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(54) **HYBRID TDM AND ATM VOICE SWITCHING CENTRAL OFFICE AND METHOD OF COMPLETING INTER-OFFICE CALLS USING SAME**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**<sup>7</sup> ..... **H04L 12/66**

(52) **U.S. Cl.** ..... **370/352; 370/353; 370/395.61**

(58) **Field of Search** ..... 370/352-356, 370/395.1, 395.52, 395.61, 400-401, 465-466

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,204,857	A *	4/1993	Obara	.....	370/354
5,838,682	A *	11/1998	Dekelbaum et al.	.....	370/401
6,282,281	B1 *	8/2001	Low	.....	379/230
6,285,680	B1 *	9/2001	Steinka et al.	.....	370/352
6,349,096	B1 *	2/2002	Liu et al.	.....	370/238
2001/0028644	A1 *	10/2001	Barzegar et al.	.....	370/352
2002/0010818	A1 *	1/2002	Wei et al.	.....	710/62

**FOREIGN PATENT DOCUMENTS**

EP	0719068	A2	6/1996	.....	H04Q 11/04
EP	0792076	A2	8/1997	.....	H04Q 3/00
WO	WO 95/17789		6/1995	.....	H04L 12/64
WO	WO 98/28901		7/1998	.....	H04M 3/50

\* cited by examiner

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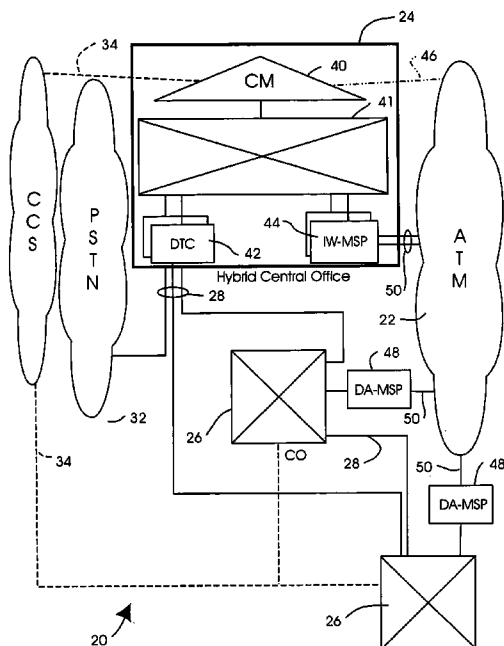
*Assistant Examiner*—Saba Tsegaye

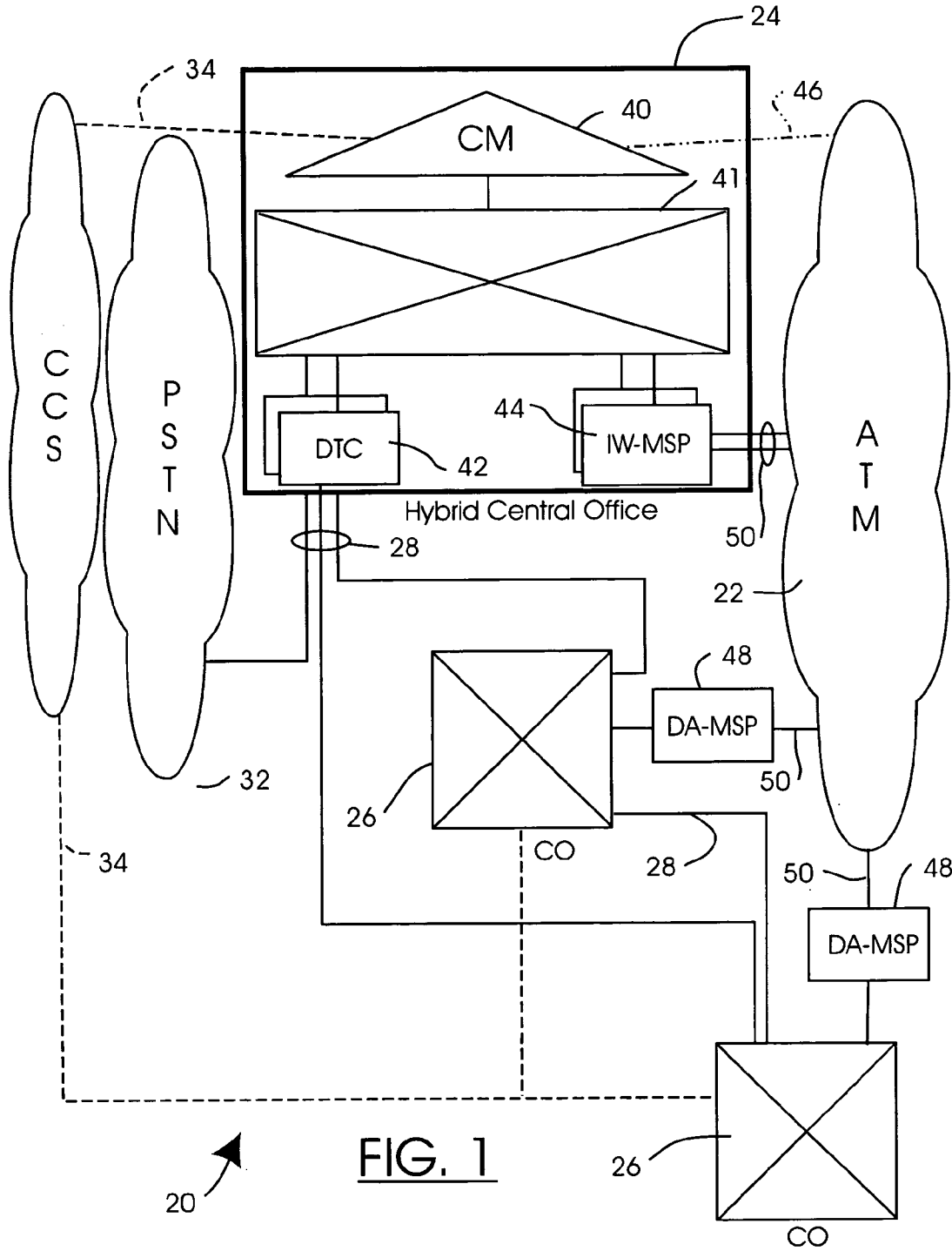
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(57) **ABSTRACT**

A hybrid central office for serving a plurality of subscriber lines while serving as a virtual access tandem to a subnetwork of central offices having a connection to an ATM backbone network is described. The hybrid central office includes a computing module having a messaging interface to the ATM network, an inter-working trunk interface to the ATM network and a trunk connection to the PSTN. The hybrid central office serves as a tandem switch for other central offices connected to the subnetwork. Other central offices are preferably connected to the subnetwork by a signal large trunk group. All inter-office call routing is therefore handled by the hybrid central office. The hybrid central office also provides a gateway to the PSTN. Inter-office calls originated and terminated within the subnetwork are set up by the virtual access tandem but after call set up, the virtual access tandem is not involved in the call. The advantage is the utilization of spare processing capacity in a central office to off-load inter-office trunking congestion, as well as a significant reduction in trunking maintenance costs.

**50 Claims, 7 Drawing Sheets**





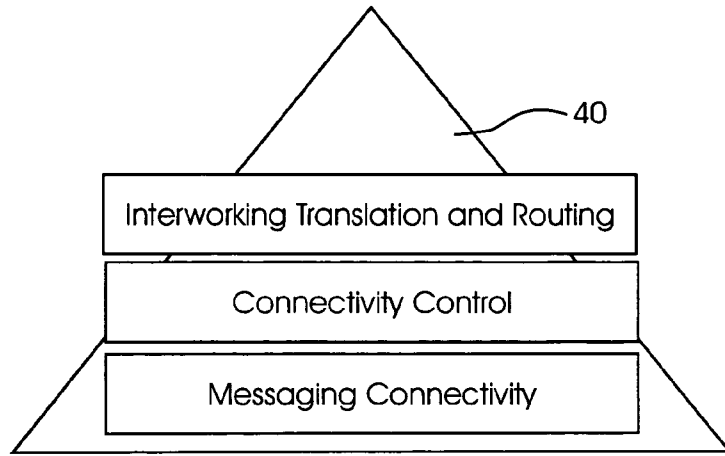


FIG. 2

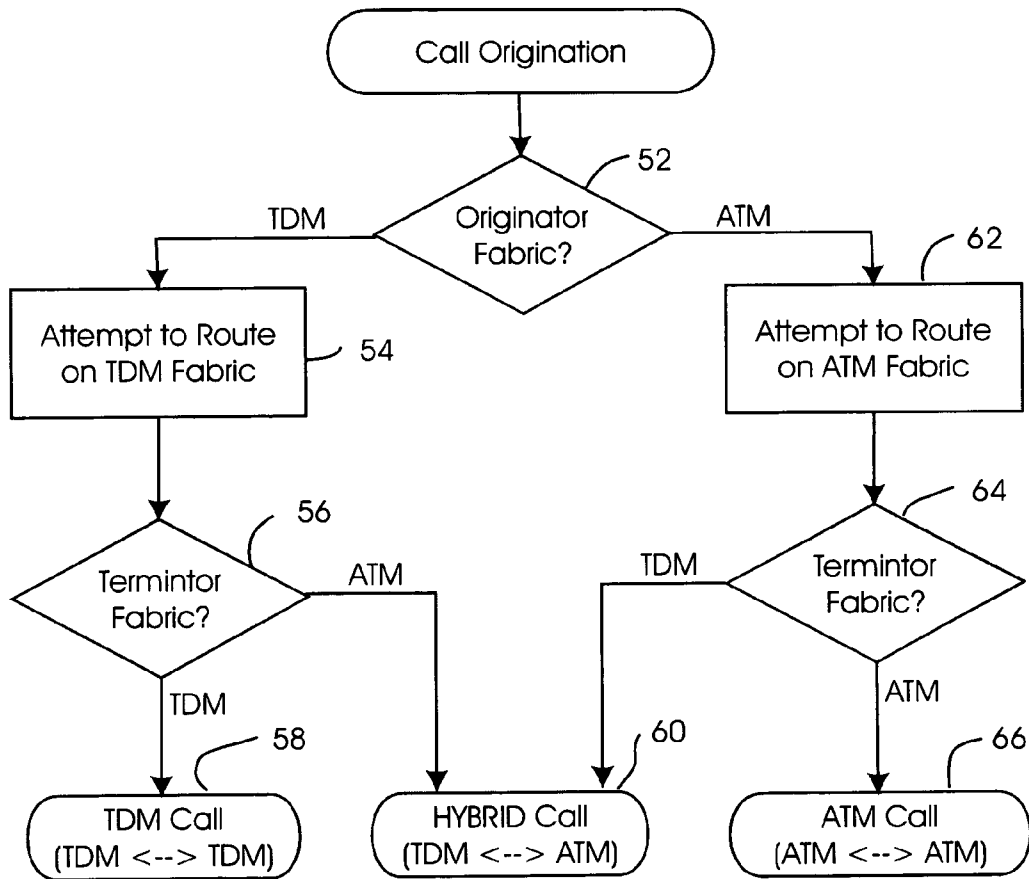


FIG. 3



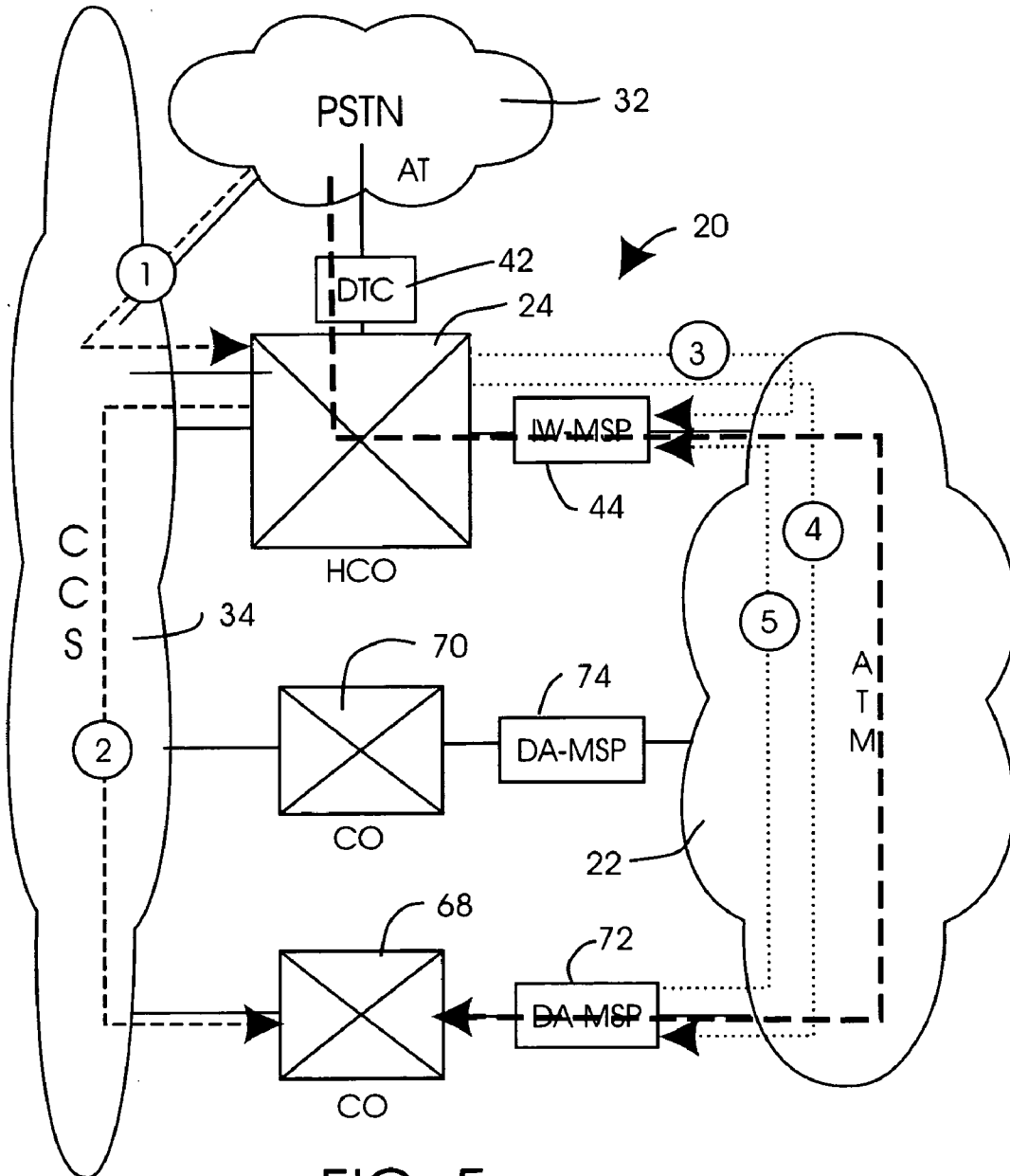


FIG. 5

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