

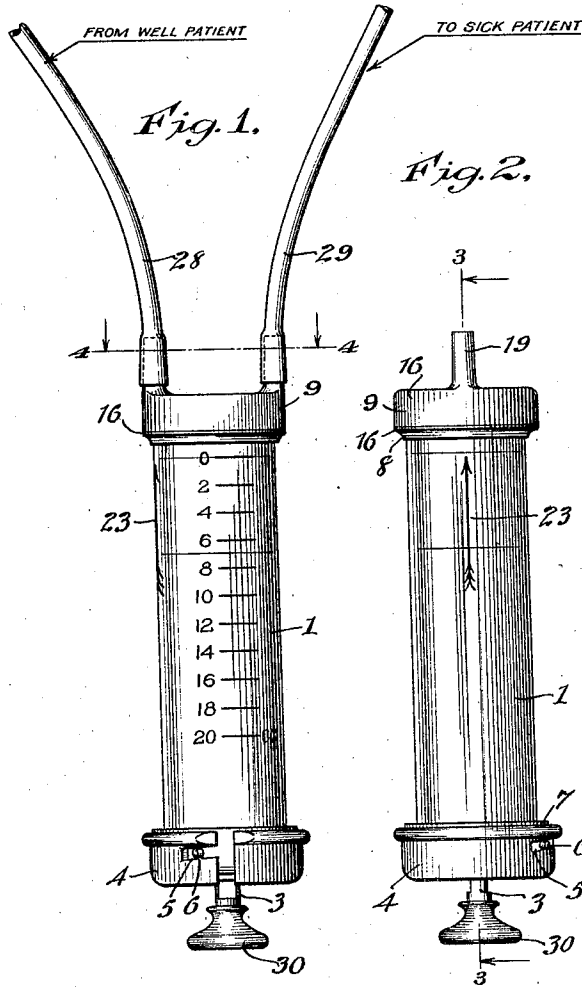
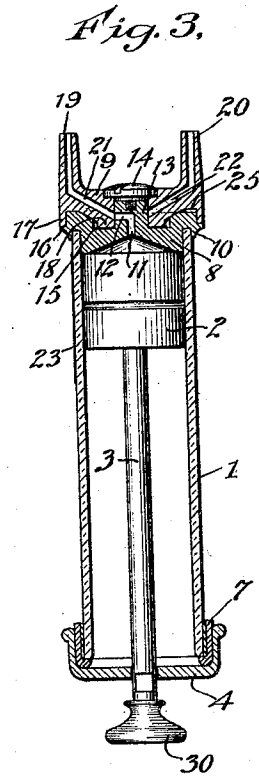
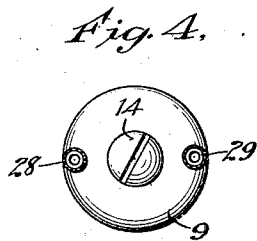
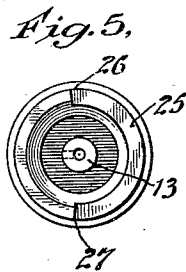
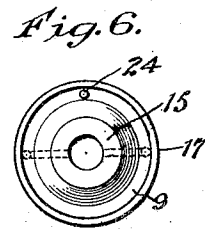
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SYRINGE OR PUMP

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WITNESSES

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SYRINGE OR PUMP.

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This invention relates to syringes or pumps adapted to be used for surgical purposes or for other purposes and has for an object to provide a construction wherein by an adjustment quickly made, the device may be caused to draw in a quantity of liquid through one opening and force the same out through another opening.

Another object of the invention is to provide a pump structure wherein means are provided for drawing in liquid from either of two sources and forcing the liquid out in either of two directions.

A still further object of the invention, more specifically, is to provide a pump for the transfusion of blood wherein means are provided for drawing in blood from one patient and forcing it into another patient, the arrangement being such that the direction of flow of blood is constantly indicated to the doctor so that proper action may be taken at all times.

In the accompanying drawing—

Figure 1 is a plan view of a syringe or pump embodying the invention, the same being shown associated with two tubes used in the transfusion of blood.

Figure 2 is a side elevation view of the pump shown in Figure 1.

Figure 3 is a longitudinal sectional view through Figure 2, approximately on line 3—3.

Figure 4 is a transverse sectional view through Figure 1, approximately on line 4—4.

Figure 5 is an end view of the pump after the adjusting cap or end has been removed.

Figure 6 is a plan view of the inner face of the cap or end member shown in Figure 3.

In providing instruments for the transfusion of blood, a pump or syringe structure must be provided for drawing the blood from one patient and then forcing the same into another patient. Many devices have been provided for accomplishing this and in order to perform the operation properly, various valves have been provided for permitting the blood to pass into the pump from the well patient and to cause the blood to pass from the pump to the sick patient. If these valves were not properly manipulated, a reverse action would take place and, consequently, injury would be done to both patients. The pump embodying the invention shows a simplified device for insuring the proper direction of flow of blood and for

easy manipulation of the various parts. Though the drawing illustrates a pump or syringe particularly adapted for the transfusion of blood, it will be evident that the pump might be used for other purposes without in any way departing from the spirit of the invention.

Referring to the accompanying drawing by numerals, 1 indicates the barrel of the pump, which barrel accommodates the piston 2. A piston rod 3 extends from piston 2 and loosely through the cap 4 removably positioned on one end of the barrel 1. The cap 4 may be held in place in any desired manner, as for instance, by having a bayonet slot 5 formed therein for accommodating pin 6 secured to the ring 7 cemented or otherwise rigidly secured to barrel 1.

At the opposite end of barrel 1 there is provided a permanent end member 8 and a removable adjustable end member or cap 9 which acts with end member 8 as a control valve or switch valve for switching the flow of fluid in different directions. The end member 8 is provided with an annular groove 10 which receives the end of barrel 1 where the parts are secured together by suitable adhesive or in any desired manner. The end 8 is provided with a centrally arranged passage-way 11 merging into a right-angle passage-way 12, said passage-way 12 extending to the outer surface of the cylindrical extension 13, which extension carries a retaining screw 14. The screw 14 is provided with a large head overlapping part of the cap or end member 9 so as to hold the end member 9 in place while permitting rotation thereof. It will also be noted from Figure 3 that end member 8 is provided with an annular depression 15 and an annular flange 16. The end member or cap 9 is provided with a depending flange 17 fitting against the flange 16 and with a depending portion 18 fitting into the groove 15 whereby it extends beyond the aperture 12. The end member 9 is provided with a pair of extensions 19 and 20, said extensions being hollow and the bore thereof merging into inclined passage-ways 21 and 22 adapted to be brought into registry at different times with the passage-way 12.

In order that an operator may readily observe at any time the position of the passage-way 12, an arrow 23 is positioned on the body 1 in line with the passage-way 12 so that when either of the hollow extensions 19

and 20 are opposite this passage-way, the arrow will point at the same as indicated in Figure 2. By this method, the operator may readily control the device to draw in liquid from either of the extensions and discharge the liquid through either of the extensions. In order that the end member 9 may be given a half turn so as to bring either of the passage-ways 20 and 21 into registry with the passage-way 20, a stop 24 which may be a pin, is carried by the end member 9 and operates in a cut-away portion 25 formed in the end member 8. From Figure 5 it will be noted that the cut-away portion 25 is limited by the shoulders 26 and 27 which makes the cut-away portion 25 slightly more than 180°. This additional distance is to take care of the thickness of the stop 24 so that a substantially exact registry of ports may be always secured. Connected to the hollow projections 19 and 20 are pipes or tubes 28 and 29, said pipes or tubes being adapted to extend to two patients when the device is being used for the transfusion of blood or to other places where the device is used for some other purpose.

When the parts are in the position shown in Figures 1 and 3, the piston 2 may move toward end 4 and when this is done, a rarefaction will be produced which will suck in fluid through the tube 28. When the desired quantity of fluid has been drawn in or when the piston has engaged the end 24, body 1 is rotated until arrow 23 comes opposite the extension 20. This will cause the passage-way 12 to register with the passage-way 22. When the parts have been re-positioned as just stated, the thumb member 30 is pressed and the piston moved back to the position shown in Figure 3. This movement will cause the blood or other fluid to pass out through the tube 29 to the desired discharge point. When this operation has been completed, body 1 is moved back to its former position, namely, to the position shown in Figure 3 and the operation is then repeated if desired. It will also be evident

that if desired, liquid could be drawn in through tube 29 and discharged through tube 28. Regardless of which tube acts as the discharge tube, the arrow 23 will continually indicate which of the passage-ways 21 and 22 are in registry with the passage-way 12 so that no mistake can be made in properly manipulating the device for causing the fluid to flow in the desired direction.

What I claim is:

1. A transfusion syringe, comprising a tubular body, a member fixedly secured to one end of the body and provided with a central cylindrical extension, a marginal flange, an annular groove surrounding the extension and an L-shaped passage having one member leading into the body and its other member leading out through the extension, a rotatable cap having a central opening receiving the cylindrical extension of the fixed member, a marginal flange engaging the marginal flange of the member, a depending portion fitting in the groove of said member, and two tubular extensions projecting from its outer face, the bore of the extensions merging into inclined passages adapted to be brought into register with the L-shaped passage of the fixed member, means for securing the cap on the extension of the said fixed member, and a piston in said body.

2. A transfusion syringe, comprising a tubular body, an end member fixedly secured to the body and having a central extension, and an L-shaped passage having one member leading into the body and the other leading out through the extension, a cap mounted to turn on the fixed member with the extension projecting therethrough and provided with two tubular extensions projecting from its outer face, the bores of the extensions terminating in inclined passages adapted to be brought in register with the L-shaped passage of the fixed member, a screw engaging the extension of the fixed member and securing the cap on the fixed member, and a piston in the body.

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