

No. 751,180.

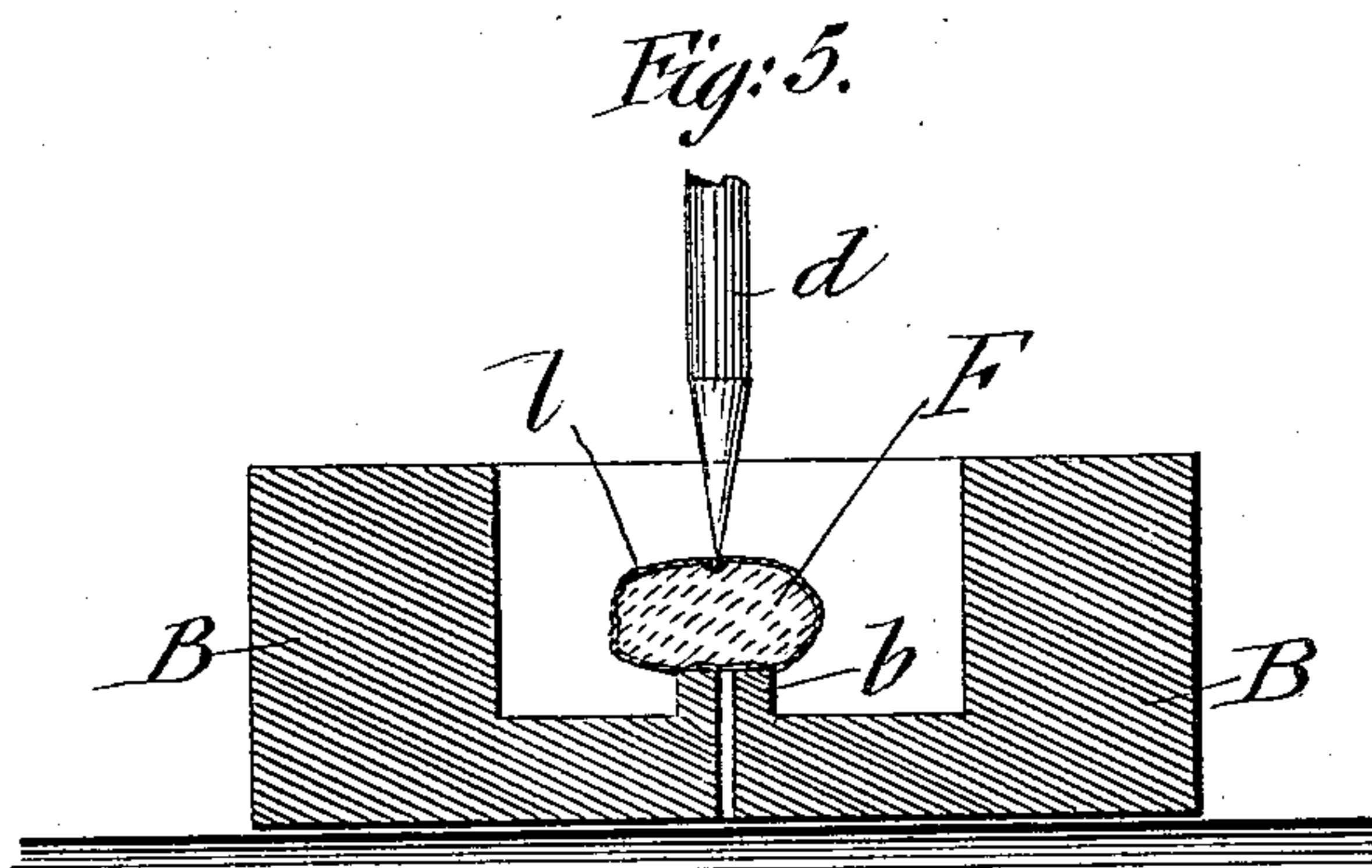
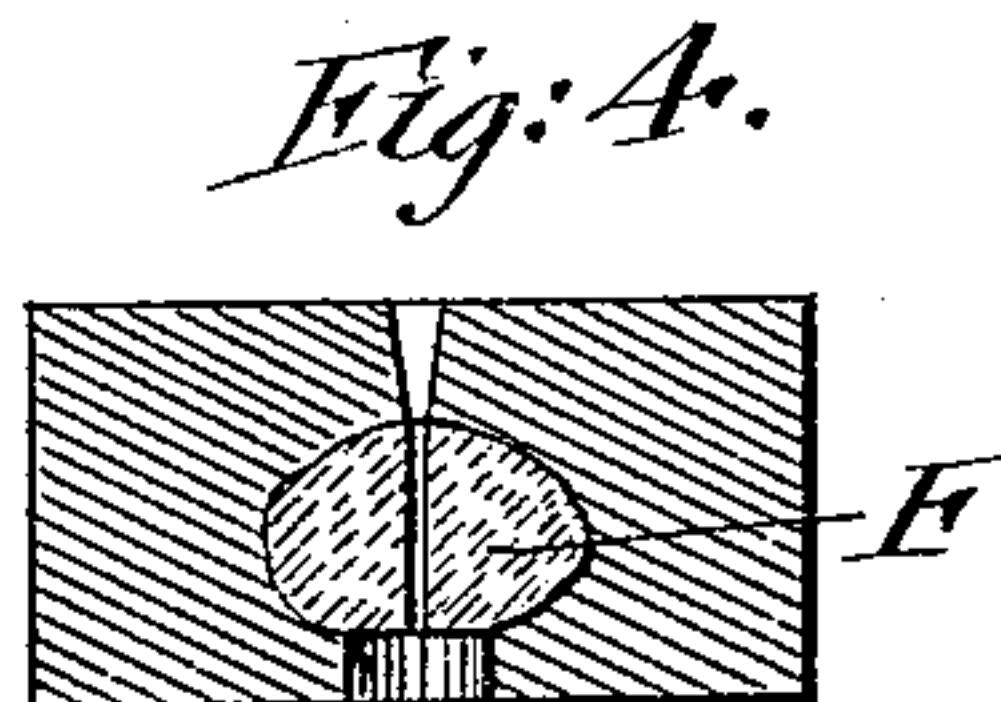
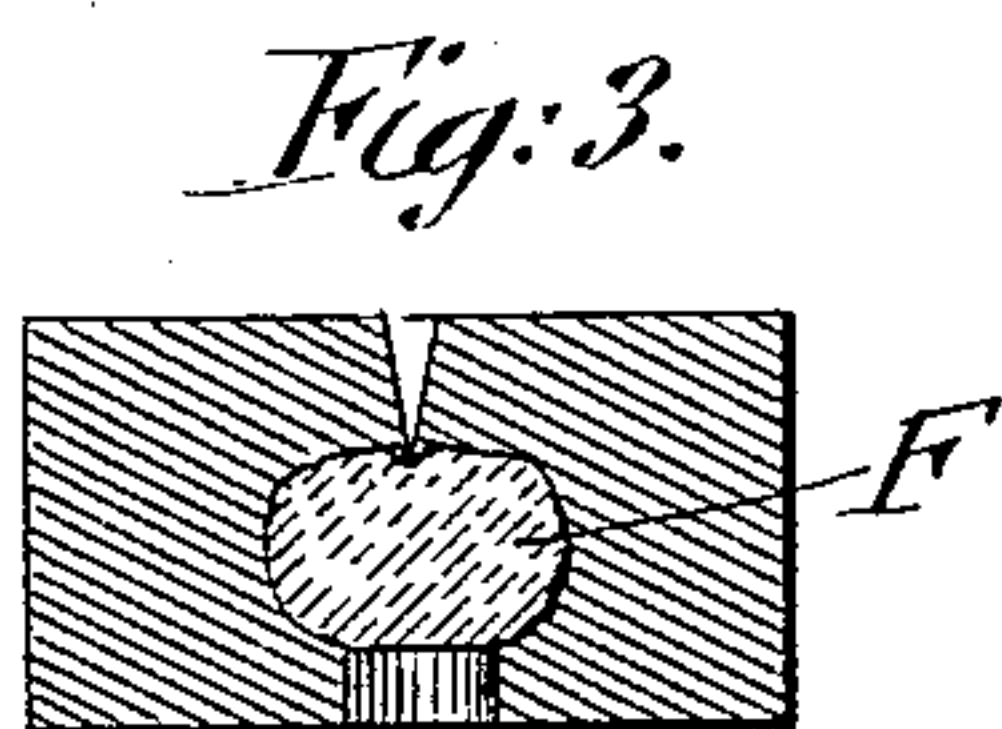
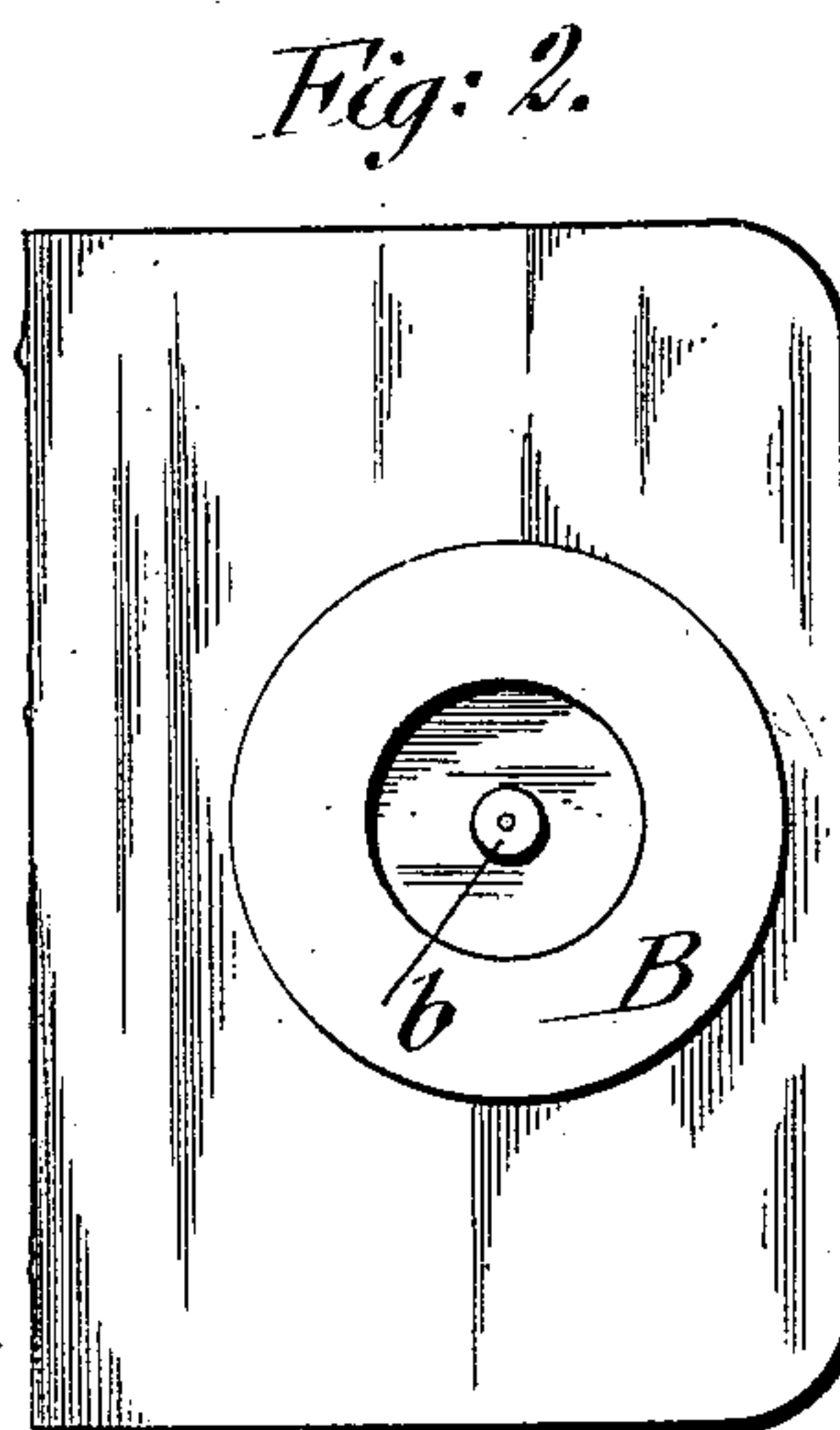
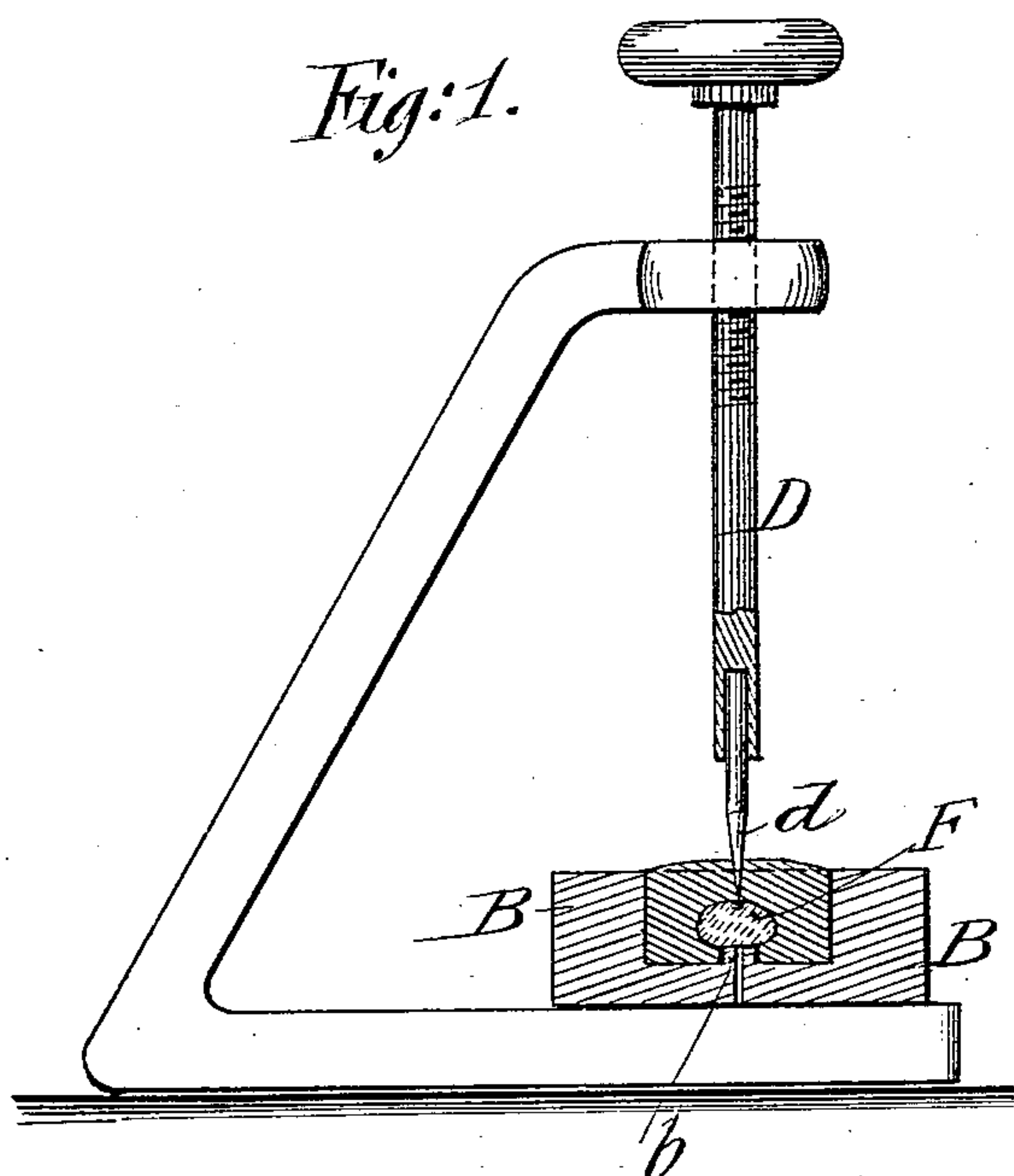
PATENTED FEB. 2, 1904.

F. KRAUSE.

PROCESS OF MAKING DIAMOND DRAW PLATES.

APPLICATION FILED AUG. 6, 1903.

NO MODEL.



Witnesses
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FRIEDRICH KRAUSE, OF JERSEY CITY, NEW JERSEY.

PROCESS OF MAKING DIAMOND DRAW-PLATES.

SPECIFICATION forming part of Letters Patent No. 751,180, dated February 2, 1904.

Application filed August 6, 1903. Serial No. 168,445. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH KRAUSE, a citizen of the Empire of Germany, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Processes of Making Diamond Draw-Plates, of which the following is a specification.

Diamonds which are to be used in the arts have heretofore been set in the tools by casting a body of metal around them, so as to prevent the stones, which are of themselves brittle, from splitting and enable their working surface to be applied to the work to be performed in as convenient a manner as possible. Heretofore the stone was incased by casting the metal around it or by pressing the same around the stone or by applying the setting around the stone by electrodeposition. In the two former cases the stone is brought into contact with molten or very hot metal, which has the effect of injuring the stone and rendering it more brittle and less durable, while by the process of electrodeposition a setting of sufficient strength is not provided for most purposes required in the arts. Moreover, the hermetical inclosure of the stone is difficult to obtain by casting or pressing metal around it, especially when a stone of irregular form is to be inclosed.

The object of this invention is to obviate the defects incident to the methods of incasing diamonds for use in the arts referred to; and for this purpose the invention consists of a process of making diamond draw-plates which consists in supporting the diamond at two diametrically opposite points, then casting the metal around the stone and its supports and removing the stone and its incasing metal after it has cooled from the mold.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of one form of mold employed for carrying out my improved process of making diamond draw-plates. Fig. 2 is a top view of the mold, part of the supporting-frame being broken off. Figs. 3 and 4 are vertical transverse sections of the stone and the metal cast around the same, Fig. 4, showing the hole drilled through the stone for using it in a wire-drawing die;

and Fig. 5 shows a stone enveloped by a layer of sheet metal and held in position prior to casting the metal around the same.

Similar letters of reference indicate corresponding parts.

My improved process is carried out as follows: The surface of the diamond is first properly cleaned, after which the stone is slightly recessed at a point near or in the central axis of the same by a diamond drill. The stone F is then placed in the mold B, the bottom of which is provided with a central raised portion b, the surface of which is slightly concaved, so as to receive the stone at a point diametrically to the recess drilled in the same. A stylus c, which is secured in a suitable socket of a vertically-adjustable screw-shank D, is then set with its point in the small recess of the stone, said stylus being made of clay or other suitable refractory material. The stone is now in condition to receive the casting. A suitable metal is then cast around the stone and stylus, as shown in Fig. 1. The metal is then permitted to cool slowly. As it shrinks slightly in cooling, it can be readily removed from the mold by a few blows with a mallet on the same. The stylus is then broken off and the point remaining in the metal removed by drilling or otherwise. The metal thus incasing the stone is then planed off at its surface, so that a diamond incased by a cylindrical body of metal is obtained, as shown in Fig. 3, in which the casing is provided with a larger opening at one side and a smaller opening tapering toward the recess drilled in the stone at the other side. A hole can be then drilled through the stone, so that the same is used as a die for drawing steel and other wire.

The stones being set in the manner described can be finished as a draw-plate by drilling the hole in line with the recess and central axis of the stone in a more accurate and reliable manner than heretofore.

In some cases, especially when cast-steel is used for the incasing metal, it is desired to protect the stone against the direct action of the hot metal. For this purpose the stone is preferably surrounded by a thin layer l of sheet metal, (shown clearly in Fig. 5,) which is melted when the hot metal is cast into the

mold, so as to form thereby a closely-adhering alloy around the stone without impairing the strength of the same.

5 The sheet-metal layer enveloping the diamond receives, so to say, the "brunt" of the intense heat of the hot molten metal. Being exposed to the hot metal it absorbs heat for some time, and so reduces to some extent the intense effect of the hot metal on the diamond.
10 This absorbed heat melts the sheet-metal layer, forming a closely-adhering alloy and insuring a hermetical inclosure of the stone.

I am aware that heat-insulating separating-layers have been proposed. These, however,
15 are subject to disintegration after some time and do not insure so efficient an inclosure of the stone as that obtained by the use of the sheet-metal layer herein proposed.

By my improved process cast-steel and other
20 hard metal can be used for incasing metal, so that a setting of considerable durability is obtained that can stand a greater amount of wear and tear without breaking or getting loose from the stone.

25 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The process herein described of making diamond draw-plates, which consists in boring
30 the stone, then supporting it in a mold at dia-

metrically opposite points, said points being arranged in the line connecting the central axis with the recess, then casting metal around the stone with the exception of the part forming the recess, then removing the stone with the incasing metal from the mold after the metal has cooled, and then drilling a hole through the stone in line with the recess and the central axis of the stone, substantially as set forth.

2. The process herein described of making diamond draw-plates, which consists in boring a small recess in the stone, wrapping a thin layer of sheet metal around the stone, suitably supporting the so-enveloped stone in a mold, inundating the same with molten metal and melting the layer so as to form an inclosing alloy surrounding the stone, removing the stone enveloped by the incasing metal from the mold after the metal has cooled, and drilling a hole through the stone in line with the recess and the central axis of the stone, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRIEDRICH KRAUSE.

Witnesses:

PAUL GOEPEL,
HENRY J. SUHRBIER.