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# United States Patent [19]

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Hahn et al.

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[54] UNIVERSAL LINEAR POWER SUPPLY

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[57] ABSTRACT

[21] Appl. No.: 08/963,701

[22] Filed: Nov. 4, 1997

A universal linear power supply capable of automatically supplying a regulated DC current output from a range of AC input. In one preferred embodiment, interchangeable modular electrical plugs configured to mate with standard AC supplies releasably connect with the power supply. The power supply circuitry comprises a two-winding step-down transformer, a rectifier and a DC/DC step-down buck converter. A projection on selected electrical plugs mechanically engages a switch on the power supply, connecting the primary coils of the transformer either in series or in parallel to accommodate 110 VAC or 220 VAC input. In another preferred embodiment, the invention comprises an electrical plug for accessing VAC input connected, releasably or permanently, to a power supply comprising a linear transformer, a full-wave rectifier and a DC/DC step-down forward converter which is capable of accommodating the full range of standard AC voltage. The interchangeable plugs may further comprise a releasable locking means mechanically connected to the casing and designed to engage the electrical plug to maintain the plug in an operative position.

### Related U.S. Application Data

[63] Continuation-in-part of application No. 08/670,247, Jun. 19, 1996, Pat. No. 5,684,689.

[51] Int. Cl.<sup>6</sup> ..... H02M 1/00

[52] U.S. Cl. .... 363/146; 363/143; 439/131

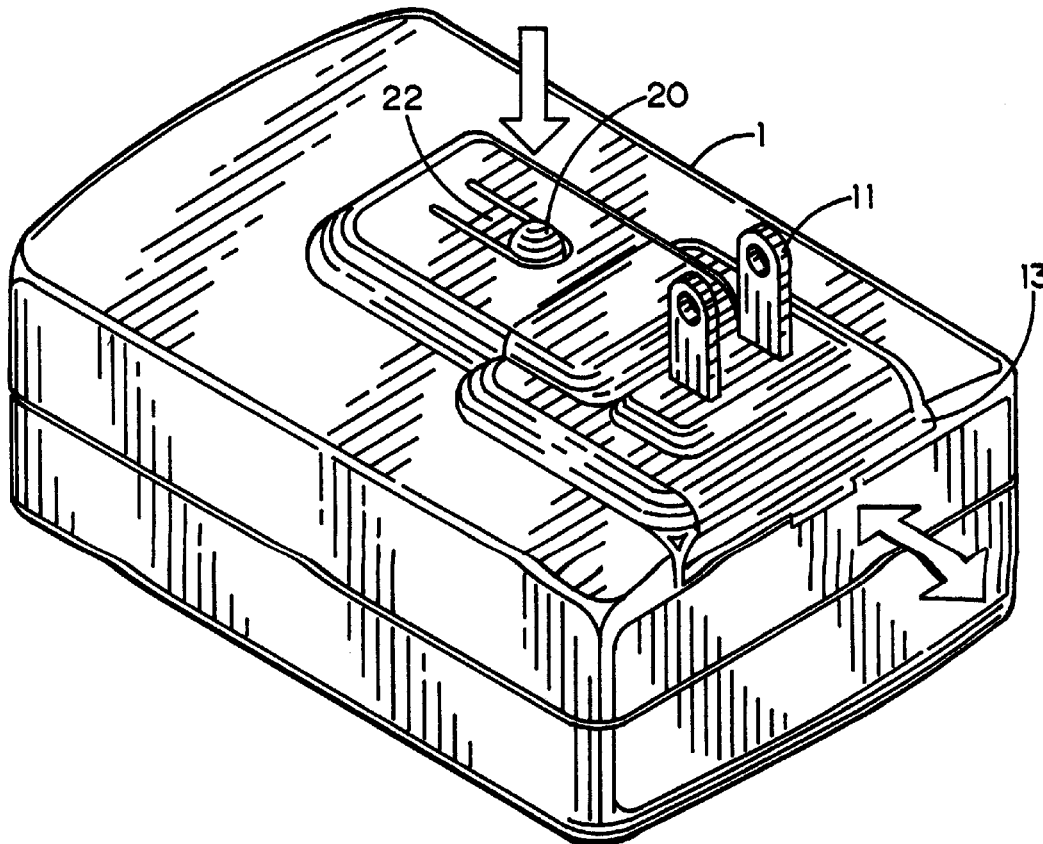
[58] Field of Search ..... 363/141, 142, 363/143, 144, 145, 146; 439/131, 172

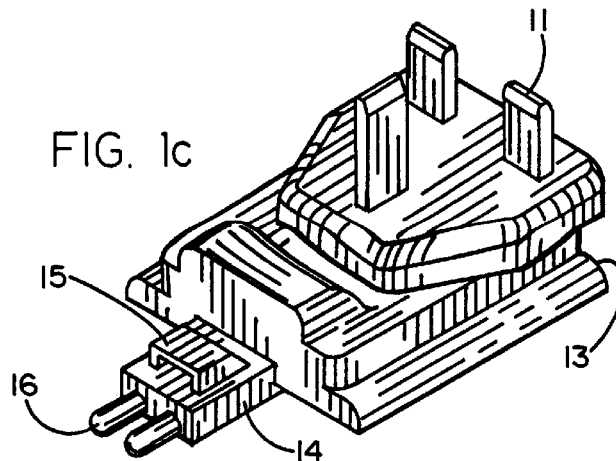
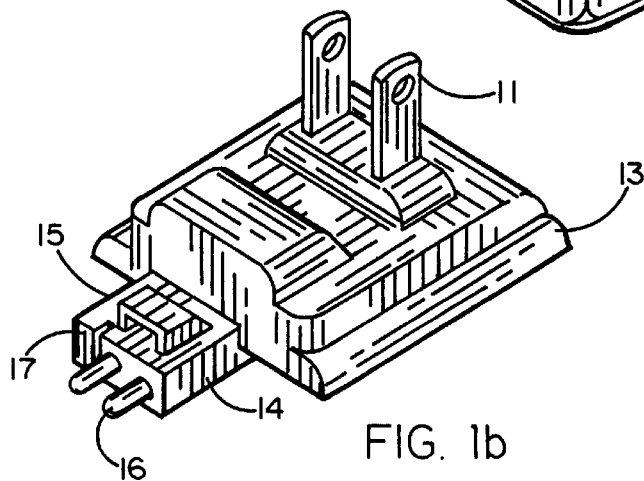
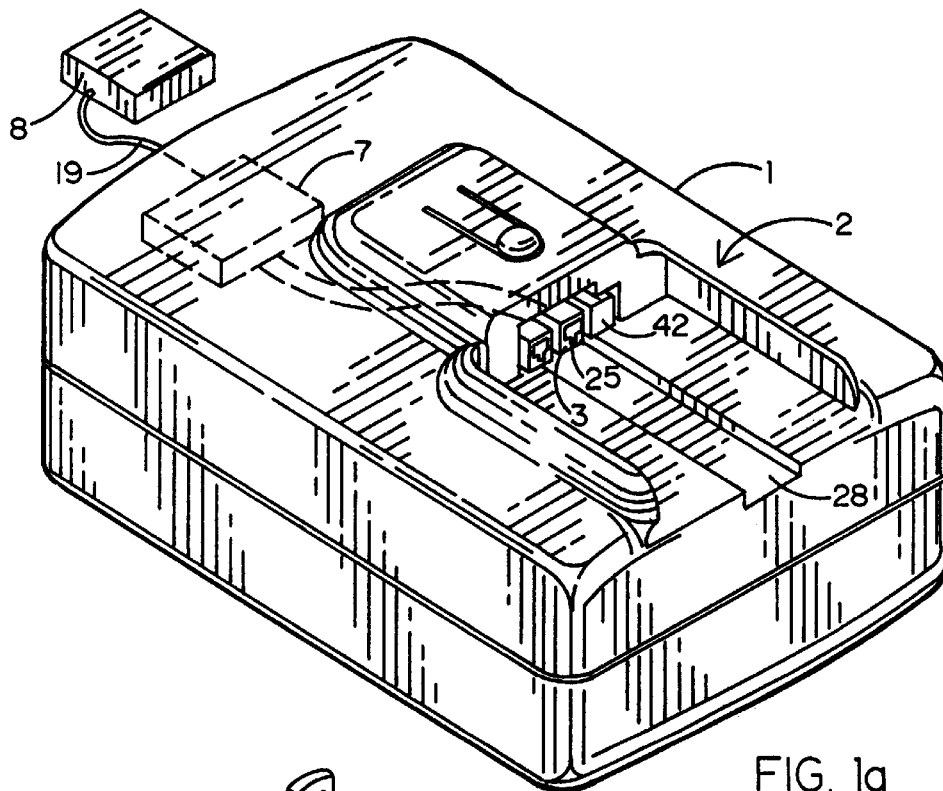
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8 Claims, 7 Drawing Sheets





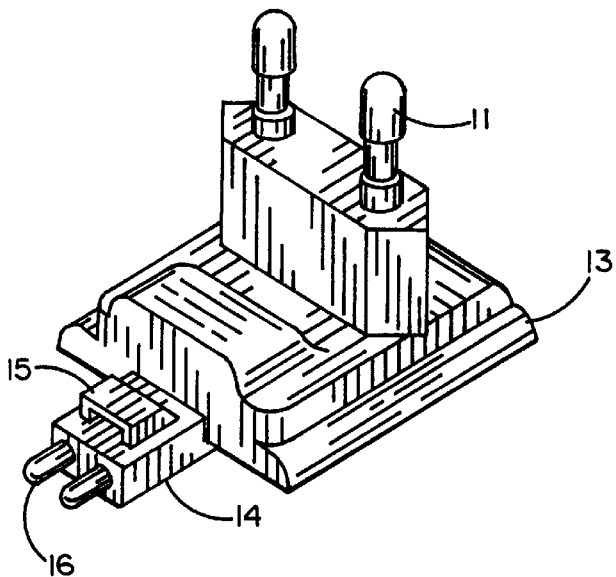


FIG. 1d

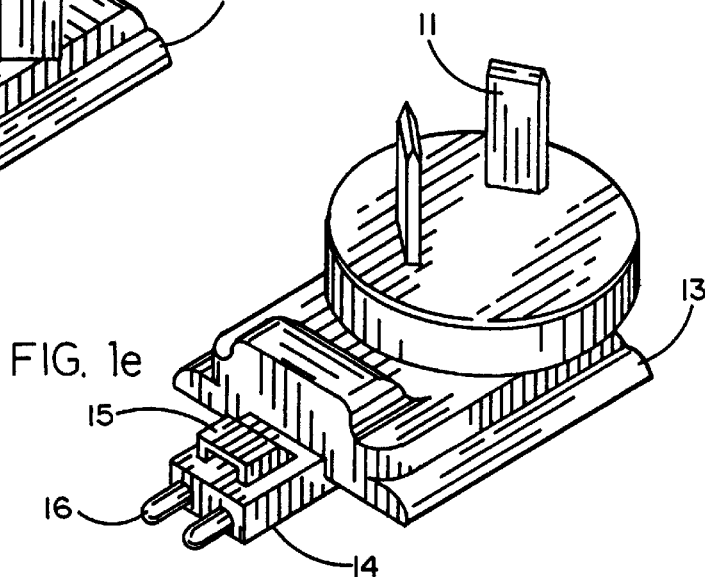


FIG. 1e

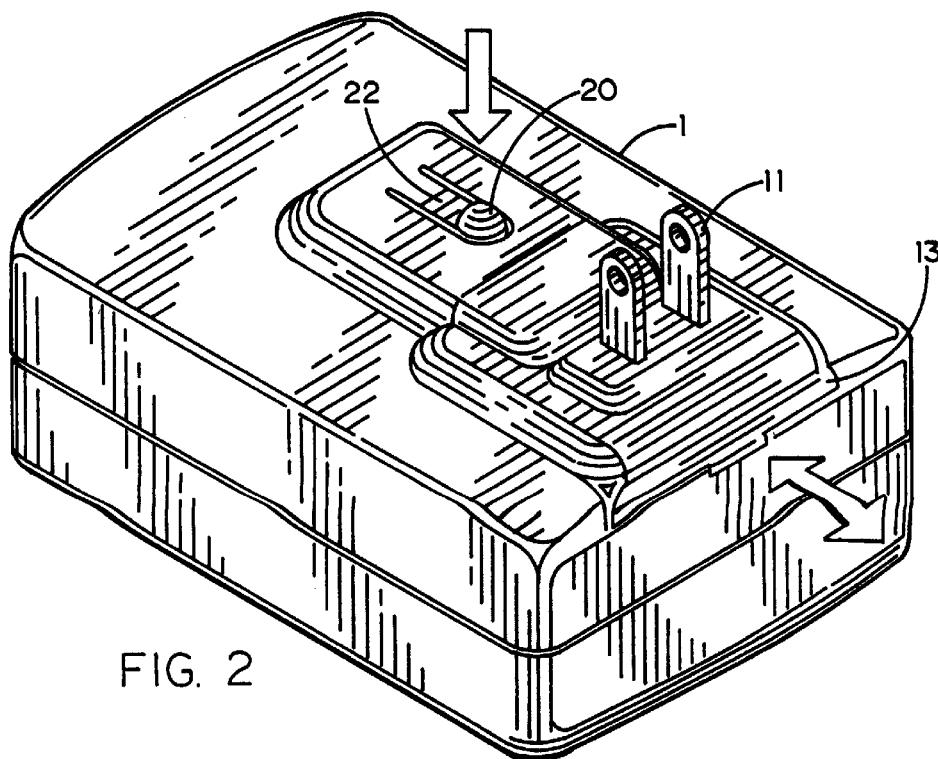


FIG. 2

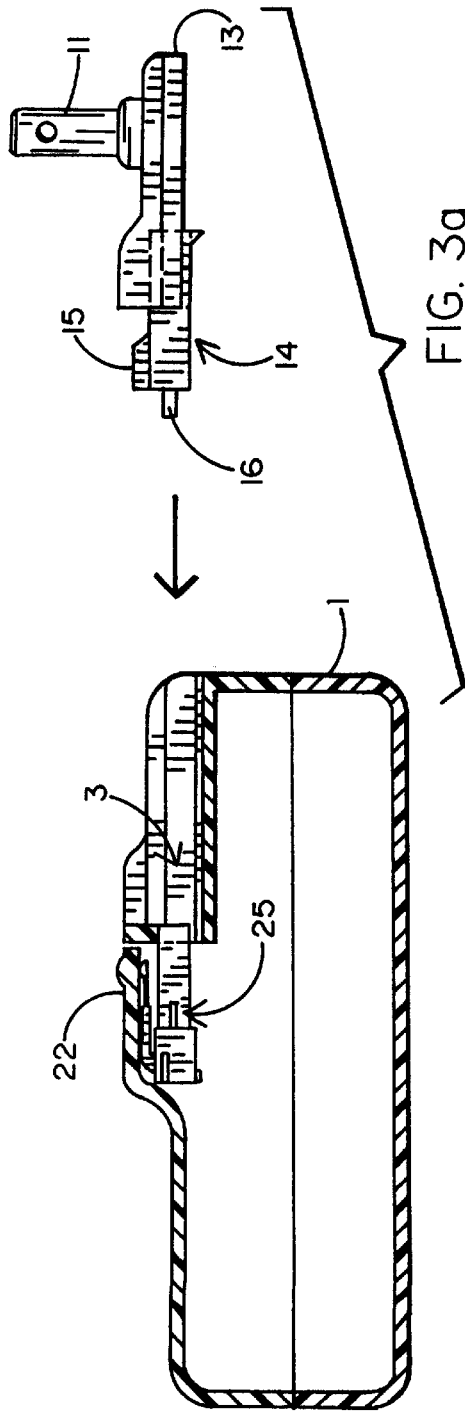


FIG. 3a

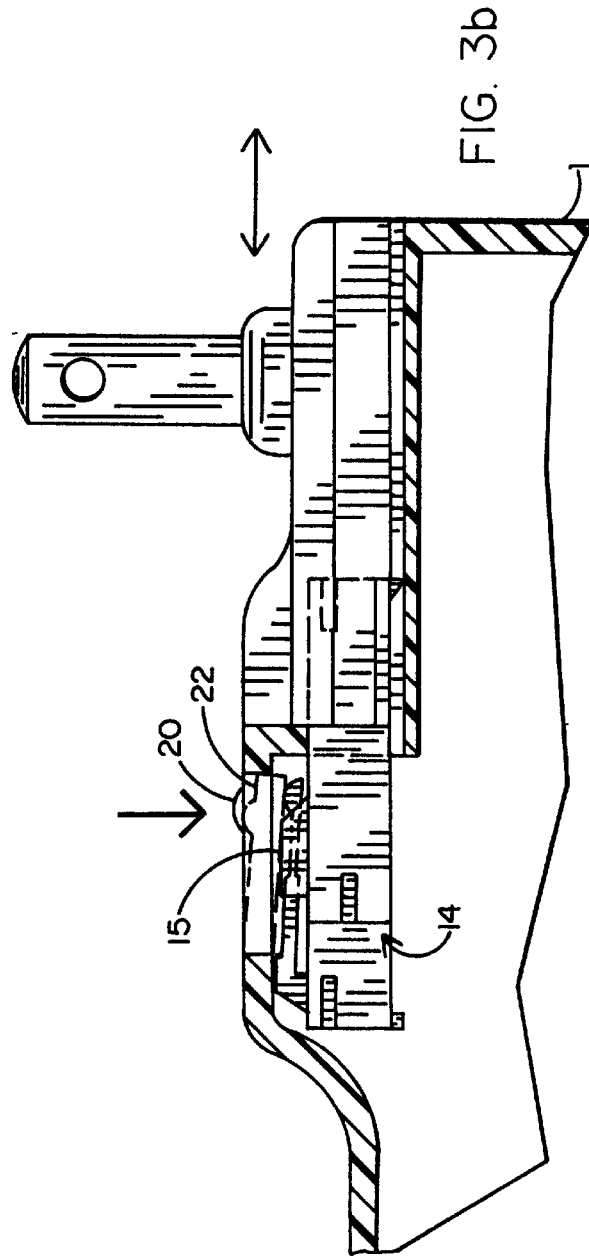


FIG. 3b

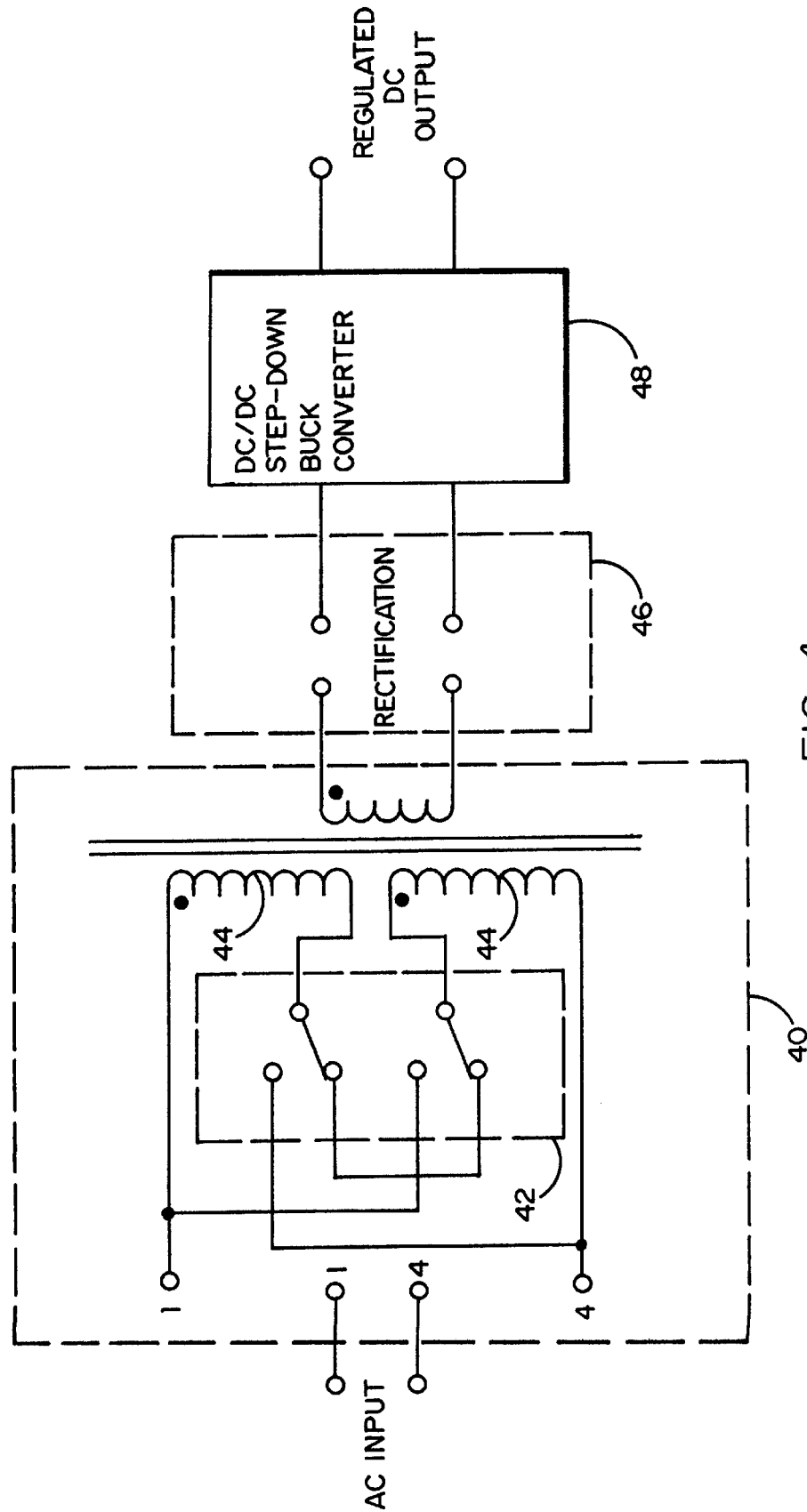


FIG. 4

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