

ABSTRACT

A positive displacement expander includes a volume change mechanism (90) for changing the volume of a first fluid chamber (72) of an expansion mechanism (60). The expansion mechanism (60) includes a first rotary mechanism (70) and a second rotary mechanism (80) each having a cylinder (71, 81) containing a rotor (75, 85). The first fluid chamber (72) of the first rotary mechanism (70) and a second fluid chamber (82) of the second rotary mechanism (80) are in fluid communication with each other to form an actuation chamber (66). Meanwhile, the first fluid chamber (72) of the first rotary mechanism (70) is smaller than the second fluid chamber (82) of the second rotary mechanism (80). The volume change mechanism (90) includes an auxiliary chamber (93) fluidly communicating with the first fluid chamber (72) and an auxiliary piston (92) for changing the volume of the auxiliary chamber (93). The auxiliary chamber (93) is in fluid communication with the first fluid chamber (72) of the first rotary mechanism (70).