

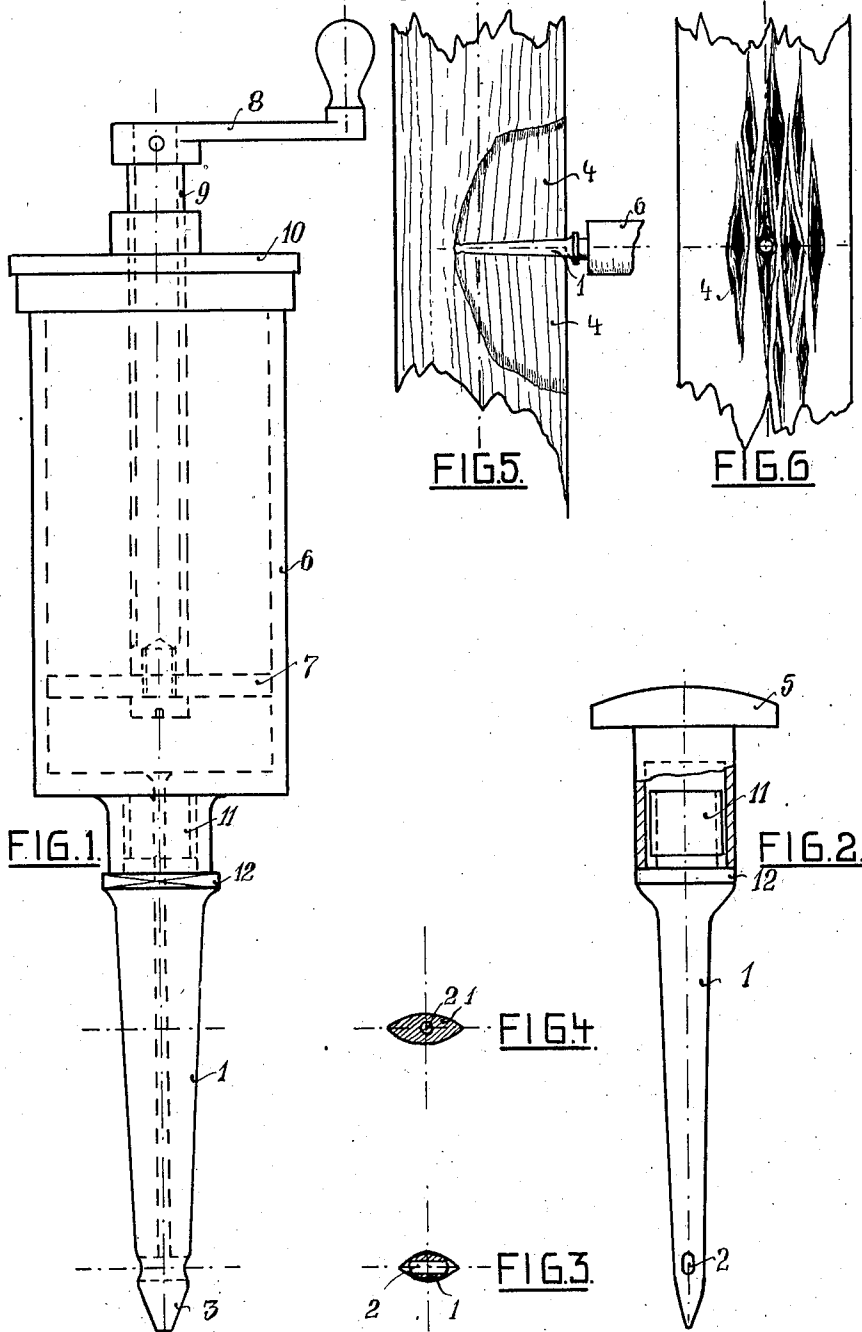
May 11, 1926.

1,583,900

C. SCHMITTUTZ

HOLLOW NEEDLE FOR VACCINATING TIMBER AND THE LIKE

Filed June 19, 1924



Inventor
Carl Schmittutz
By *E. J. R. D. Ford*
Attorney

Patented May 11, 1926.

1,583,900

UNITED STATES PATENT OFFICE.

CARL SCHMITTUTZ, OF BAD KISSINGEN, BAVARIA, GERMANY.

HOLLOW NEEDLE FOR VACCINATING TIMBER AND THE LIKE.

Application filed June 19, 1924. Serial No. 721,145.

My invention relates to an instrument for the use in treating trees, poles, timbers and the like for preserving purposes, the method consisting in a sort of vaccination of the timber; i. e., forcing a hollow needle into the trunk, pole or other piece of wood, pressing a suitable preserving substance through the hollow of the needle into the pole and withdrawing the needle.

Hollow needles for injecting purposes are known for instance for vaccination, for preserving meat and also for use in embalming corpses. Needles in use for these known treatments would however, not work well for vaccinating timber and wood. It is the object of my invention, to provide the best shape of needle for the latter purpose.

I have found out, that in vaccinating timber it is important to rupture as little as possible the fiber of timber so that the pole is not deteriorated in its resistance against storm or against the strain of wires carried thereby. On the other hand it has proved to be essential to produce as large a cavity as possible about the end of the needle both in order to form a pocket with the largest possible area and to inject as much preserving substance as possible.

In order to further explain this I may say that by every injection a certain amount of preserving substance is stored within the timber and that impregnation takes place by the moisture attacking the pole, dissolving parts of the said substance and carrying it all over the body of the timber in a vertical direction as well as laterally. The lateral dispersion however being less efficient than that in the vertical sense it is important to store the preserving substance between vertical areas as large as possible thus increasing the basis of lateral dispersion. The preserving substance has a pasty consistency and is injected whilst the needle is in its inmost position within the timber with the effect that it penetrates into the two splits gaping below and above the needle filling them up entirely. The injection can be continued during the time the needle is withdrawn and can also begin with the moment the needle attacks the timber. The most important moment for the injection however is that of the most advanced position of the needle because then the gap of the split is biggest and its extension above and below the needle the largest.

By way of example I have shown in the drawings a needle of the conformation which appears to be best suited to my purpose.

Referring to the accompanying drawings which are made a part hereof and on which similar reference characters indicate similar parts,

Figure 1 is a side view of the needle with the cylinder containing the preserving substance,

Figure 2, a side view taken at right angles to that of Figure 1 showing the same needle with an anvil for hammering it into the trunk,

Figures 3 and 4 are cross-sections of the needle, the first taken at an elevation corresponding to the height of the two exits from the interior of the needle, and the second taken at a point nearer the butt of the needle,

Figure 5, a vertical section of a tree trunk showing the needle in its inmost position in the moment of injection, and

Figure 6 a side view on the same trunk showing the splitting effect caused by the needle.

The stem 1 of the needle is in cross-section. This form is preferable because it gives the needle the necessary strength to overcome the immense resistance it meets in penetrating the wood. By properly dimensioning the longer axis of the oval section the needle can be safe-guarded against breakage without an objectionable amount of rupture of the fibers of the timber inasmuch as the needle is to be forced into the timber with this axis parallel to the fibers. The short axis is dimensioned so that the split in the wood gaps wide enough for my purpose while at the same time rupturing as few fibers as possible consistent with satisfactory results. The said cross-section preferably increases in size from the point of the needle toward its butt thus allowing it to attain the maximum splitting action gradually and with every possible caution but yet to a sufficiently large extent.

The channel 2 of the needle leads centrally of the needle shaft from the base to a point near the pointed end and is there divided into two oppositely directed branches extending at right angles to the axis of the needle so that these exits lie at the ends of the longer transverse axis of the needle. A groove is formed about the needle at the plane of the outlet openings of the branches.

It will be seen that the pointed end 3 of the needle tapers at a rather obtuse angle towards the plane of the channel exits as shown in Fig. 3. This insures the deepest possible injection of the preserving substance. Also it makes this pointed end strong enough to prevent breakage and it causes a quicker splitting of the wood as the needle is forced into the same.

Above the two exits the angle of inclination of the needle is smaller but still large enough to cause a progressive gaping of the split when the needle advances on its way into the tree.

Figure 6 shows the splits 4 gaping above and below the needle when in its inmost position and in the moment of injection and it also pictures how a suitable displacement of incisions causes thorough impregnation of the whole of the body of the trunk as far as the needle reaches into the same inasmuch as the pockets due to splitting of the wood intersect so that the lateral dispersion of the preserving substance injected into such pockets extends as far as to leave practically no parts between the pockets unimpregnated. Figure 5 shows approximately the outline of such a pocket 4 in which the preserving substance is stored in the form of a flat cake after the needle is withdrawn.

The manipulation for driving the needle into the timber and for injecting the fluent material can take place in various forms. A very simple way is indicated in the drawing. A kind of ambos 5 fits loosely over the threaded neck 11 of the needle and is held by hand so that it rests upon the shoulder 12. By hammering on the said ambos the needle is forced into the timber. Then the ambos is taken away and a cylinder 6 is screwed upon the threaded neck 11 said cylinder containing the preserving substance.

In this cylinder there is a piston (7) which can be moved to and fro by a threaded rod 9 engaging with the correspondingly threaded cover 10 of the cylinder. By turning

handle 8 the rod turns within the cover and also within the piston driving the latter on and thereby presses the fluent preserving substance through the channel in the needle communicating with the interior of the cylinder and out into the pockets 4 in the wood. The needle is then withdrawn. Other means can be devised allowing the whole process to be worked mechanically but this is of no importance to the idea proper of my invention.

It will be obvious to those skilled in the art that various changes may be made in my device without departing from the spirit of the invention and therefore I do not limit myself to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:

1. A hollow needle for use in vaccinating trees, timbers and the like with preserving substances of a pasty consistency, the said needle having an approximately oval cross-section which increases in size from the point towards the butt of the needle, and a central channel with branches leading outward in proximity to the pointed end of the needle, substantially as set forth.

2. A needle as in claim 1, the branch channels having their exits in line with the major diameter of the needle, substantially as set forth.

3. A needle as in claim 1, the branch channels having their exits in line with the major diameter of the needle, and an annular groove about the needle into which said exits open, substantially as set forth.

4. A hollow needle as set forth in claim 1, with its pointed end solid said needle tapering gradually to the plane of the outlets from said broad channel and more steeply below said plane, substantially as set forth.

In witness whereof I have signed this specification.

CARL SCHMITTUTZ.