

UNITED STATES PATENT OFFICE.

FRIEDRICH JOHANN HEINRICH ROEWER, OF HAMBURG, GERMANY, ASSIGNOR TO THE
E. I. DU PONT DE NEMOURS POWDER COMPANY, OF WILMINGTON, DELAWARE, A CORPO-
RATION OF NEW JERSEY

PROCESS OF DENSIFYING A NITROHYDROCARBON COMPOSITION.

No. 912,733.

Specification of Letters Patent.

Patented Feb. 16, 1909

Application filed August 13, 1908. Serial No. 448,358.

To all whom it may concern:

Be it known that I, FRIEDRICH JOHANN
HEINRICH ROEWER, a subject of the Emperor
of Germany, residing at Hamburg, Germany,
5 have invented a new and useful Improve-
ment in Processes of Densifying Nitrohydro-
carbon Compositions, of which the following
is a full, clear, and exact description.

Since trinitrotoluol has lately been used in-
10 stead of picric acid for loading shells, it has
been observed that when fused trinitrotoluol
is poured into the shells, after the substance
has set, it has a lesser specific gravity than
picric acid. A number of propositions have
15 been made for increasing the specific gravity
of trinitrotoluol. Thus it has been proposed
to increase the density of trinitrotoluol by
heavy pressure or by the addition of dinitro-
toluol. The pressing is slow and expensive,
20 and moreover, the addition of dinitrotoluol is
only a makeshift, as it is considered of great
moment to not use any mixture for loading
bombs, but only a simple chemical substance.

I have found that nitrotoluol and other
25 suitable nitrohydrocarbons can be obtained
of a satisfactory density, as for example 1.6,
in a very simple manner and without addi-
tion of other compounds, when the substance,
heated somewhat above its fusion point, is
30 poured into a receptacle chilled to 0° centi-
grade, by inserting a paper tube or funnel in
the opening of the receptacle, thereby ex-
tending the pouring channel vertically, and
delivering the substance in through this, per-
35 mitting it to back up in the paper tube, so
that the pressure produced by this extra col-
umn of material gives a denser casting, in
analogy, to metal foundry practice; the ex-
cess being removed after the substance is
40 cooled.

In French Patent #369,371 and in British

Patent #19215 of 1906, it is set forth that
the nitrohydrocarbons, densified by pressure,
may have their density still further increased
in a small degree if the mass is chilled dur- 45
ing the pressing. But these patents fail to
disclose my discovery that a density useful
for technical purposes can be produced with-
out the use of pressure.

Having now fully described my invention, 50
what I claim and desire to protect by Letters
Patent is:—

1. The process of densifying a nitro-hydro-
carbon composition for use in charging pro-
jectiles, consisting in introducing the compo- 55
sition, while in a molten condition, into a pre-
viously chilled receptacle, substantially as
described.

2. The process of densifying a nitro-hydro-
carbon composition for use in charging pro- 60
jectiles, consisting in subjecting the same,
while in a molten condition, to sudden chill-
ing while maintaining the same free from
pressure other than that of the composition
itself, substantially as described. 65

3. The process of densifying a nitro-hydro-
carbon composition for use in charging pro-
jectiles, consisting in subjecting the same,
while in a molten condition, to a sudden chill-
ing and to the pressure of a column of the 70
said composition extending above the part
thereof being densified, and maintaining the
composition to be densified otherwise free
from pressure, substantially as described.

In testimony of which invention, I have 75
hereunto set my hand, at Hamburg, on this
23 day of July, 1908.

FRIEDRICH JOHANN HEINRICH ROEWER.

Witnesses:

HUGO KÖHLING,

ERNEST H. L. MUMMENHOFF.