

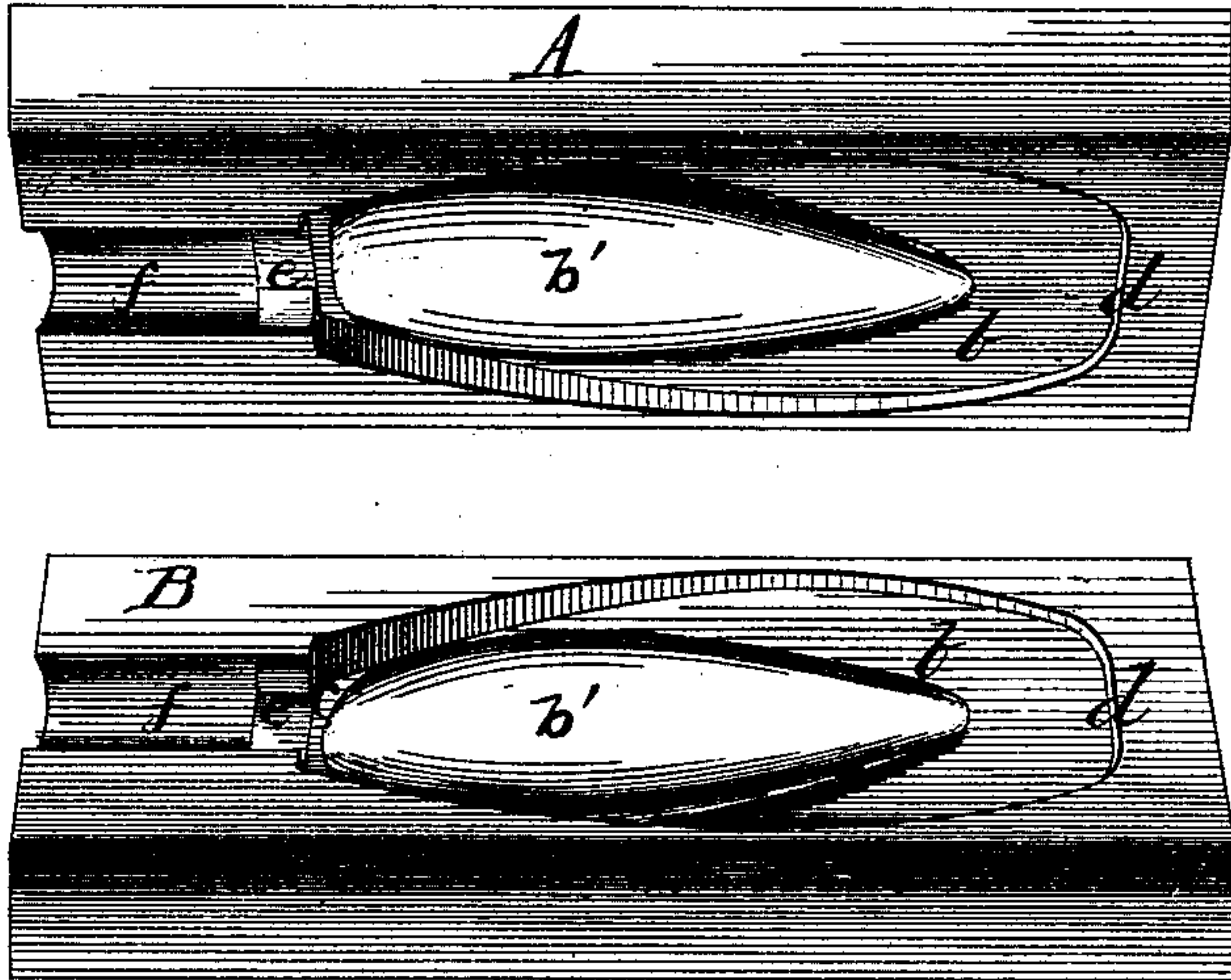
J. W. WATERMAN.

DIES FOR THE MANUFACTURE OF THRASHING-MACHINE TEETH.

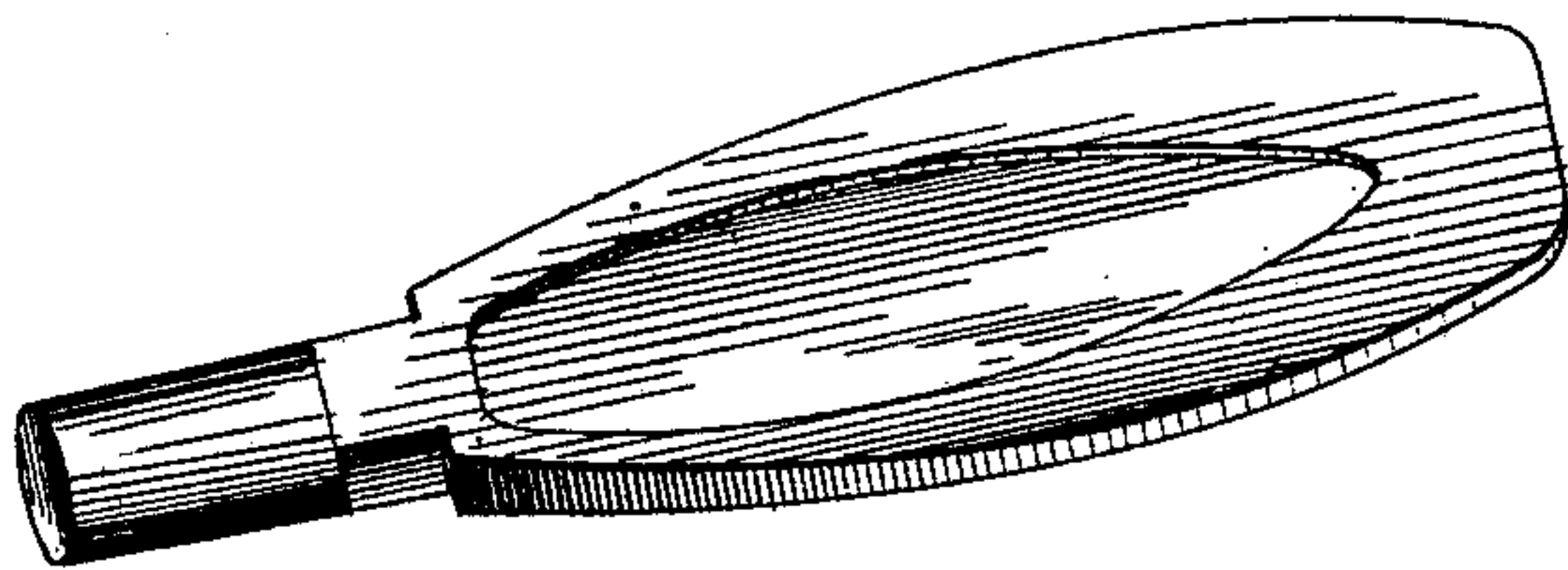
No. 185,880.

Patented Jan. 2, 1877.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*

*Robert Everett*  
*William Read*

*Inventor.*

*Jonathan W. Waterman.*  
*Gilmore, Smith & Co.*  
*Attorneys.*

# UNITED STATES PATENT OFFICE

JONATHAN W. WATERMAN, OF RUTLAND, WISCONSIN.

## IMPROVEMENT IN DIES FOR THE MANUFACTURE OF THRASHING-MACHINE TEETH.

Specification forming part of Letters Patent No. **185,880**, dated January 2, 1877; application filed October 25, 1876.

*To all whom it may concern:*

Be it known that I, JONATHAN WESLEY WATERMAN, of Rutland, in the county of Dane and State of Wisconsin, have invented a new and valuable Improvement in Dies for the Manufacture of Thrashing and Hulling Teeth or Spikes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of the upper die, and plan view of the lower one. Fig. 2 is a plan view of a tooth or spike as made in the die.

This invention relates to the manufacture of reversible teeth for thrashing-machines, as shown in Letters Patent granted to me September 28, 1875, No. 168,308; and the novelty consists in the construction of a pair of dies having raised "frogs" or elongated enlargements, for forming concavities in the sides of the teeth, and at the same time giving them the required shape, as will be hereinafter more fully described.

In the annexed drawings, A represents the upper die, and B the lower die. These dies are provided on their operating faces with depressed portions *b*, tapering wedge-like from the shoulder *c* to the concave edge *d*. The sides or edges of the depressed portion are convex—that is, tapering gradually from the convex edge *d* to the shoulder *c*. In each of the depressed portions *b* is arranged centrally,

or nearly so, a raised frog or an elongated convex enlargement, *b'*, (see Fig. 1,) to form the concaves on each side of the tooth. Said dies are also provided with rectangular shoulders *c* and semi-cylindrical channels *f*, to form the square shank and bolt-shank.

The process or method of using the said dies A and B for the manufacture of my improved thrashing-machine tooth consists simply in securing the said dies in any suitable stamping apparatus, the lower die being preferably stationary, and the upper one vertically movable, and stamping on a heated square bar of iron (about five-eighths) placed in the lower die, immediately over the raised frog. The dies, in coming together, will spread a portion of the heated metal laterally, and form the tooth with the side concavities, substantially as shown in Fig. 2 of the drawings.

The shape or configuration of the dies and the raised frogs may be varied without departing from the spirit of my invention.

What I claim as new, and desire to procure by Letters Patent, is—

Dies having depressed wedge-shaped portions *b*, extending from shoulder *c* to the concave edge *d*, raised frogs *b'*, rectangular shoulders *c*, and channels *f*, substantially as described, and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JONATHAN WESLEY WATERMAN.

Witnesses:

F. D. POWERS,

CHARLES W. HETHERWOOD.