

(No Model.)

J. HOLLAND.  
DRAW PLATE.

No. 285,896.

Patented Oct. 2, 1883.

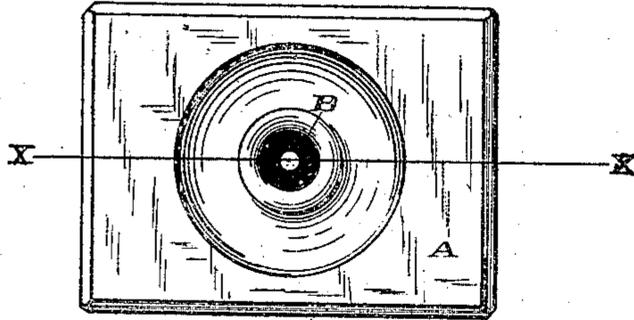


Fig. I.

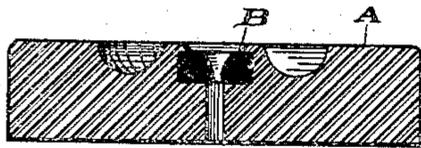


Fig. II.

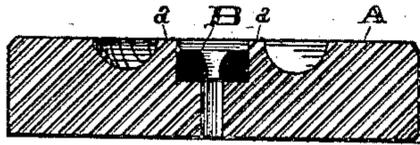


Fig. III.

ATTEST

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ATTY

# UNITED STATES PATENT OFFICE.

JOHN HOLLAND, OF CINCINNATI, OHIO, ASSIGNOR TO THE AMERICAN IRIDIUM COMPANY, OF SAME PLACE.

## DRAW-PLATE.

SPECIFICATION forming part of Letters Patent No. 285,896, dated October 2, 1883.

Application filed October 3, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOLLAND, a citizen of the United States, residing at Cincinnati, Ohio, have invented certain new and useful Improvements in Draw-Plates, of which the following is a specification.

My invention relates to plates for drawing wire tubes, &c.; and it consists in making the draw-eye of iridium phosphide or phosphide of iridium combined with other metals.

Prior to my invention draw-plates have been made of tempered steel or chilled iron for ordinary use, and for fine light work rubies, diamonds, and other precious stones have been used. The steel plate lasts but a short time and its work is never perfect. It cannot be tempered or chilled after the draw-eyes are formed, because the holes would not keep their shape. When the plate is chilled, the outer surface of the metal only is very hard, while the interior, where the bearing of the draw-eye comes, is comparatively soft. In use the plate is heated by friction. The temper is thereby drawn, and the wire drawn through is never of uniform gage, owing to the expansion of the metal. To overcome these defects rubies and other precious stones have been used; but, in addition to being very costly, they have not sufficient strength to stand heavy work, and many of them, after being drilled, are found to have cracks and fissures in them, which render them worthless. By my invention all these defects are remedied, and I am enabled to produce draw-plates which have all the advantages of the jewel and steel plates combined.

I have discovered that iridium or the phosphide of iridium, when fused, molded, and finished for a draw-plate, has all the hardness required, combined with the requisite strength for all kinds of work, and is capable of receiving a high polish, thereby reducing friction and preventing "scratching," so that plated wire and tubes may be drawn. Besides, it does not expand perceptibly when heated, and has no "temper" to be drawn, but retains its original hardness at a heat that would fuse the ductile metals.

In the accompanying drawings, Figure I represents my draw-plate in front elevation. Fig. II is a central section through line *xx* of Fig. I. Fig. III is a similar section of the partially-finished plate.

A represents a plate of brass or soft steel, which has a cavity turned or bored out to receive the iridium bushing B. Around the cavity in plate A a groove is turned, leaving a ring or flange, *a*, which, when the bushing B is inserted, projects up around it. The bushing or draw-eye is dressed and finished in substantially the manner that ruby bushings are now prepared, and when inserted in the plate A the flange *a* is spun down upon it, firmly embedding it in the plate A. The perforations through the bushing and plate register with each other, of course.

The plate or metal from which I form my bushing is prepared for some uses by the process described in Letters Patent No. 241,216, granted to me May 10, 1881, but preferably from an alloy of iridium or iridium phosphide and iron or platinum, or iridium, iron, and platinum, using, when platinum and iridium only are employed, from five to ten per cent., by weight, of platinum, and when iron is used alone from ten to twenty per cent. of iron.

I prepare the alloy by first placing the iridium in a crucible and subjecting it to a high heat, then adding to it about one-fourth its weight of phosphorus, and when the iridium has fused I then add the other metal and stir until thoroughly mixed, when the metal is poured into molds of the desired shape. For small draw-plates I prefer to cast the metal in thin sheets, cut it into pieces by means of copper disks and diamond dust or corundum, and drill the pieces in the same manner as rubies are drilled; but for the larger plates the holes are cast to near the proper size, using a plumbago or metal core. The labor of drilling the hole is thus saved, and the plate is dressed and finished as ruby and diamond plates are.

I have found that the alloys above described will answer for draw-plates for every purpose; but I do not limit myself to them alone,

as other metals, especially copper, silver, and nickel, alloyed with iridium in the same manner, make excellent draw-plate metal.

I claim as my invention—

- 5 1. As a new article of manufacture, a draw-eye or bushing for draw-plates, consisting wholly or mainly of iridium.
2. A draw-plate consisting of a metal plate,

A, and jointly therewith a bushing, B, made of iridium or iridium alloy, substantially as is specified.

JOHN HOLLAND.

Witnesses:

ALFRED B. BENEDICT,  
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