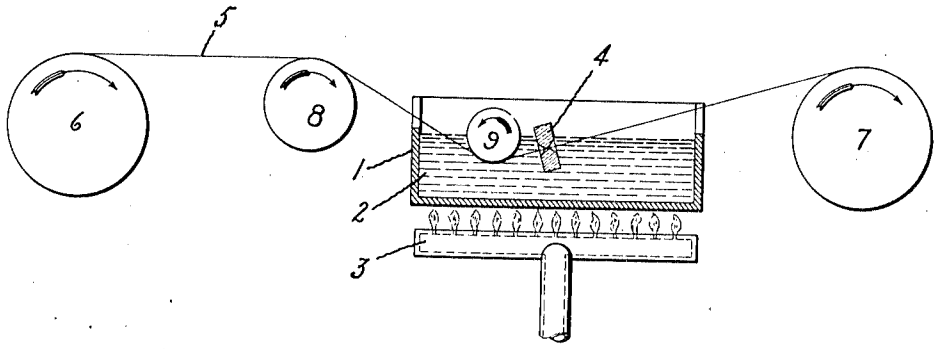
H. SCHINNERLING.

PROCESS OF DRAWING WIRE AND APPARATUS FOR SAME.

APPLICATION FILED APR. 16, 1913.

1,096,866. Patented May 19, 1914.




Witnesses:
Chas. B. Stiles
J. Ellis Glen.

Inventor:
Heinrich Schinnerling,
by: Albert G. Davis
His Attorney.

# UNITED STATES PATENT OFFICE.

HEINRICH SCHINNERLING, OF REINICKENDORF-OST, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## PROCESS OF DRAWING WIRE AND APPARATUS FOR SAME.

1,096,866. Specification of Letters Patent. Patented May 19, 1914.

Application filed April 16, 1913. Serial No. 761,480.

*To all whom it may concern:*

Be it known that I, HEINRICH SCHINNERLING, a subject of the King of Prussia, residing at Reinickendorf-Ost, Germany, have invented certain new and useful Improvements in Processes of Drawing Wire and Apparatus for Same, of which the following is a specification.

My invention relates to a method of drawing wire and the apparatus for carrying out such process and is particularly applicable to the drawing of tungsten wire, though it will be understood that it is not limited to any specific material.

It is well known that the metal tungsten is characterized by very great hardness, and it has been necessary, therefore, in working the metal into wire to apply high temperatures. In view of the great affinity of tungsten for oxygen this, of course, involves serious difficulties. Furthermore, it has been found that ordinary lubricants are unsuited to the drawing of tungsten wire, and it has, therefore, been necessary to coat the metal prior to drawing with a layer of a more ductile metal or of graphite. The application of this coating, however, makes the process of wire-drawing difficult, and, besides the high working temperature necessary for the tungsten, tends to render the metal impure because of the lubricant, and this, of course, is a disadvantage, particularly when the wire is to be used in incandescent lamps.

In accordance with the present invention, the foregoing difficulties are overcome by drawing the wire through a die situated in hot oil. This makes it possible to draw the wire through the die at the comparatively low temperature of 300° or 400° C., which experiments have shown is sufficiently high. The reason for this is apparently due to the fact that the wire is heated very uniformly throughout its entire section, as it is carried through the hot oil in which the die is located.

I have illustrated my invention in the accompanying drawing in which 1 is a vessel or trough in which is placed a suitable lubricant 2, such as oil. The vessel may be heated by any suitable means, such as a gas-burner 3. The die 4 is supported within the vessel 1 below the surface of the oil. The wire 5 is wound from a drum 6 on to another drum 7 and is directed to the die 4 by passing over a sheave 8 and underneath a second sheave 9, which is supported within the vessel 1, and the lower portion of which is below the surface of the oil. It will, of course, be obvious that the temperature of the oil can be easily regulated and that no other lubricant than that contained in the vessel through which the wire passes, is necessary. It will, of course, be understood that any lubricant other than oil may, if desired, be used.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

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

1. The method of drawing wire through a die submerged in a lubricant, which consists in heating the lubricant and drawing the wire through the die.

2. The method of drawing wire through a die submerged in oil, which consists in heating the oil and drawing the wire through the die.

3. The method of drawing tungsten wire through a die submerged in oil, which consists in heating the oil to a temperature of from 300° to 400° C. and drawing the wire through the die.

4. In a wire drawing apparatus, a vessel adapted to contain a lubricant, a die so located in the vessel as to be submerged in the lubricant, means for heating the vessel, and means for drawing the wire through the die.

5. In a wire drawing apparatus, a lubricating bath, means for heating the same, a die submerged in the lubricant, and means for drawing the wire through the die.

In witness whereof, I have hereunto set my hand this 28th day of March, 1913.

HEINRICH SCHINNERLING.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.