

UNITED STATES PATENT OFFICE.

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PROCESS AND PRODUCT FOR PREVENTING RUST.

No Drawing.

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To all whom it may concern:

Be it known that I, BRAXTON DAVENPORT AVIS, a citizen of the United States, and a resident of Clarksburg, in the county of Harrison and State of West Virginia, have invented certain new and useful Improvements in Processes and Products for Preventing Rust, of which the following is a specification.

This invention relates to a process and product to prevent rust of instruments when they are sterilized in the ordinary manner.

An object of the invention is the provision of a solution which when placed in the ordinary water bath for sterilizing surgical instruments will prevent rust regardless of the period of time said instruments may remain in the bath.

This invention will be best understood from a consideration of the following detailed description; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

It has been the experience of dentists, surgeons and other members of the medical profession who sterilize their instruments in boiling water that unless some medium is employed in the water to prevent rusting the instruments are in a measure greatly impaired by corrosion and in view of these attempts to prevent rusting during sterilization sodium carbonate, borax and other alkali salts have been applied as an addition to the water to prevent rusting but such additions have not proved satisfactory and considerable quantities of the chemicals are necessary to obtain any results whatever. I have discovered that if a small quantity of sodium nitrite be added to the water in the sterilizer that instruments could be freely boiled or left in the water for sterilization for a long period without any evidence of rusting whatever and that instruments that had been previously oxidized were considerably brightened after boiling the same in water containing sodium nitrite due to the solvent action of this salt on the corroding oxides.

Sodium nitrite being a very hygroscopic substance will on exposure to the air absorb moisture from the air and will also absorb

oxygen whereby the nitrite will be converted into sodium nitrate. Due to these properties of the sodium nitrite care must be exercised that the nitrous compound be not changed before being employed in a sterilizing bath.

In practice I find that approximately a 50% solution may be employed for commercial purposes and a teaspoonful of such concentrated solution may be added to the water in the sterilizer to prevent rust or corrosion during sterilization of the instruments. It is immaterial whether the instruments are formed of iron, steel, nickel or silver.

In certain types of sterilizers where the soft solder composed of lead and tin is used to connect the joints of the various walls of the sterilizer, sodium nitrite will slowly attack the solder and form a compound which is slightly soluble in water. Thus it will be seen that the continued use of the sodium nitrite in the sterilizing bath will eventually cause leakage in these forms of sterilizers.

In order to prevent the action of the sodium nitrite on the solder I add a small quantity of sodium sulphate or sodium carbonate in the proportions of 1 part of sodium sulphate or carbonate to 12 parts of sodium nitrite. An example of the solution for use on the market is as follows: Sodium sulphate 2 pounds, sodium nitrite 25 pounds, water 25 quarts.

The sodium sulphate is first dissolved in the water and then the sodium nitrite is added. The solution is then tinted for identification by adding a few drops of solution of Fluorescein which gives to the product a faint green fluorescence by a reflected light.

A dram or 60 drops of the above formula is added to each quart of water in the sterilizer and this quantity is sufficient to prevent rusting of instruments.

While I have stated that sodium nitrite is employed for the purpose it will be appreciated that potassium nitrite may be employed instead of the sodium nitrite with similar results but in view of the cheapness of the sodium nitrite such a salt is preferable.

What I claim is:

1. An anti-rust medium comprising 2 pounds of sodium sulphate, 25 pounds of sodium nitrite and 25 quarts of water, said solution being diluted in the proportions of

- 1 dram of the solution to 1 quart of water.
2. A sterilizing bath comprising a dilute solution of sodium nitrite.
3. A sterilizing bath comprising a weak solution of sodium nitrite and sodium sulphate.
4. A method of sterilizing metal instruments for preventing rusting which comprises heating said instruments in a weak solution of sodium nitrite.
5. A method of sterilizing metal instruments for preventing rust which comprises heating said instruments in a weak solution of sodium nitrite and sodium sulphate.
6. A method of sterilizing metal instruments which comprises heating said instruments in a weak solution of a nitrous salt of an alkali metal.

BRAXTON DAVENPORT AVIS.