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G. J. THOMAS

2,393,576

SURGICAL APPARATUS

Filed March 25, 1943

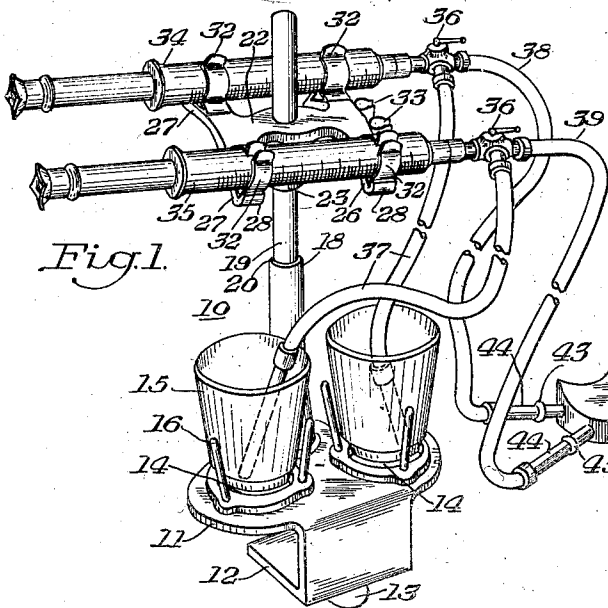


Fig. 1.

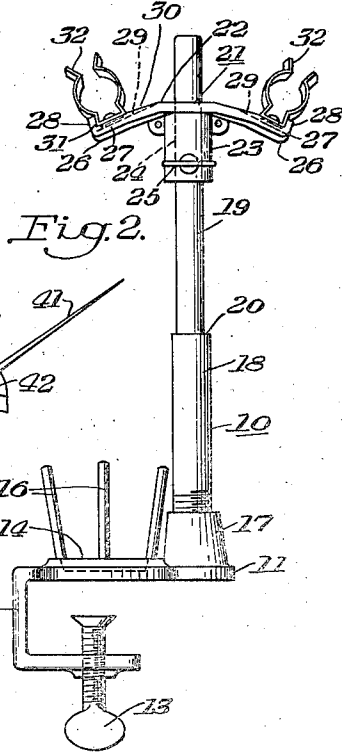


Fig. 2.

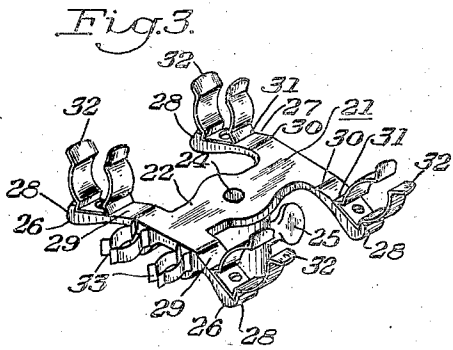


Fig. 3.

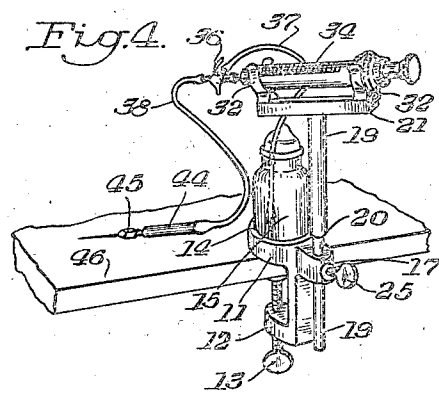


Fig. 4.

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SURGICAL APPARATUS

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1 Claim. (Cl. 128—214)

This invention relates generally to surgical apparatus and more specifically to apparatus for the injection of fluids into the body.

This invention is a continuation in part of application Serial No. 255,625, filed February 10, 1939, pursuant to which Letters Patent No. 2,322,753 issued June 29, 1943.

This apparatus may be advantageously applied for many surgical purposes, such as the intravenous injection of drugs and a normal salt solution to produce general anesthesia and resuscitation of a patient undergoing an operation or the injection of fluids for the treatment of patients.

The principal object of this invention is the provision of surgical apparatus for injecting a plurality of fluids into the body.

Another object is the provision of an improved surgical apparatus for injecting accurate quantities of a plurality of fluids into the body.

Another object is the provision of improved apparatus for supporting a syringe and a reservoir for surgical use in injecting fluids into the body and which permits continuous use without interruption.

Other objects together with their advantages appear in the following description and claim.

In the accompanying drawing two practical embodiments illustrating the principles of this invention are shown wherein:

Fig. 1 is a perspective view of the complete apparatus.

Fig. 2 is a side elevation of the stand.

Fig. 3 is a perspective view of the syringe supporting bracket.

Fig. 4 is a perspective view of a stand arranged to support a single syringe.

Referring to Figs. 1 and 2 of the drawing, 10 represents the supporting stand of the injection apparatus which is of prime importance in the operating technic thereof. This stand is preferably made of a metal, such as a chrome steel or chromium plated brass or other suitable material that may be highly polished and will withstand repeated sterilization without corrosion. It is also made strong and rugged to withstand rough treatment without injury to the more delicate parts of the apparatus which it supports. This stand comprises a base 11 having a table clamp 12 formed integral therewith and is provided with a thumb set screw 13 permitting it to be readily secured or removed from a surgical table which materially facilitates the handling of the apparatus.

The top surface of the base 11 may be provided

with one or more pockets 14 arranged to receive the base of the reservoirs or containers 15. A plurality of tapered holes are formed in the base and spaced in triangular relation about the pockets 14 for receiving the guard pins 16 therein. These pins are preferably driven in place and they guard against accidental dislodgment of the reservoirs.

On the side opposite to the clamp 12 the base is provided with an upstanding collar 17 having a threaded bore for receiving the threaded end of the stand post 18. This post is positioned on the opposite side of the base from the clamp 12 so that it is adjacent the patient to ward off any uncalculated blow or movement and thus protect the apparatus. It will be noted from Fig. 2 that this heavy post is considerably beyond the pockets 14 and it is well suited for this purpose.

The post 18 is provided with an upper section 19 of reduced diameter, forming the shoulder 20 which is located well above the reservoirs 15. Thus any bracket removably secured on the post 19, such as the syringe supporting bracket 21, upon becoming loose will slide down until it engages the shoulder 20 and thus prevent the apparatus carried by the bracket and the reservoirs from becoming broken or otherwise damaged by an impact therebetween.

The syringe supporting bracket 21 is H-shaped and the cross member 22 is provided with an integral depending cylindrical portion 23 having a hole 24 passing longitudinally therethrough to slidably receive the upper post 19 of the stand. A tapped hole is cut through the back of the wall of the cylindrical portion 23 adjacent the lower end thereof to receive the threaded set screw 25. The tapped hole in the portion 23 is preferably adjacent the lower end of the latter and at the opposite side of the post 19 from the front of the bracket 21, the left in Fig. 1, and preferably the portion 23 fits the post 19 with sufficient looseness so that, when the screw 25 is tightened against the post, the bracket is tilted downwardly and forwardly, or to the left in Fig. 1. The front and rear arms 26 and 27 of the H-shaped bracket extend outwardly and downwardly with upturned flanges 28 on the ends thereof. The front arms 26 may be formed with a single bend as indicated at 29 to produce the downward projection, while the bends 30 in the rear arms 28 are preferably of less extent so that the sockets 32 carried by the front arms are at a lower elevation than the sockets 32 carried by the rear arms. Thus the syringes supported by the bracket 21 are given a definite in-

clination to the front to permit any air accidentally entrapped in the apparatus to collect in the back of the syringes.

A spring clip 32 is secured to each of the arms 26 and 27 and is held against turning by the upstanding flanges 28. Two smaller clips 33 are secured to the front edge of the front arms 26 for supporting the tubes or needles when not in use. The syringes 34 and 35 are preferably of the glass type having graduated barrels and glass plungers. A three way valve 36 is fitted on the end of each syringe. Each valve is provided with a tubular line 37 extending into its respective reservoir to supply the syringes with fluid. The tubular lines 38 and 39 connect the valves of the syringes 34 and 35 respectively with the hypodermic needle 40. After a generous supply of the fluids have been placed in the reservoirs and the tubular lines have been filled the apparatus is ready for use. It is preferable to employ the open or easily accessible type of reservoir so that they may be replenished from time to time without interrupting the process of the treatment.

The needle structure 40 comprises an ordinary tubular stem 41 having a puncturing tip on its outer end. The butt end of the needle is secured in a socket in the manifold 42. The butt end is connected by two passageways to sockets in the other end of the manifold into which the tubular hub structures 43 are fastened. The outer ends of the hub structures 43 are provided with sockets adapted to receive the ends of the glass nipples 44. They are also provided with heads for directly receiving the rubber tubes 38 and 39 which may be slipped thereover. As shown in Fig. 1 the tubular lines 38 and 39 are slipped over the ends of the glass nipples 44. Each of the parts making up this syringe support may be readily dismantled, cleaned and sterilized, which is an important factor in surgical apparatus.

In place of employing both syringes 34 and 35 it is sometimes desirable to use only one syringe for intermittent injections of a drug such as pentothal intravenously with a continuous supply of dextrose solution from an elevated reservoir through the single needle 40. The pressure required to inject the drug interrupts the supply of the solution from the elevated reservoir. In such instances a support for only one syringe is needed. Again triple injection may be employed by the use of spinal injection which is sometimes supplemented with the intravenous injection of pentothal and dextrose. The triple injection of these drugs requires the use of the double syringe support as shown in Figs. 1 to 3 and the needle 40.

The single syringe support shown in Fig. 4

is simplified and may be employed with the needle 40 for a double injection as previously described or with the single manifold needle shown at 45 in Fig. 4. The clamp 12 with the thumb screw 13 is secured to a portion 46 of an operating table. The base 11 is provided with a pocket or well 14 having a continuous wall for receiving the reservoir 15. In place of the rod 19 being stationary it is slidably adjustable through the collar 17 and may be fixed at any desired position by the thumb screw 25. A shoulder 20 on the rod 19 is for the purpose of limiting the downward movement of the bracket 21. The single bracket 21 is fixed to the top of the rod 19 in such a manner that it slopes downwardly to the forward end. Syringe clips 32 are secured to the top surface of the bracket 21 to hold the glass syringe 34 firmly while the operator manipulates the plunger extending beyond the rear end of the bracket. As previously described the front of the syringe is connected to the three way valve 36 which has one connection through the tube 37 to the reservoir 15 and another connection through the tube 38 to the glass nipple 44 that is connected to the needle 45. In all respects the single syringe support has the same features as the double support and is preferably employed when only one syringe is needed in the operation.

I claim:

In a support for a hypodermic syringe having its nipple end connected in an intravascular liquid injection circuit between a source of supply and the hollow needle through which the liquid is injected into the patient, the combination with a base arranged to be secured to a device which supports the patient closely adjacent to the hollow needle to provide a short connection in the liquid injection circuit between the nipple end of the hypodermic syringe and the hollow needle, a post rising from the base, of a bracket carried by the post, arms extending outwardly from a central portion of the bracket, clamping means carried by the arms and arranged to receive and firmly hold the hypodermic syringe while in its operative position in the liquid injection circuit, and one of said arms being lower relative to the central portion of the bracket than the other of said arms causing the clamping means to hold the hypodermic syringe inclined relative to a horizontal plane with the nipple end of the hypodermic syringe at the lowermost point to prevent air entrapped therein from being injected through the connection and the hollow needle to the patient.

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