UNITED STATES PATENT OFFICE.

HILAND E. HOPKINS, OF BARTON, VERMONT, ASSIGNOR OF ONE-HALF TO WILLARD W. MILES, OF SAME PLACE.

COMPOUND FOR TEMPERING STEEL.

SPECIFICATION forming part of Letters Patent No. 488,433, dated December 20, 1892.

Application filed September 8, 1892. Serial No. 445,362. (No specimens.)

To all whom it may concern:

Be it known that I, HILAND E. HOPKINS, a citizen of the United States of America, residing at Barton, in the county of Orleans and State of Vermont, have invented certain new and useful Improvements in Compounds for Tempering Metals; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved compound for hardening metals, especially steel; and it consists in an admixture of water, lubricating oil and bromide of potassium, which are mixed in about the following proportions: two gallons of water; one gallon of lubricating oil; and twenty grains of bromide of potassium.

In practice I find that bromide of potassium mixes readily with crude lubricating oil, and that these ingredients when placed in water will become incorporated with the same. In preparing the compound I prefer to use soft water, a larger quantity being used than will mix with the oil and bromide of potassium, so that the part which is not taken up will remain at the bottom of the receptacle in which the fluid is placed when used.

When it is desired to use the compound it is stirred violently and the steel or iron to be tempered is heated in the usual manner and immersed in the compound. The heated steel or metal when placed in the fluid will agitate the same, and when this agitation begins to subside the steel should be withdrawn at once when it can be worked or shaped into a desired form before the temper becomes fixed, and if the temper is too high it can be drawn in the usual way without affecting the form. The advantage of this method over the ordinary one is that the steel can be put in any form after the same is hardened, and the metal thus treated will have a finer and more lasting temper than is usually given to tools tempered in the usual manner, and there is very little liability of warping.

It is obvious that in practice the surplus water not taken up by the compound will remain at the bottom of the vessel, and the heated metal it is desired to temper should not be passed into this water.

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

1. A compound for tempering metals, consisting of bromide of potassium, oil and water mixed, substantially as set forth.

2. A liquid composition for tempering metals, consisting of twenty grains of bromide of potassium to one gallon of crude lubricating oil and double the quantity of soft water, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HILAND E. HOPKINS.

Witnesses:
M. P. RIARDON,
I. M. MILES.