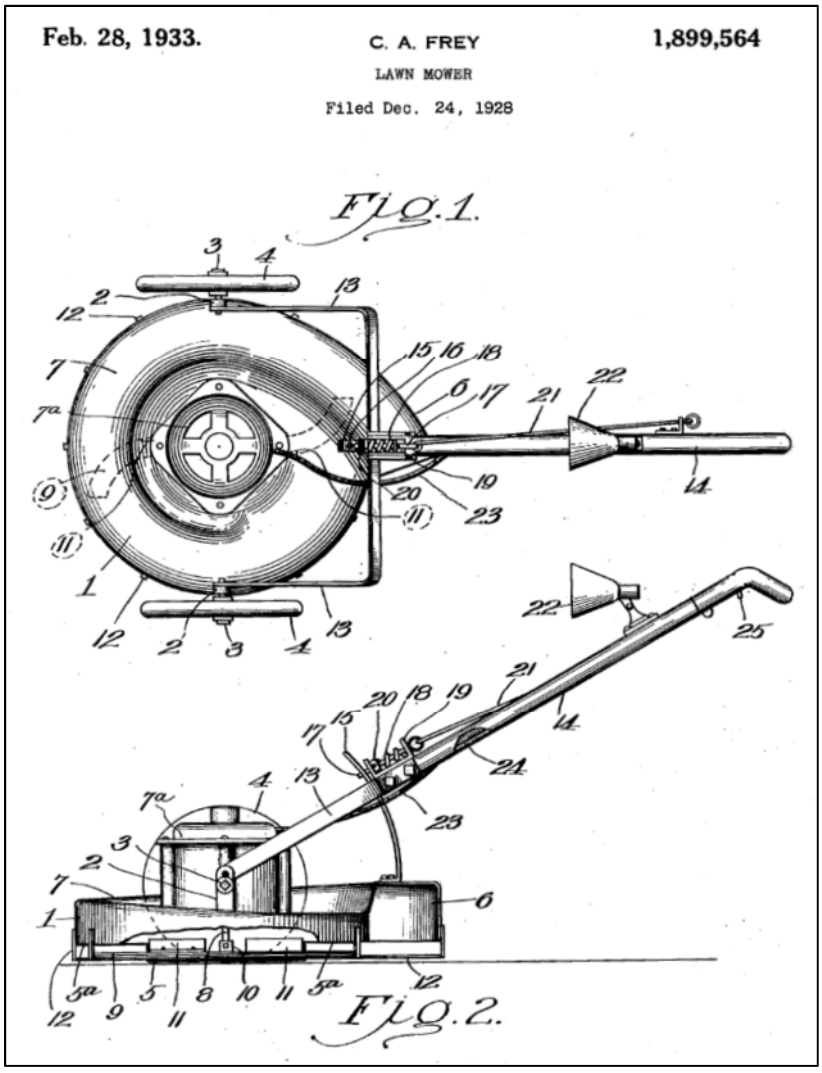
A POSITA would have known that the problems – and solutions – asserted in the Challenged Patent had existed long before its earliest priority date.

A. ELECTRIC MOWERS ALREADY HAD ROTATABLE AND TELESCOPIC HANDLES

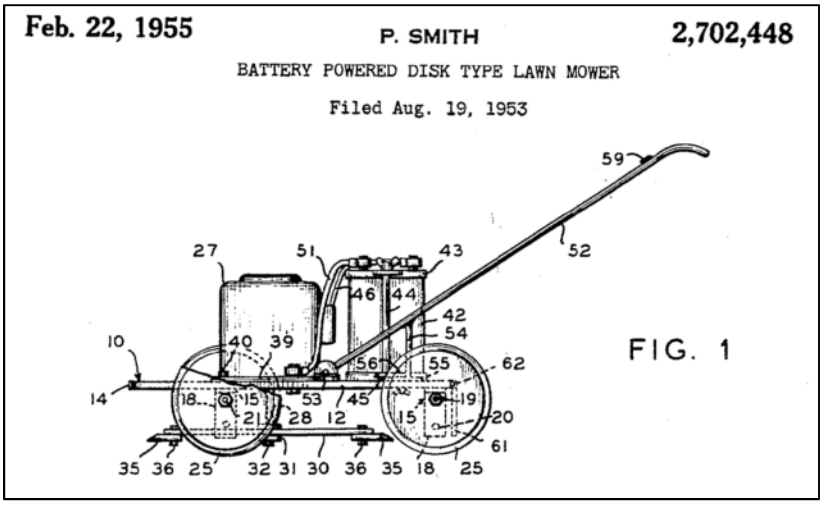
Electric lawnmowers were known since the 1920's, if not earlier, and battery-powered lawnmowers date at least to the 1950's. Examples include Frey (TTI1009 (U.S. Patent 1,899,564)) and Smith (TTI1010 (U.S. Patent 2,702,448)).

Frey's user locks the rotating handle 14 at a desired in-use position using a manually operated pin 17 insertable into one of several angle-limiting holes 16 in a locking plate ("quadrant 15"). As in the Challenged Patent, locking pin 17 is spring biased and controlled by a lever on the handle 14. TTI1009, 2:4-28, Figures 1-2. Frey's handle also included a user's operation assembly (manual component

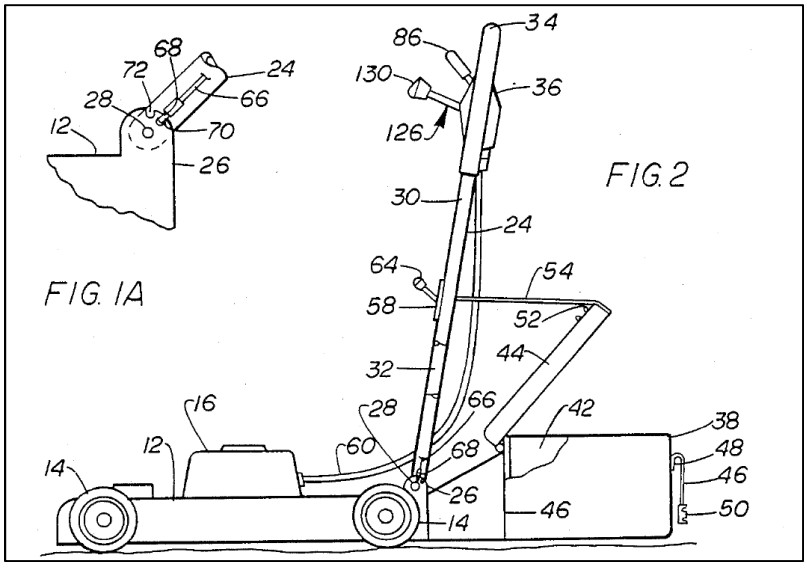
25) to connect/disconnect power to electric motor 7a and blade 9 in the main body of the mower. *Id.*, 2:23-28; 1:67-77.

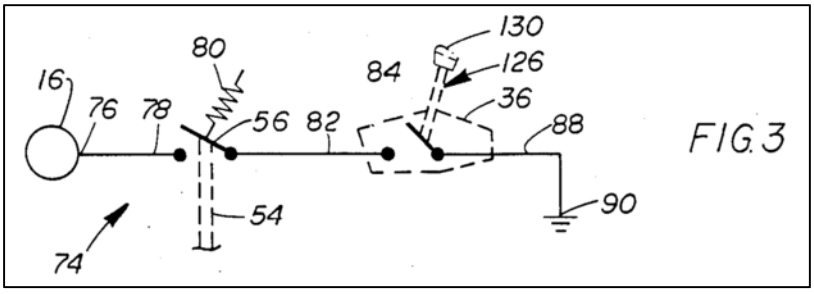


Smith's handle 52 is freely rotating (TTI1010, 1:73-81, Figure 1) and includes an operation assembly 59 that operates an electrical solenoid switch 48 "which closes the circuit of the battery to the motor." *Id.*, 2:15-34.



Another locking plate 26 and locking pin 68 is taught by Roelle (TTI1011, U.S. 4,753,062) to keep a lawnmower handle at either a use position 70 or a non-use position 72 where an operator could access a cut-grass collector 38. For safety, the non-use position 72 operated an electric switch 56 to kill the motor 16 and disable the user's operation assembly 130 and its circuit switch 84 from enabling the motor to become activated. *Id*., 4:6-22; Figures 1A, 2-3.





To rotate a handle even further over the mower's main body for storage, POSITA would have turned to Langdon (TTI1012, U.S. 5,209,051) whose "bracket 66 may have a vertical side 68 having latch means 70 permitting the [handle's] lower tubular portion 62 to be secured in place either in the push position or in a forward collapsed position as shown at 80 [in Figure 5]." *Id.*, 4:8-12; Figure 5 (annotated below). Langdon's handle also included two telescoping members 62, 82 to further reduce the mower's storage footprint. *Id.*, 4:1-20.

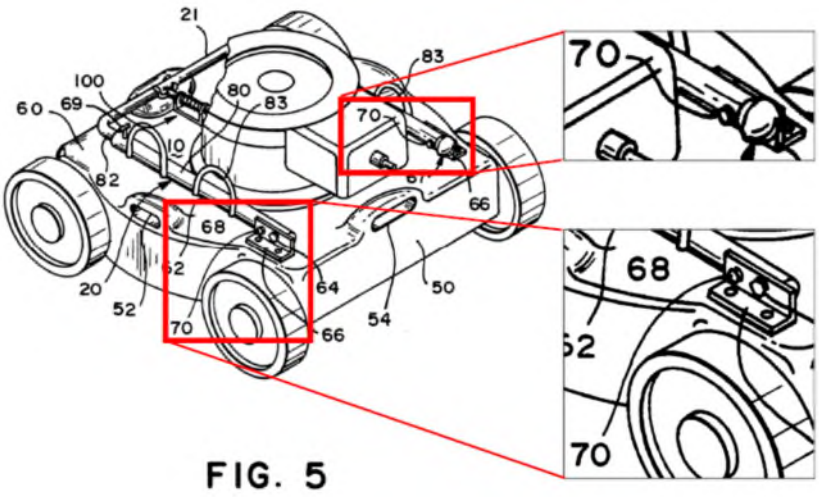


FIG. 5

Langdon's telescoping tubes 62, 82 were lengthwise adjusted by a "spring biased pin [69] to lock the handles in [an] operative push position." *Id.*, 4:6-8; Figure 5.

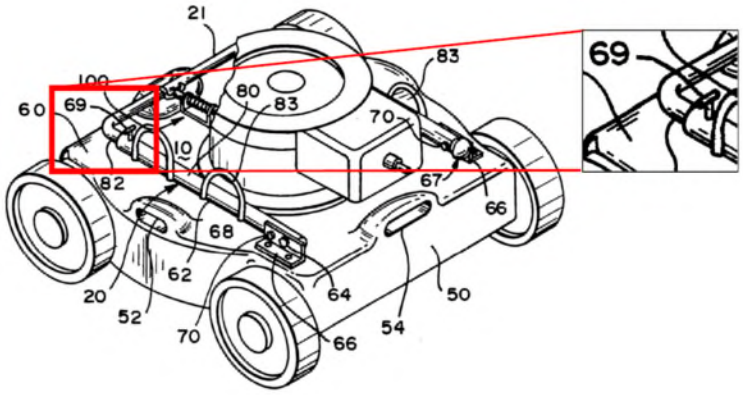
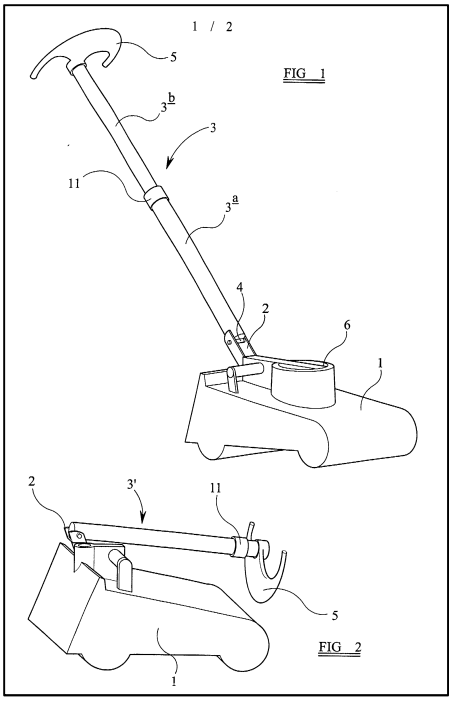
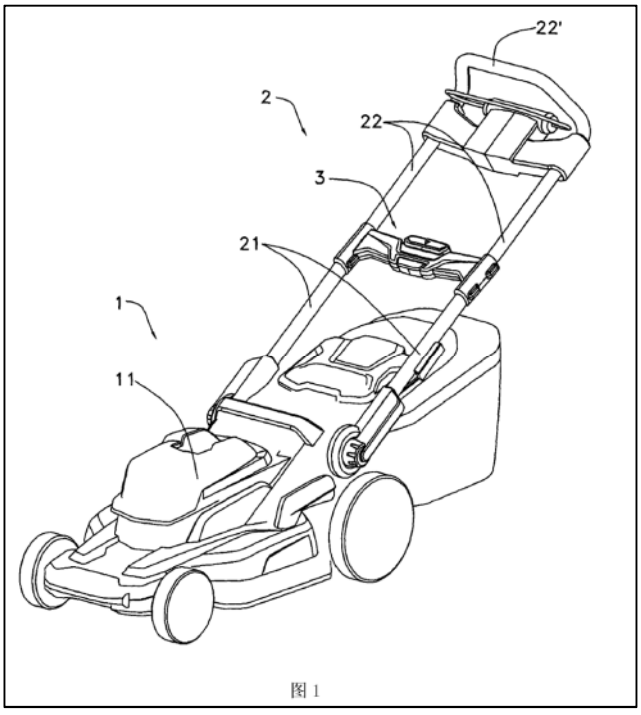


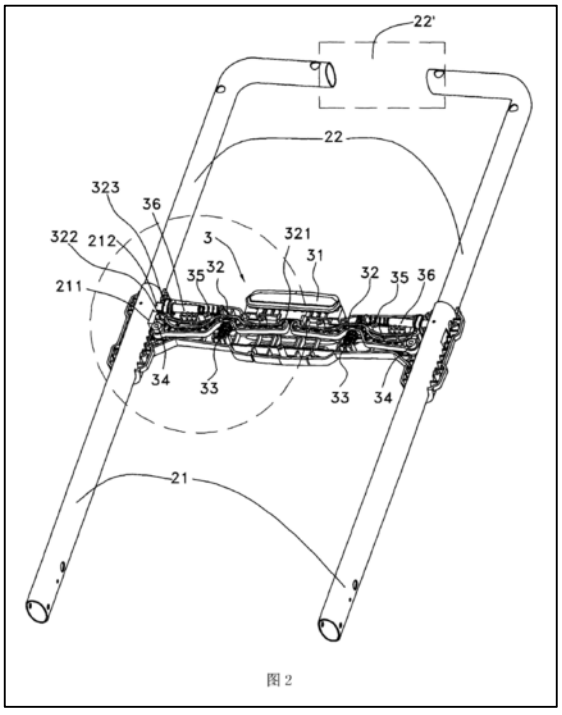
FIG. 5

Yet another mower taught by Reichart (TTI1007, GB 2,386,813) put many of these ideas together with a telescoping handle 5 that preferably locked at an in-use angle but could rotate to a vertical non-use position or all the way over the main body for storage. *Id.*, 4:8-20; Figures 1-2. As with previous examples, above, Reichart contemplates a cut-grass collector at the rear of the mower. *Id.*, 2:1-10.



By 2011, the Patent Owner itself had publicly disclosed a push-type lawn mower whose handle rotated and had retracting telescopic members 21, 22. TTI1020 (CN202019551U certified English translation), Figs. 1-4; [0023].





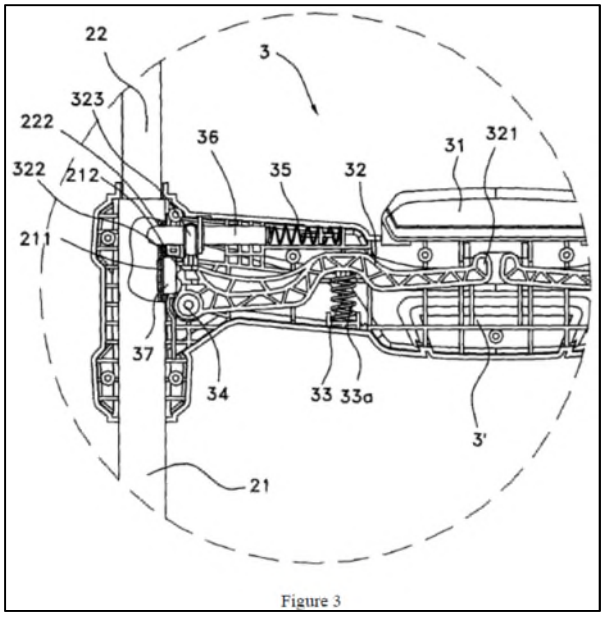


Figure 3

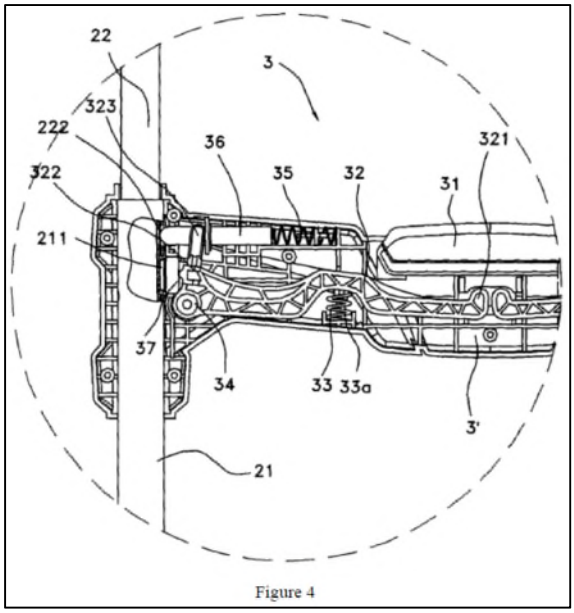
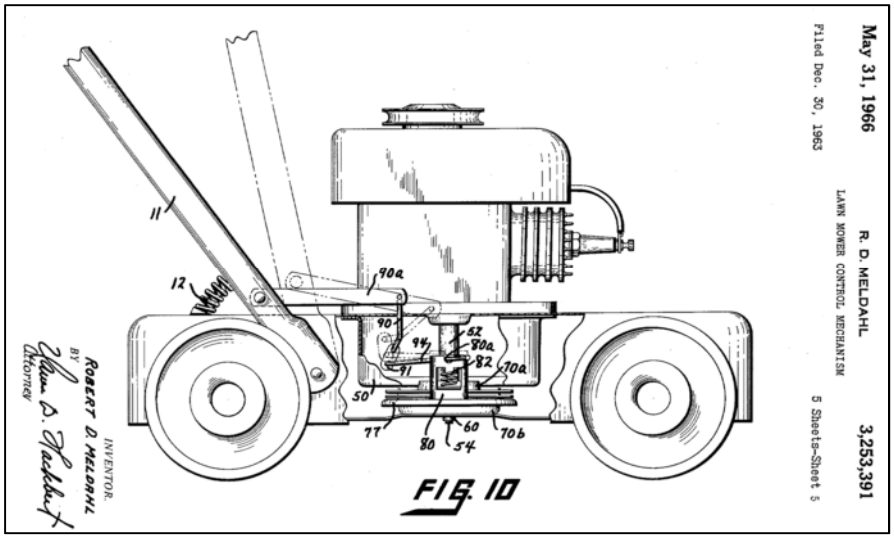


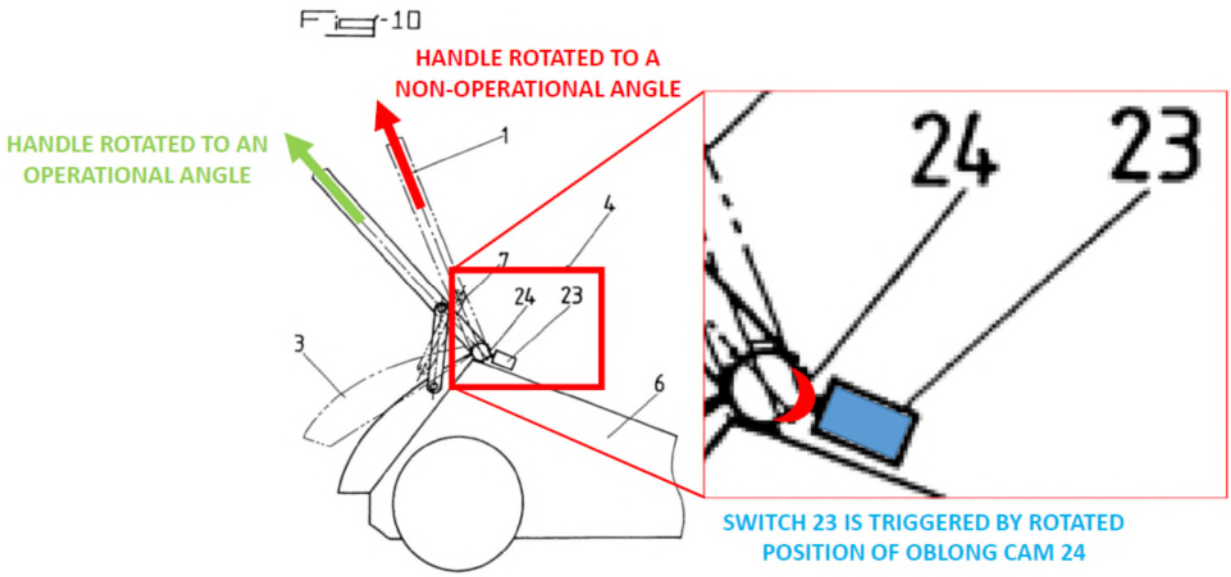
Figure 4

B. MOWERS HAD SAFETY DEVICES THAT HALTED AND DISABLED ACTIVATION OF THE MOTOR BASED ON HANDLE POSITION

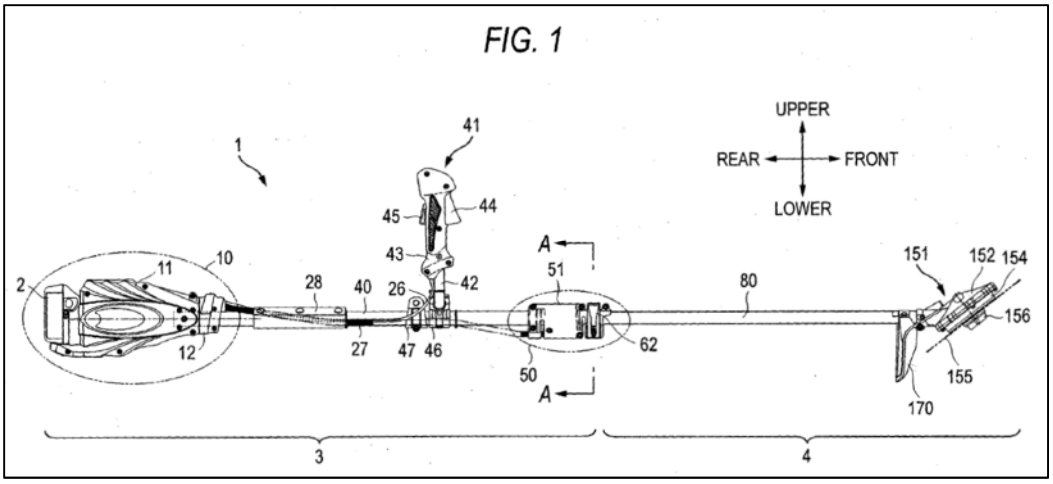
By 1963 it was "known, [that] the hazards relating to the use of rotary power lawn mowers are widespread. In most cases involving injury cause by a rotating mower blade, the operator is located other than in his normal operating position or, alternatively, is in the normal operating position, but is standing so close to the mower that the mower handle is raised." TTI1004 (U.S. 3,253,391 (Meldahl)), 1:14-20. Meldahl's solution stopped the blade by raising the handle to a vertical, non-use position so that "whenever the user is starting or stopping the mower engine, removing debris from the front of the mower, or, when operating, the user stands too close to the mower or the mower rolls backwardly, resulting in the upward movement of the mower handle, the mower blade stops rotating, preventing any injury." *Id.*, 1:31-36.

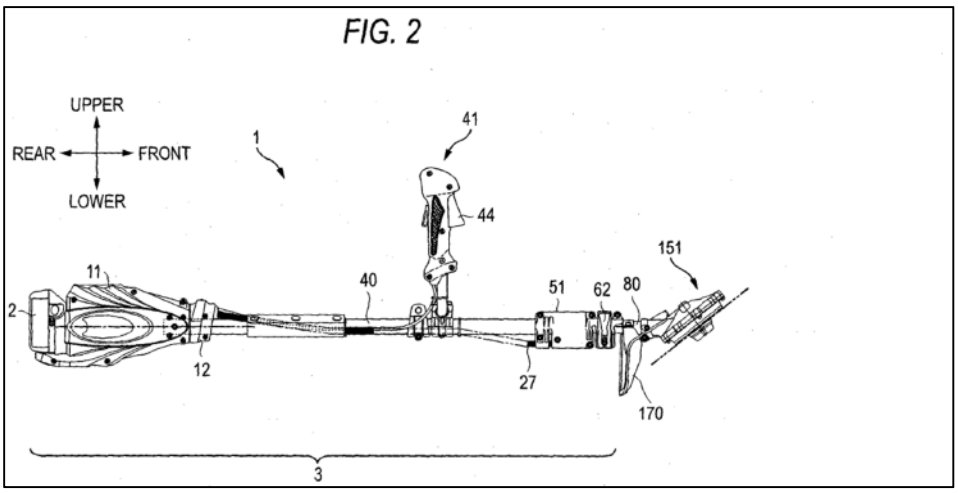


Roelle, *supra*, taught a more modern system than Meldahl, but Outils (TTI1013 (FR 2,768,300); certified translation, TTI1014) taught a rotating cam **identical** to the Challenged Patent's. In Figure 10, an actuator 23 interacted with a cam 24 provided on the handlebar 1. *Id*., 8:23-24. As soon as the handlebar 1 is tilted forward, action on the actuator 23 by cam 24 would stop the motor and/or brake the cutting blade. *Id*., 8:25-29. Outils' actuator 23 could be an electrical supply cut-off switch for an electric motor and allowed a restart only after being returned to its in-use position. *Id*., 7:25-29; 9:10-13; Figure 10 (annotated below). TTI1003, ¶60.



POSITA also knew that telescoping handles had safety devices to halt the electric motor and disable its activation. Nakano's (TTI1015, WO2013/122266A2) telescoping handle members 40, 80 used redundant safety mechanisms that halted the electric motor and disabled a restart until the safety device was reset. Like the Challenged Patent, Nakano used a switch in conjunction with an indentation in the inner telescoping pipe. If the pipes collapsed relative to one another, the switch would trip (or in alternative embodiments, a signal source would send control signal(s)) to halt the motor and disable any restart. *Id.*, Figures 1-2. Details are in the challenges, *infra*.





By 2012, POSITA knew that industry guidelines and governmental regulations imposed many restrictions intended to make lawnmowers more safe. Among them were U.S. federal regulations codified at 16 CFR 1205 (effective 1982; TTI1008 is the January 1, 2012 edition) which applied to electrically powered mowers and those powered by a gasoline engine (*id*., 1205.3(7), (9)); and ANSI B71.1 (TTI1030) which provided industry guidance. They "prescribe[d] safety requirements for certain walk-behind [consumer-grade] power lawn mowers … intended to reduce the risk of injury to consumers…." *Id*., 1205.1(a).

Accordingly, POSITA would have been motivated to design lawnmowers according to those regulations, and to make obvious modifications to turn non-complying mowers in the prior art into compliant designs. TTI1003, ¶62.

As one example, federal regulations required a walk-behind lawnmower's blade control system to halt the blade's motion "within 3 seconds after release of the control." *Id*., 1205.05(a)(iii). Accordingly, for any claim limitation in the Challenged Claim that requires the blade and/or motor to halt, POSITA would have known that such a limitation was already required by law, and would have been motivated to make obvious modifications to include that feature in any walk-behind mower.

VII. GROUND 1: CLAIMS 1-7, 11-17 ARE OBVIOUS UNDER AIA 35 U.S.C. § 103 OVER OUTILS (FR 2,768,300) IN VIEW OF ROELLE (U.S. 4,753,062) AND MATSUNAGA (U.S. 8,098,036).

Outils (TTI1013; certified English translation TTI1014) published March 19, 1999, Roelle (TTI1011) published June 28, 1988, and Matsunaga (TTI1006) published January 12, 2012, each before the earliest foreign priority date of October 10, 2013, claimed by the '26686 patent. Each qualifies as prior art under AIA 35 U.S.C. 102(a)(1) as a "printed publication … before the effective filing date of the claimed invention" and Roelle and Matsunaga also qualify under

102(a)(2). Neither Roelle nor Matsunaga were cited in the '26686 patent or prosecution history.

Patent Owner submitted only a machine translation of Outils' French-language EP0903074A1 and withheld Outils' drawings. TTI1001, 2; TTI1002, 267-292.

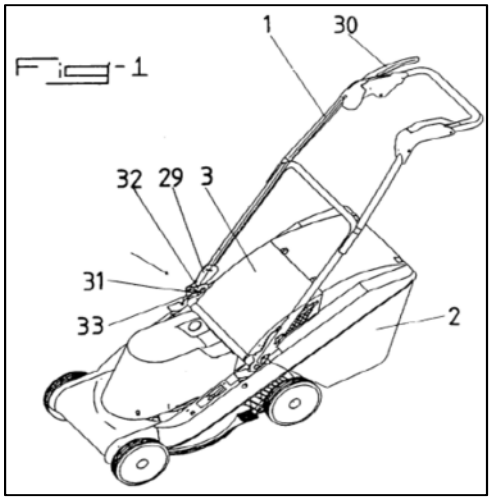
Claims 1-10 are identical to 11-20 except for their preambles and claims [2b]/[12b]. Accordingly, they are treated together below.

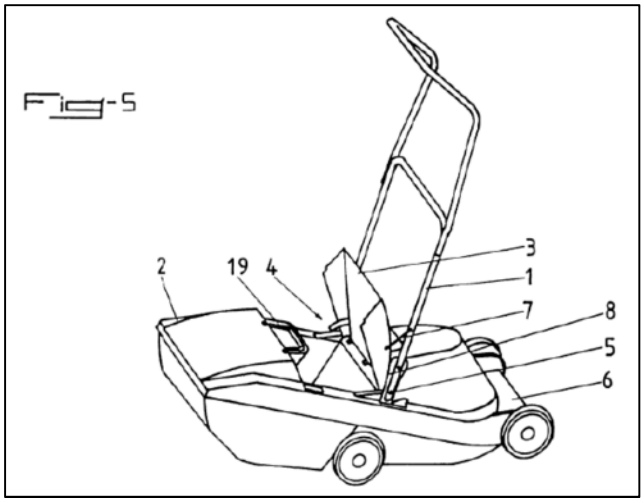
[1P][3] 1. A gardening tool, comprising:

[11P] 11. A mower, comprising:

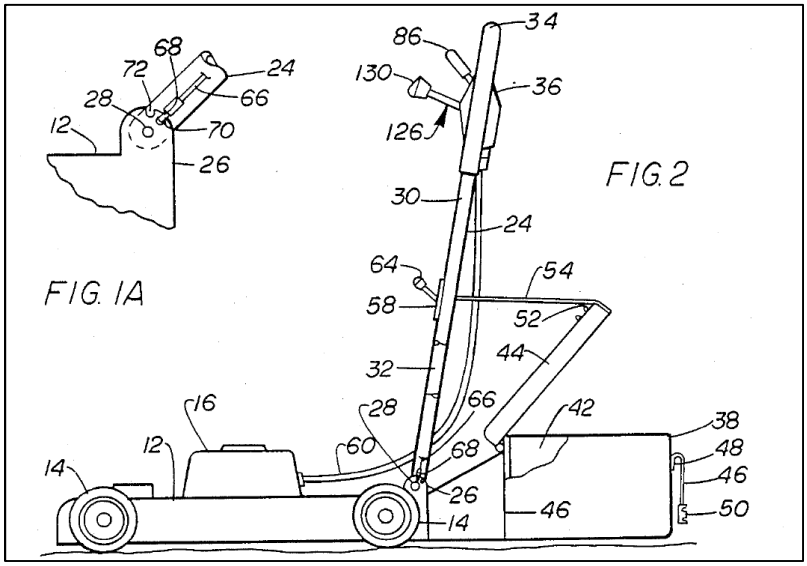
If the preamble is deemed a limiting element of the claim, then Outils discloses a gardening tool, namely a mower. The "Title of Invention" is "Lawnmower Comprising Safety Device for Preventing Access to the Rotating Cutting Blade" and its Description is directed to an "electric push mower type, but it could also be of the self-propelled type comprising an electric mower or thermal mower." TTI1014, 3:28-30. POSITA would have understood all of its embodiments – including that of Figure 10 – likewise to encompass electric walk-behind lawnmowers. TTI1003, ¶67.

[3] Petitioner adds these reference letters to help track the claim language.





Roelle is likewise directed to a lawnmower.



[1a] a main body having at least a functional accessory and a motor for driving the functional accessory;

[11a] a main body having at least a functional accessory and a motor for driving the functional accessory;

Outils' mower has a main body ("casing 6") which is only diagrammatically shown. TTI1014, 5:27. Casing 6 has a functional accessory, *e.g.*, a "cutting device" (*id*., 3:27) which is a rotating cutting/mowing blade (*id*., 3:33, 4:3). Its motor can be electric (*id*., 3:29) and would have been understood by POSITA as driving the cutting/mowing blade. POSITA would have understood all embodiments to include the casing 6, the cutting/mowing blade and a motor for driving the blade. TTI1003, ¶69.

[1b] a handle, rotatably connected to the main body, having at least one operation assembly for being operated by a user to control the motor when the handle is in a secure position;

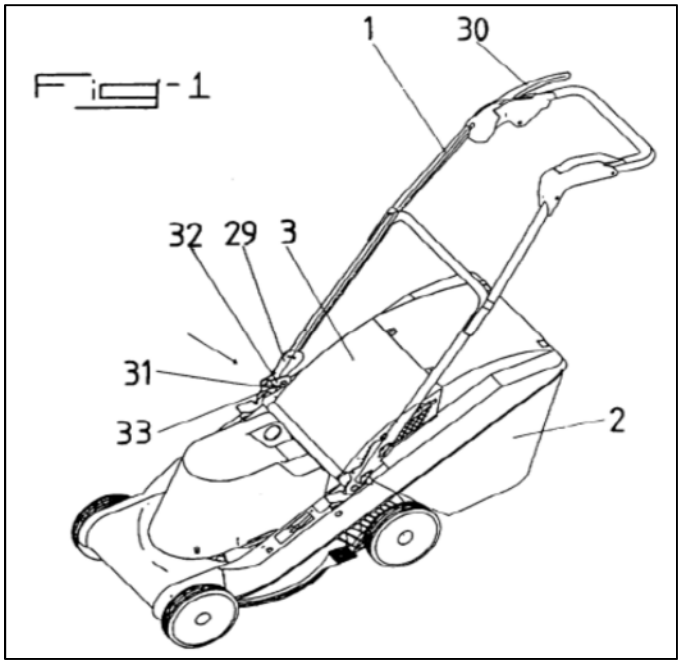
[11b] a handle, rotatably connected to the main body, having at least one operation assembly for being operated by a user to control the motor when the handle is in a secure position;

Outils' mower handle 1 is rotatably connected to the main body (casing 6). *Compare* Figures 1 and 5; Figures 6 and 7; *see* handle positions in Figures 4, 10, 11. TTI1003, ¶70.

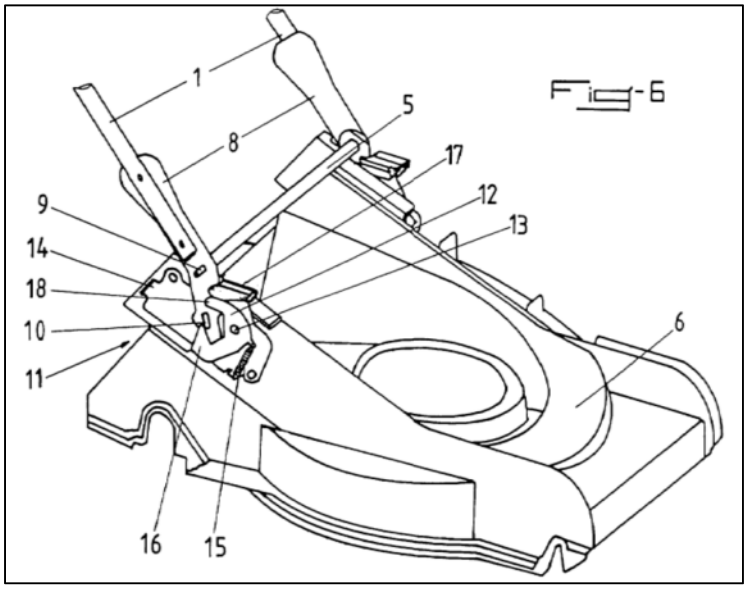
We learn in claims [1f] and [11f], *infra*, that the claimed operation assembly is simply a user-operated component, and that an electric circuit's "control device"

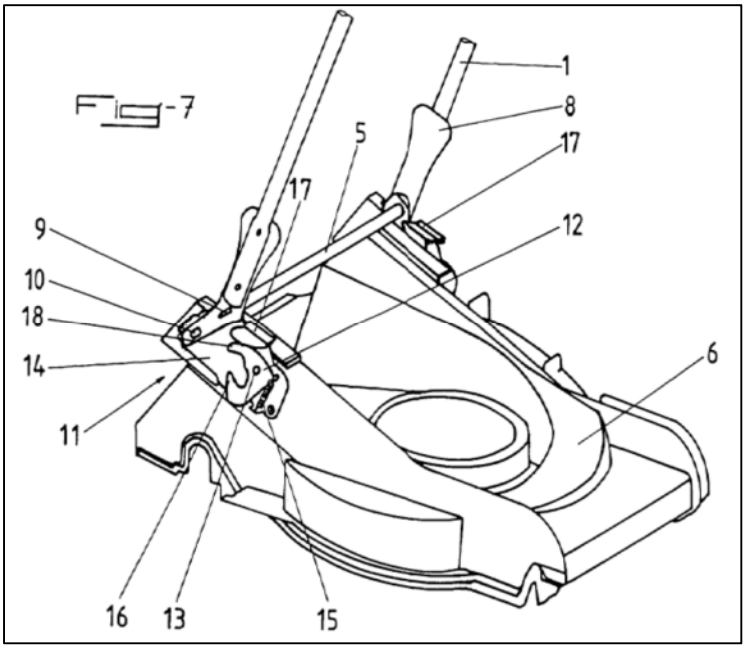
like a switch (*see* claims [9], [19]) associated with it is claimed separately. TTI1003, ¶71.

Outils' handle 1 has an operation assembly 30 which may be "a handle, lever a bow or the like, provided on the handlebar 1[.]" TTI1014, 4:8. POSITA would have understood that it is operated by a user to control the motor when the handle is in a predetermined secure (in-use) position. For example, operation assembly 30 uses "a remote control cable 29 [Figure 1], which acts on a motor brake, a brake coupling or an electrical supply contactor[.]" *Id*., 4:6-7. "Thus, when the control is not actuated, for example when the user is getting ready to empty the cut-grass receiving receptacle 2, the cable 29 is released and the driving of the blade is interrupted, either by cutting the power to the motor or by interrupting the drive of the spindle of the blade by acting on a brake and/or a coupling." *Id*., 4:14-17. TTI1003, ¶72.



The in-use position of Outils' handle 1 is secure because of a locking mechanism (lock 12) that engages a locking member (detent 10) on handle 1 against a hook-like extension piece 16 (Figure 6). Detent 10 may be unhooked (Figure 7) to rotate handle 1 forward and allow the user to empty the cut-grass receptacle. *See* TTI1014, 6:20-7:13. TTI1003, ¶73.





To the extent it is determined that the claimed operation assembly is neither taught nor inherent in Outils, POSITA would have found it obvious to include one to enable the user to selectively control (activate and deactivate) the motor, and thus the blade, when the handle is in a secure in-use position to avoid the danger of a rotating blade when it is not desired and to save power when not needed. TTI1003, ¶74.

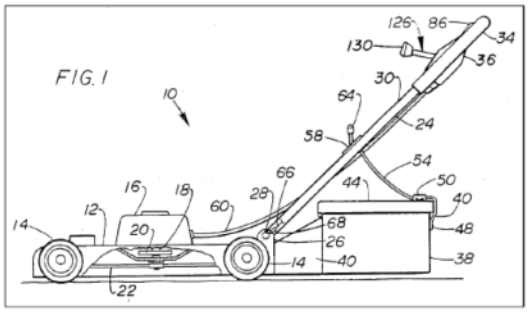
[1c] a locking mechanism for locking the rotating position of the handle;

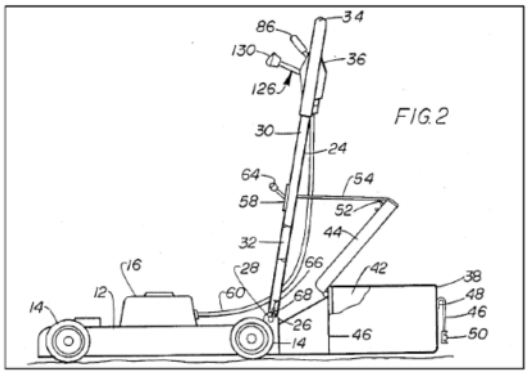
[11c] a locking mechanism for locking the rotating position of the handle;

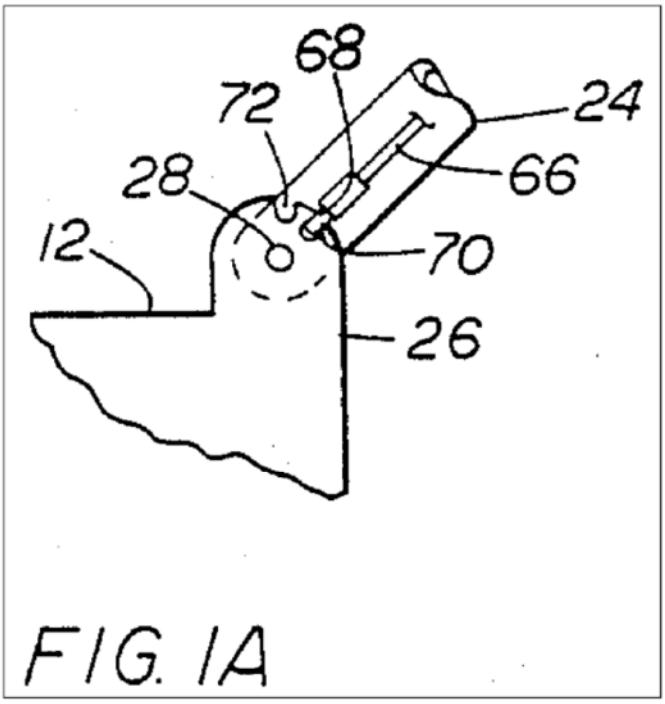
Outils expects rotatable handle 1 to be secure at its use position using the locking structure of Figures 6 and 7. A locking mechanism (pivoting lock 12 with

its extension piece 16) locks the rotating position of the handle. The subsequent claim limitation, *infra* ("locking member"), however, requires the handle to be kept at an *accommodating* position when the user is *not* in use. POSITA would have recognized that Outils' lock 12 could inadvertently *and dangerously* allow handle 1 to rotate from its accommodating position of Figure 7, *i.e.*, a position when the mower is not in use and/or the user is emptying the cut-grass receptacle, to its in-use position of Figure 6 (or at least closer to that position). POSITA would thus have been motivated by safety to lock handle 1 in its non-use, accommodating position of Figure 7. TTI1003, ¶75.

Roelle teaches a walk-behind mower similar to Outils' with a rotating handle 24 that permits a user to empty a rear-located cut-grass receptacle. TTI1011, Figures 1, 1A, 2. Like Outils, Roelle secures rotating handle 24 in its in-use position (Figures 1, 1A) but the locking structure including a locking mechanism (spring biased pin 68) also keeps the handle in an accommodating, vertical position when the mower is not in use (Figure 2). *Id.*, 3:67-4:5.







POSITA would have found it obvious to provide Outils with the locking mechanism of Roelle to keep the handle in its accommodating position when not in use. TTI1003, ¶77.

For claims 1 and 11 of the ’26686 patent, the claimed “locking mechanism” is met by Roelle’s latching pin 68 designed to fit the recesses 70, 72 of plate or lug 26. TTI1003, ¶78.

[1d] a locking member configured to engage with the locking mechanism and providing at least a locking structure to cause the locking mechanism to keep the handle at an accommodating position relative to the main body when the gardening tool is not being used; and

[11d] a locking member configured to engage with the locking mechanism and providing at least a locking structure to cause the locking mechanism to keep the handle at an accommodating position relative to the main body when the mower is not being used; and

As described for limitations [1c] and [11c], POSITA would have found it obvious to provide Roelle's locking structure in Outils' mower so that handle 1 can be locked at the non-use, accommodating position of Figure 2 (and the unclaimed use position of Figure 1). Limitations [1d] and [11d] only recite the position "when the mower is not being used," which is the position shown by the locking structure in Roelle's Figure 2. That locking structure includes the claimed locking mechanism, *i.e.*, pin 68, and its corresponding vertical plate or lug 26 which meets the presently claimed "locking member configured to engage with the locking mechanism and providing a locking structure to cause the locking mechanism to keep the handle at an accommodating position relative to the main body when the gardening tool [mower] is not being used." TTI1003, ¶79.

To the extent the "locking mechanism" and/or "locking member" are construed narrowly to require, for instance, the locking mechanism to be a plate with through-hole(s) like holes 235a, b or c in the Challenged Patent, and/or the locking member to be a pin like pin 241, POSITA would have recognized Outils'

descriptions on pages 9 and 10 to be relevant. There, Outils describes non-illustrated variations saying "it is conceivable to make the lock enter a through-hole in an end piece of the handlebar, thus preventing said handlebar from pivoting at all, or in a through-hole in the handlebar-lock activation tab [*see* tab 17, Figure 7], thus preventing the handlebar being unlocked by immobilizing said tab." TTI1014, 10:4-7. POSITA would have been motivated by these additional suggestions from Outils to use a pin-and-through-hole configuration to implement the locking structure and the locked use and non-use positions taught by Roelle. TTI1003, ¶80.

To the extent the claimed "locking mechanism" is deemed to correspond to the disclosed locking plate 231 and the claimed "locking member" is deemed to correspond to a pin, then POSITA would have understood that the relevant prior art components identified herein can be assigned to the other claim limitation by flipping the above analyses for those claim limitations. TTI1003, ¶81.

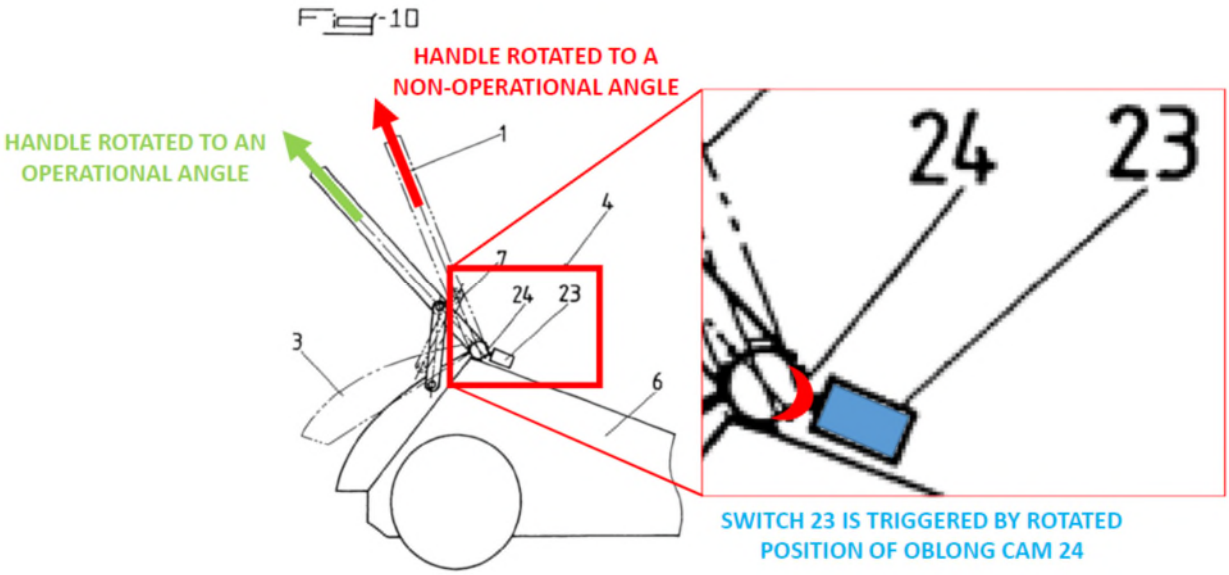
[1e] a control system capable of preventing the motor from being controlled by the operation assembly and halting the motor when the handle is out of the secure position, the control system comprising:

[11e] a control system capable of preventing the motor from being controlled by the operation assembly and halting the motor when the handle is out of the secure position, the control system comprising:

Outils discloses several types of control system capable of preventing the motor from being controlled by the operation assembly, and halting Outils' motor when the handle 1 is out of the predetermined secure in-use position.

One example is shown in Figure 10 with "an electrical, electromechanical or mechanical activation actuator 23 that interacts with a cam 24 provided on the handlebar 1…" TTI1014, 8:23-24. "In this embodiment, the actuator 23 is acted upon as soon as the handlebar 1 is tilted forward, either with or without the [cut-grass collector's] cover 3 being pivoted upward. Thus, any forward tilting of the handlebar 1 results in action on the actuator 23 by means of cam 24, and thus in the activation of the stoppage of the motor and/or the decoupling and braking of the cutting blade." *Id*., 8:25-29. Moreover, Outils' "activation actuators 23 [Figure 10] and 25 [Figure 11] are advantageously similar to the activation actuator 20 [Figure 9]…." *Id*., 9:10. "The activation actuator 20 can be an electrical supply cut-off switch for an electric motor or for the ignition circuit of a thermal engine." *Id*., 7:25-26. Those activation actuators 20, 23, 25 are also "preferably of the all-or-nothing type, that is to say that they allow the controlled element to be restarted

only after they have been interlocked again as a result of their control component returning to the in-use position." *Id.*, 9:10-13. POSITA would have interpreted this description as indicating that the "stoppage of the motor" and "braking [halting] of the cutting blade" (*id.*, 8:28) continue until the handle 1 returns to its in-use position with cam 24 properly tripping activation actuator 23. In other words, Outils' user-operated operation assembly 30 which would otherwise activate the motor does not work until that happens, and likewise the halted motor would remain halted until the mower components were reset. TTI1003, ¶83.



Additional motivation to POSITA for the above obvious modifications would have come from federal regulations that required a walk-behind lawnmower's blade control system to halt the blade's motion "within 3 seconds after release of the control." TTI1008, 1205.05(a)(iii). TTI1003, ¶84.

[1f] ***a first control device configured to be controlled by the operation assembly; and***

[11f] ***a first control device configured to be controlled by the operation assembly, and***

Outils describes its operation assembly (hold-to-run component 30) on handle 1 as controlling "an electrical supply contactor." *See id*., 4:5-12. Outils' "electrical supply contactor" is the claimed "first control device." TTI1003, ¶85.

[1g] ***a second control device configured to be controlled according to the rotating position of the handle wherein, when the handle rotates to a designated position relative to the main body, the second control device unlocks the first control device so that the first control device allows starting of the motor, and, when the handle rotates to the accommodating position relative to the main body, the second control device locks the first device so that the first control device is not allowed to start the motor; and***

[11g] ***a second control device configured to be controlled according to the rotating position of the handle wherein, when the handle rotates to a designated position relative to the main body, the second control device unlocks the first control device so that the first control device allows starting of the motor, and, when the handle rotates to the accommodating position relative to the main body, the second control device locks the first device so that the first control device is not allowed to start the motor, and***

Outils' activation actuator 23 in Figure 10 is the claimed "second control device." Figure 10 shows it disposed proximate to a shaft of the handle 1. It is configured to be controlled according to the rotating position of the handle 1 wherein, when the handle and "cam 24 provided on the handlebar 1" (TTI1014, 8:24) rotate to the designated secure (in-use) position relative to the main body (casing 6), the second control device (activation actuator 23) unlocks the first

control device (electrical supply contactor controlled by hold-to-run component 30) so that the first control device allows starting of the motor. When, instead, handle 1 and cam 24 rotate to the accommodating (non-use) position relative to the main body (casing 6), the second control device (activation actuator 23) locks the first device (electrical supply contactor controlled by hold-to-run component 30) so that the first control device is not allowed to start the motor. TTI1003, ¶86.

[1h] wherein the second control device comprises at least one of a switch connected to the power supply circuit and a signal source device for sending a control signal to control the motor.

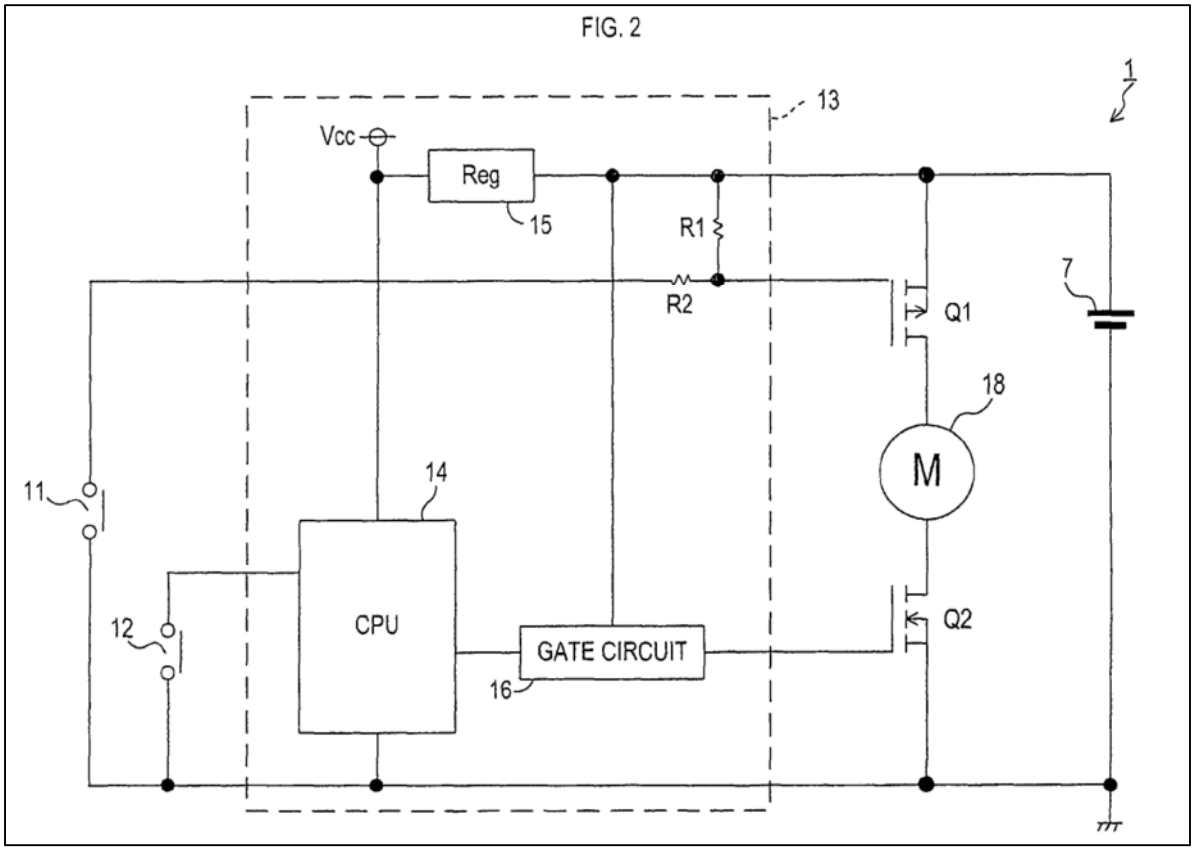
[11h] wherein the second control device comprises at least one of a switch connected to the power supply circuit and a signal source device for sending a control signal to control the motor.

Limitations [1h] and [11h] recite two options for the second control device. The obvious combination of Outils with Matsunaga teaches both options.

Outils' second control device (activation actuator 23) is described as "advantageously similar to the activation actuator 20" (TTI1014, 9:10) which, in turn, "can be an electrical supply cut-off switch for an electric motor." *Id*., 7:25. POSITA would have understood this description to mean activation actuator 23 can be a switch connected in the power supply circuit (*e.g*., in series between the electric power source and the electric motor). However, POSITA would have understood from the disclosure of Matsunaga that it is not desirable to pass the

high current needed to power a lawn mowing motor through contact switches. TTI1006 (Matsunaga), 1:7-16. Instead, it is preferable to use smaller capacity contact switches (*id*., 1:15-16) and to avoid the thick wiring (*id*., 7:23-30) and associated danger of a high current flowing through contact switches. These factors would have motivated POSITA to make an obvious modification to Outils' system by controlling its electrical supply cut-off switch using a separate, low-current circuit with thin wiring lines through which "[o]nly a small current flows for transmitting the ON/OFF state" of contact switches. *See id*., 7:23-30. TTI1003, ¶88.

In particular, Matsunaga teaches a battery-powered electric lawn mowing device having a circuit (Figure 2) that includes a contact switch (11 or 12) acting as a signal source device for sending a control signal to the power supply circuit. The power supply circuit includes Matsunaga's circuit path from battery 7 through semiconductor switch Q1 to the blade's motor "M," through semiconductor switch Q2 to ground. TTI1006, Figure 2.



POSITA would have found it obvious, based on the motivations explained above, to implement Outils' actuation activator 23 (a contact switch triggered by cam 24) as Matsunaga's contact switch 11 which meets the claimed "switch connected to the power supply circuit." Switch 11 also acts as the claimed signal source for sending a control signal to the power supply circuit, namely to semiconductor switch Q1 in the power supply circuit. TTI1003, ¶90.

POSITA would also have found it obvious, based on the motivations explained above, to implement Outils' actuation activator 23 using Matsunaga's contact switch 12 which meets the claimed switch connected to the power supply

circuit, and acts as the claimed signal source for sending a control signal through CPU 14 and gate 16 to switch Q2 in the power supply circuit. TTI1003, ¶91.

[2a] 2. The gardening tool as recited in claim 1, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

[12a] 12. The mower as recited in claim 11, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

Outils' lawnmower uses an electric motor. TTI1014, 3:29; 7:25. POSITA would have understood that to mean it comprises an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor. POSITA would further have understood all of its embodiments – including that of Figure 10 – likewise to encompass such electric walk-behind lawnmowers. TTI1003, ¶92.

To the extent an electric power source is deemed to be neither disclosed nor inherent in Outils, POSITA would have been motivated by the prevalence of battery powered lawn mowers, by the environmentally clean nature they have over gas-powered mowers, and by the freedom they offer over long electrical cords tethered to a home's wall plug, and thus would have found it obvious to include an electric power source in Outils' electric lawnmower. POSITA would also have recognized the necessity of including a power supply circuit to supply power from

the source to the motor, and thus would have found it obvious to include one in Outils' lawnmower. TTI1003, ¶93.

[2b] wherein the control system comprises a switch connected to the power supply circuit to connect the electric power source to the motor or disconnect the electric power source to the motor.

[12b] wherein the control system comprises a switch connected in the power supply circuit to connect the electric power source to the motor or disconnect the electric power source to the motor.

Claim 2 can be interpreted to specify that, instead of the "second control device" (which is recited as part of the "control system") being *either* a switch or a signal source as recited in claim 1[h], the second control device *must* be a switch. Matsunaga's switch 11 or 12 (when used to implement Outils' actuator 23) is connected "to" the power supply circuit to connect/disconnect the electric power source to the motor.

To the extent claim 2 encompasses a switch in addition to the switch recited in [1h], POSITA would have found it obvious to include *both* switches 11 *and* 12, using one in Outils' operation assembly 30 to control the "electrical supply contactor" in the "first control device." The motivation would have included adding safety by letting the user activate a low-current switch that controls a high-current switch in the power supply circuit. TTI1003, ¶95.

For claim 12, the switch is met by Matsunaga's switch Q1 or Q2 which is connected "in" the power supply circuit to connect/disconnect the electric power source to the motor. TTI1003, ¶96.

To the extent claim 12 encompasses a switch in addition to the switch recited in [11h], POSITA would have found it obvious to include *both* switches Q1 *and* Q2, using one as Outils' "electrical supply contactor" in the "first control device." The motivation would have included adding safety by letting the user activate a low-current switch that controls a high-current switch in the power supply circuit. TTI1003, ¶97.

[3] 3. The gardening tool as recited in claim 2, wherein the switch is mounted to the handle and rotates with the handle synchronously.

[13] 13. The mower as recited in claim 12, wherein the switch is mounted to the handle and rotates with the handle synchronously.

For claim 3, Outils' activation actuator 23 (Mastunaga's switch 11 or 12 when combined with Outils) is on the lawnmower's main body 6 and interacts with the oblong cam 24 mounted to the handle. POSITA would have found it obvious to swap their locations such that the switch is mounted to the handle and rotates synchronously with it. This modification would have entailed the simple substitution of one component for the other; it would have employed known techniques for mounting those components; it would have been obvious to try

since there is a finite number (two) of variations; and swapping their location would have had a predictable result and a reasonable expectation of success. POSITA would have recognized that electrical signal lines between the operation assembly 30 and motor are already within Outils' handle, so putting the cut-off switch on the handle would have simplified routing of electrical wires. TTI1003, ¶98.

In addition, as explained for claim 2, using the other of Matsunaga's switches 11 and 12 to implement Outils' operation assembly 30 would motivate POSITA to mount that switch 11 or 12 ergonomically on Outils' handle such that the switch rotates synchronously with it. TTI1003, ¶99.

For claim 13, POSITA would have found it obvious to mount the high-current switch Q1 or Q2 to Outils' handle. POSITA would have understood that such a design employed known techniques for mounting such switches, *e.g.*, attaching them to an electrically insulated enclosure and mounting such enclosure by bolts or other mechanism; it would have been obvious to try since there is a finite number of variations (either the handle or the main body); and mounting it to the handle would have had a predictable result and a reasonable expectation of success. POSITA would have also recognized that the switch Q1 or Q2 could be mounted on the handle near the main body such that it remains distal from the user during use. TTI1003, ¶100.

In addition, as explained for claim 12, using the other of Matsunaga's switches Q1 and Q2 to implement Outils' electrical supply contactor would have motivated POSITA to mount that switch to Outils' handle for the same reasons as set forth in the preceding paragraph. TTI1003, ¶101.

[4] 4. The gardening tool as recited in claim 2, wherein the switch is mounted to the main body and the handle rotates relatively to the switch.

[14] 14. The mower as recited in claim 12, wherein the switch is mounted to [the] main body and the handle rotates relatively to the switch.

For claim 4, Matsunaga's switch 11 or 12 would be used as Outils' actuator 23 which is mounted to Outils' main body. TTI1014, Figure 10. POSITA would have been motivated by Outils' design to mount Matsunaga's switch in the same location such that the handle rotates relatively to the switch. TTI1003, ¶102.

In addition, for claim 4, the obvious use of Matsunaga's other switch 11 or 12 to implement Outils' operation assembly 30 would have motivated POSITA to mount the switch to either the handle or the main body. POSITA would have understood that either location employed known techniques for mounting such switches, *e.g*., attaching them to an electrically insulated enclosure and mounting such enclosure by bolts or other mechanism; it would have been obvious to try since there is a finite number of variations (either the handle or the main body); and mounting it to the main body would have had a predictable result and a

reasonable expectation of success. POSITA would have also recognized that the switch 11 or 12 could be connected by pull-wire cable 29 to the operation assembly 30 so that the assembly 30 remains at an ergonomic location for the user. TTI1006, 4:6-7. TTI1003, ¶103.

For claim 14, POSITA would have found it obvious to mount the high-current switch Q1 or Q2 to Outils' main body. POSITA would have understood that such a design employed known techniques for mounting such switches, *e.g.*, attaching them to an electrically insulated enclosure and mounting such enclosure by bolts or other mechanism; it would have been obvious to try since there is a finite number of variations (either the handle or the main body); and mounting it to the main body would have had a predictable result and a reasonable expectation of success. POSITA would have also recognized that the switch Q1 or Q2 could be mounted on the main body such that it remains distal from the user during use. TTI1003, ¶104.

In addition, as explained for claim 12, using the other of Matsunaga's switches Q1 and Q2 to implement Outils' electrical supply contactor would have motivated POSITA to mount that switch to Outils' main body for the same reasons as set forth in the preceding paragraph. TTI1003, ¶105.

[5a] 5. The gardening tool as recited in claim 1, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

[15a] 15. The mower as recited in claim 11, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

See analysis for claims [2a] and [12a].

[5b] wherein the control system comprises a signal source for sending a control signal to the power supply circuit to disconnect the electric power source to the motor.

[15b] wherein the control system comprises a signal source for sending a control signal to the power supply circuit to disconnect the electric power source to the motor.

See the analysis for claims [1h] and [11h] for the obviousness of using Matsunaga's switch 11 or 12 as Outils' activator 23. In the resulting combination, switch 11 or 12 acts as a signal source by sending a control signal to switch Q1 or, for switch 12, to CPU 14 which, in conjunction with gate circuit 16, signals switch Q2. Switch 11 or switch 12 are connected "to" the power supply circuit to connect/disconnect the power source and motor. TTI1003, ¶107.

In addition, if switch 12 were used to implement Outils' activator 23, then CPU 14 and gate circuit 16 would also constitute the claimed "signal source…." TTI1003, ¶108.

[6] 6. The gardening tool as recited in claim 5, wherein the signal source is mounted to the handle and rotates with the handle synchronously.

[16] 16. The mower as recited in claim 15, wherein the signal source is mounted to the handle and rotates with the handle synchronously.

The analysis for claim [3] explains the obviousness of mounting Matsunaga's switch 11 or 12 on Outils' handle. POSITA would have undertaken the same analysis for claims 6 and 16 since Matsunaga's switch 11 or 12 acts as the claimed signal source. TTI1003, ¶109.

[7] 7. The gardening tool as recited in claim 5, wherein the signal source is mounted to the main body and the handle rotates relatively to the signal source.

[17] 17. The mower as recited in claim 15, wherein the signal source is mounted to main body and the handle rotates relatively to the signal source.

The analysis for claim [4] explains the obviousness of mounting Matsunaga's switch 11 or 12 on Outils' main body. POSITA would have undertaken the same analysis for claims 7 and 17 since Matsunaga's switch 11 or 12 acts as the claimed signal source. TTI1003, ¶110.

VIII. GROUND 2: CLAIMS 8-10, 18-20 ARE OBVIOUS UNDER AIA 35 U.S.C. § 103 OVER OUTILS, ROELLE, MATSUNAGA, FURTHER IN VIEW OF LANGDON (U.S. 5,209,051) AND NAKANO (WO2013/122266A2).

Langdon (TTI1012) published May 11, 1993, and Nakano (TTI1015) published August 22, 2013, each before the earliest foreign priority date of October 10, 2013, claimed by the ’26686 patent. Each qualifies as prior art under AIA 35 U.S.C. §102(a)(1) and Langdon also under (a)(2). Neither was cited in the ’26686 patent or prosecution history.

[8a] 8. The gardening tool as recited in claim 1, wherein the handle comprises a plurality of telescopic members for connecting the operation assembly to the main body, and

[18a] 18. The mower as recited in claim 11, wherein the handle comprises a plurality of telescopic members for connecting the operation assembly to the main body, and

Outils’ lawnmower uses a U-shaped handle illustrated in Figures 1 and 5. POSITA would have observed the height and length of its footprint and, motivated by the fact that users usually store lawnmowers in garages, sheds and other small places, and that users and retailers prefer smaller shipping boxes, would have been motivated to let Outils handle become smaller during non-use. TTI1003, ¶112.

Langdon teaches a similar U-shaped lawnmower handle that has a plurality of telescopic tubes 62, 82. One telescopic tube 82 extends from the other tube 62 with a “spring biased pin [69] to lock the handles in [an] operative push position.” *Id*., 4:6-8; Figure 5. POSITA would have understood the “push position” to be an extended (telescoping) position of one telescopic tube relative to the other; Figure

5 shows the collapsed handle rotated against the lawnmower's main body but POSITA would have understood the "push position" to be a raised angular position not shown in Langdon's drawings. TTI1003, ¶113.

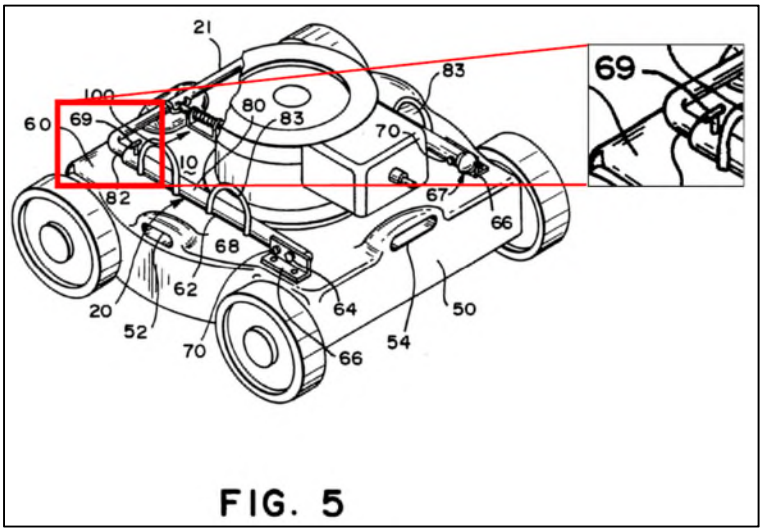


FIG. 5

POSITA would have been motivated by the collapsibility of Langdon's telescopic handle, and by the fact that it does not have to be removed from the lawnmower body, and would have found it obvious to use that feature in Outils' lawnmower. POSITA would have recognized the advantage of collapsing Outils' handle to make the lawnmower easier to ship and store. TTI1003, ¶114.

In addition, POSITA would have observed that Outils' operation assembly is ergonomically located on the handle assembly near the user during use, such that the obvious modification using Langdon's telescoping design would have

connected the operation assembly to the lawnmower's main body, as claimed. TTI1003, ¶115.

[8b] wherein, when a one of the plurality of telescopic members extends to the designated position relative to another of the plurality of telescopic members, a third control device unlocks the first control device so that the first control device is capable of starting the motor, and, when the one of the plurality of telescopic members is in a position other than the designated position, the third control device locks the first control device so that the first control device is not capable of starting the motor.

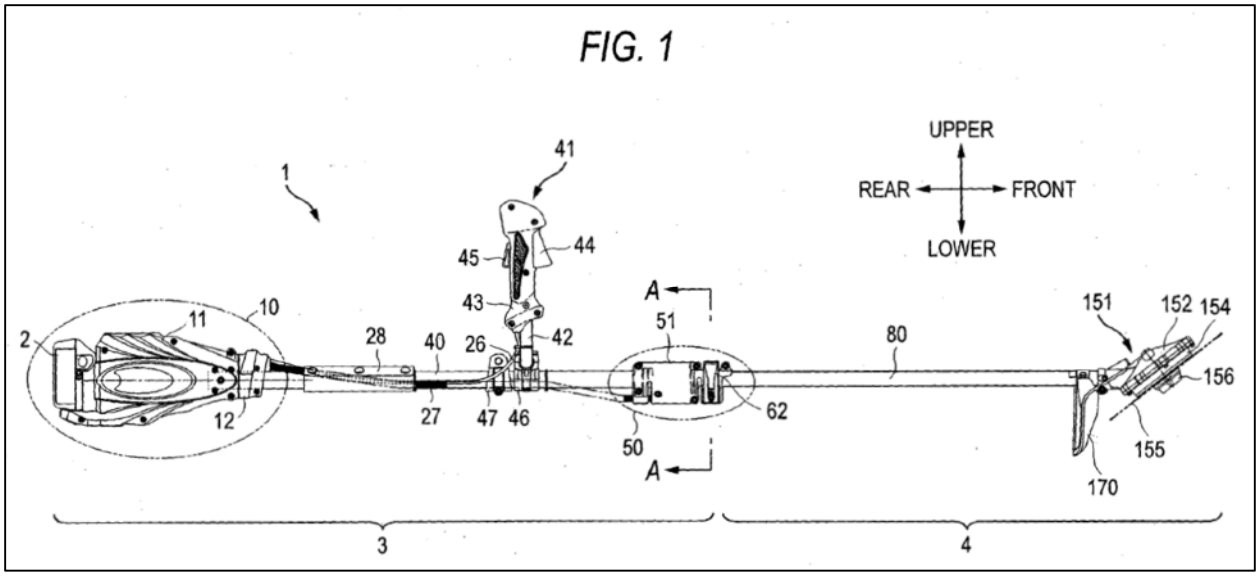
[18b] wherein, when a one of the plurality of telescopic members extends to the designated position relative to another of the plurality of telescopic members, a third control device unlocks the first control device so that the first control device is capable of starting the motor, and, when the one of the plurality of telescopic members is in a position other than the designated position, the third control device locks the first control device so that the first control device is not capable of starting the motor.

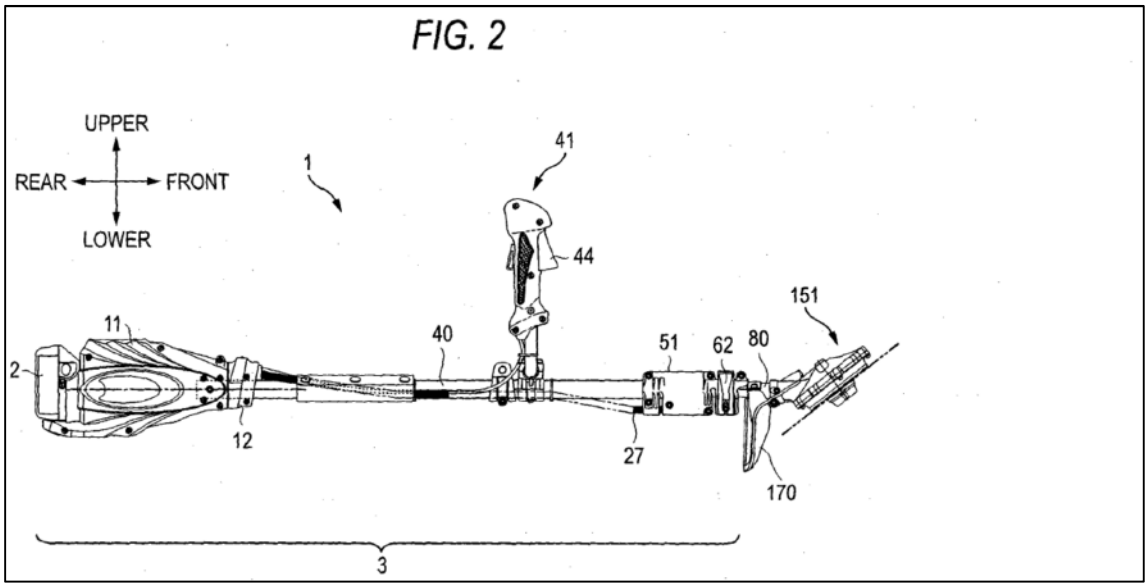
These claims contain several unclear limitations, such as referring to "the designated position" as an extended *telescopic* position despite parent claims 1 and 11 defining it as a *rotational* "designated position." This petition applies the prior art to these claims as best the claims can be understood.

Like Outils and Langdon, Nakano teaches a telescoping handle on a grass cutting tool. Nakano shares Langdon's goal of collapsing the handle "to realize a compact electric bush cutter capable of reducing a storage space thereof" (TTI1015 (Nakano), 3:3-4), but provides added safety where, "if retraction of a rod [*i.e.*, collapse of the telescoping handle] by a certain cause is detected while a work is

performed in an extended state of the rod, a motor is immediately braked, thereby improving a safety thereof." *Id*., 4:2-4. Nakano improves safety of a telescoping handle by detecting whether it has partially collapsed, and braking/disabling the grass cutter's motor accordingly. TTI1003, ¶117.

Nakano's telescoping handle includes a "pipe 40" with a "handle unit 41" and its trigger 44. *See* TTI1015, Fig. 1. A "movable pipe 80" is slidably connected "to be moved relative to the fixed pipe 40 in the front-rear direction." *Id*., 7:22-24. A holder 51 where the pipes mate helps to fix their length in the front-rear direction. *Id.*, 9:8-10. Pipe 80 fits within pipe 40 (*see* Figs. 4 and 5) much like Langdon's tube 62 fits within tube 82, such that they constitute telescoping members. What results is a handle that is adjustable between an extended length (Figure 1 below) and a retracted length (Figure 2). *Id*., 5:25-6:4. TTI1003, ¶118.





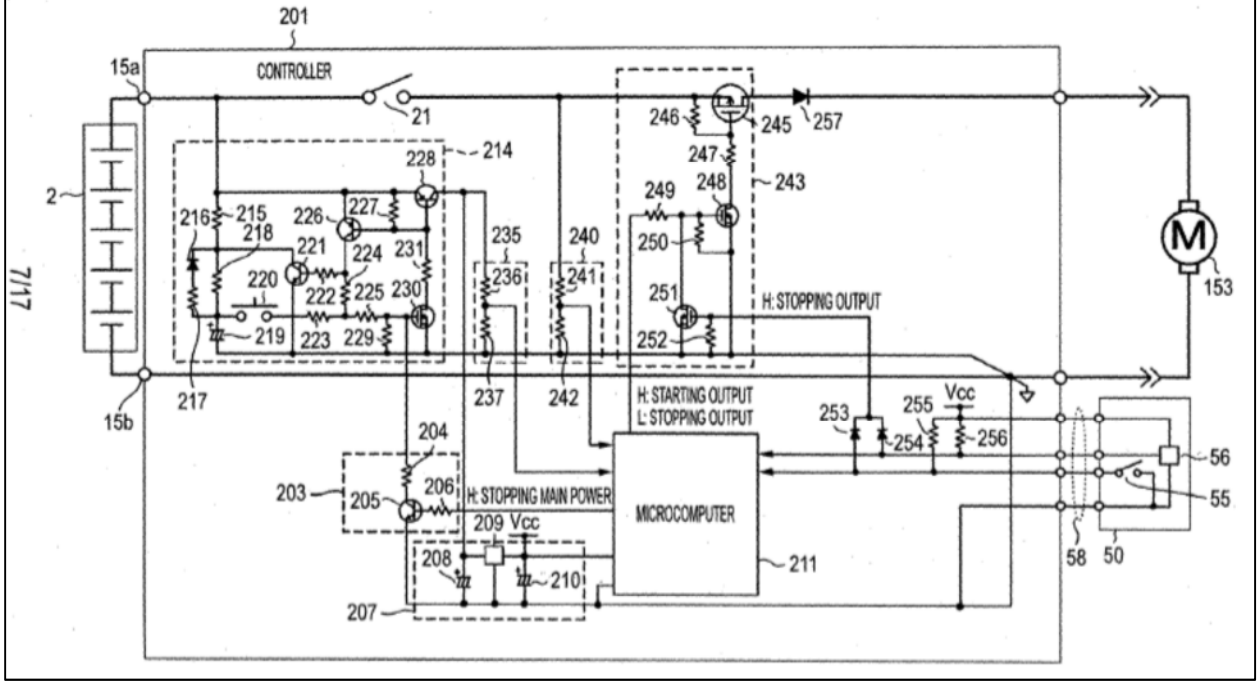
As explained below, Nakano is operable "in a state in which the movable pipe 80 is most extended from the fixed pipe 40, as shown in Fig. 1." TTI1015, 9:15-16. "Also, the holder 51 is provided with an extended detection unit as described later, and thus the driving unit 151 [of blade 155] is configured not to be operated when the movable pipe 80 is not fully extended (e.g., a non-extended

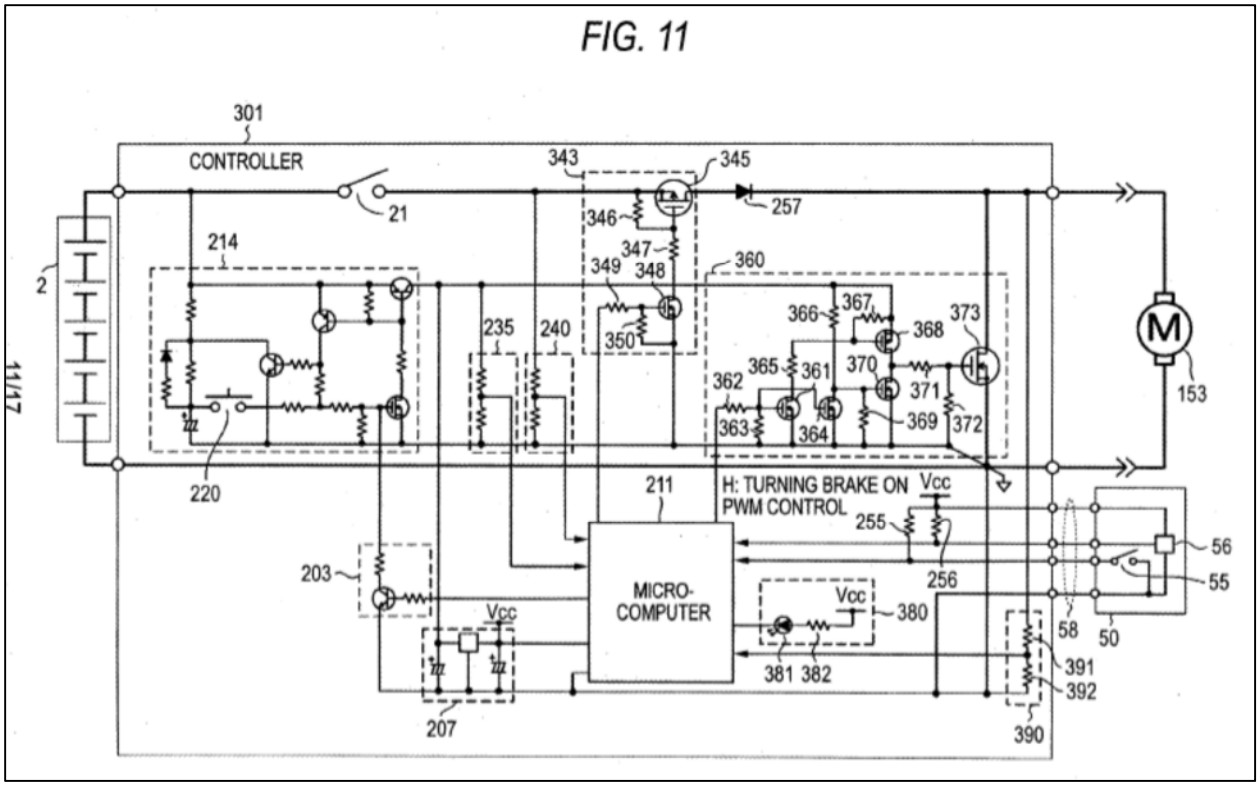
state). In addition, if the movable pipe 80 is not completely fixed or the movable pipe 80 is retracted due to a certain cause during bush cutting work, the driving unit 151 is configured to automatically stop a rotating operation thereof." *Id.*, 9:16-22. TTI1003, ¶119.

POSITA would understand that Nakano's telescoping handle resembles Langdon's, and that Nakano adds several control devices that meet this Challenged Claim: among them is switch 55, Hall IC 56, and control circuit 12 or microcomputer 211, each of which enables/disables (*i.e.*, the claimed actions of "unlocks" and "locks") the user's operation assembly, *i.e.*, trigger lever 44, from activating the motor that controls cutting blade 155. The operation assembly is unlocked when it and tube 40 extend to a designated in-use position, and locked when it and tube 40 slide (retract) away from that position toward the main body containing the blade. They also halt the motor via stop circuit 243/343. TTI1015, 24:13-18; 25:9-14; 26:3-12; Figures 7, 11. Note that Nakano's motor, like Outils' and Landgon's, is within a main body (motor case 152) for the cutting blade 155. *Id.*, 11:7-8. And Nakano inserts a "curled cord 35" within the hollow telescoping pipes (like Langdon's) "to supply an electric power for driving the motor from the circuit board 13 to the motor (see Fig. 1)." *Id.*, 12:15-19; Figs. 1, 3. POSITA would thus have found their designs to compatible for obvious combination. TTI1003, ¶120.

Switch 55: The claimed third control device reads on Nakano's switch 55, with controlled switch 245/345, that is triggered by an inclined surface 53b (Fig. 4) at the end of movable pipe 80. In Figure 4, the inclined surface 53b is detected by a round pulley 55b pressing against the exterior of pipe 80 by a resilient lever 55a. The lever 55a is, in turn, configured to turn switch 55 on/off. TTI1015, 18:12-13. Switch 55 is connected via microcomputer 211, and via diode 253, to a power supply circuit, e.g., to the path between an electric power supply (Nakano's battery pack 2) and motor "M." *Id.*, 6:13-25; 25:9-14; Figures 7, 11. TTI1003, ¶121.

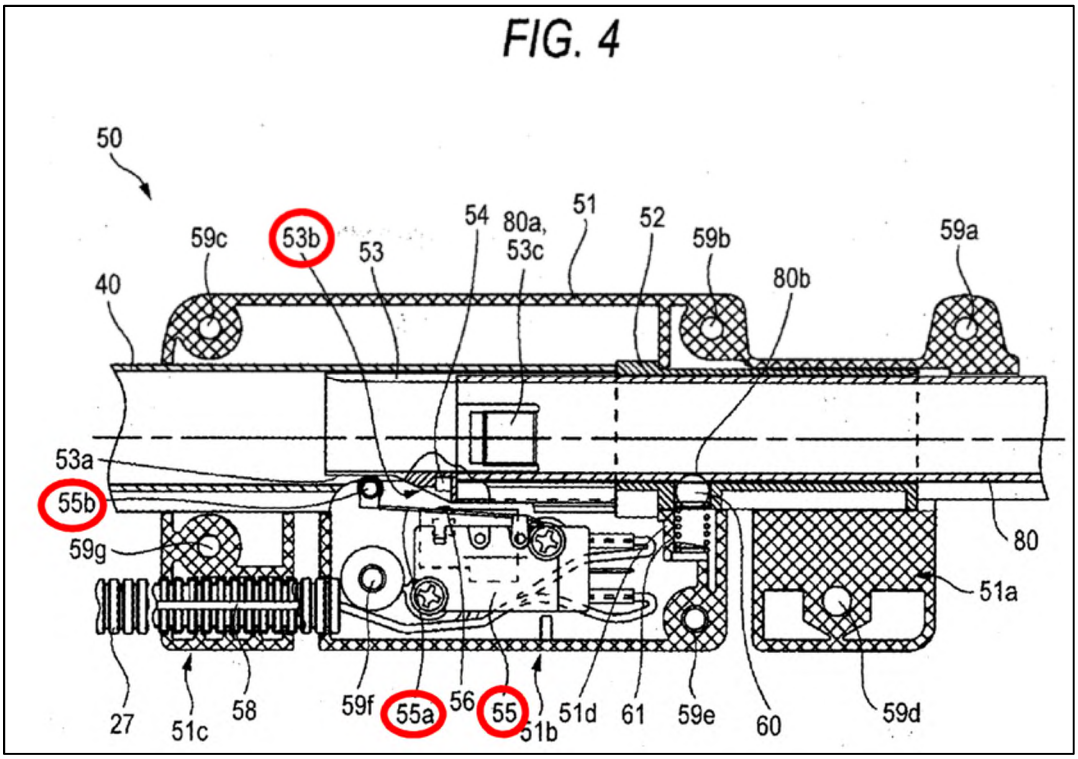
FIG. 7





When the pipes 40, 80 are extended to their operational state, pulley 55b encounters inclined surface 53b and moves axially inward. This movement causes lever 55a to trip switch 55 thereby sending a signal to microcomputer 211 allowing power to pass through switch 245 (Fig. 7) or 345 (Fig. 11) in the power supply circuit from battery to motor; of course, switch 21 for the user's trigger 44 is also part of this power supply circuit, and the motor is activated only when both trigger

44/21 and switch 55 permit power to reach the motor. TTI1015, 18:6-18, 9:8-16[4]; TTI1003, ¶122.



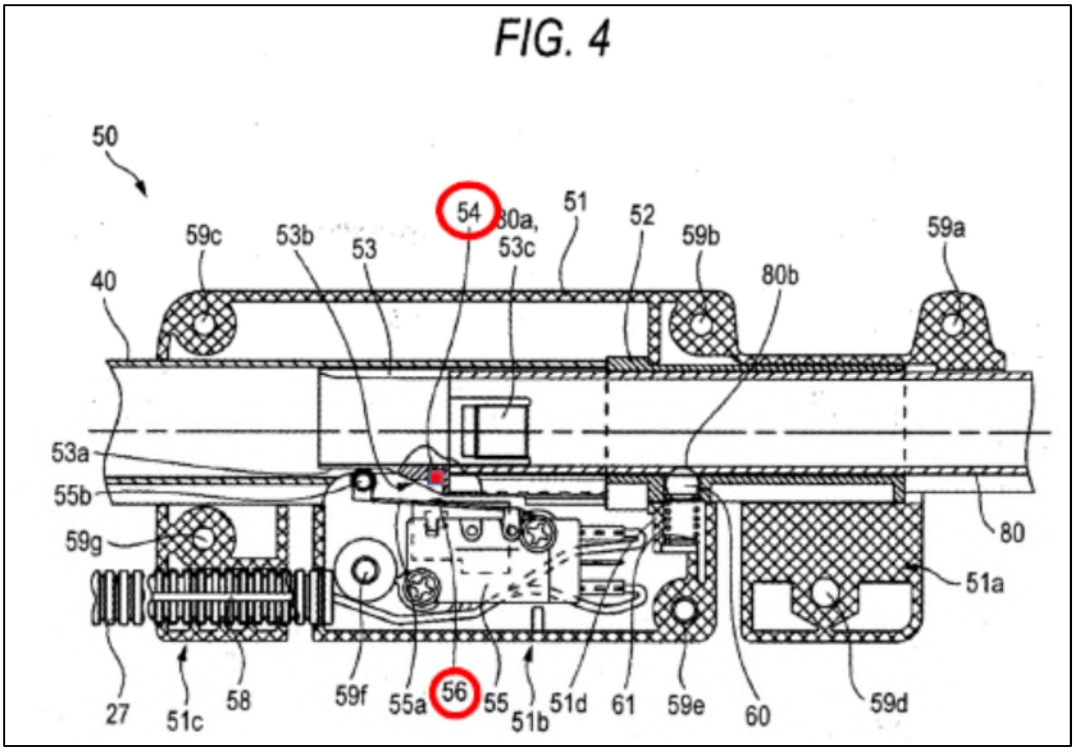
[4] Nakano is occasionally inconsistent, sometimes saying switch 55 is "on" when pulley 55b is within recess 53a, and other times "off." Regardless, POSITA would know to implement Nakano's circuitry to allow motor activation when the pipes 40, 80 are at their in-use position, and disallow activation when they are retracted. TTI1003, ¶122 n.5.

If, instead, pipe 80 retracts into pipe 40 to a non-operational length, pulley 55b is pushed axially outward against the full outer diameter of pipe 80, causing lever 55a to trip switch 55 to its other state and send a signal to microcomputer 211 disabling switch 245/345 in the power supply circuit. TTI1015, 18:6-18, 9:8-16. TTI1003, ¶123.

The embodiment in Figures 4 and 5 uses "a mechanical switch 55, such as a microswitch." TTI1015, 18:11-12. But Nakano makes clear that the detection of pipe 80's extension can be done "by any detecting methods, such as electrical, mechanical, or optical method and output the corresponding electric signals to a control unit (controller) mounted on the circuit board 13." *Id*., 18:9-11. POSITA would have understood this to be a suggestion to use active component(s), such as an optical photodetector, to determine when pipe 80 is at an operational or non-operational length. *See id*., 18:17-18; 19:24-20:2; 25:11-14; Figure 3. TTI1003, ¶124.

Hall IC 56: The claimed third control device reads on Nakano's Hall IC 56 (with controlled switch 245/345) on fixed pipe 40 to detect the proximity of a magnet 54 on pipe 80. *See* annotated Figure 4 below. Hall IC 56 is connected via microcomputer 211, and via diode 254, to stop circuit 243/343 in a power supply circuit, i.e., to the path between an electric power source (Nakano's battery pack 2) and the motor "M." TTI1015, Figures 7, 11. A voltage potential, "which is the

output of the Hall IC 56 … becomes Low when the movable pipe 80 is extended from the fixed pipe 40 to the predetermined position, and becomes High when the movable pipe 80 is not extended. … when the movable pipe 80 is not extended from the fixed pipe 40 to the predetermined position … the output from the output stop circuit 243 is stopped, thereby stopping supplying of an electric power to the motor 153. As described above, according to the present embodiment, in addition to microcomputer 211 being configured to control the output stop circuit 243 depending on the outputs of the rod extension sensors as the extending detection unit, the outputs of the rod extension sensors are directly transmitted to the output stop circuit 243. Accordingly, supplying of an electric power to the motor 15 is surely stopped when the rod has been retracted from the extended state or is retracted during operation. Also, if the signal line 58 is disconnected or an output of any one of the sensors is different from that of the other, the microcomputer 211 serves as an abnormal detection unit for detecting an abnormal state [] thereby stopping the motor 153." *Id.*, 25:21-26:12; Figures 7, 11. TTI1003, ¶125.



Microcomputer 211: The claimed third control device reads on Nakano's microcomputer 211 (with controlled switch 245/345) which, based on signal(s) received from switch 55 and/or Hall IC 56, sends a High or Low control signal to switch 245/345 and/or stop circuit 243 to enable or disable activation of the motor by the user-operation operational assembly. Microcomputer 211 is connected to a power supply circuit, *i.e.*, to the path between an electric power source (Nakano's battery pack 2) and the motor "M." TTI1015, Figures 7, 11. "The output stop circuit 243 is a circuit for forcibly stopping rotation of the motor 153 under the control of the microcomputer 211, even when the switch 21 is turned on." *Id.*, 24:6-8. "The output stop circuit 243 is provided with a FET 245 for stopping an

output." *Id*., 24:23. "When the High signal is outputted from the microcomputer, the FET 248 becomes a conductive state so that the gate signal of the FET 245 becomes a predetermined voltage to turn the FET 245 on. Thus, rotation of the motor 153 is started by pulling the switch 21. On the contrary, if the Low signal is outputted from the microcomputer 211, the FET 248 is turned off so that the gate signal of the FET 245 becomes zero to turn the FET 245 off. As a result, the motor 153 is not rotated even if the switch 21 is pulled. Accordingly, when a certain situation occurs during rotation of the motor 153, the microcomputer 211 can output the Low signal to the output stop circuit 243 to stop the motor 153." *Id*., 25:3-11. TTI1003, ¶126.

[9a] 9. The gardening tool as recited in claim 8, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

[19a] 19. The mower as recited in claim 18, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

See analysis of claims [2a] and [12a].

[9b] wherein the control system comprises a switch and a signal source, the switch is configured to be triggered by the operation assembly to activate the motor, and the signal source sends a signal to the power supply circuit to disable the activation of the motor when the one of the plurality of telescopic members is caused to be move[d] away from the predetermined position relative to the another of the plurality of telescopic members.

[19b] wherein the control system comprises a switch and a signal source, the switch is configured to be triggered by the operation assembly to activate the motor, and the signal source sends a signal to the power supply circuit to disable the activation of the motor when the one of the plurality of telescopic members is caused to be move[d] away from the predetermined position relative to the another of the plurality of telescopic members.

The claimed "switch" is met by Outils' "electrical supply contactor" triggered by operation assembly ("hold-to-run component 30" and "remote control cable 29, which acts on … an electrical supply contactor…." (TTI1014, 4:5-7)). POSITA would have understood the electrical supply contactor to be a high-current switch connected in the power supply circuit (*e.g.*, in series between the electric power source and the electric motor). TTI1003, ¶128.

As addressed for claims 8[b] and 18[b], the claimed signal source is met by Nakano's switch 55 which acts as a signal source by sending a signal through microcomputer 211 and diode 253 to control switch 245/345 in the power supply circuit. The claimed signal source is also met by Hall IC 56 which sends a similar signal through microcomputer 211 and diode 254 to control switch 245/345. The claimed signal source is also met by microcomputer 211 which sends a signal to control switch 245/345. Each of these components, when incorporated into Outils' modified system, sends a signal to the power supply circuit to disable activation of the motor when one of the telescopic members 40, 80 moves away from the predetermined in-use position relative to the other telescopic member. TTI1003, ¶129.

[10a] 10. The gardening tool as recited in claim 8, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

[20a] 20. The mower as recited in claim 18, further comprising an electric power source and a power supply circuit for enabling the electric power source to provide power to the motor

See analysis of claims [2a] and [12a].

[10b] wherein the control system comprises a plurality of signal sources for sending a signal to the power supply circuit to control the connection between the electric power source and the motor, the plurality of signal sources enable the operation of the operation assembly to the motor when the one of the plurality of telescopic members is caused to move to a predetermined position relative to another of the plurality of telescopic members and the one of the plurality of signal sources disable the operation of the operation assembly to the motor when the one of the plurality of telescopic members is caused to be move[d] away from the predetermined position relative to the another of the plurality of telescopic members.

[20b] wherein the control system comprises a plurality of signal sources for sending signal to the power supply circuit to control the connection between the electric power source and the motor, the plurality of signal sources are capable of enabling the operation of the operation assembly to the motor when the one of the plurality of telescopic members is caused to move to a predetermined position relative [to] another of the plurality of telescopic members and the one of the plurality of signal sources is capable of disabling the operation of the operation assembly to the motor when the one of the plurality of telescopic members is caused to be move[d] away from the predetermined position relative to the another of the plurality of telescopic members.

As addressed for claims [1h], [11h], [8b] and [18b], the claimed plurality of signal sources is met by (1) Matsunaga's switch 11 or 12 used as Outils' activator

23 to send a control signal to the "electrical supply contactor"; (2) Nakano's switch 55 which sends a control signal that reaches switch 245/345 in the power supply circuit; (3) Nakano's Hall IC 56 which sends a control signal that reaches switch 245/345 in the power supply circuit; and (4) Nakano's microcomputer 211 which sends a signal to switch 245/345 in the power supply circuit. Each of these components, when incorporated into Outils' modified system, is capable of enabling the operation of the operation assembly to activate the motor when a telescopic member is caused to move to its predetermined in-use position relative to the other telescopic member, and to disable such operation when caused to be moved (retracted) away from that position. TTI1003, ¶131.

IX. CONCLUSION

For the reasons set forth above, *inter partes* review of the Challenged Claims and a finding of unpatentability are respectfully requested.

Respectfully submitted,

Dated: May 1, 2020

/s/ Edward H. Sikorski
Edward H. Sikorski, Reg. No. 39,478
Attorney for Petitioners

CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter partes* Review totals 11,012 words, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i).

Respectfully submitted,

Dated: May 1, 2020

/s/ Edward H. Sikorski
Edward H. Sikorski, Reg. No. 39,478
Attorney for Petitioners

CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on the Patent Owner by electronic copy of this Petition for *Inter Partes* Review and supporting material at the following correspondence address of record for the Challenged Patent:

Keith R. Jarosik
Greenberg Traurig, LLP
77 W. Wacker Drive
Suite 3100
Chicago IL 60601-1732
jarosikk@gt.law.com

The undersigned also certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on Patent Owner's lead litigation counsel by electronic copy of this Petition for *Inter Partes* Review and supporting material at the following address:

Benjamin J. Schladweiler, Esq. Greenberg Traurig, LLP The Nemours Building 1007 North Orange Street, Suite 1200 Wilmington, DE 19801	SchladweilerB@gtlaw.com
Michael A. Nicodema Greenberg Traurig, LLP 500 Campus Drive Ste. 400 Florham Park, NJ 07932	NicodemaM@gtlaw.com
James J. Lukas, Jr. Matthew S. Levinstein Callie J. Sand Benjamin P. Gilford Greenberg Traurig, LLP 77 West Wacker Drive, Ste. 3100 Chicago, IL 60601	LukasL@gtlaw.com LevinsteinM@gtlaw.com SandC@gtlaw.com GilfordB@gtlaw.com

Dated: May 1, 2020

/s/ Edward H. Sikorski
Edward H. Sikorski
Reg. No. 39,478
Attorney for Petitioner