

(No Model.)

P. B. CHARBONEAU.

SAW SWAGE.

No. 287,363.

Patented Oct. 23, 1883.

Fig. 1

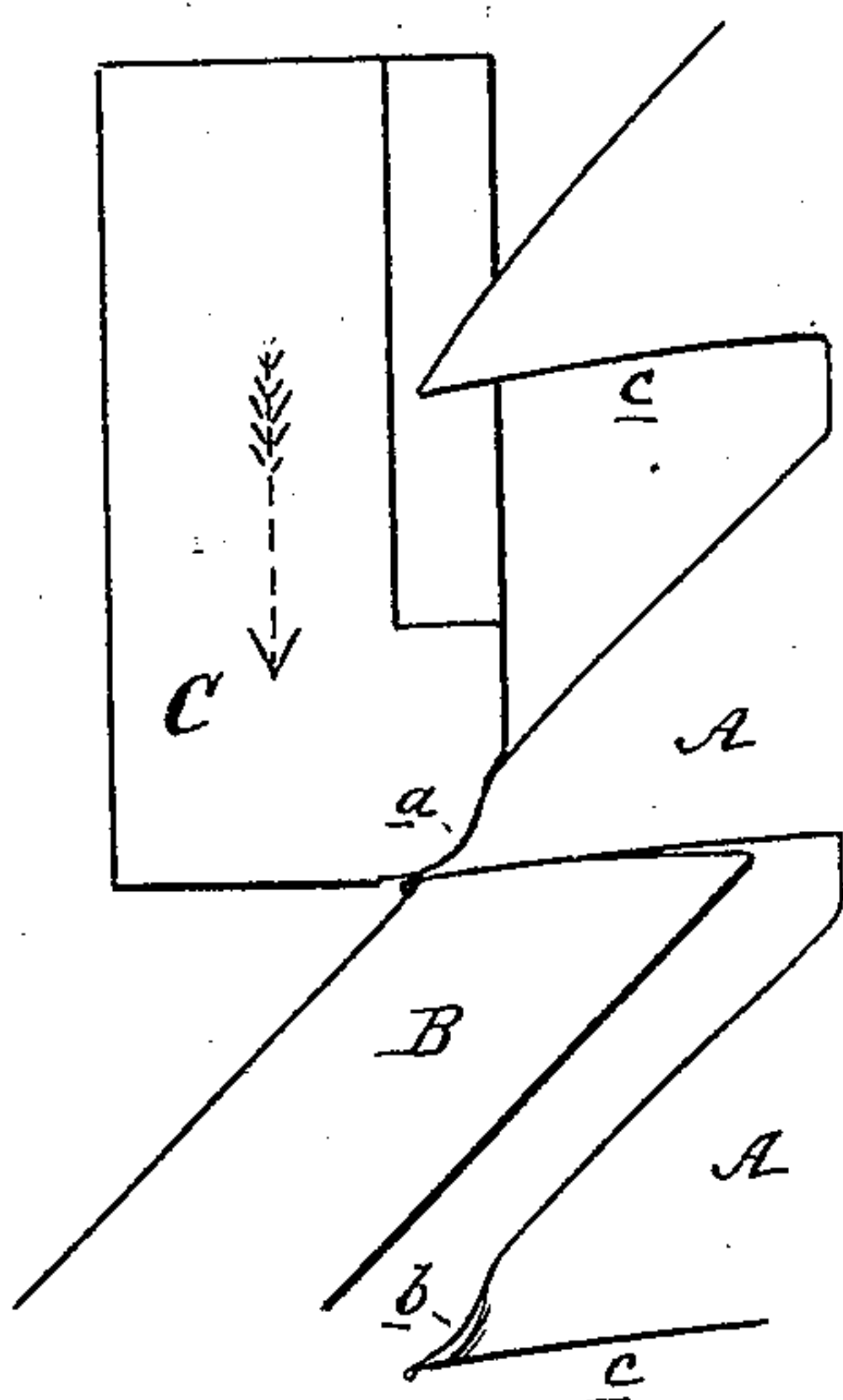


Fig. 2

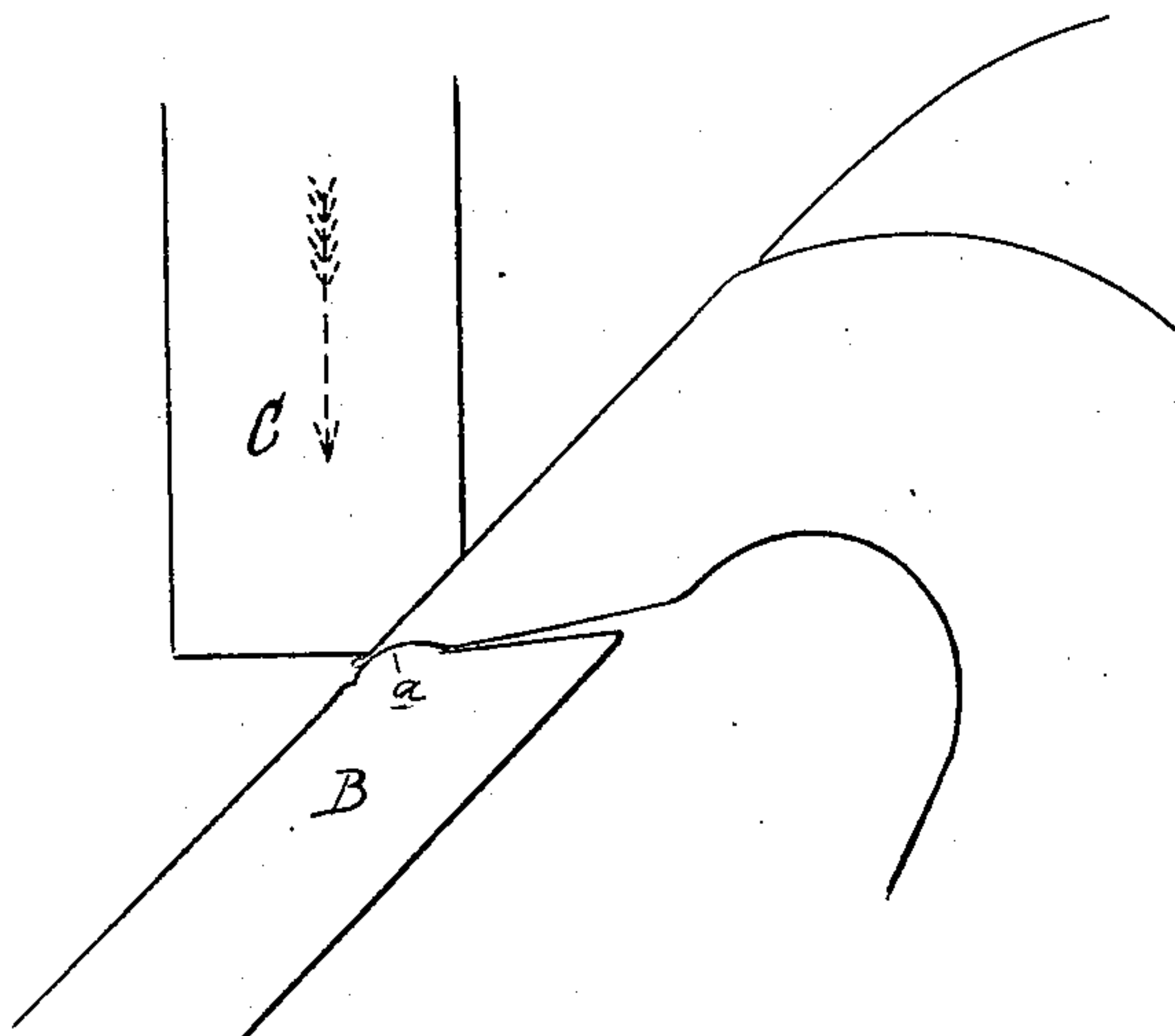


Fig. 3

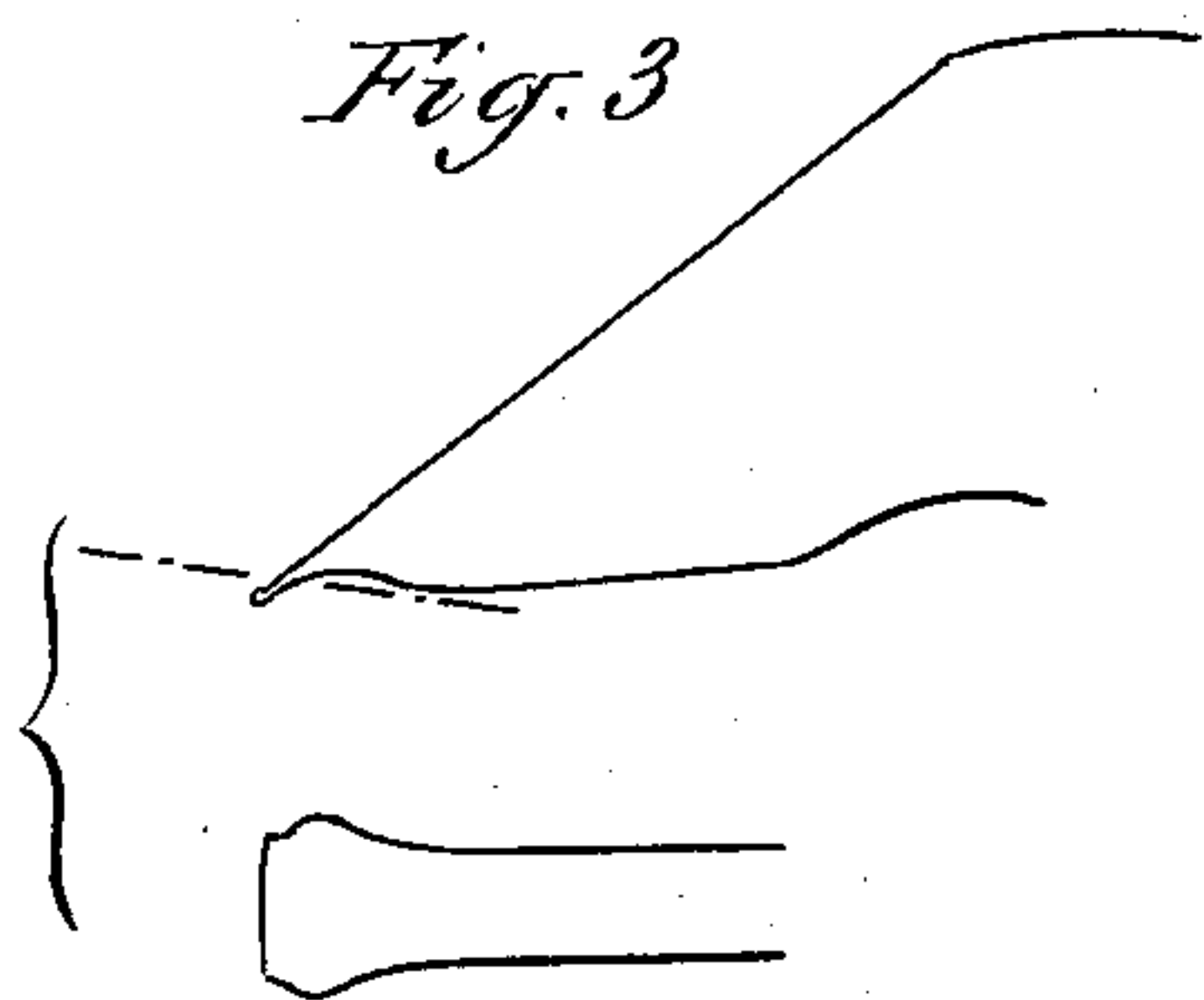
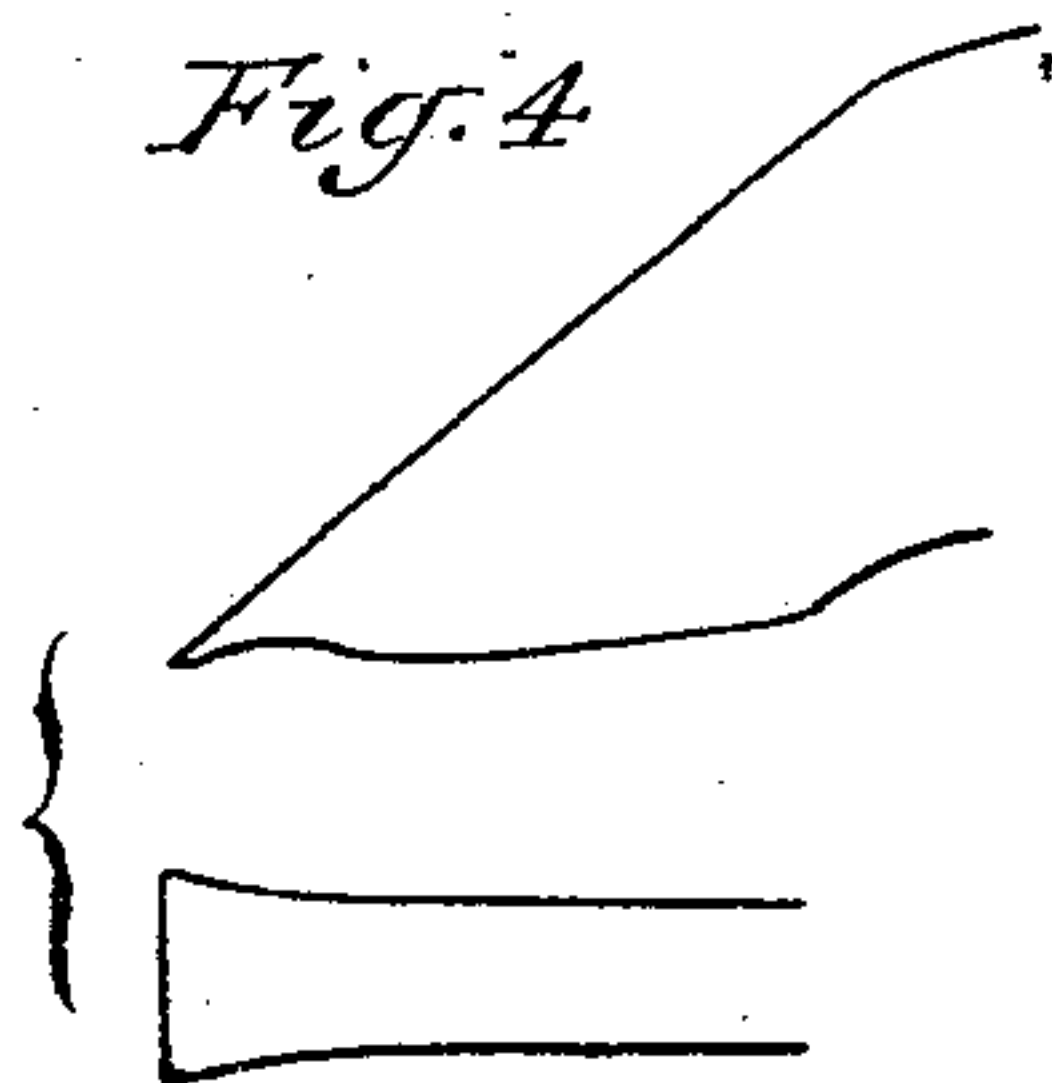


Fig. 4



Attest:

A. Barthel
E. Scully

Inventor:

Pascal B. Charboneau
by his Atty. Thos. S. Sprague

UNITED STATES PATENT OFFICE.

PASCAL B. CHARBONEAU, OF BAY CITY, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO H. A. FRASER AND J. B. BARBER, BOTH OF SAME PLACE.

SAW-SWAGE.

SPECIFICATION forming part of Letters Patent No. 287,363, dated October 23, 1883.

Application filed May 10, 1883. (No model.)

To all whom it may concern:

Be it known that I, PASCAL B. CHARBONEAU, of Bay City, in the county of Bay and State of Michigan, have invented new and useful Improvements in Saw-Swages; and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form a part of this specification.

10 This invention is an improvement in saw-swages; and it consists in the construction and arrangement of parts, as will be more fully hereinafter set forth, and specifically pointed out in the claims.

15 At the present state of the art swaged saw-teeth are generally formed by upsetting the tooth, so as to spread its cutting-edge, or a form of punch or striker has been used which forms a flattened saw-tooth. The objection to
20 the method of upsetting the tooth is that the steel which forms the cutting-edge of the tooth is thereby injuriously affected, as the fibers or particles of steel lose some of their cohesion, making the steel, as it is technically called,
25 "coarse." Where the saw-teeth are much worn, the operation of upsetting has to be preceded by filing, so as to bring the saw-tooth in proper shape for upsetting. The swage-tooth obtained by punching devices is weak and ne-
30 cessitates much filing. A general objection to all present devices of forming swage-teeth is that they all affect the cutting-line of the tooth, which necessitates a readjustment by filing, which in circular saws with inserted teeth is a
35 serious drawback. With my means for swaging saw-teeth the cutting-line of the tooth is never affected, and the tooth is formed by an operation which is just the reverse from up-
40 setting, and tends to refine the steel which makes up the cutting-edge, instead of destroying its cohesion, as in the upsetting process. Another advantage is that I am enabled to form a superior swage-tooth with less loss of material, as the amount of filing needed to
45 perfect my tooth is but trifling, as will be shown and explained hereinafter.

50 In the drawings, Figure 1 shows in diagram the operation of swaging a tooth of an ordinary mill-saw. Fig. 2 shows the operation of swaging an inserted tooth of a circular saw.

Fig. 3 is a side elevation and top plan of the same tooth after swaging. Fig. 4 is a side elevation of the same tooth when perfected by filing.

In Fig. 1, A is the tooth of an ordinary mill- 55 saw, which is intended to be swaged. B is a bed tool or anvil to support the tooth. C is a die, which is provided with a segmental cylindrical face, *a*. This die is forced down by pressure upon the tooth, as shown by dotted 60 arrow. The action of the die C will be easily understood from the drawings. Its rounded portion *a* will form an indentation, *b*, on top of the tooth, pressing a corresponding amount of material toward the cutting-edge and produc- 65 ing the desired spread or display, as the shape of the die does not allow the material to escape any other way. To get the proper effect, the die C is held in proper guides, or other- 70 wise, so as to allow it to move only in the direction it is intended to act. The bottom die or anvil, B, serves as a rest only, and furnishes a large enough support and resistance against the pressure brought to bear against the top die, so as not to alter or affect the cutting-line 75 *c* of the saw. Its bearing or supporting surface does not extend beyond the cutting-edge, thereby aiding and facilitating the action of the upper die, which, with sufficient pressure, can now form an almost finished cutting-edge, 80 which requires only a few strokes of a file to form a perfect chisel-edge.

In Fig. 2 is shown the arrangement of the dies for swaging the teeth of a circular saw. The form of the dies is reversed—that is, the 85 bottom or stationary die is provided with the segmental cylindrical face, while the top die is provided with a plain inclined face. The top die is brought down upon the tooth, the same as in Fig. 1, but the indentation will now nat- 90 urally be produced on the leading face of the saw-tooth; but the result is again a swage-tooth of the same conformation as in Fig. 1, necessitating only a few strokes of a file to acquire the chisel-edge. It will be seen that (the 95 saw being free to rotate) the top tool merely presses the saw-tooth onto the lower, without in the least affecting the cutting-line of the tooth, if it is given only enough bearing-surface. This is a decided advantage of my pro- 100

cess, especially for swaging inserted teeth. After swaging, all the filing needed is simply to sharpen the cutting-edge, which generally has only a little burr, if the operation has been performed with any care. As the tooth is provided with an indentation back of its cutting-edge, the filing will produce a regular chisel-edge, as seen in the drawings. This is a feature not produced by any other manner of swaging. The nature of the indentation, produced as it is by a perfectly-smooth die, is of itself a desirable feature in my swage-tooth, as it greatly facilitates the escape of the sawdust, its smoothness making it superior to any similar indentation obtained by the use of a file.

The use of the segmental cylindrical die-face I consider an important factor, as it furnishes a tooth that presents a most favorable cutting-edge—that is, a chisel-edge—the action of which is greatly assisted by the smooth indentation into which it leads the débris.

A swage-tooth obtained by the process herein described is easily distinguishable from one obtained by any other way.

What I claim as my invention is—

25

1. The combination of the anvil B and reciprocating die C, one having a rounded portion, as at *a*, to form a recess in the rear of the cutting-edge of the tooth, and the die C adapted to strike diagonally on the back of the tooth, substantially as described. 30

2. The anvil or stationary die B, having the rounded portion, as shown, combined with the movable die having inclined surface, and the whole adapted to swage a recess in the face of the tooth in the rear of the cutting-edge and spread the metal on either side thereof, as set forth. 35

PASCAL B. CHARBONEAU.

Witnesses:

H. S. SPRAGUE,
E. SCULLY.