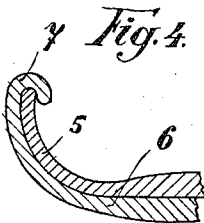
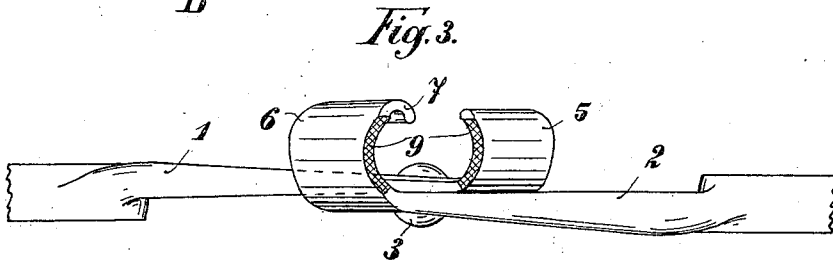
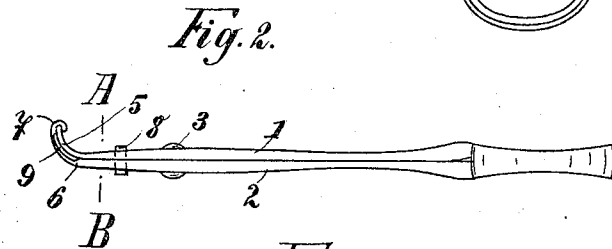
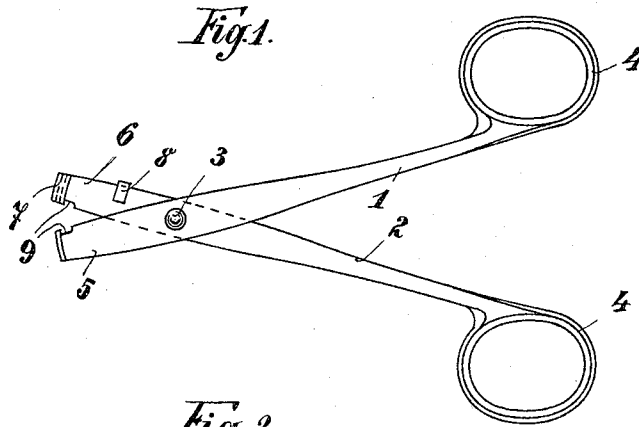


R. BLUNK.
SURGICAL TWEEZERS.
APPLICATION FILED AUG. 17, 1908.

1,053,149.

Patented Feb. 18, 1913.



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UNITED STATES PATENT OFFICE.

RICHARD BLUNK, OF WESEL, GERMANY.

SURGICAL TWEEZERS.

1,053,149.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed August 17, 1908. Serial No. 448,946.

To all whom it may concern:

Be it known that I, RICHARD BLUNK, a subject of the German Emperor, residing at Wesel, in the Empire of Germany, have invented new and useful Improvements in Surgical Tweezers, of which the following is a specification.

This invention has reference to surgical tweezers, the action of which is to arrest hemorrhage by closing the ends of a blood vessel that has been cut through by other tweezers or by a knife, this closing of the blood vessel being effected by a brief application of the new tweezers and without any auxiliary means. This result is attained by the device shown in the accompanying drawing in which:

Figure 1 is an inside view of the open tweezers; Fig. 2 is a plan view of the closed tweezers seen from below; Fig. 3 is a plan view of the open tweezers seen from in front and on an enlarged scale; Fig. 4 is a longitudinal section through the closed jaws on a larger scale; Fig. 5 is a cross-section on the line A—B of Fig. 2 on a larger scale.

Similar reference numerals refer to similar parts in all the drawings.

Generally the escape of blood from blood vessels that have been cut through is prevented by binding the ends of the blood vessel together by a thread or by twisting it. There exist tweezers which arrest the hemorrhage although not reliably, by firmly pressing the blood vessels together. These methods of arresting the hemorrhage occupy too much time, are not to be depended upon or interfere with the space at disposal and the treatment of the wound. I have consequently endeavored to find a reliable rapid and sure means for effecting a permanent closing of bleeding vessels, in that I separate the two inner skins of the blood vessel and roll up the thus artificially obtained ends of the skin within the intact outer third skin. This rolling-up chokes the blood channel and thus arrests the hemorrhage although the end of the blood vessel is not held closed either by a thread, by clamping or by torsion.

I shall now describe the instrument used and then explain the method of working.

The device is similar to ordinary tweezers the jaws of which are curved aside and contrary to the ordinary tweezers do not contact at a single point but along their whole active surface, in the closing and in the

closed condition. The parts 1 and 2 containing the eyes 4 are pivoted together by a rivet or pin 3. The parts of the tweezers (jaws) 5 and 6 prolonged beyond the pin 3 are curved aside from the straight direction of the parts 1 and 2. The outer jaw ends in a further curved portion 7 which is bent over the end of the jaw 5, thus preventing the jaws 5 and 6 springing apart too easily from each other when being used owing to the part clamped between them. A hook 8 (guide or guard) may also serve the same purpose and is provided on the one jaw 6 and engages over the other jaw 5 when the tweezers are closed.

The mutual position and shape of the jaws 5 and 6 in the closing and closed condition is such that their surfaces facing each other contact everywhere with a slight spring action. The blood vessels held by the jaws and thus situated between the same are consequently forcibly rubbed. In order, when seizing the blood vessel to be closed, to prevent the latter slipping out the jaws 5 and 6 are provided with recesses 9 on the edges turned toward each other, in which the blood vessel when seized is situated, thus preventing or rendering it difficult for the blood vessel seized to slip away. The recesses 9 are roughened for the purpose of preventing the slipping of the seized blood vessel.

The recesses seizing the blood vessel are rounded off on their co-acting or meeting edges so as to prevent the blood vessel seized being cut through or sheared.

The manipulation and working of my tweezers is as follows:—The instrument is held by the eyes 4 and so placed on the cut-off blood vessel to be closed that the latter is situated between the jaws 5, 6, that is to say between their recesses 9. If the eyes 4 are approached to each other then the recesses 9 will come so near together that their opposite edges seize the blood vessel and in the first place forcibly press it between them without, however, being able to cut it through, because the edges in question have been well rounded-off. Owing to this pressure the blunt edges of the recesses 9 will squeeze off or separate the brittle inner skin of the blood vessel seized at the pressure spot crosswise to the longitudinal axis of the blood vessel whereas the thin tough outer skin presses the slightly springing jaws of the tweezers so far apart that the outer skin is uninjured. Sharp cutting edges would be

necessary for separating the latter. If the
tweezers are now further pressed together
the blunt edges of the jaws 5, 6 no longer
stand opposite each other but each of these
5 blunt edges slide farther along the oppo-
sately situated surface of the jaws. The sur-
faces owing to the natural friction hold the
outer skin with relatively considerable force,
whereby the pressing blunt opposite edges
10 push the separated thick inner skins for-
ward into the outer uninjured skin. The
inner skins are thus artificially rolled up
thereby choking and closing the blood ves-
sel. The closing of the blood vessel thus
15 effected is permanent even if the tweezers
are removed from the blood vessel.

I am aware that there exist tweezers which
are for the purpose of cutting blood and
lymphatic vessels and which aim to close
20 said vessels by pressure. I am not aware,

however, that any tweezers exist adapted to
subject such vessels to the rolling action
herein set forth.

What I claim is:

In tweezers for arresting hemorrhage 25
from divided blood vessels, the combination
of two jaws which on closing the tweezers
glide on each other contacting everywhere
over large surfaces and having a slight
spring action, the encountering edges of the 30
jaws being rounded off, with recesses (9) on
the jaws, the recesses being roughened, said
jaws subjecting the vessels engaged thereby
to a rubbing action between them, whereby
the skins of said vessels are rolled up sub- 35
stantially as described.

RICHARD BLUNK.

Witnesses:

H. STELZER,
M. KÜPPERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
