April 16, 1929. C. S. THROGMORTON 1,709,046

SURGICAL APPLIANCE

Filed May 14, 1928 2 Sheets-Sheet 1

Fig. 1.

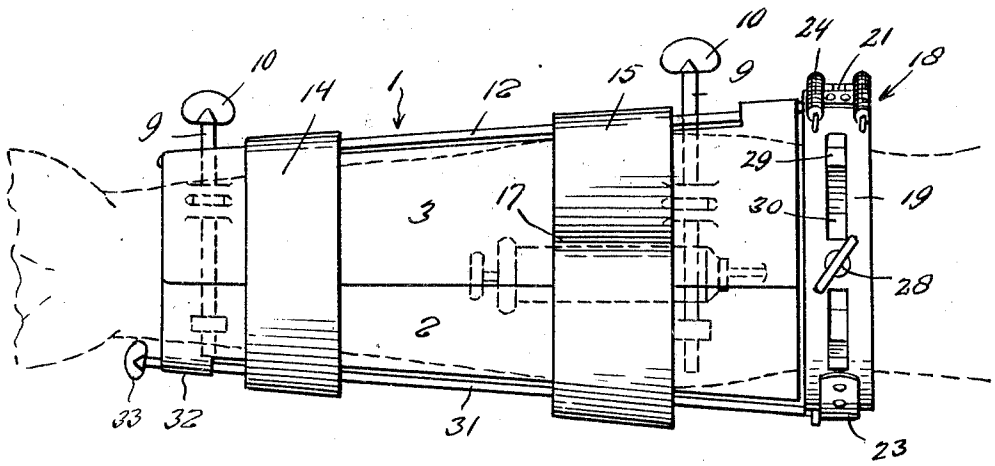


Fig. 2.

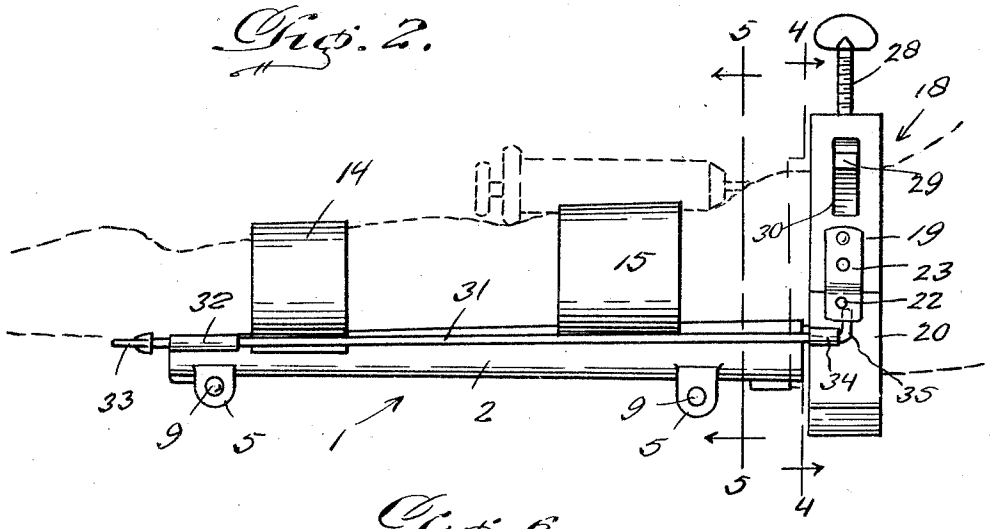
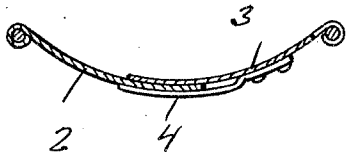


Fig. 6.



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Fig. 3.

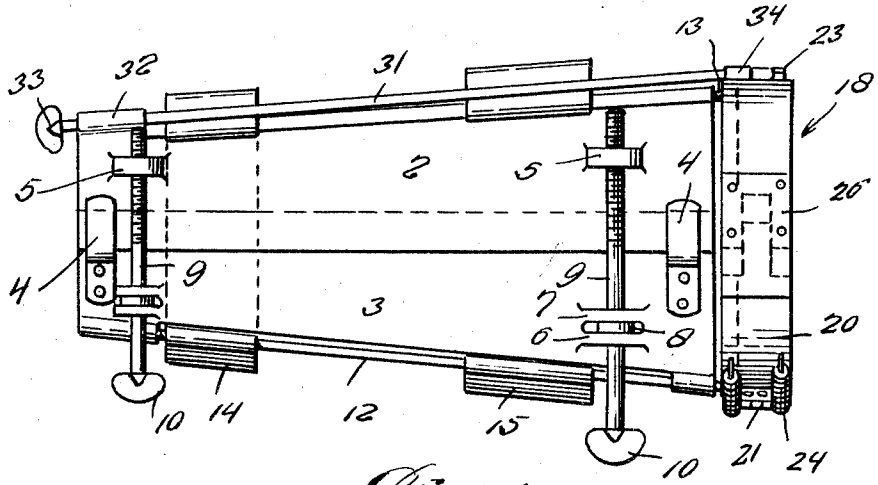


Fig. 4.

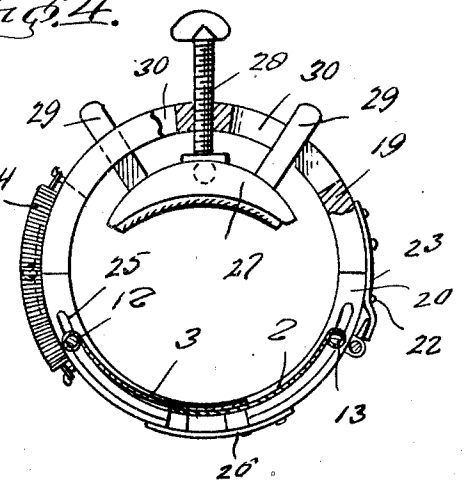
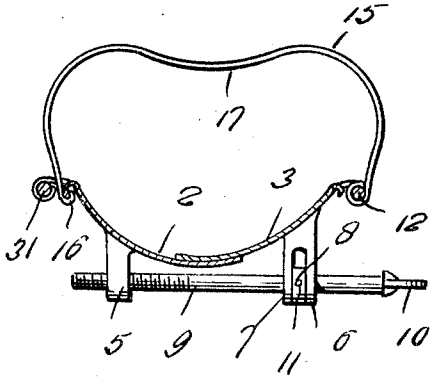


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SURGICAL APPLIANCE.

Application filed May 14, 1928. Serial No. 277,694.

The present invention relates to improvements in surgical appliances, and has reference more particularly to an appliance for attachment on the arm of a patient for use in intravenous injections into the veins.

One of the important objects of the present invention is to provide a surgical appliance of the above mentioned character, which includes a means for supporting the arm of the patient in a steady manner, additional means being associated with the appliance to provide a rest for the hypodermic needle used in injecting a serum into the veins.

A further object of the invention is to provide a surgical appliance that includes a tourniquet member that encircles the arm at a point above where the intravenous needle is to be inserted into the skin, means being provided for releasing the tourniquet member, upon the completion of the injection operation.

Still a further object is to provide a surgical appliance that includes a cradle or rest for the hypodermic needle or syringe used in injecting the serum into the veins.

A further object is to provide a surgical appliance of the above mentioned character, that can be readily and easily assembled or disassembled, the same being further capable of adjustment to enable the same to fit properly on different sizes of arms.

A further object is to provide a surgical appliance of the above mentioned character, which is simple in construction, inexpensive, strong and durable, and further well adapted to the purpose for which it is designed.

Other objects of the invention will become apparent as the nature of the invention proceeds and when taken in connection with the accompanying drawings.

In the accompanying drawings, forming a part of this application, and in which like numerals indicate like parts throughout the several views:

Figure 1 is a top plan view of the surgical appliance embodying my invention, showing the manner in which the same is secured on the arm of a patient.

Figure 2 is a side elevation thereof.

Figure 3 is a bottom plan view of the appliance.

Figure 4 is a sectional view, taken approximately on the line 4—4 of Figure 2, looking in the direction of the arrows.

Figure 5 is a similar section taken on the line 5—5 of Figure 2, looking in the opposite direction, and

Figure 6 is a transverse section through the complementary curved plates that constitute the arm support.

In the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates generally the arm support of my improved surgical appliance, the same including a pair of elongated plate like members 2 and 3 respectively. Each of the plates tapers gradually from one end to the other and furthermore, each plate is curved transversely throughout its entire length. The inner edge portions of these plates are adapted for disposition in overlapping relation as shown very clearly in Figures 5 and 6 of the drawings. A pair of spaced clips are secured on the under side of the inner edge portion of the plate 3, and the free ends of these clips are spaced with respect to the bottom edge portion of this plate 3, for receiving the inner edge portion of the complementary transversely curved plate 2, as shown very clearly in Figure 6.

These plates are adjustably secured together, so that said arm rest or support may be made wider or narrower, depending upon the size of the arm of the patient on which the appliance is to be attached, and the attaching means including a pair of apertured lugs 5 depending from the side of the plate 2, adjacent the respective ends thereof, and the apertures of these lugs are threaded. Formed on the bottom face of the plate 3, are the pairs of spaced apertured lugs 6 and 7 respectively, that depend downwardly, each pair of apertured lugs associated with the plate 3 being disposed in alignment with the respective apertured lugs that depend from the plate 2, as clearly indicated in Figure 3 of the drawings.

A collar 8 is adapted for disposition between each pair of apertured lugs 7 and extending through these apertured lugs and the collar is an elongated bolt 5, the inner threaded end thereof being threaded through the threaded aperture of the adjacent lug 5 that

depends from the bottom of the plate 2. A thumb engaging member 10 is formed on the outer end of each bolt to facilitate manual actuation thereof. A pin or the like, shown at 11, extends radially through the collar for engagement with the respective bolt, so that when the thumb engaging portion 10 is turned, the threaded end of the bolt will cooperate with the threaded lug to effect a sliding movement of the plate members in opposite directions. This construction provides a means for adjusting the plates away from or toward each other as is obvious from the construction shown in Figure 3.

The outer edges of the plates 2 and 3 are rolled, and a rod 12 extends through the rolled outer edge of the plate 3, and an additional rod 13 extends longitudinally in the rolled outer edge of the plate 2. As is shown more clearly in Figure 1, the intermediate portion of the outer edge of the plate 3 is cut away so that the intermediate portion of the rod 12 is exposed and hingedly secured at one end on this rod 12 are the sheet metal strap members 14 and 15 respectively, the same being arranged adjacent the respective ends of the arm support or rest 1. These strap members are capable of swinging movement over the curved plates, and the free ends of the straps are formed with upturned edges 16 that engage with the rolled outer edge of the plate 2, in the manner as shown more clearly in Figure 5. These straps encircle the arm of the patient and when attached to the outer edge of the plate 2, provide a means for positively clamping the appliance on the arm of the patient. The intermediate or crown portion of each strap member is slightly bent inwardly to form an arched rest piece 17, for a purpose to be presently described.

Forming a salient part of the present invention is the tourniquet member, designated generally by the number 18. This member comprises a segmental band, comprising the upper and lower semi-circular sections 19 and 20 respectively. These sections are secured together at one end by a hinge connection, shown at 21, the free ends of the sections being detachably secured together by a suitable fastening means that comprises a pin 22 projecting outwardly from the outer side of the lower section 20, a spring strip 23 being fixedly secured at its upper end at the outer face of the adjacent section 19, and the lower end of this spring strip extends downwardly for disposition over the outer face of the adjacent portion of the lower section 20 and this portion of the strip is formed with an opening to receive the pin 22, as shown very clearly in Figures 2 and 4 of the drawings.

A pair of retractile coil springs 24 extend across the hinged ends of the sections, the lower ends of the springs being secured to the lower sections, while the upper ends of these springs are connected to the upper sections and manifestly, when the sections are secured together at their free ends, the springs are placed under tension. The manner in which these springs cooperate to force the segmental tourniquet band to an open position will hereinafter be more fully described.

This tourniquet member is supported, at the rear end of the arm rest or support 1, and the lower section 20 is formed in its inner edge with the elongated groove or slot 25, to accommodate the rear edges of the plates 2 and 3, as well as the rear ends of the rods 12 and 13 respectively so that the tourniquet member will be properly supported on the rear end of the arm rest. In Figures 3 and 4, the lower section is shown as consisting of a pair of segments which are formed at their adjacent ends with a tongue and slot, and a plate 26 extends over this tongue and slot arrangement, the plate being secured to the under side of one of the segments.

A padded arcuate shaped constrictor head 27 is supported in the segmental tourniquet member for vertical adjustment, and an adjusting screw 28 is threaded through an opening provided therefor in the top of the upper section 19, the lower end of this thumb screw being swivelly connected to the head 27 as indicated in Figure 4.

To prevent rotation of the constrictor heads 27, I provide the upwardly diverging arms 29 that are connected at their lower ends to the upper face of the head 27, adjacent the respective ends thereof, and the upper ends of these arms project through the elongated slots 30 formed in the upper section 19 on opposite sides of the thumb screw 28, as also shown very clearly in Figure 4.

When the thumb screw 28 is turned in one direction, the head 27 moves downwardly to effect a congested condition of the blood vessel at a point above where the intravenous injection is to be made.

Also forming an important part of the present invention is the latch plate tripping means, and the same includes an elongated rod 31, that extends through suitable bearing portions 32, formed at the outer edge of the plate 3, at the ends thereof. This rod extends along the outer sides of the free end portions of the clamping straps 14 and 15. A thumb engaging member 33 is arranged on the forward end of this rod to facilitate turning thereof.

The rear end of the elongated rod 31 projects through a bearing 34, arranged on the outer face of the lower section 20, adjacent the free end thereof, and as clearly shown in Figure 2, the rear end of the rod is formed with a laterally disposed finger 35, that is disposed underneath the free end portion of the latch plate 23.

When the parts are arranged as shown in Figures 1 and 2 of the drawings, the surgical appliance is in position for use, so that an intravenous injection may be made into the

veins. The cradle 17 formed in the top portion of the band 15 will provide a rest for the hypodermic syringe, during the administration or injection of the serum, into the veins, and the arm support will tend to steady the arm of the patient and also the hand of the operator will be steadied.

After the intravenous injection operation has been completed, the operator turns the thumb engaging portion 33 in one direction, so that the finger 35 will force the free end of the swing plate 23, outwardly, out of engagement with the pin 22, and the retractile coil springs 24 will swing the upper section 19 of the tourniquet member upwardly, thus opening this member. The free ends of the arm encircling band may then be disengaged from the outer edge of the plate 2 to facilitate the removal of the appliance from the arm of the patient.

It will thus be seen from the foregoing description that I have provided a surgical appliance that is used for intravenous injections, and by reason of its simplicity, the appliance can be readily and easily adjusted, in order to properly attach the same on the arm of the patient. Furthermore, an appliance of the above mentioned character will be positive and efficient in carrying out the purpose for which it is designed.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to, without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, what I claim as new is:

1. In a surgical appliance of the class described, an arm support, a tourniquet member carried by the support, and a rest on said support for an instrument used in an intravenous injection.

2. In a surgical appliance of the class described, an arm support, a tourniquet member carried by the support at the inner end portion thereof, said tourniquet member including complementary sections hingedly secured together at one end, releasable latching means for connecting the free ends of said sections together, and means for automatically swinging the sections apart to an open position when the latching means is released.

3. In a surgical appliance of the class described, an arm support, a tourniquet member carried by the support at the inner end portion thereof, said tourniquet member including complementary sections hingedly secured together at one end, releasable latching means for connecting the free ends of said sections together, means for automatically swinging the sections apart to an open position when the latching means is released, said last mentioned means comprising a retractile coil spring extending across the hinged ends of the sections and connected at its ends to the respective sections, the spring being expanded when the sections are secured together.

4. In a surgical appliance of the class described, an arm rest, a tourniquet member carried by the inner end portion of said support, said tourniquet including a pair of semi-circular sections hingedly secured together at one end and adapted to encircle the arm of a patient, a pin extending laterally from the free end portion of one section, a spring latch plate carried by the free end of the other section and provided with an opening to receive said pin to secure said sections together in a closed position, means arranged on the support for disengaging the latch plate from the pin, and additional means for swinging the sections apart to an open position simultaneously with the disengagement of the latch plate with the pin.

5. In a surgical appliance of the class described, an arm rest, a tourniquet member carried by the inner end portion of said support, said tourniquet including a pair of semi-circular sections hingedly secured together at one end and adapted to encircle the arm of a patient, a pin extending laterally from the free end portion of one section, a spring latch plate carried by the free end of the other section and provided with an opening to receive said pin to secure said sections together in a closed position, means arranged on the support for disengaging the latch plate from the pin, an additional means for swinging the sections apart to an open position simultaneously with the disengagement of the latch plate with the pin, said first mentioned means comprising a rod journaled for rotation on the arm support, the inner end of said rod being formed with the laterally projecting finger that has engagement with the free end portion of the latch plate, and a member on the other end of the rod for turning the same to actuate said finger.

6. In a surgical appliance of the class described, an arm rest, a tourniquet member carried by the inner end portion of said support, said tourniquet including a pair of semi-circular sections hingedly secured together at one end and adapted to encircle the arm of a patient, a pin extending laterally from the free end portion of one section, a spring latch plate carried by the free end of the other section and provided with an opening to receive said pin to secure said sections together in a closed position, means arranged on the support for disengaging the latch plate from the pin, an additional means for swinging the sections apart to an open position simultaneously with the disengagement of the latch plate with the pin, said last mentioned means comprising a retractile coil spring disposed over the hinged ends of the sections, the ends of the spring being secured

to the respective sections, said spring being expanded when the sections are in a closed position.

7. In a surgical appliance of the class described, an arm support comprising a pair of elongated transversely curved plates, means adjustably securing the plates together at various widths, bands extending across the arm of the patient and secured to the outer edges of the plates, a tourniquet carried by the rear end portion of the arm support, the rearwardmost band being provided as a rest for a surgical instrument.

8. In a tourniquet, a member encircling band, a thumb screw threaded through said band, a radially movable constricting head carried by the inner end of the thumb screw, and cooperating means between the head and the band to prevent rotation of said head, said means including an arm extending outwardly from the head, the band being formed with a slot through which the outer end of the arm projects.

In testimony whereof I affix my signature.

CHARLES SCHOTTUS THROGMORTON.