

July 17, 1956

W. F. RICHMOND
MECHANICAL TOURNIQUET

2,754,825

Filed March 13, 1953

2 Sheets-Sheet 1

Fig. 1.

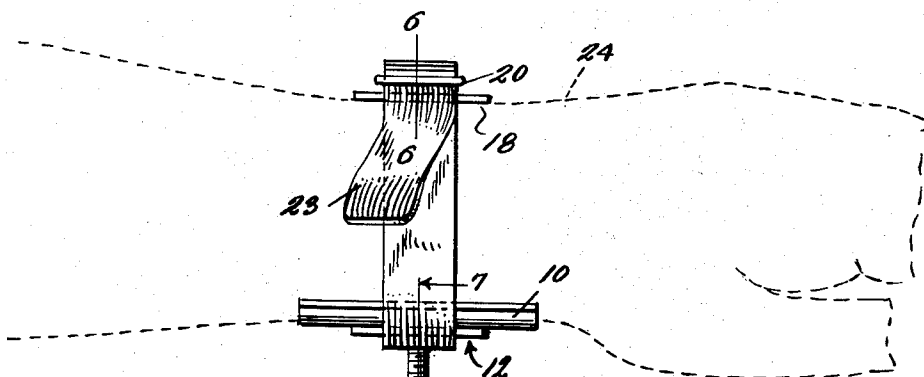


Fig. 7.

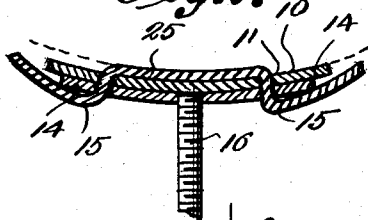


Fig. 6.

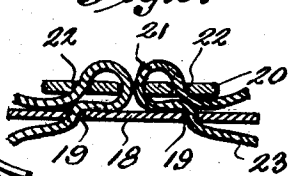


Fig. 3.

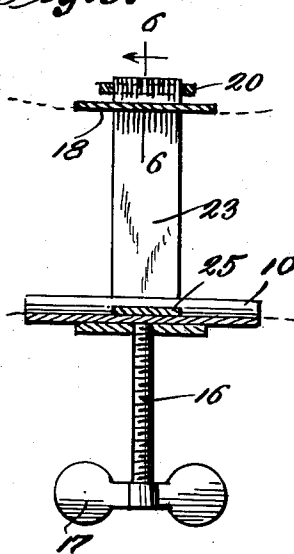


Fig. 2.

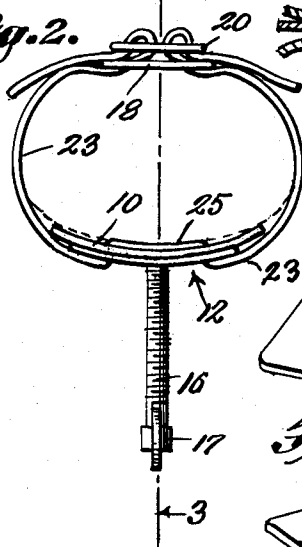


Fig. 4.

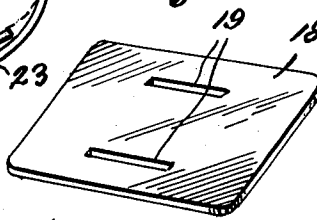
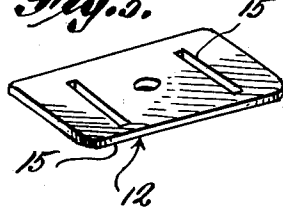


Fig. 5.



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Fig. 8.

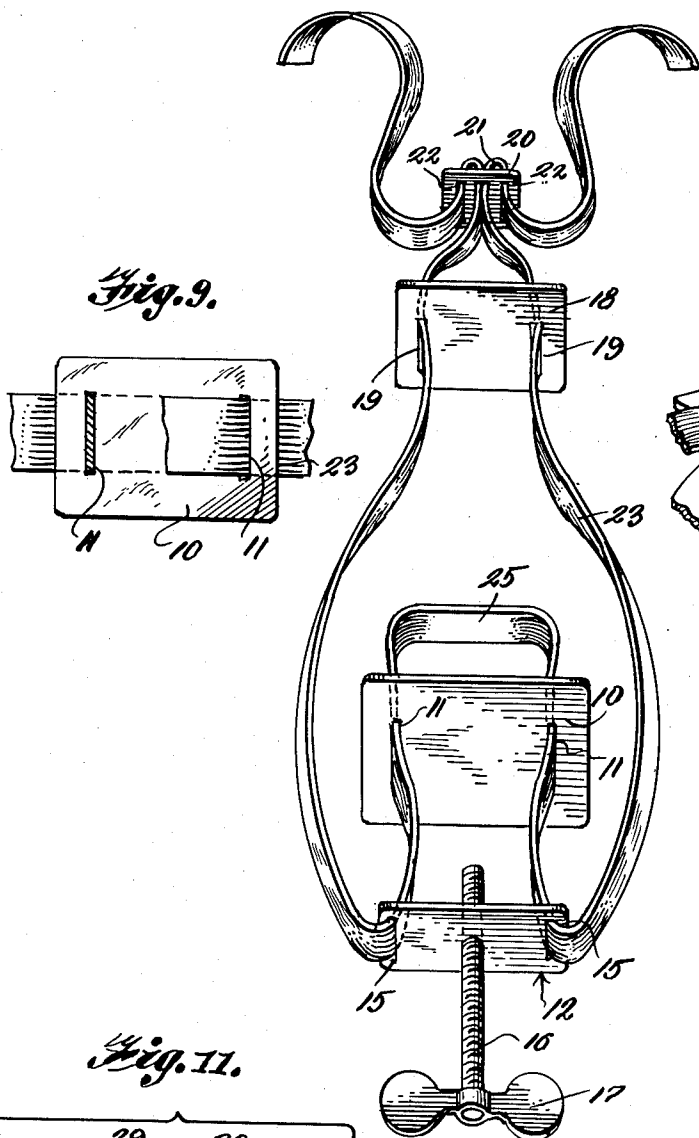


Fig. 9.

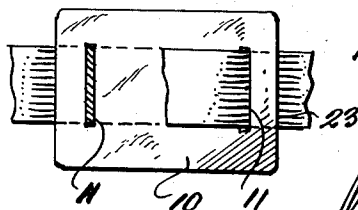


Fig. 10.

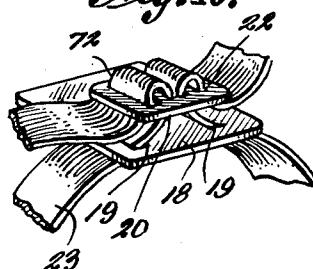
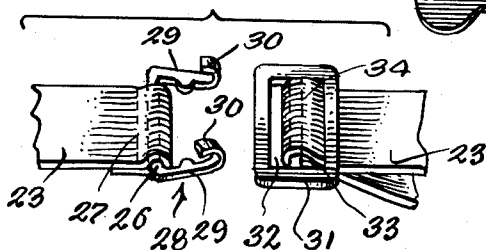


Fig. 11.



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MECHANICAL TOURNIQUET

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1 Claim. (Cl. 128—327)

The present invention relates to a mechanical tourniquet and it consists in the combinations, constructions and arrangements of parts herein described and claimed.

Generally there is provided a mechanically operated tourniquet which may be applied to any one of the limbs of the human body whereby to stop the flow of blood therefrom. Means is also provided for releasing the pressure from time to time without removing the tourniquet from the limb so encompassed. The device contains several novel features including an elongated strap, a pair of flexible plates through which the strap is threaded, a bracket adapted to bear against one of the plates and a thumb screw extending through the bracket and adapted to bear against the plate associated therewith.

It is accordingly an object of the invention to provide a device of the character set forth which is simple in construction, inexpensive to manufacture and yet effective and efficient in use.

Another object of the invention is to provide, in a device of the character set forth, a novel limb engaging flexible plate and novel means for applying pressure thereto in a device of the character set forth.

Another object of the invention is to provide, in a device of the character set forth, a limb-encircling strap and novel arrangement of yieldable pressure elements through which the strap is threaded.

Other and further objects of the invention will become apparent from a reading of the following specification taken in conjunction with the drawings, in which:

Figure 1 is a side elevational view of an embodiment of the invention shown in operative position upon a human wrist,

Figure 2 is an end elevational view of the device illustrated in Figure 1,

Figure 3 is a sectional view taken along line 3—3 of Figure 2,

Figure 4 is a perspective view of a pressure plate forming a part of the invention,

Figure 5 is a perspective view of a bracket forming a part of the invention,

Figure 6 is an enlarged fragmentary sectional view taken substantially along line 6—6 of Figure 3,

Figure 7 is an enlarged fragmentary sectional view taken substantially along line 7—7 of Figure 1,

Figure 8 is a perspective view of the device shown in inoperative position and ready to be applied to a human limb,

Figure 9 is a fragmentary plan view, partly broken away, of a pressure plate and strap both forming parts of the invention and illustrating the manner of threading the strap to the plate,

Figure 10 is a fragmentary perspective view of a pressure plate and buckle associated therewith, both forming parts of the invention, together with a strap and illustrating the manner of threading the strap through the parts mentioned, and

Figure 11 is a fragmentary perspective view of another form of buckle which may be utilized in the invention.

Referring more particularly to the drawings, there is shown therein a relatively large rectangular pressure plate 10 preferably formed of a flexible plastic material and provided adjacent each of its narrower ends with a transverse slot 11. A bracket is generally indicated at 12 and is preferably of some suitable plastic material, each end of which is provided with a transversely extending slot 15. A bolt 16 extends threadably through the center of the bracket and is provided at its outer end with a wing head 17. The inner end of the bolt 16 is adapted to bear centrally upon the plate 10 when the device is in use.

A relatively small rectangular pressure plate 18, likewise preferably formed of flexible plastic material is provided adjacent each of its narrower ends with a transverse slot 19 and there is also provided a buckle 20 having a centrally located transverse slot 21 and a pair of outer transverse slots 22, such slots 21 and 22 being in spaced parallel relation to one another. An elongated strap 23 completes the device.

In operation, it will be seen that the strap 23 extends first upwardly through one of the slots 22 and thence downwardly through the slot 21, thence through one of the slots 19 and upwardly through one of the slots 15, upwardly through one of the slots 11, downwardly through the other slot 11 and downwardly through the other slot 15 and thence upwardly through the other slot 19, upwardly through the slot 21 and downwardly through the remaining slot 22. When the strap 23 is thus threaded through the various other components of the invention, the device will be ready for use, as, for example, upon the wrist indicated at 24 in dotted lines in Figure 1.

It will be seen that the device may be initially tightened upon the limb 24 by drawing the free ends of the strap 23 away from the buckle 20 thus causing the pressure plate 10 to bear against one side of the limb 24 and the plate 18 against the other side thereof at which time the plates 10 and 18 will bend to conform with the contour of the limb from which they are bearing against. The person applying the tourniquet will have previously determined the location of the vein or artery against which the greatest pressure is to be applied and in placing the device upon the limb 24 he will see to it that that looped portion indicated at 25 and the strap 23 which lies above the plate 10 as viewed in Figure 8, bears against such vein or artery. When the device is in tightened condition upon the limb, further pressure may be applied by turning the wing head 17 to thus force the bolt 16 inwardly against the center of the plate 10 and consequently to apply greater pressure against the looped portion 25 and thus great pressure against the vein or artery lying next thereto. When it is desired to ease the pressure so that blood may be again allowed to flow for a short period of time, as is customary and desirable in such cases, it is only necessary to release the pressure of the bolt 16 momentarily through the manipulation of the wing head 17, thereafter immediately again applying pressure as aforesaid. It will also be apparent that the buckle 20 will act to hold the strap in tightened position, as shown in Figure 6, for example, by frictional contact between overlying portions of the strap. This is conventional and does not form a part of the invention except in conjunction with the remaining components thereof.

In Figure 11 there is shown another form of buckle wherein one end of the strap 23 is looped over the bight portion 26 and stitched to itself as indicated at 27, the bight portion 26 forming a part of a hook member generally indicated at 28 and provided with a pair of legs 29 each having an integrally formed hook 30 at its outer end. The remainder of the buckle consists of a plate 31 having an opening 32 therein which is traversed by a bar 33 over

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which the other end of the strap 23 is looped, as indicated at 34. In this form of the invention, it will be apparent that the free end of the strap is tightened by pulling the same away from the plate 31 after it has been looped as indicated at 34 after which the hooks 30 5 may be engaged through the opening 32 to maintain the device in tightened condition, the remainder of the device being as above described.

While but one form of the invention has been shown and described herein, it will be readily apparent to those skilled in the art that many minor modifications may be made without departing from the spirit of the invention or the scope of the appended claim. 10

What is claimed is:

A device of the character described comprising a pair of 15 pressure plates of flexible material, a bracket adapted to bear against the outer side of one of said plates, a buckle positioned outwardly of the other of said plates, said

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plates and said bracket each provided with a pair of transverse slots, said buckle comprising a rectangular plate having a central transverse slot and a pair of outer transverse slots, a bolt threadably extending centrally through said bracket and bearing centrally against the outer side of its adjacent pressure plate, a wing head at the outer end of said bolt, and a strap threaded through all of said slots and forming a looped portion on the inner side of said first-mentioned pressure plate.

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