

In his patent, Bonham describes a two arm bridge that has two impedances that are connected in series across the input. The signal is coupled across the bridge and develops two signal voltages that are 180 degrees out-of-phase. The impedance magnitude of one or both of the impedances is cyclically changed at the vibrato frequency, resulting in the deviation of the input to output frequency. The frequency of the vibrato will be from 1 to 8 cycles per second. This vibrato circuit uses two varistors to create variable impedance of the bridge. The signal is applied across the non-linear variable impedance in parallel, and the voltage applied to the vibrato control is in series. Thus, distortion is reduced in the circuit, and cancels harmonic distortion. The control voltage is then eliminated from the circuit output. An oscillator and a phase-splitter supplies the push-pull control voltage to vary the impedance of one arm of the bridge. The frequency deviation is made by the phase shift of the electrical signal by the derivative of phase and the amount of phase shift. The frequency of the impedance change controls the rate of the phase change, and the magnitude of the frequency change controls the amount of phase shift.

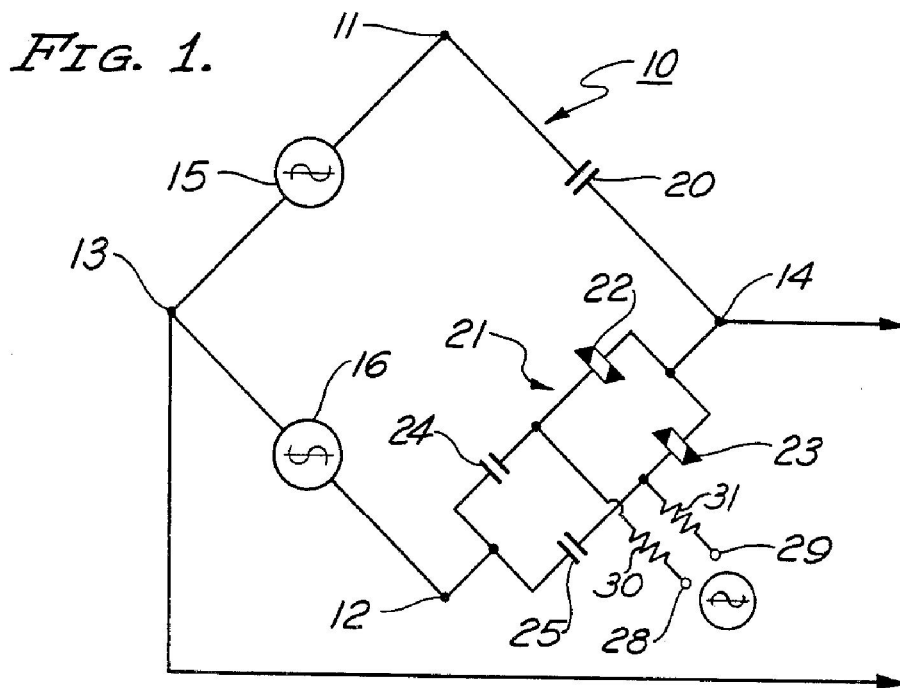


Figure 11. Schematic from US Patent 2988706. 11 to 13 is one bridge. 12 to 13 is the other bridge, 180 degrees out-of-phase with the other, but at the same frequency. 15 and 16 are alternating signal sources. 28 & 29 are vibrato control terminals. 22 & 23 are copper oxide varistors.<sup>18</sup>

<sup>18</sup> U.S. Patent No. 2,988,708, (1961)