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**Gibson**

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(54) **ESTABLISHING CONNECTIONS WITH A PRE-SPECIFIED QUALITY OF SERVICE ACROSS A COMMUNICATION NETWORK**

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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.

(57) **ABSTRACT**

On receipt of a request for a communication session over a communications network, such as an Internet Protocol communications network, a method of establishing a path for this session which provides a guaranteed quality of service is described. In a preferred example the communications network is an MPLS network and the method uses a modified version of the SIP messaging protocol. A number of possible paths for the communication session are identified and ranked according to factors such as traffic levels. Bandwidth along a chosen path is reserved and a messaging protocol such as CR-LDP used to establish this reserved path for the communication session. An advertising mechanism is used to provide entities in the network with information about topology and traffic levels. This enables the ranks to be determined effectively. The communications network has an overlay network of high capacity paths established on it. By arranging for communication sessions to preferably be established using these pre-determined high capacity paths the complexity of the topology information required is reduced.

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(22) Filed: **Jun. 30, 1999**

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

(52) **U.S. Cl.** ..... **370/352**

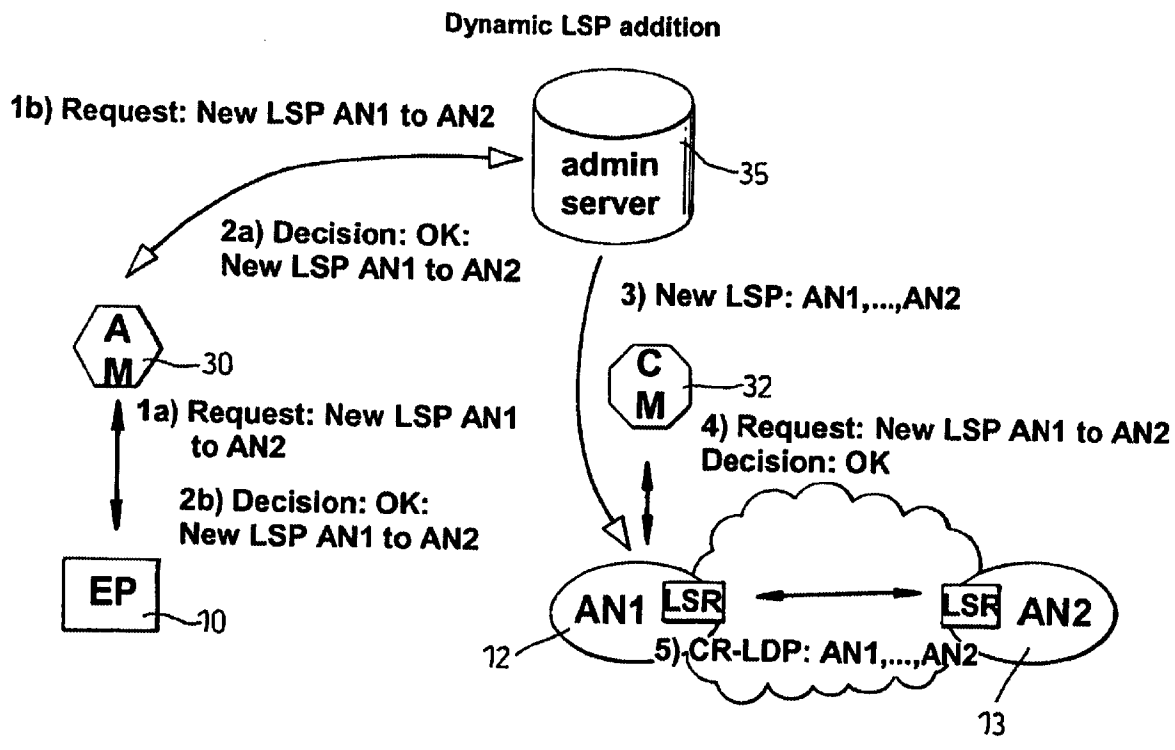
(58) **Field of Search** ..... 370/352, 395-398, 370/238, 338, 214-217, 389, 231, 355, 390, 380, 417; 709/201, 238-242; 455/433-439, 466, 450-456, 440; 714/4

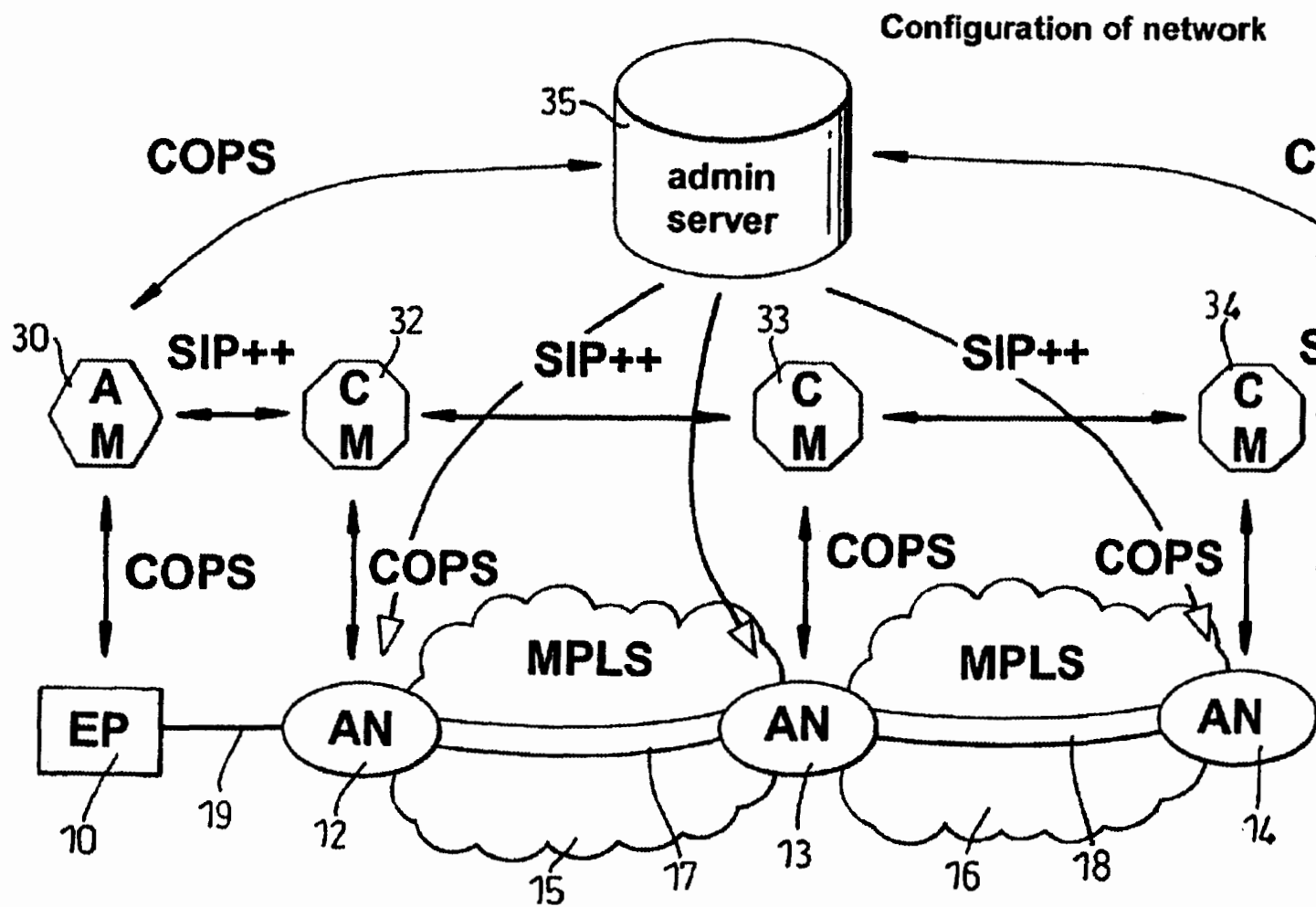
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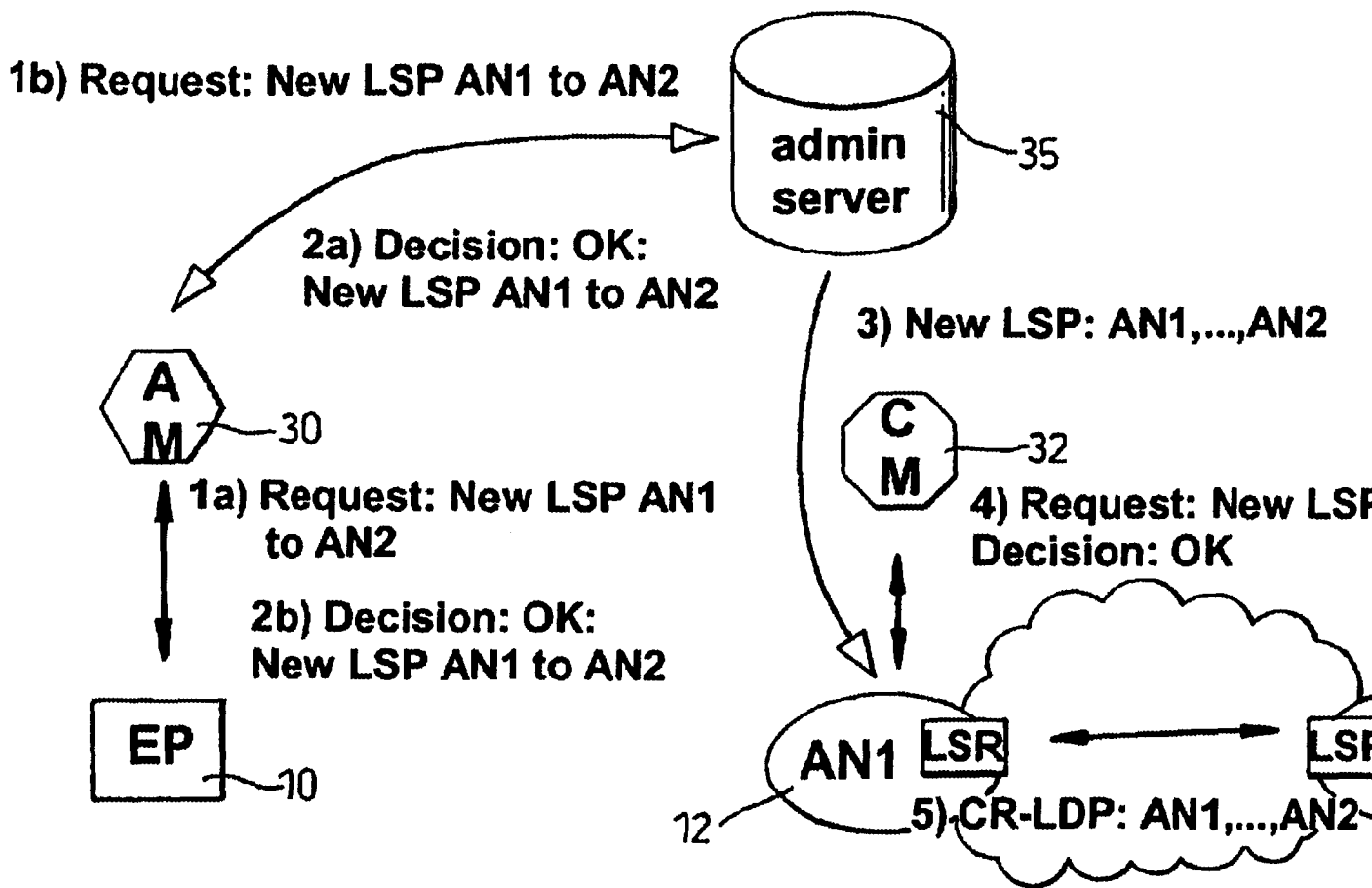
**19 Claims, 10 Drawing Sheets**





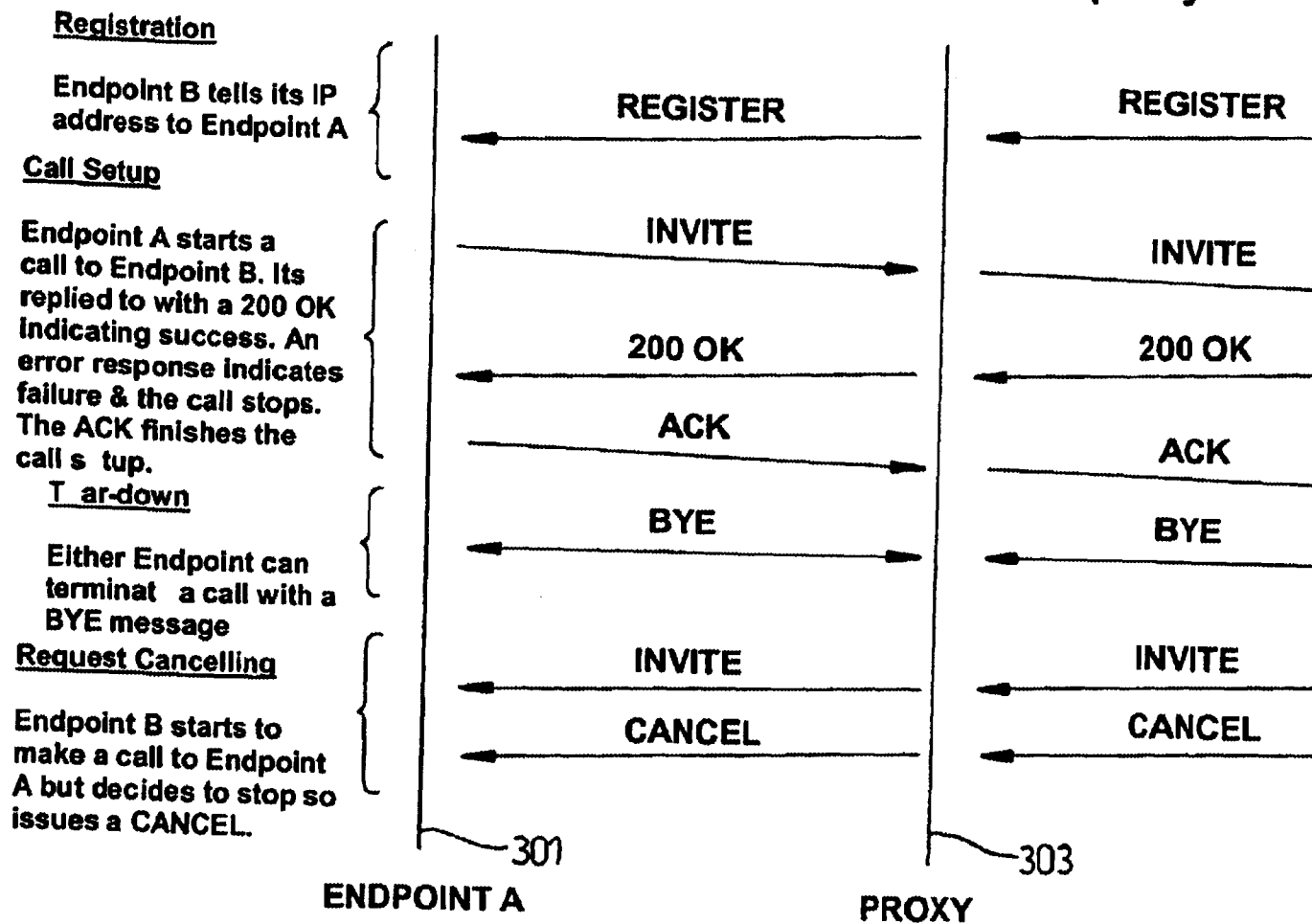
*Fig. 1*

Dynamic LSP addition



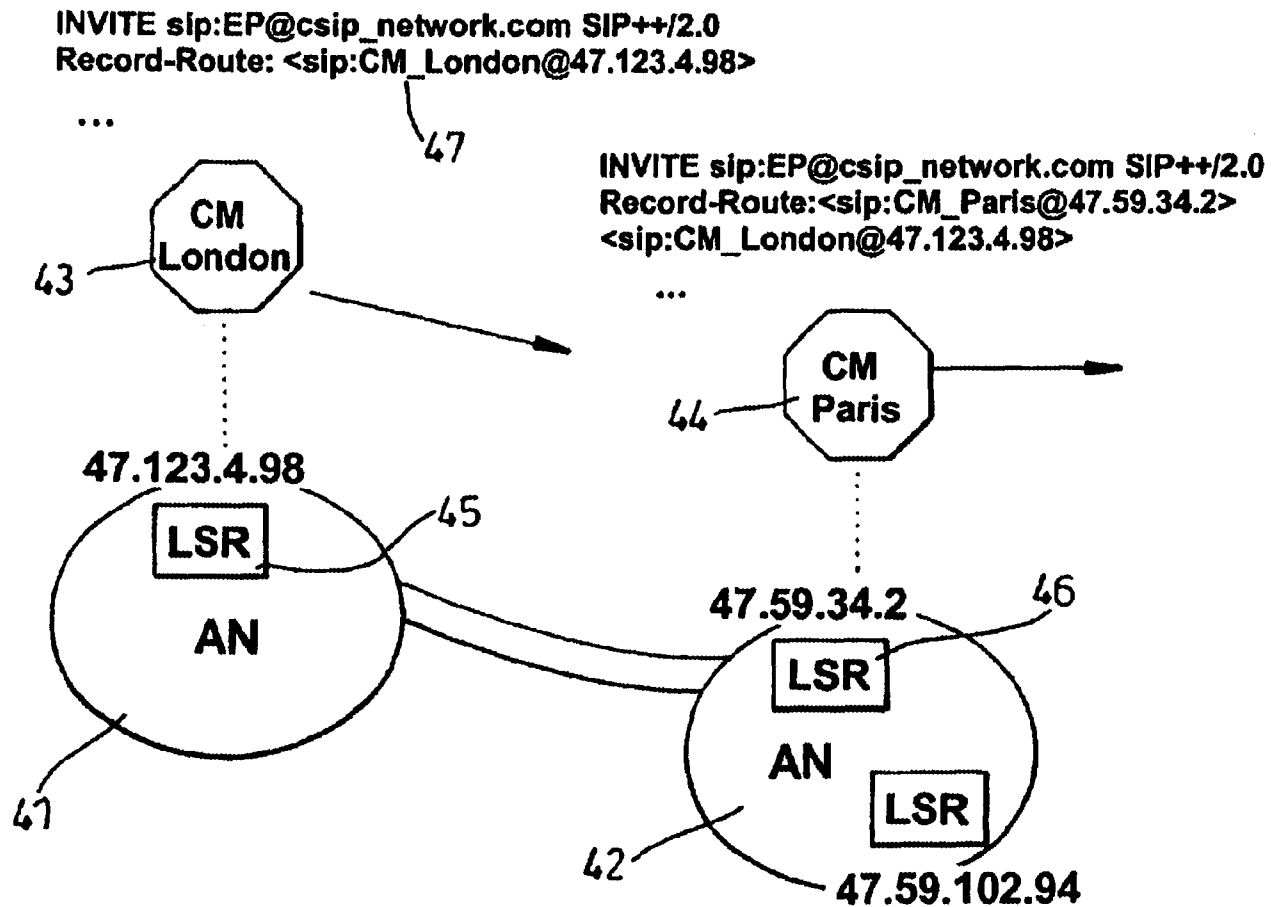
*Fig. 2*

## Basic SIP operation with a proxy



*Fig. 3*

## Record-Route header to track route



*Fig. 4*

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