

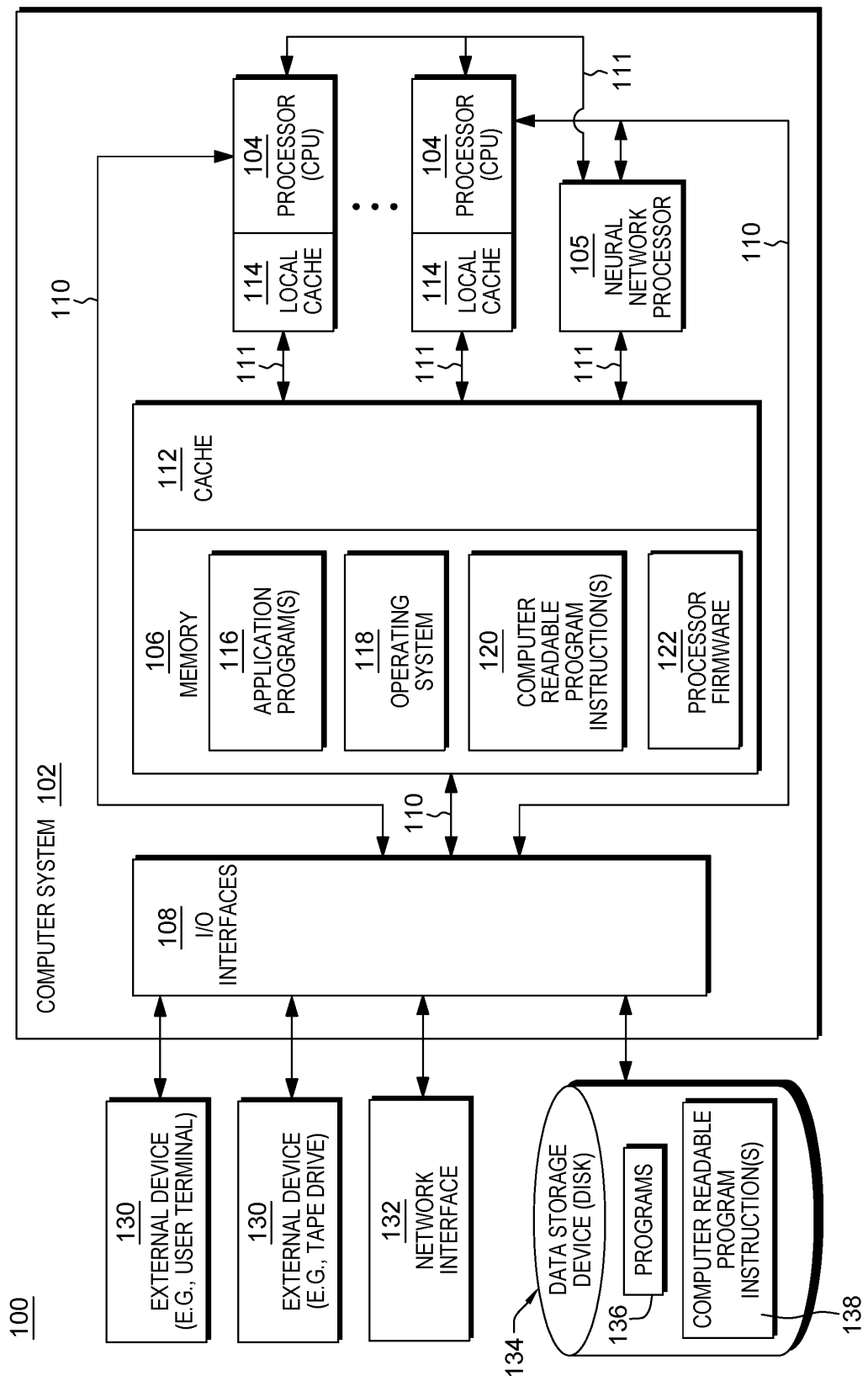


FIG. 1A

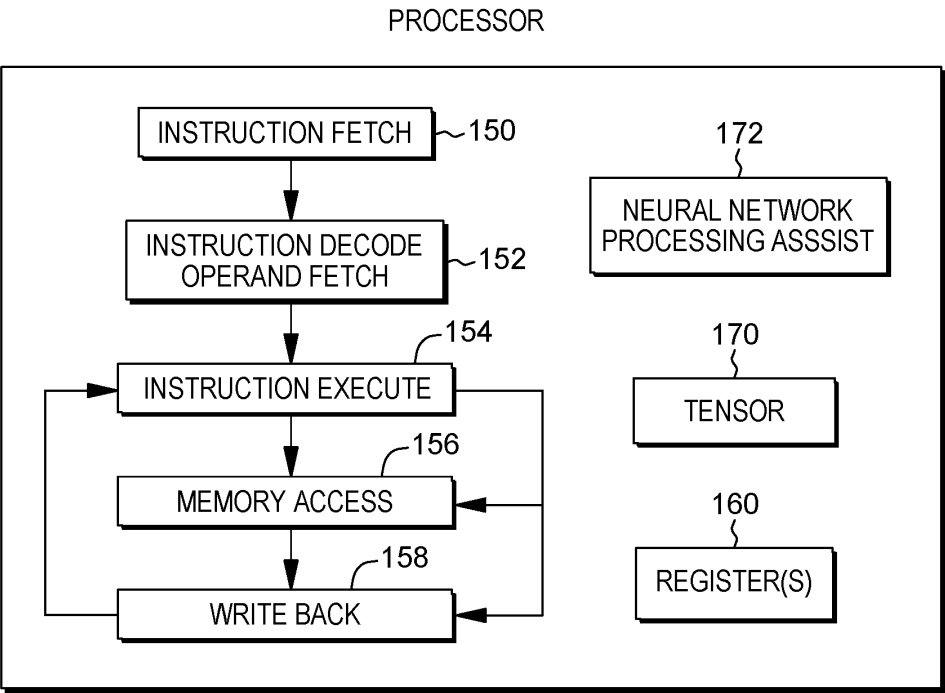


FIG. 1B

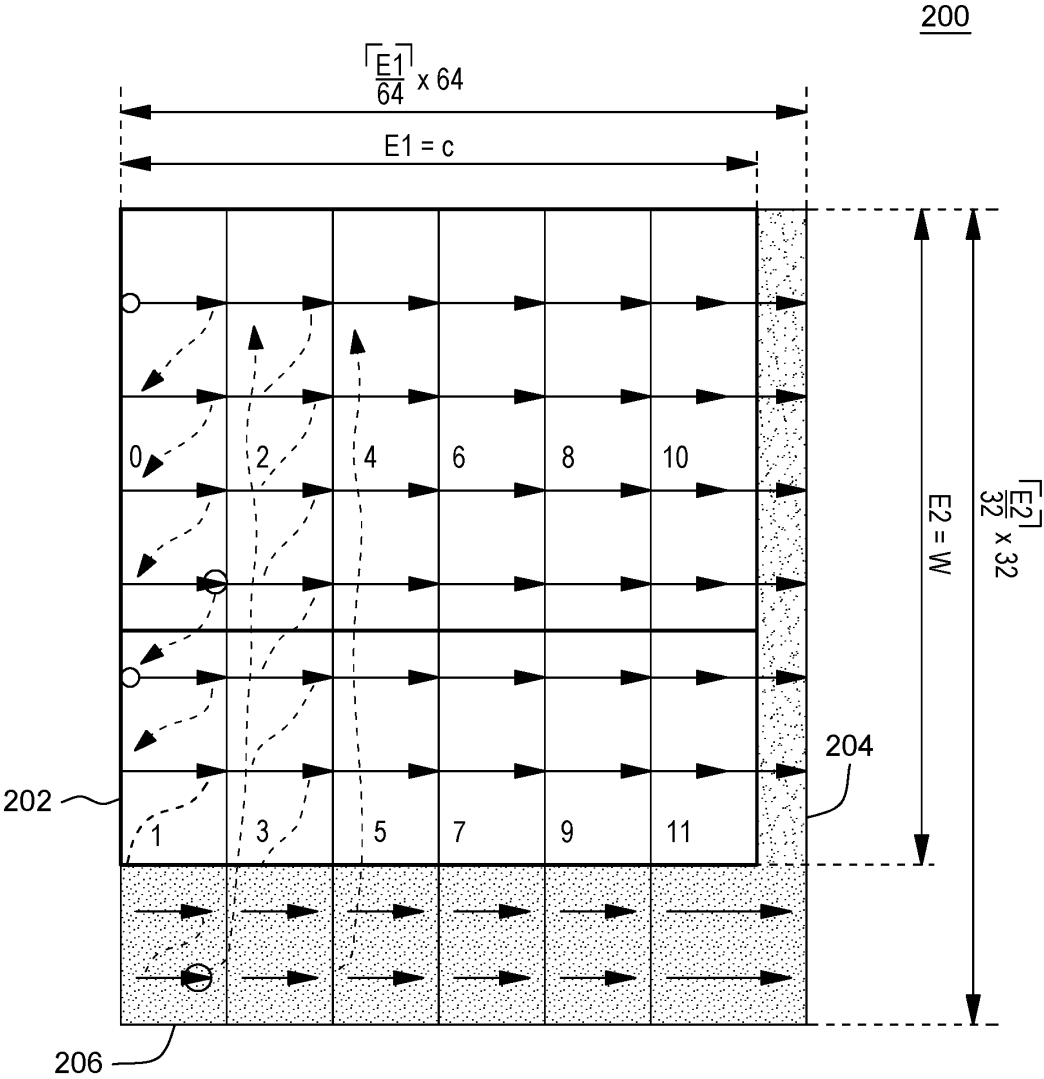


FIG. 2A

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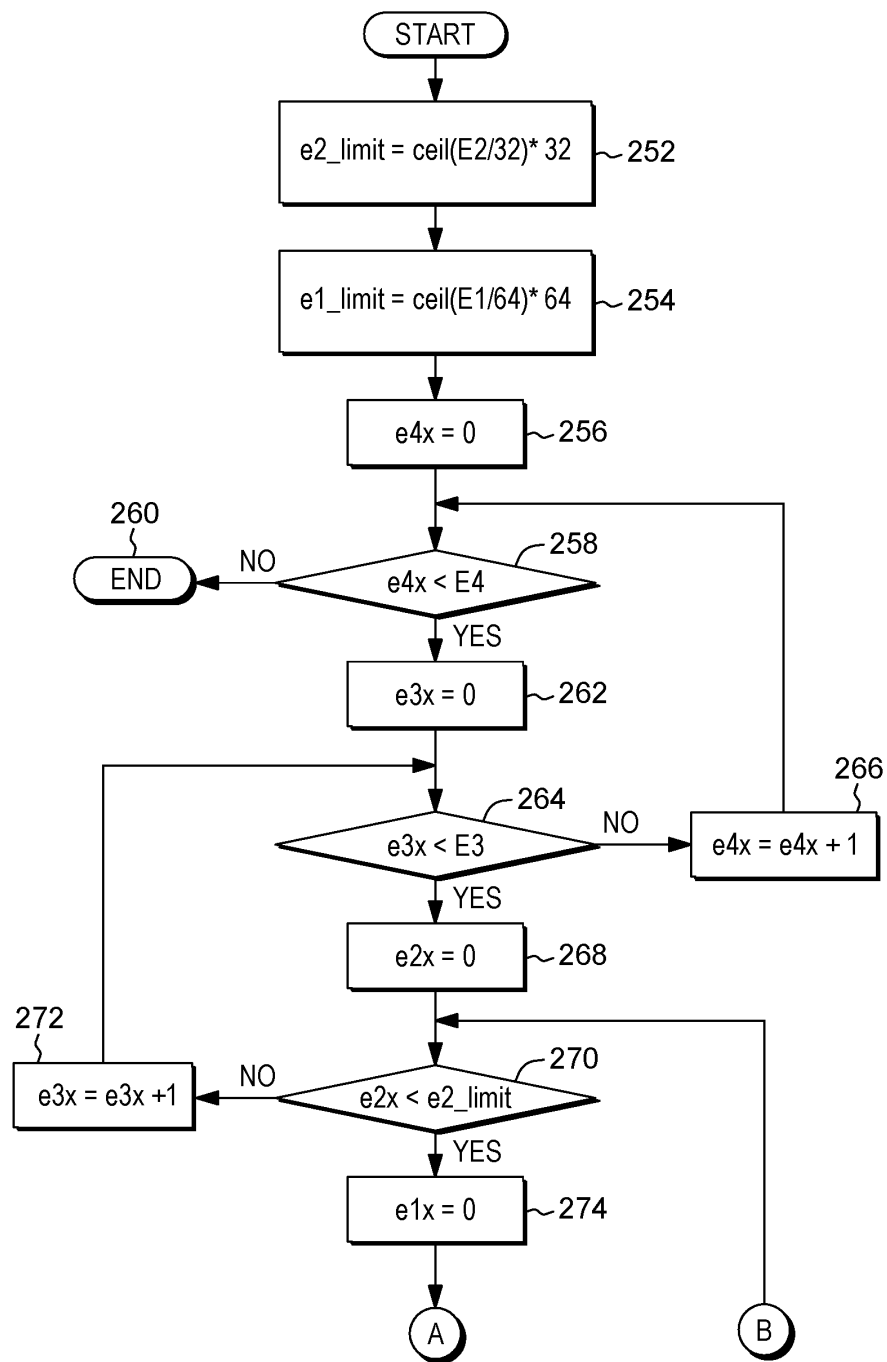


FIG. 2B

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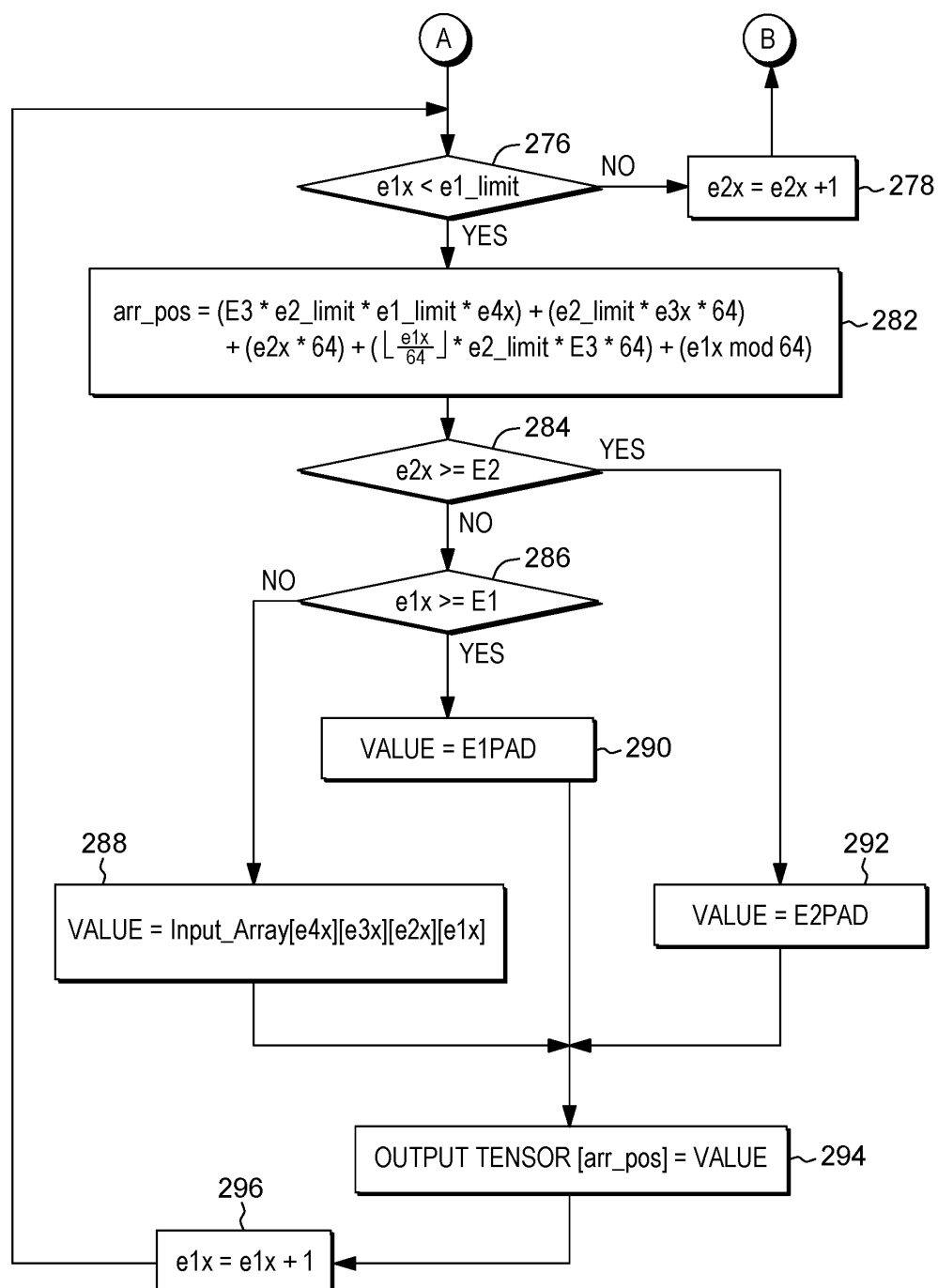


FIG. 2C

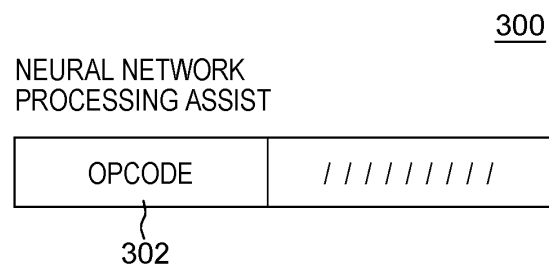


FIG. 3A

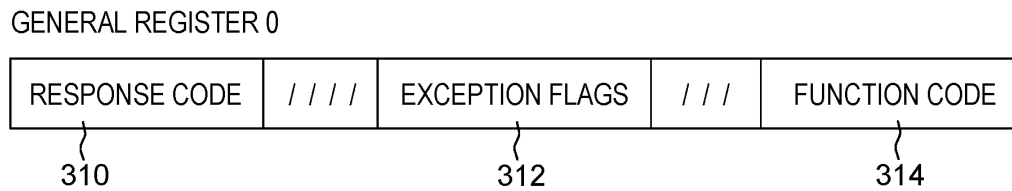


FIG. 3B

| CODE<br>(DEC) | CODE<br>(HEX) | FUNCTION                 | PARAMETER<br>BLOCK SIZE<br>(BYTES) |
|---------------|---------------|--------------------------|------------------------------------|
| 0             | 0             | NNPA - QAF               | 256                                |
| 16            | 10            | NNPA - ADD               | 4096                               |
| 17            | 11            | NNPA - SUB               | 4096                               |
| 18            | 12            | NNPA - MUL               | 4096                               |
| 19            | 13            | NNPA - DIV               | 4096                               |
| 20            | 14            | NNPA - MIN               | 4096                               |
| 21            | 15            | NNPA - MAX               | 4096                               |
| 32            | 20            | NNPA - LOG               | 4096                               |
| 33            | 21            | NNPA - EXP               | 4096                               |
| 49            | 31            | NNPA - RELU              | 4096                               |
| 50            | 32            | NNPA - TANH              | 4096                               |
| 51            | 33            | NNPA - SIGMOID           | 4096                               |
| 52            | 34            | NNPA - SOFTMAX           | 4096                               |
| 64            | 40            | NNPA - BATCHNORM         | 4096                               |
| 80            | 50            | NNPA - MAXPOOL2D         | 4096                               |
| 81            | 51            | NNPA - AVGPOOL2D         | 4096                               |
| 96            | 60            | NNPA - LSTMACT           | 4096                               |
| 97            | 61            | NNPA - GRUACT            | 4096                               |
| 112           | 70            | NNPA - CONVOLUTION       | 4096                               |
| 113           | 71            | NNPA - MATMUL-OP         | 4096                               |
| 114           | 72            | NNPA - MATMUL-OP-BCAST23 | 4096                               |

FIG. 3C

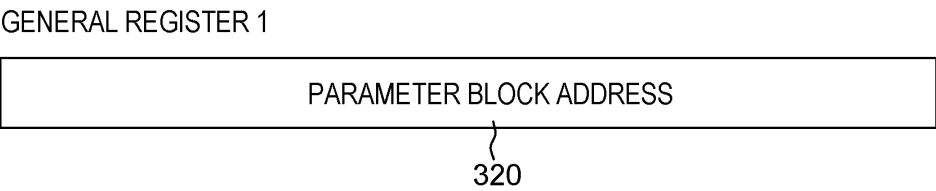


FIG. 3D

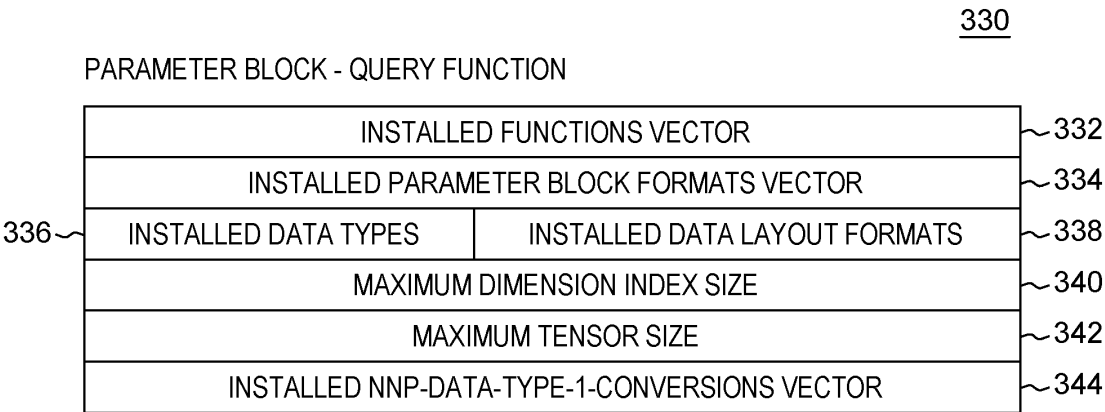


FIG. 3E

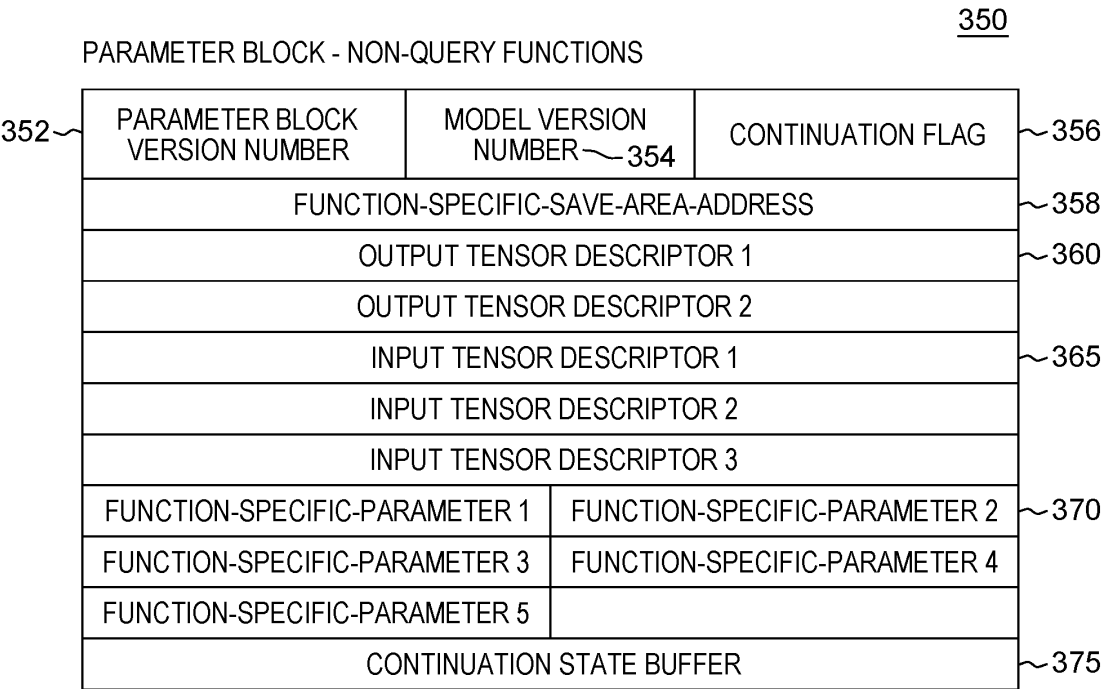


FIG. 3F

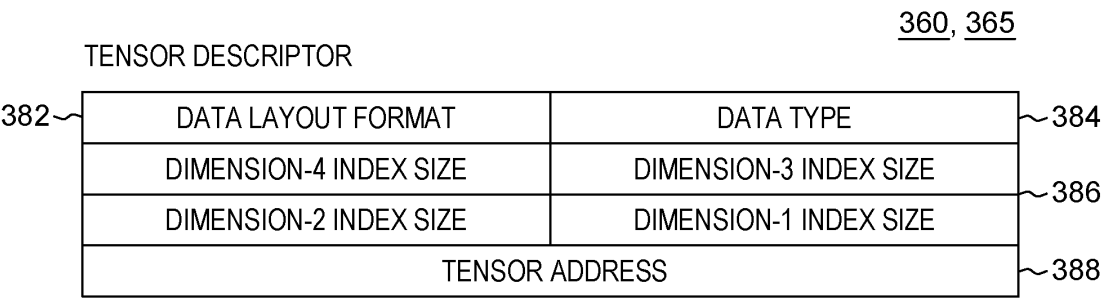


FIG. 3G

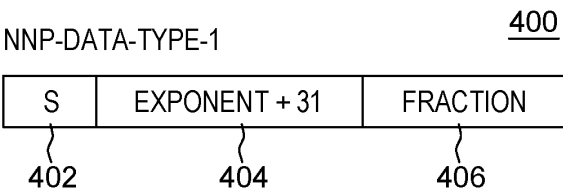


FIG. 4

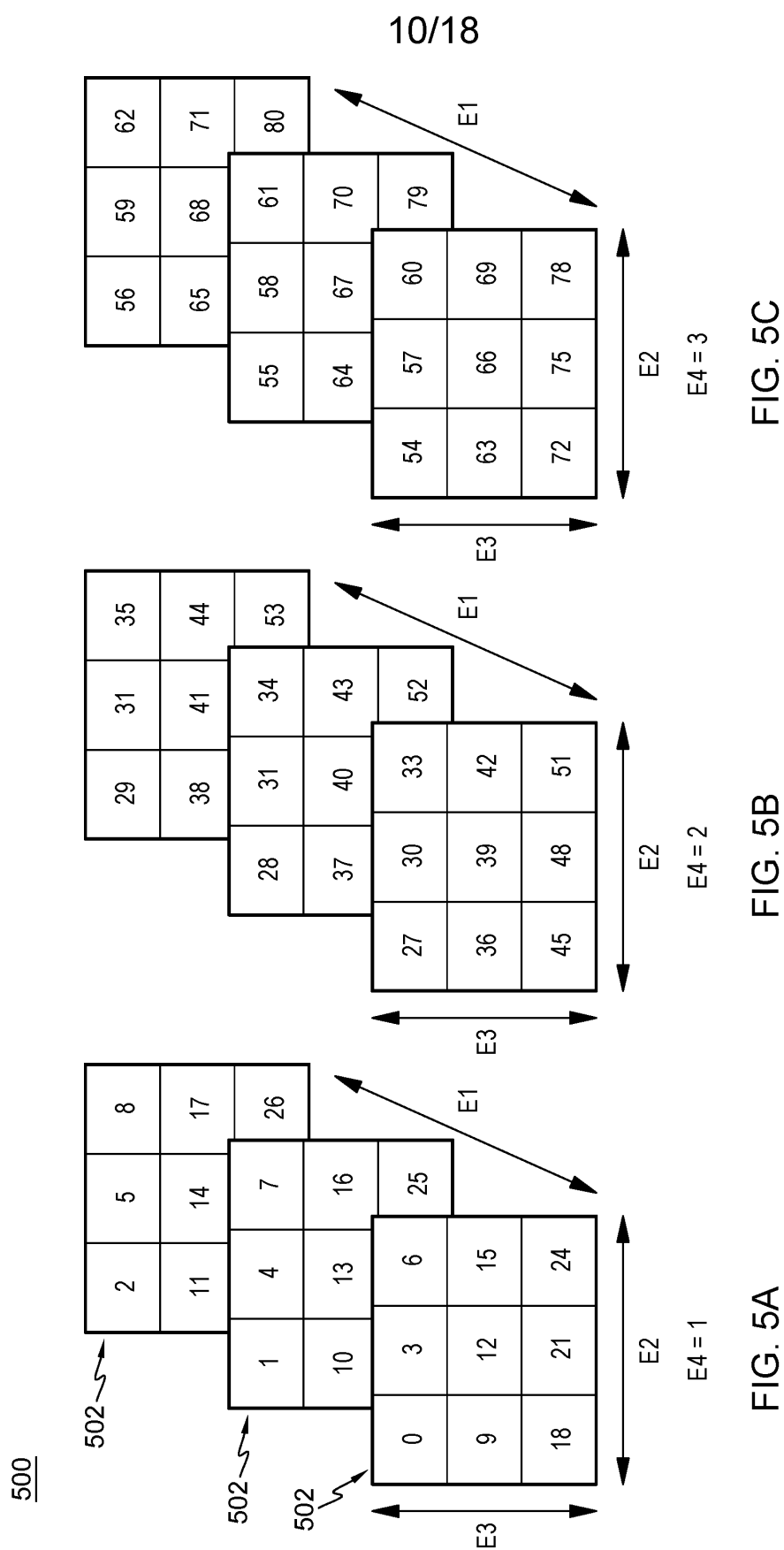


FIG. 5C

FIG. 5B

FIG. 5A



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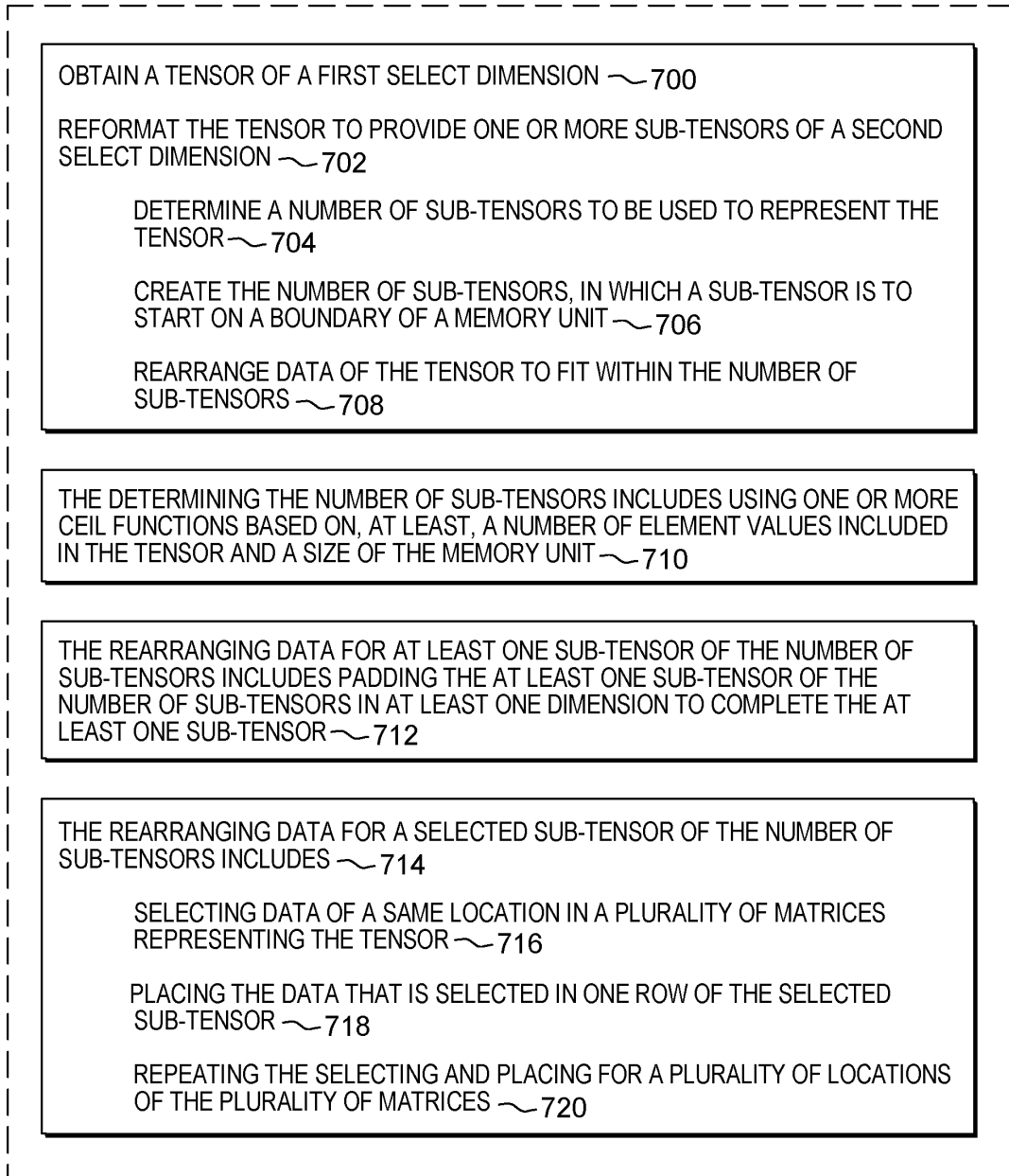


FIG. 7A

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THE REARRANGING DATA FURTHER INCLUDES

PADDING ONE OR MORE ROWS OF THE SELECTED SUB-TENSOR, BASED ON THE ONE OR MORE ROWS HAVING LESS DATA THAN ACCOMMODATED BY A SIZE OF THE SELECTED SUB-TENSOR ~ 730

PADDING THE SELECTED SUB-TENSOR WITH ONE OR MORE ADDITIONAL PADDED ROWS, BASED ON THE SELECTED SUB-TENSOR HAVING LESS ROWS THAN ACCOMMODATED BY THE SIZE OF THE SELECTED SUB-TENSOR ~ 732

THE MEMORY UNIT IS A MEMORY PAGE, AND THE BOUNDARY OF THE MEMORY UNIT IS A PAGE BOUNDARY ~ 734

THE ONE OR MORE SUB-TENSORS ARE PROVIDED TO A PROCESSOR FOR USE IN TENSOR COMPUTATIONS ~ 740

THE PROVIDING THE ONE OR MORE SUB-TENSORS INCLUDES PROVIDING ADDRESS INFORMATION AND INFORMATION RELATING TO THE SECOND SELECT DIMENSION TO THE PROCESSOR TO BE USED TO STORE THE DATA OF THE ONE OR MORE SUB-TENSORS IN ONE OPERATION ~ 742

THE PROVIDING THE ONE OR MORE SUB-TENSORS INCLUDES PROVIDING ADDRESS INFORMATION AND INFORMATION RELATING TO THE SECOND SELECT DIMENSION TO THE PROCESSOR TO BE USED TO LOAD THE DATA OF THE ONE OR MORE SUB-TENSORS IN ONE OPERATION ~ 744

THE FIRST SELECT DIMENSION IS 4-DIMENSIONS, AND THE SECOND SELECT DIMENSION IS 2-DIMENSIONS, IN WHICH ONE OR MORE 2-DIMENSION SUB-TENSORS REPRESENT ONE 4-DIMENSION TENSOR ~ 750

FIG. 7B

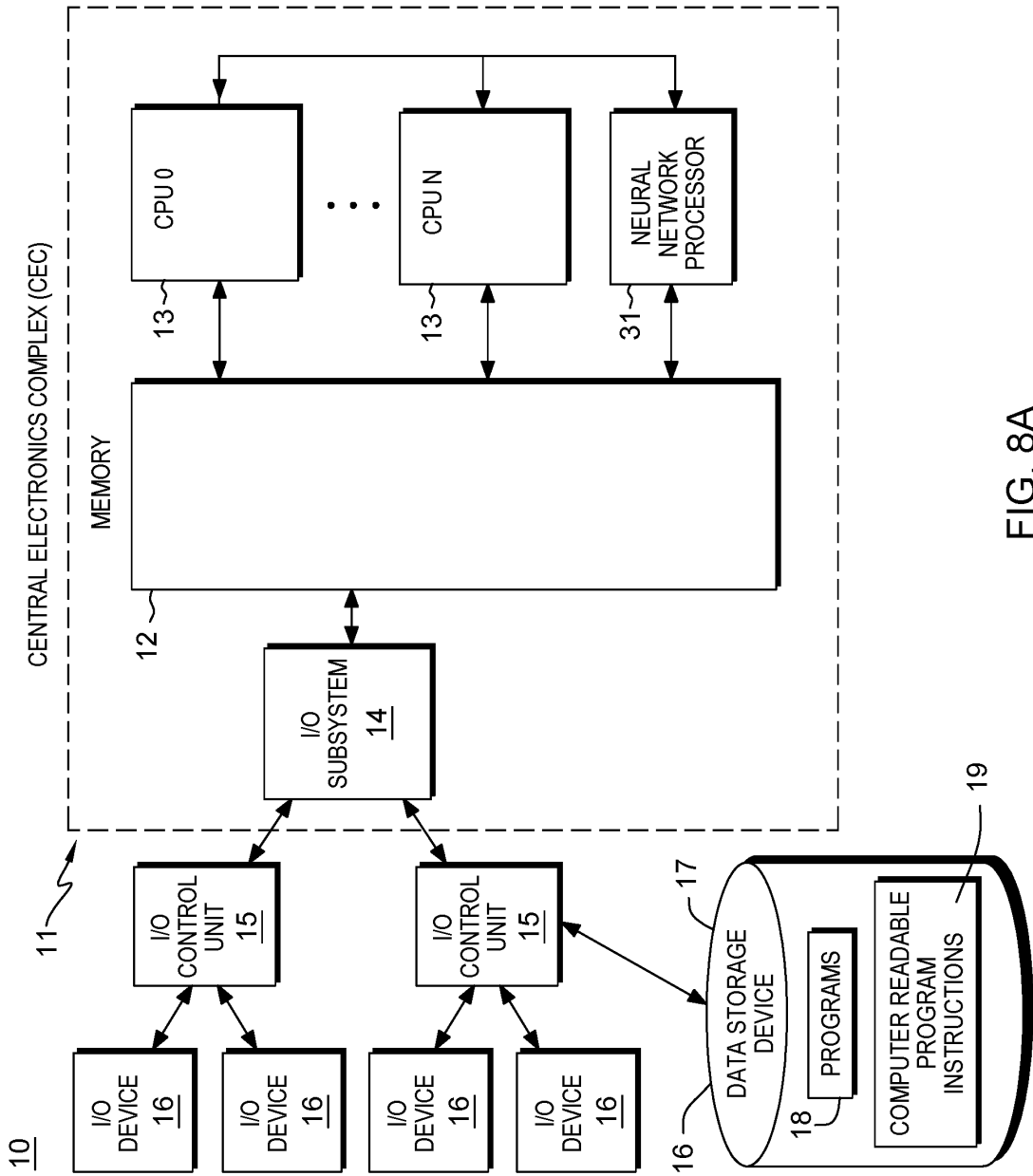


FIG. 8A

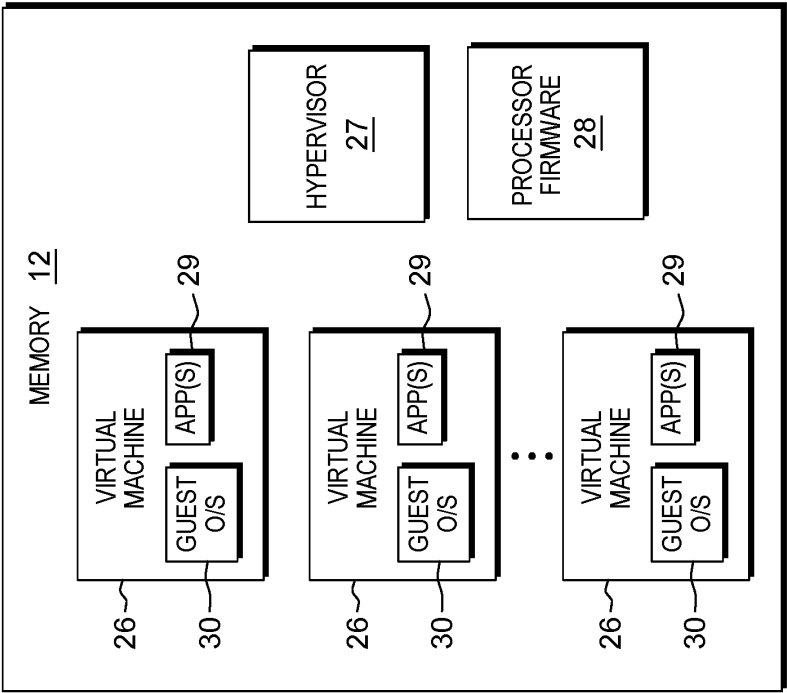


FIG. 8C

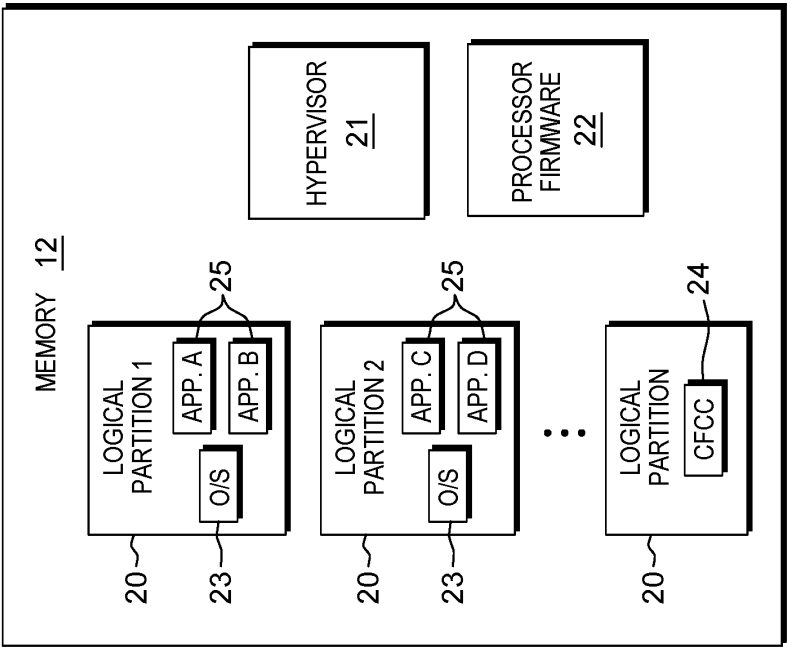


FIG. 8B

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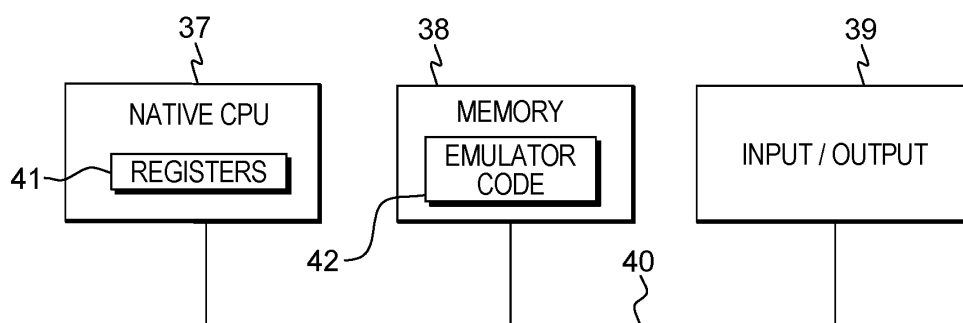
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FIG. 9A

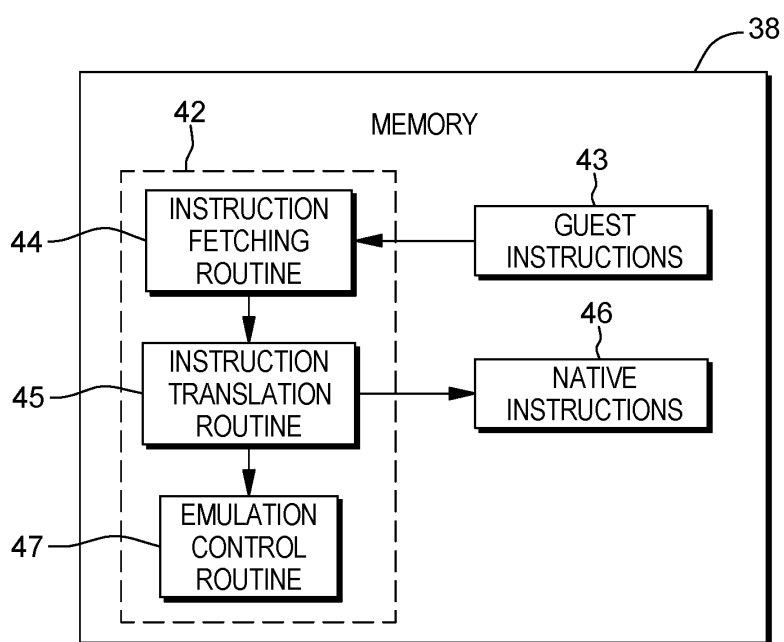


FIG. 9B

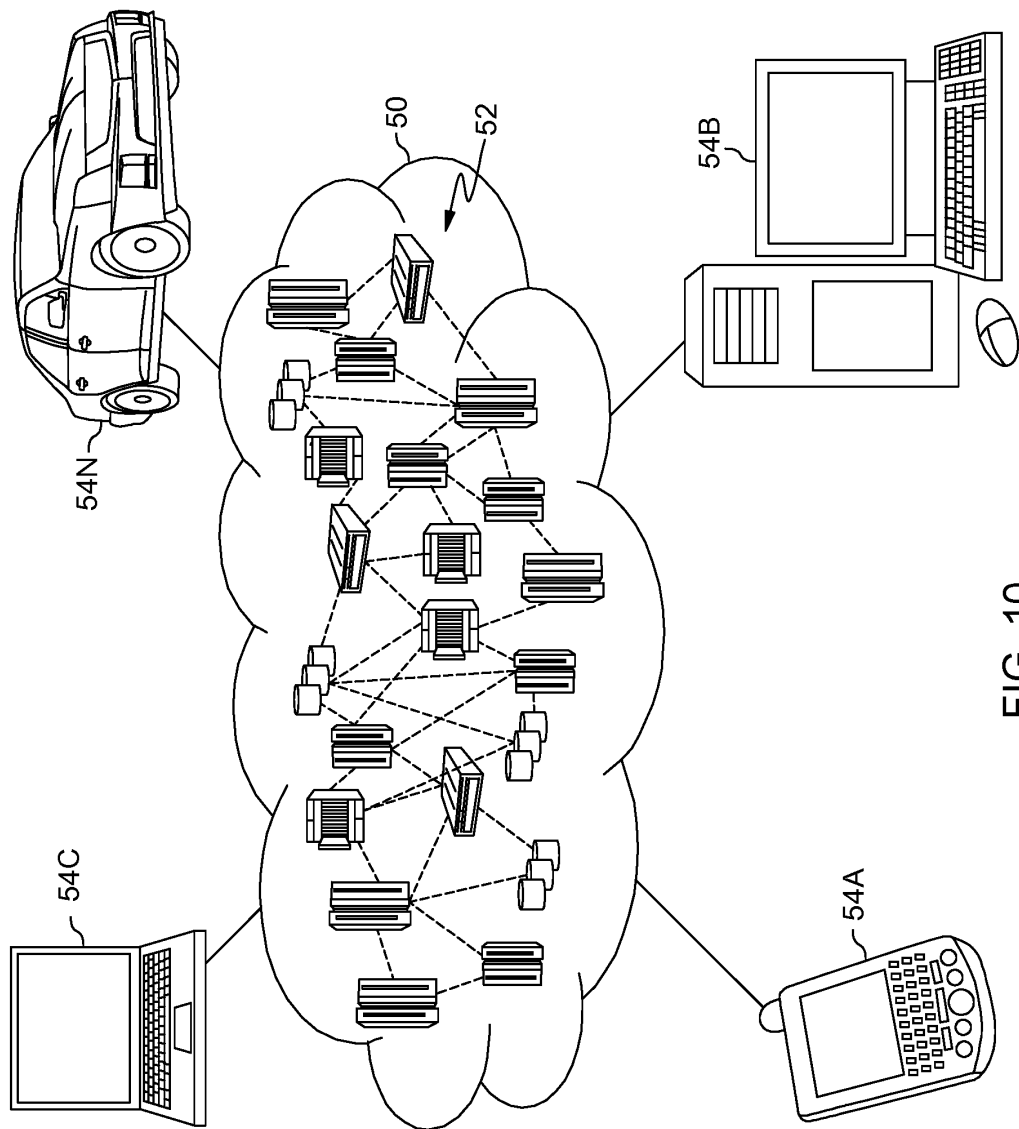


FIG. 10

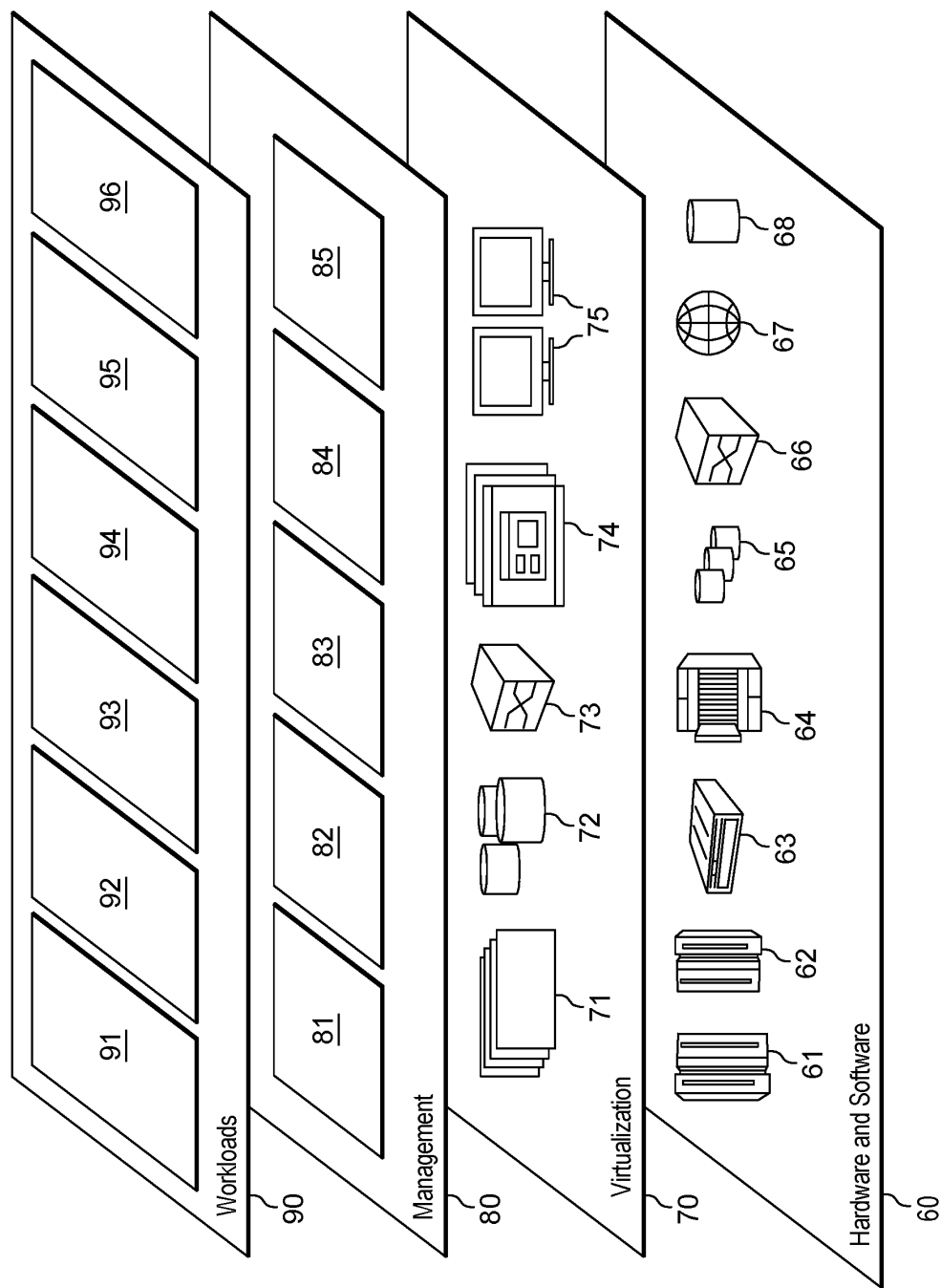


FIG. 11