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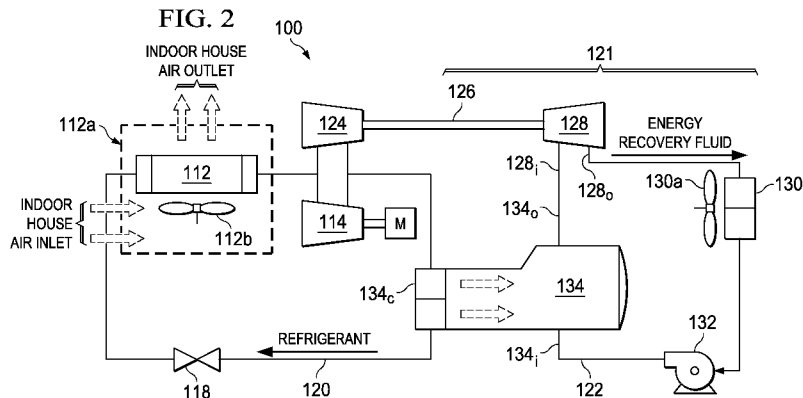
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(54) Title: AIR CONDITIONING SYSTEM WITH DISCHARGED HEAT DRIVING COMPRESSION OF SYSTEM REFRIGERANT



(57) Abstract: An air conditioning system. The system includes apparatus for circulating a refrigerant in a path, further having apparatus for compressing the refrigerant and generating heat in the refrigerant. The system further includes apparatus for providing a driving force to the apparatus for compressing in response to the generated heat.

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AMENDED CLAIMS

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23. A system for producing cooled air, wherein at least a portion of the cooled air is re-circulated, comprising:

5 a first set of apparatus in fluid communication along a first line for carrying refrigerant, the first set of apparatus comprising:

a first heat exchanging apparatus for transferring heat from the re-circulated air to refrigerant in the first line;

10 a second heat exchanging apparatus for transferring heat, having a higher temperature than the re-circulated air, to refrigerant in the first line; and apparatus for compressing the refrigerant in the first line;

and

a second set of apparatus in fluid communication along a second line for carrying an energy recovery fluid, the second set of apparatus comprising:

15 a third heat exchanging apparatus for transferring heat from the refrigerant in the first line to the energy recovery fluid in the second line; and

expansion apparatus, operationally responsive to pressure of the energy recovery fluid in the second line, to provide an operational force to the apparatus for compressing the refrigerant in the first line.

20 24. The system of claim 23 wherein the second heat exchanging apparatus is for transferring heat comprising heat from a natural source.

25 25. The system of claim 23 wherein the second heat exchanging apparatus is for transferring heat comprising solar heat.

26. The system of claim 25 wherein the solar heat comprises heated air located in a non-air conditioned location in a residential structure.

30 27. The system of claim 26 wherein the heated air located in a non-air conditioned location in a residential structure comprises heated air located in a residential structure attic.

28. The system of claim 23 wherein the second heat exchanging apparatus is for transferring heat comprising heat from a non-combustible source.

29. The system of claim 23:

5 wherein the first set of apparatus further comprises condensing apparatus for causing a phase change of the refrigerant in the first line from a vapor to a liquid; and

wherein the condensing apparatus communicates heat from the refrigerant in the first line to the third heat exchanging apparatus.

10 30. The system of claim 23 wherein the first heat exchanging apparatus is for causing a phase change of the refrigerant in the first line from a liquid to a vapor.

31. The system of claim 30 wherein the second heat exchanging apparatus is for transferring sufficient heat into the vapor so as to cause, via the third heat
15 exchanging apparatus, at least a 90 degree Fahrenheit temperature of the energy recovery fluid in the second line.

32. The system of claim 23 wherein the apparatus for compressing receives the refrigerant in the first line, in a vapor phase, coming from the second heat
20 exchanging apparatus.

33. The system of claim 23 wherein the second set of apparatus further comprises apparatus for transferring solar heat to the energy recovery fluid.

25 34. The system of claim 23 wherein the refrigerant comprises propane.

35. The system of claim 23 wherein the energy recovery fluid comprises propane.

36. The system of claim 23:
wherein the refrigerant comprises propane; and
wherein the energy recovery fluid comprises propane.

5 37. The system of claim 23 wherein the apparatus for compressing
comprises compressor apparatus responsive to both electricity for compressing the
refrigerant and to the operational force for compressing the refrigerant.

10 38. The system of claim 23 wherein the first set of apparatus is part of a heat
pump system.

 39. The system of claim 23:
 wherein the second set of apparatus comprises a pump for circulating a fluid
along the second line; and
15 wherein the first set of apparatus comprises an energy exchange device for
providing an operational force to the pump in response to a change in pressure of
refrigerant circulating in the first set of apparatus.

40. A method of operating a system for producing cooled air, wherein at least a portion of the cooled air is re-circulated, comprising:

circulating a refrigerant through a first set of apparatus in fluid communication along a first line for carrying the refrigerant, the first set of apparatus
5 comprising:

a first heat exchanging apparatus for transferring heat from the re-circulated air to refrigerant in the first line;

a second heat exchanging apparatus for transferring heat, having a higher temperature than the re-circulated air, to refrigerant in the first line; and

10 apparatus for compressing the refrigerant in the first line;

and

circulating an energy recovery fluid through a second set of apparatus in fluid communication along a second line for carrying the energy recovery fluid, the second set of apparatus comprising:

15 a third heat exchanging apparatus for transferring heat from the refrigerant in the first line to the energy recovery fluid in the second line; and

expansion apparatus, operationally responsive to pressure of the fluid in the second line, to provide an operational force to the apparatus for compressing the refrigerant in the first line.

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