No. 620,517. Patented Feb. 28, 1899.

S. VANSTONE.

CONSTRUCTION OF HOLLOW SHAFTING, TUBING, &c.

(Application filed May 28, 1898.)

(No Model.)

Fig. 1.

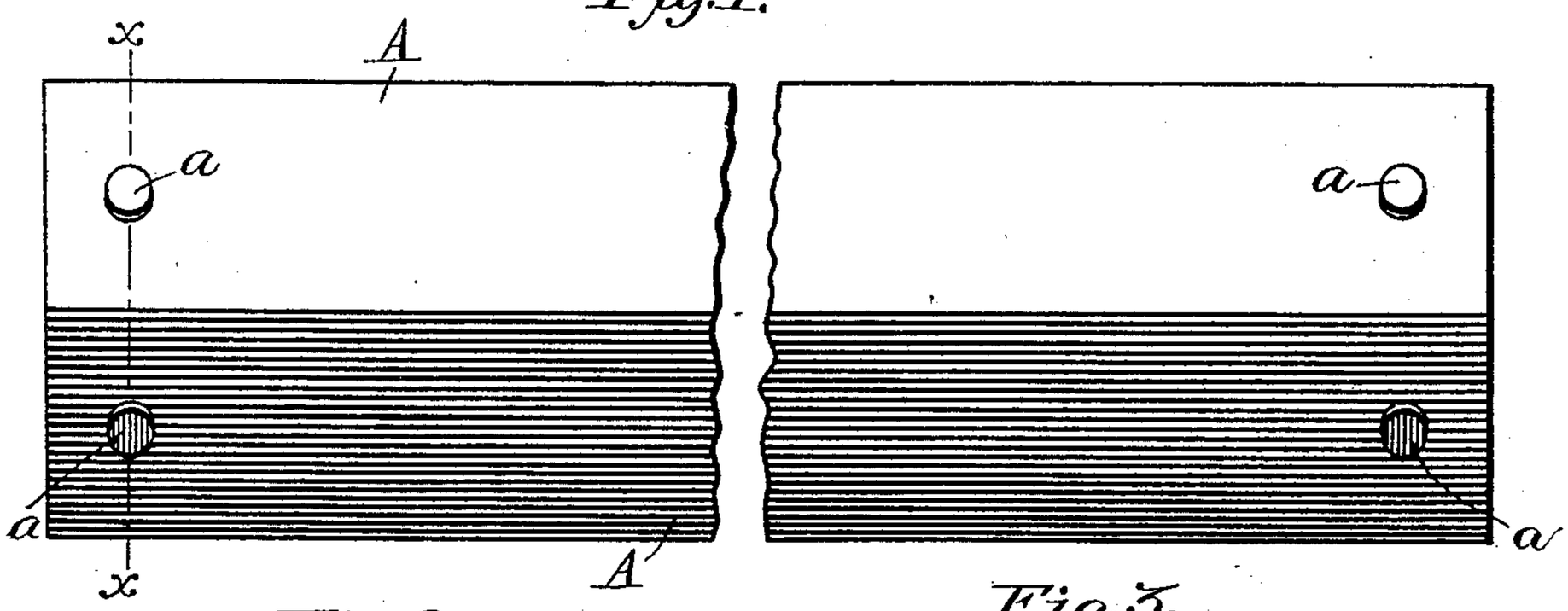


Fig. 2.

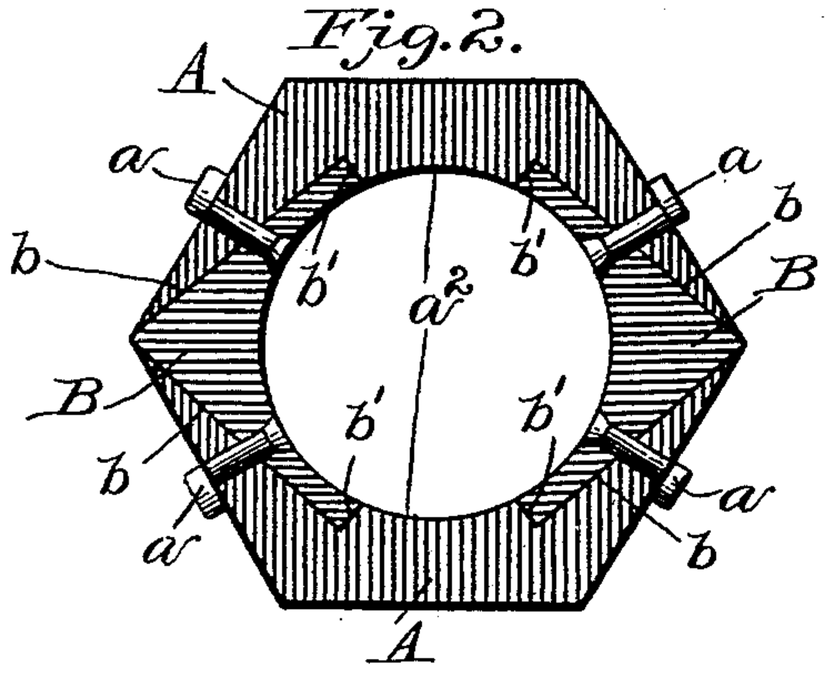


Fig. 3.

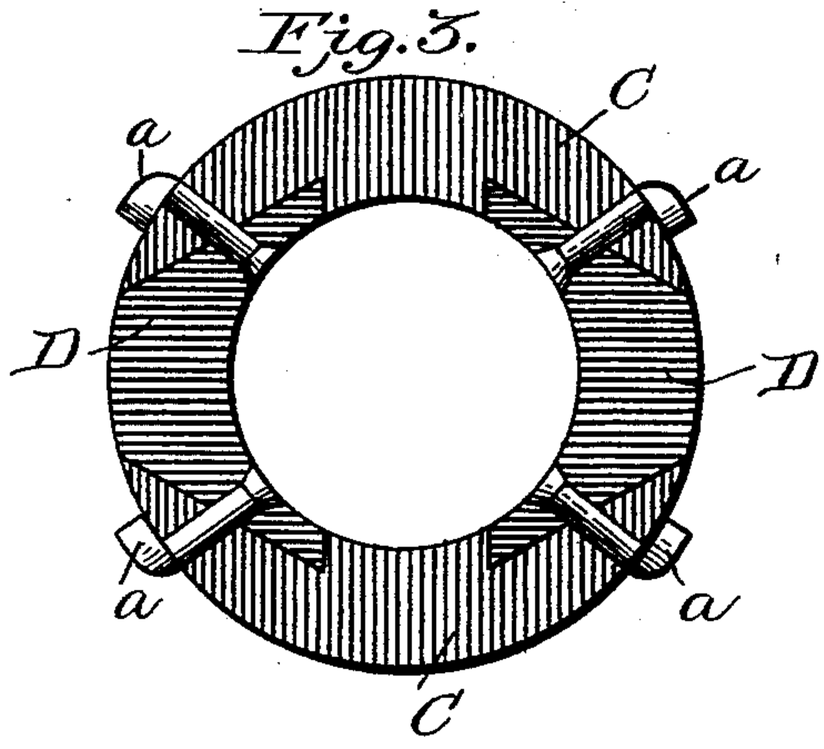
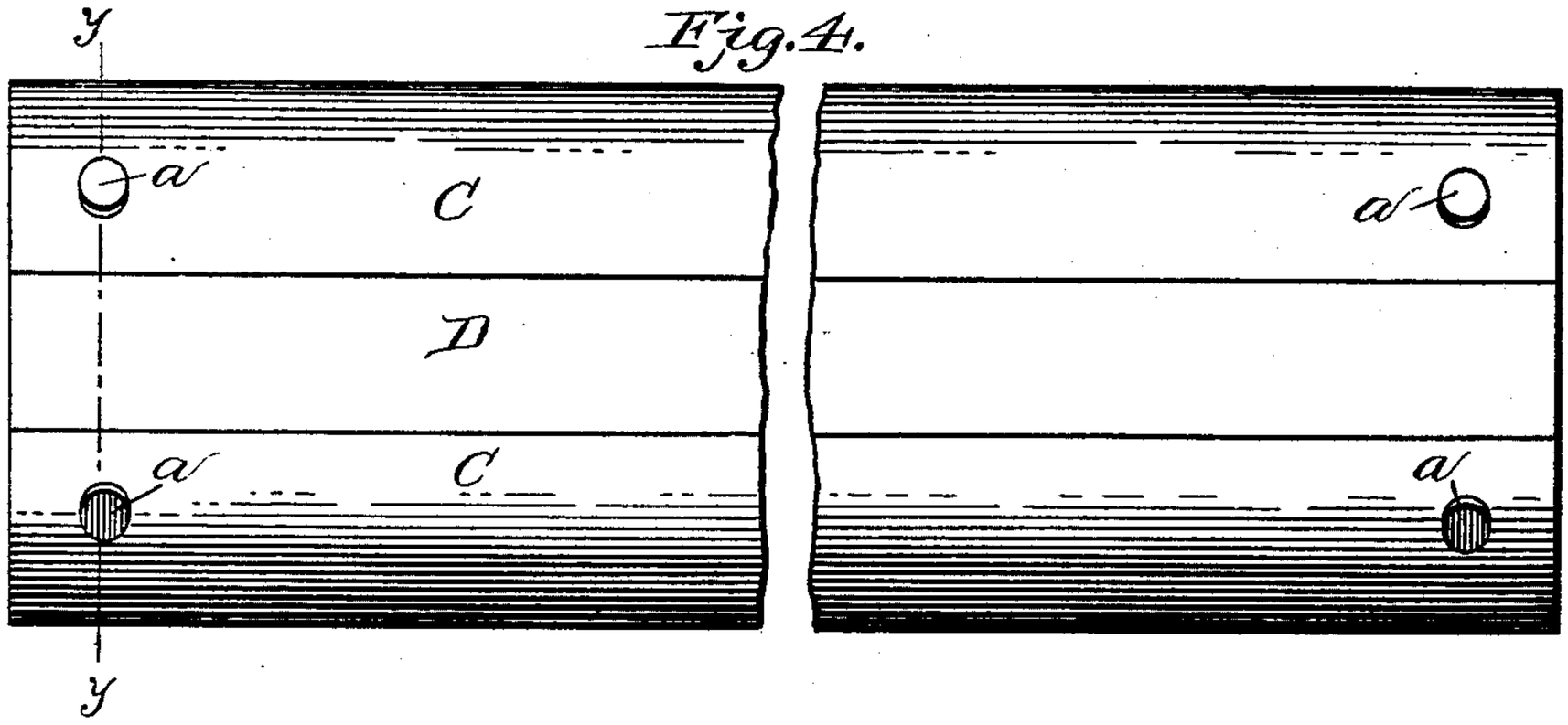


Fig. 4.



WITNESSES:

Edwin F. McKee

Philip C. Masi.

INVENTOR
Samuel Vanstone

BY E. W. Anderson
his ATTORNEY.

UNITED STATES PATENT OFFICE.

SAMUEL VANSTONE, OF PROVIDENCE, RHODE ISLAND.

CONSTRUCTION OF HOLLOW SHAFTING, TUBING, &c.

SPECIFICATION forming part of Letters Patent No. 620,517, dated February 28, 1899.

Application filed May 28, 1898. Serial No. 682,023. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL VANSTONE, a citizen of the United States, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Construction of Hollow Shafting, Tubing, &c.; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view, broken in two, of a tube structure embodying my invention. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a cross-section on the line *y y*, Fig. 4. Fig. 4 is a side view, broken in two, of another form of tube structure.

This invention has relation to certain new and useful improvements in the manufacture of hollow shafting, tubing, hollow piles for nut-tubing, &c., the object being to provide a hollow shaft or tube composed of a number of separate pieces of steel or malleable iron fitted together and then welded to form a practically integral structure, thereby providing a hollow shafting of great strength, capable of use for car and locomotive axles, and for various other purposes, or a stock which can be cut into lengths to form nuts.

In carrying out my invention I take pieces, scraps, or billets of metal and draw them out to form elongated sections, such as shown at A A B B in Fig. 2 of the drawings or such as shown at C C D D, Fig. 3, and fit the same to each other in the manner shown to build up a hollow shaft or tube structure of either polygonal or circular form in cross-section. These sections are temporarily secured to each other by means of rivets *a* near each end. They are then placed in a furnace and subjected to a welding heat, after which they are removed and passed through rolls, either with or without a mandrel, and are thereby rolled and drawn to the required size and shape, thereby forming a practically integral structure.

Referring more particularly to Fig. 2 of the drawings, it will be seen that the two similar sections A A are each of three-sided form, and when put together form a hexagon, their inner faces *a'* being shaped to fit the inclined faces *b* of the pieces or sections B, which are of triangular form, with shoulders at *b'*, which abut the ends of said pieces B and intermediate curved faces a^2.

Referring to Fig. 3, the sections C C correspond to the sections A A in internal form, their outer faces, however, being arcs of circles. The sections D D are similar to the sections B except that their outer portions are removed and are shaped to conform to the circumference of the tube or shaft.

In both of the forms described it will be seen that the sections have overlapped portions terminating at their inner ends in abutting faces at an angle to the main interfitted faces thereof and that the said interfitted faces are non-radial. It will be understood, however, that in so far as the external form of the sections is concerned this may be determined largely by the shaping and drawing rolls through which the article is passed after being welded, and that consequently their initial external form may vary.

The form shown in Figs. 1 and 2 is designed to be sawed into lengths to form hexagonal nuts, and the invention provides means for the manufacture of such nuts in a rapid and economical manner, while the form shown in Figs. 3 and 4 is designed for use for locomotive and car axles, hollow shafting, and for various other purposes.

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

1. A hollow tube, shaft, or pile formed of interfitted longitudinal sections having laterally-abutted inner portions and circularly-lapped non-radially tapered outer portions, substantially as specified.

2. A hollow tubular structure, formed of four longitudinally-interfitted sections welded and rolled together, opposite sections being of similar form, two of such opposite sections having each a central portion abutted on op-

posite sides by the inner longitudinal edges of the respective adjacent sections, and laterally and circularly extended portions which overlap the adjacent portions of the adjacent sections, substantially as specified.

3. A hollow shaft, tube or pile, formed of longitudinal sections, having interfitted overlapped portions terminating at their inner ends in short abutting faces at an angle to the main interfitted faces of said overlapping portions, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL VANSTONE.

Witnesses:
GILMAN E. JOPP,
BERNARD MCGUINNESS.