

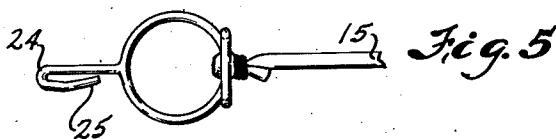
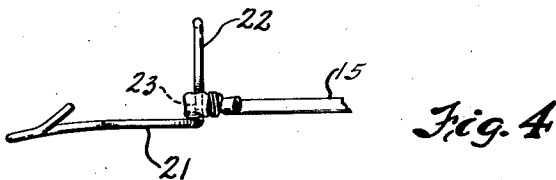
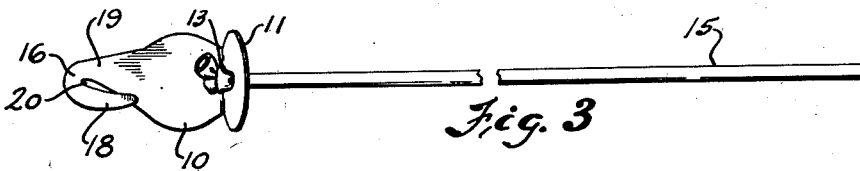
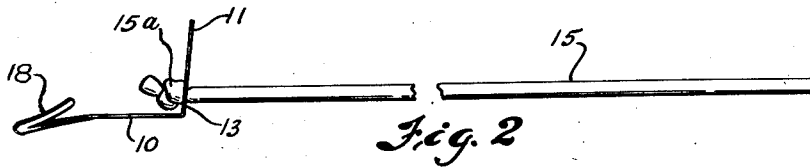
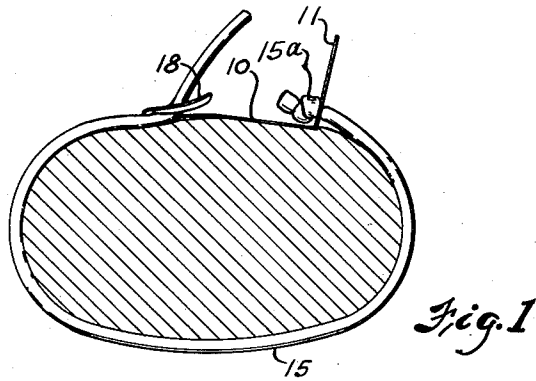
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TOURNIQUET

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TOURNIQUET

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4 Claims. (Cl. 128—327)

This invention is directed to improvements in tourniquets and particularly of the type utilized in connection with intravenous needle manipulation.

The present invention contemplates a tourniquet the use of which involves a very simple method of insuring minimal trauma due to needle manipulation while accurate, deft elastic band or tube obstruction of venous pressure can be obtained. The practice is to obstruct the vein flow so that the veins are overfilled and distended with blood whereby a needle may be inserted into the enlarged vein. Either injection of fluids or withdrawal of blood can then be effected.

When fluids are administered the tourniquet must be removed or released while the needle is steadied in the vein, thus the desirability of a tourniquet which may be removed or released with one hand without disturbing the skin while the other hand is occupied with the needle. The manner of removal of my tourniquet is so simple and direct that little or no movement of the skin under or near the tourniquet takes place and this eliminates the usual cause of the needle slipping out of the vein with resulting vein tearing, blood obscuration, etc. A most important feature of the tourniquet is that when applied or released, the movement is transverse to the axis of the extremity i. e. transverse to the direction of the vein being punctured. Unnecessary movement is minimal and confined for the most part, in a direction that will not pull the needle from the vein, or the vein from the needle.

My tourniquet is developed particularly for emergency use on the type of critically ill patient where its use must be critically tensed in position and released on patients who are delicate through disease and who have thin-walled veins. Ideal tension for the tourniquet for maximum distension of the veins of such a patient will effect a stricture to produce a pressure which is approximately the mean blood pressure of the patient i. e. half way between the systolic and the diastolic pressures.

A purpose accordingly is to provide a tourniquet through familiarity with which an operator will know how much tension is to be placed thereon so that the desired condition will be obtained when the tourniquet is in buckled position on an extremity of the patient, and with which detensioning is effected by the use of one hand without any twisting or disturbing reactions upon the skin and veins of the patient. The tourniquet band cannot "roll," and it is the "roll" of the band on the skin in the usual tourniquet that "winds up the skin," pulling skin and vein just below the skin, away from proper contact with the needle in the vein.

In furtherance of the foregoing I arrange a thumb piece on a flat body of metal and centrally secure one end of the tourniquet band to the thumb piece adjacent the flat body. Spaced from the thumb piece for finger clearance, I form a snubber slot extending substantially longitudinally of the body in an outwardly extending slotted snubber part which is formed on the body at the end thereof opposite to the thumb piece thereby to avoid any twisting effect

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of the tourniquet band on the buckle. The snubber slot is so positioned on the body that the anchored end and the snubbed end of the tourniquet band will be in substantially axial alignment with the thumb piece and the body. The arrangement is such that the snubbed untensioning of the elastic band can be effected gradually with one hand while the other hand is occupied with the needle.

The general object of the invention is then provision of a tourniquet which can be manipulated or released gradually with one hand while the other hand is occupied with the manipulation of the needle.

A further object of the invention is the provision of a tourniquet buckle which can be applied to the patient without turning or twisting of the buckle when in contact with the patient's skin and when removing the tourniquet.

A further object is the provision of a tourniquet buckle with an elastic tourniquet band which can be grasped by the thumb and forefinger and the buckling effected without necessitating the crossing of the hands of the user.

A still further object is the provision of a tourniquet that can be unsnubbed and removed with one hand in so simple and direct a manner that little if any movement of the skin under or near the tourniquet is caused by the removal effort.

Other objects of the invention will become apparent from the following description referring to the accompanying drawings and the essential characteristics thereof are summarized in the claims.

In the drawings,

Fig. 1 is an illustration of my tourniquet, in place on the arm of a patient shown in generalized section and viewed toward the hand;

Fig. 2 is a side view of the tourniquet device;

Fig. 3 is a top or plan view of the tourniquet appearing in Figs. 1 and 2;

Fig. 4 is a side elevation of an alternate construction of the tourniquet; and

Fig. 5 is a plan view of the construction appearing in Fig. 4.

In the drawings I show a flat body portion 10 adapted to rest upon the skin of the patient. The body portion 10 has an upstanding rigid thumb piece 11 struck or bent upwardly at substantially a right angle to the body portion. Centrally of the body and thumb portion is a perforation 13 through which an elastic tourniquet band 15 may pass and be secured to the thumb portion near the body portion and be held in attachment to the thumb portion by a knot 15a tied in one end of the tourniquet band. The reach of the tourniquet band is thus disposed close to the body portion or base plate 10.

The anchor or snubbing construction for the free end of the tourniquet band comprises a single snubbing slot formation formed in a narrowed extension of the end of the body portion and which is opposite to the thumb portion and disposed substantially in line with the opening 13 formed in the thumb portion. The slot construction is in the form of an extension portion 16 of the body 10 to form a snubber hook for the free end of the tourniquet band with one side 18 of the slot construction flaring upwardly from the plane of the body portion and with the other side 19 flaring or bent downwardly relative to the plane or the body portion. This snubber construction is spaced from the thumb piece to afford finger clearance. All hooking or hitching actions to snub the tourniquet to securement in the slot 20 take place on the under side of the snubber structure and the under side of the upwardly extending portions 16 and 18 and the portion 18 serves as a guide or camming surface to guide the stretched tourniquet band into the snubber slot.

In use the operator grasps the thumb portion between thumb and forefinger and draws the looped tourniquet

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elastic under the portions 16 and 18 and over portion 19 to the proper tension. The tensed elastic automatically seats back into the slot by lifting it somewhat and seating into recess of slit 20 with the heel of portion 16 bearing upon the elastic band 15, pressing it gently against the underlying skin area, whereby the elastic band is secured relative to the anchor element. In releasing the tourniquet, the operator grasps the free end of the tourniquet elastic between the fingers curled toward the palm of one hand, with palm downward toward the arm and the forefinger bearing on the elastic near the slot, while the thumb opposed to the forefinger bears upon the outer side of the thumb piece to apply a buckle holding force in direction opposite to the force applied to the elastic by the forefinger. The lever action of the thumb piece tends to move the slotted body portion downward away from the elastic to facilitate release. The tourniquet elastic can thus be gradually released with the one hand while the other hand is engaged in maintaining the needle in position.

In Figs. 4 and 5 I show an alternate construction formed of stainless steel wire wherein the body 21 of the buckle structure constitutes a wire loop and the thumb piece 22 another wire loop, the two loops being connected at a right angle by a neck piece 23 to which one end of the tourniquet elastic can be secured or tied. The body loop 21 has a snubber hook formation 24 having an upwardly slanting guiding portion 25 which corresponds in function to the upwardly flared camming portion 18 of the Fig. 1 construction.

In both constructions one end of the tourniquet elastic is permanently secured to the center of the thumb piece structure so that the snubbing or hitching action is in central alignment with the end of the elastic secured to the thumb piece. Application of the device is made without requiring the crossing of the hands or the crowding of the fingers and the buckle structure remains in repose without pinching or twisting of the skin. The snubbing slot is free of finger obstruction and at the top side of the buckle structure so that the operator need not maneuver the buckle structure to effect the hitch.

I claim:

1. In a tourniquet for use in making veinal injections, a buckle structure having a flat body portion adapted to rest upon the skin of a member of the body of a patient to be treated, a thumb and forefinger grasping piece portion extending upwardly from the body portion formed at one end of the body portion, said grasping piece portion having means affording permanent attachment of one end of an elastic tourniquet member whereby the longitudinal reach of the tourniquet member extends in a plane centrally of the flat body portion and an elastic tourniquet member having an end thereof secured by said means, a snubber anchor formation formed on the flat body portion at the end of the flat body portion opposite to the grasping piece portion, said snubber formation having a snubber slot formation extending substantially in a plane extending centrally of the body portion.

2. In a tourniquet for use in making veinal injections, a buckle structure having a flat body portion adapted to rest upon the skin of a member of the body of a patient

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to be treated, a thumb and forefinger grasping portion extending upwardly from the body portion formed at one end of the body portion, said grasping piece portion having means affording permanent attachment for one end of an elastic tourniquet member whereby the longitudinal reach of the tourniquet member extends in a plane centrally of the body portion, an elastic tourniquet member having an end thereof secured by said means, a snubber anchor formation formed on the body portion at the end of the body portion opposite to the grasping piece portion, said snubber anchor formation having a snubber slot formation extending substantially in a plane extending centrally of the body portion in line with the elastic tourniquet member and said snubber anchor formation having one side of the slot structure flared upwardly from the plane of the flat body portion.

3. In a tourniquet for use in making veinal injections, a buckle structure having a flat body portion adapted to rest upon the skin of a member of the body of a patient to be treated, a thumb and forefinger grasping portion extending upwardly from the body portion formed at one end of the body portion, an elastic tubular tourniquet member, said grasping piece portion having an opening affording permanent attachment for one end of a knotted end of the elastic tourniquet member whereby the longitudinal reach of the tourniquet member extends in a plane centrally of the flat body portion, a snubber anchor formation formed on the body portion at the end of the body portion opposite to and spaced from the thumb grasping piece portion, said snubber anchor formation having a snubber slot formation extending substantially in a plane extending centrally of the body portion.

4. In a tourniquet for use in making veinal injections, a buckle structure having a flat body portion adapted to rest upon the skin of a member of the body of a patient to be treated, an elastic tourniquet tube, a thumb and forefinger grasping portion extending upwardly from the body portion formed at one end of the body portion, said thumb grasping portion having an opening affording permanent attachment of one end of an elastic tubular tourniquet member by the member passing through the opening and by a knot formed in the tourniquet tube at one end thereof whereby the longitudinal reach of the tourniquet member extend in a plane centrally of the body portion and a snubber anchor formation formed on the body portion at the end of the body portion opposite to the thumb grasping portion, said snubber anchor formation having a snubber slot formation extending substantially in a plane extending centrally of the body portion and bounded on one side by a downwardly extending portion and the other side by an upwardly flared portion constituting a tube guide for the tubular elastic tourniquet member.

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