drive the circuit away from its stable oscillating point. Moreover, because of the nature of the inductor 10, there is complete isolation of the load from the line and vice versa and the output wave form is essentially a pure sine wave independent of the input wave form.

Figure 5 is a schematic diagram of a circuit very similar to that of Figure 4 with certain practical considerations taken into account. In this Figure, a variable inductor 20 of the form described in Specification No. 1,153,901 has its control winding 21 connected to a source of voltage 22, for example, the conventional 120 volt AC power line. A second winding 23 is wound on the core with its axis parallel to that of the winding 21 and a capacitor 24 is connected across the winding 23. The capacitor 24 serves the same purpose as the capacitor 13 in Figure 4 but the use of a separate winding 23 permits the establishment of a voltage across the capacitor 24 at which it can operate more efficiently. Similarly, the load winding 25 of the inductor 20 has a capacitor 26 connected across its entire length and the load 27 connected across only a portion of it. This arrangement permits the capacitor 26 to be operated at a higher voltage where it is more efficient, for example, 600 volts, while maintaining the voltage across the load at a lower value, for example, 110 volts. The operation of the circuit is similar in all respects similar to Figure 4.

In Figure 6 there is shown another modification of this circuit. In this Figure, the variable inductor 30 of the type described has its control winding 31 connected to a source of AC voltage 32. Two windings 33 and 34 are wrapped on the core in place of the single windings 14 and 25 shown in Figures 4 and 5. These windings 33 and 34 are wound on the core so that their axes are parallel and a capacitor 35 is connected across the winding 33 and a load 36 is connected across the output winding 34. The winding 33 and capacitor 35 serve as the resonant circuit to which energy is transferred by the pumping action of the source 32 and the control winding 31. The oscillating output of the tuned circuit 33 and 35 is transformer coupled to the output winding 34 so that a regulated output is produced across the load 36 in the same manner as previously described. The separation of the windings 33 and 34 permits a high voltage to be developed across the capacitor 35 so that this capacitor is operated more efficiently.

A circuit constructed in accordance with Figure 6 was found to regulate very accurately with the following parameters:

Winding 31 equals 250 turns
Winding 33 equals 1100 turns
Winding 34 equals 170 turns
Capacitor 35 equals 6 microfarads
Load Resistance 36 equals 50 ohms
Core weight equals 6 pounds
Input voltage equals 120 volt, AC. 60 cycle.
Output voltage equals 110 volts rms
Output power equals 250 VA.

The core used for this circuit was similar to that shown in Figure 6 of Specification No. 1,153,901, that is, two C-cores rotated 90° and joined together.

If more than one regulated output voltage value is desired, or if isolation is required for practical reasons, the circuit of Figure 7 can be used. In this circuit, an inductor 40 of the type described has its control winding 41 connected to a source 42 of AC voltage. As was the case in Figure 6, a load winding 43 is provided across which is connected a capacitor 44 to form the resonant circuit. A plurality of output windings 45, 46 and 47 are also provided, each having its axis oriented in parallel with the axis of the winding 43 so that they are transformer coupled thereto. By choosing the number of turns of the output windings 45, 46 and 47, any desired output voltage can be developed across the loads 48, 49 and 50. The manner in which the circuit operates is identical to that of Figure 6.

Figure 8 illustrates a circuit constructed according to the present invention which produces a regulated DC output voltage. In this circuit, an inductor 52 of the type described has its control winding 53 connected to a source of AC voltage 54. The load winding 55 has a capacitor 56 connected there across to form the resonant circuit. An output winding 57 which is transformer coupled to the load winding 55 has its output rectified by the full wave rectifier 58 and applied to the load 59. If desired, of course, a filtering network can be interposed between the rectifier 58 and load 59. The operation of the circuit of Figure 8 is identical to that of Figure 6, that is, the LC resonant circuit 55, 56 produces an AC output voltage of contant amplitude. This output voltage is coupled to output winding 57 by transformer coupling and is rectified by the rectifier 58 and applied to the load 59 in a conventional manner. If desired, the rectifier 58 could be directly connected to the resonant circuit and the separate output winding eliminated. If desired, a plurality of output windings may be provided to supply different voltages.

Figure 9 shows a DC-AC converter using the present invention. In this Figure, an inductor 60 of the type described has its control winding 61 connected to the output of an SCR switch 62 which is supplied by a source of DC voltage 63. The load winding 64 of the inductor 60 is connected in parallel with a capacitor 65 to form a resonant circuit