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**Dahod et al.**

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(54) **PROVIDING ADVANCED COMMUNICATIONS FEATURES**

5,634,196 A \* 5/1997 Alford ..... 455/18  
5,717,830 A \* 2/1998 Sigler et al. .... 455/426.1  
5,838,748 A \* 11/1998 Nguyen ..... 375/370

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**Paul Shieh**, Westborough, MA (US)

(Continued)

**FOREIGN PATENT DOCUMENTS**

EP 0 650 284 4/1995

(Continued)

**OTHER PUBLICATIONS**

Schulzrinne, H. "The Session Initiation Protocol," [http://www.cs.columbia.edu/~ucoms6181/slides/11/sip\\_long/.pdf](http://www.cs.columbia.edu/~ucoms6181/slides/11/sip_long/.pdf), May 2001.

(Continued)

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(52) **U.S. Cl.** ..... **370/328; 370/349; 370/356; 370/389; 370/401; 455/517**

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See application file for complete search history.

(56) **References Cited**

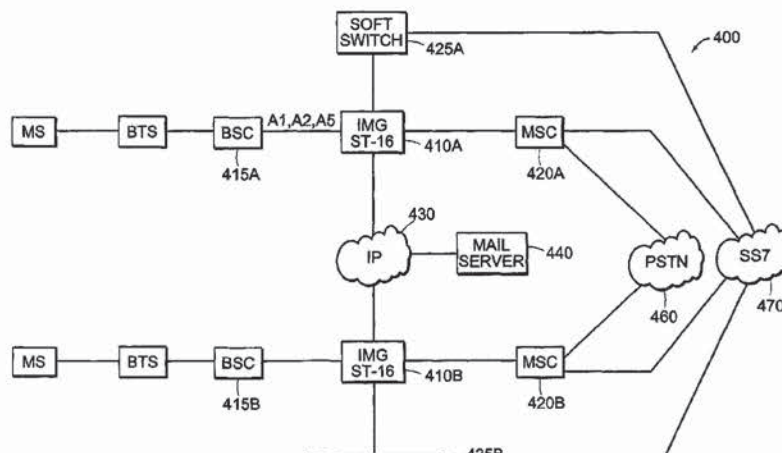
**U.S. PATENT DOCUMENTS**

4,677,656 A \* 6/1987 Burke et al. .... 455/403  
5,513,181 A \* 4/1996 Bresalier et al. .... 370/465

(57) **ABSTRACT**

Advanced communications features are provided in a mobile communications network having at least one mobile switching center and at least one mobile station subsystem. The mobile switching center and mobile station subsystem each communicate signaling messages according to a mobile signaling protocol. An indication is received that a half-duplex mobile communications session is to be initiated between a first mobile station subsystem and a second mobile station subsystem. The first and second mobile station subsystems include full-duplex communications apparatus for use in full-duplex mobile communications sessions. The half-duplex mobile communications session relies on the first and second mobile station subsystems, and all of the reliance is only on the full-duplex communications apparatus. Mobile communications telephone calls are established with the first mobile station subsystem and the second mobile station subsystem. One of the first and second mobile station subsystems is selected as a voice signal source in the half-duplex communications session.

**27 Claims, 13 Drawing Sheets**



U.S. PATENT DOCUMENTS

6,112,083	A *	8/2000	Sweet et al. ....	455/426.1
6,128,509	A *	10/2000	Veijola et al. ....	455/556.1
6,131,121	A *	10/2000	Mattaway et al. ....	709/227
6,298,058	B1 *	10/2001	Maher et al. ....	370/390
6,366,782	B1 *	4/2002	Fumarolo et al. ....	455/457
6,400,967	B1 *	6/2002	Nilsson .....	455/563
6,449,496	B1 *	9/2002	Beith et al. ....	455/563
6,477,150	B1 *	11/2002	Maggenti et al. ....	370/312
6,570,871	B1 *	5/2003	Schneider .....	370/356
6,606,305	B1 *	8/2003	Boyle et al. ....	370/260
6,754,180	B1 *	6/2004	Christie .....	370/236
7,058,036	B1 *	6/2006	Yu et al. ....	370/335
2001/0046234	A1	11/2001	Agrawal et al.	
2002/0075805	A1	6/2002	Gupta et al.	
2002/0075814	A1	6/2002	Desai et al.	
2002/0075875	A1	6/2002	Dravida et al.	
2002/0077136	A1	6/2002	Maggenti et al.	
2002/0078464	A1	6/2002	Dravida et al.	
2002/0085552	A1	7/2002	Tandon	
2002/0085589	A1	7/2002	Dravida et al.	
2002/0086665	A1	7/2002	Maggenti et al.	
2003/0017836	A1 *	1/2003	Vishwanathan et al. ....	455/517
2003/0063590	A1 *	4/2003	Mohan et al. ....	370/338
2003/0088421	A1 *	5/2003	Maes et al.	
2003/0128696	A1 *	7/2003	Wengrovitz et al. ....	370/352

2003/0156688	A1 *	8/2003	McCarty et al. ....	379/67.1
2003/0185202	A1 *	10/2003	Maenpaa .....	370/352
2005/0286689	A1 *	12/2005	Vuori .....	379/88.22
2006/0002358	A1	1/2006	Ray et al.	
2006/0140151	A1 *	6/2006	Dantu et al. ....	370/331

FOREIGN PATENT DOCUMENTS

EP	0 845 894	6/1998
WO	WO-98/47298 A2	10/1998
WO	WO-00/22792 A2	4/2000
WO	WO 01/45335	6/2000
WO	WO 00/47005	8/2000
WO	WO 00/57601	9/2000
WO	WO 00/79826 A1	12/2000
WO	WO-01/31939 A2	5/2001
WO	WO 01/56236	8/2001
WO	WO-01/76276 A2	10/2001
WO	WO 02/30010	4/2002
WO	WO-02/45440 A1	6/2002
WO	WO-02/054707 A2	7/2002

OTHER PUBLICATIONS

Handley, M. et al., "SIP Session Initiation Protocol," <http://tools.ietf.org/html/rfc2543>, Mar. 1999.

\* cited by examiner

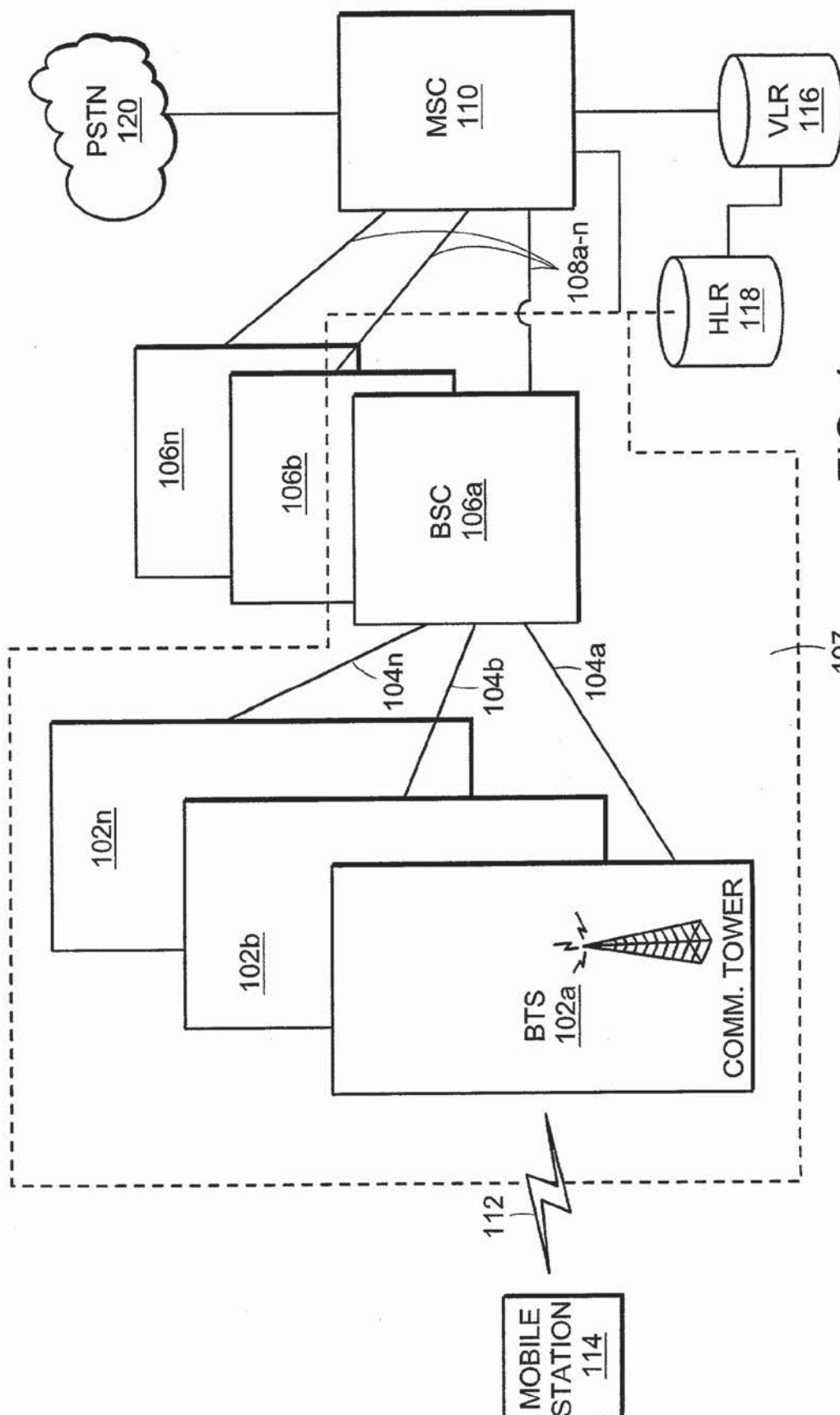


FIG. 1  
PRIOR ART

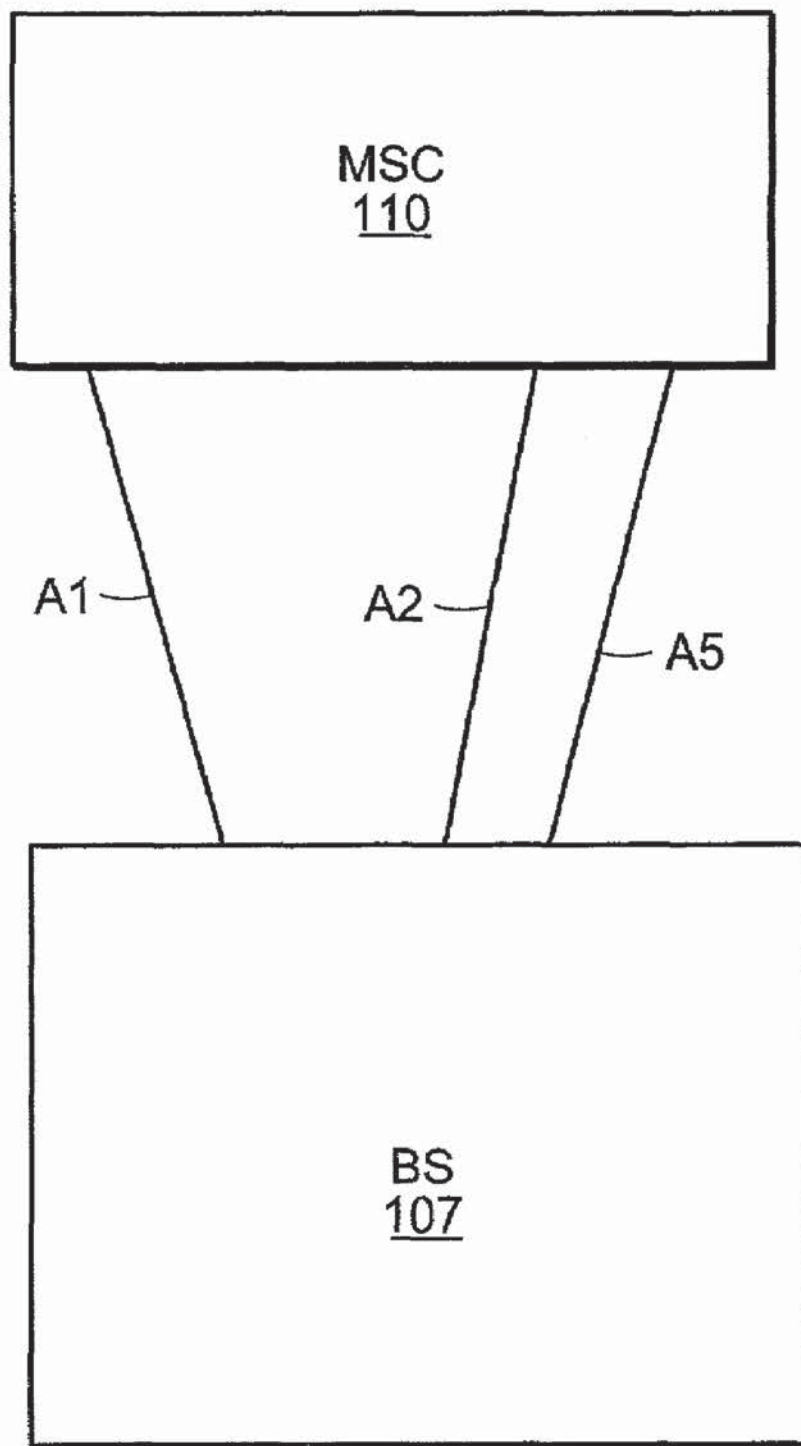


FIG. 2  
PRIOR ART



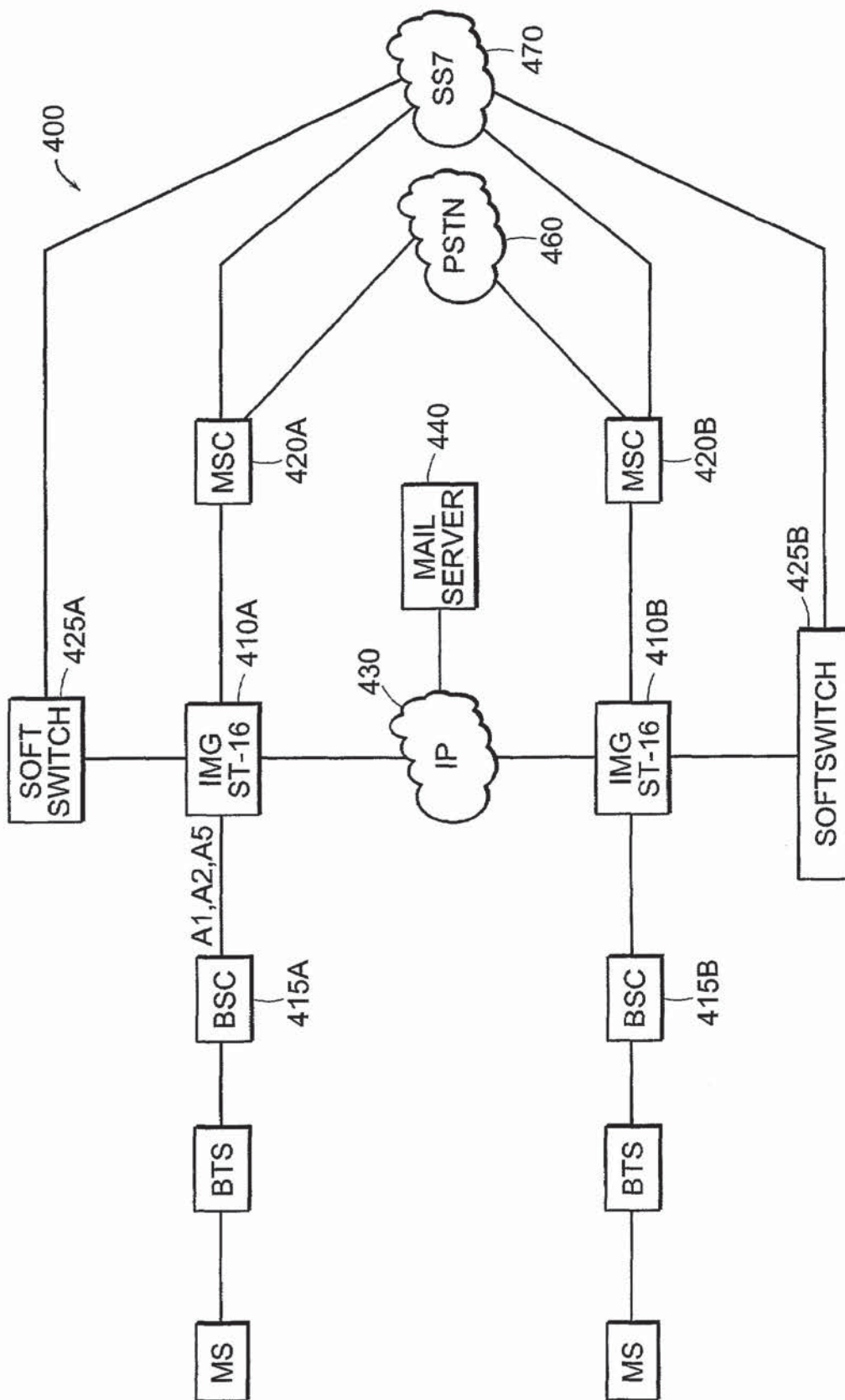


FIG. 3A

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