



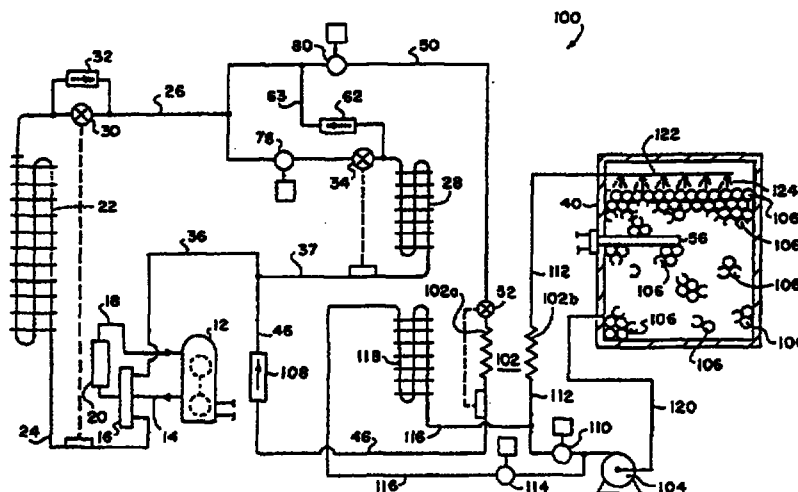
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(54) Title: **THERMAL ENERGY STORAGE AIR CONDITIONING SYSTEM**



(57) Abstract

A vapor compression air conditioning system (100, 200) that reduces power consumption during peak demand periods is characterized by four refrigerant circuits. A first circuit includes a compressor (12), a first heat exchanger (22) and a second heat exchanger (28). A second circuit comprises the compressor (12), the first heat exchanger (22) and a third heat exchanger (102). A third circuit comprises the third heat exchanger (102), a refrigerant pump (104) and a thermal energy storage unit. A fourth circuit includes the thermal energy storage unit, the refrigerant pump (104) and a fourth heat exchanger (118). The first heat exchanger (22) is an outdoor heat exchanger. The second and fourth heat exchangers (28, 118) are indoor heat exchangers in heat transfer relationship with the fluid to be cooled or heated. A first refrigerant is circulated in the first and second circuits by the compressor (12). A second refrigerant is circulated in the third and fourth circuits. The system (100, 200) is operable in plural cooling and heating modes.