

UNITED STATES PATENT OFFICE.

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PROCESS AND COMPOUND FOR TEMPERING STEEL.

No Drawing.

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This invention relates to a process and principally to a compound used for tempering steel and other metals and has for its object the production of an efficient compound which, when properly compounded as set forth in the following, will properly temper steel to the desired hardness and permit the same to maintain its temper and proper hardness for a maximum length of time under varying conditions.

Another object of this invention is the production of a compound used in tempering steel which may be produced at a minimum cost.

Other objects and advantages of the present composition will appear throughout the following specification and claims.

In tempering the steel, the process essentially consists in plunging the steel, when red hot, into the solution which is described in the following, to give an excess of hardness and then gradually reheating the same until the hardness is reduced or brought down to the required degree as is usual in tempering steel. The compound consists of the following ingredients:

- $\frac{3}{4}$ ounce of glycerine.
- $\frac{1}{4}$ ounce of tincture of iodine.
- $\frac{1}{4}$ ounce of chlorid of sodium.
- $1\frac{3}{4}$ ounces of soft water.

This solution then will be sufficient for use in conjunction with one gallon of water to be used as a liquid into which the heated steel may be dipped for the purpose of tempering.

When compounding the ingredients above set forth, the glycerine in proper proportion, the tincture of iodine in proper proportion, the chlorid of sodium in proper proportion, are placed in a three ounce vial, which is then filled with soft water. As stated above, this solution will then be sufficient to produce the result desired when added to one gallon of water into which the heated steel may be placed in the usual manner for the purpose of tempering.

Although it has been found more advan-

tageous to employ the exact ingredients set forth in the above description, it should be understood that the same may be varied in degrees and the exact proportions may not be used under certain conditions if it should be so desired, and it is desired to point out that such changes may be made so long as these changes fall within the scope of the appended claims.

It should be understood that the tincture of iodine will greatly toughen the steel and that chlorid of sodium, when used in the preparation has a tendency to harden the steel, causing the water to adhere to the steel which otherwise would be repelled by the heat. In fact, I have found by experience that the preparation above described will give very much better results than if glycerine or tincture of iodine alone were used without the addition of the sodium chlorid.

Having described the invention, what is claimed is:

1. A liquid bath for quenching steel, including as one of its ingredients, iodine.

2. A liquid bath for quenching steel, including as one of its ingredients, tincture of iodine.

3. A liquid bath for quenching steel, including tincture of iodine, sodium chlorid and water.

4. A liquid bath for quenching steel, consisting of glycerine, tincture of iodine, sodium chlorid, and water.

5. A liquid bath for quenching steel, consisting of the following ingredients combined in the following proportions and intended to be added to approximately one gallon of water for use:

	Approximate metric equivalents.
Glycerine, $\frac{3}{4}$ fluid oz-----	24.00 c. c.
Tr. iodine, $\frac{1}{4}$ fluid oz-----	8.00 c. c.
Sodium chlorid, $\frac{1}{4}$ fluid oz-----	8.00 c. c.
Soft water, $1\frac{3}{4}$ ozs-----	56.00 grams

In testimony whereof, I affix my signature.
JOHN F. EDWARDS.