EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 1746

DATE: MAY 1, 2025

PROJECT MP12294

The following classification changes will be effected by this Notice of Changes:

Action	**Subclass**	**Group(s)**
SCHEME:		
Titles Changed:	F02N	11/08
	F02N	99/00
Notes Modified:	F02N	SUBCLASS
Guidance Headings Deleted:	F02N	2250/00
Guidance Headings New:	F02N	2200/00
DEFINITIONS:		
Definitions Deleted: (no frozen (F) symbol definitions should be deleted)	F02N	19/00
	F02N	99/00
Definitions New:	F02N	1/005, 1/02
	F02N	7/02, 7/04, 7/06, 7/08, 7/10
	F02N	9/02, 9/04
	F02N	11/003, 11/006, 11/0818, 11/087, 2011/0881, 11/106, 11/108, 11/12, 11/14
	F02N	15/003, 15/021, 15/022, 15/023, 15/025, 15/06, 15/065, 15/08
Definitions Modified:	F02N	SUBCLASS
	F02N	3/00, 3/02, 3/04
	F02N	5/02, 5/04
	F02N	7/00
	F02N	9/00
	F02N	11/00, 11/04, 11/06, 11/08, 11/0803, 11/0807, 11/0814, 11/0825, 11/0829, 11/084, 11/0844, 11/0848, 11/0851, 11/0855. 11/0859, 11/0862, 11/0866, 11/10, 11/101, 11/105
	F02N	13/00, 13/02
	F02N	15/00, 15/02, 15/04
	F02N	19/02

The following subclasses/groups are also impacted by this Notice of Changes (indicate subclasses/groups outside of the project scope, such as those listed in the CRL): *F02D*

This Notice of Changes includes the following *[Check the ones included]:*

1. CLASSIFICATION SCHEME CHANGES

CPC NOTICE OF CHANGES 1746

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- ☒ A. New, Modified or Deleted Group(s)
- ☐ B. New, Modified or Deleted Warning(s)
- ☒ C. New, Modified or Deleted Note(s)
- ☒ D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS
   - ☒ A. New or Modified Definitions (Full definition template)
   - ☒ B. Modified or Deleted Definitions (Definitions Quick Fix)
3. ☐ REVISION CONCORDANCE LIST (RCL)
4. ☐ CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)
5. ☒ CHANGES TO THE CROSS-REFERENCE LIST (CRL)

CPC NOTICE OF CHANGES 1746

DATE: MAY 1, 2025

PROJECT MP12294

1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)

SUBCLASS F02N - STARTING OF COMBUSTION ENGINES; STARTING AIDS FOR SUCH ENGINES, NOT OTHERWISE PROVIDED FOR

Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title "CPC only" text should normally be enclosed in {curly brackets}**	Transferred to#
M	F02N 11/08	1	Circuits specially adapted for starting of engines	
M	F02N 99/00	0	Subject matter not provided for in the other groups of this subclass	

*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; T= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

NOTES:

- **No {curly brackets} are used for titles in CPC only subclasses, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The {curly brackets} are used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- U groups: it is obligatory to display the required "anchor" symbol (U group), i.e. the entry immediately preceding a new group or an array of new groups to be created (in case new groups are not clearly subgroups of C-type groups). Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types.
- "Transferred to" column must be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the "Transferred to" column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: "< administrative transfer to XX>", "<administrative transfer to XX and YY simultaneously>", or "<administrative transfer to XX, YY, ...and ZZ simultaneously>" when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be "additional information".
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations "ADD" or "INV": <administrative transfer to XX ADD>, <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the "D" entries of 2000-series or Y-series groups may not require a destination ("Transferred to") symbol, however it is required to specify "<no transfer>" in the "Transferred to" column for such cases.
- For finalisation projects, the deleted "F" symbols should have <no transfer> in the "Transferred to" column.
- For more details about the types of scheme change, see CPC Guide.

C. New, Modified or Deleted Note(s)

SUBCLASS F02N - STARTING OF COMBUSTION ENGINES; STARTING AIDS FOR SUCH ENGINES, NOT OTHERWISE PROVIDED FOR

Type*	Location	Old Note	New/Modified Note
M	F02N	1. Attention is drawn to the notes preceding class F01. 2. The starting of engines which are not explicitly stated to be combustion engines will be classified in this subclass insofar as their starting is equivalent to that of combustion engines.	1. Attention is drawn to the Notes preceding class F01. 2. The starting of engines which are not explicitly stated to be combustion engines is classified in this subclass in so far as their starting is equivalent to that of combustion engines. 3. {In this subclass, it is desirable to add the indexing codes of groups F02N2200/00 - F02N2300/00 relating to i. Parameters used for control of starting apparatus. ii. Problems related to engine starting or engine's starting apparatus. iii. Control related aspects of engine starting.}

*N = new note, M = modified note, D = deleted note

NOTE: The "Location" column only requires the symbol PRIOR to the location of the note. No further directions such as "before" or "after" are required.

D. New, Modified or Deleted Guidance Heading(s)

SUBCLASS F02N - STARTING OF COMBUSTION ENGINES; STARTING AIDS FOR SUCH ENGINES, NOT OTHERWISE PROVIDED FOR

Type*	Location	Old Guidance Heading	New/Modified Guidance Heading
N	F02N 2200/00 - F02N 2300/00		Indexing codes relating to engine starting associated with subclass F02N
D	F02N 2250/00 - F02N 2300/00	Muscle-operated starting apparatus	Delete guidance heading

*N = new guidance heading, M =modified guidance heading, D = deleted guidance heading

NOTES:

- The "Location" column requires the symbol AFTER the guidance heading location. No further directions such as "before" or "after" are required.
- In cases where there may be confusion as to whether a new group falls within the scope of a guidance heading, indicate the guidance heading and whether the group does or does not go with the guidance heading. This can be included in the "Location" column. For example, the guidance heading "Compounds containing carbon together with sulfur, selenium or tellurium with or without hydrogen, halogens, oxygen or nitrogen" encompasses groups C07C 301/00-395/00 only. If a new group C07C 398/00 is proposed and is included in the guidance heading scope, indicate this in the "Location" column as follows: 398/00 to be included under the guidance heading: "Compounds containing carbon together with sulfur, selenium or tellurium with or without hydrogen, halogens, oxygen or nitrogen."

2.B. Definitions (new)

F02N 1/005

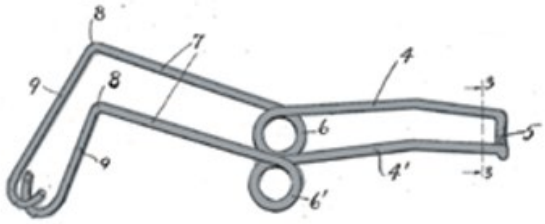
Definition statement

This place covers:

Safety arrangements of starting apparatus having hand cranks to reduce damage to the system (not necessarily to the operator).

Illustrative example of subject matter classified in this place:

1a. Resilient crank holder



1b. Crankshaft with resilient crank holder

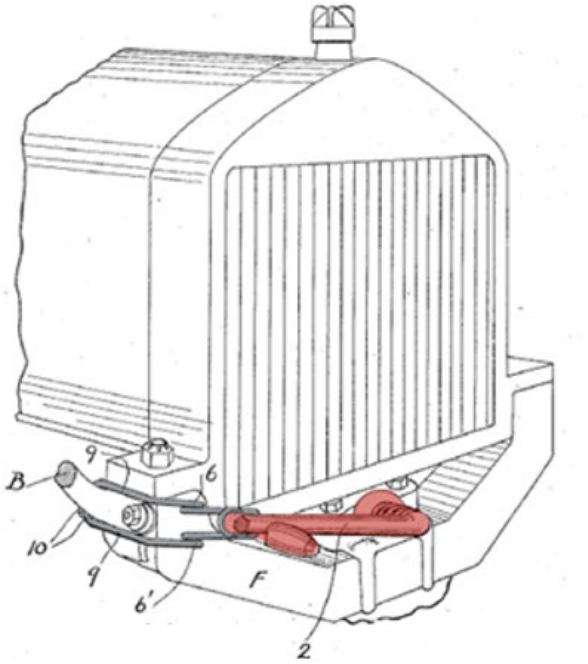


Figure 1b illustrates the resilient crank holder of Figure 1a connected to starter crank (2) and headlight bracket (B) for securing the starter crank (2) when not in use.

References

Limiting references

This place does not cover:

Safety means preventing damage caused by reverse rotation	F02N 1/02

F02N 1/02

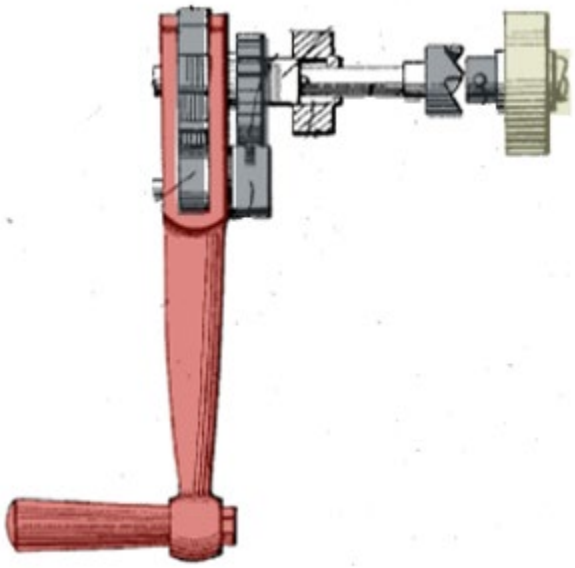
Definition statement

This place covers:

- Safety arrangements for preventing reverse rotations during start;
- Safety arrangements for reducing hazard for the person trying to start the engine.

Illustrative example of subject matter classified in this place:

1a. Crank assembly with unidirectional gearing (side view)



1b. Crank assembly with unidirectional gearing (front view)

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gearing between starting-engines and started engines, the gearing including disengaging starter jaws	F02N 15/021

Starter comprising an intermediate clutch of the pawl type	F02N 15/027

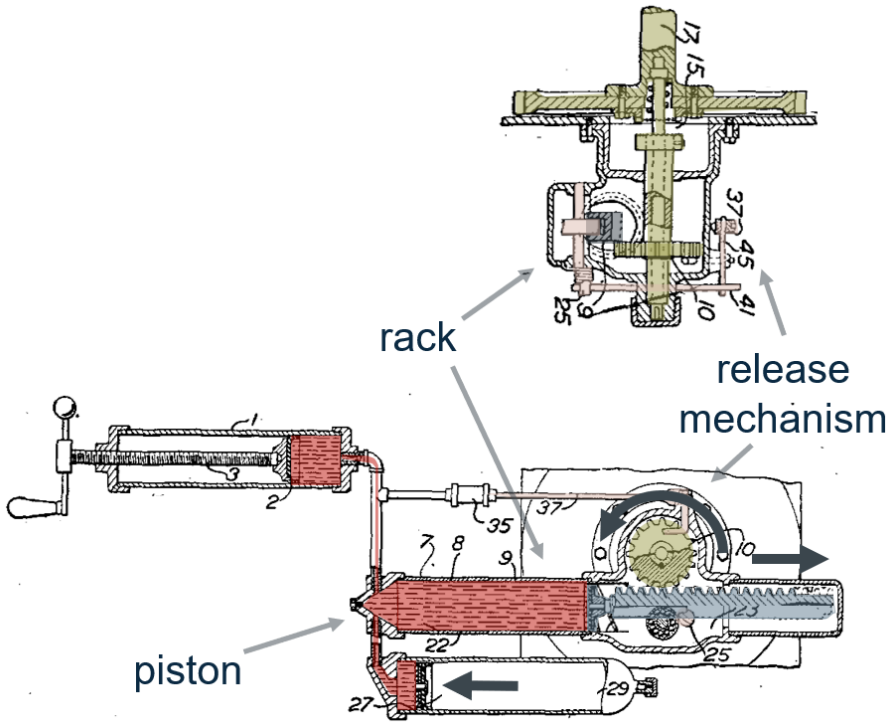
F02N 7/02

Definition statement

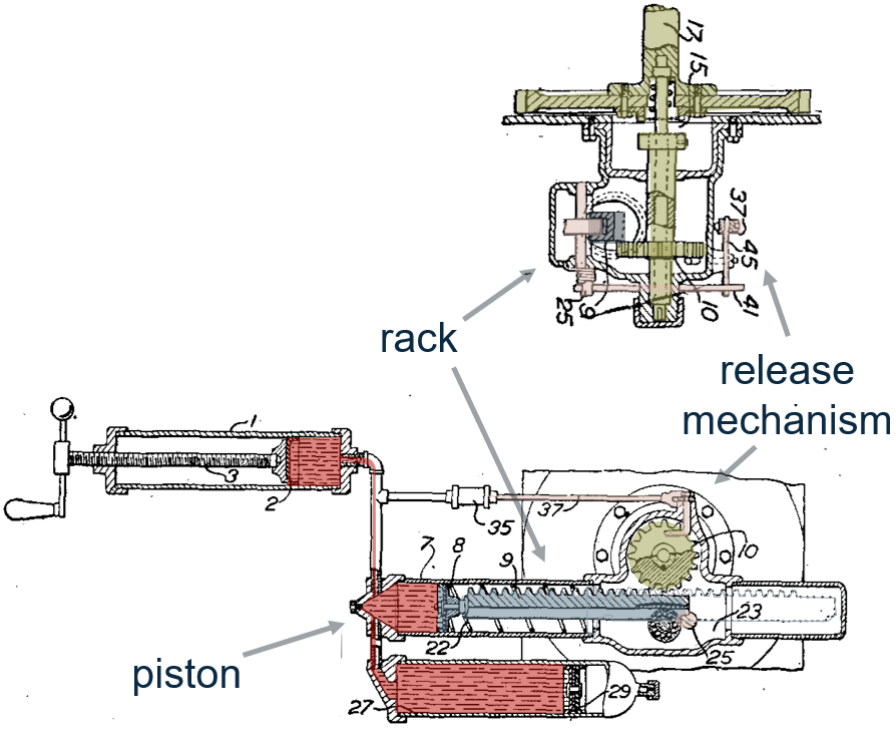
This place covers:

Illustrative examples of subject matter classified in this place:

1a.



1b.



2a. Hydraulic starting device (front view)

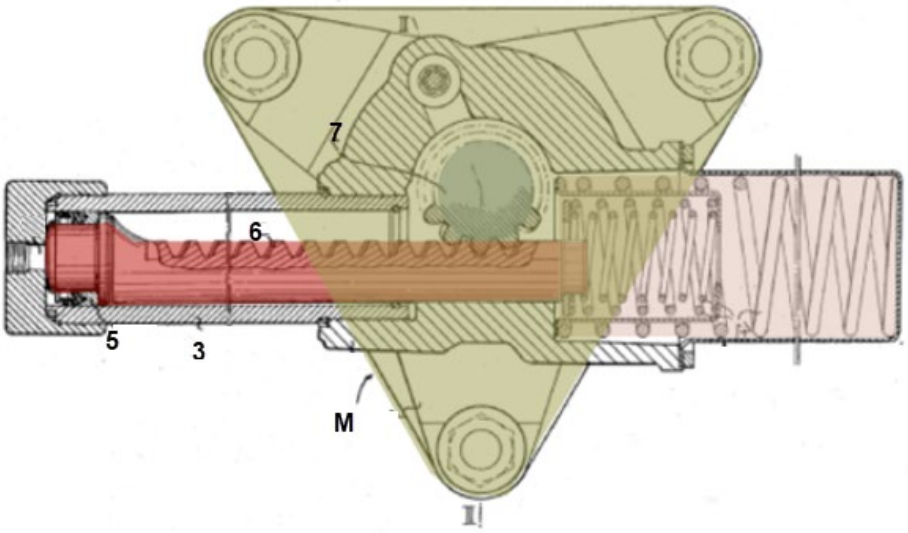


Figure 2a illustrates a fluid operated hydraulic jack (3) with a toothed rack (6) highlighted in red that forms a threaded connection with a rotary pinion (7) for starting a motor (M).

2b. Fluid feed and return system for hydraulic starting device (top view)

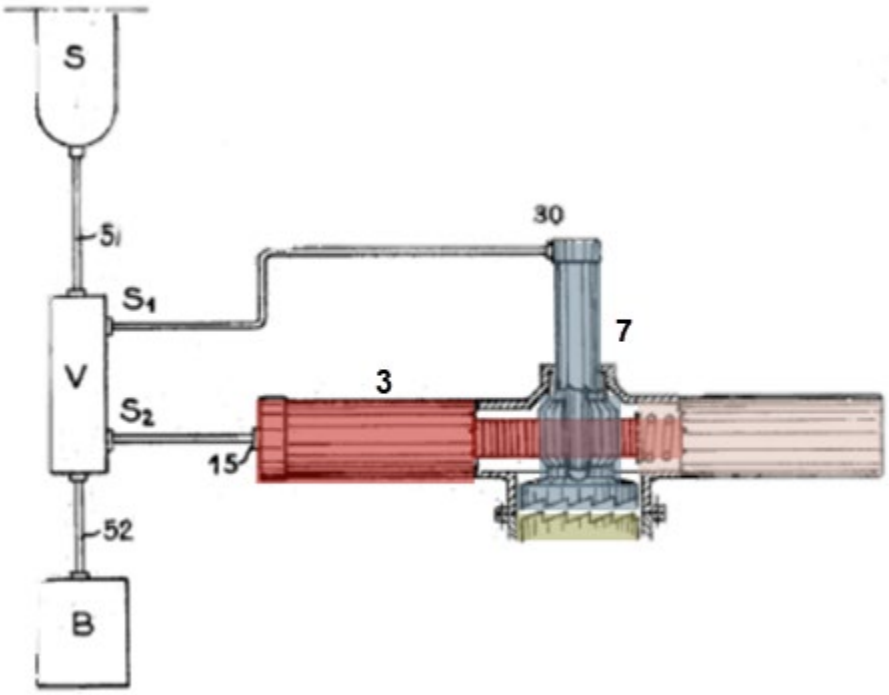


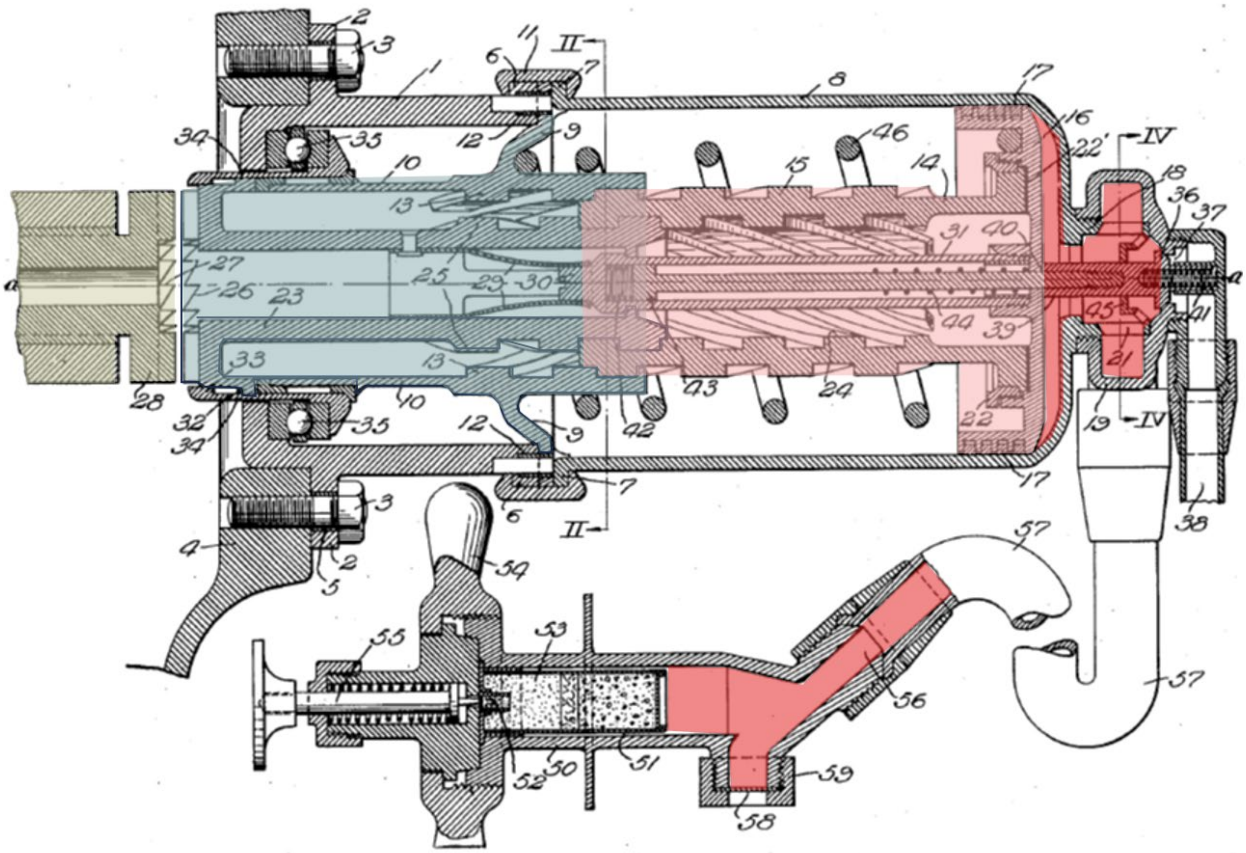
Figure 2b illustrates a hydraulic circuit with a source of hydraulic pressure (S) and a pressure valve (V) for supplying fluid to feed-and-return lines (S1, S2) connected to auxiliary port (30) and main port (15) for operation of the hydraulic jack (3) and pinion (7).

F02N 7/04

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates a system comprising a chamber (50) for generating a pressurized gas (53) used to create a longitudinal displacement of a piston (16) resulting in a rotation of a driven member (14) due to screw threading (15) on a surface of the driven member (14), where the rotational movement of the driven member (14) is used to start a motor via a connecting element (28).

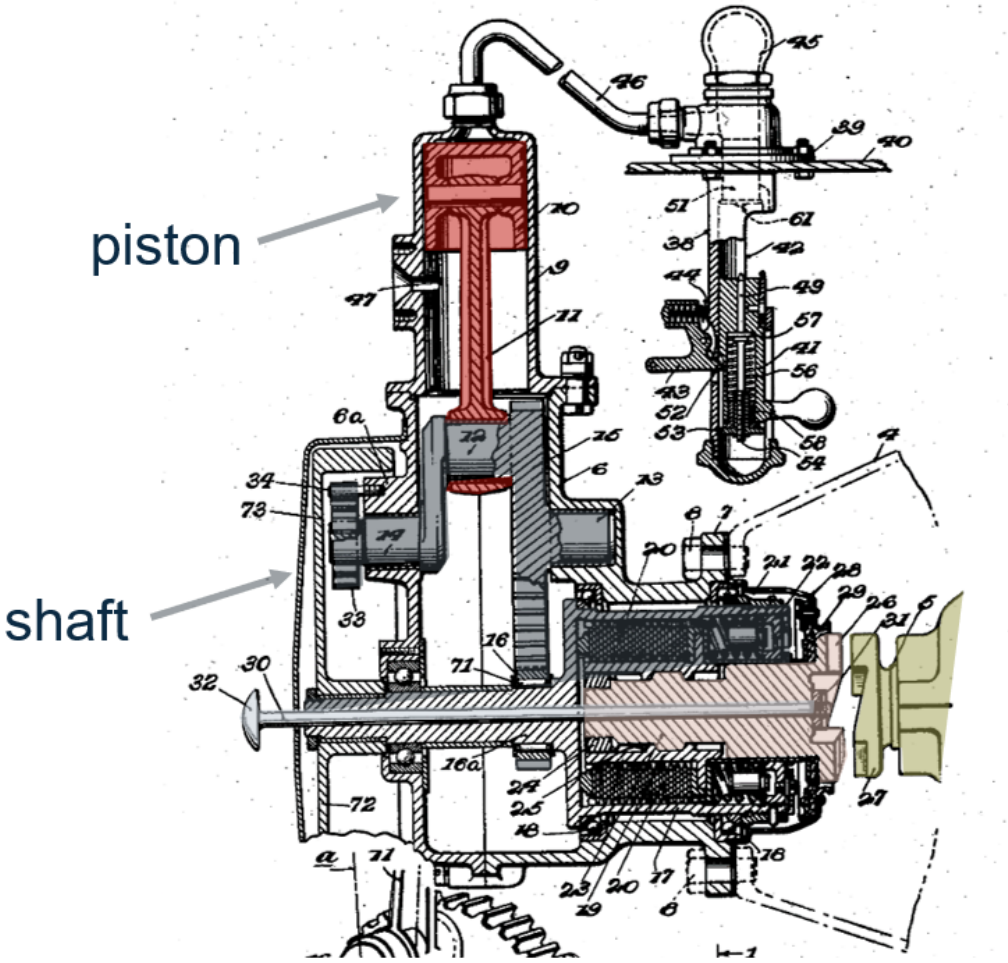
F02N 7/06

Definition statement

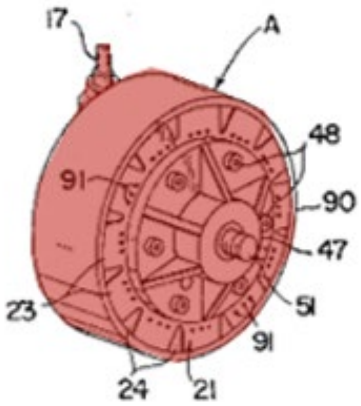
This place covers:

Illustrative examples of subject matter classified in this place:

1.



2a. Small scale engine



2b. Chainsaw with small scale engine

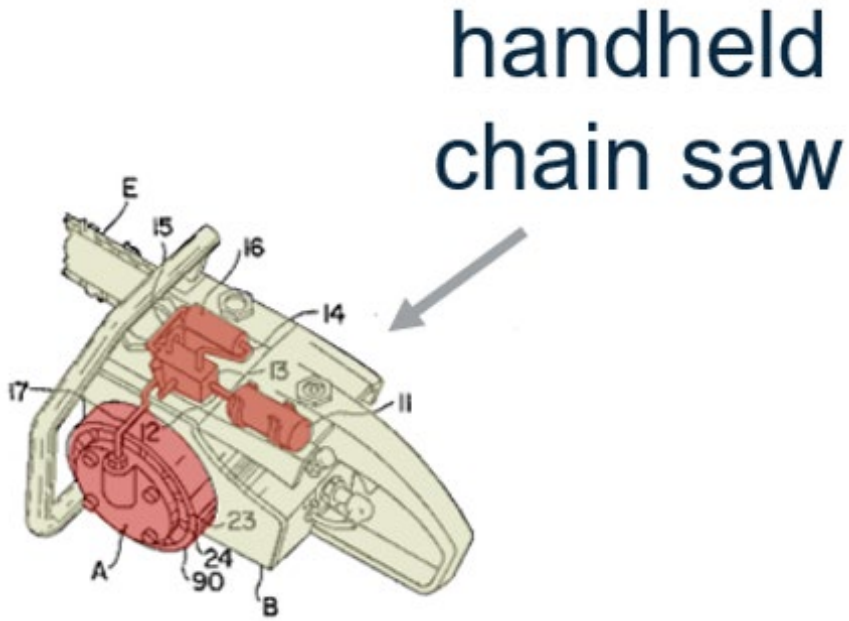


Figure 2b illustrates a chainsaw assembly with an energy cell (11) containing a source of pressurized liquified gas that is supplied to supply and discharge lines (14, 15) via a valve regulator (13) for starting motor (A) shown in figure 2a.

2c. Small scale engine (cross-sectional view)

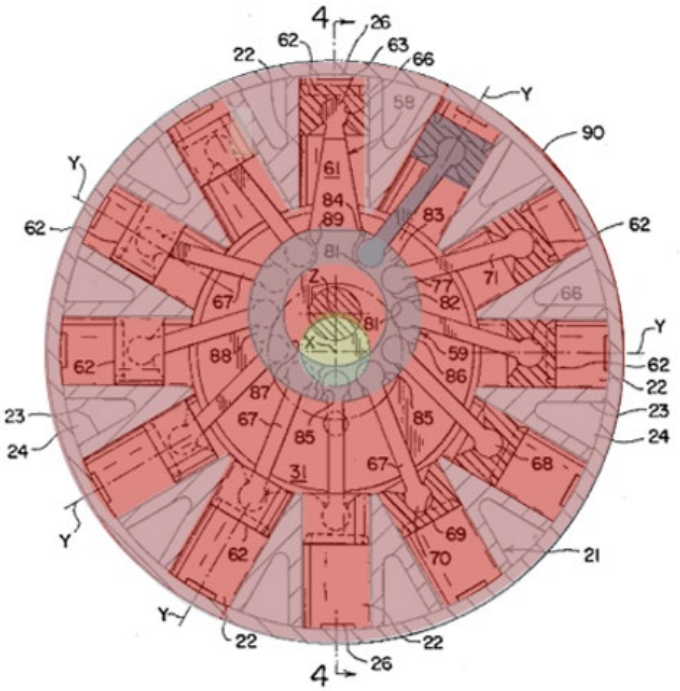


Figure 2c illustrates motor (A) with reciprocating pistons (62).

References

Limiting references

This place does not cover:

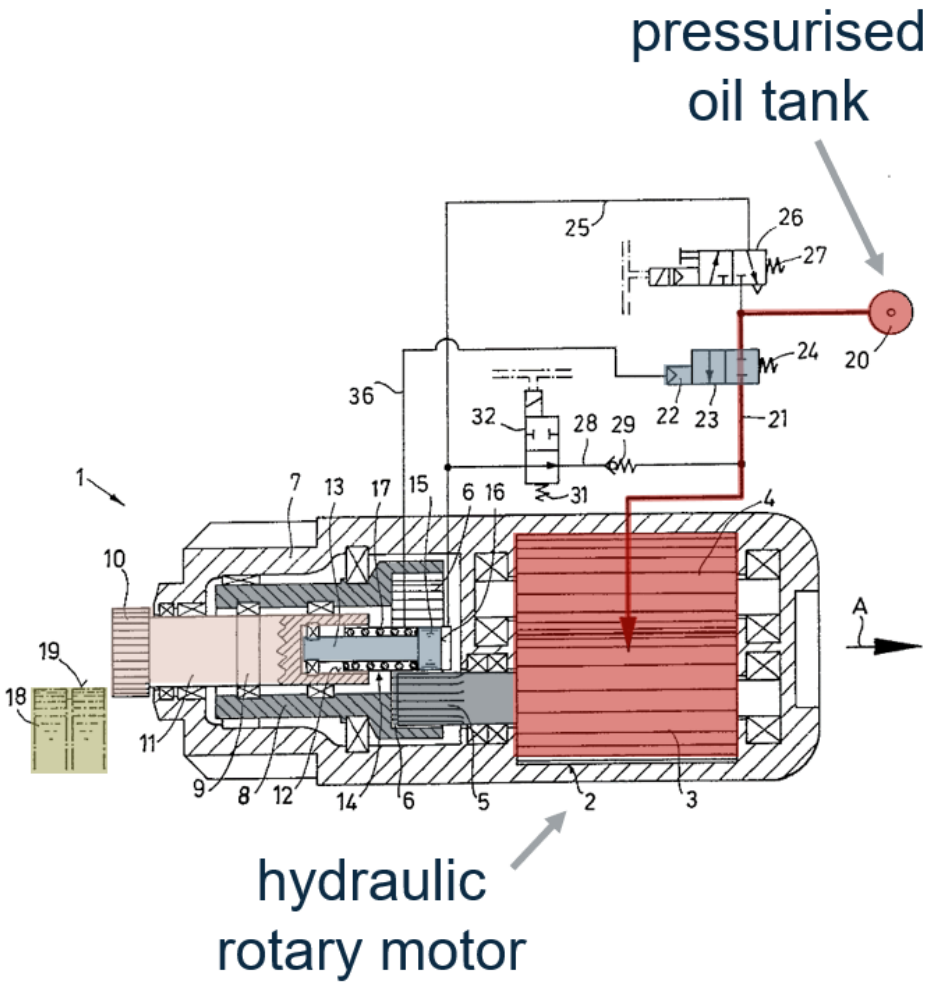
Starting apparatus having fluid-driven auxiliary engines or apparatus of combustion type	F02N 7/10

F02N 7/08

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

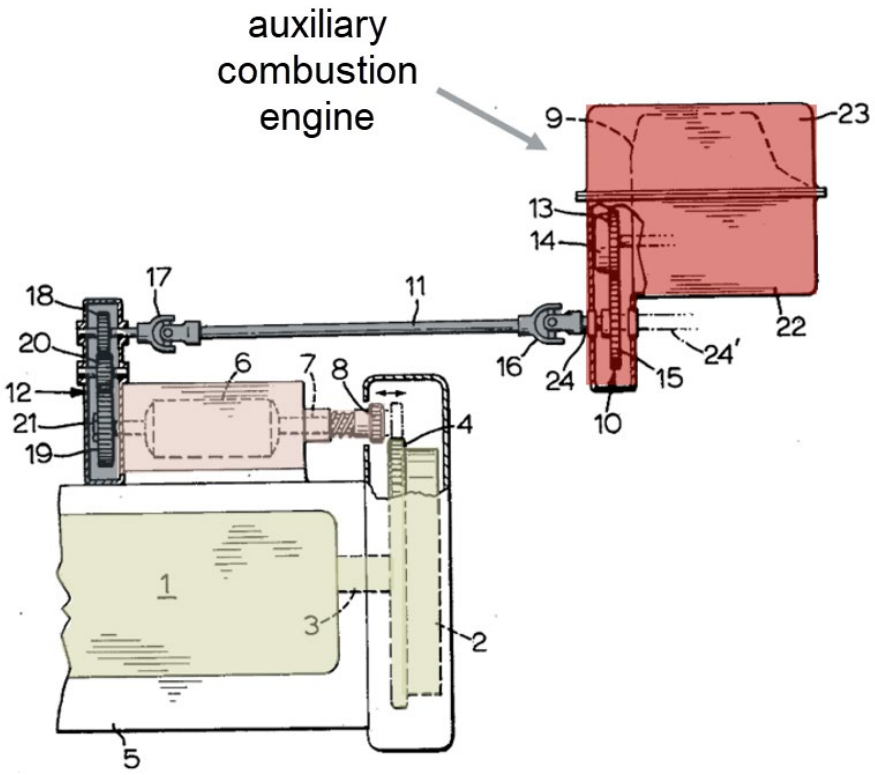


F02N 7/10

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The Figure illustrates an auxiliary combustion engine (9) connected to a pinion (8) of a starter (6) for starting a combustion engine (1).

References

Limiting references

This place does not cover:

Starting of engines by use of explosives, e.g. stored in cartridges	F02N 13/00

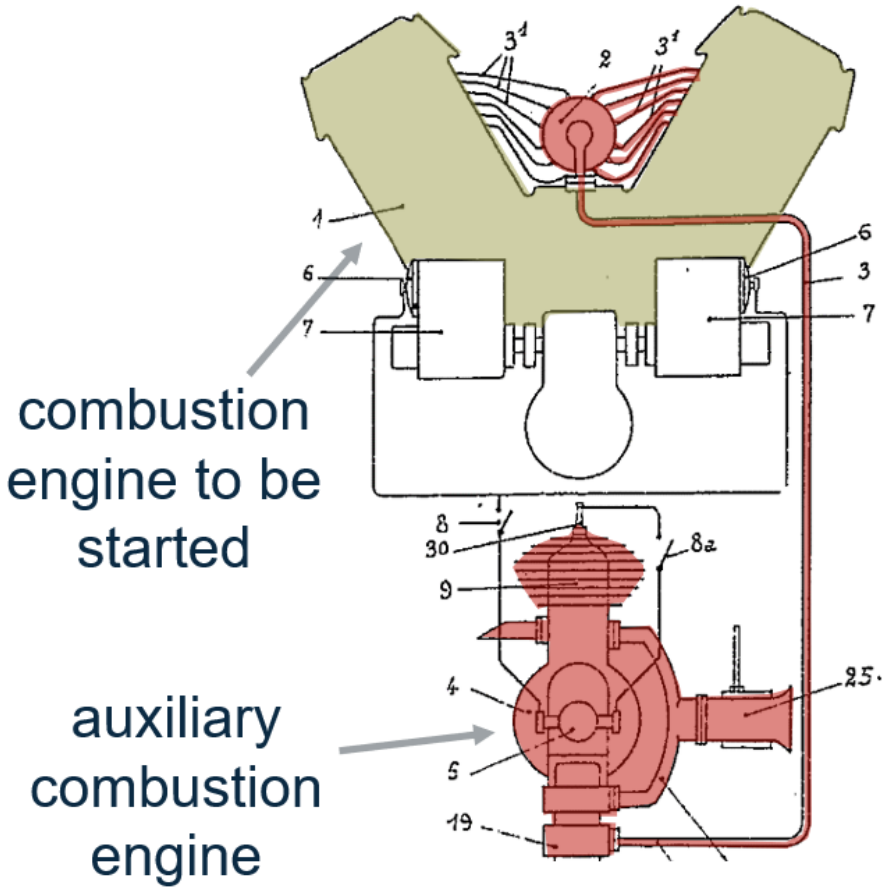
F02N 9/02

Definition statement

This place covers:

Starting of engines by generating pressure fluid directly by combustion, e.g. in an external combustion chamber, and supplying said pressure fluid to the working chambers of the engines.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

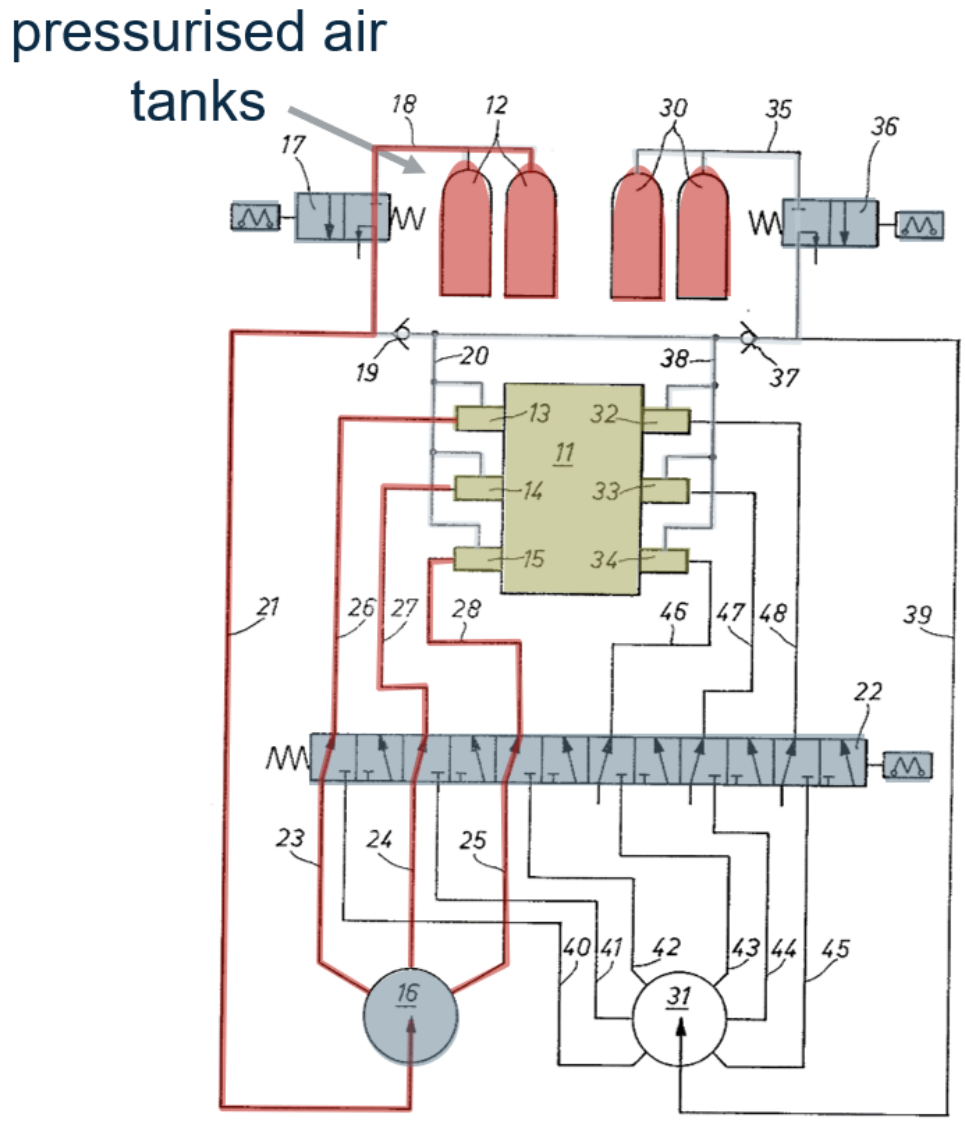
Starting of engines by use of explosives, e.g. stored in cartridges	F02N 13/00

F02N 9/04

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:


pressurised air tanks
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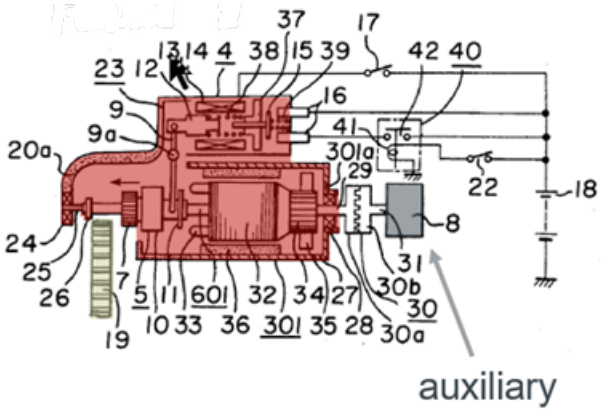
F02N 11/003

Definition statement

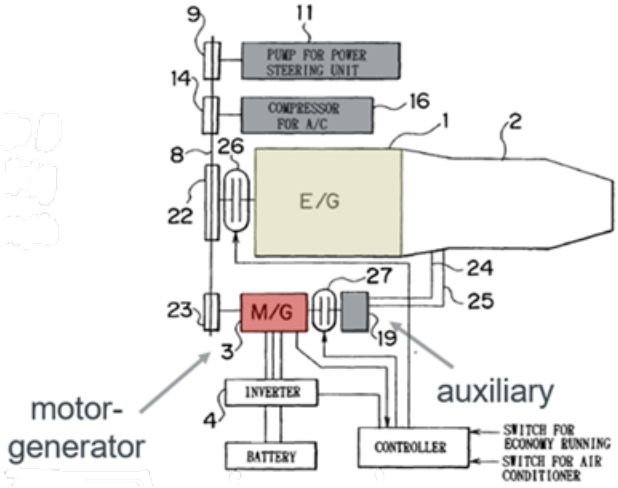
This place covers:

Illustrative examples of subject matter classified in this place:

1.



2.



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mechanical integration of starter with other accessories, e.g. fuel pump or compressor	F02N 15/00

F02N 11/006

Definition statement

This place covers:

Starting of engines using a plurality of electric motors, whereby said electric motors can be used simultaneously or alternatively for driving and starting the combustion engine.

Illustrative examples of subject matter classified in this place:

1.

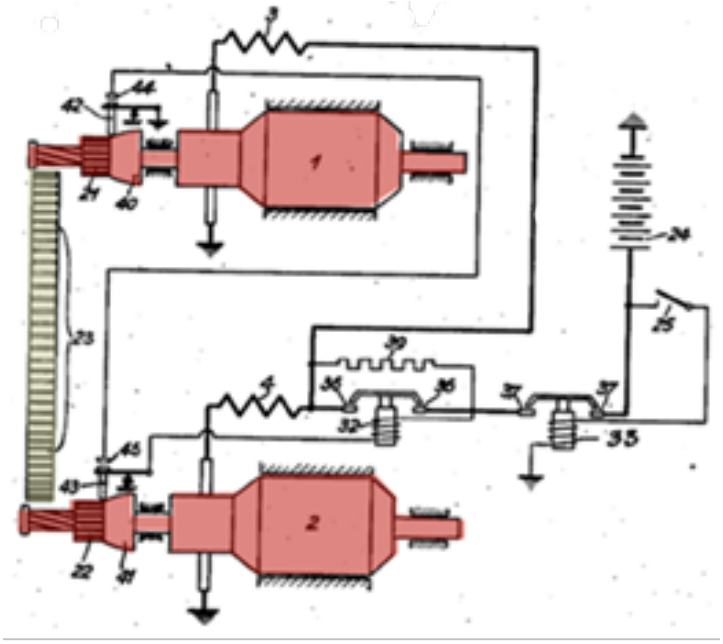


Figure 1 illustrates two starter armatures (1, 2) used to start an engine via a flywheel (23).

2.

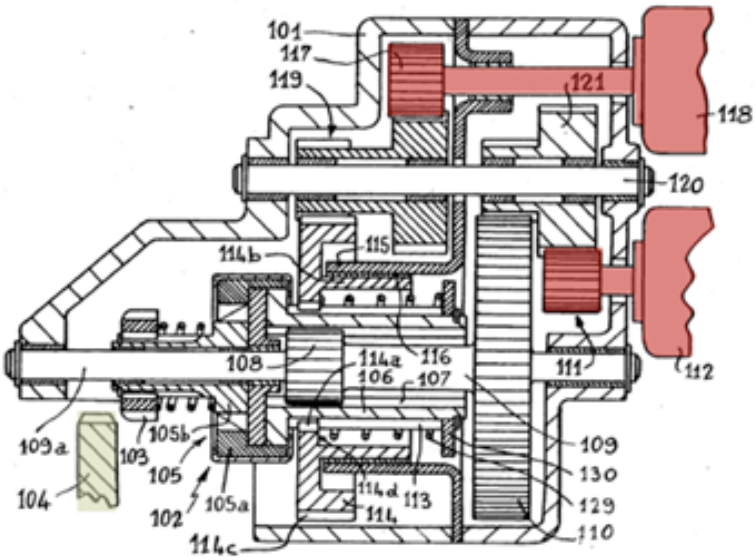


Figure 2 illustrates two starter motors (112, 118) connected to a pinion (103) for operation of a crown wheel (104) used to start a combustion engine.

3.

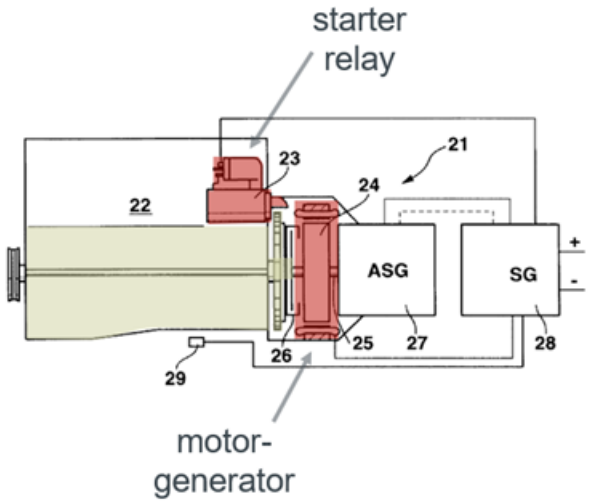


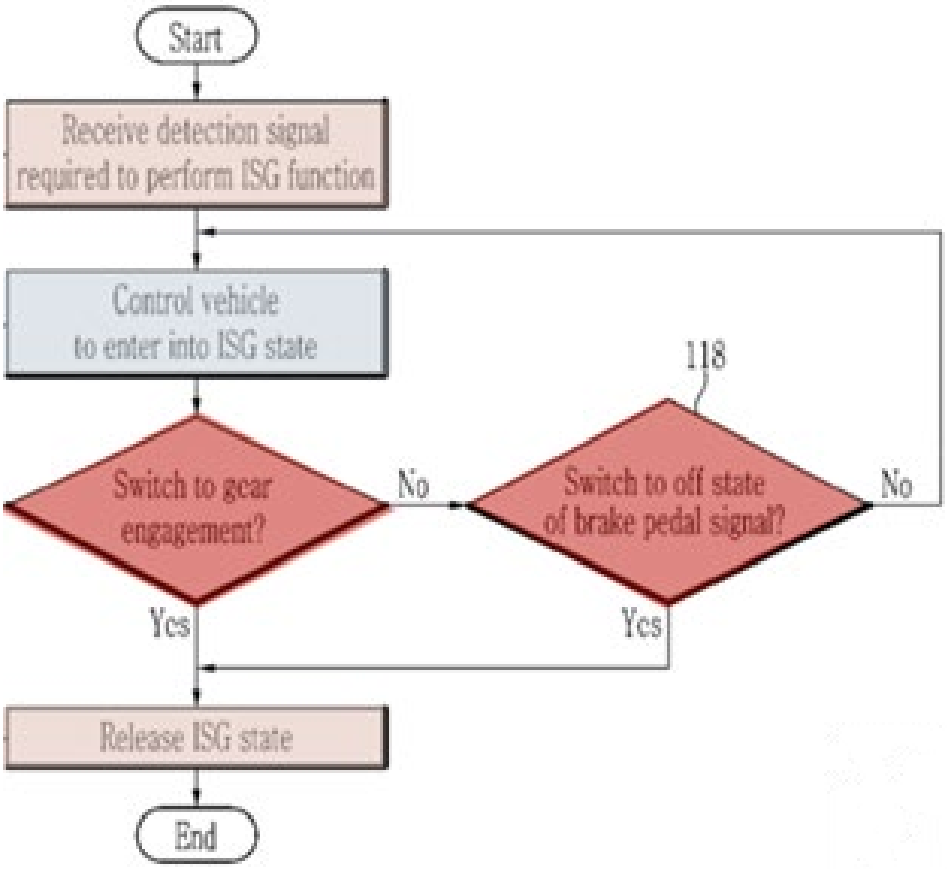
Figure 3 illustrates a conventional starter (23) and a starter generator (24) used to start a combustion engine (22).

F02N 11/0818

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Parameters used for control of starting apparatus	F02N 2200/00
Problems related to engine starting or engine's starting apparatus	F02N 2250/00
Control related aspects of engine starting	F02N 2300/00

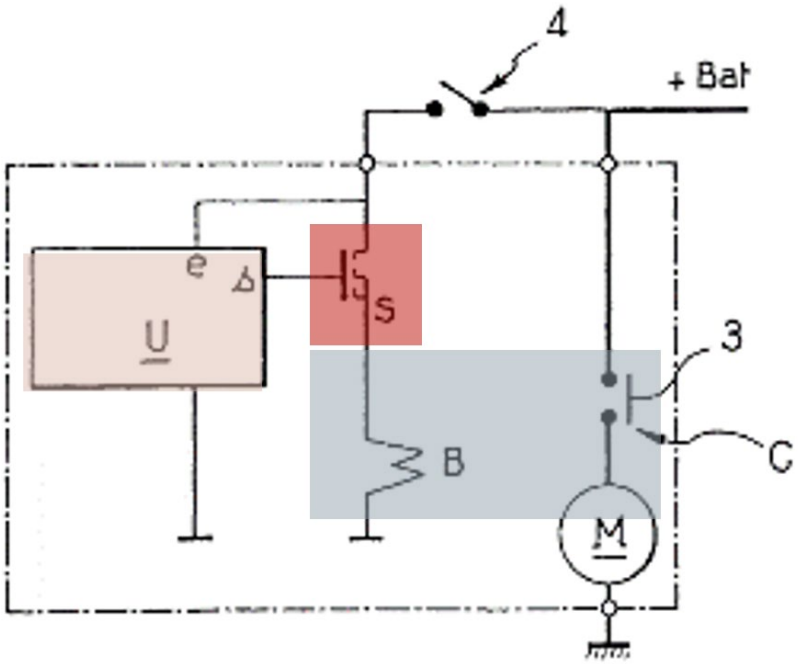
F02N 11/087

Definition statement

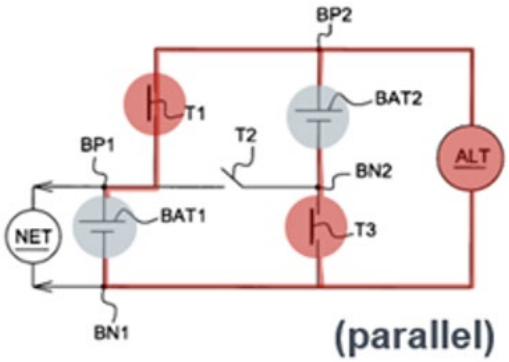
This place covers:

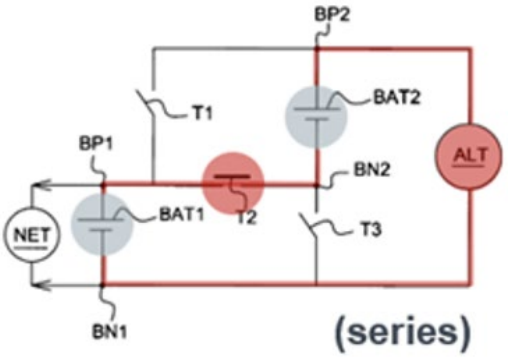
Illustrative examples of subject matter classified in this place:

1.



2.



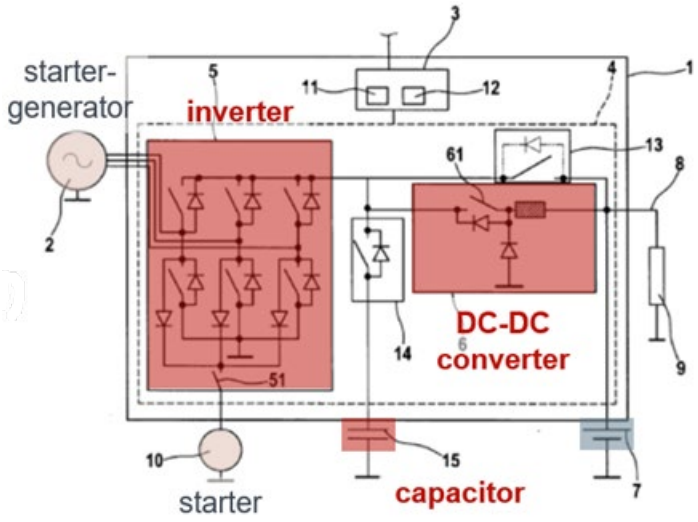


F02N 2011/0881

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



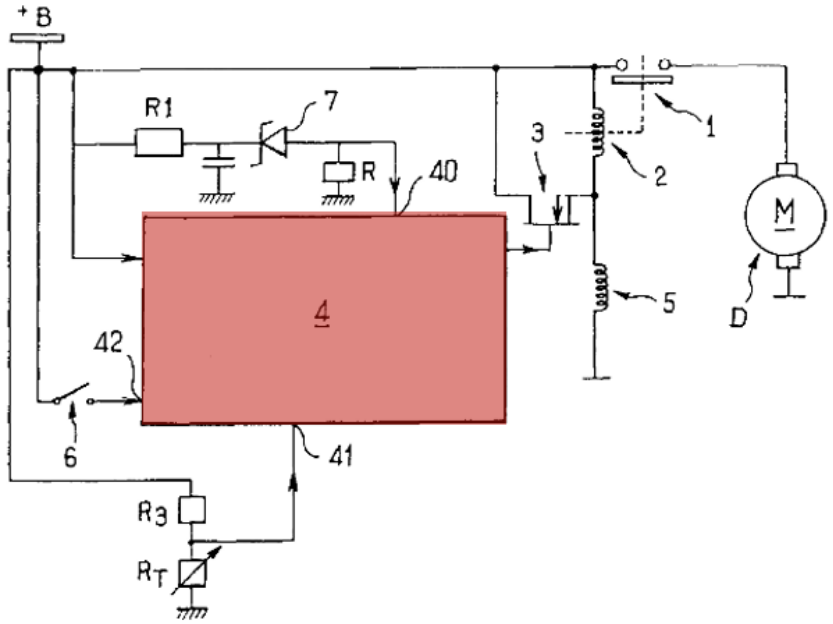
F02N 11/106

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.



1b.

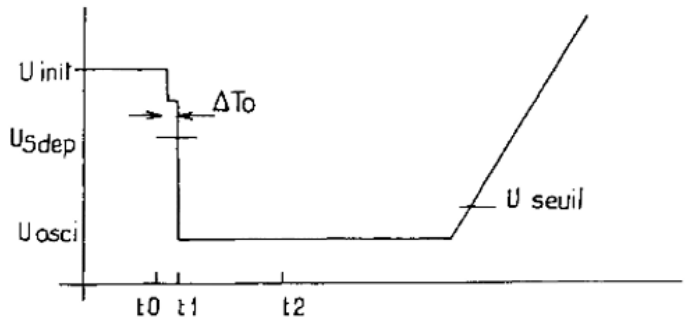


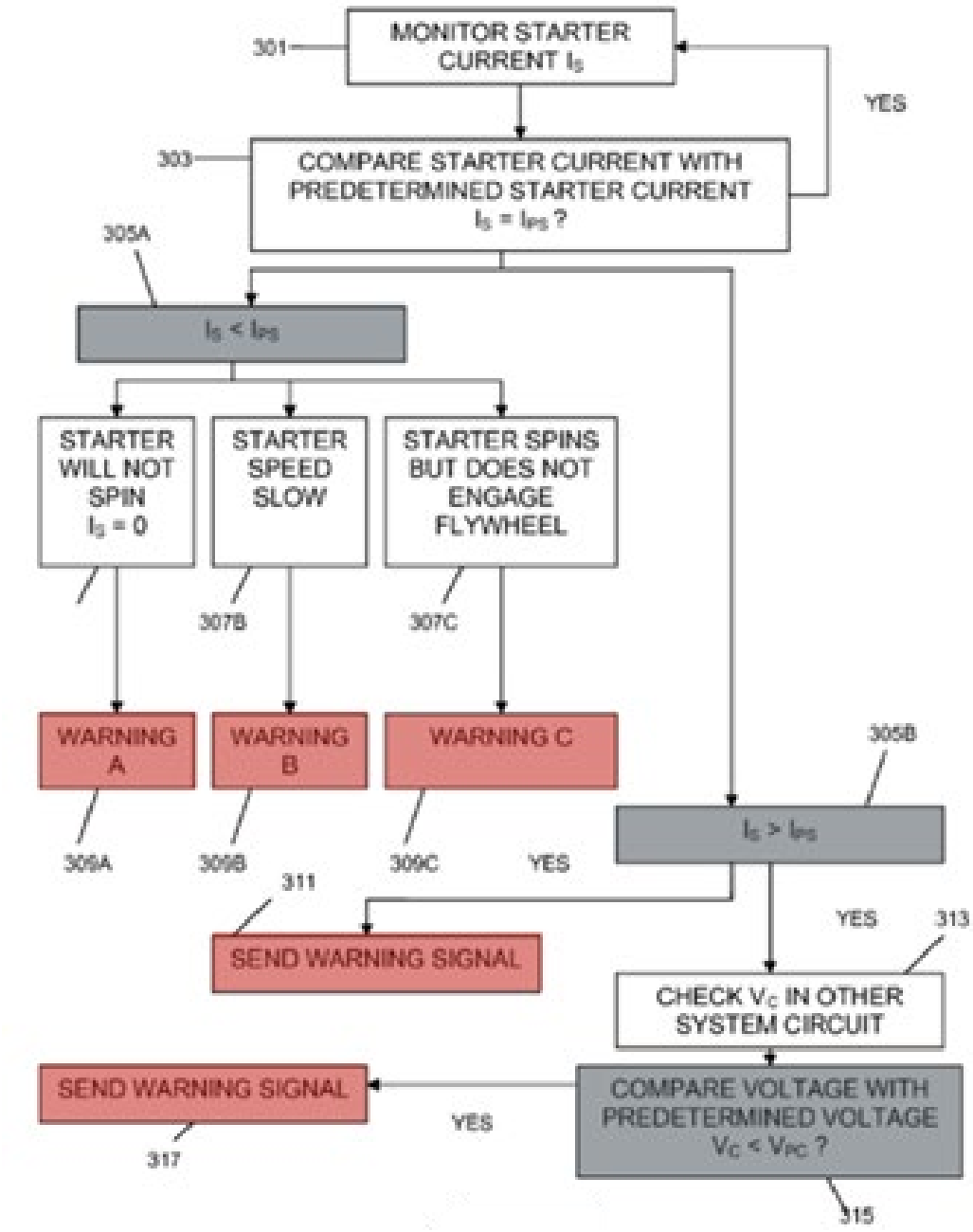
Figure 1a and Figure 1b illustrate a device for switching off an engine starter (M) when the measured supply voltage (41) of the starter (M) reaches a threshold value (U_{seuil}). The control unit (4) receives the measured supply voltage (41), compares it with the threshold value (U_{seuil}) and produces an output signal that triggers the transistor (3), so that the relay (1+2) opens and interrupts the power supply from the power line (+B) to the starter (M).

F02N 11/108

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



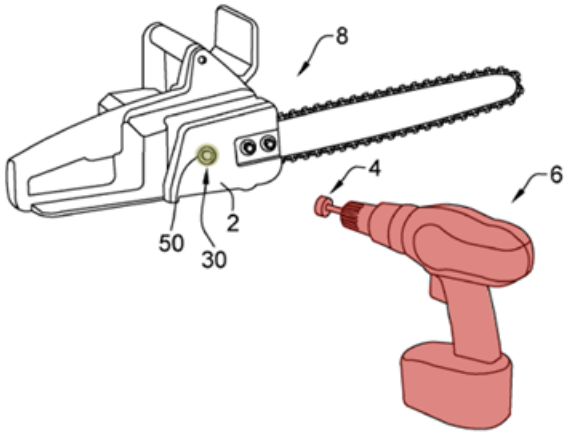
F02N 11/12

Definition statement

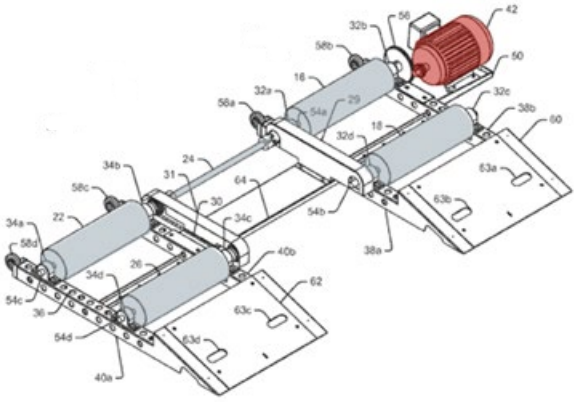
This place covers:

Illustrative examples of subject matter classified in this place:

1.



2.



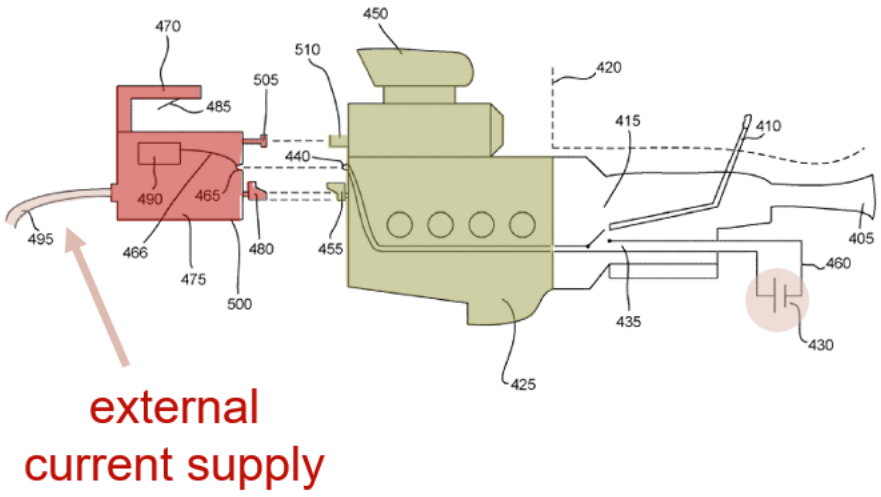
F02N 11/14

Definition statement

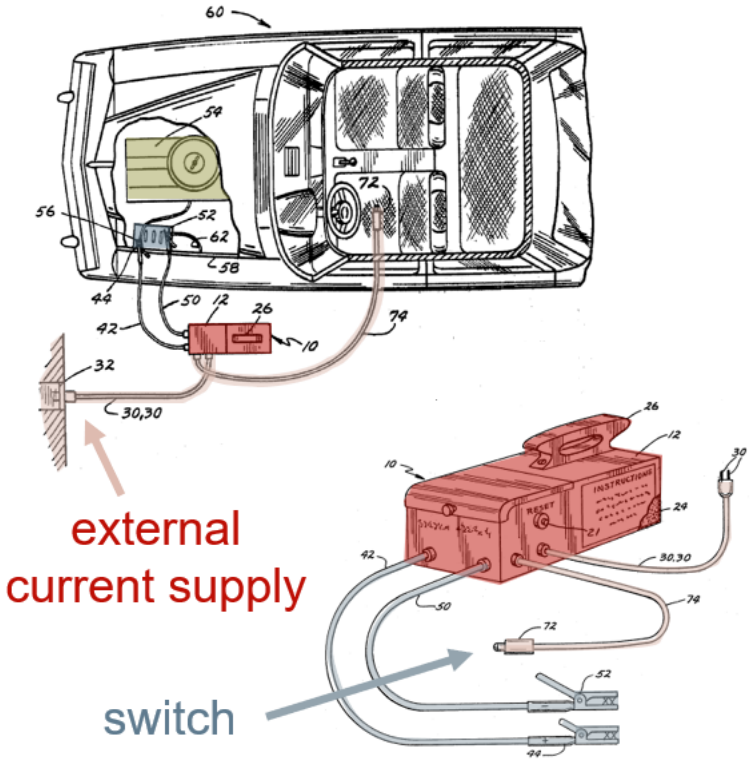
This place covers:

Illustrative examples of subject matter classified in this place:

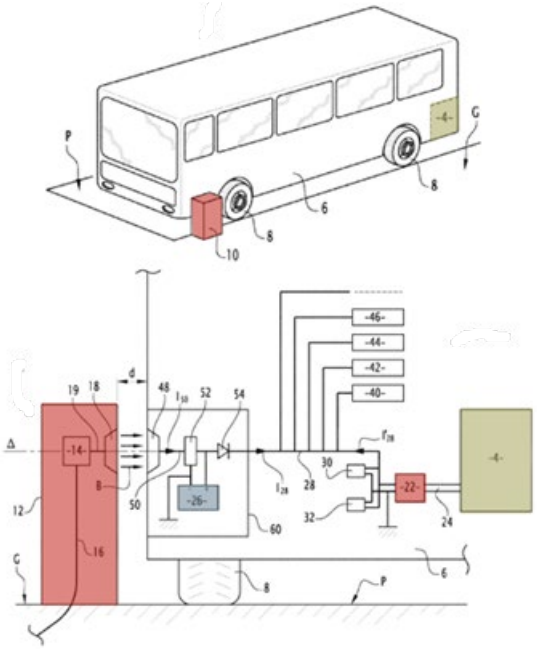
1.



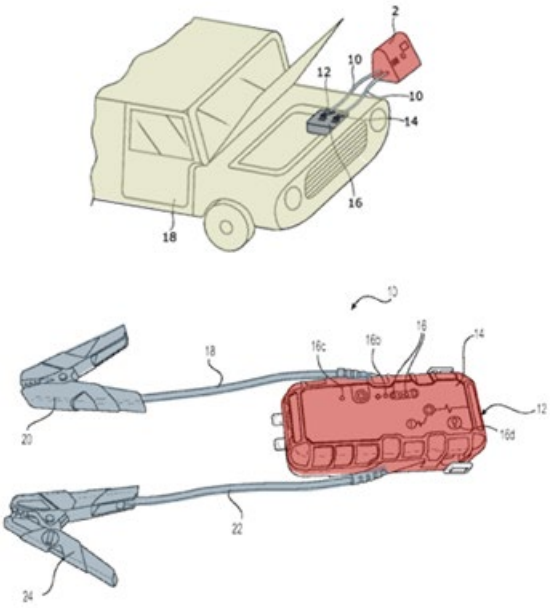
2.



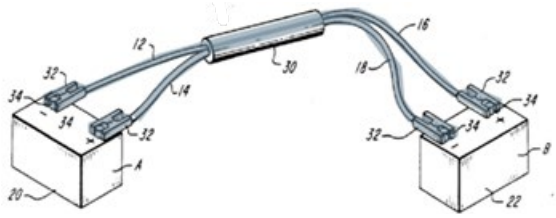
3.



4.



5.



References

Limiting references

This place does not cover:

Starting of engines by means of mobile, e.g. portable, starting sets	F02N 11/12

Informative references

Attention is drawn to the following places, which may be of interest for search:

Provisions for temporary connection of DC sources of essentially the same voltage, e.g. jumpstart cables	H02J 1/122

Parallel operation in networks using both storage and other DC sources, the other DC source being a battery actively interacting with the first one, i.e. battery to battery charging	H02J 7/342

F02N 15/003

Definition statement

This place covers:

- Components for producing a braking action on the starter rotation;
- Components of the starter producing a braking action on the engine rotation.

Illustrative examples of subject matter classified in this place:

1.

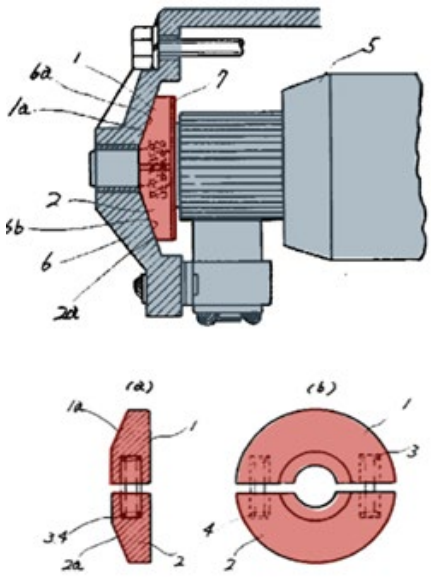


Figure 1 illustrates friction brake elements (1, 2) with springs (3, 4) for pressing tapered braking surfaces (1a, 2a) against end frame (6).

2.

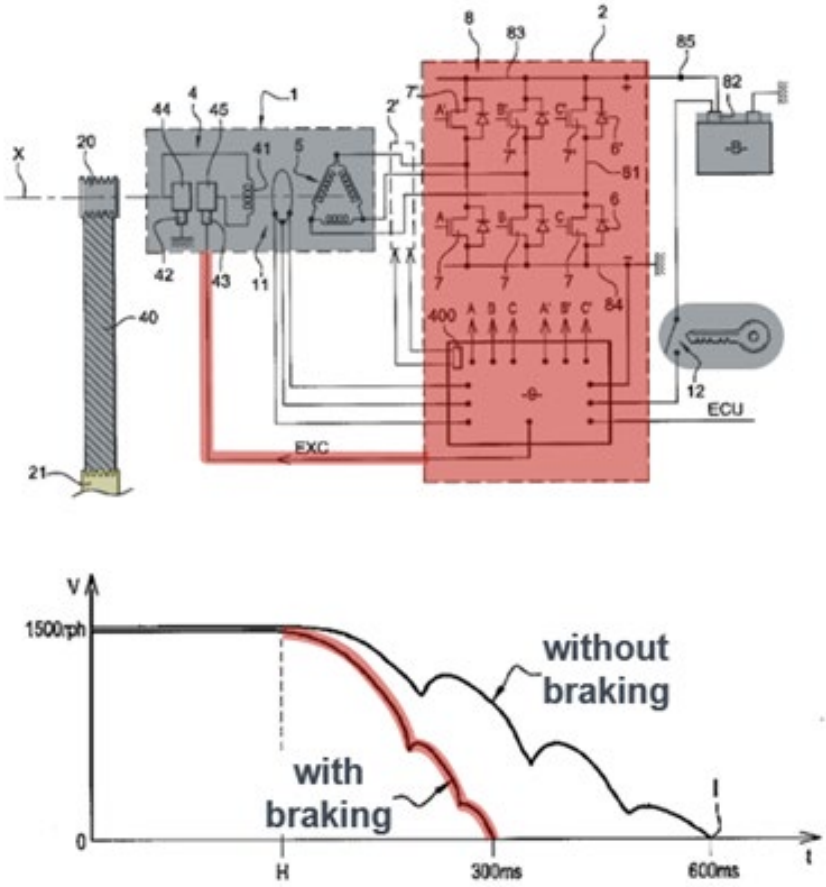


Figure 2 illustrates a power control unit (2) with a wired connection (EXC) to an alternator stater (1) for regulating a voltage (V) used to perform electro-magnetic induced braking within the alternator starter (1).

3.

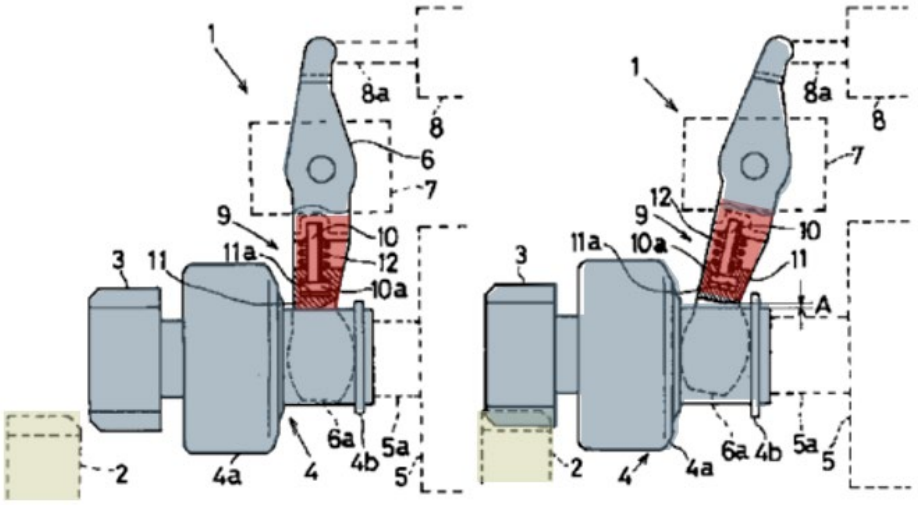


Figure 3 illustrates a brake device (9) comprising a brake member (11) that presses against an outer surface of clutch (4) to stop inertial rotation of pinion (3), clutch (4) and starter motor (5) when the pinion (3) is disengaged from a ring gear (2) used to start an engine.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Vehicle brake control systems or parts thereof; Brake control systems or parts thereof, in general	B60T
Brakes per se	F16D

Special rules of classification

Starters that brake the engine during engine stopping are classified in group F02N 11/00.

Resistors or impedances that dissipate the starter current produced by the inertial rotation of the starter after the engine starts are classified in group F02N 11/087.

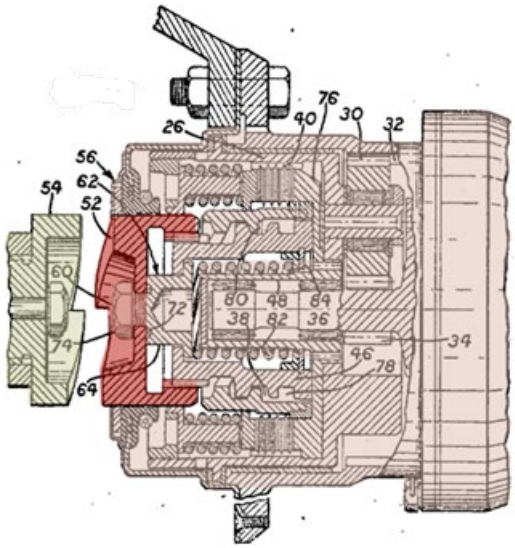
Brakes that actually block the starter drive are classified in group F02N 15/065.

F02N 15/021

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



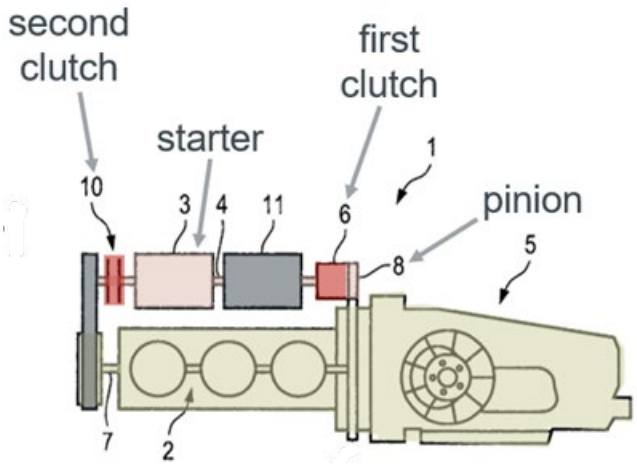
F02N 15/022

Definition statement

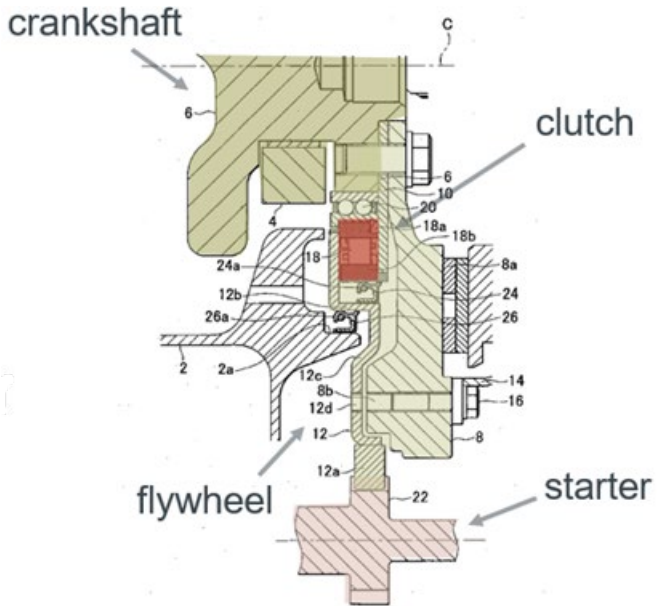
This place covers:

Illustrative examples of subject matter classified in this place:

1.


second clutch
first clutch
starter
1
10
3
4
11
6
pinion
8
5
7
2

2.


crankshaft
C
clutch
6
10
20
18a
18b
4
18
24a
8a
12b
24
26a
26
2
2a
12c
14
8b
16
12d
12
8
12a
22
flywheel
starter

3.

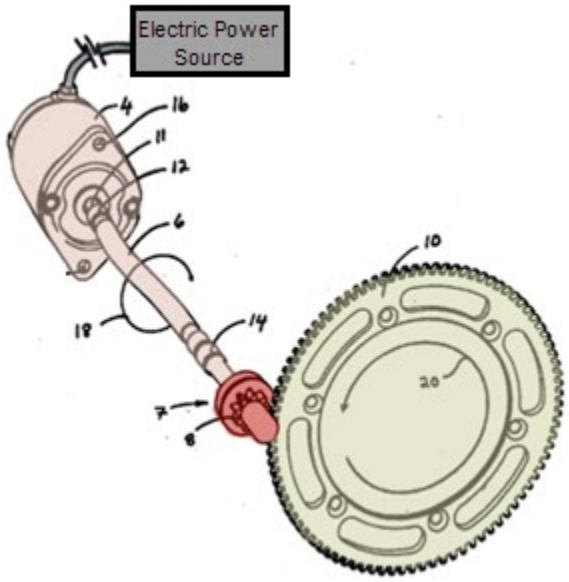


Figure 3 illustrates a flexible shaft starter system comprising a starter motor (4), a flexible torsion shaft (6) and a pinion drive assembly (7) that start an internal combustion engine via a starter gear (10) connected to a clutch.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Couplings for transmitting rotation; Clutches; Brakes	F16D

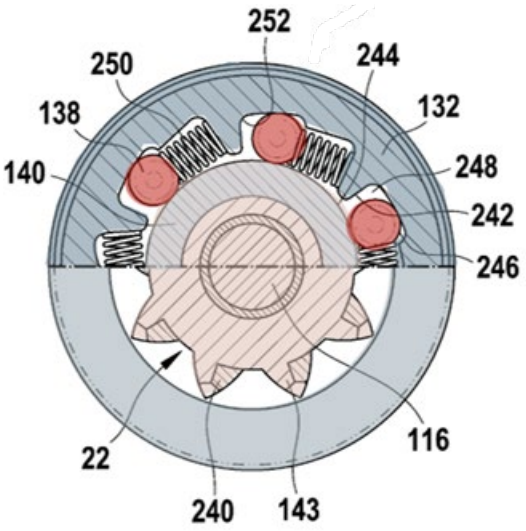
F02N 15/023

Definition statement

This place covers:

Starter comprising intermediate clutches of the overrunning or freewheel type.

Illustrative example of subject matter classified in this place:

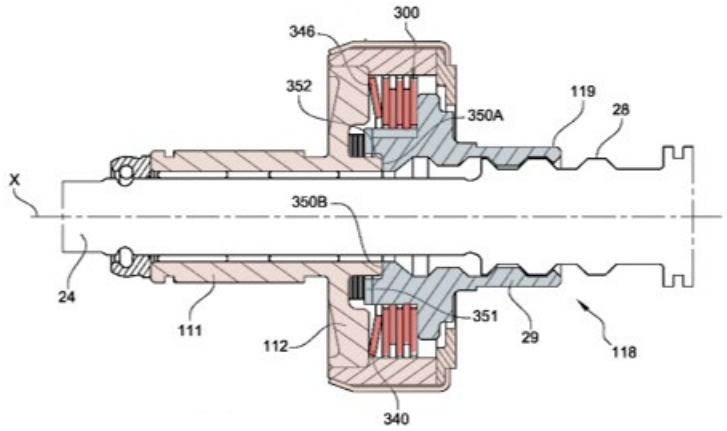


F02N 15/025

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



F02N 15/06

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

1a.

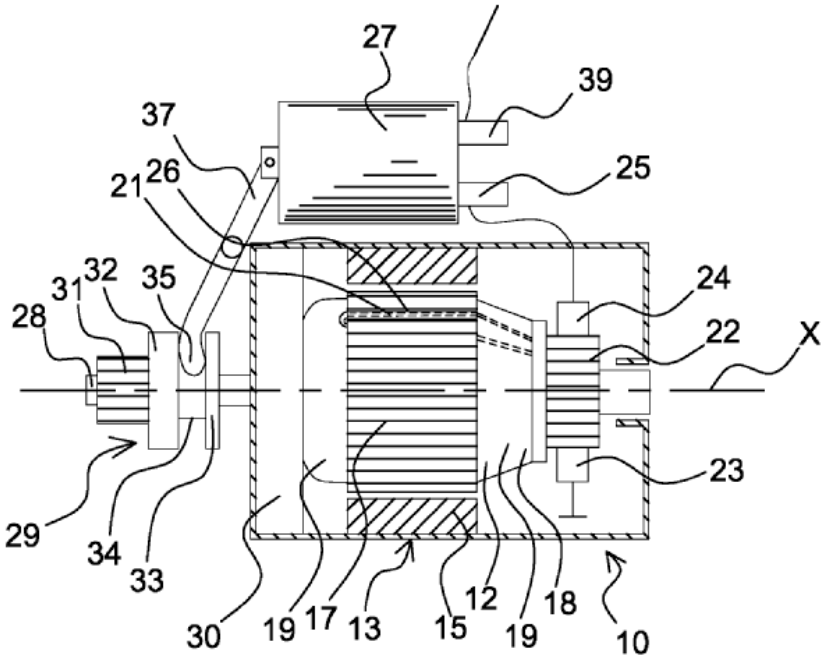


Figure 1a illustrates a control lever (37) pushing pinion (31) and moving it axially outwards.

1b.

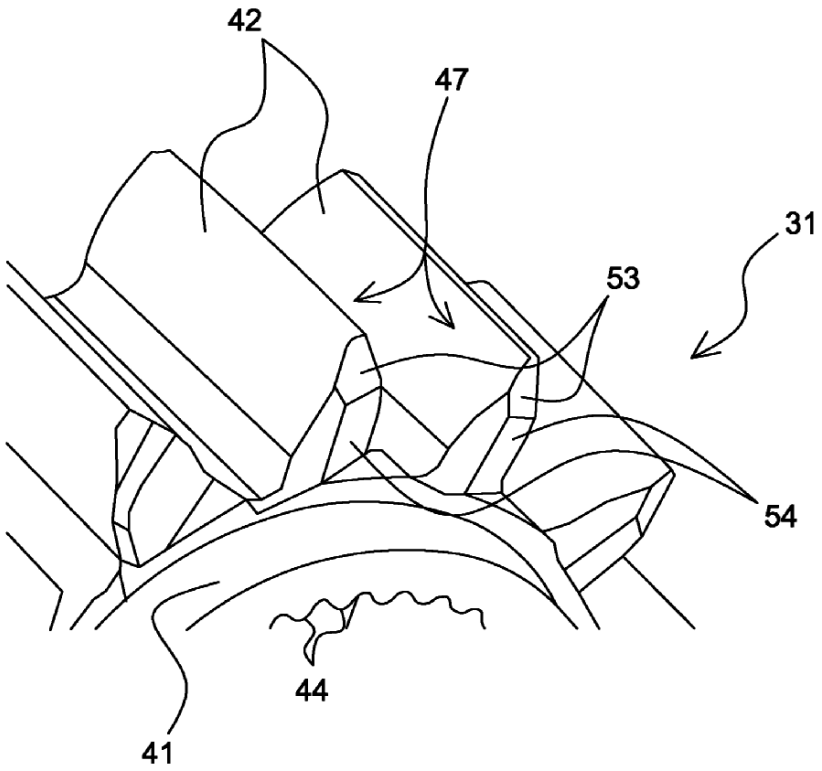


Figure 1b illustrates the pinion (31) of figure 1a with gear teeth (42).

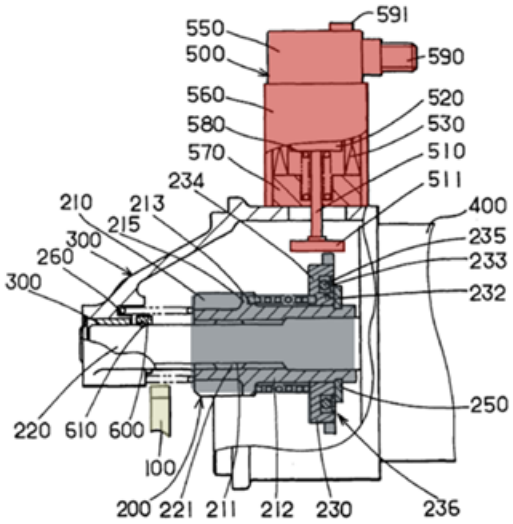
F02N 15/065

Definition statement

This place covers:

Starter drives with blocking means which prevent the retracting movement of the starter drive back into the disengaged position or which maintain the pinion in the engaged position. The blocking means may not necessarily include an electro-magnetic relay.

Illustrative example of subject matter classified in this place:



The Figure illustrates a starter assembly comprising a regulation member (510, 511) used to move a pinion gear (210) of a pinion assembly (200) into engagement with a ring gear (100) used to start an engine, while blocking backward movement of the pinion assembly (200) via the regulation member (510, 511).

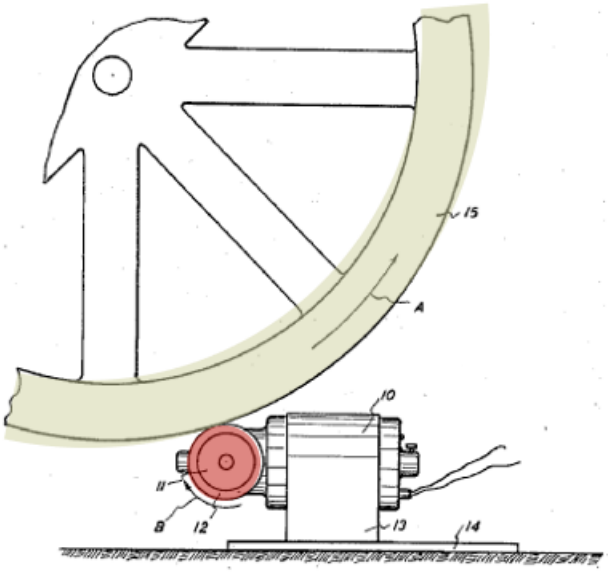
F02N 15/08

Definition statement

This place covers:

Friction-type connections between starter and combustion engine, e.g. starters with pulley-belt connection (for instance belt-integrated starter-generators).

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Starter/generators	F02N 11/04
Gearings for conveying rotary motion by endless flexible members, in general	F16H 7/00

2.A. Definitions (modified)

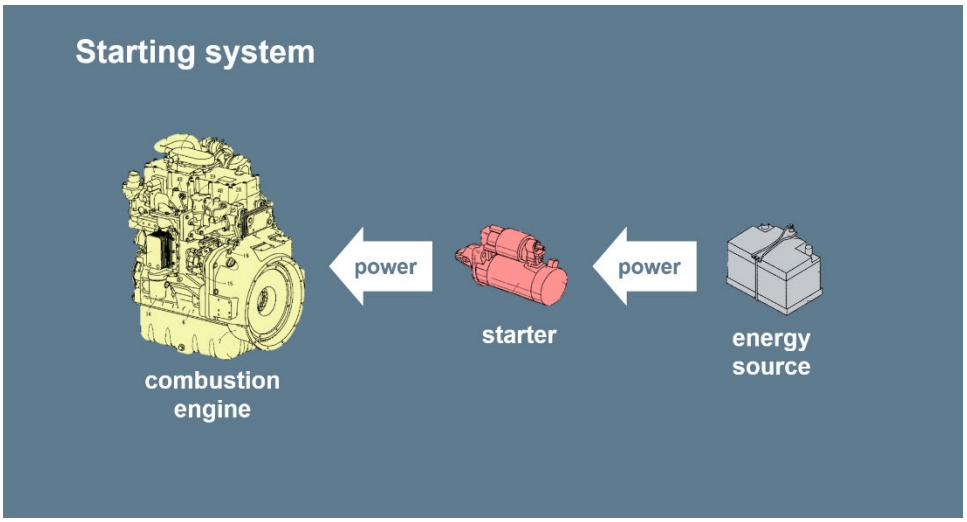
F02N

Definition statement

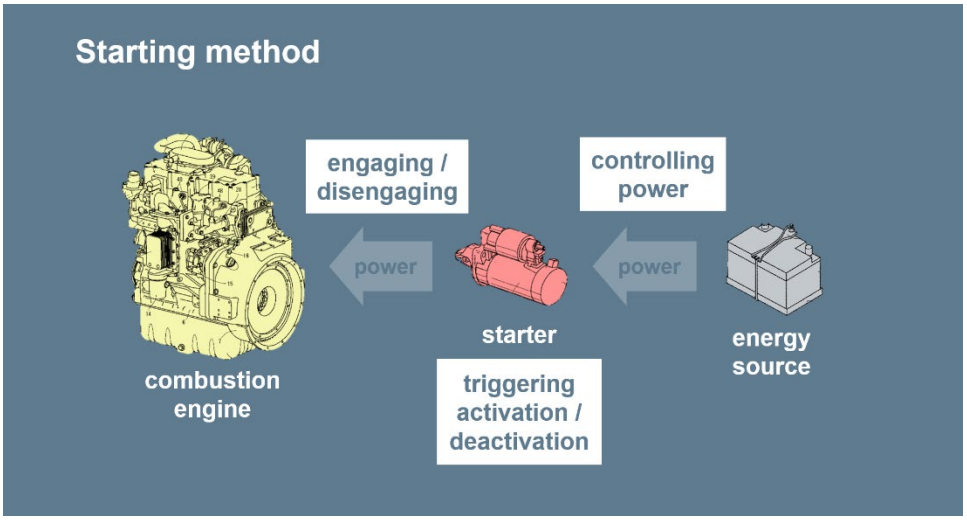
Replace: The existing Definition statement with the following new text and images:

Illustrative examples of subject matter classified in this place:

1.



2.



References

Application-oriented references

Insert: The following new table row into the existing table:

Ground or aircraft-carrier-deck installations for starting aircraft propulsion plant	B64F 1/34

F02N 3/00

Definition statement

Insert: A period at the end of the text so that it reads as follows:

Starting of engines achieved by manual actuation by the operator.

References

Limiting references

Replace: The existing table row with the following revised row:

Muscle-operated starting apparatus with intermediate power storage	F02N 5/00 - F02N 15/00

Informative references

Replace: The text of the existing table row so that it appears as follows:

Starting apparatus having hand cranks	F02N 1/00

F02N 3/02

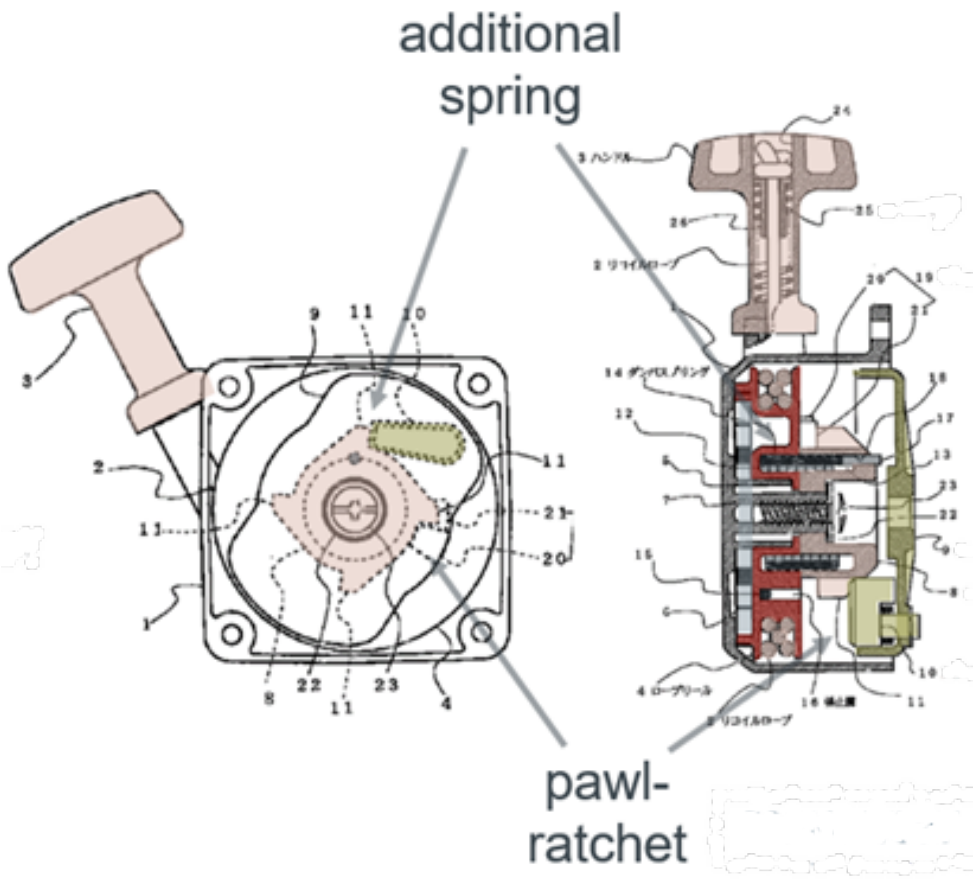
Definition statement

Replace: The existing Definition statement with the following new text and images:

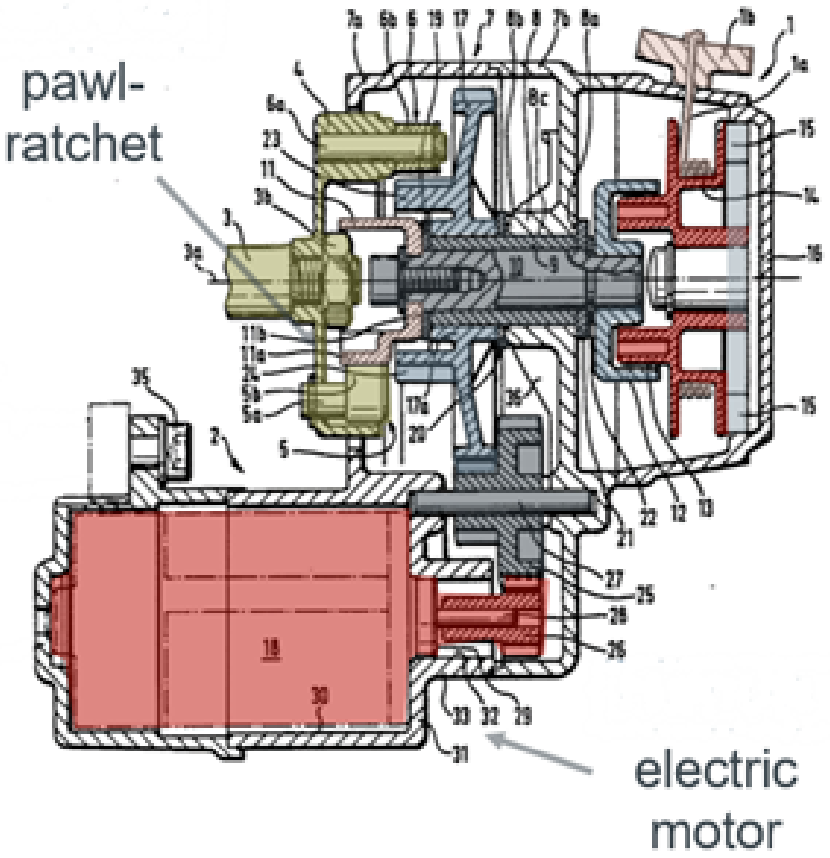
Pull-cord actuated starting apparatus, e.g. recoil mechanisms used in lawn mowers.

Illustrative examples of subject matter classified in this place:

1.



2.



Insert: The following new References/Informative references section:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Toothed gear type starter drives with resilient shock absorbers	F02N 15/063

Insert: The following new Special rules section:

Special rules of classification

Combinations of pull-cord actuated starting apparatus with other starting means are classified by allocating F02N 3/02 as well as the symbol corresponding to said other starting means, e.g. F02N 5/00 for intermediate mechanical power storage or F02N 11/00 for electric motors.

F02N 3/04

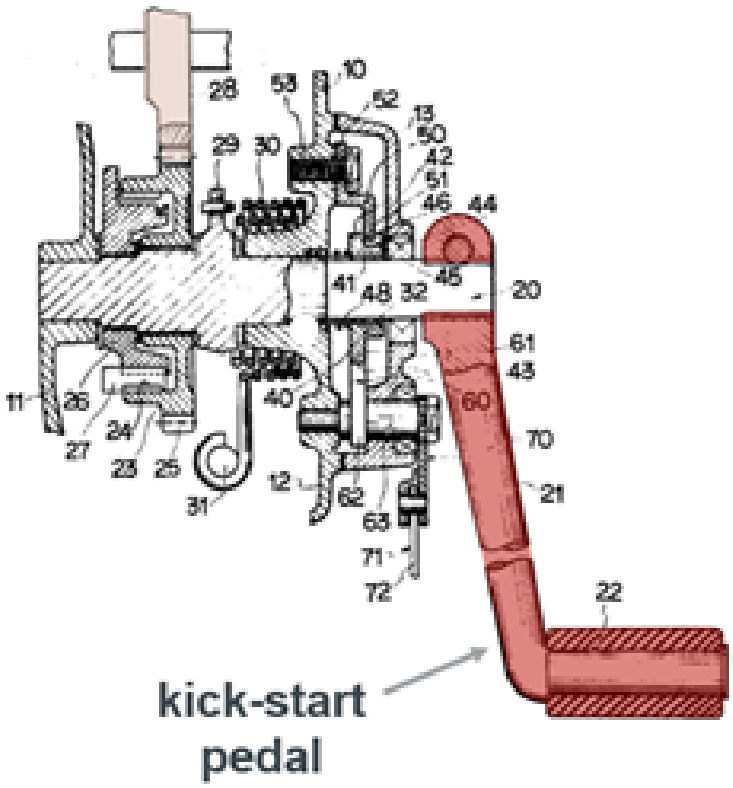
Definition statement

Replace: The existing Definition statement with the following revised text and new images:

- Kick starters for motorbikes and similar arrangements;
- Hand-actuated levers.

Illustrative examples of subject matter classified in this place:

1.



2.

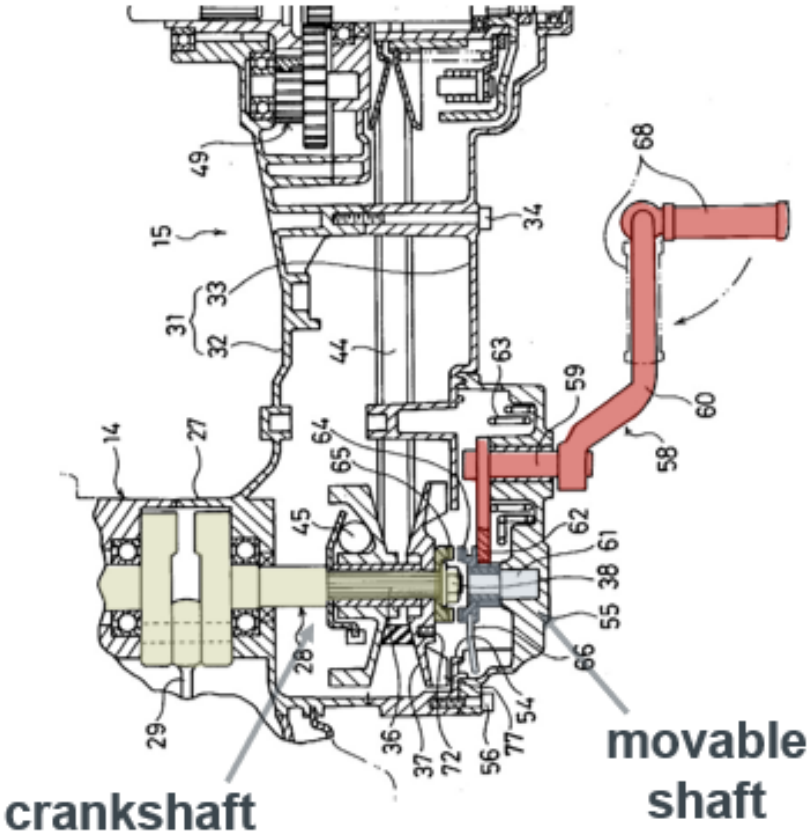


Figure 2 illustrates a kick starter having two ratchet gears (64, 65) selectively connecting the kickstart lever to the combustion engine, wherein said ratchet gears (64, 65) are mounted on two different coaxial shafts and move to engage each other.

3.

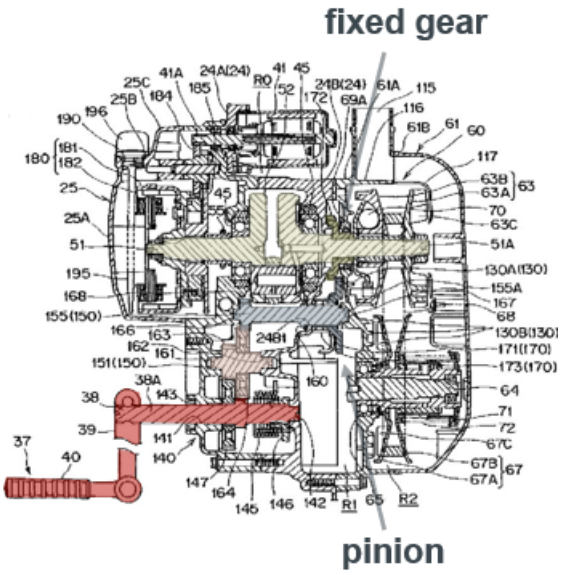


Figure 3 illustrates a kick starter having two ratchet gears (pinion 170, fixed gear 172) selectively connecting the kickstart lever to a combustion engine, wherein said ratchet gears are mounted on two different eccentric shafts and move to engage each other.

4.

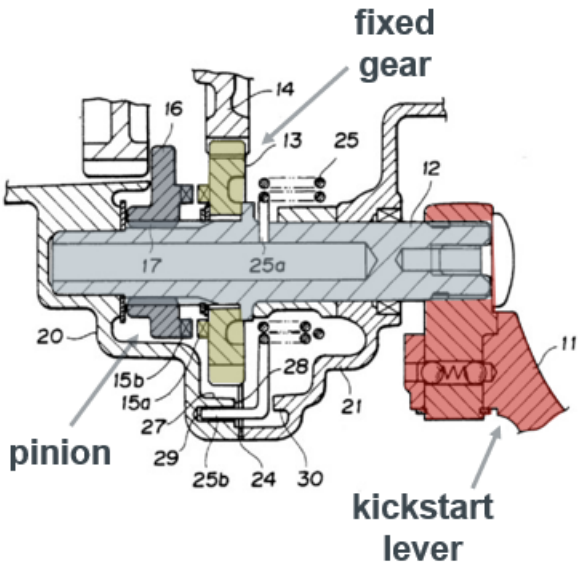


Figure 4 illustrates a kick starter having two ratchet gears (pinion 13, gear 16) selectively connecting the kickstart lever to the combustion engine, wherein said ratchet gears are mounted on the same shaft and move to engage each other.

Insert: The following new References/Informative references section:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Starter comprising an intermediate clutch of the jaw type	F02N 15/028

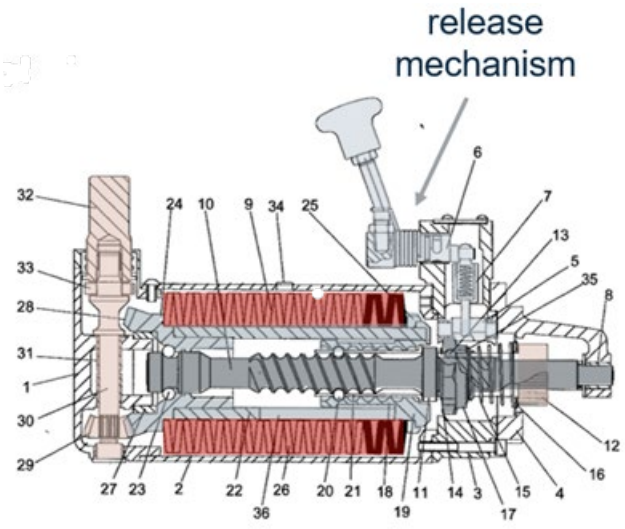
F02N 5/02

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

Starting apparatus, whereby the energy for starting is at least partially stored in a spring and subsequently released to effect starting.

Illustrative example of subject matter classified in this place:



Insert: The following new References/Informative references section:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Muscle-operated starting apparatus having foot-actuated levers	F02N 3/04

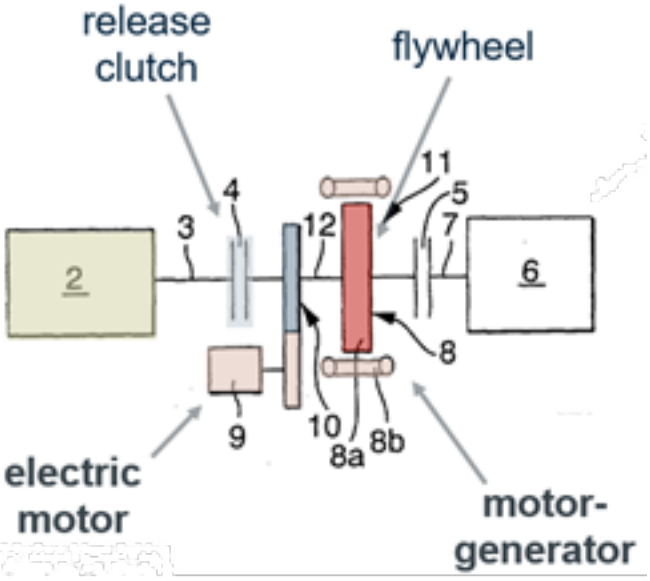
F02N 5/04

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

- Starting apparatus, whereby the energy for starting is stored in moving parts (e.g. the engine flywheel);
- Using the vehicle inertia to start the engine;
- Connection of the engine via the clutch to the wheels of a moving vehicle to accelerate the engine for starting, e.g. in hybrid vehicles;
- Acceleration of the starter before the starter and the engine are connected.

Illustrative example of subject matter classified in this place:



The Figure illustrates a powertrain for a motor vehicle comprising an engine (2) connected to a flywheel (11) by crankshaft (3) for storing mechanical energy via flywheel (11).

Insert: The following new Special rules section:

Special rules of classification

When the initial source of power is an electric motor, then additional classification should be given in F02N 11/00.

F02N 7/00

Definition statement

Replace: The existing Definition statement with the following revised text:

Starting apparatus having fluid-driven auxiliary engines or apparatus, e.g. hydraulic or air motors.

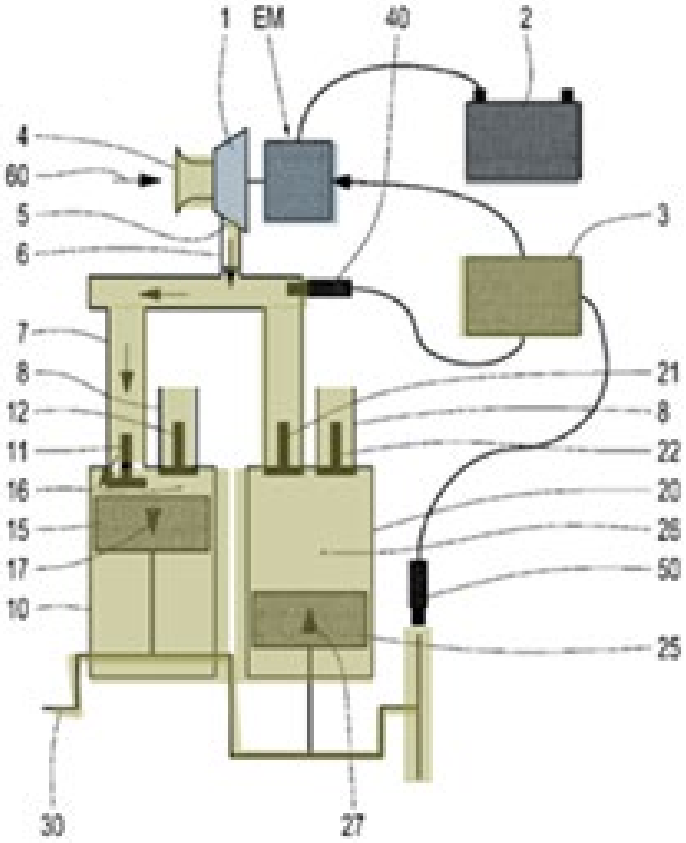
F02N 9/00

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

Supply of high-pressure fluid to the engine's working chambers to achieve engine start.

Illustrative example of subject matter classified in this place:



The Figure illustrates a system comprising a compressor (1) connected to cylinders (10, 20) through air flow passage (7), where the compressor delivers compressed air into cylinder (10) upon opening of an intake valve (11) to drive a piston (15) downwards for starting an engine.

Insert: The following new Special rules section:

Special rules of classification

Air or combustible mixtures introduced in the working chamber solely to be combusted for starting the engine is classified in group F02N99/00.

F02N 11/00

Delete: The entire Definition statement.

Special rules of classification

Replace: The existing Special rules text with the following revised text:

Control means specially adapted for starting of engines by means of electric motors are classified in F02N 11/08 and subgroups.

F02N 11/04

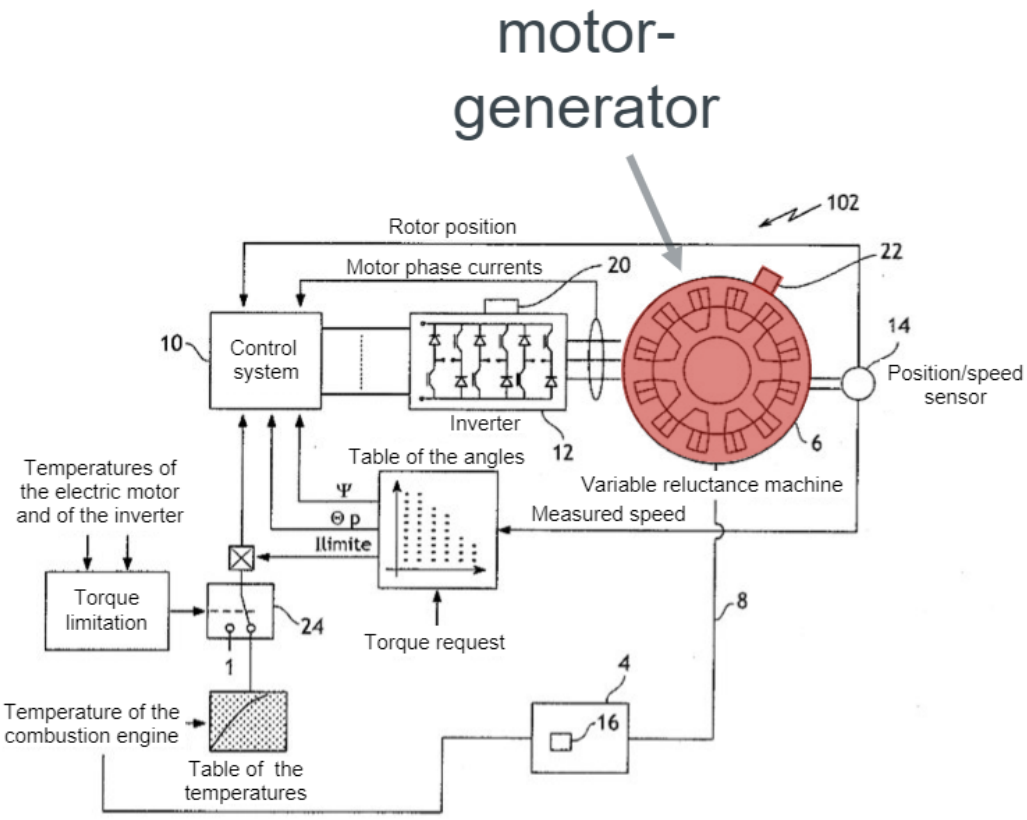
Definition statement

Replace: The existing Definition statement with the following revised text and new images:

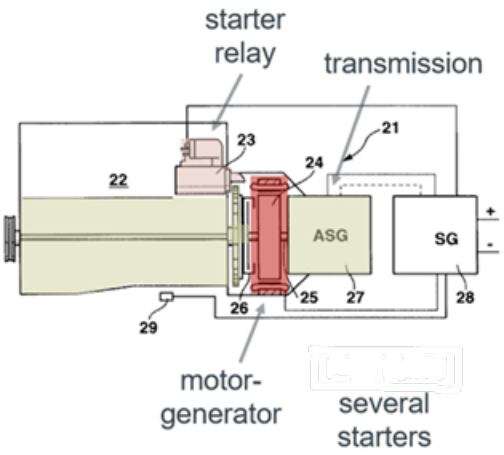
Starter motors also used as generators, e.g. for mild hybrid vehicles.

Illustrative examples of subject matter classified in this place:

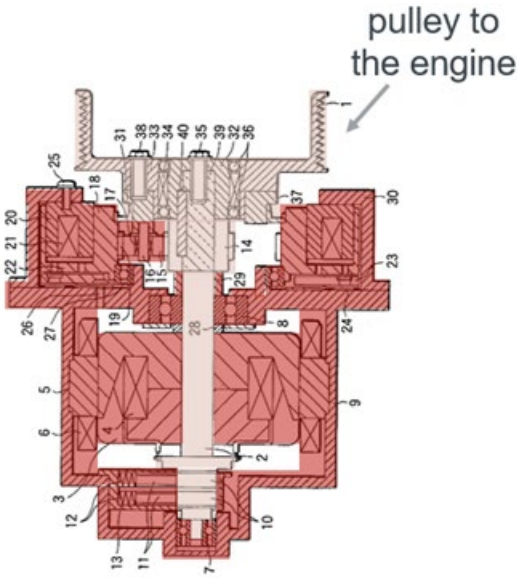
1.


motor-
generator
102
Rotor position
Motor phase currents
20
22
14
10
Control system
Position/speed sensor
Inverter
12
6
Table of the angles
Variable reluctance machine
Temperatures of the electric motor and of the inverter
Ψ
Θ p
Ilimite
Measured speed
Torque limitation
24
8
Torque request
1
4
16
Temperature of the combustion engine
Table of the temperatures

2.


starter relay
transmission
21
23
24
22
ASG
SG
+
-
25
27
28
26
29
motor-generator
several starters

3.



Insert: The following new References/Informative references section:

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangement or mounting of plural diverse prime-movers for mutual or common propulsion, the prime-movers consisting of electric motors and internal combustion engines, e.g. Hybrid Electric Vehicles [HEVs]	B60K 6/20
Structural association of a motor or generator with the drive train of a motor vehicle	H02K 7/006

F02N 11/06

Definition statement

Replace: The existing Definition statement text with the following revised text:

Starter generators associated with ignition apparatus.

F02N 11/08

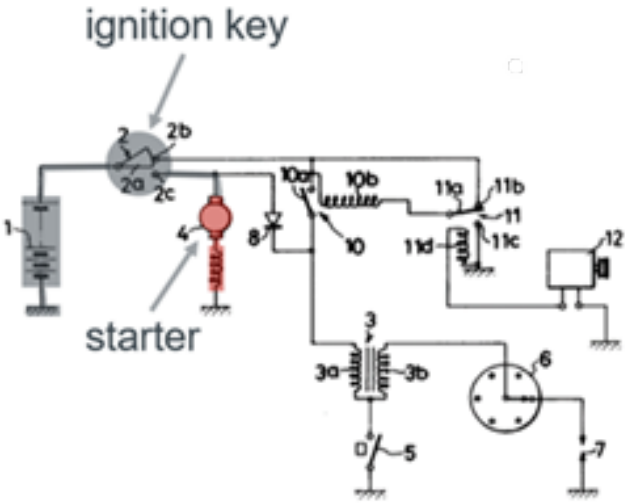
Definition statement

Replace: The existing Definition statement with the following revised text and new image:

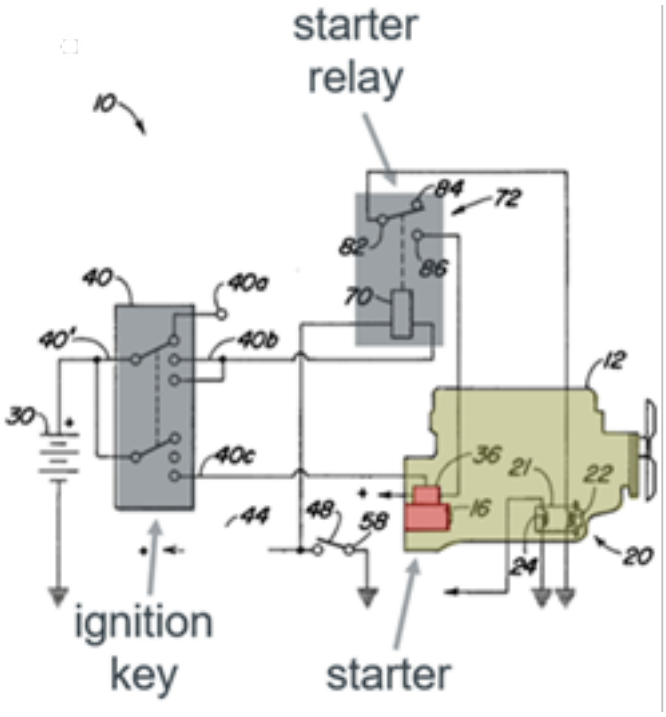
- Circuits, control means or control methods specially adapted for starting of engines;
- Circuits, control means or control methods specially adapted for stopping of engines in such a way as to facilitate their restart.

Illustrative examples of subject matter classified in this place:

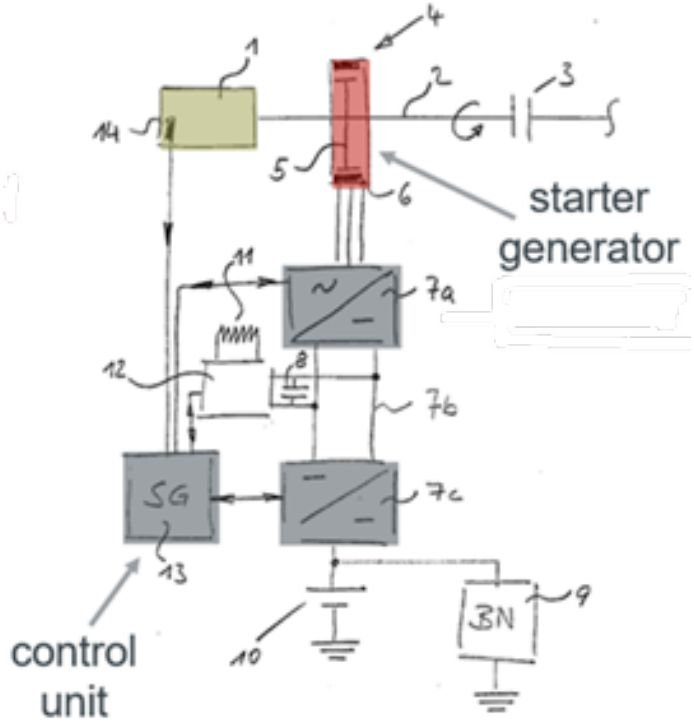
1.



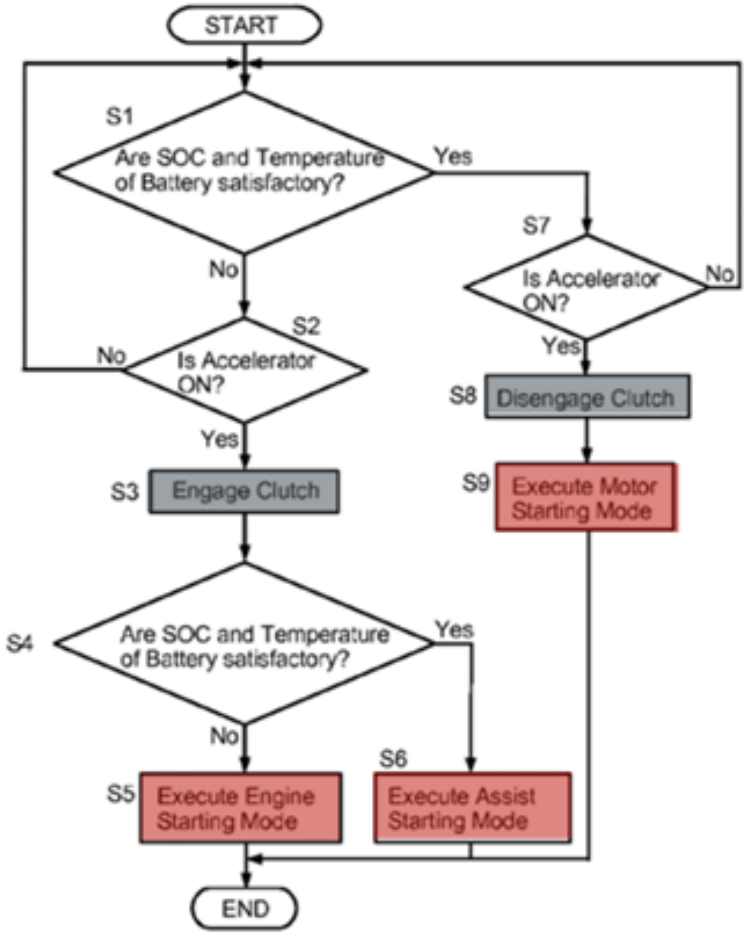
2.


starter
relay
ignition
key
starter

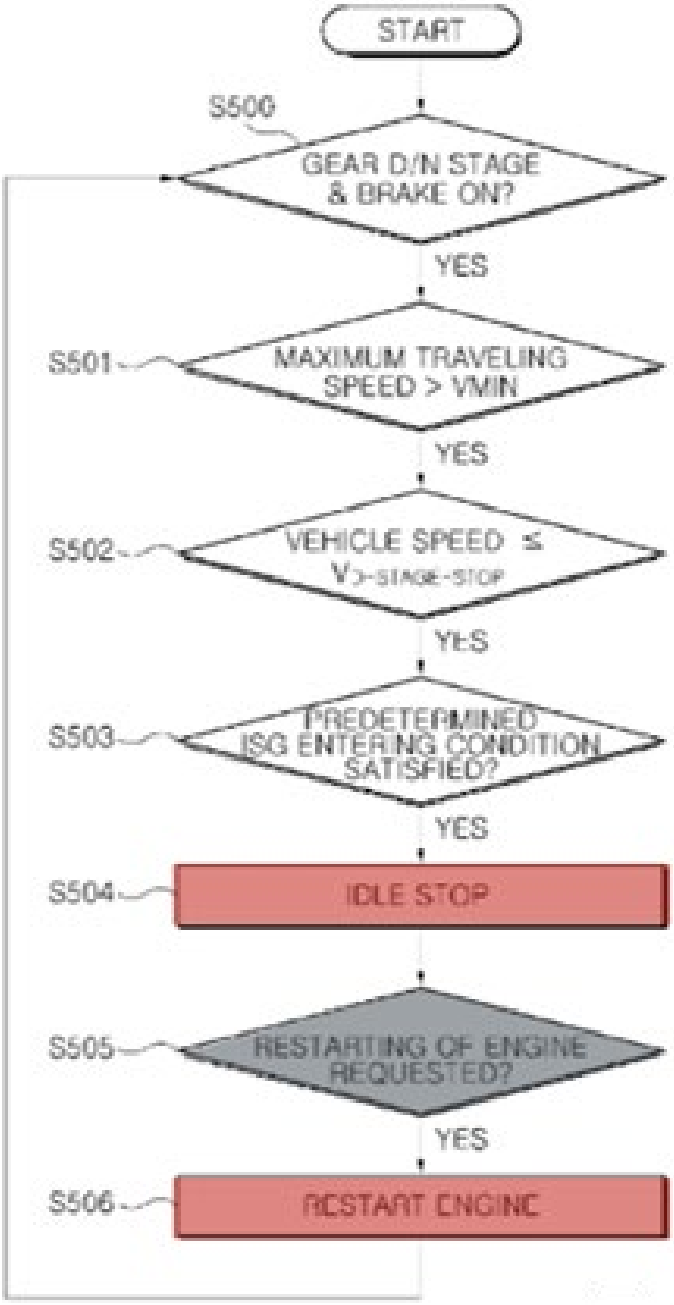
3.


starter
generator
control
unit
SG
BN

4.


START
S1
Are SOC and Temperature of Battery satisfactory?
Yes
No
S7
Is Accelerator ON?
No
Yes
S2
Is Accelerator ON?
No
Yes
S8
Disengage Clutch
S3
Engage Clutch
S9
Execute Motor Starting Mode
S4
Are SOC and Temperature of Battery satisfactory?
Yes
No
S6
S5
Execute Engine Starting Mode
Execute Assist Starting Mode
END

5.


START
S500
GEAR D/N STAGE & BRAKE ON?
YES
S501
MAXIMUM TRAVELING SPEED > VMIN
YES
S502
VEHICLE SPEED ≤ V>-STAGE-STOP
YES
S503
PREDETERMINED ISG ENTERING CONDITION SATISFIED?
YES
S504
IDLE STOP
S505
RESTARTING OF ENGINE REQUESTED?
YES
S506
RESTART ENGINE

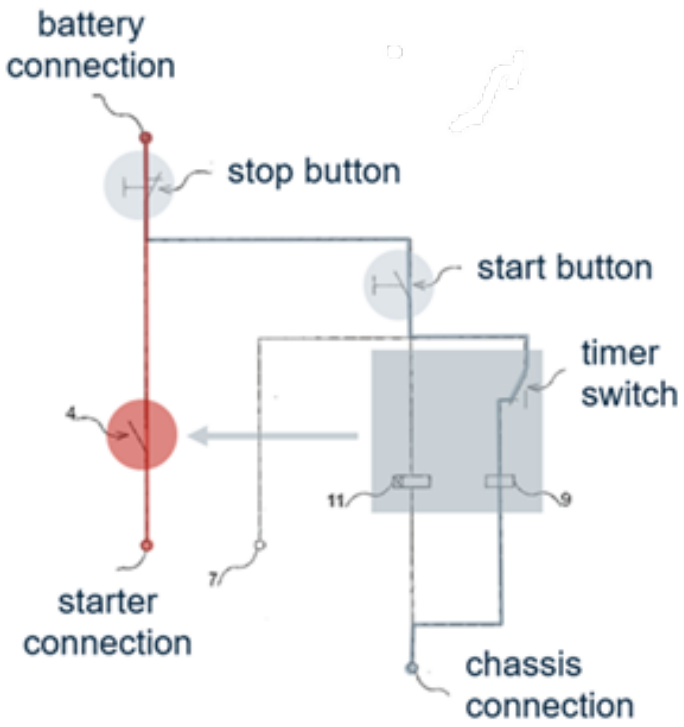
F02N 11/0803

Definition statement

Replace: The existing Definition statement with the following new text and new image:

- Arrangements for initiating engine start related to ignition switches;
- Arrangements for initiating automatic restart at engine stall;
- Arrangements for initiating engine start based on temperature measurements, e.g. in driver cabin (for trucks) or in engine;
- Arrangements for automatically stopping the engine at extended idling;
- Arrangements for automatically stopping the engine after the engine has been automatically started.

Illustrative example of subject matter classified in this place:



References

Limiting references

Replace: The Limiting references table with the following revised table:

Arrangements for controlling automatic idle-start-stop	F02N 11/0814

Informative references

Replace: The Informative references table with the following revised table:

Key-operated switches	H01H 27/06

Delete: The entire Special rules section.

F02N 11/0807

Definition statement

Replace: The existing Definition statement with the following revised text:

Automatic engine start using a remote, e.g. to preheat the vehicle or the engine.

F02N 11/0814

Definition statement

Replace: The existing Definition statement with the following revised text:

- Starting apparatus comprising means for controlling automatic idle-start-stop;
- Starting apparatus with a start-stop system, wherein the engine is automatically stopped when the vehicle has stopped, e.g. at a traffic light, the engine being then automatically restarted based on driver's intention to continue driving or based on system requirements.

F02N 11/0825

Definition statement

Replace: The existing Definition statement with the following revised text:

Means preventing automatic engine stop if restart cannot be guaranteed, e.g. in case of low battery or starter failure.

F02N 11/0829

Definition statement

Replace: The existing Definition statement with the following revised text:

Means preventing automatic engine stop when engine running is required for other engine-related reasons, e.g. for adaptation, cleaning of catalysts or purging of fuel vapours.

F02N 11/084

Definition statement

Replace: The existing Definition statement with the following revised text:

Control of automatic engine start or preventing engine stop for periods when engine running is required to support vehicle accessories.

References

Informative references

Replace: The Informative references table with the following revised table:

Conditions for starting or stopping the engine or for deactivating the idle-start-stop mode, related to special engine control	F02N 11/0829

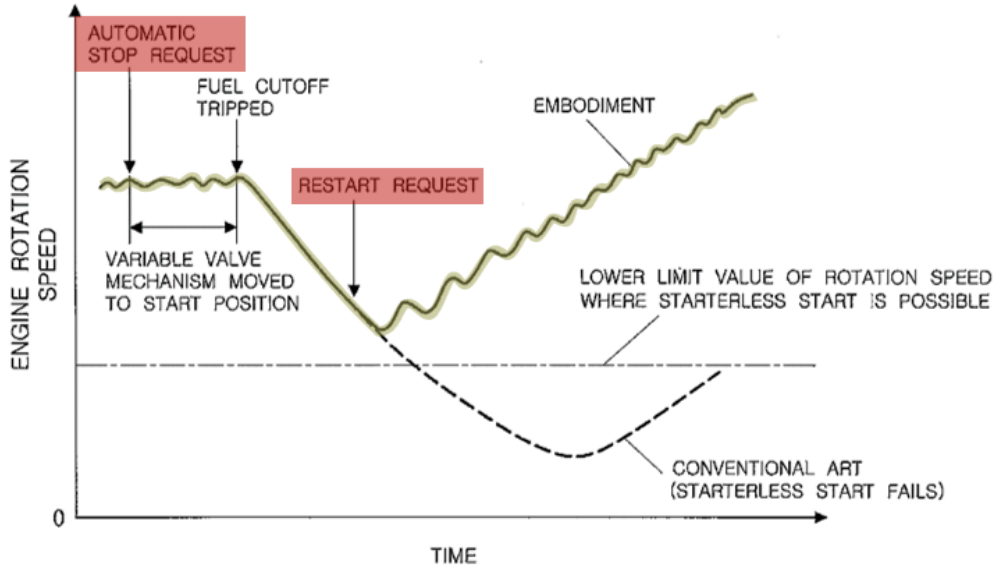
F02N 11/0844

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

Means for restarting engine when engine is still rotating.

Illustrative example of subject matter classified in this place:



The Figure illustrates a mapping used in an automatic stop and start control system for determining whether a starterless start is possible following an automatic stop request based on engine rotation speed at the time of the restart request.

F02N 11/0848

Definition statement

Replace: The existing Definition statement with the following new text and new image:

- Arrangements for detecting successful engine start for stopping starter;
- Arrangements for detecting successful engine start for disengaging starter;
- Arrangements for detecting successful engine start for other engine control;
- Arrangements for detecting unsuccessful engine start for trying new start attempt.

Illustrative example of subject matter classified in this place:

F02N 11/0851

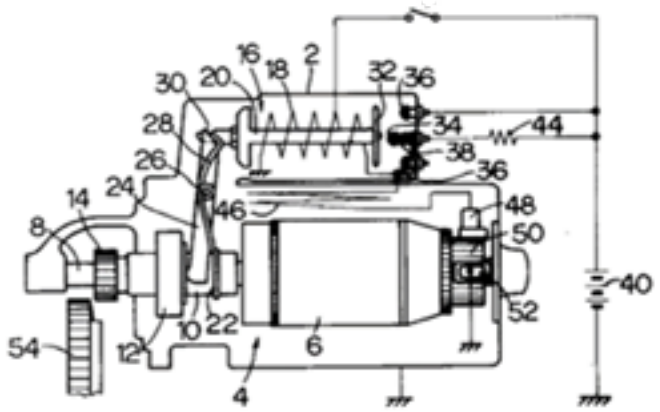
Definition statement

Replace: The existing Definition statement with the following revised text and new images:

- Arrangements for controlling the engagement or disengagement between engine and starter, e.g. meshing of pinion into engine ring gear;
- Arrangements for controlling clutch between engine and starter-generator;
- Control or circuit aspects for connecting the starter and the engine, mainly for starters using pinions.

Illustrative examples of subject matter classified in this place:

1.



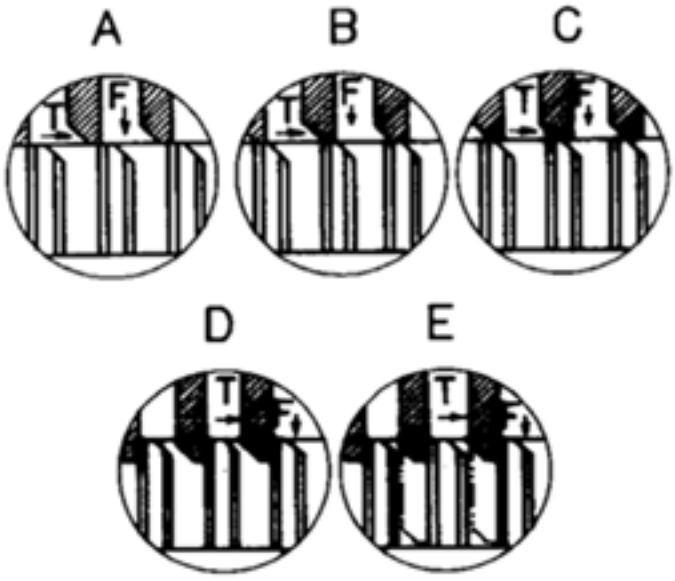
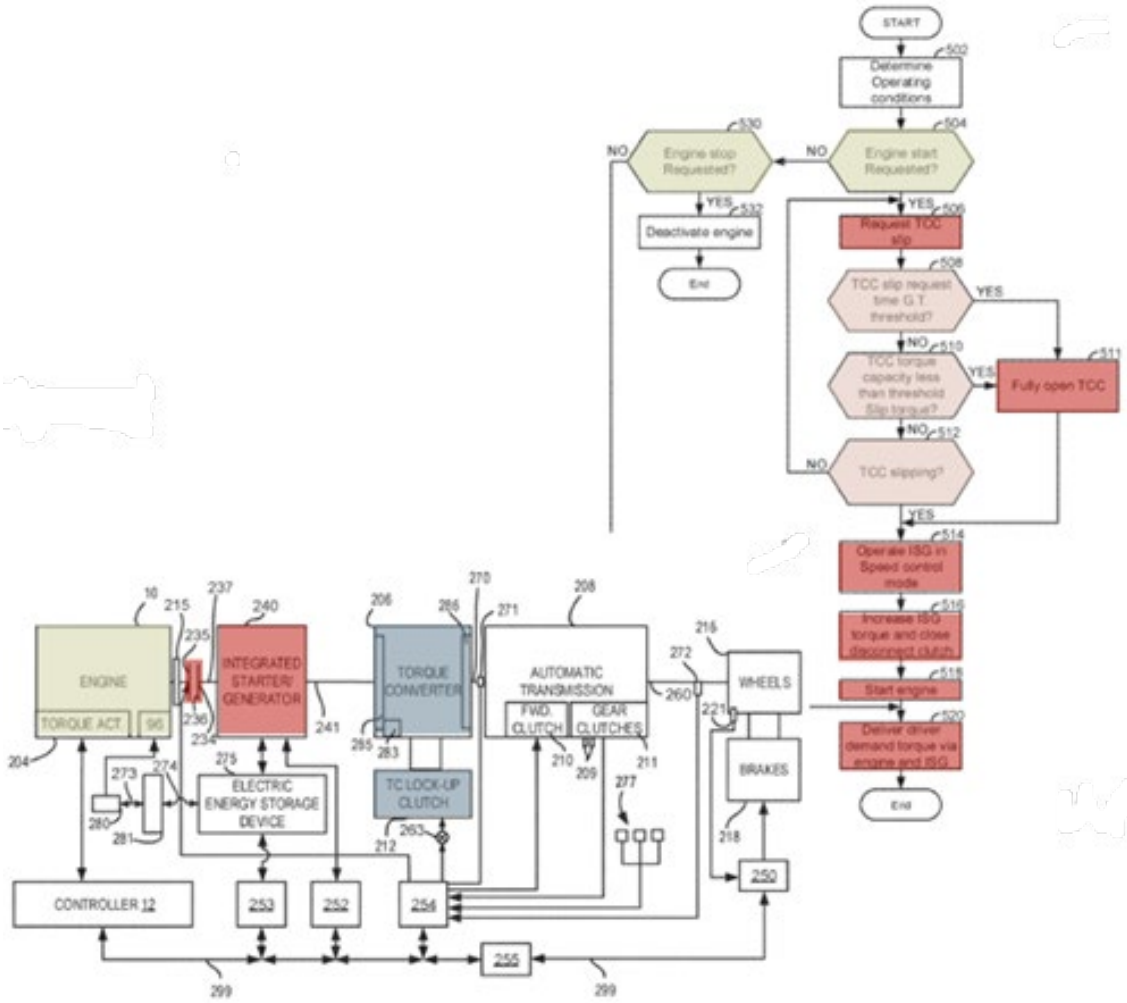


Figure 1 illustrates an electromagnetic system for controlling an axially displaceable pinion (14) via an electromagnetic core (20) and coil (18) to move the pinion (14) into engagement with a ring gear (54) used to start an engine. (A-E) depict a rotation direction (T) and a movement of the pinion (F) during operation.

2.



References

Informative references

Replace: The text of the Informative references table so that the table appears as follows:

Mechanical aspects concerning the connection between the engine and the starter	F02N 15/02

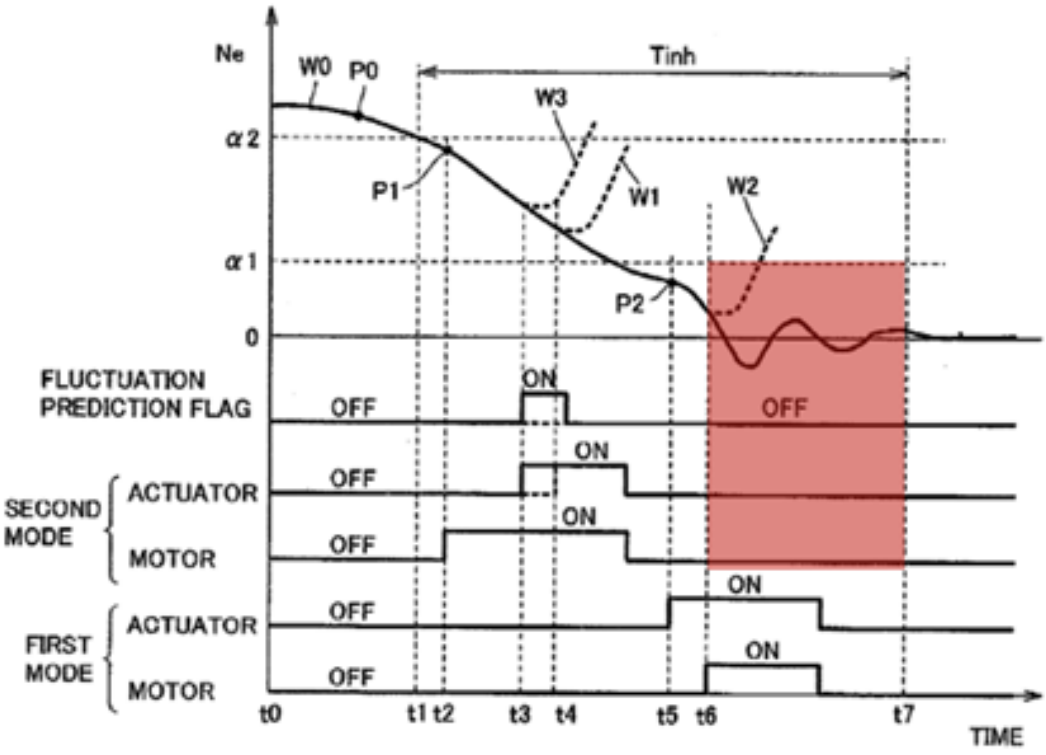
F02N 11/0855

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

- Engagement of the pinion while the engine is still rotating, e.g. by first accelerating the starter and thereafter engaging the pinion with the engine gear;
- Engagement of the pinion when the engine has stopped but no engine start request has been detected. This can be done when future engine start is likely, e.g. based on vehicle door opening.

Illustrative example of subject matter classified in this place:



F02N 11/0859

Definition statement

Replace: The existing Definition statement with the following revised text and new images:

All circuits specially adapted to a certain type of motor, e.g. inverter circuits.

Illustrative examples of subject matter classified in this place:

1. Commutator structure

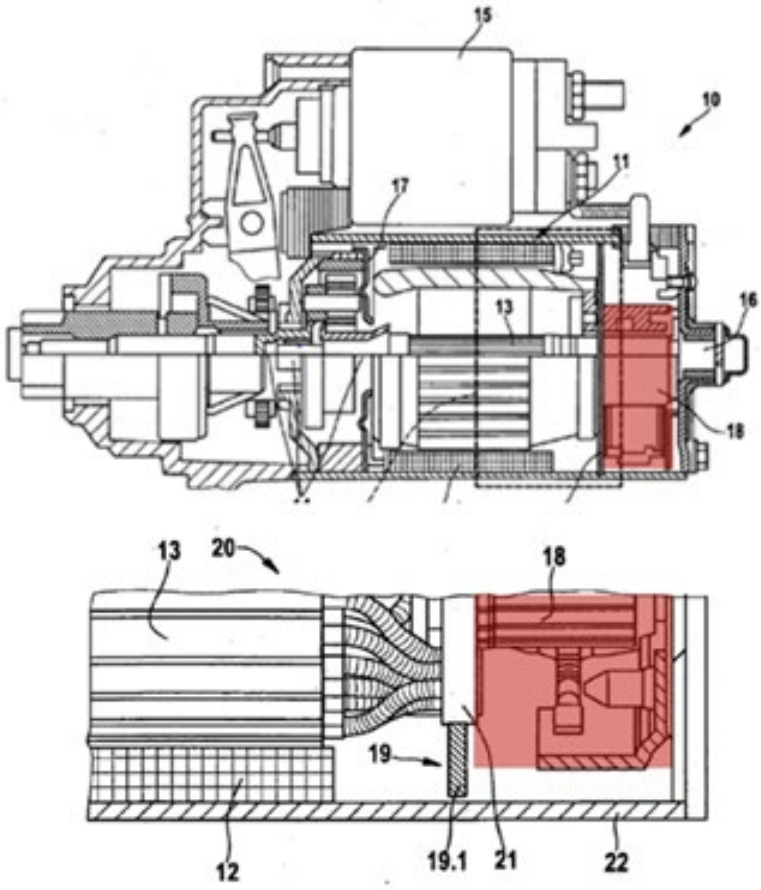


Figure 1 illustrates a particular commutator structure (18).

2. Starter winding connections

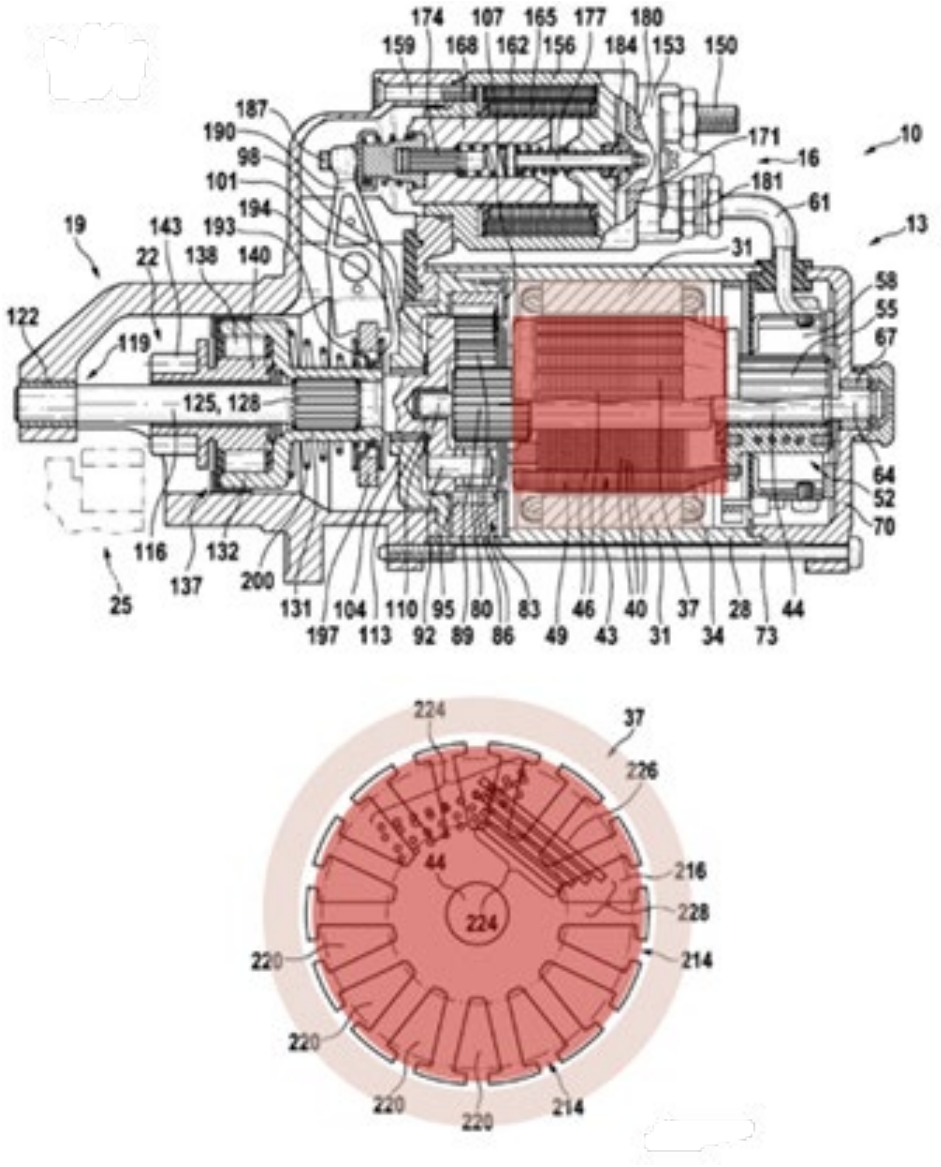


Figure 2 illustrates a starter armature (37) having a winding (49) comprising a wire (226) wound around armature anchor teeth (224).

3. Integrated circuits in a starter

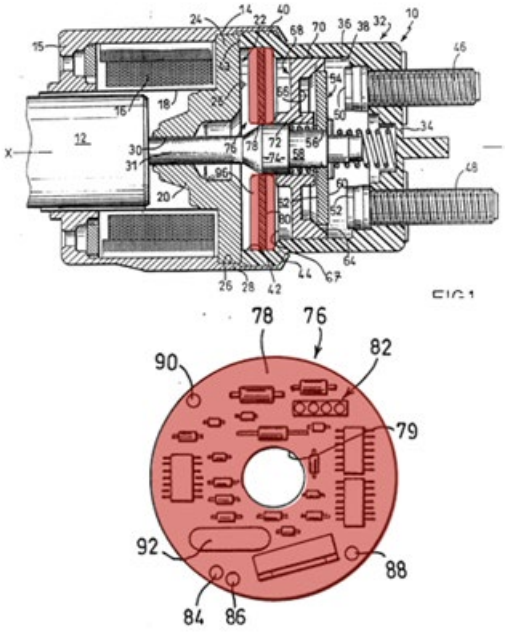


Figure 3 illustrates an electronic control circuit (76) integrated into a starter motor assembly (10).

F02N 11/0862

Definition statement

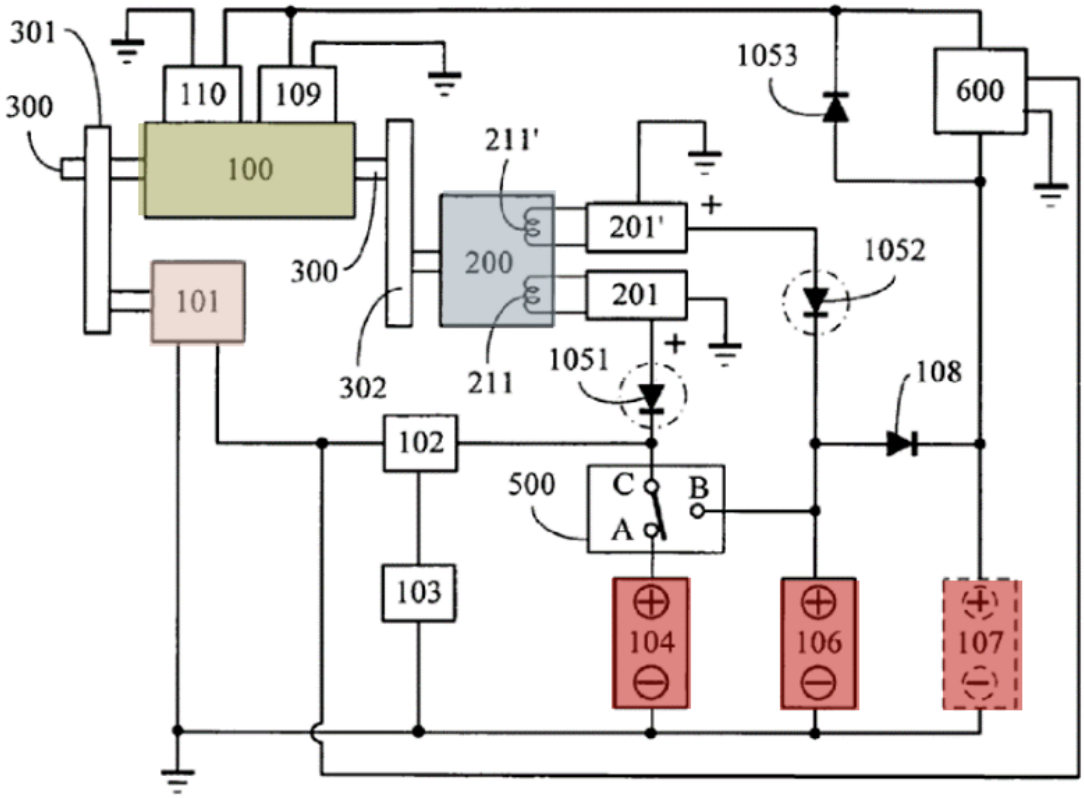
Replace: The existing Definition statement with the following revised text and new images:

Aspects relating to the battery or to other arrangements for supplying energy for starting, e.g.:

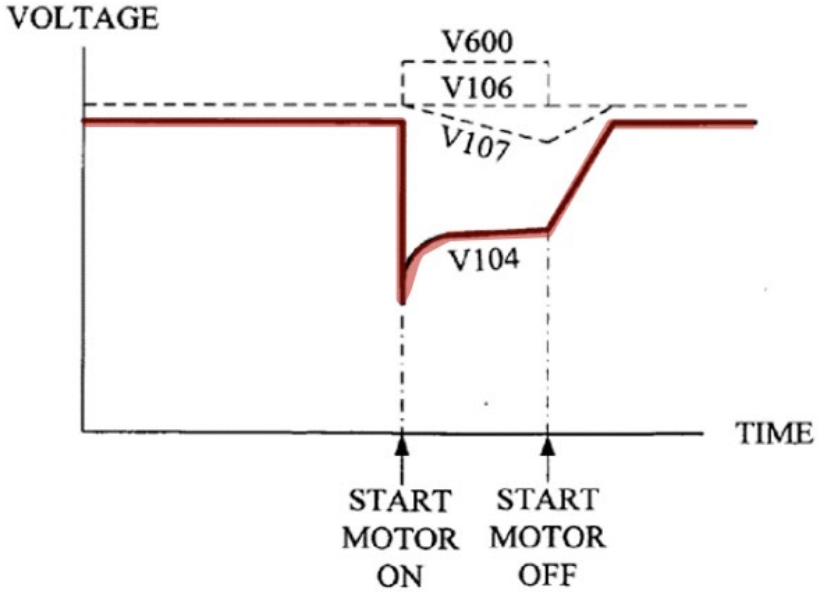
- Special power supply connections;
- Special control of supply at start, for instance controlling starting voltage;
- Combinations of power supplies.

Illustrative example of subject matter classified in this place:

1a.


301
300
110
109
100
101
300
302
211'
200
211
201'
201
1053
600
1052
1051
108
102
500
C
B
A
103
104
106
107

1b.


VOLTAGE
V600
V106
V107
V104
TIME
START MOTOR ON
START MOTOR OFF

F02N 11/0866

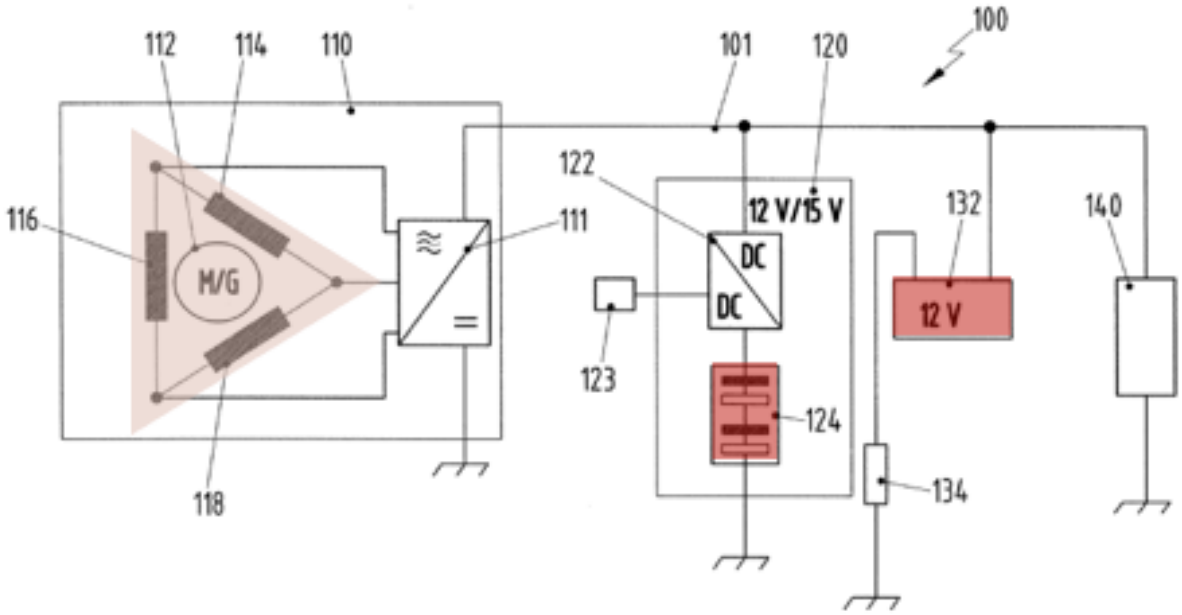
Definition statement

Replace: The existing Definition statement with the following revised text and new image:

Aspects relating to the use of two batteries or power supplies in a vehicle in relation to starting:

- Choice of battery;
- One battery for starting and one battery for accessories;
- Capacitor charging, e.g. before engine start.

Illustrative example of subject matter classified in this place:



F02N 11/10

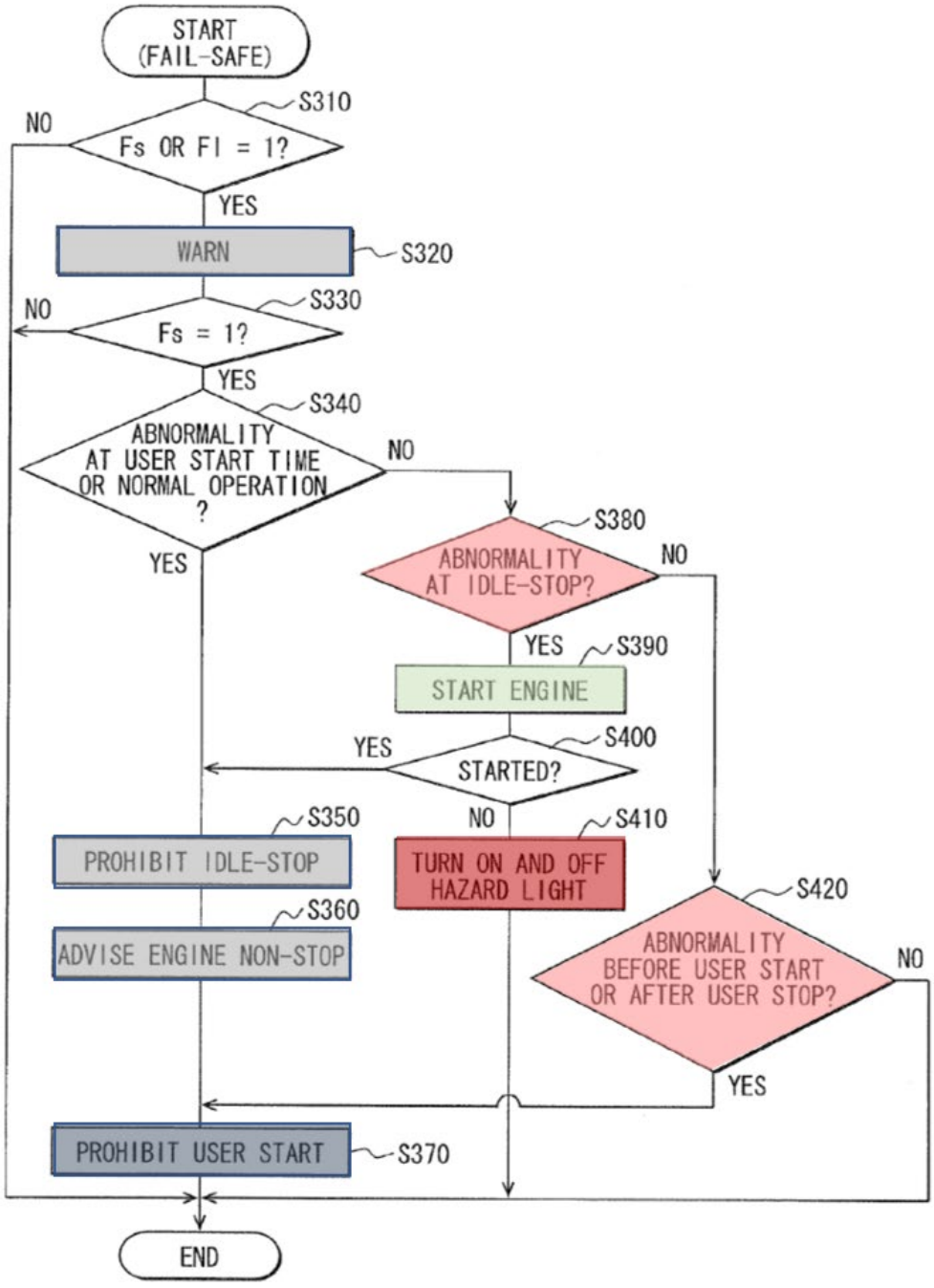
Definition statement

Replace: The existing Definition statement with the following revised text and new images:

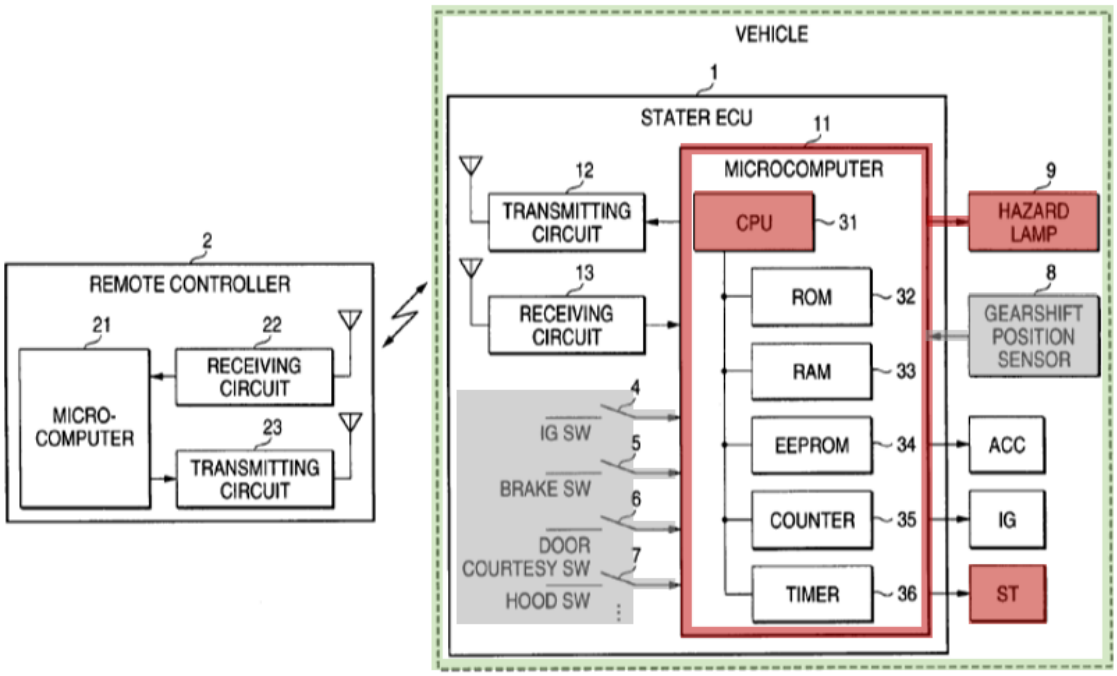
- Safety devices for protecting the system and avoiding hazardous situations;
- Diagnosis of starters.

Illustrative examples of subject matter classified in this place:

1.


START
(FAIL-SAFE)
S310
Fs OR FI = 1?
NO
YES
WARN
S320
S330
Fs = 1?
NO
YES
S340
ABNORMALITY
AT USER START TIME
OR NORMAL OPERATION
?
NO
YES
S380
ABNORMALITY
AT IDLE-STOP?
NO
YES
S390
START ENGINE
S400
STARTED?
YES
NO
S350
PROHIBIT IDLE-STOP
S360
ADVISE ENGINE NON-STOP
S410
TURN ON AND OFF
HAZARD LIGHT
S420
ABNORMALITY
BEFORE USER START
OR AFTER USER STOP?
NO
YES
PROHIBIT USER START
S370
END

2.



References

Limiting references

Insert: The word “of” before “engines” so that the Limiting references table appears as follows:

Circuits or control means specially adapted for starting of engines	F02N 11/08

F02N 11/101

Definition statement

Replace: The existing Definition statement with the following revised text and new images:

Devices preventing the engine start, and therefore the starter actuation, in order to protect the engine, the starter or the environment.

Illustrative example of subject matter classified in this place:

1a.

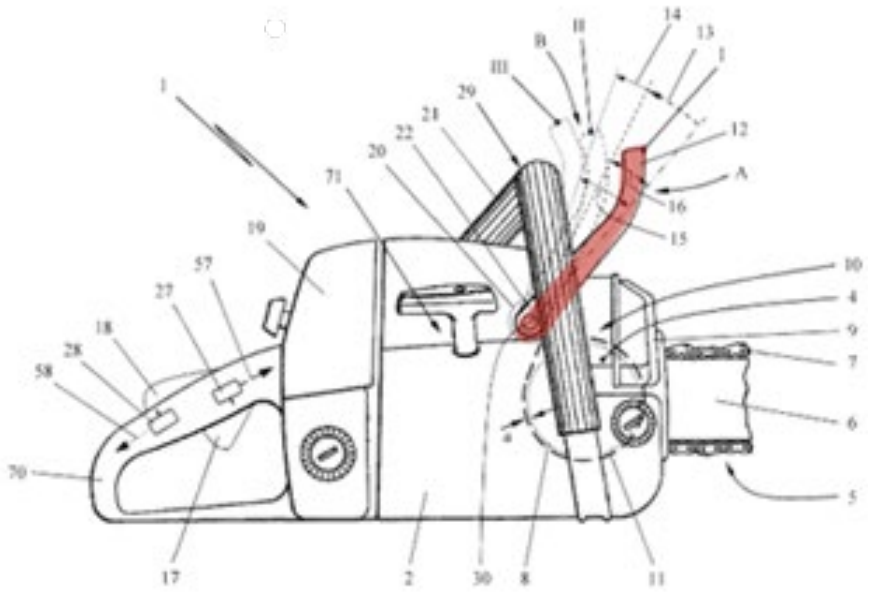


Figure 1a illustrates a chainsaw (1) comprising an actuation lever (12) that is moved between a start disabled position (A) and a start enabled position (B) to enable starting of motor.

1b.

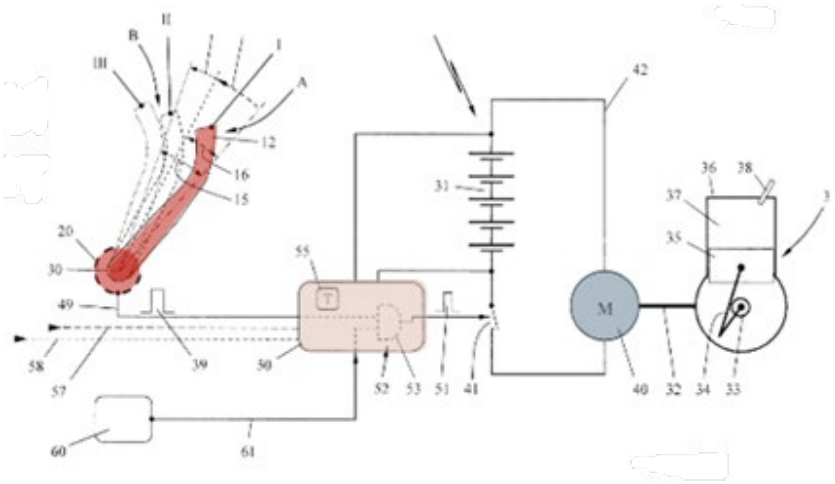


Figure 1b illustrates a circuit with electronic locking device (52) for enabling or disabling starting of the chain saw (1) based on the position of the lever (12).

References

Informative references

Replace: The text of the Informative references table so that the table appears as follows:

Fittings or systems for preventing unauthorised use or theft of vehicles, said fittings or systems operating on the propulsion system, e.g. on the engine or drive motor	B60R 25/04

F02N 11/105

Definition statement

Insert: A comma after “running” so that the text appears as follows:

Devices preventing new starter actuation when the engine is already or still running, in order to protect the starter, e.g. the pinion.

References

Limiting references

Replace: The text of the Limiting references table so that the table appears as follows:

Circuits or control means specially adapted for starting of engines with means for detecting successful engine start	F02N 11/0848

F02N 13/00

Definition statement

Replace: The Definition statement text with the following revised text:

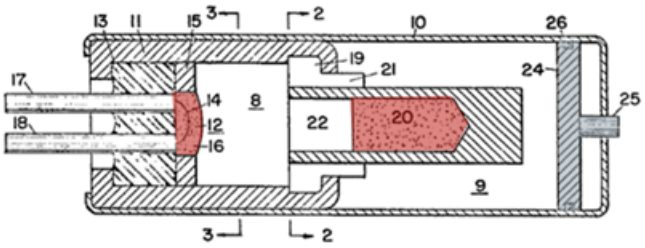
Systems or methods for starting combustion engines moved by explosive mixture other than the combustion mixture, in particular explosive cartridges. The systems could be either portable or structurally fixed to the engine.

F02N 13/02

Definition statement

Replace: The existing Definition statement with the following new text and new image:

Illustrative example of subject matter classified in this place:



.

The Figure illustrates a controlled burning cartridge comprising a first stage incendiary propellant (12) and second stage incendiary propellant (20) for delivering pressurized gas via a conduit (21) to start piston motor (24).

F02N 15/00

Definition statement

Replace: The existing Definition statement text with the following revised text:

All remaining aspects of starting devices, especially the connection between the starting apparatus and the engine.

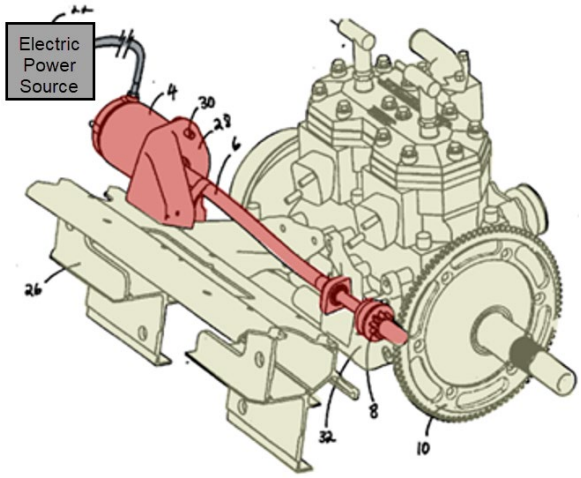
F02N 15/02

Definition statement

Replace: The existing Definition statement with the following revised text and new image:

Connections between the engine and the starting means. The starter does not have to be an electric starter.

Illustrative example of subject matter classified in this place:



The Figure illustrates a flexible shaft starter system comprising a starter motor (4), a flexible torsion shaft (6) and a pinion gear (8) that start an internal combustion engine via a starter gear (10) connected to a clutch.

F02N 15/04

Definition statement

Replace: The existing Definition statement text with the following revised text:

Disengaged gearing between engine and starting means, e.g. starter.

References

Informative references

Replace: The text of the Informative references table so that the table appears as follows:

Electrical or electronical control of the engagement and disengagement between engine and starter and circuits therefor	F02N 11/0851

F02N 19/02

References

Informative references

Replace: The text of the Informative references table so that the table appears as follows:

Aiding engine start by using electrically-heated glowing plugs	F02P 19/02

2. B. DEFINITIONS QUICK FIX

Symbol	**Location of change** (e.g., section title)	**Existing reference symbol or text**	**Action; New symbol; New text**
F02N 19/00			Delete the entire Definition.
F02N 99/00			Delete the entire Definition.

Notes:
Use this Definitions Quick Fix (DQF) table to:

- Delete an entire definition
- Delete an entire section
- Change a reference symbol
- Delete a reference symbol
- Delete text in a References section
- Correct one error in spelling, article use, or verb tense

Otherwise, use the standard template.

Reminder: Never delete F symbol definitions.

5. CROSS-REFERENCE LIST (CRL)

Definitions references impacted by this revision project

Location of reference to be changed	**Referenced subclass or group to be changed**	**Section of definition**	**Action; New reference symbol; New text**
F02D 41/00	F02N 11/08	Limiting references	Replace reference text with the following: Circuits or control means specially adapted for starting of engines

NOTES:

- The CRL tables above are used for changes to locations **outside** of the project scope. Changes to references in scheme titles or definitions inside the project scope will be reflected in the "scheme change" template or one of the "definition" templates.
- In addition to other changes proposed in the tables above, in the column titled "Referenced subclass or group to be changed," **referenced** D symbols should indicate an action of "delete" or should indicate a replacement symbol and **referenced** F symbols should indicate a replacement symbol.
- When a reference is deleted, text related to that reference will also be deleted unless other references or a range of references associated with the same text remain.