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(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,

[Continued on next page]

(54) Title: AN APPARATUS FOR TIGHTENING A FASTENER HAVING A SAFETY DEVICE

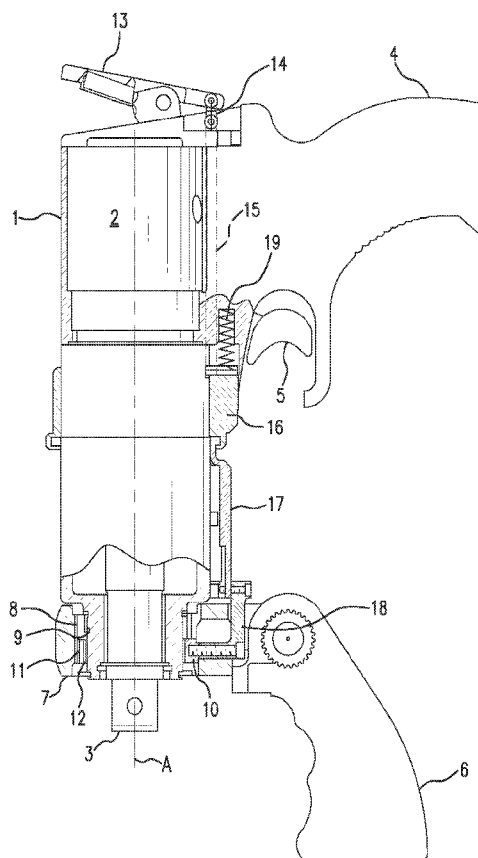


FIG. 1

(57) Abstract: An apparatus for tightening and loosening fasteners, the apparatus including a device (2) for effecting rotation of the fastener having a trigger (5) operatable by a hand of an operator, and a safety device operatable by another hand of the operator, and being configured such that, in use, the device for effecting rotation is operatable, but when only one hand of the operator is used and the trigger (5) is operated, the apparatus is not functioning to tighten or loosen the fastener.



TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

Declarations under Rule 4.17:

- *of inventorship (Rule 4.17(iv))*

Title: An apparatus for tightening a fastener having a safety device

Cross Reference

5

This application claims the benefit of priority of U.S. Patent Application Serial No. 61/081,765 filed July 18, 2008 and U.S. Patent Application Serial No. 12/325,815 filed December 12, 2008. The subject matter of the aforesaid U.S. Patent Applications are further explicitly incorporated herein by reference thereto.

10

Description of Invention

The present invention relates to torque power tools. More particularly, this invention relates to an apparatus for tightening a threaded fastener having a safety device.

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Power tools are known in the art. One of such known tools is a pneumatic torque power tool. Other torque power tools are known to be driven electrically, hydraulically, manually or otherwise powered. Every torque power tool has an action force and an equal and opposite reaction force. In any of torque tools such as a pneumatic torque tool, a torque multiplier, an electric or hydraulic torque tool, the action force equals a reaction force in opposite direction. As tightening of fasteners is becoming a more precise art, accurate or at least even bolt loads is a requirement. However, this can not be accomplished with slugging wrenches or impact wrenches.

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Torque power tools require a reaction arm to abut against an adjacent stationary object, so as to stop the tool from turning around a bolt and to turn a nut instead. In such torque power tools, the reaction arm is usually connected around an axis, and a mechanism is provided to hold the arm steadily relative to the tool housing during operation. This can be done with splines, hexagons, or other configurations.

The reason that torque power tools include a reaction arm is that the tools are unable to tighten and loosen fasteners, e.g., a nut, unless the tool housing is stopped from turning in the opposite direction. This means that the equal and opposite reaction force to the nut turning force has to be diverted for a torque power tool to function properly. Several examples of known torque power tools that include a reaction arm to abut against a stationary object are disclosed in U.S. Patent No. 6,152,243, U.S. Patent No. 6,253,642 and U.S. Patent No. 6,715,881, commonly owned and incorporated by reference herein.

In known torque power tools with a reaction arm there is a significant risk that during intended use, operator's fingers or hand might be caught between the reaction arm and the abutment area when not paying attention. The stationary object or abutment area against which the necessary reaction arm abuts can be one of adjacent nuts, a housing of the application, a pipe of which the flange is part, etc.

The operator grasps the tool with an operating hand that also trigger torque tool operation. The hand other than the operating hand is free and might inadvertently move to the reaction arm, or proximate to the reaction arm at which the free hand can be caught as the reaction arm moves against a stationary object to find it abutment area while the operator triggers and activates the torque tool by the operating hand. This is one of the greatest dangers in bolting with torque power tools, and it happens frequently, since the reaction force applied by the tool is in most cases much larger than the LBS/FT torque as the portion of the reaction arm that abuts is often less than one-quarter of a foot away from the turning axis of the tool. Tools of this kind have and will amputate fingers.

Injury to the free hand and its fingers known to be severe. Such accidents occur frequently, and require attention. At times not only the operator's work is stopped in response to injury, but an entire operation must stop. Anyone proximate an injury to a

workforce member normally directs their attention to the injury, and the injured operator. So not only has the operator been injured and hurt, but the cost to the job or work task and loss in productivity is enormous. For that matter, such workforce accidents are normally subject to OSHA reporting requirements.

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Accordingly, it is an object of the present invention to provide a torque power tool which avoids the disadvantages of the prior art.

10 In keeping with these objects and with others which will become apparently hereinafter, one feature of the present invention resides, briefly stated, in an apparatus for tightening and loosening fasteners, the apparatus including a device for effecting rotation of the fastener having a trigger operatable by a hand of an operator, and a safety device operatable by another hand of the operator, and being configured such that, in use, the device for effecting rotation is operatable, but when only one hand of the operator is
15 used and the trigger is operated, the apparatus is not functioning to tighten or loosen the fastener..

In accordance with another feature of the present invention, a reaction arm connectable with and disconnectable from a housing of the apparatus and configured to abut against
20 an adjacent stationary object during the functioning of the apparatus so as to stop it from turning around the fastener during its tightening or loosening, the safety device being configured such that the reaction arm is non-rotatably connected with the housing when the safety device is in use and can divert a reaction force to the adjacent stationary object, but is disconnected from the housing when only one hand of the
25 operator is used and the trigger is operated and therefore, when disconnected, cannot divert a reaction force to the adjacent stationary object.

Still, a further feature of the present invention resides, in an apparatus for tightening and loosening fasteners, in which the safety device further includes a hand grip, such that

when the grip is operated by the operator, the reaction arm is non-rotatably connected with the housing, but when only one hand of the operator is used and the trigger is operated, the reaction arm is automatically disconnected from the housing.

- 5 In accordance with a further feature of the present invention, the safety device includes an engaging element located substantially between the reaction arm and the housing and displaceable between a first position in which it non-rotatably connects the reaction arm with the housing and a second position in which it disconnects the reaction arm from the housing.

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The safety device can further include spring means arranged such that when the hand grip is operated by the operator, the engaging element is moved from the second position into the first position against a spring force, but when the operator releases the hand grip, the spring means automatically displace the engaging element back from the
15 second position into the first position.

- In accordance with another embodiment of the present invention, the safety device can be configured such that when it is operated by the other hand of the operator, the device for effecting rotation of the fastener, for example a motor, is supplied with power,
20 but when only one hand of the operator is used and the trigger is operated, the device for effecting rotation of the fastener is not supplied with power and the apparatus is not functioning to tighten or loosen the fastener. This safety device is usable for any torque power wrench, including electrical, hydraulic, pneumatic, etc.

- 25 For example for a torque power wrench with a fluid-operated (pneumatic or hydraulic) drive, the safety device can be configured such that when it is operated, it provides a supply of a working fluid to the device for effecting rotation of the fastener, but when only one hand of the operator is used and the trigger is operated, the supply of the

working fluid to the the device for effecting rotation of the fastener is interrupted and the apparatus is not functioning to tighten or loosen the fastener.

The novel features which are considered as characteristic for the present invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Figure 1 is a view showing a cross section of a torque power wrench in accordance with one embodiment of the present invention.

Figure 2 is a view showing parts of a safety device of the inventive torque power wrench including a shifter rod and a sleeve;

Figure 3 is a view showing another part of the safety device of the inventive torque power wrench, in particular a shifter link;

Figure 4 is a view showing a region of engagement of a portion of a reaction arm with a portion of a tool housing of the inventive torque power wrench, on an enlarged scale;

Figures 5 and 6 are views showing two positions of the safety device in accordance with another embodiment of the present invention.

A hand-held torque power wrench in accordance with the present invention has a housing which is identified with reference numeral 1 and accommodates a motor 2, that can be formed as a hydraulic, pneumatic, electric, etc. motor. A drive element 3 is driven in rotation by the motor 2 and engages a fastener to be tightened or loosened, so that when the motor 2 is actuated, the driving element 3 rotates and provides rotation of

a corresponding fastener. The torque power wrench can be provided with torque intensifying means for increasing a torque output from the drive motor 2 to the driving element 3. The torque intensifying means can be formed as planetary gears which are located in the housing 1 and not shown in the drawings.

5

The torque power wrench further has a handle 4 for holding the torque power wrench in a position with one hand of an operator, with a trigger 5 for activating the torque power tool with the operator's one hand. The handle 4 is for example immovably connected with the housing 1. When an operator holds the handle 4 and pulls the trigger 5, the drive motor 2 is activated.

10

The torque power tool further has a reaction arm for abutting against an adjacent stationary object and diverting a reaction force generated during the operation to the adjacent stationary object. The reaction arm has a distal portion 6 configured to abut against the stationary object so as to stop the tool from turning around a fastener, and a proximal portion 7 connectable with and disconnectable from the housing 1 of the torque power wrench, as will be explained below. The portions 6 and 7 of the reaction arm are connected with one another so that they are non-rotatable relative to one another around an axis A of rotation of the driving element 3.

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The hand-held torque power wrench in accordance with the present invention has a torque output which exceeds a torque output counteractable by hand of an operator. In other words, the operator cannot stop the housing of the tool from turning under the action of a reaction force which is opposite to an action force provided by the driving element 3, but instead for functioning of the inventive torque power wrench the reaction arm must be always functional as well. It must be connected with the housing non-rotatably about an axis A of the housing 1 and of the driving element 3 and must abut against the adjacent stationary object.

25

In accordance with the present invention, the torque power wrench is provided with a safety device which is operatable by the other hand of the operator, and designed so that when it is operated by the other hand of the operator the torque power wrench is functioning to tighten or loosen the fastener, but when the only one hand of the operator
5 is used for holding the torque power wrench in position by holding the handle 4 and pulling the trigger 5, the torque power wrench is not functioning to tighten or loosen the fastener.

In accordance with one exemplary embodiment of the present invention which is
10 disclosed in this application, the safety device is configured so that when it is operated by the other hand of an operator, the reaction arm is connected with the housing and can abut against an adjacent stationary object during the functioning of the torque power wrench so as to stop the housing of the torque power wrench from turning around the fastener during tightening or loosening of the latter. The reaction arm is
15 however disconnected from the housing when the safety device is not operated by the other hand of the operator and therefore, in the latter case the reaction arm cannot divert a reaction force to the adjacent stationary object.

As can be seen from Figures 1 and 4 the distal portion 7 of the reaction arm is provided
20 with axially longer inner splines 8 while a portion of the housing 1 extending through the interior of the distal portion 7 is provided with axially shorter outer splines 9, configured so that the splines 8 and 9 are radially spaced from one another. The safety device mentioned hereinabove includes an engaging element formed for example as a ring 10 which is movable in an axial direction and has outer splines 11 which for example
25 always engage with inner splines 8 of the distal portion 7 of the reaction arm, and also has inner splines 12 which for example are engagable with the splines 9 of the portion of the housing 1 and disengagable therefrom. Reference numeral 20 identify bearings provided in this region.

In the position shown in Figure 1, the ring 10 is displaced axially downwardly so that its splines 12 do not engage with the splines 9 of the housing, and therefore the portion 7 of the reaction arm is not connected to the housing 1 non-rotatably around the axis A. In order to connect the reaction arm with the housing non-rotatably around the axis A, the ring 10 is displaced axially upwardly so that not only its splines 11 engage with the splines 8 of the reaction arm, but its splines 12 also engages with the splines 9 of the housing. The reaction arm becomes connected with the housing non-rotatably about the axis A. In this position when the distal portion 6 of the reaction arm abuts against a neighboring stationary object during the operation of the torque power wrench, the torque power wrench can function since a reaction torque output which cannot be counteracted by hand of an operator is counteracted by the reaction arm abutting against the adjacent stationary object.

In order to displace the ring 10 axially upwardly to provide engagement of the reaction arm with the housing, an operator acts on one leg of a hand grip 13, so that its other leg through a chain link 14 lifts a shifter rod 15. The shifter rod 15 lifts a sleeve 16, which in turn lifts a link 17, which then lifts a shifter 18 connected with the ring 10, so finally the ring 10 is lifted. As explained hereinabove, when the ring 10 is displaced upwardly, it provides the connection of the reaction arm with the housing, so that the reaction arm becomes connected with the housing non-rotatably around the axis A.

It is therefore believed to be understood that a torque power wrench can function only when both actions take place: an operator holds the handle 4 of the torque power tool in position and pulls the trigger 15 with one hand, and at the same time the operator operates the safety device by acting on the hand grip 13 with the other hand, and therefore his other hand cannot be in the region of the reaction arm.

When the operator does not act on the hand grip 13 with its other hand, a return spring 19 which was tensioned when the hand grip 13 was operated, relaxes. It displaces the

elements 16, 17, and 18 axially downwardly, and the ring 10 is also displaced axially downwardly, so that its splines 12 are disengaged from the splines 9 of the housing, and the reaction arm no longer is non-rotatably connected to the housing.

5 The safety device for the hand-held torque power wrench in accordance with another embodiment can be formed for example so that when the other hand of the operator operates the safety device, it provides a power supply to the motor 2, but when only one hand of the operator is used for holding the torque power wrench in position by holding the handle 4 and pulling the trigger 5, the power supply to the motor 2 is interrupted and
10 the torque power wrench is not functioning to tighten or loosen the fastener. This safety device can be used for the torque power wrenches with drives of different types, for example electric, pneumatic, hydraulic, and other drives. One example of this embodiment of the present invention is illustrated in figures 5 and 6, which shows the safety device in two different positions.

15 In this embodiment the torque power wrench has means for supplying a working fluid (liquid or gas) to a motor 21 formed for example as an air motor and provided with a directional valve 22. The means for supplying the working fluid include a fluid inlet passage 23 through which the working fluid is supplied. An exhaust passage through
20 which the working fluid is withdrawn is identified with reference numeral 24.

The safety device in accordance with the present invention includes a turnable hand grip 25 to be held by the other hand of an operator and which is provided with a return spring 26. An operator acts on an upper arm of the hand grip 25, while the lower arm is
25 connected with a stem 27 which slides in a guide bushing 28 and is connected with a piston 29. The piston 29 is moveable transversely to the inlet passage 23 between a position shown in figure 5, in which it closes a throughgoing opening of the inlet passage 23 and prevents the working fluid from flowing into the air motor 21, and a

position shown in figure 6 in which it opens the opening of the inlet passage 23 to allow a flow of the working fluid into the air motor 21.

5 In order to displace the stem 27 with the piston 29 from the position shown in figure 5 to the position shown in figure 6, the operator must hold the hand grip 25 with his other hand and turn it, for example clockwise, so that the through going opening of the inlet passage 23 opens, the working fluid is supplied into the air motor 21 and the torque power wrench can function. When however the operator removes his other hand from the hand grip 25, the spring 26 pushes it counterclockwise, the inner leg of the hand
10 grip 25 displaces the stem 27 with the piston 29 to the position shown in figure 6 in which the piston 29 closes the throughgoing opening of the inlet passage 23, the working fluid is no longer supplied into the motor 21, and the torque power wrench does not function.

15 It is believed to be clear that other embodiments are also possible for the safety device which is designed in accordance with the present invention, such that only when not only the one hand of the operator of the user holds the torque power wrench and pulls the trigger, but also when the other hand of the operator is used for operation of the torque power wrench, the torque power wrench functions. However, when the other
20 hand of the operator is not used to activate a component of the torque power wrench, the torque power wrench stops functioning.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from
25 the types described above.

While the invention has been illustrated and described as embodied in a torque power tool with reaction arm safety control, it is not intended to be limited to the details shown,

since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

CLAIMS

1. An apparatus for tightening and loosening fasteners, the apparatus including:
 - 5 a device for effecting rotation of the fastener having a trigger operatable by a hand of an operator; and
 - a safety device operatable by another hand of the operator, and being configured such that, in use, the device for effecting rotation is operatable, but when only one hand of the operator is used and the trigger is operated, the
 - 10 apparatus is not functioning to tighten or loosen the fastener.
2. An apparatus according to claim 1 including a reaction arm connectable with and disconnectable from a housing of the apparatus and configured to abut against an adjacent stationary object during the functioning of the
- 15 apparatus so as to stop it from turning around the fastener during its tightening or loosening, the safety device being configured such that the reaction arm is non-rotatably connected with the housing when the safety device is in use and can divert a reaction force to the adjacent stationary object, but is disconnected from the housing when only one hand of the operator is used
- 20 and the trigger is operated and therefore, when disconnected, cannot divert a reaction force to the adjacent stationary object.
3. An apparatus according to claim 2 wherein the safety device includes a hand grip, such that when the grip is operated by the operator, the reaction
- 25 arm is non-rotatably connected with the housing, but when only one hand of the operator is used and the trigger is operated, the reaction arm is automatically disconnected from the housing.
4. An apparatus according to claim 3 wherein the safety device includes
- 30 an engaging element located substantially between the reaction arm and the housing and displaceable between a first position in which it non-rotatably

connects the reaction arm with the housing and a second position in which it disconnects the reaction arm from the housing.

5 5. An apparatus according to claim 4 wherein the safety device includes spring means arranged such that when the grip is operated by the operator, the element is moved from the second position into the first position, but when the operator releases the grip, the spring means automatically displace the element back from the first position into the second position.

10 6. An apparatus according to claim 5 wherein the engaging element is substantially ring shaped and has engaging formations which are permanently engageable with engaging formations of either of the housing or the reaction arm, and also engaging formations engageable with and disengageable from engaging formations of the other of the housing and the reaction arm in the
15 first position and in the second position correspondingly.

7. An apparatus according to any preceding claim wherein the safety device is configured such that when it is operated by the other hand of the operator, the device for effecting rotation of the fastener is supplied with
20 power, but when only one hand of the operator is used and the trigger is operated, the device for effecting rotation of the fastener is not supplied with power and the apparatus is not functioning to tighten or loosen the fastener.

8. An apparatus according to claim 7 including means for supplying a
25 working fluid to the device for effecting rotation of the fastener for operating it and therefore functioning the apparatus, the safety device being configured such that when it is operated by the other hand of the operator the means for supplying the working fluid provide the working fluid to the device for effecting rotation of the fastener, but when only one hand of the operator is used and
30 the trigger is operated, the means for supplying the working fluid stop supplying the working fluid to the device for effecting rotation of the fastener

and the apparatus is not functioning to tighten or loosen the fastener.

9. An apparatus according to claim 8 wherein the means for supplying the working fluid include a passage through which the working fluid is suppliable to the device for effecting rotation of the fastener, and means for opening the passage or closing the passage when the other hand of the operator operates the safety device or when only one hand of the operator is used and the trigger is operated, correspondingly.
10. An apparatus according to claim 1 including a housing which contains the device for effecting rotation of the fastener and a handle to hold the apparatus in a position with one hand of the operator.
11. An apparatus for tightening a fastener substantially as hereinbefore described with reference to and/or as shown in the accompanying drawings.
12. Any novel feature or novel combination of features described herein with reference to and/or as shown in the accompanying drawings.

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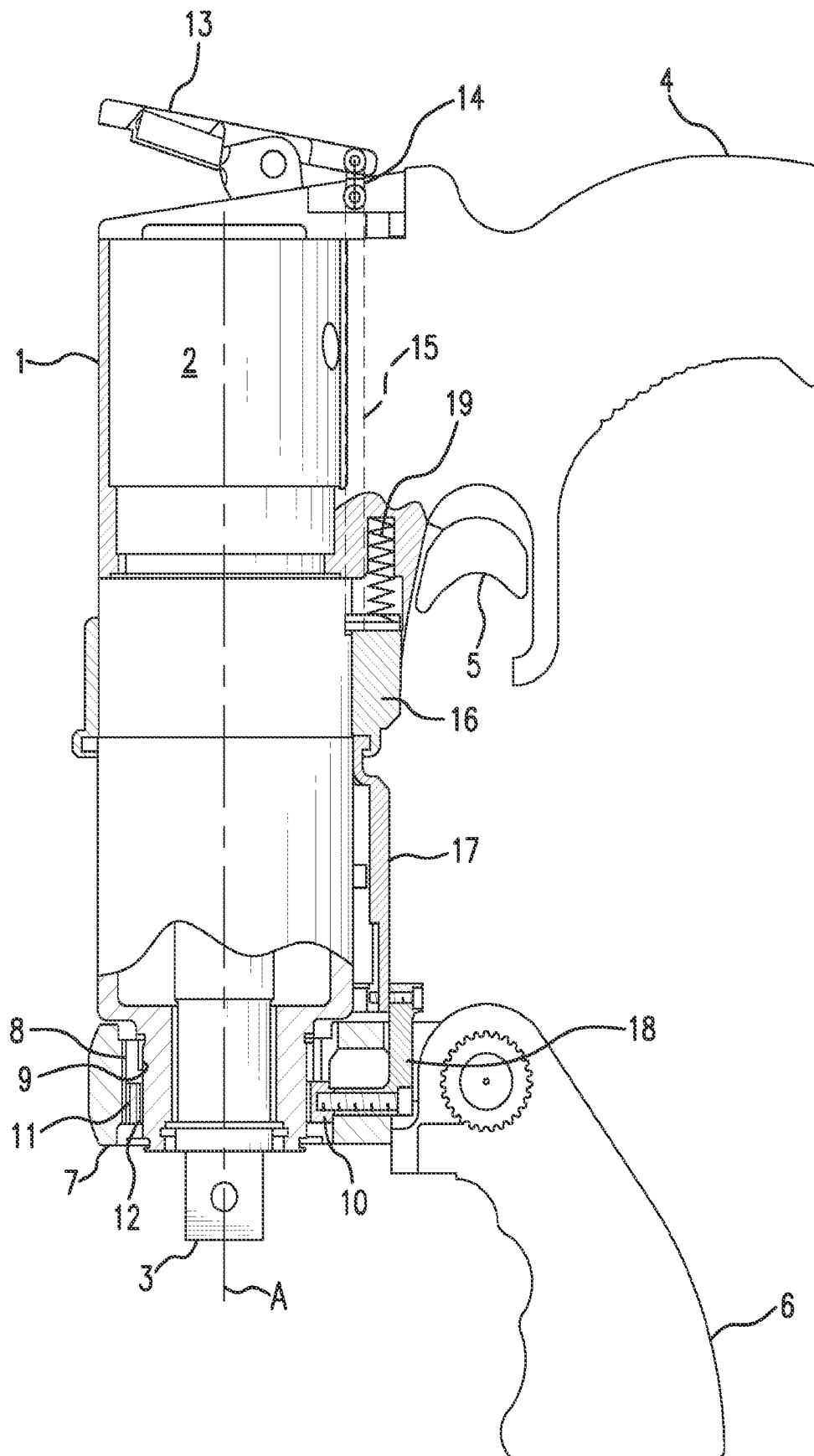
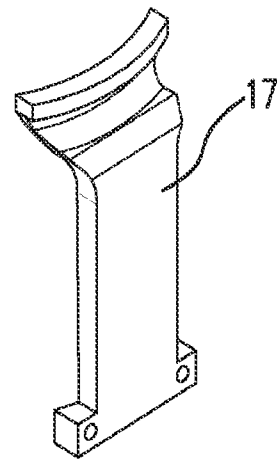
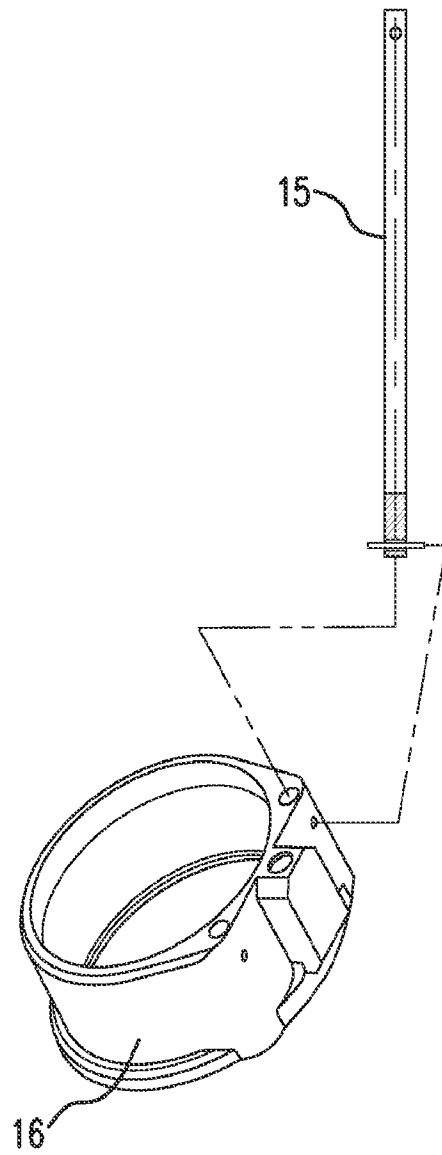


FIG. 1

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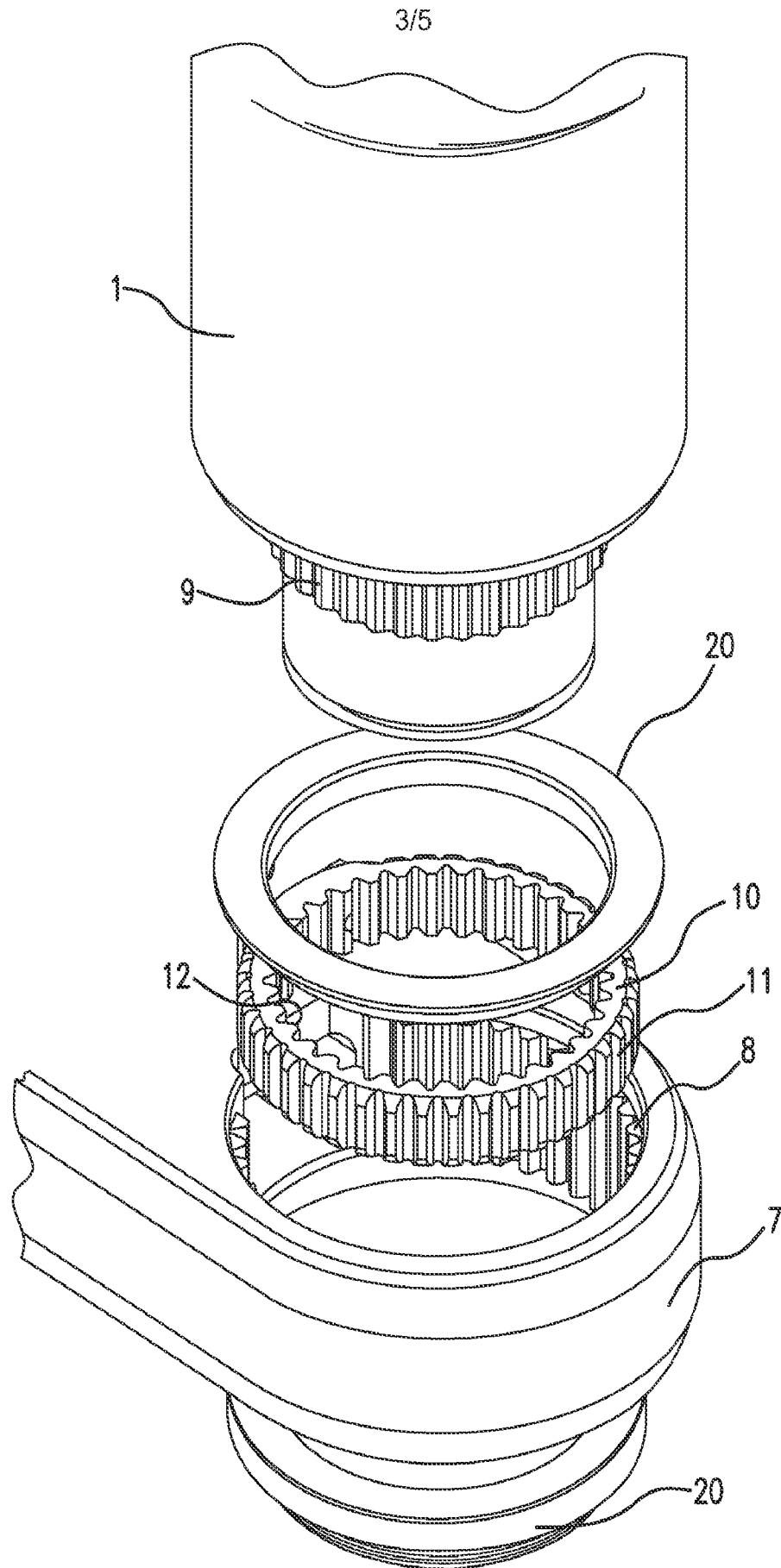
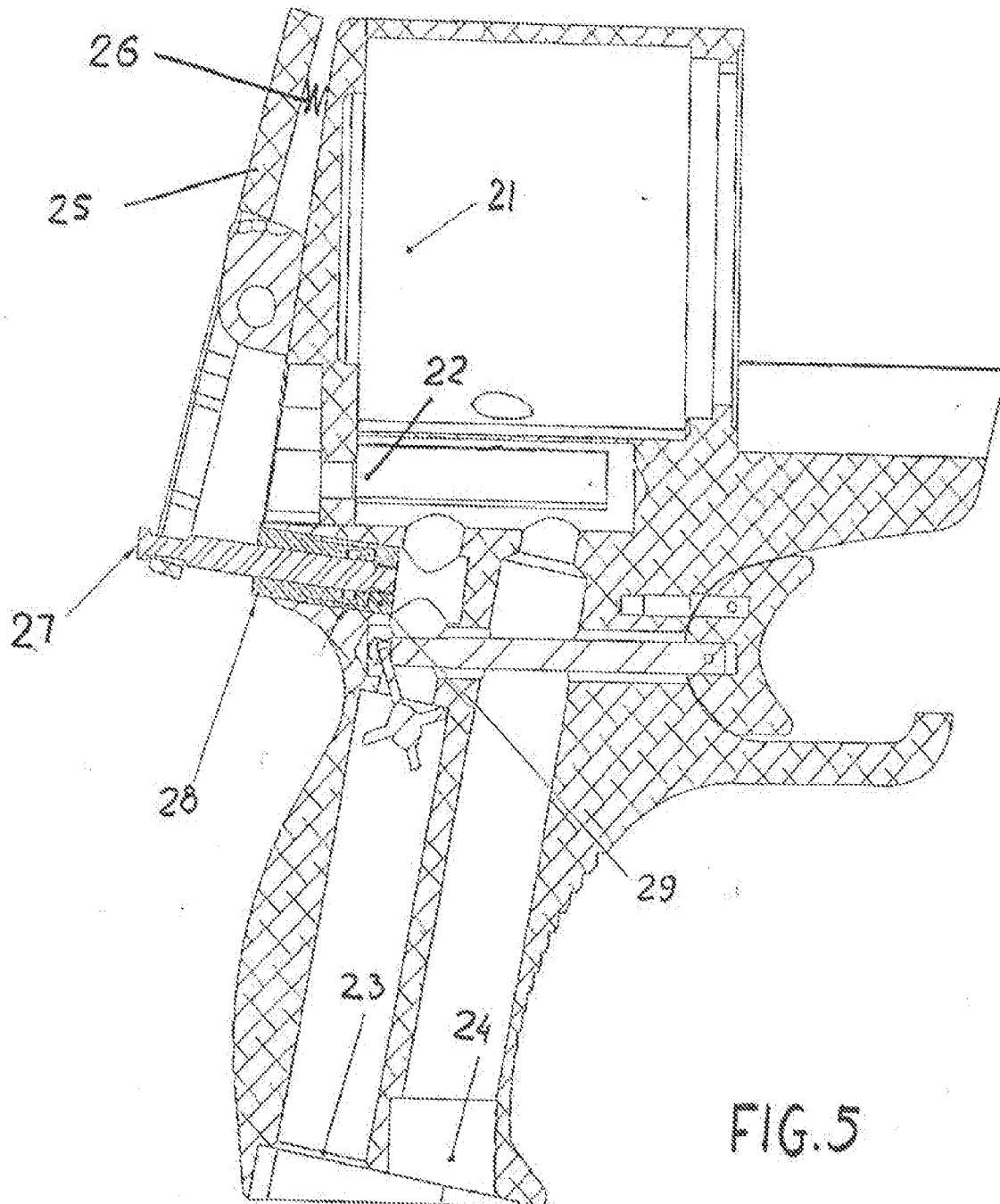


FIG.4

SUBSTITUTE SHEET (RULE 26)



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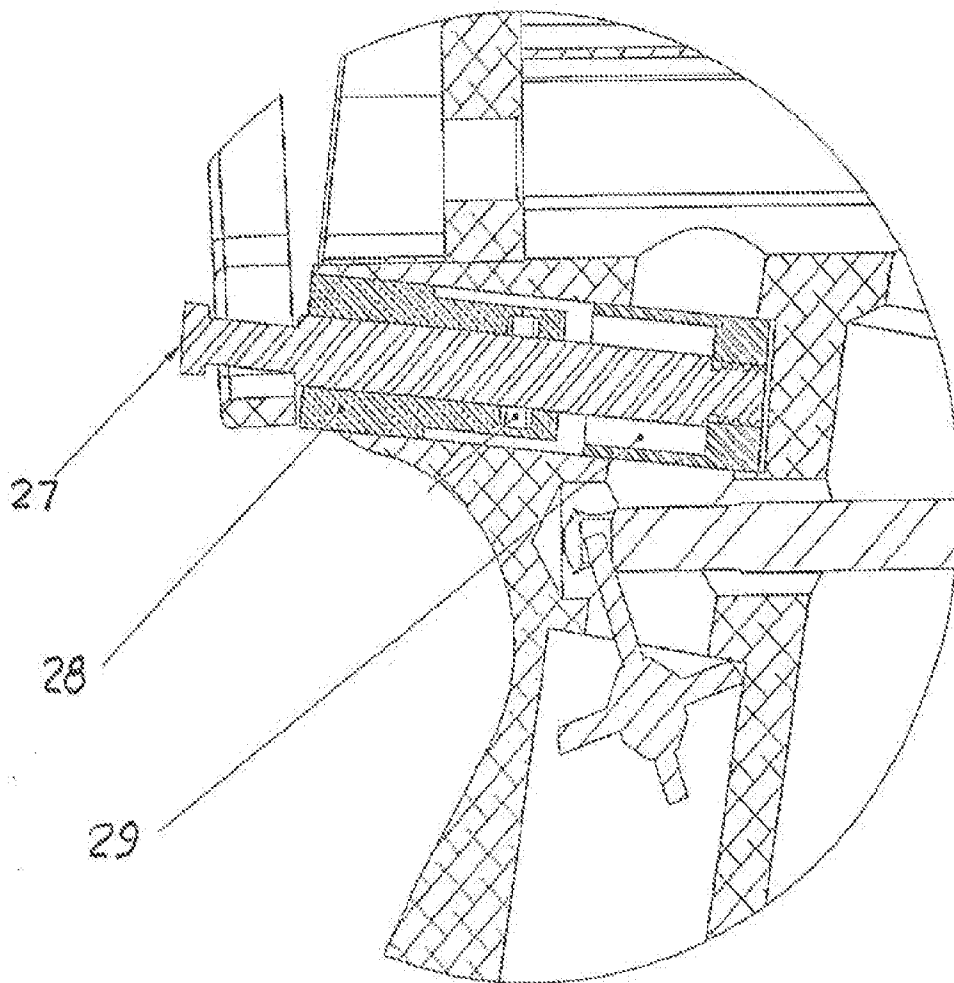


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/051085

A. CLASSIFICATION OF SUBJECT MATTER
INV. B25B21/00 B25B23/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B25B B25F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 20 2006 011224 U1 (WAGNER PAUL HEINZ [DE]) 22 November 2007 (2007-11-22) paragraphs [0001] - [0006] paragraphs [0013] - [0022]	1,7-9
Y	figures 1,2	10
Y	----- WO 2004/073005 A (FEIN C & E GMBH [DE]; RUDOLF BORIS [DE]; BRAUN SIGMUND [DE]; KRESS CHR) 26 August 2004 (2004-08-26) page 6 figure 1	10
A	----- DE 195 07 955 A1 (NIEBERLE JAN [DE]) 12 September 1996 (1996-09-12) column 2, line 21 - line 40 figures 1,2 ----- -/--	1,7

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

20 November 2009

Date of mailing of the international search report

02/12/2009

Name and mailing address of the ISA/

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Authorized officer

Schultz, Tom

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/051085

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 651 391 A (VOGELSBERG WALTER H) 21 March 1972 (1972-03-21) column 1, line 69 - column 2, line 16 figures 1,2,6 -----	1
A	DE 203 01 759 U1 (WAGNER PAUL HEINZ [DE]) 17 June 2004 (2004-06-17) paragraphs [0010] - [0012] paragraphs [0020] - [0026] figures 1-3 -----	2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/051085

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 11, 12
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 11, 12

Present claims 11, 12 relate to an apparatus or a novel feature defined by reference to the drawings or the description of the application. The claims 11, 12 so lack clarity (Art. 6 PCT, Rule 6.2(a) PCT). This lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/051085

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