

# ALIEN PROPERTY CUSTODIAN

## METHOD OF INCREASING THE VOLUME OF ORGANIC SUBSTANCES, PARTICULARLY VEGETABLE SUBSTANCES

Joachim Böhme, Berlin-Schöneberg, and Karl Sunthelmer, Hamburg, Germany; vested in the Allen Property Custodian

No Drawing. Application filed November 13, 1939

This invention relates to a method of increasing the volume of organic substances, particularly vegetable substances.

When treating organic substances, particularly vegetable substances under the action of the electric field produced by high-frequency currents, for instance, under the action of ultra-short waves it has occasionally been observed that an increase in volume of the substance under treatment could easily be detected, the increase being obviously brought about by the electric field. Thus, for instance, such an increase in volume has been ascertained when treating cereals and tobacco as well. Formerly it was assumed that the increase in volume occurred always automatically when treating the substances under the action of the electric field produced by high-frequency currents and that the increase in volume depends only upon the value of the voltage applied; however, it has hitherto not been possible to ascertain whether an increase in volume occurred or not. Even when employing high-frequency generators of a considerable output the substance under treatment had often experienced no increase in volume.

The object of the present invention is to provide a method, whereby a permanent increase in volume may be attained with certainty. According to the invention the temperature of the substance to be treated must be increased as quickly as possible, for instance, within 30 seconds to about 30 to 50 degrees centigrade or more and then the substance is preferably cooled down at once. Consequently, the increase in volume depends according to the invention upon as rapid a heating of the substance as possible and the increase is the greater, the more rapid the temperature increases. To attain such a rapid increase in temperature it is therefore not sufficient as had hitherto been assumed to increase, for instance, the voltage or power of the high-frequency

generator, but the generator must be rated for a predetermined minimum power referred to the mass or the weight of the substances to be treated, i. e., the high-frequency generator must be so rated that for every gram of the substance under treatment a wattage of about 4 to 5 watts or more is available. This has been substantiated by a number of tests carried out at different wattages. For instance, an increase in volume of tobacco by more than 20% has been attained when treating one gram of the substance in accordance with the above-mentioned data.

It may be assumed that the so-called wood or xylem cells which have their open ends under the palisade tissue of foliage leaves and serve to convey water are enlarged by the high-frequency treatment, since they are very thin and extremely elastic. The water contained in the cells is first heated during the treatment and expands thus bringing about also an enlargement of the wood cells. When the substance is cooled down no water loss occurs so that no thermal reaction of the substance treated takes place and therefore the quality thereof is by no means impaired.

The increase in volume of tobacco is of particular advantage to the dressing which may consequently be effected under considerably more favorable conditions. The same applies to any other organic substances, particularly vegetable substances. The increase in temperature up to about 40 to 50 degrees centigrade which occurs when the volume of the tobacco increases by approximately 20% does not affect by any means the quality of the tobacco. The volume may be increased according to the invention to a still greater extent; however, in this case the quality of the tobacco is under circumstances impaired.

KARL SUNTHEIMER.  
JOACHIM BÖHME.