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Benyamin et al.

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(54) **CIRCUIT AND METHOD FOR EQUALIZATION OF SIGNALS RECEIVED OVER A COMMUNICATION SYSTEM TRANSMISSION LINE**

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Related U.S. Application Data

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(51) **Int. Cl.**[7] **H03H 11/06**; H03G 5/16

(52) **U.S. Cl.** ..... **333/18**; 333/28 R; 375/230; 330/304

(58) **Field of Search** ..... 33/28 R, 18; 375/229, 375/230; 330/304, 124 R

(56) **References Cited**

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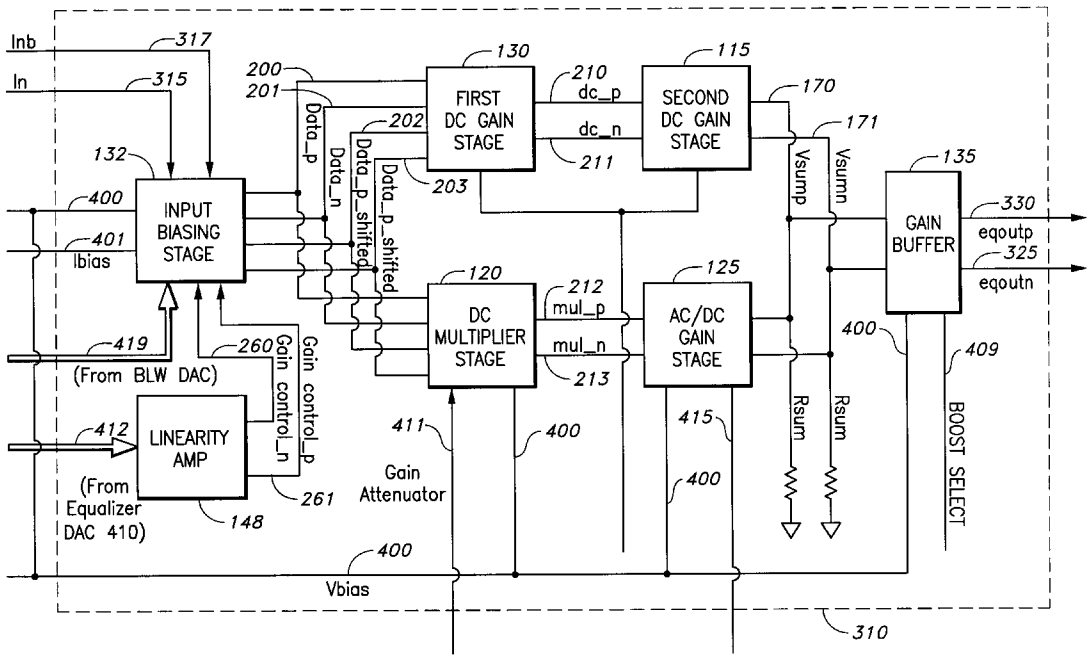
(57) **ABSTRACT**

A circuit and method for equalization of a communication signal received over a communication system transmission line using switched filter characteristics. Equalization for frequency-independent and frequency-dependent attenuation of the communication signal is accomplished with a linear equalization channel which includes an input biasing circuit which provides a common input signal to two parallel amplifier paths. One path includes a wideband, fixed-gain, frequency-independent amplifier stage. The other path is a wideband multiplier amplifier stage in series with a wideband, frequency-dependent amplifier stage having a switchable high-pass characteristic. The outputs of the fixed-gain wideband frequency-independent amplifier stage and wideband, frequency-dependent amplifier stage having a switchable high-pass characteristic are both tied in common to the input of a wideband gain buffer amplifier stage, which has a switchable high-frequency boost frequency response characteristic. Filter characteristic for the frequency-dependent amplifier stages are selected to accommodate predetermined ranges of cable lengths. The amplifier stages are formed as simple n-MOS transconductance differential amplifiers with restive loads and with switchable filter components connected between the legs of the differential amplifiers.

20 Claims, 20 Drawing Sheets



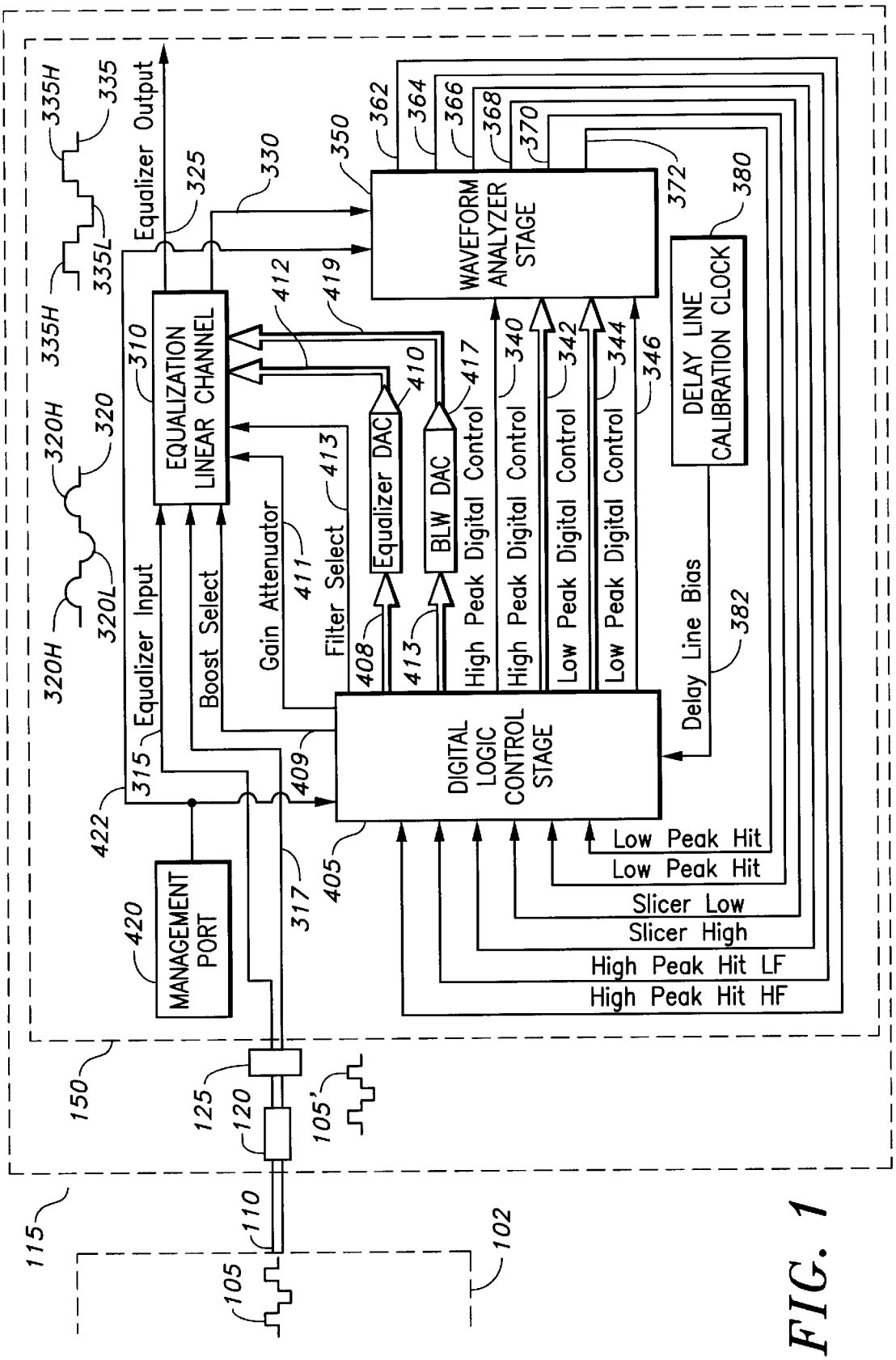


FIG. 1

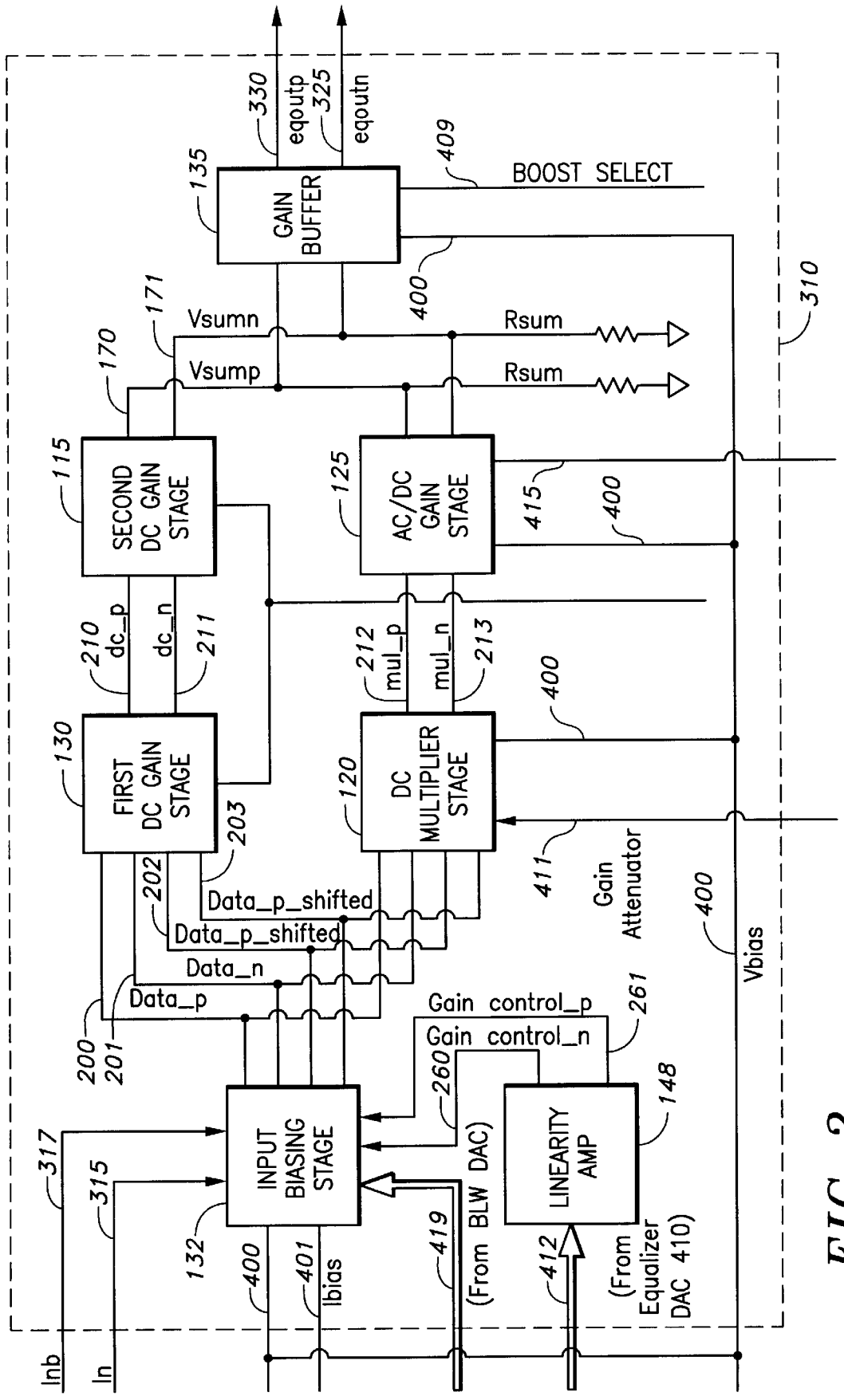


FIG. 2

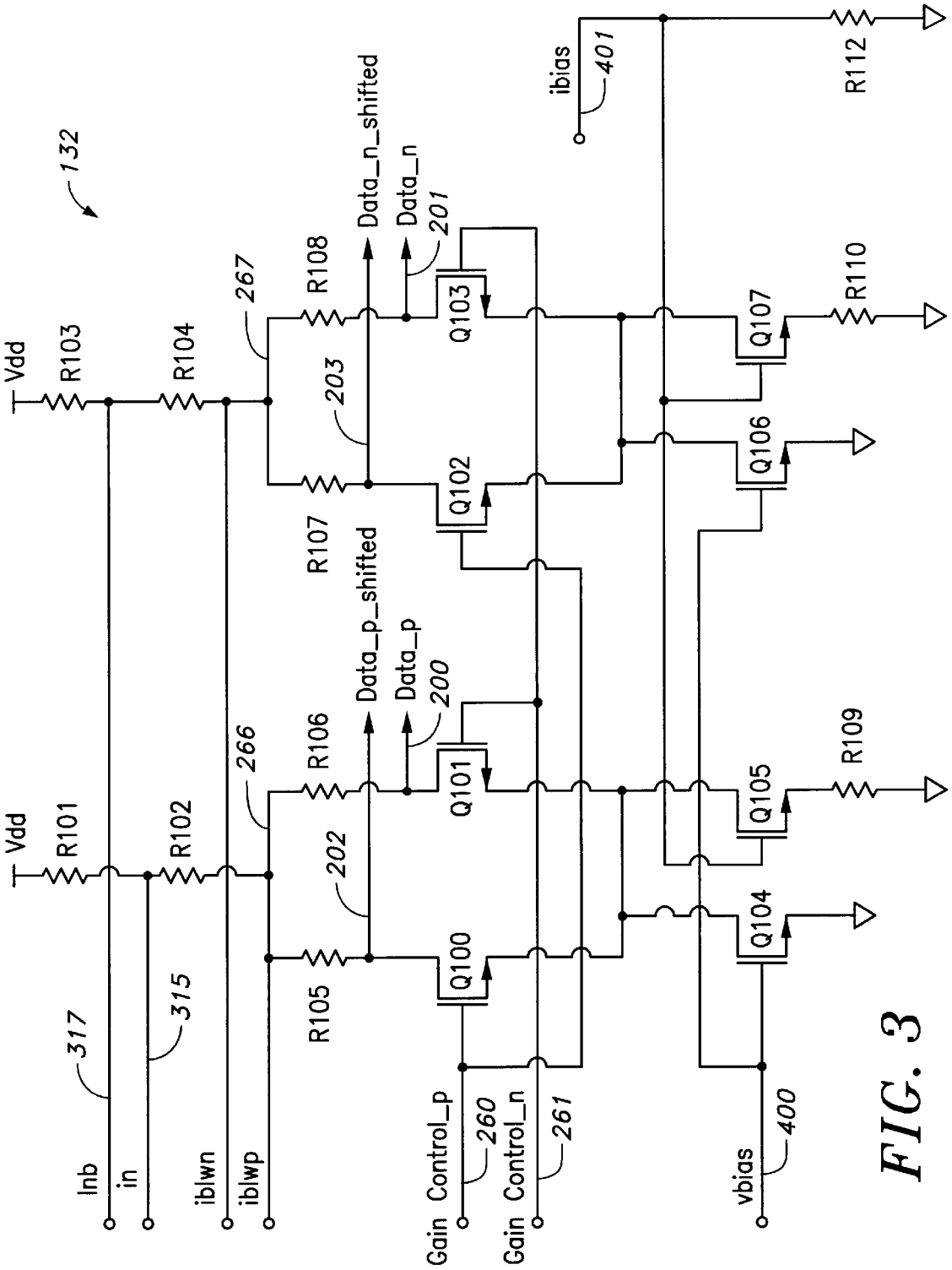


FIG. 3

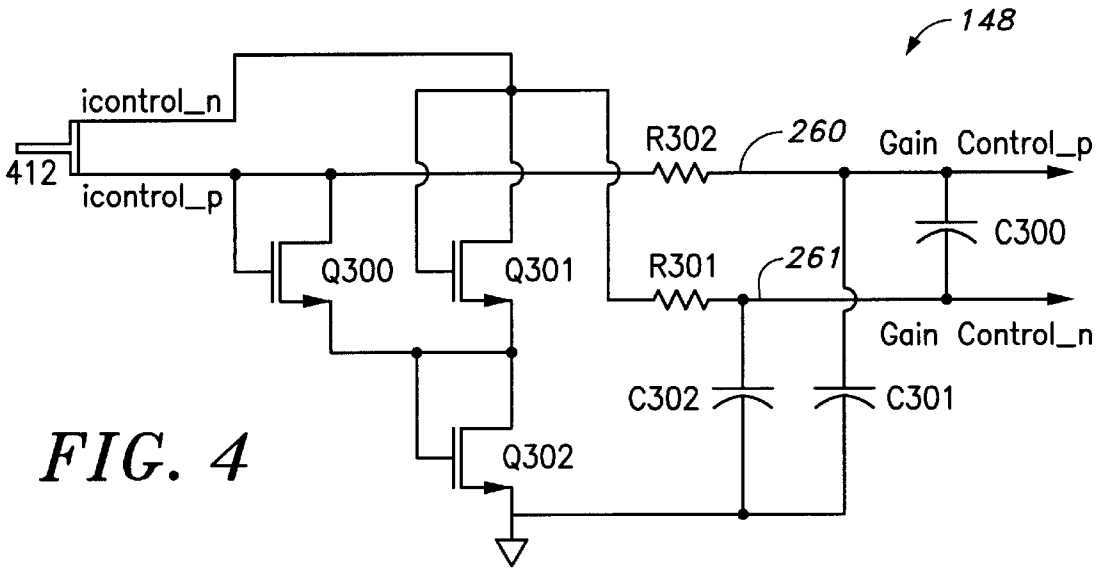


FIG. 4

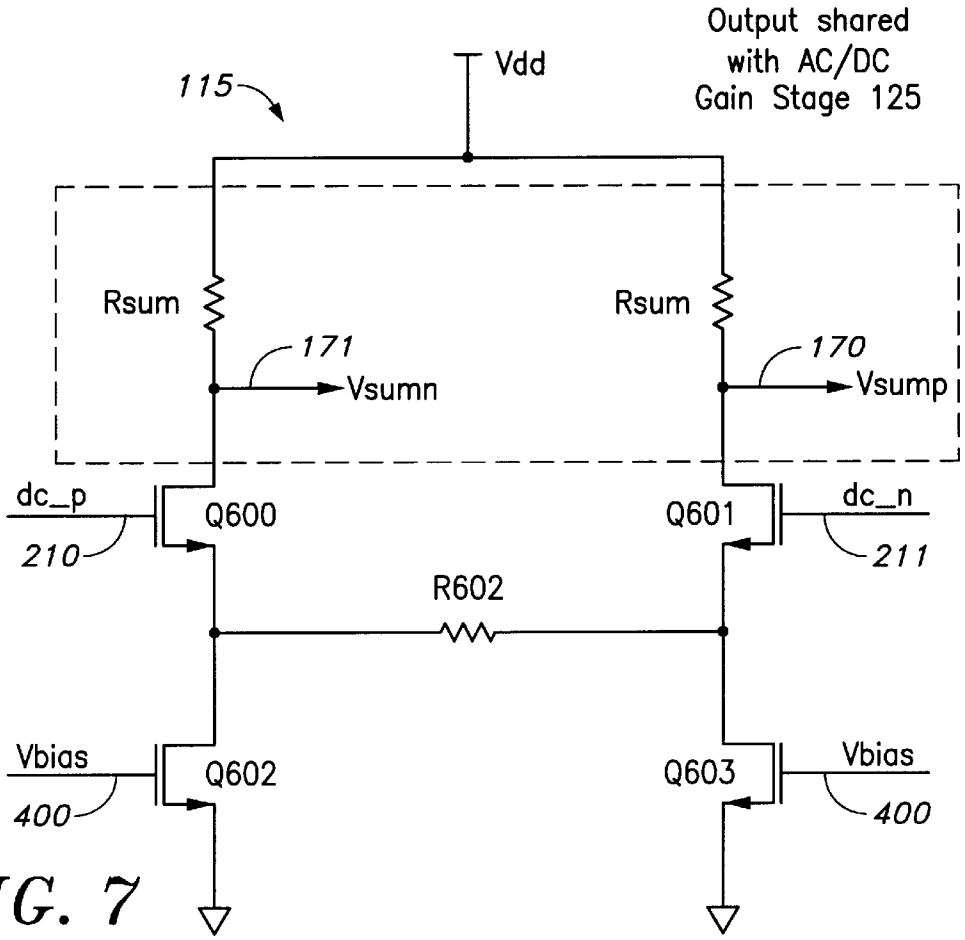


FIG. 7

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