

(No Model.)

J. H. SPRINGER, Sr.  
MANUFACTURE OF EYE BARS.

No. 270,143.

Patented Jan. 2, 1883.

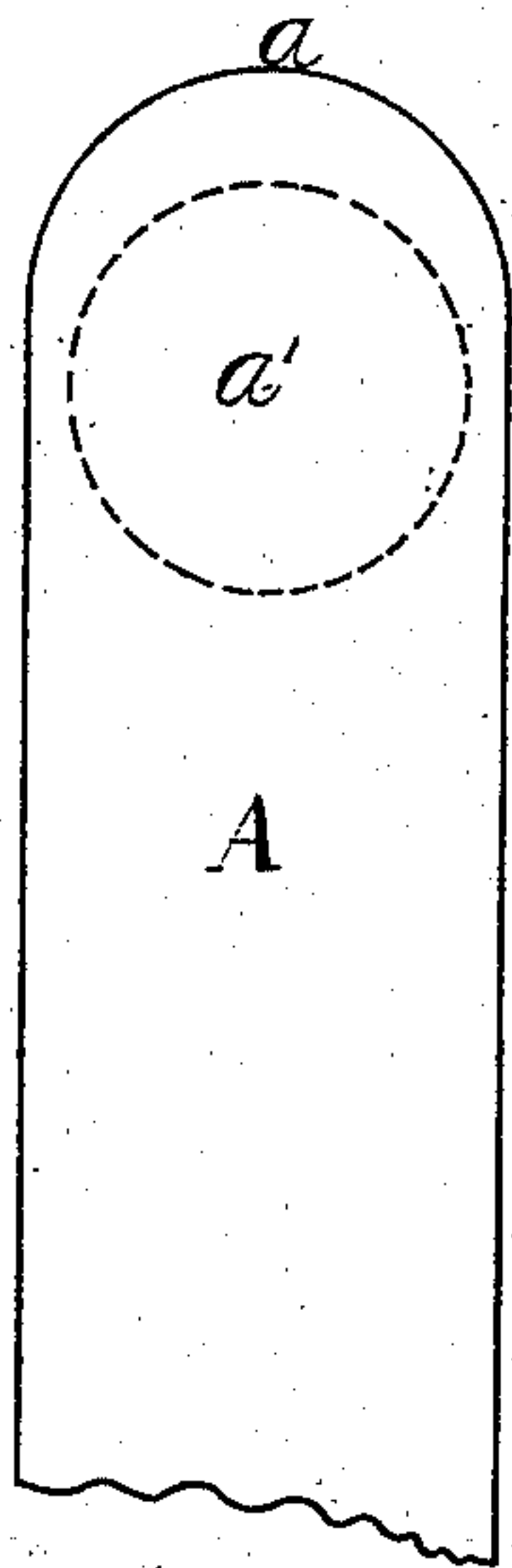


Fig. 1.

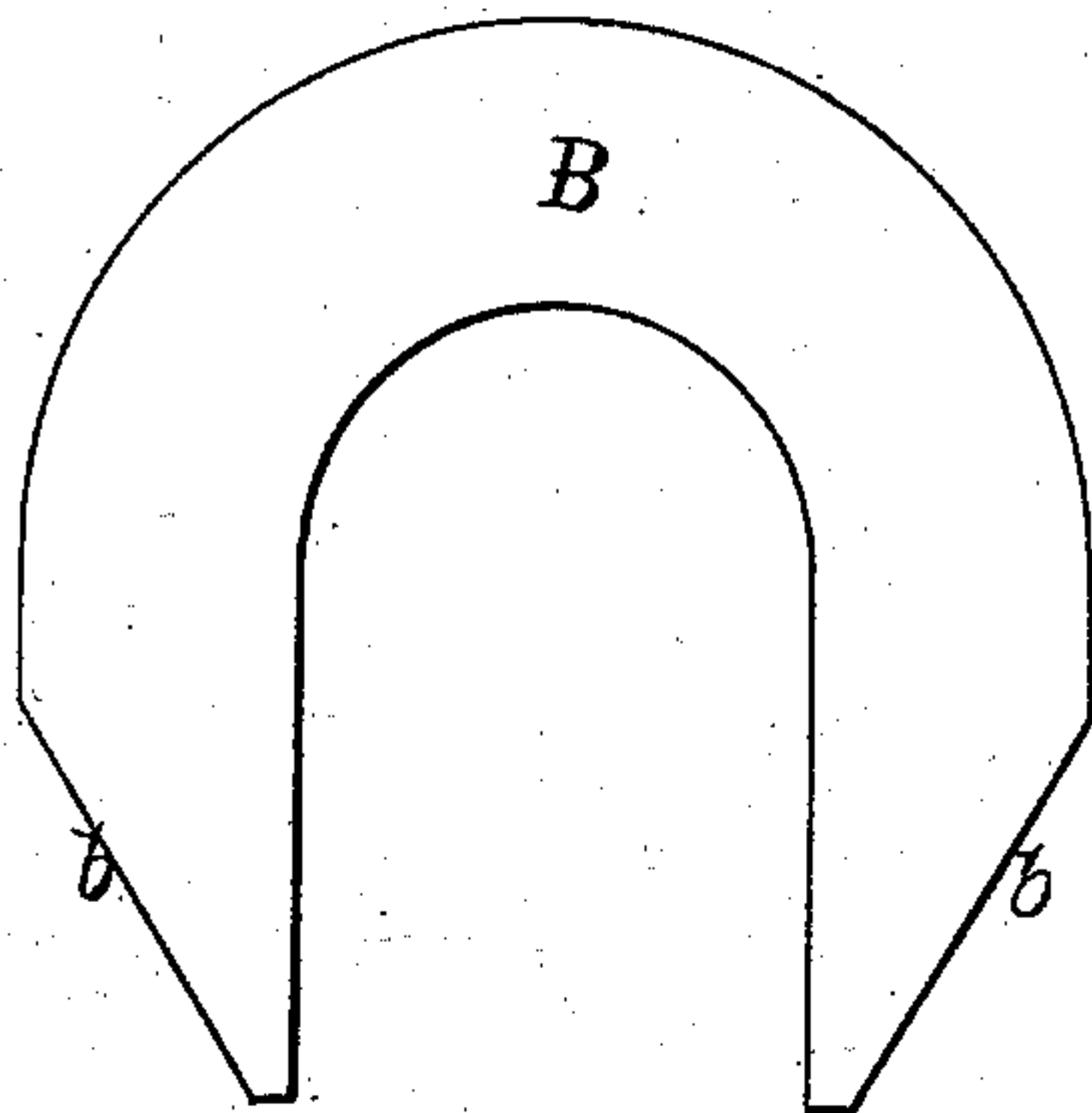


Fig. 2.

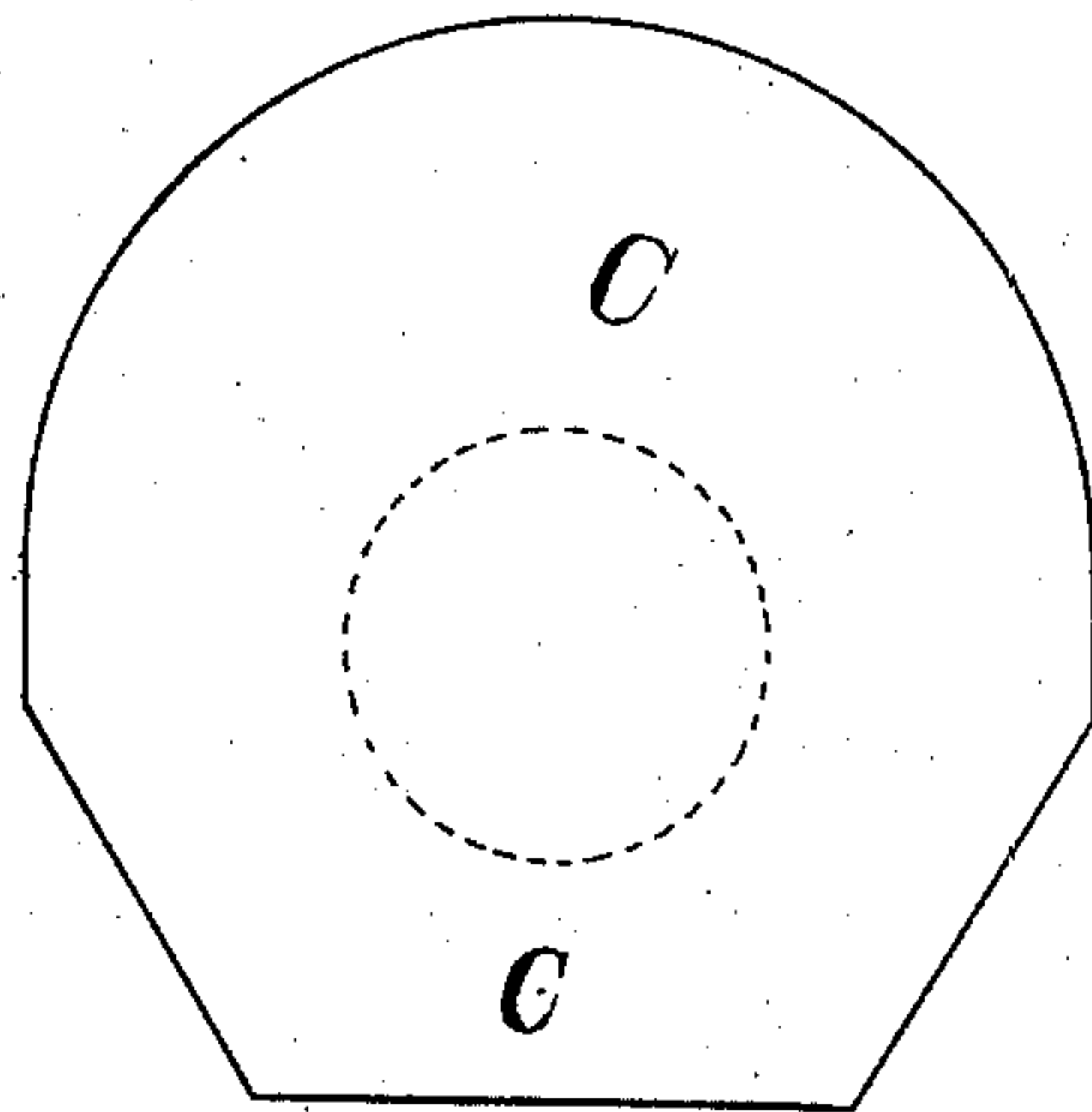


Fig. 3.

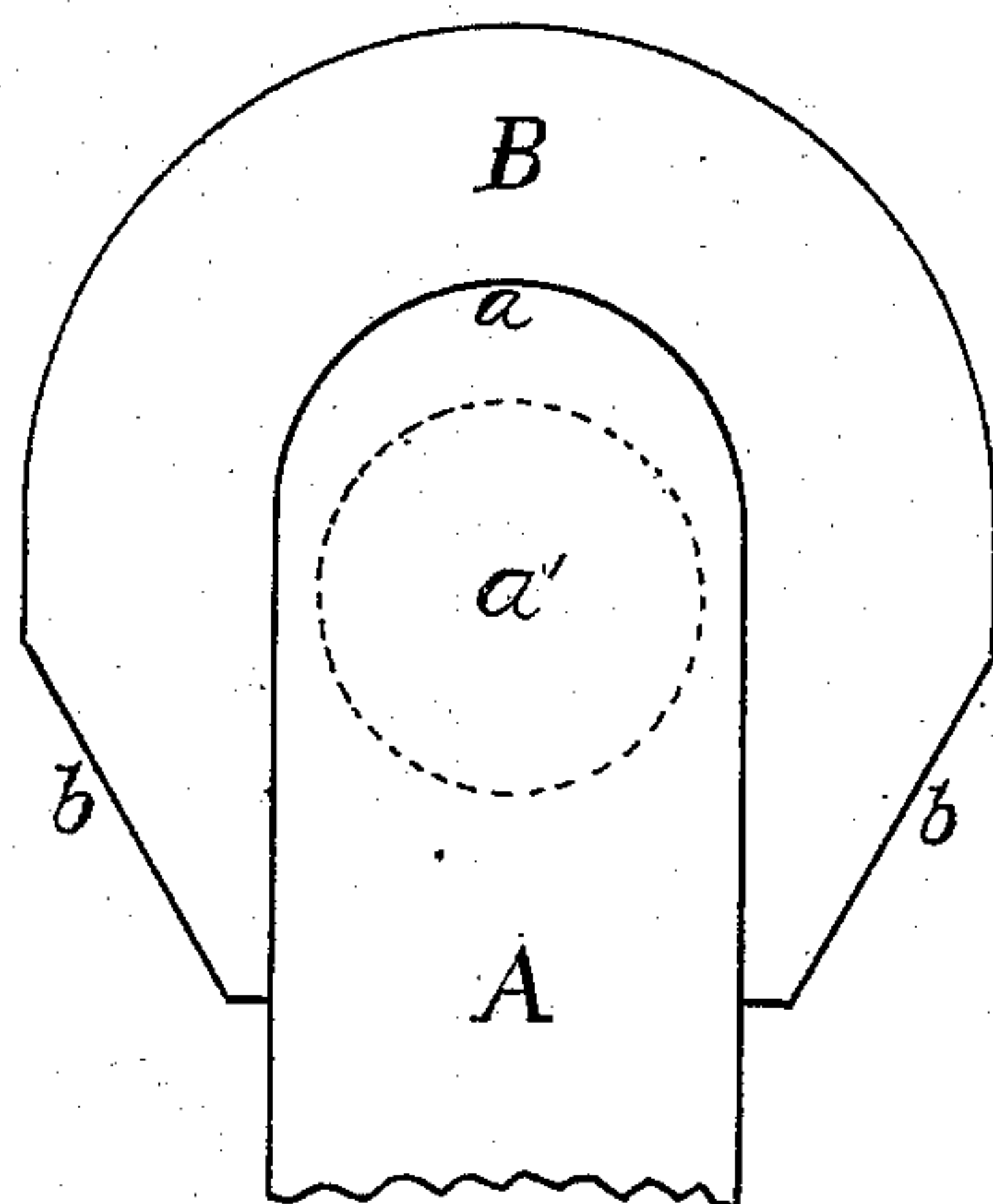


Fig. 4.

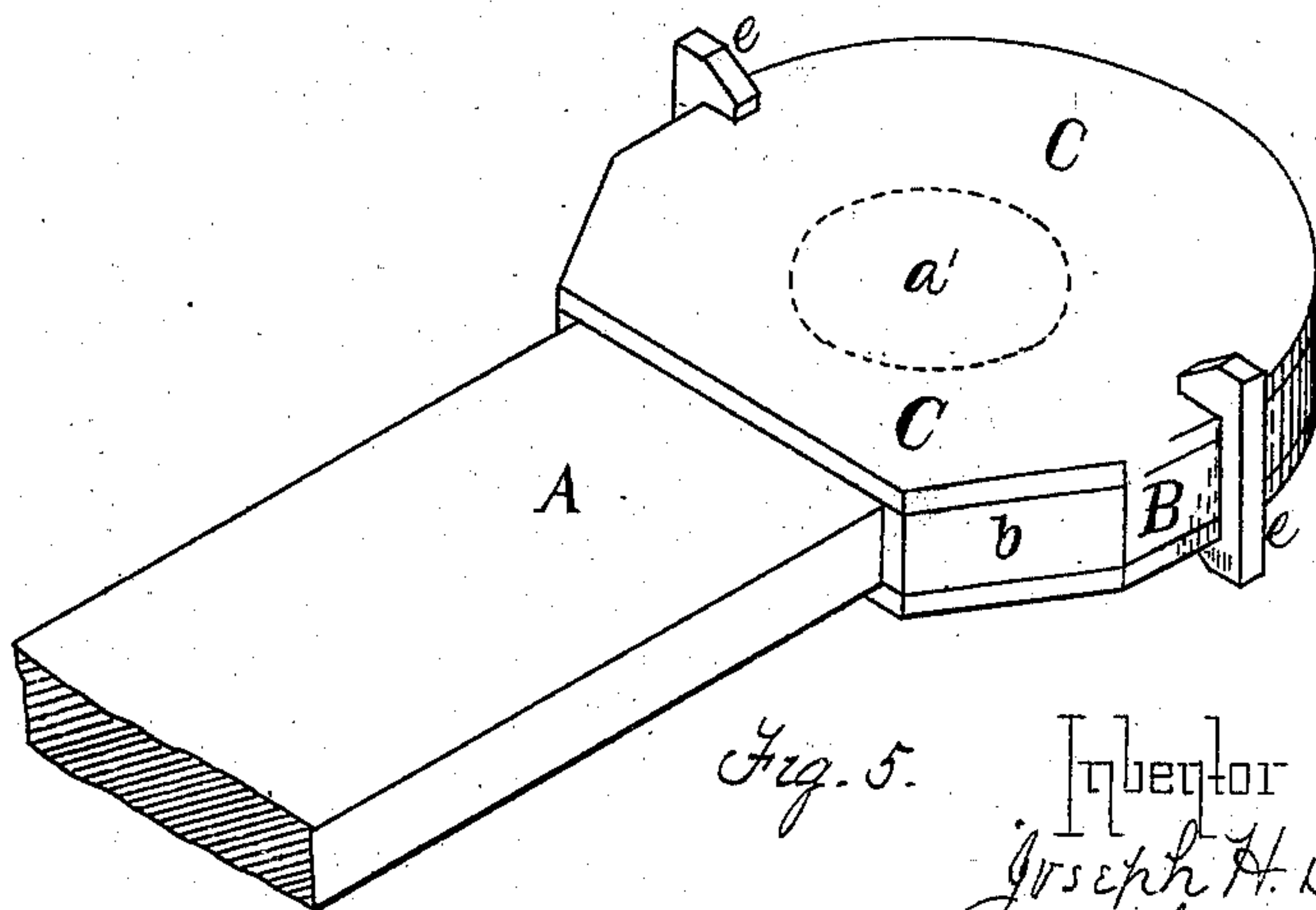


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF EYE-BARS.

SPECIFICATION forming part of Letters Patent No. 270,143, dated January 2, 1883.

Application filed September 13, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. SPRINGER, Sr., a citizen of the United States, residing at Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in the Manufacture of Eye-Bars; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figures 1, 2, and 3 are similar plan views of parts or blanks used in carrying out my invention. Fig. 4 illustrates the manner of uniting the blanks Figs. 1 and 2; and Fig. 5 is a perspective view, illustrative of the manner of uniting the blanks shown in Fig. 3 to the blank Fig. 4.

One of the requirements usually provided for eye-bars to be used for structural purposes is that the head or eye shall have greater strength than the intermediate bar, so that when tested breakage shall be in the bar proper or shaft, and not in or at the head. Great difficulty has been experienced in practice in meeting this requirement, and various expedients have been resorted to by rolling, piling, and upsetting, to overcome the difficulty without undue increase in expense of manufacture.

The purpose of my invention is to provide a cheap and practicable way of securing the requisite strength in the head or eye of such bars without the necessary use of powerful and costly machinery.

In carrying out my invention a wrought-iron bar, A, Fig. 1, of the desired form, length, and area of section, is provided by rolling in the usual way. One or both ends of such bar are given a rounded form, as at *a*, by the use of suitable dies, shears, or other suitable cutting or trimming device. To the curved end *a* and the side edges near the end of such blank is then welded a correspondingly curved blank, B, Fig. 2, the two being applied in welding, as illustrated in Fig. 4. This blank is formed of wrought iron by rolling or by rolling and hammering by preference in a straight bar, and it is then bent to the curved form shown by means of any suitable bending-machine or by com-

pression-dies. The end corners, *bb*, are beveled by shearing or by forging by preference before bending, though it may be done after bending, if desired; and the form of bend is by preference U-shaped, conforming approximately to the end of the bar. The two blanks being placed together, as indicated in Fig. 4, they are placed in any suitable heating-furnace—such, for example, as is commonly used for kindred purposes—and are raised to a welding-heat. They are then removed, and by the use of any suitable compression or swaging dies the adjacent parts of the two are firmly welded. By this method of re-enforcing the ends of a bar to form the head or eye a continuous unbroken fiber is obtained surrounding it in the direction of strain without weakening or distorting the lay of fiber in either end of bar A or in blank B. This I consider an important feature of construction, and it affords the additional advantages that the end of the bar or blank A is prevented from splitting, being banded and bound, as it were, by the blank B, and the full tensile strength of fiber is preserved, especially at and about the base of the head, which ordinarily is especially subject to breakage, owing to distortion and displacement of fiber at this point by methods of manufacture heretofore commonly practiced. The pin-hole *a'* (indicated by dotted lines) is drilled or otherwise made, by preference in the end of blank A, back of the center of the head.

When an equal thickness is desired in both the head and bar or shaft the method of manufacture thus far described will afford very desirable results, both on account of strength secured and also on account of the cheapness in construction, as the steps described in making the bar do not require the aid of powerful and expensive machinery or a high grade of skill in the workmen. For certain classes of work, however, it is desirable to form a raised boss on one or both sides of the head or to make the head thicker than the shaft or bar. To do this I provide plate-blanks C, Fig. 3, of wrought-iron, which are sheared or stamped approximately to the form of the exterior edge of blank B. In applying the blanks C they are placed on one or both faces of the head of the blank Fig. 4, and in case a heavy bar is worked it will be found convenient to secure



the plates temporarily by gripping-clamps *e*, as illustrated in Fig. 5. With light bars, however, the plates may be held by the tongs of the workmen while the end of the bar is placed in the heating-furnace. When a welding-heat has been reached the parts of the head will stick together sufficiently to permit of the requisite handling, and in this condition the bar is removed from the furnace, and the parts of the head are firmly united by welding in the usual or any suitable way of doing such work. The pin-hole *a'* may then be made as before described, and the head be finished substantially in the form illustrated in Fig. 5, the clamps *e* of course being removed before welding or worked into the body of metal in welding.

In shaping the blanks *C* they may be taken with the fiber running with or across that of the blank *A*, as may be preferred, and in forming the complete head, Fig. 5, the blanks *A* and *B* may be first welded and afterward the blank *C* be welded to the blank Fig. 4, as above described; or all the blanks may be put together and clamped or otherwise held while heated, and all welded together by one operation. In either case an excellent bar will be secured, which, owing to the direction and uninjured condition of fiber in and about the head, will possess a high degree of strength for the amount of metal employed, and also the method or operation of forming such head can be carried out cheaply and with comparatively small outlay for plant and skill.

I claim as my invention—

1. The improvement herein described in the art of forming an enlarged head on the end of a bar, consisting in bending a blank, *B*, to *U* form and welding the inner edge of such blank to the end and side edges of the bar near its end, substantially as described, whereby the end of the bar is banded and surrounded by continuous metallic fiber.

2. The improvement herein described in the art of making eye-bars, consisting in forming a rounded end, *a*, on a bar-blank, *A*, and fitting and welding to the end and the side edges near the end of such blank a bent blank, *B*, having a *U*-shaped inner edge corresponding to the rounded end of the bar and an outer edge approximating in form the desired form of head, substantially as set forth.

3. The improvement herein described in the art of making eye-bars, consisting in welding a bent blank, *B*, to the end and the side edges near the end of a bar-blank, *A*, and welding face-blanks *C* to one or both the side faces of the head formed by the blanks *A* *B*, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOSEPH H. SPRINGER, SR.

Witnesses:

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C. L. PARKER.