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McKeachnie et al.

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(54) **WELLBORE TOOL WITH DISINTEGRATABLE COMPONENTS AND METHOD OF CONTROLLING FLOW**

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E21B 34/08 (2006.01)

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(58) **Field of Classification Search** 166/317, 166/376, 383, 332.4, 318, 134, 152, 105.5, 166/387, 194, 373, 374
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,238,895	A		4/1941	Gage et al.
2,672,199	A	*	3/1954	McKenna 166/134
3,497,003	A	*	2/1970	Kisling et al. 166/134
3,645,331	A		2/1972	Maurer et al.
5,333,684	A	*	8/1994	Walter et al. 166/105.5
5,335,727	A	*	8/1994	Cornette et al. 166/387
5,417,285	A		5/1995	Van Buskirk et al.
5,479,986	A		1/1996	Gano et al.
5,607,017	A		3/1997	Owens et al.
5,685,372	A		11/1997	Gano
5,765,641	A		6/1998	Shy et al.
5,941,309	A	*	8/1999	Appleton 166/317
6,189,618	B1		2/2001	Beeman et al.
6,220,350	B1		4/2001	Brothers et al.
6,540,033	B1		4/2003	Sullivan et al.
6,752,209	B2	*	6/2004	Mondelli et al. 166/152

OTHER PUBLICATIONS

CA Office Action, Application No. 2,528,694, Dated Apr. 12, 2007.

* cited by examiner

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(57) **ABSTRACT**

The present invention generally provides a pressure isolation plug for managing a wellbore with multiple zones. The pressure isolation plug generally includes a body with a bore extending therethrough, a first disintegratable ball sized and positioned to restrict upward fluid flow through the bore, wherein the disintegratable ball disintegrates when exposed to wellbore conditions for a first amount of time. The plug also includes a second ball sized and positioned to restrict downward fluid flow through the bore.
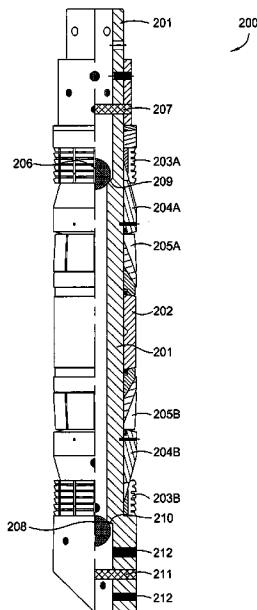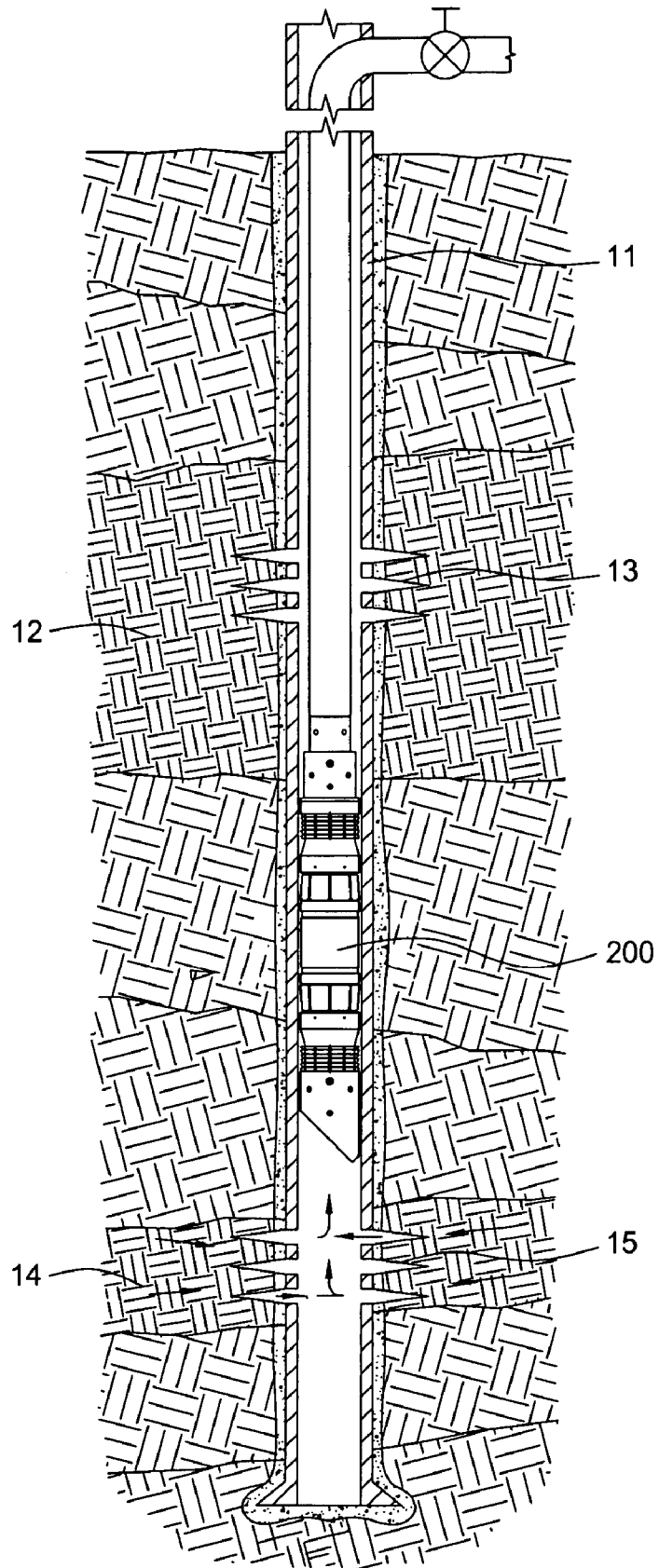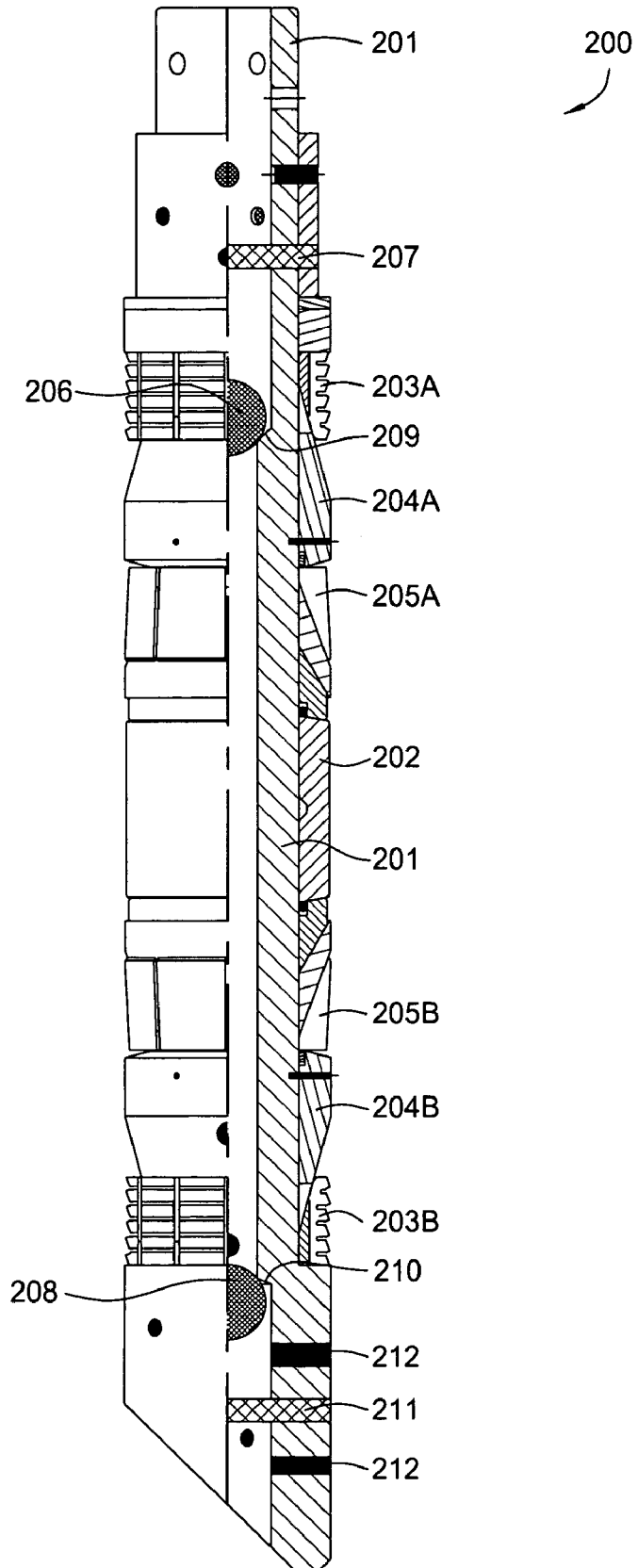
15 Claims, 5 Drawing Sheets

FIG. 1

11

13

12

200

15

14

FIG. 2

200

201
207
206
203A
209
204A
205A
202
201
205B
204B
203B
210
208
212
211
212

FIG. 3

401
400
407
406
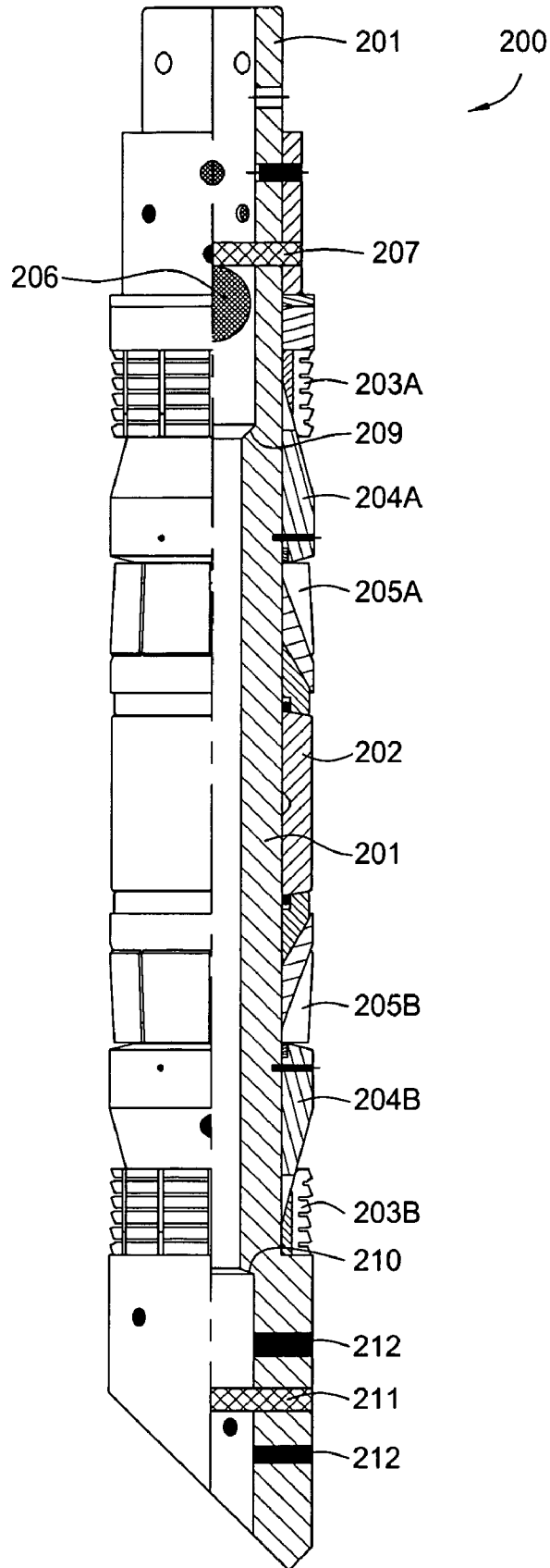403A
409
404A
405A

FIG. 4

402
401
405B
404B
403B

DOCKET ALARM
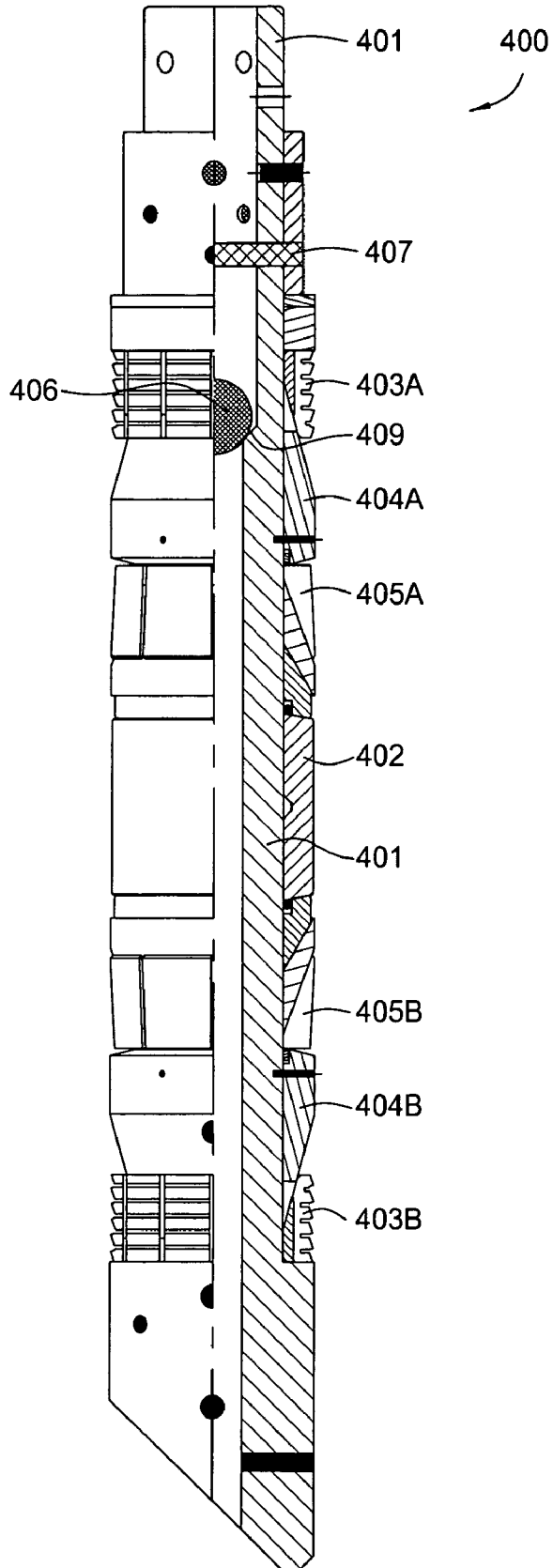
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