

V. THRANE.

APPARATUS FOR THE PRODUCTION OF NITROGEN COMPOUNDS FROM METAL CARBIDS

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1,364,157.

Patented Jan. 4, 1921.

Fig. 1.

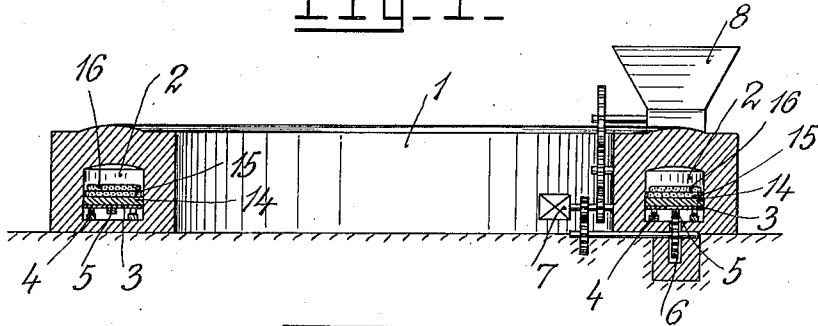
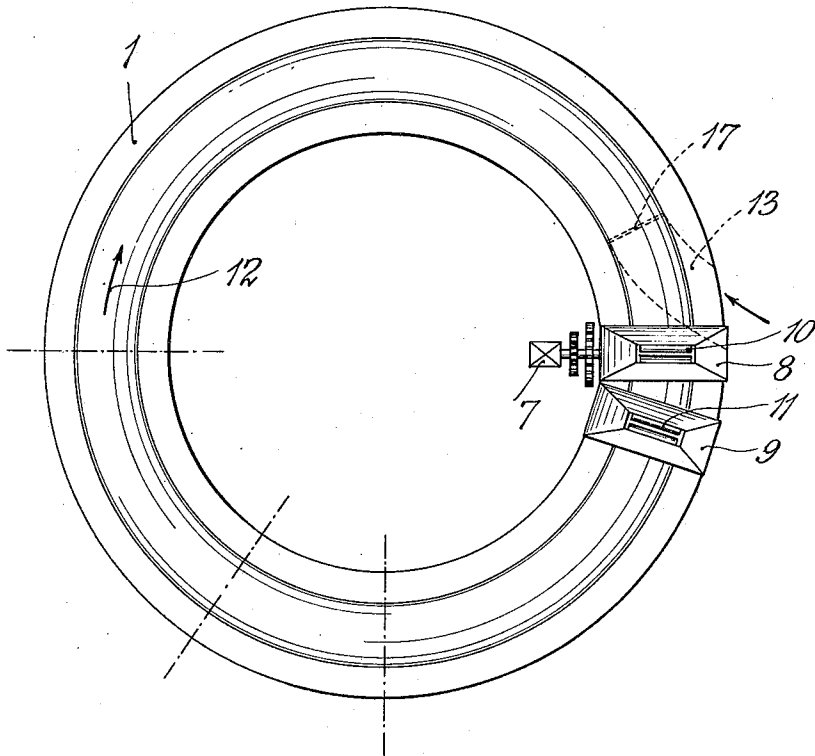


Fig. 2.



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APPARATUS FOR THE PRODUCTION OF NITROGEN COMPOUNDS FROM METAL CARBIDS.

1,364,157.

Specification of Letters Patent.

Patented Jan. 4, 1921.

Original application filed November 10, 1916, Serial No. 130,632. Divided and this application filed January 9, 1918. Serial No. 211,068.

To all whom it may concern:

Be it known that I, VICTOR THRANE, citizen of Norway, residing at Christiania, Norway, have invented certain new and useful
5 Improvements in Apparatus for the Production of Nitrogen Compounds from Metal Carbids, (forming a divisional part of my U. S. Patent Appl. No. 130,632 which has matured into Patent No. 1,273,690, dated
10 July 23rd, 1918), of which the following is a specification.

In the production of compounds from metal carbids and nitrogen the preheated carbid mass is moved or transported within
15 a furnace in a direction opposite to the incoming current of nitrogen, and by regulation of the temperature and velocity of the nitrogen gas the reaction is readily controlled.

20 The carbid is placed upon a layer of an inert substance, so that the nitrogen compound is produced upon this layer and may be easily removed with a larger or less portion of the same.

25 The furnace or apparatus is illustrated in the accompanying drawing, in which:

Figure 1 is a vertical section,

Fig. 2 is a plan view.

30 Like characters of reference refer to like parts in the several figures.

Referring to the drawings, —1— represents a furnace provided with an annular compartment —2— therein, in which the
35 endless curvilinear base plate or table —3— is rotatably mounted.

This table rests upon rollers —4— and is provided intermediate of its breadth with a curvilinear rack —5— adapted to mesh with the gear —6— which is rotated
40 through any suitable train of gearing driven from a prime mover —7— or other suitable source of power.

Operatively mounted on the furnace —1— are a pair of hoppers —8— and —9—
45 which discharge directly into the annular compartment —2— and are provided respectively with feed rollers —10— and —11— located in the discharge outlets, the said rollers being operatively driven through
50 a suitable train of gearing from the prime mover or source of power —7—.

The inert material is filled into the hopper —8— and is fed by the rolls —10— and discharged upon the moving table —3—, which
55 it will be understood travels in the direction

indicated by the arrow —12—, and in this way a layer of material is deposited upon the table.

The metal carbids are fed into the hopper —9— which is arranged alongside the
60 hopper —8—, the said carbids passing through between the feed rollers —11— and being deposited upon the layer of inert material which is already lying upon the table —3—.

65 As the table —3— is traveling in a clockwise direction and carrying the metal carbids delivered thereto a current of nitrogen is introduced into the annular compartment —2— through the opening —13— in the lateral wall of the furnace —1—. The said
70 current of nitrogen traveling in a direction opposite to that of the rotation of the table —3— acts upon the preheated metal carbids and produces the desired nitrogen com-
75 pounds.

When the desired nitrogen compounds, produced during the passage of the metal carbids through the annular compartment —2— and under the influence of the current
80 of nitrogen, arrive at the opening —13—, the stationary or mechanically operated knife —17— which is located at a level corresponding to the bottom of the nitrogen compounds (at the top of the layer of inert
85 material) loosens the same from the underlying loose indifferent material so facilitating discharging the said compounds from the furnace.

It will be noted that the passage 13, shown by dotted lines, merges into the passage 2. This will throw the lower wall of the passage 13 within the chamber 2 as shown, and the knife 17 being arranged at the inner edge of the bottom wall of the
95 passage 13 will loosen the nitrogen compounds from the inert material. As the table 3 moves, the loosened material will be forced by the material behind it along the bottom wall of the passage 13 to the exit of
100 said passage.

It will thus be seen that the operation of this furnace is continuous and the compounds produced thereby are obtained by a
105 single operation.

The several parts of the furnace together with removable parts may be insulated or protected against the strong heat so that deterioration of the said parts is not liable
110 to take place.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claim constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawing shall be interpreted as illustrative and not in a limiting sense.

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

15 1. A furnace suitable for nitrifying carbids, said furnace comprising a compartment, a table movable in the said compartment, means for actuating the table, means for delivering a layer of inert material to the table, means for delivering the carbid material to be acted upon on the said layer
20 of inert material and means for delivering a current of nitrogen to the compartment in a direction counter to that in which the table moves.

25 2. A furnace suitable for nitrifying carbids, said furnace comprising a compartment, a table movable in the said compart-

ment, means for delivering a layer of inert material to the table, means for delivering onto the said layer a layer of carbid material to be nitrified, means for delivering a current of nitrogen to the compartment and means for separating the nitrogen compound formed on the table and for discharging the same from the furnace.

3. A furnace suitable for nitrifying carbids, said furnace comprising a compartment having a nitrogen inlet and an outlet opening, a table movable in the said compartment, a plurality of feeding means adapted to successively discharge onto said table, and a separating and discharging means including a knife located in proximity to the said outlet opening, capable of separating the nitrified carbids, and of discharging the same, as and for the purpose specified.

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

VICTOR THRANE.

Witnesses:

GUNNAR NORDER,
THORE ROSENDAHL.