Aug. 4, 1959 T. B. WALKER ET AL 2,897,652

POWER OPERATED PRESSING MACHINES

Filed Sept. 17, 1956

3 Sheets-Sheet 1

FIG. 1.

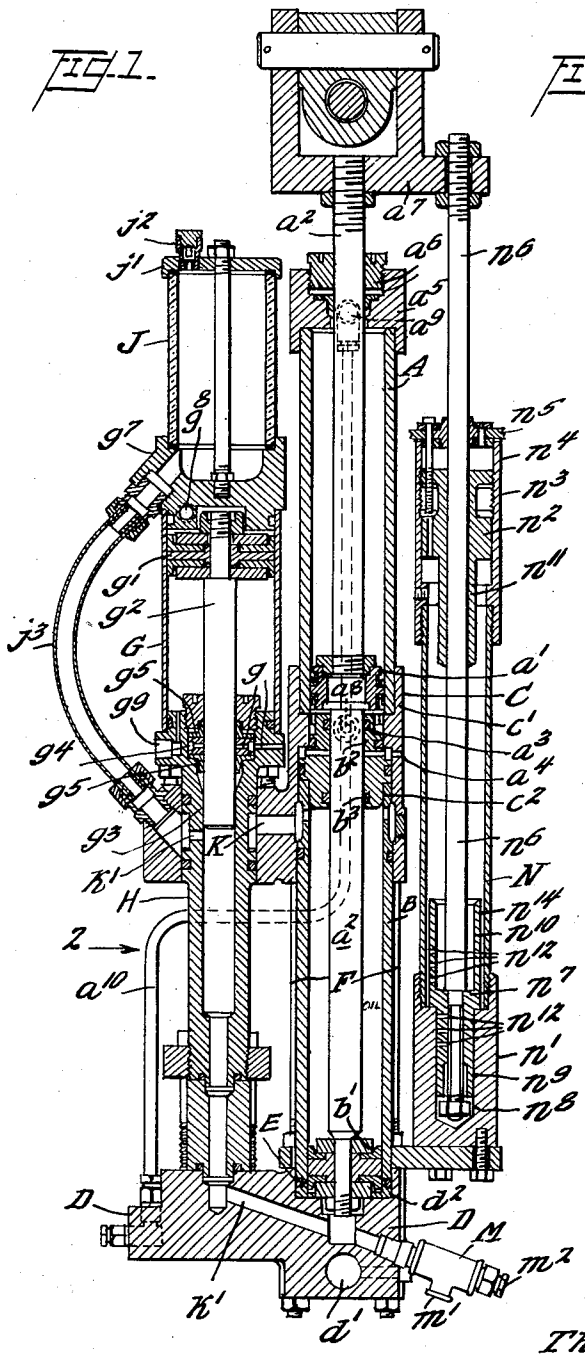
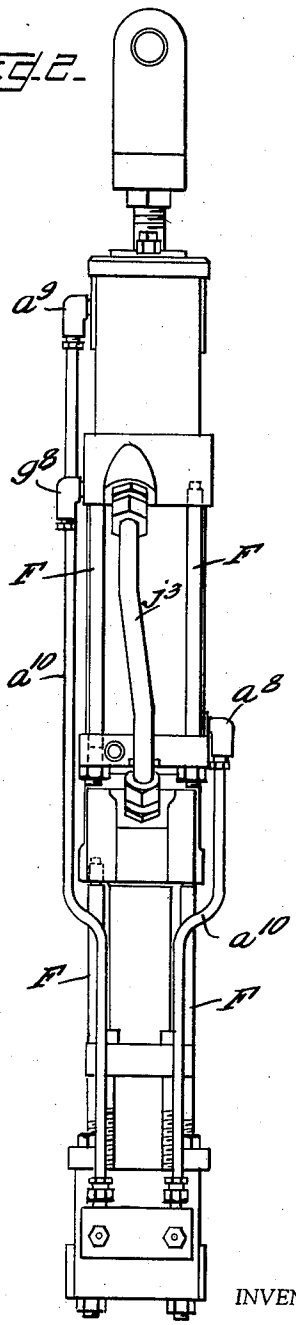


FIG. 2.



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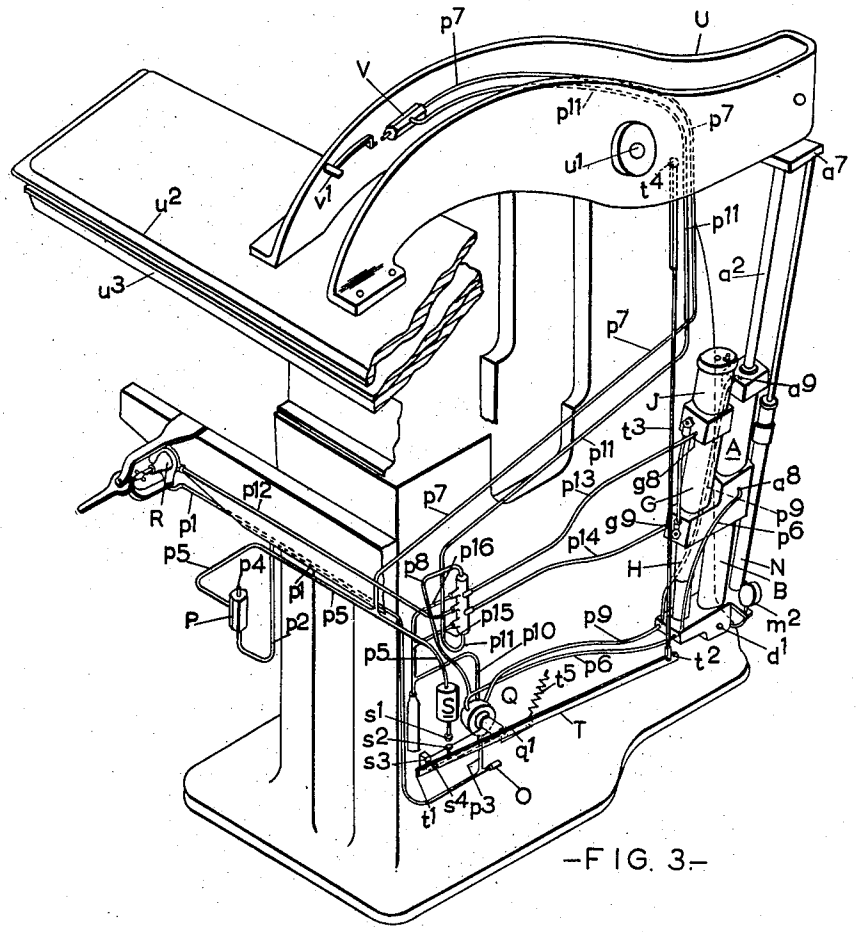
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POWER OPERATED PRESSING MACHINES

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-FIG. 3-

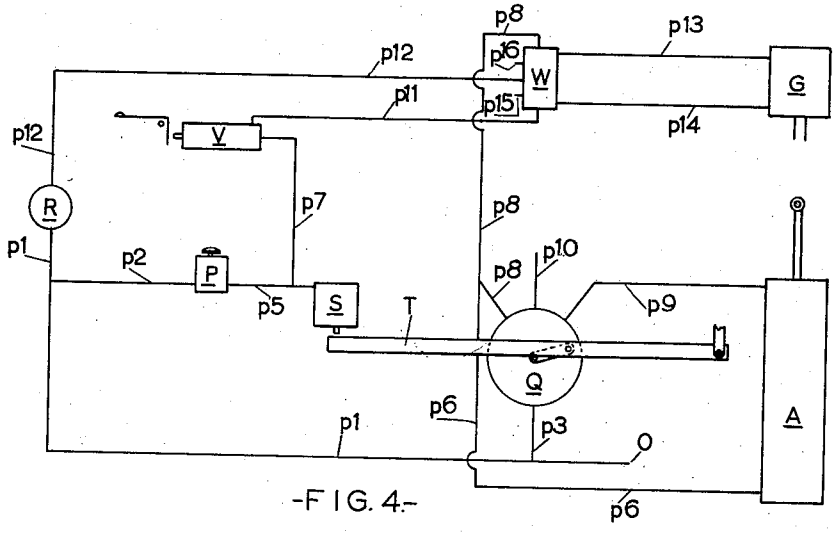
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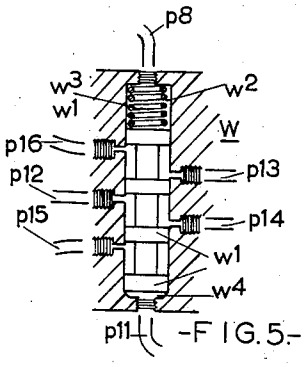
POWER OPERATED PRESSING MACHINES

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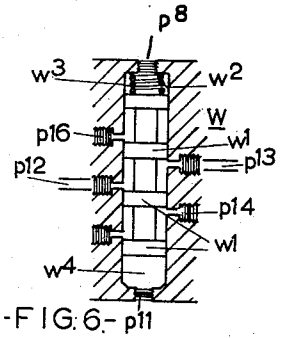
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-FIG. 4.-



-FIG. 5.-



-FIG. 6.-

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POWER OPERATED PRESSING MACHINES

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Application September 17, 1956, Serial No. 610,233

7 Claims. (Cl. 60—97)

This invention relates to improvements in fluid actuated power units for operating devices in which a relatively long movement necessitating a low pressure is first required followed by a short movement at a higher pressure.

A known form of unit for such purpose consists of a single cylinder having the required volume to give the large movement while the pressure of the fluid is relatively low, the pressure of the fluid then being increased to give the required high pressure. In such case if the fluid is elastic such as air, this necessitates the relatively large volume of the cylinder being charged with air at high pressure which is not economical since the fluid used is the same as that required to move the piston through the whole distance at high pressure.

To overcome this uneconomical use of fluids under pressure, power units have been proposed making use of two cylinders, one of relatively large capacity to effect the first movement under low pressure and the other of relatively small capacity to apply the final pressure.

According to the present invention two pairs of cylinders are provided, one pair comprising a cylinder to which air is supplied at relatively low pressure to cause the piston therein to move through a relatively long distance and the second cylinder containing a fluid (usually oil). The pistons of these two cylinders are so mechanically coupled that they move in sympathy with one another and can be in tandem. The oil in the second cylinder is in a closed circuit connecting the two ends of the oil cylinder and including a reservoir and expansion chamber which permits the oil in the oil cylinder to be transmitted from one side of its piston to the other when this piston is moved in sympathy with the piston in the air cylinder.

The second pair of cylinders comprise an air cylinder of relatively large diameter and short stroke, and an oil cylinder of smaller diameter, the pistons of these pair of cylinders being preferably connected in tandem. Air pressure applied to one side of the piston in the air cylinder causes movement to the piston in the oil cylinder. The movement of this piston in the oil cylinder first interrupts the circuit connecting the two ends of the oil cylinder of the first pair of cylinders and further movement intensifies the oil pressure acting on one side of the piston in the first cylinder and the oil cylinder, in the second pair of cylinders. At the end of the pressing operation the oil pressure is relieved in the oil cylinder of the first pair of cylinders by admitting air pressure to the opposite side of the piston in the air cylinder of the second pair and so retracting the piston of its associated oil cylinder and to reopen the circuit connecting the two ends of the first oil cylinder, so that when air pressure is admitted to its associated air cylinder to reopen the

press, the oil is transferred from one side of the piston in the oil cylinder to the other side.

The invention is particularly applicable for the operating of pressing machines including presses of the type used in laundry, dry-cleaning and clothing establishments.

When the unit is applied to a press having an upper pressing surface or head carried on a lever which pivots about a fixed fulcrum and it is desired that the movement of the head should be through a large angle to a position adjacent to the lower pressing surface or buck and then to apply considerable pressure between the head and the buck, the air cylinder of the first pair of cylinders is first operated to bring the pressing head into a position adjacent to the buck and the final pressure applied to the article on the buck by the operation of the second air cylinder.

The invention is illustrated in and will be described with reference to the accompanying drawings, in which:

Fig. 1 is a sectional elevation of the power unit,

Fig. 2 is an end elevation thereof in direction of arrow 2 Fig. 1,

Fig. 3 is a perspective view showing the power unit fitted to a pressing machine of the type having a stationary lower surface to receive the work and an upper moveable pressing surface or head carried on a lever which pivots about a fixed fulcrum, suitable control mechanism being also shown,

Fig. 4 is a diagram of the connections and pipes of the control mechanism shown in Fig. 3,

Fig. 5 is a vertical section of a four-way distribution valve employed with the control mechanism, the sliding member of the valve being in its lower position, and

Fig. 6 is a similar section of the valve with the sliding member in its upper position.

Referring to Figs. 1 and 2, an air cylinder A and an oil cylinder B are disposed vertically, or substantially so, one above the other. The piston a^1 in the air cylinder A and the piston b^1 in the oil cylinder B are secured to a common rod a^2 and consequently these pistons move in their respective cylinders in sympathy with one another. A cylinder cover b^2 common to the air cylinder A and the oil cylinder B is disposed between the two cylinders. The cover b^2 is fitted with suitable packing means a^3 and b^3 to prevent air passing from the air cylinder A to the oil cylinder B, or conversely oil from the cylinder B to the cylinder A. A vent hole a^4 is drilled in the cover b^2 and in the sleeve on casting C to enable any leakage which might take place to be detected.

At the top of the cylinder A is fitted a cover a^5 provided with a suitable gland packing a^6 through which the piston rod a^2 passes. To the upper end of the piston rod a^2 is secured a crosshead a^7 or other fitting suitable to couple to the part of the machine to be actuated.

At the bottom of the oil cylinder B is a cover D in which a circular hole d^1 is formed to provide pivotal means to secure the assembly to the rigid frame of the machine. Recesses c^1 and c^2 are formed in the casting or sleeve C to receive the adjacent ends of the cylinders A and B in the cover D; a recess d^2 is formed to receive the lower end of oil cylinder B. O rings E or other suitable packing means are provided between the cylinder B and the walls of the recess to prevent leakage of oil.

The cylinders A and B are rigidly secured together and in the recesses of the sleeve C and cover D by means of the clamping screws F.

Two further cylinders, an air cylinder G and an oil cylinder H, are arranged at one side of the cylinders A

and B. The piston g^1 in the cylinder G is secured to a rod g^2 which is extended to enter the cylinder H at g^3 to form a piston or ram therein so that the two pistons move in sympathy with one another. The cylinders G and H are shown parallel to the common axis of the cylinders A and B and in the working position the axis is substantially vertical but it is to be understood that the position of the cylinders G and H is not restricted to that shown in the figures but that the common axis of these cylinders may be disposed at right angles or other convenient angle to the axis of the cylinders A and B. Similarly the axis of cylinders A and B is not restricted to a substantially vertical position.

A common cover g^4 is arranged between the cylinders G and H provided with suitable packing means g^5 to prevent leakage between the two cylinders. An oil vessel J is provided to form a breathing chamber and to allow for expansion of the oil in the cylinder H. The vessel J is shown in Figs. 1, 2 and 3 attached to the cover g^7 of the cylinder G but if more convenient it may be independent thereof. The cover j^1 of the vessel J is provided with a vent j^2.

Ports K and K^1 are provided between cylinders B and H to allow the oil in cylinder B to move freely from one side of piston b^1 to the other side while the piston g^3 is in the "out" position shown in Fig. 1. As the piston g^3 moves towards the "in" position, the port k^1 is closed by the rod g^2 and oil above the piston b^1 can be displaced freely in to the vessel J through the port K and the pipe connection j^3.

In the arrangement shown in the figures the pair of cylinders A and B and the pair of cylinders G and H are secured in their relative positions by the members D and C which form respectively the cover of the cylinder B and the sleeve to which the adjacent ends of the cylinder A and B are secured. The bottom of the cylinder H is connected to the bottom of the cylinder B by a passage K^1 in the member D. The unit may be drained also through this passage K^1 by extending it as shown to the side of the member and providing a T fitting M at the outer end of the passage, the T fitting having a controlled outlet at m^1 and means m^2 for attaching a pressure gauge thereto.

In such arrangement it is convenient to form the ports K and k^1 in these members. If it is desired to dispose the pairs of cylinders to other relative positions more suitable to a particular application, the ports K and k^1 may be replaced by pipe connections.

The unit can be charged with oil through the vessel J to a convenient free surface level j^4.

A controlled air supply is connected through the pipes a^{10} to the cylinder A at a^8 below the piston a^1 and at a^9 above the piston a^1. The air supply is also connected to the cylinder G at g^8 above the piston g^1 and at g^9 below the piston g^1.

To operate the unit, air under pressure is admitted to cylinder A at a^8 below the piston a^1 thereby causing the piston rod a^2 to move outwardly carrying with it the attached crosshead a^7. The crosshead a^7 being connected to the movable member by suitable mechanical means causes the latter to move through a relatively long distance to a position adjacent to a stationary member. During the time that the piston a^1 is traversing outwardly the piston b^1 in cylinder B is moving in sympathy and oil is transferred from above piston b^1 to below it by way of the port K, the cylinder H and the passage K^1.

Air under pressure can then by means of a suitable control be admitted to the cylinder G at g^8 above the piston g^1 thereby causing the piston g^1 to traverse cylinder G in direction towards cylinder H. As the rod g^2 moves in sympathy with the piston g^1 it first closes the port k^1 thus causing the oil in the cylinder H to be subjected to pressure, which pressure is transmitted to the cylinder B below the piston b^1, through the passage K^1. The oil thus displaced from the cylinder H to the cylinder B moves the piston b^1 and as the latter is rigidly connected to the crosshead a^7 this motion is transmitted to the movable member through the aforesaid mechanical means connecting the crosshead to the member. The movable member having been arrested adjacent to the fixed member, as previously described, the movement given to the piston b^1 by oil transferred from cylinder H to cylinder B will cause the movable member to be brought into intimate contact with the stationary member and will then exert a pressure between the members comparable with the pressure acting on the piston b^1.

The pressure in the cylinder B is higher than the pressure of the air supplied to cylinder G in the ratio of the area of the piston g^1 to the area of the piston g^3.

It will be understood from the foregoing description that the long movement of the movable member necessary to bring it adjacent to the stationary member is obtained by using air at relatively low pressure and the final pressure between the members is increased by the intensifying action of the difference in diameters of the pistons g^1 and g^3. The pressure between the members may be controlled by controlling the pressure of the air supply to the cylinder G through connection g^8. One method of controlling the air pressure to cylinder G is by means of a reducing valve with means of readily adjusting the pressure in the supply to the connection g^8.

To retract the movable member from the stationary member air is admitted to the cylinder G through the connection g^9 to the underside of the piston g^1, causing it to move in a direction away from cylinder H. As the piston g^3 moves in sympathy with the piston g^1 it will first relieve the pressure acting on piston b^1 and then uncover the port k^1, leaving a clear passage for oil to be transferred from below to above the piston b^1 through the ports K and k^1. Air can then be admitted to the cylinder A through the connection a^9 above the piston a^1 causing the piston a^1 to move inwardly, and acting through rod a^2 and crosshead a^7 to cause the movable member to retract from the fixed member to the fully open position.

A means is provided to react against the inertia of the moving parts and to bring them to rest, at the ends of the stroke of the power unit. Such means may consist of any known form of snubber or damper. The form shown in Fig. 1 consists of a cylindrical vessel N having a cover n^1 at the lower end which is secured to the member D whereby the cylinder N is held rigidly in relation to the cylinders A and B. The upper end of the cylinder N is closed by a cover n^2 held in position by a screwed socket n^3 which is extended upwards to carry an oil chamber n^4 which serves as a breathing chamber and is closed by the cover n^5. A rod n^6 extends downwards through the chamber n^4 into the cylinder N and carries at its lower end a piston n^7. The upper end of the rod n^6 is secured to the crosshead a^7 which operates the movable member. A cylinder n^8 is formed in the cover n^1 to receive a circular extension n^9 of the piston n^7 when the latter is at the lower end of its stroke. A cylinder n^{10} is also formed in the piston n^7. The cover n^2 has a cylindrical extension n^{11} which enters cylinder n^{10} of the piston n^7 when the piston is at the upper end of its stroke. Suitably sized vent holes n^{12} are drilled in piston n^7. The cylinder N is charged with a fluid suitable to perform the action of snubbing to some free surface level in the chamber n^4.

As the lower end of the cylinder N is secured relative to the lower ends of the cylinders A and B of the power unit and the rod n^6 is secured to the crosshead a^7 then piston n^7 will move in sympathy with the pistons a^1 and b^1 of the power unit. In operation, as the piston n^7 moves in a downward direction fluid is displaced freely from the underside of piston n^7 to the upper side thereof through the annular space n^{14} between the piston n^7 and the inside of the cylinder N. As the piston n^7 approaches the end of its downward stroke the extension n^9 of the piston n^7 enters the bored portion n^8 of the cover

n^1 and traps fluid therein. As the extension n^9 travels further into the bored portion n^8 the fluid is brought under pressure which reacts against the moving parts to bring them to rest. In order that the moving parts may be brought to rest smoothly the sizes of the vent holes n^{12} are suitably graduated to slow down the rate of escape of fluid from the cylinder n^8. When the piston n^7 moves in an upward direction the extension n^{11} of the cover n^2 will enter the cylindrically bored portion n^{10} of piston n^7 and the movement of the parts will be gradually arrested in a similar manner.

It is to be understood that the form of snubber employed is not restricted to that described and shown in Fig. 1. Although experience has shown that there are certain advantages to be obtained by fitting an independent snubbing device, which allows a wider choice of fluid suitable for that purpose, the arrangement described might be incorporated in the air or the oil cylinders of the power unit by making either the piston in the air cylinder or the piston in the oil cylinder similar to the piston n^7 and fitting covers similar to covers n^1 and n^2 to the appropriate cylinder.

Referring now to Fig. 3 pressure air is connected to the pressing machine at O and is conveyed to a reducing valve R by the pipe p^1 and by branches p^2 and p^3 from the pipe p^1 to the valves P and Q. The valve P is controlled by a push button p^4 and when this button is depressed air is allowed to pass through the valve P from the pipe p^2 to the pipe p^5 thus conveying pressure to the top of the air ram S causing the ram s^1 to descend and contact an adjustable screw s^2 attached to a lever s^3. The lever s^3 is thus moved in a downward direction and by its connection to a rod T by a screw s^4 the end t^1 of the rod T is caused to move downwards and operate a lever q^1 of a rotary valve Q which may be of the same construction and operation as described in the specification of our application 6,237/51.

The operation of the lever q^1 causes the rotary member of the valve Q to uncover ports in the valve body to allow pressure-air to pass through the valve Q from the pipe p^3 to the pipes p^6 and p^8 and air in the pipe p^9 to pass through the valve Q to atmosphere through the pipe p^{10}. Depression of the button p^4 of the valve P thus causes pressure-air to be supplied through the pipe p^6 and connection a^8 to the cylinder A to the under side of the piston a^1 and connects the cylinder A above the piston a^1 to atmosphere through the connection a^9 and pipes p^9 *and* p^{10}. The piston a^1 under the influence of the pressure air moves in an upward direction and being connected to the lever U of the pressing machine through the rod a^2 and crosshead a^7 causes the lever U to turn about its fixed fulcrum u^1 thereby bringing the movable pressing surfaces u^2 of the pressing machine to a position adjacent to the fixed pressing surface u^3 thereof.

The end t^2 of the rod T is connected to the lever U by the link t^3 so that the end t^2 will move upwards in sympathy with the movement of the lever U and since the other end t^1 of the rod T is held in position by the ram S, the upward movement of the end t^2 of the rod T causes the valve Q to be restored to its neutral position and when the valve Q is in the neutral position pressure air is cut off from both ends of cylinder A and both ends are connected to atmosphere through the pipes p^6, p^9 and p^{10}.

The top of a valve W, the construction of which will be described later is connected to the pipe p^6 through a pipe p^8 so that the pressure of the air at the top of the valve W is always the same as that in the pipe p^6, that is, while pressure air is moving the piston a^1 in the cylinder A in an upward direction, pressure air is acting on the top of the valve W and when the piston a^1 comes to rest due to the valve Q being restored to its neutral position the pressure at the top of valve W will be that of the atmosphere.

When the push button p^4 of the valve P is in its normal position pressure air is shut off P, and the pressure of air in the pipe p^5 is atmospheric. When the push button p^4 is depressed pressure air passes through the valve P to the pipe p^5 and so to the pipe p^7 which is connected to valve V on the lever U. When the valve V is in its normal position connection between the pipes p^7 and p^{11} is closed, but when an operating lever v^1 is depressed, the valve is opened to connect the pipes p^7 with the pipe p^{11}. The pipe p^{11} connects the valve V with the bottom of the valve W.

The construction of the valve W is shown in detail in Figs. 5 and 6. The valve is shown in its normal position in Fig. 5 with the sliding member thereof held in its lower position by a spring w^2. The strength of the spring w^2 while being sufficient to maintain the sliding member in its lower position, normally, is not sufficient alone to resist upward movement of the sliding member w^1 against pressure air admitted to the underside of the valve through pipe p^{11}.

Air at a pressure controlled by the setting of reducing valve R is supplied to the valve W by a pipe p^{12} and a pipe p^{14} is connected to the cylinder G at g^9 below piston g^1, consequently air pressure is transmitted through valve W from the pipe p^{12} to the pipe p^{14} to the underside of piston g^1 to hold the end g^3 of the ram g^2 normally clear of port k^1.

The operation of the pressing machine will now be described with reference to the function of the several valves and also to certain features of the arrangement which are conducive to the safety of the operator.

It has already been described how the pressing surfaces u^2 and u^3 can be brought adjacent to one another by depressing the button p^4 of the valve P and that as the pressing surfaces assume this position the valve Q is restored to its neutral position by the link t^3 and lever T. With the valve Q in the neutral position the air on both sides of the piston a^1 in cylinder A is at atmospheric pressure, consequently no pressure is exerted between the pressing surfaces u^2 and u^3. If the manual pressure on the button p^4 is now released the rod T and the valve Q by the reaction of rod T on lever q^1 are restored to normal positions by the spring t^5 with the pressing machine in the open position.

As already described when the button p^4 of the valve P is in its free or normal position pressure-air is cut off from pipes p^5 and p^7, and consequently from valve V, the valve V therefore being inoperative unless the button p^4 is depressed.

Since the valve V must be manually operated to bring the surfaces u^2 and u^3 into pressure contact, the operator must employ both hands, one to operate the valve P and the other to operate the valve V before pressure can be applied between the pressing surfaces.

Further, when the button p^4 of the valve P is depressed to bring the pressing surfaces u^2 and u^3 adjacent to one another by admitting pressure air to the pipe p^6 through the valve Q, pressure air is also admitted through the pipe p^8 into the top w^3 of the valve W (see Fig. 5), this pressure assisted by the spring w^2 maintains the sliding member w^1 in its lower position. If under these conditions the valve V is opened to admit pressure air through the pipe p^{11} to the underside w^4 of the valve W the sliding member w^1 still remains in its lower position due to the additional force of the spring w^2 acting downwards and the lower position of the member w^1 will be maintained until the air pressure at the top w^2 is reduced. Pressure at the top of the valve W will be reduced when the pressing surfaces have been brought adjacent to one another and the valve Q has assumed its normal position as the pressure air at the top w^2 will then exhaust to atmosphere through pipe p^8, valve Q and pipe p^{10}. The sliding member w^1 of the valve W will be moved to its upper position by the pressure air at w^4 and pressure air from the pipe p^{12} will pass through the valve W and the pipe p^{13} to the top of the piston g^1 in the cylin-

der G, causing the piston g^1 to move downwards and the ram g^3 to close the port k^1 and subject the oil in the cylinder H to pressure which pressure is transmitted to the underside of the piston b^1 in the cylinder B causing the pressing surface u^2 to be brought into pressure contact with the surface u^3.

From the above it will be seen that the pressure cannot be applied at the pressing surface until the surfaces have first been brought adjacent to one another. This condition is further conducive to the safety to the operator and the more satisfactory operating of the pressing machine.

If the lever v^1 is now released the valve V returns to its normally closed position, trapping pressure air in the pipe p^{11} and below the moving part w^1 of the valve W. If pressure is then released on the push button p^4 the end t^1 of the rod T will be returned to its normal position for the pressing machine in its open position and the end w^2 of the valve W will still be open to atmosphere through the pipe p^8 and the valve Q and pressure air will be acting on the upper side of the piston a^1 in the cylinder A through the valve Q and pipe p^9. Pressure air above the piston a^1, however, can not move the piston a^1 in a downward direction due to the intensified oil pressure below the piston b^1 in the cylinder B, which pressure is maintained due to the air pressure acting on the upper side of the piston g^1 in the cylinder G.

To open the press the valve V is opened by depressing the lever v^1 and pressure air trapped in the pipe p^{11} and at the bottom w^4 of the valve W will escape to atmosphere through the valve P. The sliding member w^1 of the valve W will then be restored to its normal lower position (Fig. 5) by the spring w^2. The pipe p^{13} is thus opened to exhaust through the valve W to the pipe p^{16} and the pressure air pipe p^{12} through the valve W and pipe p^{14} to the under side of the piston g^1 in the cylinder G. As piston g^1 is thus moved upwards oil pressure is released under the piston b^1 and the port k^1 is uncovered. Pressure air above the piston a^1 will move the piston downwards, thus opening the pressing machine and the valve Q by the action of the rod T, link t^3 and lever q^1 is restored to its normal position.

We claim:

1. A fluid actuated power unit for operating a device in which a long movement requiring a relatively low pressure is first required to bring two members adjacent to one another but not in pressure contact, followed by a short movement necessitating a higher pressure to bring them into pressure contact, comprising a pair of cylinders in tandem, one cylinder being adapted to be connected to a source of fluid pressure and the other being adapted to contain a liquid, a piston in each cylinder, a common piston rod on which the pistons are mounted, the said piston rod being adapted to be connected to the member to be operated, a second pair of cylinders also in tandem, one cylinder being adapted to be connected to a source of fluid pressure and the other containing a liquid, a piston in each cylinder, a common piston rod on which the pistons are mounted, the area of the piston in the cylinder of said second pair connected to the source of fluid pressure being greater than the area of the piston in the associated liquid containing cylinder, a conduit between the liquid containing cylinders of the two pairs, means for admitting fluid under pressure to the fluid pressure cylinder of the first pair to give the long movement at a low pressure, and means for subsequently admitting fluid pressure to the fluid pressure cylinder of the second pair to cause the piston thereof to move and apply pressure to the liquid in its associated liquid cylinder, such liquid under pressure being transmitted through said conduit to the liquid containing cylinder of the first pair to act on the piston thereof and exert an increased pressure on the common piston rod, thereby giving a small movement of the latter at a higher pressure.

2. A fluid actuated power unit as in claim 1 comprising means for admitting fluid under pressure to the opposite side of the piston in the fluid pressure cylinder of the second pair to move the latter in the reverse direction, thereby relieving the pressure in the liquid containing cylinder of the second pair and consequently in the liquid containing cylinder of the first pair and also to the piston in the fluid pressure cylinder of the first pair to return it and the member connected thereto to its inoperative position so that the unit is double acting.

3. A fluid operated power unit as in claim 2 in combination with said member to be operated and separate means connected to said member for dampening the return stroke of said unit.

4. A fluid actuated power unit for operating devices in which a long movement requiring a relatively low pressure is first required to bring two members adjacent to one another but not in pressure contact, followed by a short movement necessitating a higher pressure to bring them into pressure contact comprising a pair of cylinders in tandem, one cylinder being adapted to be connected to a source of fluid pressure and the other being adapted to contain a liquid, a piston in each cylinder, a common piston rod on which the pistons are mounted, the said piston rod being adapted to be connected to the member to be operated, a second pair of cylinders also in tandem, one cylinder being adapted to be connected to a source of fluid pressure and the other containing a liquid, a piston in each cylinder, a common piston rod on which the pistons are mounted, the area of the piston in the cylinder of said second pair connected to the source of fluid pressure being greater than the area of the piston in the associated liquid containing cylinder, and a conduit between the liquid cylinders of the two pairs, means for admitting fluid under pressure to the fluid pressure cylinder of the first pair to give the long movement at a low pressure, means for admitting fluid under pressure to the fluid pressure cylinder of the second pair to cause the piston thereof to move and apply pressure to the liquid in the associated liquid containing cylinder, this pressure being transmitted through the conduit to the liquid in the liquid containing cylinder of the first pair to act on the piston thereof and exert an increased pressure on the common piston rod, thereby giving a small movement of the latter at a higher pressure, a further cylinder, a piston therein, a third piston rod on which the piston is mounted, means for connecting said third piston rod to the piston rod of the first pair of cylinders, the further cylinder containing a suitable fluid and the piston being a loose fit in the cylinder so that fluid may readily pass from one side thereof to the other during the greater part of its stroke, an extension on the piston in the further cylinder which extension, has a close fit in the end of the bore of the cylinder so that during the final movement of the piston in the further cylinder fluid will tend to be compressed in said end of the cylinder, and means forming a series of passages through the piston in the further cylinder which will allow the gradual passage of the fluid from one side of said piston to the other during this final movement, these passages being so arranged that the passage of the fluid is progressively decreased as said piston approaches the end of its stroke.

5. In combination with the power unit defined in claim 1 and wherein said device is a pressing machine of the type used in laundry and wherein one of said members is stationary and the other member is movable and is connected to the piston rod of the first pair of cylinders, valve means controlling the admission of fluid under pressure to the fluid pressure cylinder of said first pair of cylinders and subsequently to the fluid pressure cylinder of said second pair of cylinders, and manual means for actuating said valve means.

6. In the combination defined in claim 5, said valve means comprising a first manually operable valve for controlling the admission of fluid under pressure to the fluid pressure cylinder of said first pair of cylinders to

effect said long movement of said movable member of the device to a position adjacent said other member, a second manually operable valve, and means operable when said first and second valves are actuated at the same time for admitting fluid under pressure to the fluid pressure cylinder of the second pair of cylinders.

7. In the combination defined in claim 6, means providing a connection from said movable member to said valve means for cutting off the application of fluid pressure to the pressure cylinder of said first pair of cylinders at the end of said long movement of the movable member.

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