

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Appl. No.:	16/359,540	Art Unit:	3641
Filed:	03/20/2019	Confirmation No.:	9246
Title:	PERFORATION GUN COMPONENTS AND SYSTEM	Atty Docket No.:	DMC007USCon3

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY UNDER 37 C.F.R. §1.111

AMENDMENT UNDER 37 C.F.R. §1.121

Sir:

Responsive to the Non-Final Office Action mailed May 3, 2019 (hereinafter “the Office Action”) to which a reply is due by August 3, 2019, Applicant respectfully requests reconsideration, withdrawal of the rejections, and allowance of the Claims based upon the following amendments and remarks. Please charge or credit any additional fee due to Deposit Account Number 600151, with reference to the above-referenced attorney docket number.

Amendments to the Claims are set forth in the Listing of Claims that begins on page 2 of this correspondence.

Remarks begin on page 7 of this correspondence.

AMENDMENTS TO THE CLAIMS

A listing of all claims and their current status in accordance with 37 C.F.R. §1.121(2) is provided below. This listing of claims replaces all prior versions and listing of claims in the application.

1. (Currently Amended) A perforating gun, comprising:
 - an outer gun carrier;
 - a charge holder positioned within the outer gun carrier and including at least one shaped charge; ~~and~~
 - a detonator contained entirely within the outer gun carrier, the detonator including
 - a detonator body containing detonator components,
 - a wireless ~~bulkhead-signal-in~~ connector-~~portion~~, a wireless through wire ~~connector-connecting-portion~~, and a wireless ground ~~contact connector-portion~~, and
 - an insulator electrically isolating the wireless ~~bulkhead-signal-in~~ connector ~~portion~~ from the wireless through wire ~~connector-connecting-portion~~; and,
 - a bulkhead, wherein the bulkhead includes a contact pin in wireless electrical contact with the wireless signal-in connector, wherein
 - at least a portion of the bulkhead is contained within a tandem seal adapter, and the wireless ground contact connector is in wireless electrical contact with the tandem seal adapter.
2. (Currently Amended) The perforating gun of claim 1, further comprising a through wire for relaying an electrical signal along a length of the charge holder, wherein the through wire is a wire and the wireless through wire ~~connector-connecting-portion~~ is in electrical contact with the through wire.
3. (Original) The perforating gun of claim 1, wherein the charge holder is an injection molded part.

4. (Cancelled)
5. (Currently Amended) The perforating gun of claim 1[[4]], wherein the contact pin transfers an electrical signal from a previous wellbore tool to the wireless signal-in ~~bulkhead~~-connector ~~portion~~.
6. (Cancelled)
7. (Original) The perforating gun of claim 1, further comprising a top connector, wherein the detonator is positioned within the top connector.
8. (Original) The perforating gun of claim 7, wherein the top connector is an injection molded part.
9. (Currently Amended) A modular detonator, comprising:
 - a detonator body containing detonator components;
 - a wireless signal-in connector ~~bulkhead connecting portion~~;
 - a wireless through wire connector ~~connecting portion~~;
 - a wireless ground contact connector ~~portion~~;
 - a signal-in wire electrically connecting at least in part the wireless signal-in connector ~~bulkhead connecting portion~~ to at least one of the detonator components; and,
 - an insulator electrically isolating the wireless signal-in connector ~~bulkhead connecting portion~~ from the wireless through wire connector ~~connecting portion~~, wherein
 - the wireless signal-in connector is configured for making wireless electrical contact with an electrical contact of a bulkhead assembly contained at least in part within a tandem seal adapter when the modular detonator is received within a gun assembly of a perforating gun system, and

the wireless ground contact connector is configured for making wireless electrical contact with the tandem seal adapter when the modular detonator is received within the gun assembly of the perforating gun system.

10. (Original) The modular detonator of claim 9, further comprising a detonating cord connecting portion, wherein the detonating cord connecting portion is sized to retain a detonating cord and positioned to energetically couple the detonating cord to the detonator.

11. (Currently Amended) A method for assembling a perforation gun system, comprising:

(a) inserting a charge holder within a hollow interior of an outer gun carrier, wherein the charge holder includes a detonating cord connected to the charge holder and at least one shaped charge;

(b) inserting a top connector into the outer gun carrier adjacent to the charge holder, the top connector comprising a hollow channel;

(c) inserting a detonator into the hollow channel of the top connector ~~outer gun carrier~~, the detonator including

a detonator body containing detonator components,

a wireless ~~signal-in-bulkhead connector-portion~~, a wireless through wire connector ~~connecting portion~~, and a wireless ground contact connector ~~portion~~, and

an insulator electrically isolating the wireless ~~signal-in-bulkhead connector portion~~ from the wireless through wire connector ~~connecting portion~~; and

~~(e)~~(d) connecting a through wire to the wireless through wire connector; ~~connecting portion~~

(e) energetically coupling the detonating cord to the detonator; and,

(f) transporting the perforation gun system to a wellbore site, wherein at least one of steps (a), (b), and (d) is performed before transporting the perforation gun system, and step (c) is performed at the wellbore site.

12. (Cancelled)

13. (Original) The method of claim 11, wherein inserting the detonator into the outer gun carrier includes pushing the detonator into the outer gun carrier.

14. (Currently Amended) The method of claim 11, wherein the through wire is a wire, and the wireless through wire ~~connector-connecting portion~~ of the detonator is in electrical contact with the through wire.

15. (Currently Amended) The method of claim 11, further comprising connecting a bulkhead into the outer gun carrier, wherein the bulkhead includes a contact pin and connecting the bulkhead into the outer gun carrier includes placing the contact pin in wireless electrical contact with the wireless ~~signal-in-bulkhead connector-portion~~.

16. (Currently Amended) The method of claim ~~11~~[[12]], wherein one or more of steps (a), ~~(b)(e)~~, and (d) is performed at a factory or a facility that is not a wellbore site.

17. (Cancelled)

18. (Currently Amended) The method of claim ~~11~~[[12]], further comprising performing a continuity test to ensure continuity between one or more electrical connections of the perforation gun system.

19. (Currently Amended) The method of claim ~~11~~[[12]], wherein performing ~~at least~~ steps (a) ~~to~~ ~~[[--]](e) and (e)~~ a first time with a first set of components completes a first perforating gun segment and the method further comprises:

performing ~~at least~~ steps (a) ~~to~~ ~~[[--]](e) and (e)~~ a second time with a second set of components to complete a second perforating gun segment; and
connecting the second perforating gun segment to the first perforating gun segment.



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