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(54) **WRITE-MANY MEMORY DEVICE AND METHOD FOR LIMITING A NUMBER OF WRITES TO THE WRITE-MANY MEMORY DEVICE**

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(51) **Int. Cl.**
G06F 12/14 (2006.01)
(52) **U.S. Cl.** **711/103**
(58) **Field of Classification Search** 711/103, 711/154, 163
See application file for complete search history.

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(57) **ABSTRACT**

The preferred embodiments described herein provide a write-many memory device and method for limiting a number of writes to the write-many memory device. In one preferred embodiment, a write-many memory device is provided comprising a plurality of blocks of memory, each block being limited to N number of writes. Data can be stored in a block of memory only if there has been fewer than N number of writes to the block. In another preferred embodiment, a write-many memory device is provided comprising a plurality of blocks of memory, wherein each block comprises a first sideband field storing data indicating whether the block is free and a second sideband field storing data indicating how many times the block has been written into. The first and second sideband fields are used in a method for limiting a number of writes to the write-many memory device. Other preferred embodiments are provided, and each of the preferred embodiments can be used alone or in combination with one another.
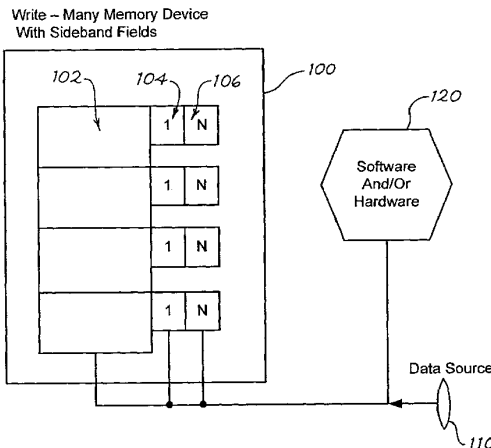
45 Claims, 3 Drawing Sheets

Write – Many Memory Device
With Sideband Fields

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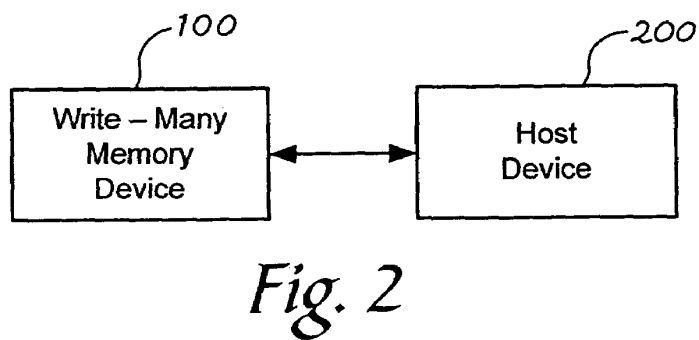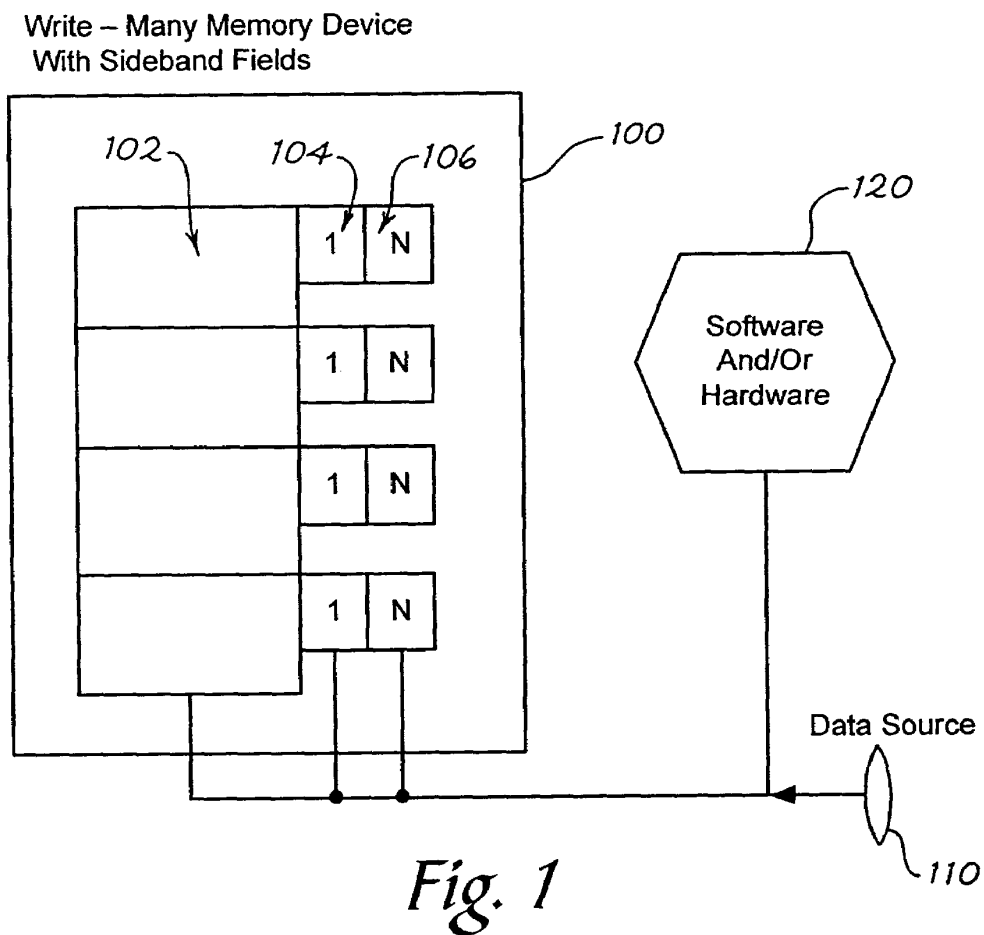
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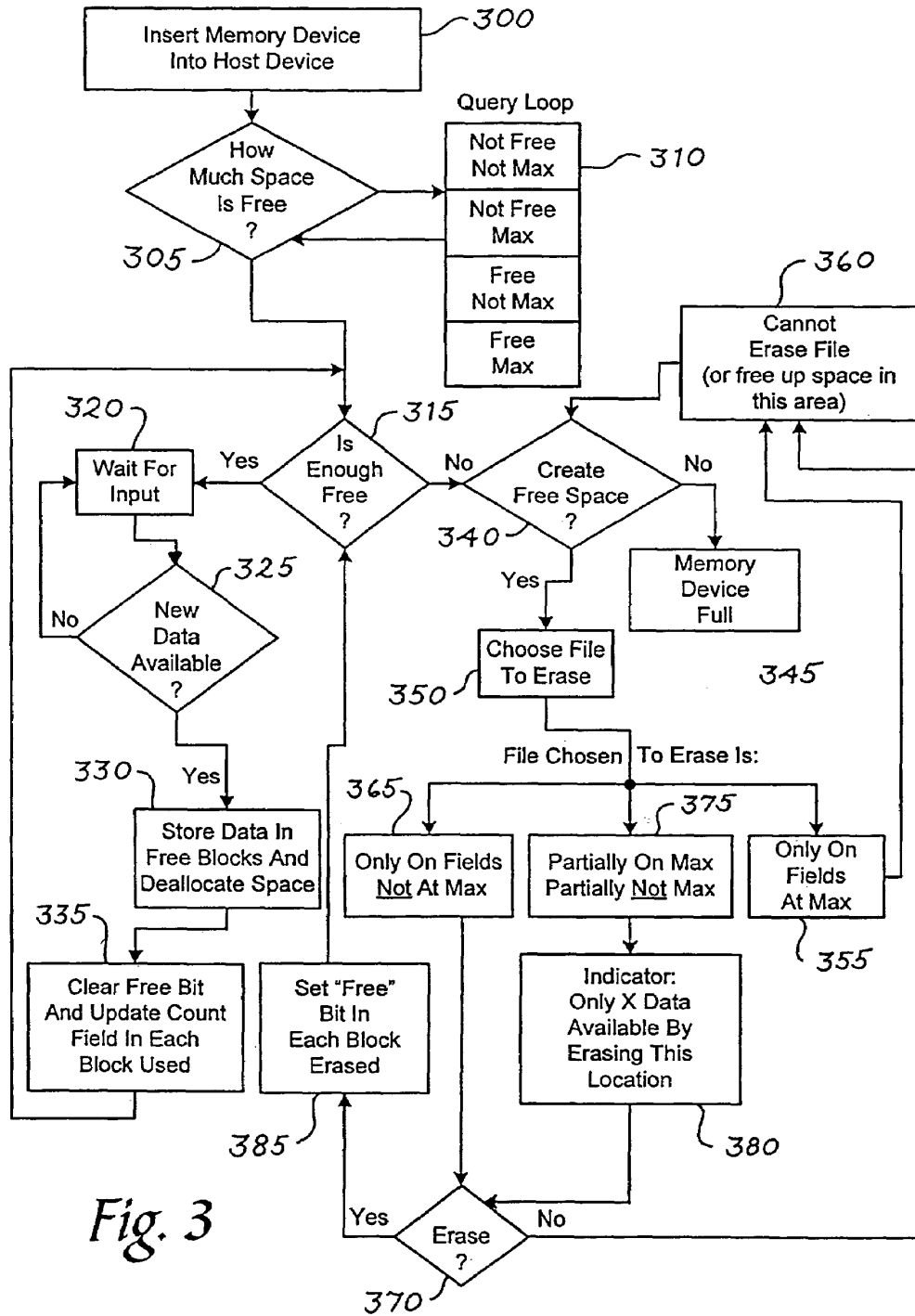
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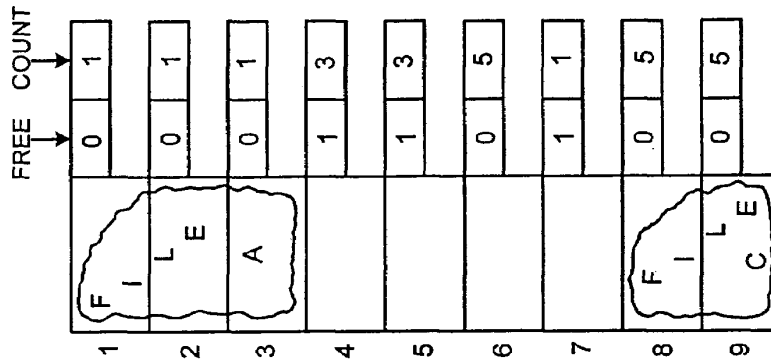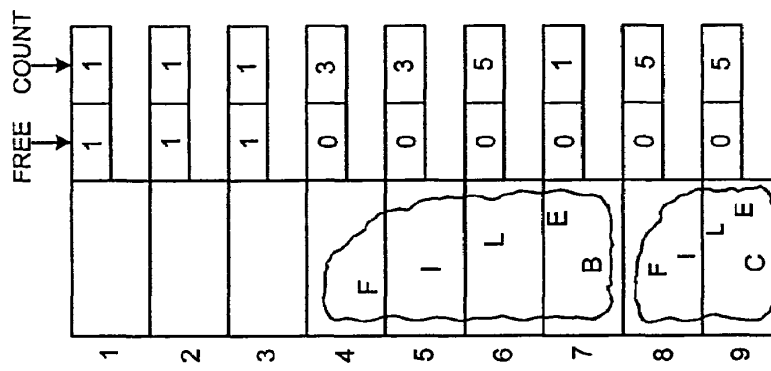Write – Many Memory Device
With Sideband Fields

102

104

106

100

120

1	N
1	N
1	N
1	N

Software
And/Or
Hardware

Data Source

110

Fig. 1

100

200

Write – Many
Memory
Device

Host
Device

Fig. 2

Insert Memory Device Into Host Device — *300*

Query Loop

How Much Space Is Free ? — *305*

Not Free Not Max — *310*

Not Free Max

Free Not Max

Free Max

Cannot Erase File (or free up space in this area) — *360*

Is Enough Free ? — *315*

Wait For Input — *320*

Yes

No

Create Free Space ? — *340*

No

Memory Device Full — *345*

Yes

New Data Available ? — *325*

No

Choose File To Erase — *350*

Store Data In Free Blocks And Deallocate Space — *330*

Yes

File Chosen To Erase Is:

Clear Free Bit And Update Count Field In Each Block Used — *335*

Set "Free" Bit In Each Block Erased — *385*

Only On Fields Not At Max — *365*

Partially On Max Partially Not Max — *375*

Only On Fields At Max — *355*

Indicator: Only X Data Available By Erasing This Location — *380*

Fig. 3

Yes

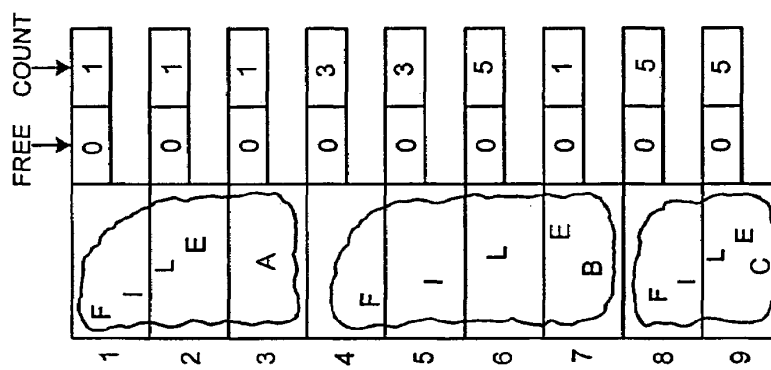Erase ? — *370*
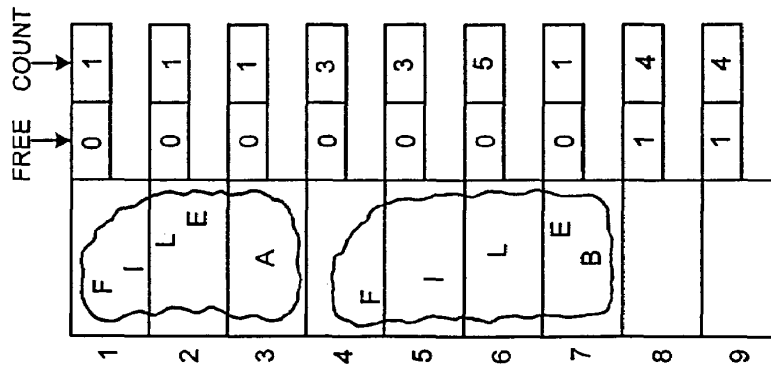
No

Fig. 4D

Fig. 4C

Fig. 4B

Fig. 4A

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