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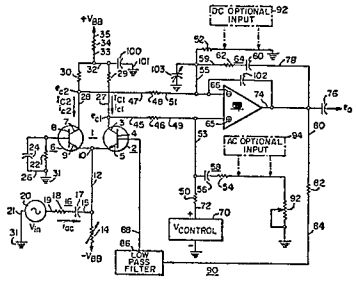
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LINEAR FOUR-QUADRANT MULTIPLIER

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2 Sheets Drawing. 16 Pages Specification



A circuit for multiplying two voltages together. The output is a voltage which is proportional to the product of the two voltages and whose sign is directly related to the signs of each of the input voltages. Even though nonlinear elements are used, such as transistors, the final output voltage varies linearly with each of the input voltages. An AC voltage (**2**) is an input to a high gain amplifier (**1**). A DC voltage (**70**) is an input to a high gain operational amplifier (**68**). The two amplifiers are interconnected by a DC bridge and an AC bridge. Initially, both bridges are balanced. A change in the DC voltage momentarily unbalances the output of the DC bridge. The high gain of the operational amplifier (**68**) provides a degenerative feedback voltage to control the multiplying amplifier (**1**) by rebalancing the DC bridge so that the overall output is a linear multiplication.

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LINEAR FOUR-QUADRANT MULTIPLIER

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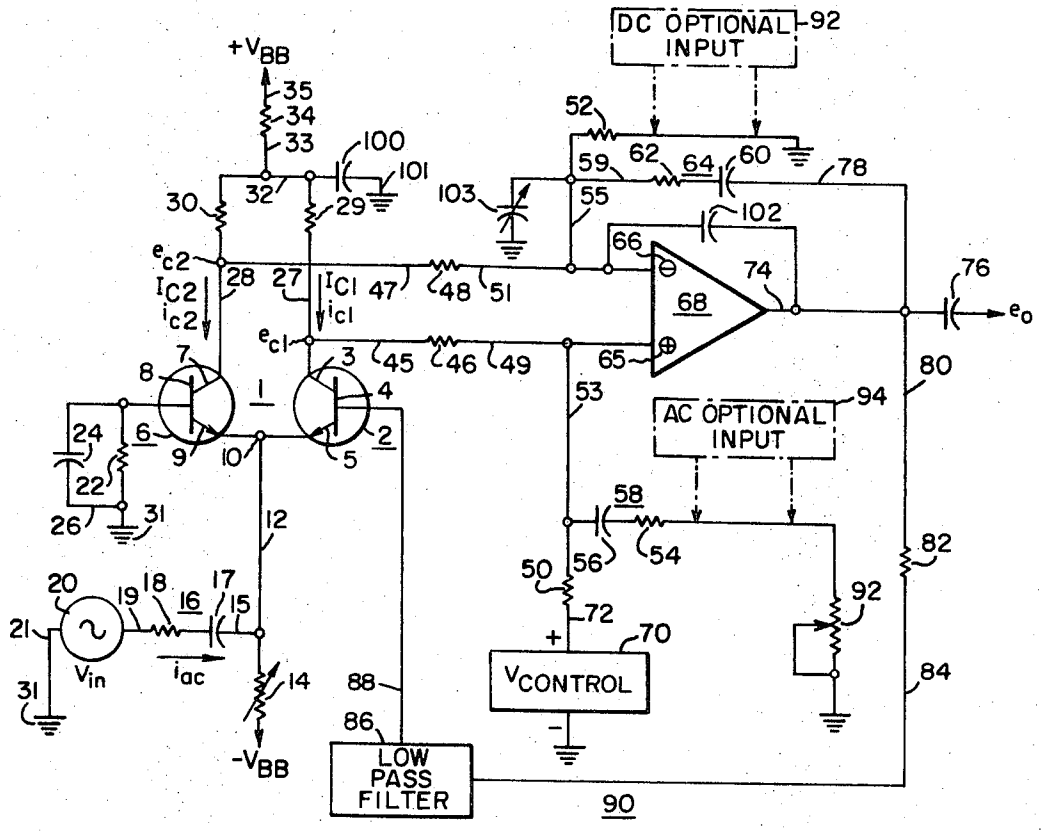


FIG. 1.

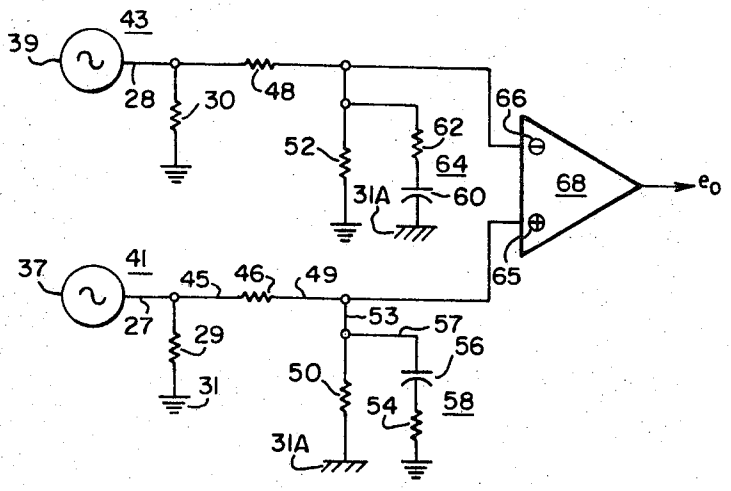


FIG. 2.

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LINEAR FOUR-QUADRANT MULTIPLIER

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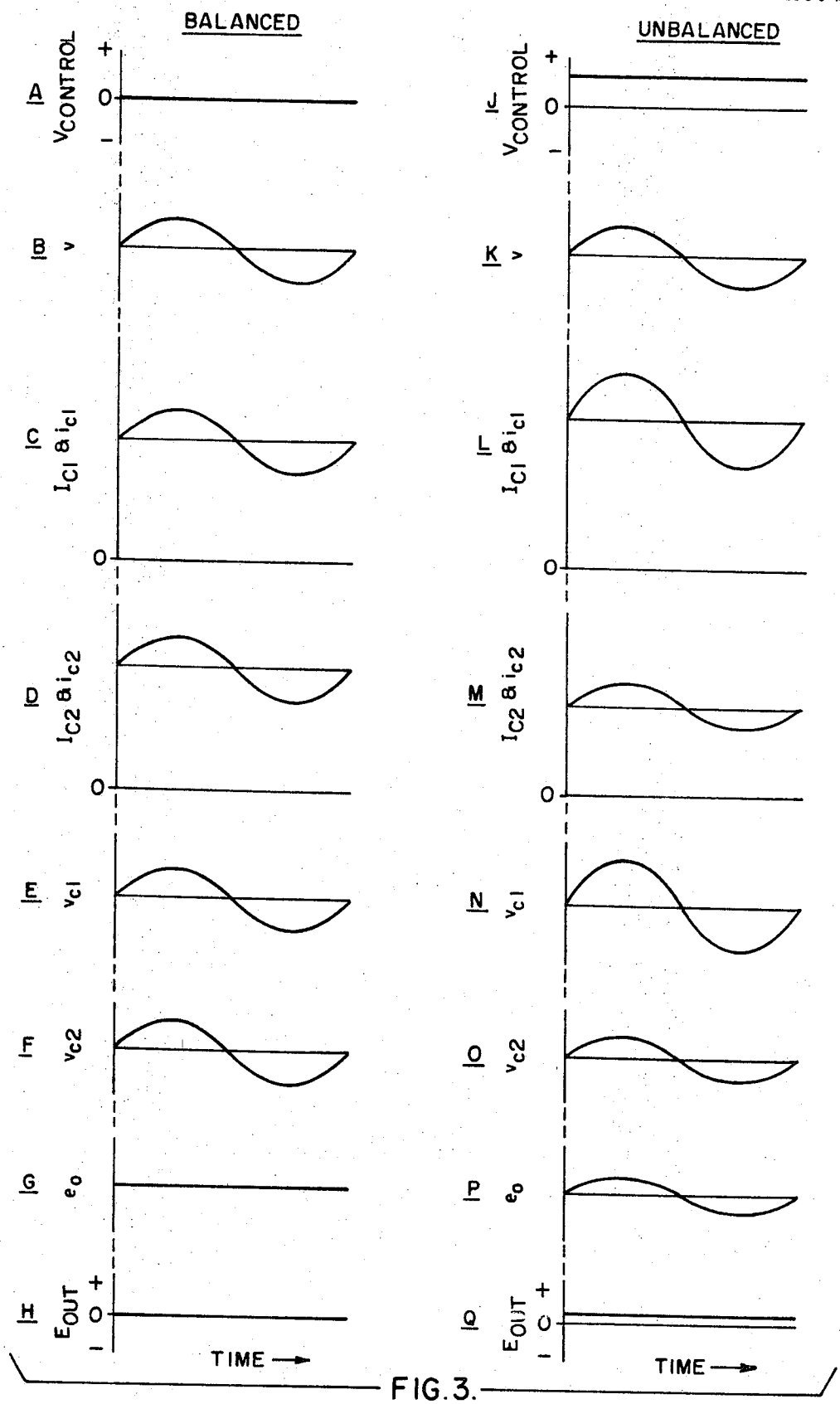


FIG. 3.