there would be no worry about feeding pressurant **20** directly to the engine **2** via engine conduit **32**. Any pressurant **20** that made it to the engine **2** could interrupt combustion and possibly fail the engine.

[**0051**] Referring now to **FIG. 16**, in another preferred embodiment, spindle **26** contains a plurality of very thin transfer chambers **84**. It is the same as the spindle **26** described previously, except for the existence of thin transfer chambers **84**. The thinner the thin transfer chambers **84**, the fewer the instabilities—e.g. splashing of propellant **12**, bubbles of pressurant **20** in propellant **12**, unevenness of the meniscus of propellant **12**, etc. One might conceive of a thin transfer chamber **84** so thin that propellant **12** is fed into it by means of a capillary effect. This is all within the scope of the present invention.

[**0052**] Referring now to **FIGS. 17 and 18**, in another preferred embodiment, spindle **26** houses several transfer chambers **42'**, each of which contains a movable membrane **74** that is capable of separating a region above it from a region below it. The membrane **74** serves a similar purpose as piston **72** shown in **FIG. 15**, except that the edges of membrane **74** are permanently attached to the walls of transfer chamber **42'**, so that there is no need to provide a moving seal between the membrane **74** and the walls of transfer chamber **42'**. Rather, while the edges of membrane **74** stay fixed in relation to the transfer chamber **42'**, the remainder of the membrane **74** (particularly near the center) moves up and down in the transfer chamber **42'** in response to the filling and draining of propellant **12** per the cycle previously described. This embodiment, like the embodiment involving piston **72**, has the advantage that membrane **74** would prevent the direct feeding of propellant **12** to exhaust conduit **34** and the direct feeding of pressurant **20** to engine conduit **32**.

[**0053**] It will be apparent to one skilled in the art that the transfer chamber **42** need not be housed in a spindle **26**, need not rotate with the spindle **26**, and need not be in a cycle of rotation at all—it could move in many other cyclical ways relative to the conduits **6**, **32**, **34**, **36** and chamber separators **28**, **30**. By way of example and not of limitation, a transfer chamber could reciprocate between the pressurant conduit **36**/engine conduit **32** pair and the exhaust conduit **34**/propellant conduit **6** pair. In order to provide constant, uninterrupted flow to the engine **2** via engine conduit **32**, several such reciprocating transfer chambers **42** could be used in parallel, each one corresponding to a different stage in the cycle. In all cases, however, at least one transfer chamber **42** moves in a cycle to transfer a propellant/fluid from a filling stage to a pressurizing/emptying stage.

I claim:

1. A pressurizer for pressurizing a fluid, comprising:

a pressurant entrance for the introduction of a pressurant;

a fluid entrance for said fluid;

a fluid exit for said fluid; and

a transfer chamber movable in a cycle with respect to said fluid exit,

wherein for a portion of a cycle said pressurant exerts a force on said fluid inside said transfer chamber.

2. The pressurizer as claimed in claim 1, further comprising a spindle housing more than one transfer chamber.

3. The pressurizer as claimed in claim 2, wherein the spindle is rotatable.

4. The pressurizer as claimed in claim 3, wherein the spindle is rotatable about an axis between said fluid entrance and said fluid exit.

5. The pressurizer as claimed in claim 1, wherein the transfer chamber comprises a flexible membrane to separate said pressurant and said fluid.

6. The pressurizer as claimed in claim 1, wherein the transfer chamber comprises a movable piston to separate said pressurant and said fluid.

7. The pressurizer as claimed in claim 1, further comprising a pressurant exit for a pressurant exhaust.

8. The pressurizer as claimed in claim 7, wherein said pressurant exhaust is exhausted in a direction substantially opposite a direction of motion of said transfer chamber.

9. The pressurizer as claimed in claim 1, further comprising a motor to move said transfer chamber.

10. The pressurizer as claimed in claim 1, wherein a cross section of said pressurant entrance is larger than a cross section of said fluid exit.

11. The pressurizer as claimed in claim 7, wherein a cross section of said pressurant exit is larger than a cross section of said fluid entrance.

12. A rocket engine system, comprising:

a pressurant;

a pressurant container;

a propellant;

a propellant container;

a rocket engine; and

a transfer chamber movable in a cycle with respect to said rocket engine,

wherein for a portion of a cycle said pressurant exerts a force on said propellant inside said transfer chamber.

13. The rocket engine system as claimed in claim 12, wherein for a portion of a cycle a bouyant force causes said propellant to flow into, and said pressurant to flow out of, said transfer chamber.

14. The rocket engine system as claimed in claim 12, further comprising a heating means for heating said pressurant.

15. The rocket engine system as claimed in claim 14, wherein said heating means comprises a heat conductor for conducting heat from said rocket engine to said pressurant.

16. The rocket engine system as claimed in claim 12, wherein a pressurant exhaust exerts a force on said propellant inside said propellant container.

17. The rocket engine system as claimed in claim 12, wherein said propellant comprises an oxidizer and a fuel.

18. The pressurizer as claimed in claim 1, wherein a cross section of said fluid entrance is greater than a cross section of said fluid exit.

19. The rocket engine system as claimed in claim 12, further comprising an engine conduit between said transfer chamber and said engine and a propellant conduit between said transfer chamber and said propellant container, wherein a cross section of said propellant conduit is greater than a cross section of said engine conduit.

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