38, and the higher-pressure region of the lower storage tank **38** is the upper region of the bottom storage tank **38**. The two storage tanks **38** are divided by a separator **216** having a hole through which connecting rod **214** may pass. There is a very tight clearance between the connecting rod **214** and the hole in the separator **216**, and preferably the hole in the separator **216** has piston rings, to prevent leakage of propellant **12** from the higher pressure region of the upper storage tank **38** to the higher pressure region of the lower storage tank **38**, and vice versa. Details of the pressurant entrance and exit valves of each of the storage tanks **38** has been left out, because these details have been discussed, e.g., with reference to **FIGS. 16***a* and **16***b*. Two propellant entrance valves, one for the higher pressure region of each storage tank **38**, are designated as propellant entrance check valves **218**, and two propellant exit valves, one for the higher pressure region of each storage tank **38**, are designated as propellant exit check valves **220**. Because of this connection via connecting rod **214**, the cycles of the two storage tanks **38** are offset by exactly half a cycle. An advantage of this embodiment is that, during the draining cycle of one storage tank **38**, the differential piston **54** of the other storage tank **38** is immediately forced in the filling direction (i.e., before the pressure of the propellant **12** from the propellant tank **10** would normally push the piston **54** in the filling direction). This has the effect of pushing the residual high-pressure pressurant **20** more quickly than then the pressurant **20** would naturally depressurize. Thus, the depressurization time is reduced, with a corresponding reducing in cycle time and pressurizer mass. **FIG. 17***b* shows a similar embodiment where each storage tank **38** has a short piston **50** (instead of a differential piston **54**), and the short pistons **50** are connected by connecting rod **214** through separator **216**.

[**0082**] Most of the embodiments described herein have represented simple versions for clarity of explanation. Needless to say, many of the features of the embodiments described herein may be "mixed and matched" to satisfy individual design requirements regarding cost, complexity, size, type of propellant **12** and pressurant **20**, desired flow rate, and other factors.

I claim:

1. A pressurizer for pressurizing a fluid, comprising:

at least two storage tanks, wherein, for each storage tank, said pressurizer further comprises:

a propellant entrance valve connected to and associated with said storage tank;

a propellant exit valve connected to and associated with said storage tank;

a pressurant entrance valve connected to and associated with said storage tank; and

a pressurant exit valve connected to and associated with said storage tank,

wherein each of said storage tanks is configured to be filled with said fluid under a low pressure when its associated propellant entrance and pressurant exit valves are open and its associated propellant exit and pressurant entrance valves are closed, and to be drained of said fluid under a high pressure by the force of a pressurant when its associated propellant entrance and pressurant exit valves are closed and its associated propellant exit and pressurant entrance valves are open,

wherein, for each storage tank, its associated valves are configured to be opened and closed in a cycle to sequentially fill and drain their associated storage tank of said fluid, said cycle having a cycle time,

wherein said cycles of said associated valves of said storage tanks are out of phase with each other such that at some time in which one storage tank is being filled with said fluid, at least one other storage tank is being drained of said fluid, and

wherein said cycle time for each storage tank is between 1 and 500 milliseconds.

2. The pressurizer as in claim 1, wherein said cycle time is between 1 and 250 milliseconds.

3. The pressurizer as in claim 1, wherein said cycle time is between 1 and 100 milliseconds.

4. The pressurizer as in claim 1, wherein each of said associated valves of each of said storage tanks has an open time, which is the time required for the valve to move from a filly closed position to a fully open position, and a close time, which is the time required for the valve to move from a fully open position to a fully closed position, wherein, for each storage tank and its associated valves, a sum of the following terms is less than 100 milliseconds: a) a maximum of the pressurant entrance valve open time and the propellant exit valve open time; b) a maximum of the pressurant entrance valve close time and the propellant exit valve close time; c) the pressurant exit valve open time; d) the propellant entrance valve open time; and e) a maximum of the pressurant exit valve close time and the propellant entrance valve close time.

5. The pressurizer as in claim 4, wherein said sum is less than 25 milliseconds.

6. The pressurizer as in claim 1, wherein, for each storage tank, said associated pressurant exit valve comprises a plurality of separate flow holes and a movable valving member configured to restrict flow through said plurality of separate flow holes simultaneously.

7. The pressurizer as in claim 1, wherein, for each storage tank, said associated propellant exit valve comprises a plurality of separate flow holes.

8. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein a shortest flow distance from said movable valving member to a meniscus of said fluid inside said storage tank when said storage tank is filly filled with said fluid is substantially less than a shortest flow distance from said movable valving member to a meniscus of said fluid inside said storage tank when said storage tank is filly drained of said fluid.

9. The pressurizer as in claim 1, wherein said associated pressurant exit valve for each storage tank comprises at least one flow hole and a movable valving member configured to restrict flow through said flow hole, wherein each storage tank comprises a movable partition configured to substantially separate said fluid from said pressurant during filling and draining, wherein a shortest flow distance from said movable valving member to a surface of said movable partition when said storage tank is fully filled with said fluid is substantially less than a shortest flow distance from said