

[54] HIGH SPEED SIGNAL CONVERSION METHOD AND DEVICE

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[73] Assignee: LSI Logic Corporation, Milpitas, Calif.

[\*] Notice: This patent is subject to a terminal disclaimer.

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Related U.S. Application Data

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[51] Int. Cl.<sup>7</sup> ..... B09G 5/00

[52] U.S. Cl. .... 345/518; 345/516; 345/507

[58] Field of Search ..... 365/230.04, 230.05, 365/230.08, 230.09, 189.05; 345/185, 189, 186, 190, 200, 507, 509, 515, 516, 517, 518; 395/507, 509, 515, 516, 517, 518

[56] References Cited

U.S. PATENT DOCUMENTS

- 4,503,429 3/1985 Schreiber .
4,742,350 5/1988 Ko et al. .
4,791,580 12/1988 Sherrill et al. .
4,849,937 7/1989 Yoshimoto .
4,860,263 8/1989 Mattausch ..... 363/230.05

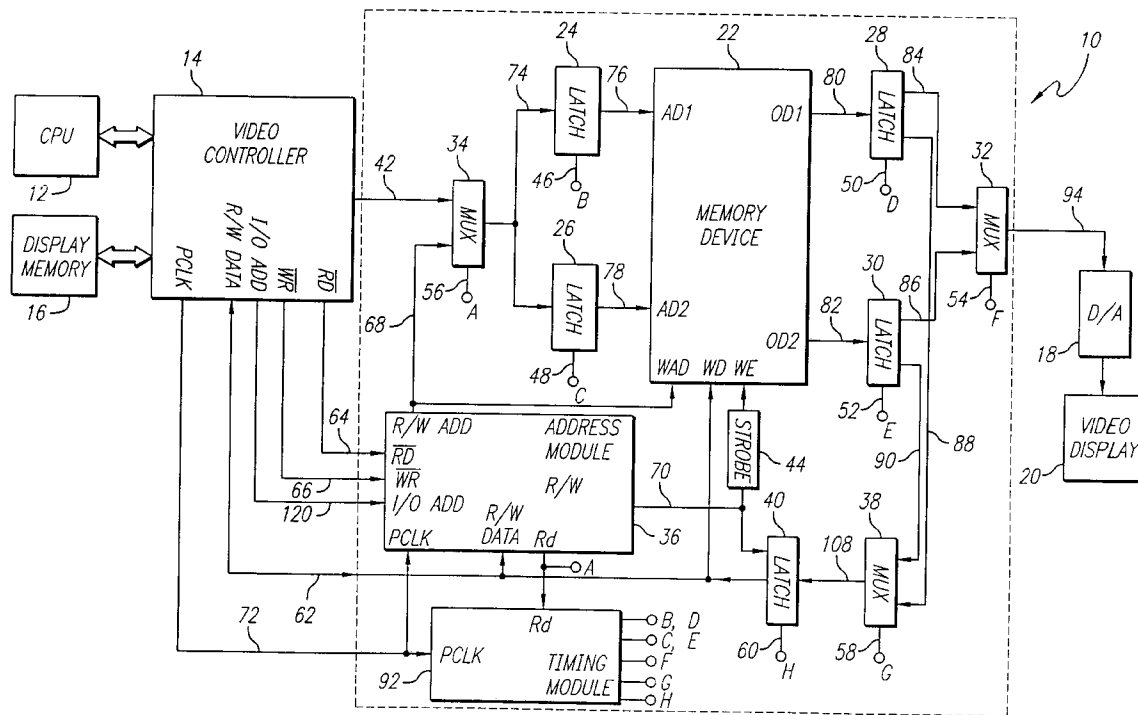
- 4,894,653 1/1990 Frankenbach .
4,905,189 2/1990 Brunolli .
5,097,256 3/1992 Eldridge et al. .
5,163,024 11/1992 Heilveil et al. .
5,204,664 4/1993 Hamakawa .
5,220,312 6/1993 Lumelsky et al. .
5,269,003 12/1993 Roskowski et al. .
5,276,803 1/1994 Iwase .
5,283,866 2/1994 Kumagai .

Primary Examiner—Dennis-Doon Chow

[57] ABSTRACT

A random access memory has an access time which is longer than the period of read input signals, for example digital video data signals, such that it cannot respond directly to the input signals. The memory has two read address inputs and two outputs which are arranged as separate channels, each of which can access any location in the memory. The access time of the memory is shorter than two input signal periods. The input signals are applied alternately to the read address inputs, and output signals constituted by data stored at addresses corresponding to the input signals are produced at the memory outputs by an arrangement of clocked latches such that, although two input signal periods are used for accessing each memory location, the alternating accessing using two channels enables the memory to produce output signals having the same period (at the same frequency) as the input signals. Additional elements are provided to enable writing to the memory using the alternating channel arrangement, and also to enable memory locations to be unconditionally interrogated while responding to a stream of read input signals.

17 Claims, 4 Drawing Sheets



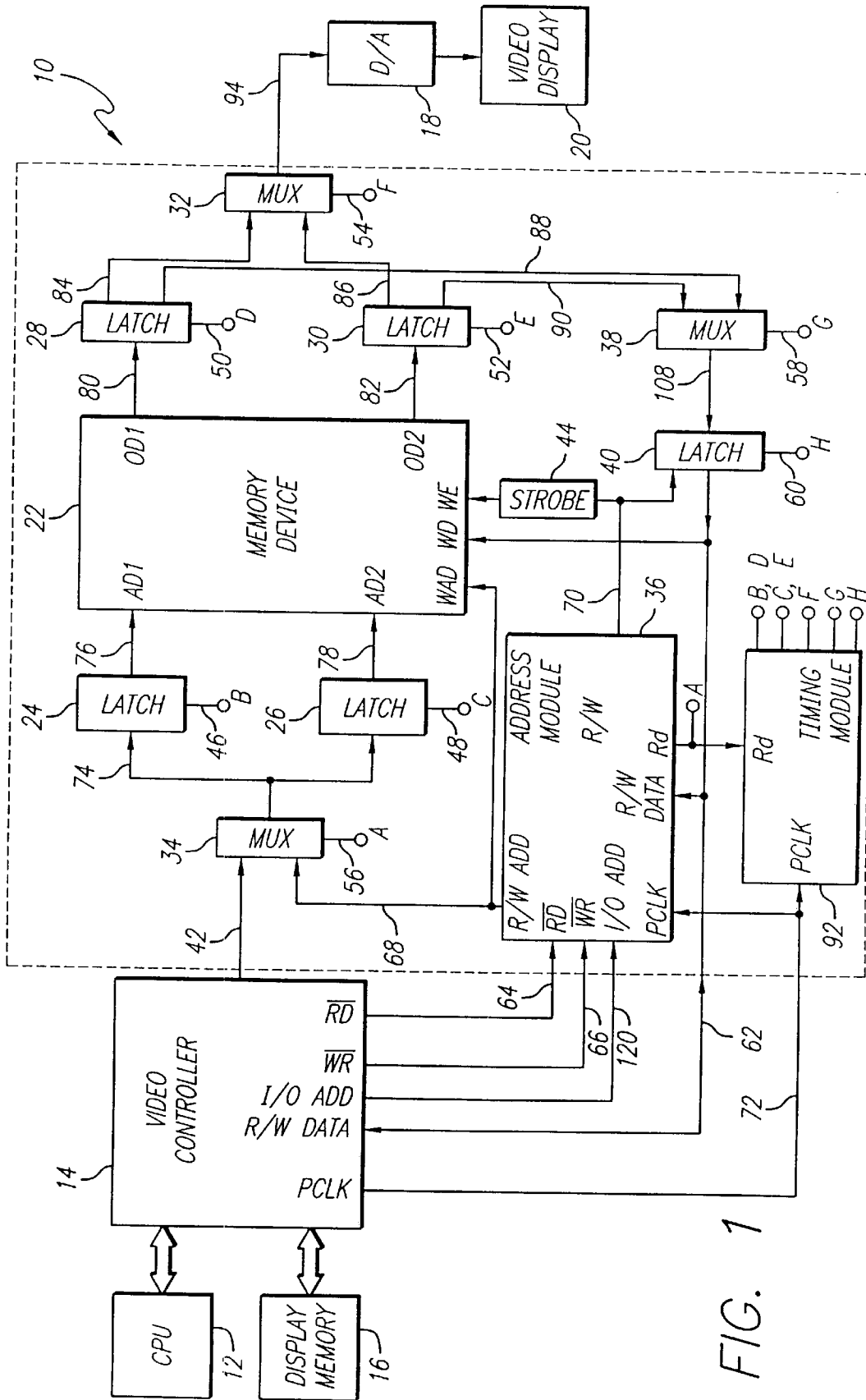


FIG. 1

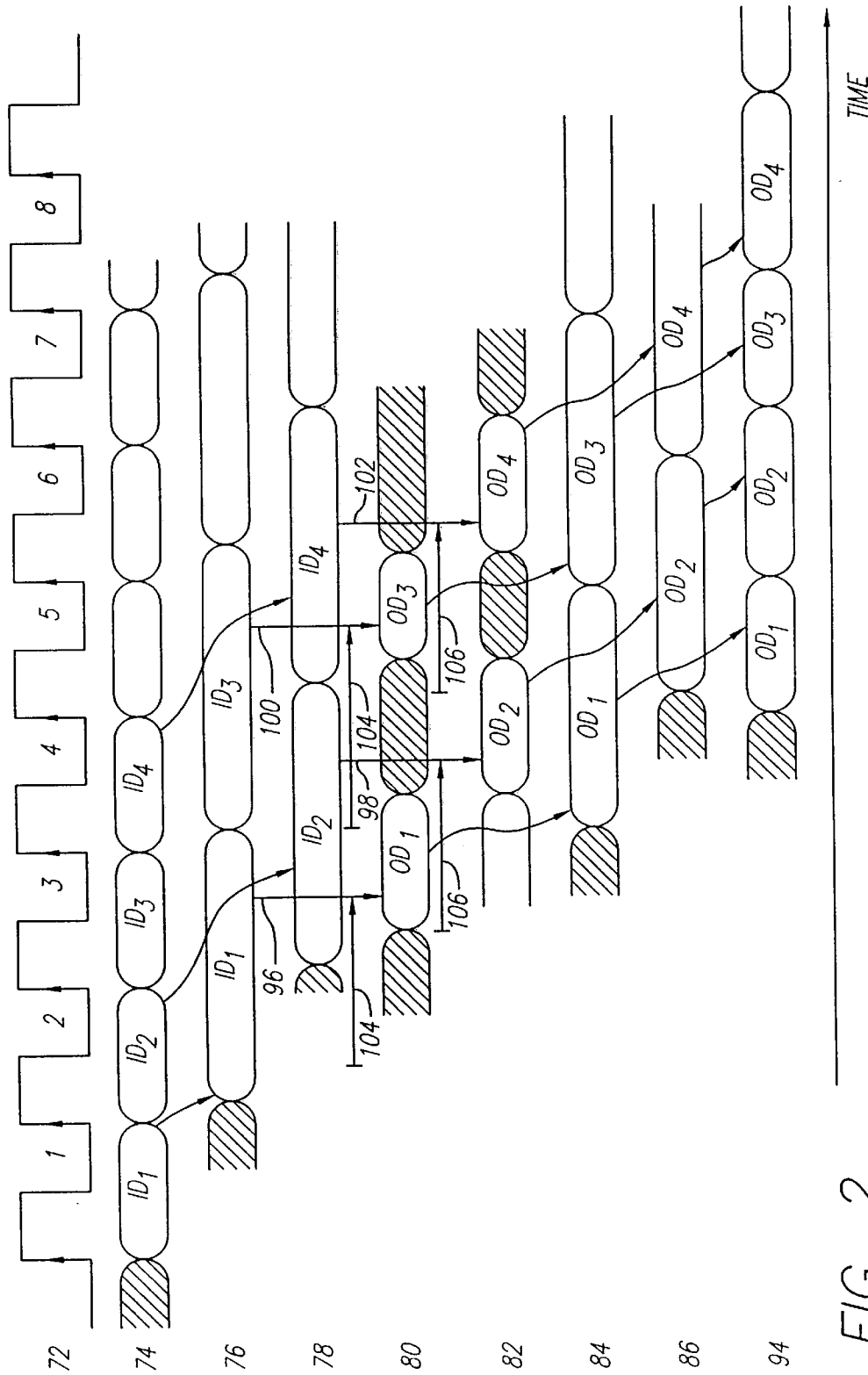


FIG. 2

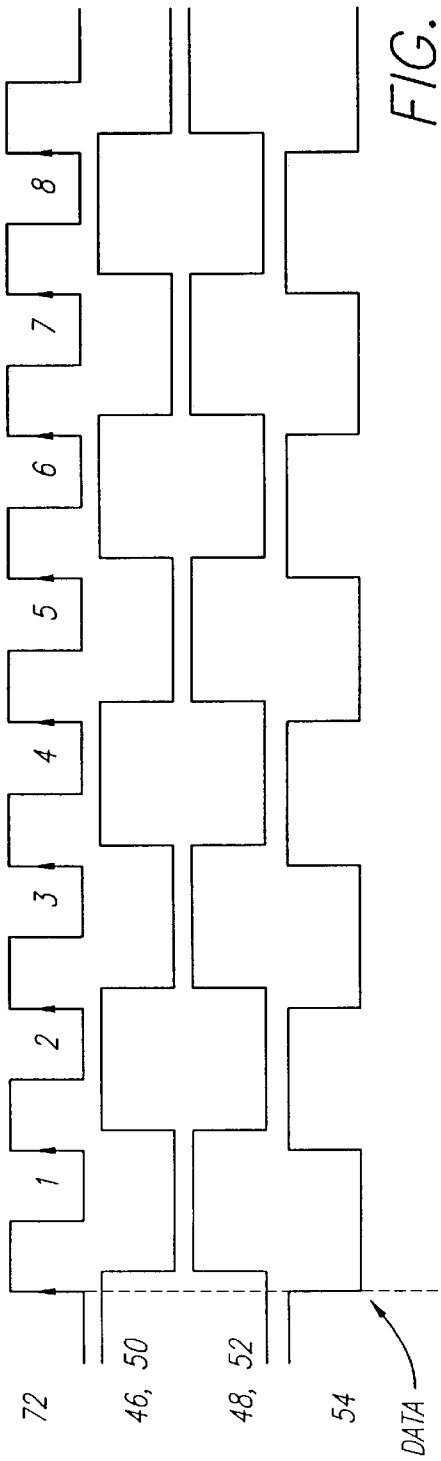


FIG. 3(a)

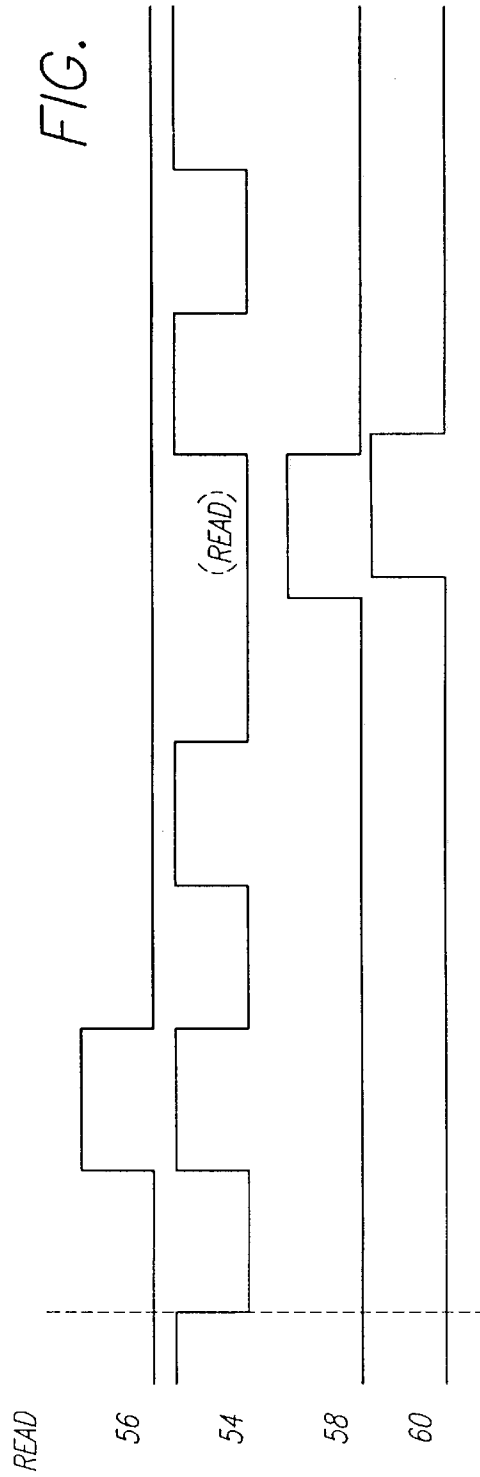
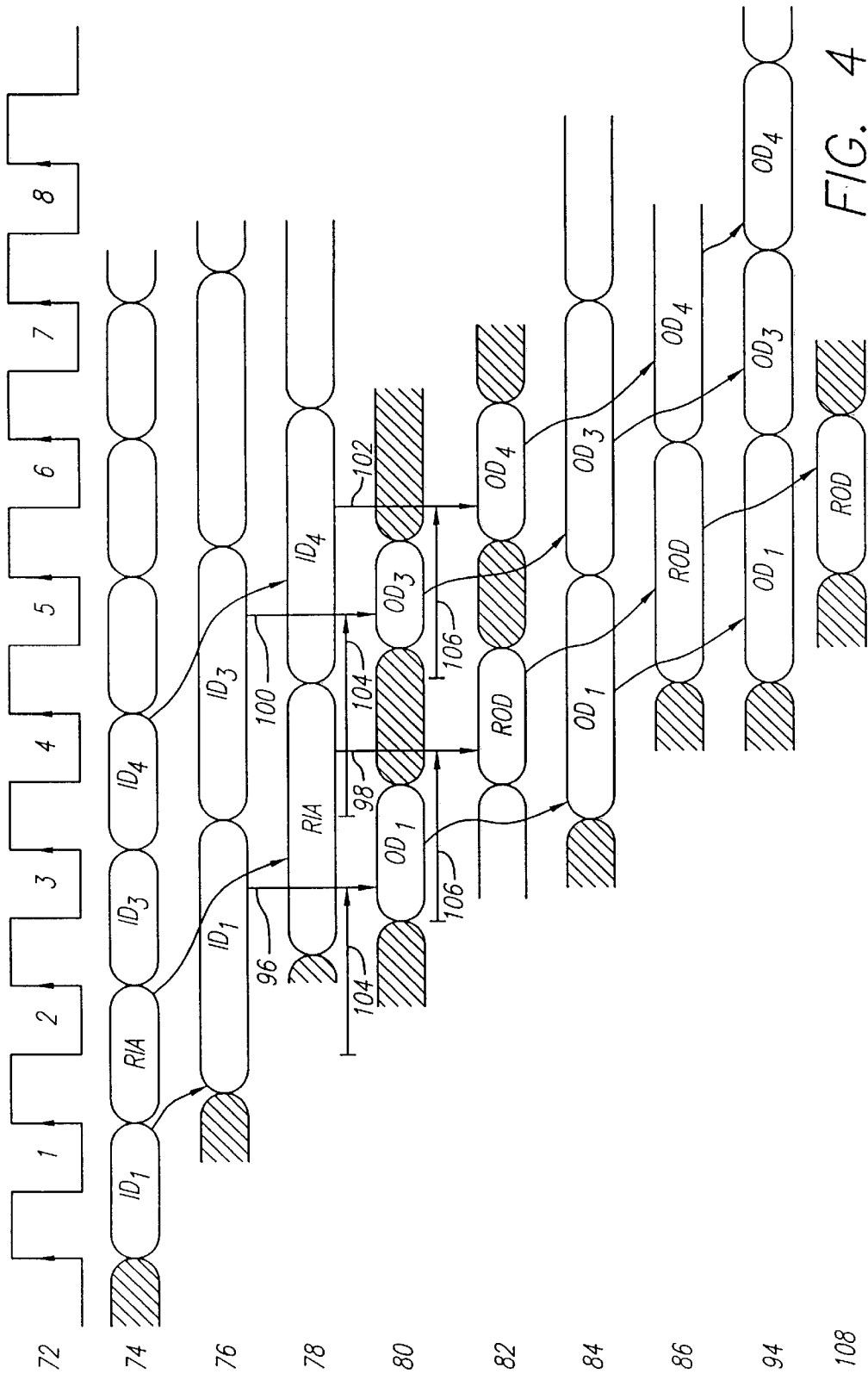


FIG. 3(b)



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