WHAT IS CLAIMED IS:

1. A hydraulic suspension apparatus, configured to adjust a height of a vehicle body of a vehicle, comprising:

a liquid storage apparatus, the liquid storage apparatus being suitable for being arranged on the vehicle body and being configured to store oil;

a reducer, the reducer having a reducer housing, a piston, and a piston rod, the reducer housing being suitable for being connected to an axle, the piston being located in the reducer housing and fitting the reducer housing to define an upper chamber and a lower chamber, an end of the piston rod being connected to the piston, the piston rod being suitable for being connected to the vehicle body, an oil channel being provided in the piston rod, and the oil channel being communicated with the lower chamber and the liquid storage apparatus, to make oil flowable between the liquid storage apparatus and the lower chamber; and

a plurality of reducer assemblies, the plurality of reducer assemblies comprising a left-front reducer assembly, a left-rear reducer assembly, a right-front reducer assembly, and a right-rear reducer assembly, and each of the plurality of reducer assembly comprising the reducer, wherein:

the upper chamber of the left-front reducer assembly is communicated with the lower chamber of the left-rear reducer assembly through a fifth pipe, the lower chamber of the left-front reducer assembly is communicated with the upper chamber of the left-rear reducer assembly through a sixth pipe, the upper chamber of the right-front reducer assembly is communicated with the lower chamber of the right-rear reducer assembly through a seventh pipe, and the lower chamber of the right-front reducer assembly is communicated with the upper chamber of the right-rear reducer assembly through an eighth pipe; and

the fifth pipe is communicated with the seventh pipe through a first connecting pipe to form

a third return path, and the sixth pipe is communicated with the eighth pipe through a second connecting pipe to form a fourth return path.

2. The hydraulic suspension apparatus according to claim 1, wherein the liquid storage apparatus comprises a control pump and a liquid storage device, and the control pump is arranged between the liquid storage device and the oil channel.

3. The hydraulic suspension apparatus according to claim 1 or 2, wherein an upper end of the piston rod extends out of the reducer housing, an oil port is formed at the upper end of the piston rod, and the oil port is configured to communicate the oil channel and the liquid storage apparatus.

4. The hydraulic suspension apparatus according to claim 2, further comprising an oil outlet channel and an oil return channel, the oil outlet channel and the oil return channel are both communicated between the liquid storage device and the oil channel, the oil outlet channel and the oil return channel partially overlap, and the control pump is arranged on the oil outlet channel.

5. The hydraulic suspension apparatus according to claim 4, wherein the oil outlet channel comprises a shared channel and an oil outlet branch, the oil return channel comprises the shared channel and an oil return branch, one end of the shared channel is communicated with the oil channel, and the oil outlet branch and the oil return branch are both communicated with the other end of the shared channel.

6. The hydraulic suspension apparatus according to claim 5, wherein a one-way valve and the

control pump are arranged on the oil outlet branch, one end of the one-way valve is communicated with the shared channel, the other end of the one-way valve is communicated with the control pump, and an oil return valve is arranged on the oil return branch.

7. The hydraulic suspension apparatus according to any one of claims 1 to 6, further comprising an accumulator module, the oil channel is communicated with the liquid storage apparatus through a communicating channel, the accumulator module is communicated with the communicating channel, and the accumulator module is suitable for at least adjusting at least one of damping and stiffness of the reducer and the height of the vehicle body of the vehicle.

8. The hydraulic suspension apparatus according to claim 7, further comprising a first control valve, and the first control valve is arranged on the communicating channel, and is configured to control communication or separation between the liquid storage apparatus and the accumulator module.

9. The hydraulic suspension apparatus according to claim 7 or 8, wherein the accumulator module comprises a first accumulator and an openness adjustment valve, the first accumulator is communicated with the communicating channel at a first communicating point, the openness adjustment valve is arranged between the first communicating point and the oil channel, the openness adjustment valve is configured to adjust openness of a communicating channel between the oil channel and the first communicating point, to adjust the damping of the reducer, and the openness adjustment valve is further configured to close a communicating channel between the oil channel and the first communicating point, to adjust the stiffness of the reducer.

10. The hydraulic suspension apparatus according to any one of claims 7 to 9, wherein the accumulator module further comprises a second accumulator and a stiffness adjustment valve, a second communicating point communicated with the second accumulator is arranged on the communicating channel, the stiffness adjustment valve is arranged between the second accumulator and the second communicating point, and the stiffness adjustment valve is configured to communicate or separate the communicating channel and the second accumulator to adjust the stiffness of the reducer.

11. The hydraulic suspension apparatus according to claim 10, wherein a second control valve is further arranged between the second communicating point and the oil channel.

12. The hydraulic suspension apparatus according to claim 7 or 8, wherein the accumulator module further comprises a first accumulator and a second accumulator, the first accumulator is communicated with the communicating channel at a first communicating point, and a second communicating point communicated with the second accumulator is arranged on the communicating channel.

13. The hydraulic suspension apparatus according to claim 12, wherein the first communicating point is located between the oil channel and the second communicating point.

14. The hydraulic suspension apparatus according to claim 12 or 13, wherein a second control valve is arranged between the first communicating point and the second communicating point.

15. A hydraulic suspension system, comprising a controller and the hydraulic suspension apparatus according to any one of claims 1 to 14, the controller being configured to control a flow direction of oil between the liquid storage apparatus and the reducer according to a status of a vehicle, to increase or reduce a height of a vehicle body of the vehicle.

16. A vehicle, comprising the hydraulic suspension system according to claim 15.