

EXPANDER AND AIR REFRIGERATING DEVICE WITH THE SAME

A B S T R A C T

According to one embodiment, an expander includes
5 a piston provided reciprocatively in a first direction
in a cylinder, a crankshaft extending to intersects
perpendicularly a reference plane including a moving
axis in the first direction of the piston, an XY-
separation crank mechanism provided between the piston
10 and the crankshaft, which converts a reciprocating
motion of the piston and a rotary motion of the
crankshaft into one another, a cylinder head including
an inlet port and an outlet port, a suction valve which
opens/closes the inlet port, a discharge valve which
15 opens/closes the outlet port, an inlet-side valve
mechanism which opens/closes the suction valve and an
outlet-side valve mechanism which opens/closes the
discharge valve. At least one of the inlet-side and
outlet-side valve mechanisms comprises an XY separation
20 drive mechanism.

FIG.4