

C. DANTSIZEN.
ELECTROLYTIC APPARATUS AND METHOD.
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1,416,692.

Patented May 23, 1922.

Fig. 1.

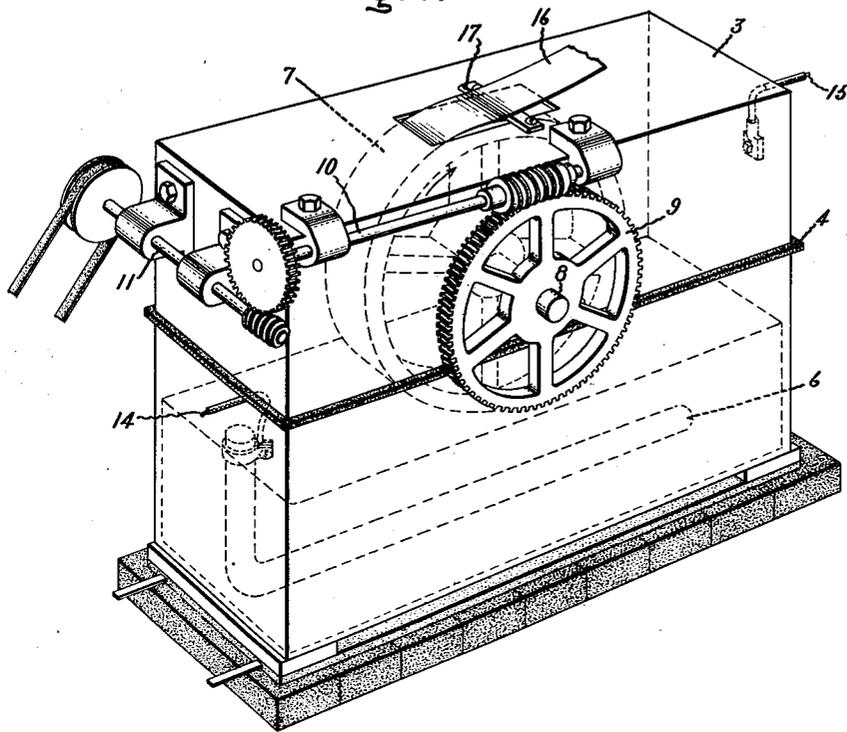
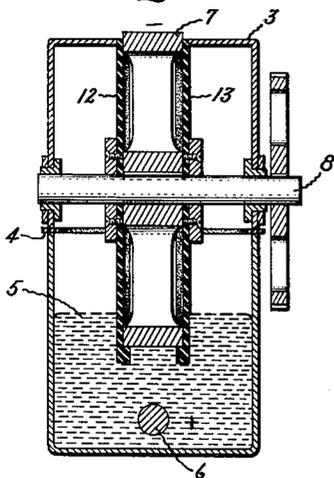


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ELECTROLYTIC APPARATUS AND METHOD.

1,416,692.

Specification of Letters Patent. Patented May 23, 1922.

Application filed May 21, 1920. Serial No. 383,076.

To all whom it may concern:

Be it known that I, CHRISTIAN DANTSIZEN, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electrolytic Apparatus and Methods, of which the following is a specification.

The present invention comprises apparatus and process for producing sheets of electro-deposited metal.

Various attempts have been made to produce iron in thin laminae directly by electrolysis as mechanical working materially alters the magnetic properties of iron. Difficulties have been experienced heretofore in stripping electro-deposited metal from the cathode. Electrically deposited iron adheres so firmly to some ordinary metals, such as copper or iron, as to make removal mechanically impracticable; on other metals, for example, aluminum, a very poor deposit is obtained.

I have discovered that iron may be deposited as a uniform and removable layer of good mechanical and magnetic properties on a cathode comprising tungsten or molybdenum, or alloys of these metals either with each other or with other metals.

An apparatus suitable for producing sheets of metal in accordance with my invention and which embodies in itself features of my invention is shown in the accompanying drawing. Fig. 1 is a perspective view of this apparatus and Fig. 2 is a vertical cross section.

The apparatus illustrated in the drawing comprises a container 3 conveniently made in two sections separable at 4. In the lower section of the container is provided a suitable electrolyte 5 consisting, for example, of a ferrous salt, say ferrous chloride, and a suitable anode 6 consisting of iron. In the upper section of the container is located a cylindrical cathode 7, consisting wholly or in part of tungsten, molybdenum or an alloy consisting largely of tungsten or molybdenum. The cylindrical cathode 7 is rotatably supported upon a shaft 8, which carries also a gear wheel 9. The gear wheel 9 may be driven in any convenient way, as, for example, by the geared shaft 10, receiving power from the pulley-driven shaft 11. It is not necessary that the entire rotatable structure 7 should consist of a tungsten group metal. Only the peripheral band

which comes into contact with the electrolyte need consist of tungsten or molybdenum. The rest of the cathode may consist of iron. Preferably shields 12, 13 of insulating material, such as bakelite, may be provided to confine access of the electrolyte to the peripheral band.

An electrolyzing current is introduced by an anode conductor 14 and a cathode conductor 15. A strip of electro-deposited-metal 16 may be continuously separated by a cleaving blade 17 from the cathode section emerging from the electrolyte when the cathode is slowly rotated in the direction indicated by the arrow.

By the described method and apparatus sound, homogeneous ribbon of electrolytic iron as thin as 0.00025 may be produced. Ordinarily the range of thickness of electrolytic metal strip produced in accordance with any invention is from 0.00025 to 0.010 in. although my invention is not limited to producing metal of any particular thickness.

I intend by the accompanying claims to cover not only tungsten as applied to my process and apparatus but also an equivalent metal such as molybdenum and alloys having a relatively large percentage of tungsten or molybdenum.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. The method of producing laminae of electrolytic iron which consists in electro-depositing iron upon a tungsten cathode from an electrolyte, removing a part of said cathode from said electrolyte while submerging another part of said cathode and stripping said deposit continuously from said cathode as a deposit bearing part of said cathode emerges from said electrolyte.

2. An electrolytic apparatus comprising a container, a cylindrical tungsten cathode therein partly submerged in an electrolyte in said container, an anode, means for rotating said cathode and means for cleaning a deposited layer of metal from said cathode.

3. The method of producing thin sheets of electrolytic iron which consists in electro-depositing iron upon a tungsten cathode to a desired thickness and when a layer of desired dimension has been deposited stripping the same from said cathode.

In witness whereof, I have hereunto set my hand this 20th day of May, 1920.

CHRISTIAN DANTSIZEN.