

UNITED STATES PATENT OFFICE.

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OF PARIS, FRANCE, AND PAUL LEON HULIN, OF GRENOBLE, FRANCE.

PROCESS FOR THE MANUFACTURE OF METALLIC SODIUM.

971,198.

Specification of Letters Patent. Patented Sept. 27, 1910.

No Drawing. Original application filed October 27, 1908, Serial No. 459,728. Divided and this application
filed June 2, 1909. Serial No. 499,737.

To all whom it may concern:

Be it known that I, PAUL LÉON HULIN, of
6 Rue Félix Poulat, Grenoble, Tsère, Repub-
lic of France, engineer, have invented a
5 Process for the Manufacture of Metallic So-
dium, of which the following is a full, clear,
and exact description, this being a division
of my application for Letters Patent for
means for the electrolytic manufacture of
10 sodium, Serial No. 459,728, filed October 27,
1908.

It has been noticed in the manufacture of
sodium, by means of the electrolysis of fixed
caustic soda, that during the carrying out of
15 the process, the quantity of sodium produced
decreases somewhat after a short time. This
phenomenon cannot be attributed to an in-
crease in the resistance of the bath, nor to
the surface of the electrodes. Up till now it
20 has been surmised that the decrease in the
production was due to impurities in the
caustic soda, silicic acid, iron oxid, etc.,
which are contained even in the purest soda,
the proportion of the impurities increasing
25 as the decomposition of the soda is carried
out. This supposition was apparently con-
firmed by the fact that the quantity of so-
dium produced decreased all the more rap-
idly when the soda was very impure. Un-
30 der these conditions the disadvantage could
only be remedied by taking the electrolytic
vat out of circuit, to dismount and clean it,
as soon as its efficiency began to decrease,
then refilling it with new caustic soda and
35 putting it to work again. It is easy to
imagine the loss of time and the considerable
labor necessitated by such a process; more-
over, to obviate the too frequent dismount-
ing, and cleansing operations, only soda of the
40 purest grade was used which is very expen-
sive, and had to be rejected when it had only
supplied a small quantity of sodium. The
new process does away with these disadvan-
tages and enables sodium to be produced in
45 a practical manner and under economical
conditions by electrolytic means.

The principle of the process consists in in-
termittently taking the cathode out of the
bath, in bringing it into contact with water
50 or with any solution of aqueous nature and

then to replace it in position. Such water
or solution constitutes a restorative liquid.
By this process the working remains regu-
lar, the decrease in the production is ar-
rested and the inconvenience, due to the fre- 55
quent replacement of the caustic soda and to
the dismounting of the whole apparatus, is
entirely removed.

It should be noted that in the present case
there is not visible manifestation of dirt 60
deposition on the cathode and that the new
process cannot be compared to other elec-
trolytic cases where incrustations are formed
on the electrodes. It should also be re-
marked that, on the contrary, in certain 65
electrolytic operations and particularly in
the preparation of chlorates, the formation
of deposits on the cathode is considered as
favorable to the efficient working of the op-
eration. 70

Claims:

1. The herein described process for the
manufacture of metallic sodium, which con-
sists in subjecting fused caustic soda to elec-
trolysis, withdrawing the cathode periodi- 75
cally, bringing it into contact with a restora-
tive liquid, and then replacing it for continu-
ing the electrolytic operation.

2. The herein described process for the
manufacture of metallic sodium, which con- 80
sists in subjecting fused caustic soda to elec-
trolysis, withdrawing the cathode periodi-
cally, bringing it into contact with water to
restore its efficiency, and then replacing it
for continuing the electrolytic operation. 85

3. The herein described process for the
manufacture of metallic sodium, which con-
sists in subjecting fused caustic soda to elec-
trolysis, withdrawing the cathode when its
efficiency becomes materially diminished, 90
and continuing the electrolytic operation
with a cathode of greater efficiency.

The foregoing specification of my process
for the manufacture of metallic sodium
signed by me this seventeenth day of May 95
1909.

PAUL LEON HULIN.

Witnesses:

DEAN B. MASON,
R. EHRIOT.