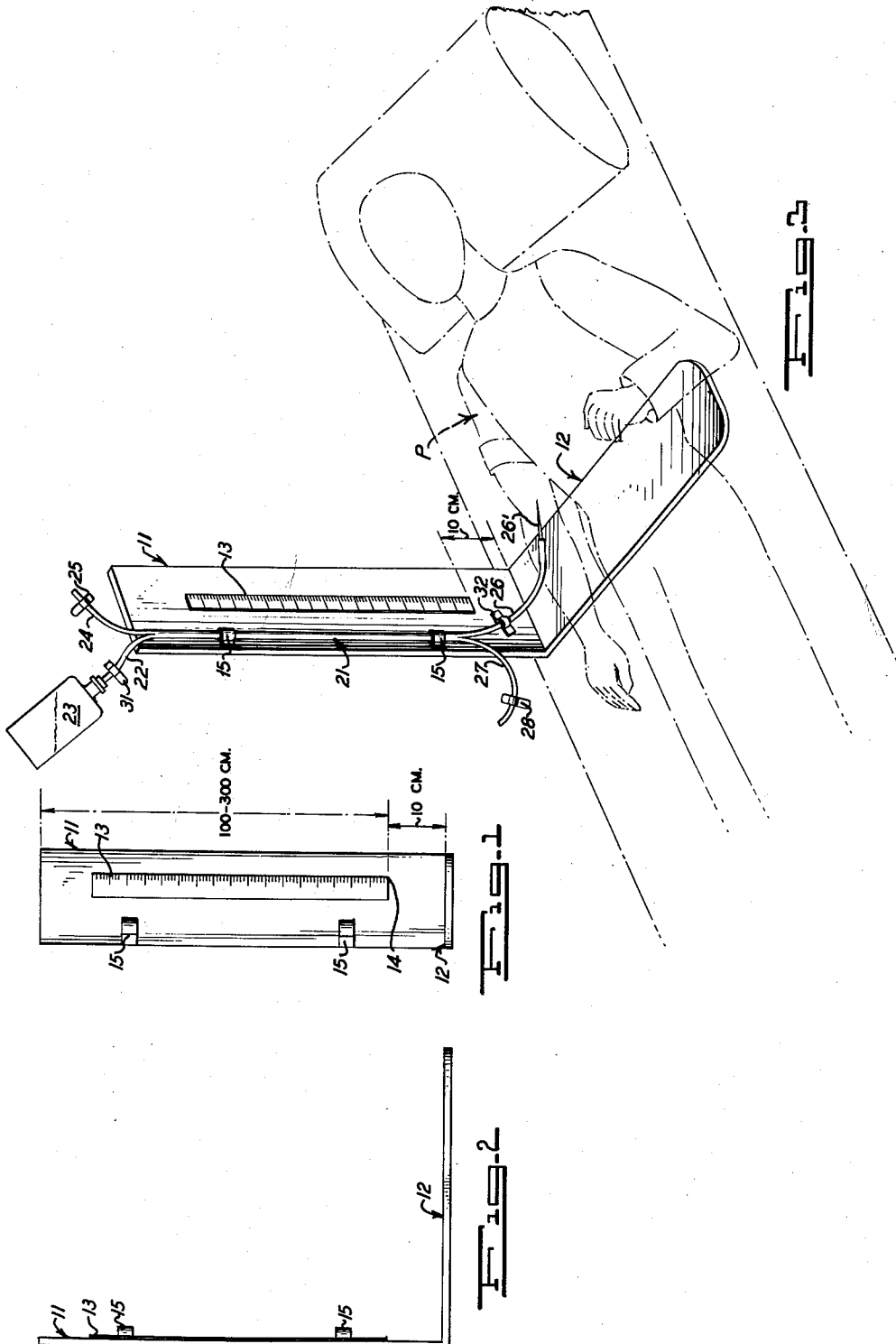


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INFUSION APPARATUS

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INFUSION APPARATUS

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This application is concerned broadly with support means useful in venous infusion procedures. More particularly, it is concerned with the combination of such support means with venous fluid transfer means adapted to allow measurement of venous blood pressure concurrently with venous infusion.

More particularly, it is concerned with such support means in combination with the venous fluid transfer means bifurcated at both ends as hereinafter described.

Heretofore in the course of venous infusion procedures when it has been desired to measure the venous blood pressure, it has been necessary to insert a second needle into the vein in order to obtain such pressure reading. This is a procedure which requires the presence of a doctor who routinely would not be in attendance during the entire venous infusion procedure but would necessarily have to be called in order to accomplish reading of the blood pressure after he had inserted the second needle. Obviously this is not alone disadvantageous in its requirement of a doctor, but also has the disadvantage of subjecting a patient to a second insertion of a needle.

The present invention provides an apparatus which enables the measurement of venous blood pressure without the insertion of a second needle into a vein so that this can be read by a technically trained person other than a doctor, for example, a nurse who is present during the venous fusion procedure.

The present invention in one embodiment is concerned with an L-shaped member having on its vertical leg a vertically disposed centimeter scale having its zero mark positioned 10 centimeters above the plane of the horizontal leg; said vertical leg being provided with support means adapted to position fluid transfer means alongside and parallel to said centimeter scale. In a further embodiment the present invention is concerned with a venous infusion apparatus in combination with a vertically disposed means adapted to be positioned with its bottom in the same horizontal plane as the back of a patient receiving a venous infusion, said support means being provided with a vertically disposed centimeter scale with its zero mark adapted to be positioned in a horizontal plane 10 centimeters above the back of said patient, such support means being provided with means adapted to position a fluid transfer means as below described relative to such centimeter scale and a fluid transfer means bifurcated at both ends; both upper forks being equipped with shut-off means and being adapted to receive venous infusion fluid and to provide communication with the atmosphere while the other said upper fork is receiving venous infusion fluid; both lower forks being equipped with shut-off means, one lower fork being adapted to deliver venous infusion fluid into a vein and the other lower fork being adapted to allow escape of any air flowing through said fluid transfer means.

FIG. 1 is a front elevational view of one embodiment of the support means of the present invention.

FIG. 2 is a side view of FIG. 1.

FIG. 3 illustrates the support means of the present invention in combination with a bifurcated fluid transfer means, both being positioned with respect to a patient receiving a venous infusion.

Referring to FIG. 1 there is shown the L-shaped member having a vertically disposed leg 11 and a horizontally disposed leg 12. On the vertical leg 11 there is shown a centimeter scale 13 which has its zero mark 14 disposed 10 centimeters above the horizontal leg 12. Also

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illustrated are two clips 15 adapted to receive the tubular fluid transfer means.

FIG. 2 illustrates the horizontal leg 12, the vertical leg 11, and the clips 15 are seen from the left side of FIG. 1.

Referring to FIG. 3 there is shown a patient P receiving a venous infusion. The vertically disposed leg 11 supports the centimeter scale 13. The horizontal leg 12 is below the body of the patient (shown in dot-dash line) receiving this infusion. Also illustrated is a bifurcated fluid transfer means 21 which is bifurcated at both its upper and lower ends. In this embodiment one of the upper forks 22 is shown attached to venous fluid container 23 and provided with clamp means 31. The other upper fork 24 is supplied with clamp means 25 and is adapted to communicate with the atmosphere when said clamp means is open. At the lower bifurcation one member 26 is provided with a needle 26' adapted to enter a vein and allow flow of venous infusion fluid thereto. The other bifurcated fork 27 is supplied with clamp means 28 which when open allows any air passing the lower bifurcation to escape through fork 27.

It will be realized that FIG. 3 is essentially a schematic illustration of a venous fluid transfer means and that many variations thereof utilizing such elements as a drip meter, a fluid element, a pump chamber with suitable check valves to allow rapid administration of the venous infusion fluid are capable of being utilized in the combination of the present invention.

Referring further to FIG. 3, the venous infusion procedure commences with insertion of the needle 26' attached to lower fork 26 into the vein of a person and opening of clamp 31 in fork 22 allowing fluid to flow. At this time clamps 25 and 28 are closed. The hydraulic head of the fluid from container 23 flows through transfer means 21 through the lower fork 26 and into the vein. When it is desired to utilize the combination of the present invention to measure venous pressure, clamp 31 is closed and clamp 25 is opened, allowing communication to the atmosphere. The venous fluid being infused will seek a level in fluid transfer means 21 dependent upon the venous blood pressure which can then be read on the centimeter scale 13. In order to resume infusion of the venous fluid clamp 25 closed, clamp 31 is opened as is clamp 28. Conveniently fork 26 can be supplied with a clamp 32 which can be closed at this time and when the flow of fluid from container 23 through fork 22 through transfer means 21 has displaced through fork 27 the air which has entered through fork 24, clamp 28 can be closed, clamp 32 is opened and the infusion procedure resumed.

It will be seen that the present invention does not require the presence of a doctor to insert a second needle as the bifurcated fluid transfer means allows measurement of the venous pressure with the same needle as utilized for the venous infusion procedure.

It will be realized that the support means of the present invention is adapted to be utilized with a variety of venous fluid infusion equipments such as, for example, as described in U.S. Patent No. 2,730,097, by providing the tube through which it communicates directly with the needle with a bifurcation akin to that illustrated by the fork 27 in FIG. 3.

The venous fluid infusion equipment which can be utilized in the combination of the present invention can be made of translucent plastic materials which are capable of being sterilized and rendered non-pyrogenic such as for example certain polyethylenes and polyvinyl chlorides.

In view of the foregoing disclosures, variations and modifications thereof will be apparent to one skilled in the art, and it is intended to include within the invention all such variations and modifications except as do not come within the scope of the appended claims.

What is claimed is:

1. In a venous fluid infusion apparatus the combination of a vertically disposed support means adapted to be positioned with its bottom in the same horizontal plane as the back of a patient receiving a venous infusion, said support means being provided with a vertically disposed centimeter scale with its zero mark adapted to be positioned in a horizontal plane 10 centimeters above the back of said patient; said support means being provided with means adapted to position a fluid transfer means relative to said centimeter scale; and a fluid transfer means bifurcated at both ends; both upper ends being equipped with shut-off means and being adapted to receive venous infusion fluid and to provide communication with the atmosphere while one of the said upper ends is receiving venous infusion fluid; both lower ends being equipped with shut-off means, one of said lower ends being adapted to deliver venous infusion fluid into a vein and the other of said ends being adapted to allow escape of any air flowing through said fluid transfer means; said fluid transfer means being supported by said support means.

2. In a venous fluid infusion apparatus the combination of a vertically disposed support means adapted to be positioned with its horizontally disposed bottom in the same horizontal plane as the back of a patient receiving a venous infusion, said support means being provided with a

vertically disposed centimeter scale with its zero mark adapted to be positioned in a horizontal plane 10 centimeters above the back of said patient; said support means being provided with means adapted to position a fluid transfer means relative to said centimeter scale; and a fluid transfer means bifurcated at both ends; both upper ends being equipped with shut-off means and being adapted to receive venous infusion fluid and to provide communication with the atmosphere while one of the said upper ends is receiving venous infusion fluid; both lower ends being equipped with shut-off means, one of said lower ends being adapted to deliver venous infusion fluid into a vein and the other of said ends being adapted to allow escape of any air flowing through said fluid transfer means; said fluid transfer means being supported by said support means.

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