UNITED STATES PATENT OFFICE.

LUDLEM BASSETT ROCKWELL, OF SUNBURY, PENNSYLVANIA.

HARDENING STEEL.

SPECIFICATION forming part of Letters Patent No. 309,492, dated December 16, 1884.

Application filed May 6, 1884. (No specimens.)

To all whom it may concern:

Be it known that I, LUDLEM BASSETT ROCKWELL, a citizen of the United States, residing at Sunbury, in the county of Northumberland and State of Pennsylvania, have invented an Improvement in Hardening Steel, of which the following is a description.

My invention relates to the hardening of steel in such manner as to avoid the necessity of drawing the temper; and it consists in a peculiar compound for that purpose, and in the process of treating the steel therewith, in conjunction with a peculiar bath, as hereinafter fully described.

In carrying out my invention, I take one pound cyanide of potassium, one ounce prussiate of potash, one ounce salt sal-ammoniac, two ounces sulphate of iron, one-half ounce blue-stone (sulphate copper.) These ingredients are placed in a crucible and melted together, and when thoroughly mixed the compound is poured out into cakes. The steel to be tempered is then heated to a cherry-red, or a little brighter, and on it is placed a small piece of the compound. When the surface of the steel is properly covered by the melting of the compound, the steel is plunged into a bath of tallow into which has been mixed, by melting, sal-ammoniac and common salt in the proportion of three pounds each of these two ingredients to sixty or seventy-five pounds of tallow contained in a kettle, box, or other suitable receptacle. When the steel has been thus tempered, it is ready for use without drawing the temper, and is suitable for all knives used in nail-mills, dies, and lathe-work. By the use of this compound and process steel worth from twelve to fifteen cents per pound is made equal to "R. Mushet" steel, and is superior to all others, as it does not crack. Knives tempered in this way will run from twelve to sixteen days. Bed-knives for nail-machines will last from five to six months in daily use, thus effecting a great saving in breakage, time, and labor.

Having thus described my invention, what I claim as new is—

1. A compound for tempering steel, consisting of cyanide of potassium, prussiate of potash, sal-ammoniac, sulphate of iron, and blue-stone, in or about the proportions named.

2. The process of tempering steel, which consists in heating the steel to a cherry-red and melting on its surface a compound of cyanide of potassium, prussiate of potash, sal-ammoniac, sulphate of iron, and blue-stone, and then plunging the steel into a bath of tallow having incorporated in it salt and sal-ammoniac, as described.

LUDLEM BASSETT ROCKWELL.

Witnesses:
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