

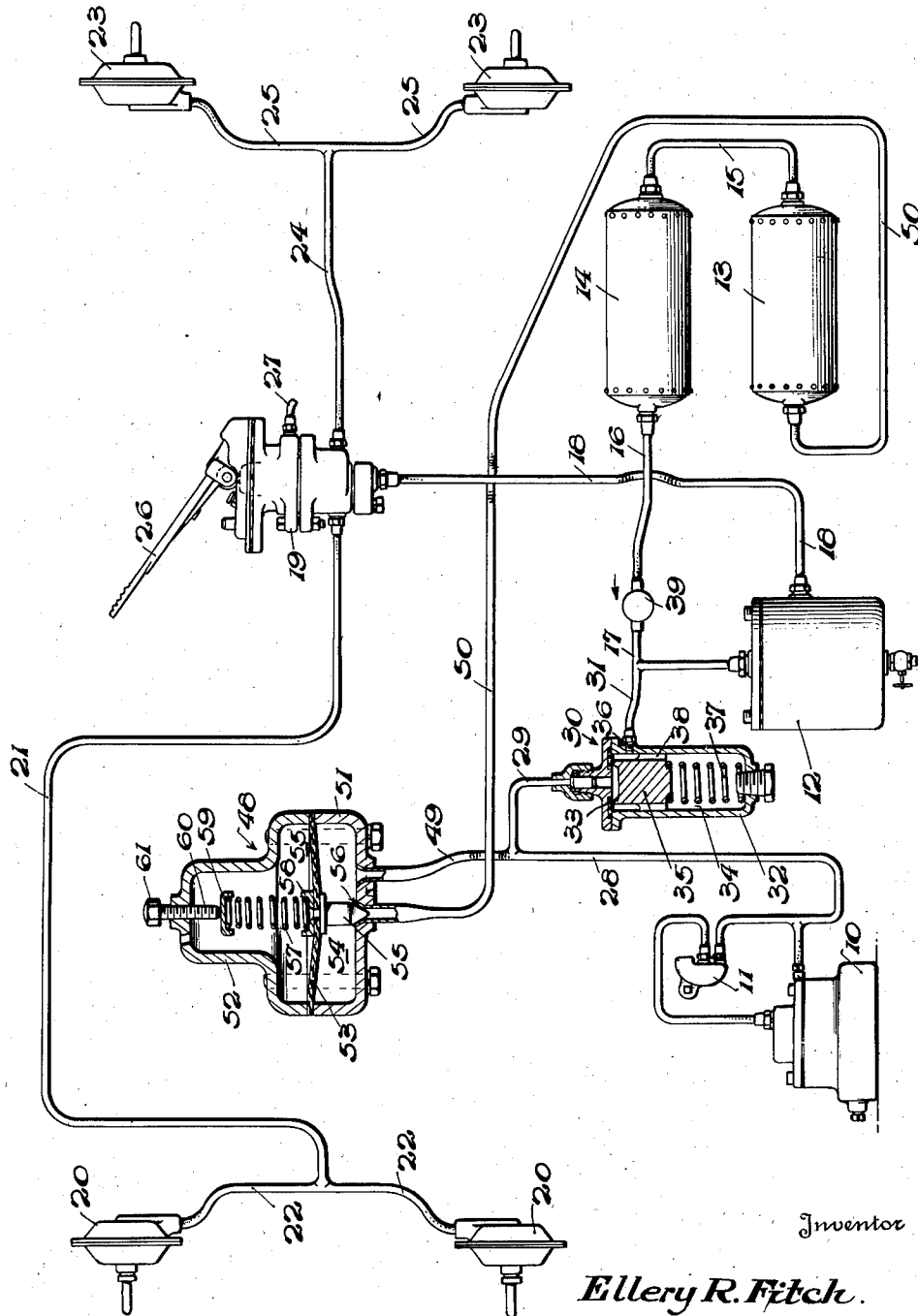
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BRAKE MECHANISM

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BRAKE MECHANISM

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This invention relates to fluid pressure apparatus and more particularly to a fluid pressure receiving system adapted for use in connection with fluid pressure braking systems for automotive vehicles.

In conventional fluid pressure receiving systems, the fluid compressor, main reservoirs, and the auxiliary reservoirs are so interconnected that the discharge conduit of the compressor is freely open to the relatively large volume of such reservoirs. Therefore, it is necessary to operate the compressor a substantially long period before the fluid supplied to the reservoirs builds up to a pressure of sufficient value to effectively apply the vehicle brakes. In order to safely operate a vehicle utilizing such a system, it is obvious that the engine thereof must be operated to drive the compressor, while the vehicle is at rest, until the fluid supplied to the system builds up to a value to maintain an application of the vehicle brakes.

Therefore, one of the objects of the present invention is to provide a novel fluid pressure receiving system which operates to overcome the inherent disadvantages of conventional fluid pressure receiving systems.

Another object of the invention is to provide a fluid pressure receiving system wherein a source of fluid pressure for effectively applying the vehicle brakes is available after the fluid compressor is operated a substantially short time.

Still another object is to provide a fluid pressure receiving system wherein a source of fluid pressure, of sufficient volume and under sufficient pressure to maintain an effective application of the vehicle brakes, is available after the fluid compressor has operated a substantially short time.

It has been found that the high temperatures and pressures present during the compression of fluids cause a certain percentage of moisture to be contained in the compressed fluid, and that such percentage increases as the pressure of the compressed fluid increases. Therefore, when the pressure of the compressed fluid is low, substantially little or no moisture will be present, while, on the other hand, when the pressure of the compressed fluid is high, a substantial amount of moisture may be contained therein. If the moisture is not removed from the fluid pressure before the same is utilized in the system, the moisture may condense from the fluid and collect in the system, and thus cause parts of the system to function improperly.

Accordingly, a further object of the invention is to provide a fluid pressure receiving system wherein fluid under high pressures, having moisture therein, flows through a plurality of reservoirs whereby the moisture is condensed from the fluid pressure before the same is utilized.

A still further object is to provide a fluid pressure receiving system so constructed that fluid under pressures below a predetermined value, having substantially little or no moisture content, is supplied to one reservoir and utilized directly therefrom, while fluid under pressures, above said predetermined value, having a substantial moisture content, is utilized after passing through a plurality of reservoirs whereby the moisture is condensed therefrom.

A still further object is to provide a fluid pressure receiving system so constructed as to automatically isolate a source of fluid pressure when a rupture occurs in certain portions of the system.

Other objects and novel features of the invention will appear more fully hereinafter from the following detailed description when taken in connection with the accompanying drawing. It is to be expressly understood, however, that the drawing is employed for purposes of illustration only and is not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

With reference more particularly to the drawing, a fluid pressure brake system embodying the present invention is shown therein as having a fluid compressor 10 controlled by a pressure governor 11 and driven by an engine of the vehicle, not shown, for supplying fluid under pressure to reservoirs 12, 13 and 14, connected in series relation by means of conduits 15, 16 and 17. A conduit 18 is provided for supplying fluid under pressure from the reservoir 12 to a brake valve 19, preferably of the self-lapping type as disclosed in the patent to W. J. Andres and R. S. Sanford, No. 2,133,275, dated October 18, 1938, for Control mechanism, which is adapted to control the flow of fluid under pressure to a pair of front brake actuators 20, 20 through conduits 21 and 22 and to a pair of rear brake actuators 23, 23 through conduits 24 and 25. A control lever 26 is provided on the brake valve 19 to operate the latter to close the normally open connection between an atmospheric port 27 and conduits 21 and 24 and to open a fluid connection between the latter conduits and conduit 18.

One of the features of the invention is to provide, in a fluid pressure receiving system, means for securing a source of fluid, of sufficient volume and under sufficient pressure to maintain an application of the vehicle brakes, after the fluid compressor has operated a substantially short time. Such an arrangement dispenses with the necessity of operating the compressor a substantially long time before the system is charged with fluid pressure of sufficient value to effectively apply the vehicle brakes. More particularly, the reservoir 12 is constructed to be of sufficient size to contain the proper volume of

fluid, under a predetermined pressure, to supply energy to the brake actuators for maintaining at least one medium brake application. It is to be understood, however, that the reservoir 12 may be constructed in various sizes, depending upon the energy desired for instant use, during initial operation of the compressor 10.

During certain phases of operation of the system, namely, during initial operation of the compressor 10, or when the fluid pressure discharged therefrom is below a predetermined value, the reservoir 12 is supplied with fluid under pressure directly from a discharge conduit 28 of the compressor 10. As shown, such fluid connection comprises conduit 29, a valve device 30, and conduits 31 and 17.

The valve device 30 is constructed to function as a check valve to prevent the flow of fluid under pressure from the reservoir 12 to conduit 28, and also to provide means for maintaining a differential between input and output pressures thereof, for a purpose described more fully hereinafter. More particularly, the valve mechanism includes a cylindrical casing 32 having one end closed and a cover plate 33 secured to the other end thereof, thus forming a chamber 34 in which a valve member 35 is adapted to reciprocate. Conduit 29 supplies fluid under pressure to the chamber 34 above the valve member 35, while conduit 31 communicates with a port 36 in casing 32. Communication between conduit 29 and port 36 is normally prevented by the valve member 35, due to the action of a spring 37, positioned in the chamber 34, that holds the valve member in the position shown in the drawing. The spring 37 is compressed sufficiently to prevent downward movement of the valve member 35 until the pressure of the fluid in conduit 29 reaches a predetermined value. Fluted guides 38 formed on the valve 35 serve to guide the valve and permit equalization of pressure throughout the chamber 34.

In operation of the valve device 30, the valve member 35 remains in the normal position thereof shown in the drawing until the pressure of the fluid in conduit 29 builds up to a value greater than the compression of the spring 37. When such pressure is attained, the valve member moves downwardly against the spring 37, thus establishing a fluid connection between conduits 29 and 31, through which fluid under pressure flows to the reservoir 12. The fluid under pressure thus supplied to the reservoir 12 is conducted to the chamber 34 to act therein against the valve member 35 to oppose the pressure of the fluid acting on the opposite side thereof. Since there are equal pressures exerted on opposite sides of the valve member 35, the spring 37 will move the valve member to the position shown in the drawing, wherein the fluid connection between the conduits 29 and 31 is closed. In order to move the valve member 35 downwardly to again form a fluid connection between the conduits 29 and 31, the pressure of the fluid in the conduit 29 must be greater than the pressure of the fluid in the chamber 34 by an amount equal to the compression of the spring 37. Therefore, a differential will be present between the pressures of the fluid in the conduit 29 and in the reservoir 12 that will be substantially equal to the compression of the spring 37.

In order to permit flow of fluid pressure from reservoir 14 to reservoir 12, while preventing flow from reservoir 12 to reservoir 14, a check valve

39 of any suitable construction is interposed in the connection between conduits 17 and 16.

As heretofore stated, another feature of the invention is to provide means for supplying a reservoir, which is connected to the brake valve, with fluid under pressure through a plurality of reservoirs arranged in series relation, when the pressure of the fluid in the compressor discharge conduit reaches a predetermined value. As also mentioned heretofore, such an arrangement is advantageous since the fluid under high pressures is utilized from the system after the same has passed through a plurality of reservoirs whereby the moisture in the fluid is caused to condensate therefrom, and, therefore, dry fluid is supplied to the brake valve and subsequently to the brake actuators.

Such means, as shown, includes a pressure responsive device 48, which will be more fully described hereinafter, that is adapted to control the flow of fluid under pressure from a conduit 49, connected to the conduit 28, to a conduit 50 that forms a fluid connection with the reservoir 13. More particularly, the device 48 comprises casings 51 and 52 which are adapted to be clamped together with a diaphragm 53 therebetween, thus forming chambers 54 and 55. The conduit 49 is connected to the casing 51 and fluid under pressure therefrom is allowed to flow to the chamber 54. The conduit 50 is also connected to the casing 51, but fluid communication between the conduit 50 and the chamber 54 is normally prevented by a valve member 55 which contacts a valve seat 56 and thus closes the end of the conduit 50. The valve member 55 is secured to the diaphragm 53 by any suitable means and is held in contact with the valve seat 56 by the action of a spring 57 which exerts a downward force on the diaphragm 53. One end of the spring 57 is enclosed by a flanged plate 58 secured to the diaphragm 53, while the other end thereof is enclosed by another flanged plate 59. A member 60, threaded mounted in the casing 52, has one end thereof contacting the plate 59 and the other end extending outside the casing and provided with a control member 61 so that the member 60 may be rotated in one direction or the other to regulate the tension of the spring 57, and thus determine the pressure of the fluid that is required in the chamber 54 to move the diaphragm 53 upwardly to allow the flow of fluid under pressure from the chamber 54 to the conduit 50.

In operation of the fluid pressure system heretofore described, assuming that no fluid under pressure is present in the system and that the spring 37 of the valve mechanism 30 is compressed so that a predetermined pressure of fluid in conduit 29 is required before the valve operates to allow the flow of fluid under pressure to the reservoir 12, thereby maintaining a differential between the pressures of the fluid in the conduit 29 and the reservoir 12 that is equal to the compression of the spring, and that the spring 57 of the pressure responsive device 48 is so adjusted that a predetermined pressure of the fluid in the chamber 54 that is greater than the predetermined pressure referred to above with regard to the valve mechanism 30 is required to move the diaphragm upwardly to allow fluid communication from the conduit 49 to the conduit 50, it will be apparent that, as the compressor 10 begins to operate, fluid under pressure discharged therefrom is supplied to the valve mechanism 30 through conduits 28 and 29, and to the chamber 54 of the pressure responsive

device 48 through conduits 28 and 49. When the compressor 10 has operated for a sufficient period to increase the pressure of the fluid in the conduit 28 to a value greater than the compression of the spring 37, the valve device 30 will operate in a manner fully described heretofore to form a fluid connection between the conduits 29 and 31, and fluid under pressure is thus supplied to the reservoir 12. The valve device 39, being in the normal position thereof, will prevent the flow of fluid under pressure from the reservoir 12 to the reservoir 14, and, therefore, as the pressure of the fluid in the conduit 28 increases, the pressure of the fluid in the reservoir 12 will also increase. However, it will be understood that the pressure of the fluid in the reservoir 12 will be less than the pressure of the fluid in the conduit 28 by an amount equal to the compression of the spring 37. Thus, during the initial operation of the compressor 10, fluid under relatively low pressure is supplied to the reservoir 12, the volume of which is such that the fluid contained therein will be ample to maintain at least one medium brake application which may be accomplished by operating the brake valve 19 to supply fluid under pressure to the brake actuators from the reservoir 12.

When the pressure of the fluid in the reservoir 12 builds up to a sufficient value to maintain an effective application of the vehicle brakes, the device 48 is adapted to operate to allow the flow of fluid pressure to the reservoirs 13 and 14. The spring 57 is, therefore, compressed to a value greater than the predetermined pressure of fluid in the reservoir 12 by an amount substantially equal to the compression of the spring 37 of the valve 30.

When the pressure of the fluid in the chamber 54 builds up to such value, the diaphragm 53 will move upwardly against the spring 57 to move the valve member 55 away from the valve seat 56 and allow the flow of fluid under pressure from the conduit 49 to the conduit 50, through the chamber 54. When the pressure responsive device 48 operates in the above manner, there will be no further increase in the pressure of the fluid in the reservoir 12 by way of valve 30. Fluid under pressure in the conduit 50 flows to the reservoir 13 and therefrom to supply fluid pressure to the conduit 15, the reservoir 14 and the conduit 16.

As the compressor 10 continues to operate, the pressure of the fluid in the reservoirs 13 and 14 is increased, and, when the same is slightly greater in value than the pressure of the fluid in the reservoir 12, the valve device 39 is caused to operate to allow the flow of fluid under pressure from the reservoir 14 to the reservoir 12 through conduits 16 and 17. Further operation of the compressor will increase the pressure of the fluid in the reservoirs 12, 13 and 14 by way of conduit 50, the differential pressure action of the valve device 30 preventing the flow of fluid under pressure to the reservoir 12 through the conduit 29.

When fluid under pressure in the reservoir 12 is utilized for a brake application, the supply thereto will always be through the reservoirs 13 and 14, if the pressure of the fluid in the discharge conduit 28 is above a predetermined value which is necessary to maintain a fluid connection between the conduits 49 and 53. Since the valve device 30 operates to maintain a differential between the pressures of the fluid in the reservoir 12 and in the conduit 29, the flow of fluid pressure to the reservoir 12, by way of the

conduit 29, will be prevented because the pressure of the fluid is equal throughout the system after such predetermined pressure is present therein. Therefore, when the pressure of the fluid discharged from the compressor 10 is above a predetermined value, such fluid pressure is supplied to the brake valve 19 through a plurality of reservoirs arranged in series relation, whereby the moisture in the fluid, present therein when the pressure of the fluid is high, is condensed therefrom when flowing through the series of reservoirs.

As discussed heretofore, means are provided by the present invention for automatically isolating a source of fluid under pressure from the system in the event that some connections therein might rupture. The valve devices 30 and 39 are so positioned with respect to the reservoir 12, and are so constructed that, if a rupture occurs in any part of the system that supplies fluid under pressure to these valve devices, they automatically operate to prevent the flow of fluid under pressure from the reservoir 12 through such rupture. Therefore, a source of fluid under pressure is retained that may be utilized for applying the vehicle brakes.

Thus, the present invention provides a fluid pressure receiving system that may be utilized in connection with fluid pressure brake systems for automotive vehicles that includes means for supplying fluid under low pressure, during the initial operation of the compressor, directly from the compressor to a reservoir designed to retain a sufficient volume of fluid under a predetermined pressure to maintain an effective brake application. Means are also provided for supplying fluid at pressures above a predetermined value to the reservoir through a plurality of reservoirs connected in series therewith, and, at all times after the pressure of the fluid in the reservoir builds up to a predetermined value, fluid delivered to the brake valve has the moisture therein removed by condensation while flowing through the plurality of reservoirs. The present invention also provides automatic means for isolating a source of fluid under pressure for brake applying purposes if a rupture occurs in certain parts of the system.

While only one embodiment of the invention has been shown and described herein, it is to be understood that the invention is not limited thereto but may be embodied in various forms as will be understood by those skilled in the art, without departing from the spirit of the invention. Reference will, therefore, be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. In a fluid pressure system comprising a fluid compressor, a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid under pressure from said compressor to the first reservoir of said series during initial operation of said compressor, and means responsive to a predetermined pressure in said first means for thereafter supplying fluid under pressure to said one reservoir through another reservoir of said series.

2. In a fluid pressure system comprising a fluid compressor, a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid under pressure to one reservoir of said series during initial operation of said compressor, and means responsive to a predetermined pressure in said first means for supplying fluid under pres-

sure to said one reservoir through other reservoirs of said series.

3. In a fluid pressure system comprising a fluid compressor having a discharge conduit, a plurality of serially connected reservoirs adapted to receive fluid under pressure from said conduit, means for supplying one of said reservoirs with fluid under pressure when the pressure of the fluid in said conduit is between two predetermined limits, and means for supplying fluid under pressure to said one reservoir through another of said reservoirs when the pressure of the fluid in said conduit is above the higher of said limits.

4. In a fluid pressure system comprising a fluid compressor having a discharge conduit, a plurality of reservoirs adapted to receive fluid under pressure from said conduit, means for supplying one of said reservoirs with fluid under pressure, means responsive to a predetermined pressure in said conduit for supplying fluid under pressure to another of said reservoirs, and means for preventing the flow of fluid under pressure to said one reservoir from said conduit when the pressure of the fluid in said conduit is above said predetermined value.

5. In a fluid pressure system having a fluid compressor, a plurality of reservoirs, and a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid under pressure below a predetermined value directly from said compressor to one reservoir of said series, means positioned in the conduit between said one reservoir and the adjacent reservoir of said series for preventing the flow of fluid under pressure from said one reservoir to other reservoirs of said series, and means for supplying fluid under pressure in excess of said predetermined value directly from said compressor to another reservoir of said series whereby said one reservoir is supplied with fluid under pressure above said predetermined value through said other reservoirs.

6. In a fluid pressure system comprising a fluid compressor, a plurality of reservoirs, and a plurality of conduits connecting said reservoirs in series relation, a conduit connecting the compressor to a reservoir positioned at one end of said series, a second conduit connecting said compressor to another reservoir positioned at the other end of said series, means for preventing the flow of fluid under pressure from the first named reservoir to the other reservoirs of said series, means in said second conduit for normally preventing the flow of fluid under pressure to said second named reservoir, and means responsive to a predetermined pressure in said conduit for operating the last named means for supplying fluid under pressure above a predetermined value to said second named reservoir whereby said first named reservoir is supplied with fluid under pressure above a predetermined value through the other reservoirs of said series.

7. In a fluid pressure system comprising a fluid compressor, a plurality of reservoirs, and a plurality of conduits connecting said reservoirs in series relation, a conduit connecting the compressor to a reservoir positioned at one end of said series, a second conduit connecting said compressor to another reservoir positioned at the other end of said series, means for preventing the flow of fluid under pressure from the first named reservoir to the other reservoirs of said series, means for supplying fluid under pressure below a predetermined value to said first

named reservoir, and means responsive to said predetermined value for supplying fluid under pressure to said second named reservoir whereby said first named reservoir is supplied with fluid under pressure above said predetermined value through the other reservoirs of said series.

8. In a fluid pressure system comprising a plurality of reservoirs and a plurality of conduits connecting said reservoirs in a series circuit, a fluid compressor, means connecting said compressor to said circuit for supplying fluid under pressure to each reservoir positioned at the ends of said series, means positioned in the conduit connecting one of said end reservoirs to the adjacent reservoir for preventing the flow of fluid under pressure from said one reservoir to other reservoirs of said series, means for normally closing the fluid connection between the compressor and the other of said end reservoirs and means responsive to a predetermined pressure in said first means for operating the last named means to allow the flow of fluid under pressure to said other end reservoir whereby said one reservoir is supplied with fluid under pressures below said predetermined pressure directly from the compressor and is supplied with fluid under pressures above said predetermined pressure through said other reservoirs.

9. In a fluid pressure system comprising a fluid compressor having a discharge conduit, a plurality of reservoirs, a conduit forming a fluid connection between said discharge conduit and one of said reservoirs, a second conduit forming a fluid connection between said discharge conduit and another of said reservoirs, means for allowing the flow of fluid pressure from said second named reservoir to said one reservoir, means positioned in said second conduit for normally closing the fluid connection to said second named reservoir, said last named means being responsive to a predetermined pressure of the fluid in said discharge conduit for opening the fluid connection to said second named reservoir whereby said one reservoir is supplied with fluid under pressures below said predetermined pressure and is supplied with fluid under pressures above said predetermined pressure through said second named reservoir.

10. In a fluid pressure system comprising a fluid compressor having a discharge conduit, a plurality of reservoirs, a conduit forming a fluid connection between said discharge conduit and one of said reservoirs, means in said conduit for normally closing the fluid connection to said one reservoir, said means responsive to a predetermined pressure of the fluid in said discharge conduit for opening said fluid connection, a second conduit forming a fluid connection between said discharge conduit and another of said reservoirs, means in said second conduit for normally closing the fluid connection to said second named reservoir, the last named means being responsive to a second predetermined pressure of the fluid in said discharge conduit, greater than said predetermined pressure, for opening the fluid connection to said second named reservoir whereby said one reservoir is supplied with fluid under pressure when the pressure of the fluid in said discharge conduit is above a predetermined value and below a second predetermined value and said second named reservoir is supplied with fluid under pressure when the pressure of the fluid in said discharge conduit is above said second predetermined value.

11. In a fluid pressure system comprising a

fluid compressor, a plurality of reservoirs, and a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid under pressure to one reservoir of said series, means responsive to a predetermined pressure in said first means for supplying fluid under pressure to said one reservoir through other reservoirs of said series, and means for preventing the flow of fluid under pressure to said one reservoir through said first means when the fluid under pressure in the latter is above said predetermined value.

12. In a fluid pressure system comprising a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, and a fluid compressor having a discharge conduit, separate conduits connecting said discharge conduit to the first and the last reservoir of said series, means for normally preventing the flow of fluid under pressure from said discharge conduit to said last reservoir, means responsive to a predetermined pressure in said discharge conduit for operating said first means to allow the flow of fluid under pressure to said last reservoir, means for preventing the flow of fluid under pressure from said first reservoir to other reservoirs of said series, and means for maintaining the pressure of the fluid in said first reservoir less than the pressure of the fluid in said discharge conduit whereby said first reservoir is supplied with fluid under pressures below said predetermined pressure directly from said discharge conduit and is supplied with fluid under pressures above said predetermined pressure through said other reservoirs.

13. In a fluid pressure system comprising a fluid compressor, a plurality of reservoirs, and a plurality of conduits connecting said reservoirs in series relation, a conduit connecting the compressor to a reservoir positioned at one end of said series, a second conduit connecting the compressor to another reservoir positioned at the other end of said series, means responsive to a predetermined pressure in said first conduit for allowing the flow of fluid under pressure to said one reservoir, means in the conduit connecting said one reservoir to the adjacent reservoirs of said series for preventing the flow of fluid under pressure from said one reservoir to other reservoirs of said series, means in said second conduit for normally preventing the flow of fluid under pressure to said second named reservoir, and means responsive to a predetermined pressure in said first conduit greater than said first named predetermined pressure for operating the last named means to allow the flow of fluid under pressure to said second named reservoir whereby said one reservoir is supplied with fluid under pressure through the other reservoirs of said series when the pressure in the system reaches said second predetermined value.

14. In a fluid pressure system comprising a plurality of reservoirs, a plurality of conduits connecting the reservoirs in series relation, and a compressor having a discharge conduit, a conduit connecting said discharge conduit to the first reservoir of said series, a second conduit connecting said discharge conduit to the last reservoir of said series, means in said first conduit for maintaining a differential between the pressure of the fluid in said discharge conduit and in said first reservoir, means for preventing the flow of fluid under pressure from said first reservoir to other reservoirs of said series, means in said

second conduit for normally preventing the flow of fluid under pressure to said last reservoir, means responsive to a predetermined pressure of the fluid in said discharge conduit for operating the last named means to allow the flow of fluid under pressure to said last reservoir whereby said first reservoir is supplied with fluid under pressure above said predetermined value through said other reservoirs, said first named means preventing the flow of fluid under pressure to said first reservoir through said first conduit when the pressure of the fluid in said discharge conduit is above said predetermined value.

15. In combination with a fluid pressure system having a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, and a fluid compressor having a discharge conduit, separate conduits for supplying fluid under pressure from said discharge conduit to the first and the last reservoir of said series, means for normally preventing the flow of fluid under pressure to said last reservoir, means responsive to a predetermined pressure in said discharge conduit for operating said first means for allowing the flow of fluid under pressure to said last reservoir, means for preventing the flow of fluid under pressure from said first reservoir to other reservoirs of said series, and means for preventing the flow of fluid under pressure from said discharge conduit to said first reservoir when the pressure of the fluid in said discharge conduit is above said predetermined value.

16. In a fluid pressure system having a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid pressure below a predetermined value directly to one reservoir of said series, and means for supplying fluid pressure above said predetermined value to said one reservoir through the other reservoirs of said series.

17. In a fluid pressure system having a plurality of reservoirs, a plurality of conduits connecting said reservoirs in series relation, means for supplying fluid pressures below a predetermined value directly to one reservoir of said series, means for supplying fluid pressures above said predetermined value to another reservoir of said series, and means for preventing the flow of fluid pressure through the first means when the pressure of the fluid is above said predetermined value.

18. In a fluid pressure system having a pair of reservoirs, means for supplying fluid pressure directly to one of said reservoirs when the supply pressure is below a predetermined value, and means responsive to an increase in the supply pressure above said predetermined value for supplying fluid pressure to said one reservoir through said other reservoir.

19. In a fluid pressure system having a pair of reservoirs and a source of fluid pressure for supplying fluid to said reservoirs, means for supplying fluid pressure directly from the source to one of said reservoirs, means operable in response to a predetermined increase of pressure at the source for supplying fluid pressure to said one reservoir through the other reservoir, and means associated with said first named means for preventing the supply of fluid pressure directly to the first reservoir when fluid pressure is being supplied thereto through the second reservoir.

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