CLAIMS

1. A transportation refrigeration system comprising:

an enclosure and at least two compartments within the enclosure to be conditioned to two distinct temperatures, with one of the two compartments being maintained below freezing, and the other being cooled, but at a temperature above freezing;

at least two refrigeration circuits, with one of each of the refrigeration circuits associated with each of the at least two compartments, and a first of the at least two refrigeration circuits including a first compressor, a first evaporator, and a first expansion valve, and a second of the at least two refrigeration circuits including a second compressor, a second evaporator, and a second expansion valve;

the first and second refrigeration circuits utilizing a common condenser, with first inlets into the condenser from the first circuit connected to first flow passages and second inlets from the second circuit connected to second flow passages, and first and second outlets connected to the first and second flow passages, wherein the first and second flow passages are staggered in a direction perpendicular to a flow direction across the common condenser;

the first and second flow passages being staggered, in that they are interspersed in a direction perpendicular to the flow direction across the common condenser;

there being spaced apart fins between each of the staggered first and second flow passages to increase heat transfer; and

an engine driving at least each of the first and second compressors; .

wherein the condenser is a microchannel heat exchanger.

2. The transportation refrigeration system as set forth in claim 1, wherein the microchannel heat exchanger has a dimension parallel to a flow path of refrigerant across the microchannel heat exchanger.

3. The transportation refrigeration system as set forth in claim 2, wherein the first and the second inlets entering at one side of the dimension, and the first and second outlets are at an opposed side of the dimension.

4. The transportation refrigeration system as set forth in claim 2, wherein the first and second inlets are at one end of the dimension, and the first and second outlets are also at the one end of the dimension, with the first and second flow passages passing across the dimension from the first and second inlets, respectively, to a folded region, and then extending back across the dimension to the first and second outlets.

5. The transportation refrigeration system as set forth in claim 1, wherein the heat exchanger is a round tube and plate fin heat exchanger.

6. The transportation refrigeration system as set forth in claim 5, wherein the round tube and plate heat exchanger has a dimension parallel to a flow path of refrigerant across the heat exchanger.

7. The transportation refrigeration system as set forth in claim 6, wherein the first and the second inlets entering at one side of the dimension, and the first and second outlets are at an opposed side of the dimension.

8. The transportation refrigeration system as set forth in claim 6, wherein the first and second inlets are at one end of the dimension, and the first and second outlets are also at the one end of the dimension, with the first and second flow passages passing across the dimension from the first and second inlets, respectively, to a bend and then extending back across the dimension to the outlets.