

UNITED STATES PATENT OFFICE.

HERBERT P. EWELL, OF DETROIT, MICHIGAN.

METHOD OF MAKING LIQUID SODIUM AMALGAM.

969,853.

Specification of Letters Patent. Patented Sept. 13, 1910.

No Drawing.

Application filed January 2, 1909. Serial No. 470,427.

To all whom it may concern:

Be it known that I, HERBERT P. EWELL, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented a Method of Making Liquid Sodium Amalgam; and I do 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 a method of making liquid sodium amalgam for use in extracting gold and silver from their ores, and consists in the several steps hereinafter more fully set forth and pointed out particularly in the claims.

The object of the invention is to afford a novel method of manufacturing sodium amalgam, wherein provision is made for maintaining the alloy or amalgam of sodium and mercury in a liquid state to enable it to be employed in an amalgamating machine, in which the ore pulp is brought into contact with the mercury rendered active by the presence of the sodium.

In carrying out my invention I employ an apparatus in which the amalgam is made, similar to that shown in United States Letters Patent No. 841,006 issued to me on the 8th day of January, 1907, a reference to which will enable a complete understanding to be had of the method described herein. In applying my invention I use a suitable receptacle in which is contained a body of mercury. Over the surface of this mercury I maintain a stratum of paraffin, or analogous material, to exclude the air therefrom. The sodium is contained in a suitable container and provision is made for discharging it from said container into the mercury through the stratum of paraffin in such quantities as may be desired or found necessary.

To prevent the hardening of the sodium upon the surface of the mercury at the point where the mercury and sodium are commingled, I employ suitable means for agitating the mercury so as to draw the sodium into the body thereof and effect a thorough mixing of the sodium and mercury. By this means I am always able to maintain the mercury in excess of the sodium at the point

of introduction of the latter into the former, whereby the alloy or amalgam resulting from the mixture of the sodium and mercury is maintained in a liquid state so that it may be conveniently introduced into an amalgamating machine.

It will be understood that in order to maintain the mercury in an amalgamating machine at its highest state of efficiency, a constant supply of sodium amalgam thereto must be provided for in order to reduce the oxids, sulfids, etc., which are continually encountered in the ore. Sodium amalgam made in accordance with this method is always in a liquid state, and for that reason it can be constantly supplied in such quantity as may be required, to the amalgamating machine and may be introduced with the ore pulp which is fed into the machine or may be directed into the well of amalgamating material in the machine over which the ore passes.

By excluding air from the surface of the mercury at the point where the sodium is introduced therinto, the violent chemical action which would otherwise take place is avoided, making it possible to form a sodium amalgam by a direct introduction of a comparatively small quantity of sodium into a relatively large body of mercury.

Having thus fully set forth my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. Method of making liquid sodium amalgam, which consists in introducing sodium into mercury, excluding air therefrom at the point of introduction, and maintaining an excess of mercury over the sodium at the point of union of said elements.

2. Method of making liquid sodium amalgam, which consists in mixing a minor portion of sodium with a major portion of mercury and excluding the air therefrom during the operation of mixing.

3. Method of making liquid sodium amalgam which consists in commingling sodium and mercury in the absence of atmospheric air, and maintaining the mercury in excess of the sodium.

4. Making liquid sodium amalgam for separating gold and silver from their ores by introducing a minor portion of sodium

into a major portion of mercury in the absence of atmospheric air.

5 5. Method of making liquid sodium amalgam which consists in covering the surface of mercury with material for excluding air therefrom and introducing sodium into said mercury through said material.

In testimony whereof, I sign this specification in the presence of two witnesses.

HERBERT P. EWELL.

Witnesses:

O. B. BAENZIGER,
I. G. HOWLETT.