

# UNITED STATES PATENT OFFICE.

ARTHUR E. SMITH, OF CHICAGO, ILLINOIS.

## ANESTHETIC NERVE-BLOCKING TABLET.

1,243,349.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, ARTHUR E. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Anesthetic Nerve-Blocking Tablets, of which the following is a specification.

This invention relates to anesthetic tablets, and more particularly to a tablet having the necessary constituent ingredients to produce a local anesthetization under such conditions as will achieve the most desirable results.

An anesthetic tablet of the foregoing nature is particularly useful in nerve blocking work. In order that the results achieved may be best understood I will state briefly the steps heretofore usually employed in securing the desired results and particularly the steps employed by dentists and dental surgeons in operative work. Heretofore it has been customary to employ Ringer's solution and to use in conjunction therewith and as entirely separate elements, novocain and suprarenin or adrenalin. The function of the suprarenin or adrenalin is to restrict the arterioles whereby the rapid absorption of the anesthetic—*i. e.*, the novocain, into the tissues, is prevented. Otherwise the tissues would absorb the solution very quickly and the part would not remain anesthetized for the desired length of time.

As has been stated, it has heretofore been customary to separately prepare the Ringer's solution. This solution is made from tablets comprising the following ingredients:

Sodium chlorid.....	0.50
Calcium chlorid.....	0.04
Pottassium chlorid.....	0.02

and these tablets are dissolved in 10 cubic centimeters of distilled water. It will therefore be seen that it is necessary for the dentist to make up 10 cubic centimeters of the Ringer's solution, because the smallest tablets contain the above named chlorids in the amounts to make 10 cubic centimeters of the solution. However, this Ringer's solution will not keep any great length of time. A number of reliable authorities state that it is not safe to use it after five days from the time it is prepared. Having thus made up his stock solution from the Ringer tablets, the dentist will, when he desires to make up

the anesthetic solution to be injected, pour out the desired amount of Ringer's solution and boil it. For example, we will suppose that the operator is desirous of making 5 cubic centimeters of the solution to be injected. He will pour out 5 cubic centimeters or 6 cubic centimeters, we will say, of the stock Ringer's solution, place it over a flame and boil it for several minutes. According to our instructions in bacteriology, water and many other solutions, must be boiled for at least fifteen minutes to render them sterile. Now, it is to be remembered that the Ringer's solution which is being boiled contains, upon the start the proper amounts of the three chlorids but after being boiled for the necessary length of time, the operator no longer has a true Ringer's solution, because a certain amount of the water has been lost in evaporation and the remaining solution is more or less hypertonic or concentrated. In other words, the operator no longer has a true Ringer's solution, but a solution containing more chlorids than is found in an equal amount of blood, and if injected into the tissue osmotic changes will result. To get the desirable results it is necessary to use an isotonic solution or one containing the right amounts of the chlorids. It is absolutely necessary in injecting this local anesthetic solution into the tissues to have it conform to the chlorids (salts) in the blood. If the solution is not isotonic then the osmotic pressure of the solution will be different from that of the surrounding tissues and will cause pathological changes in the blood and other tissues that are highly undesirable.

Now, my invention consists in combining in a single tablet the suprarenin or adrenalin, the novocain and the chlorids found in a Ringer's tablet, all in such proportions that no stock solution need be kept on hand, but that a fresh solution may be made from one of these tablets whenever desired, so that all the necessary boiling of the distilled water may be done before the chlorids are placed therein, and consequently no reduction of the volume by evaporation can result in the production of a hypertonic solution.

While I have stated that novocain is the anesthetic employed, it is to be understood that the invention is not limited to the employment of this particular anesthetic, for other anesthetics may be substituted there-

for, while the basic idea of combining the anesthetic and the suprarenin or adrenalin in the same tablet with the ingredients used to produce Ringer's solution, remains the same. Furthermore, the particular amount of anesthetic employed may vary without departure from the invention. My improved local anesthetic nerve blocking tablet, as heretofore prepared by me, contains the following ingredients in substantially the proportions stated:

Novocain .....	.02000	gram
Suprarenin or adrenalin hydrochlorid .....	.00004	"
Sodium chlorid.....	.00500	"
Calcium chlorid.....	.00040	"
Potassium chlorid.....	.00020	"

In making up the solution one of these tablets is dissolved in one cubic centimeter of sterile, distilled water and the temperature raised to boiling point only. The distilled water which is free from chlorids has been boiled for at least 15 minutes before the tablet is added.

I am aware of the fact that tablets have heretofore been placed upon the market containing novocain and adrenalin or suprarenin, but I find that these tablets contain too much of the suprarenin or adrenalin where it is necessary to inject a large amount of the solution. The action of suprarenin or adrenalin is to constrict the arterioles and raise the blood pressure. In nerve blocking it is necessary to inject a large amount of solution and in that case a tablet containing a large amount of suprarenin or adrenalin would be more or less dangerous, because it would cause high blood pressure and produce a toxic effect. Therefore my invention contemplates not only the combining of the constituents of Ringer's solution; an anesthetic and suprarenin or adrenalin in a single tablet adapted to be added to the distilled water after the latter is boiled, but it goes further than this in that I have reduced the amount of suprarenin to 1/1600 of a grain, or .00004 gram. Consequently, a solution containing this small amount of suprarenin can be injected in greater quantities than would be possible if a large proportion of the suprarenin or adrenalin were used. I find that this small

proportion of suprarenin is sufficient to hold the anesthetic in a circumscribed area for at least one hour and this gives the operator ample time to complete his operation without pain to the patient. This decrease in the amount of suprarenin results, as has been stated, in increasing the volume of the solution that may be injected and consequently renders it possible to use the necessary amount of water to produce the desired amount of Ringer's solution.

Having thus described my invention, what I claim is:

1. A local anesthetic nerve blocking tablet containing the following ingredients combined in substantially the proportions set forth, viz.,

Potassium chlorid.....	.00020	gram	
Calcium chlorid.....	.00040	"	
Sodium chlorid.....	.00500	"	
Suprarenin .....	.00004	"	and
Novocain .....	.02000	"	

2. A local anesthetic nerve blocking tablet which contains an anesthetic, a vaso-constricting agent and the chlorids to produce a Ringer's solution and in which the amount of the several ingredients is so proportioned that when said tablet is added to that amount of water requisite for one treatment the solution is isotonic to the blood and the vaso-constricting agent is in sufficient quantity to localize the anesthetic but not in sufficient quantity to produce an excessive general blood pressure.

3. A local anesthetic nerve blocking tablet containing an anesthetic, a vaso-constricting agent and the chlorids to produce a Ringer's solution and in which the amount of the vaso-constricting agent is restricted to such proportions with relation to the chlorids that when said tablet is added to one milliliter of distilled water the solution is isotonic to the blood and the vaso-constricting agent is sufficient to localize the anesthetic without the production of an excessive general blood pressure.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR E. SMITH.

Witnesses:

MEDORA A. DICKESON,  
ARTHUR LEWIS MILLER.