J. W. BONTA.

Chains.

No. 166,334. Patented Aug. 3, 1875.

Fig. 1.

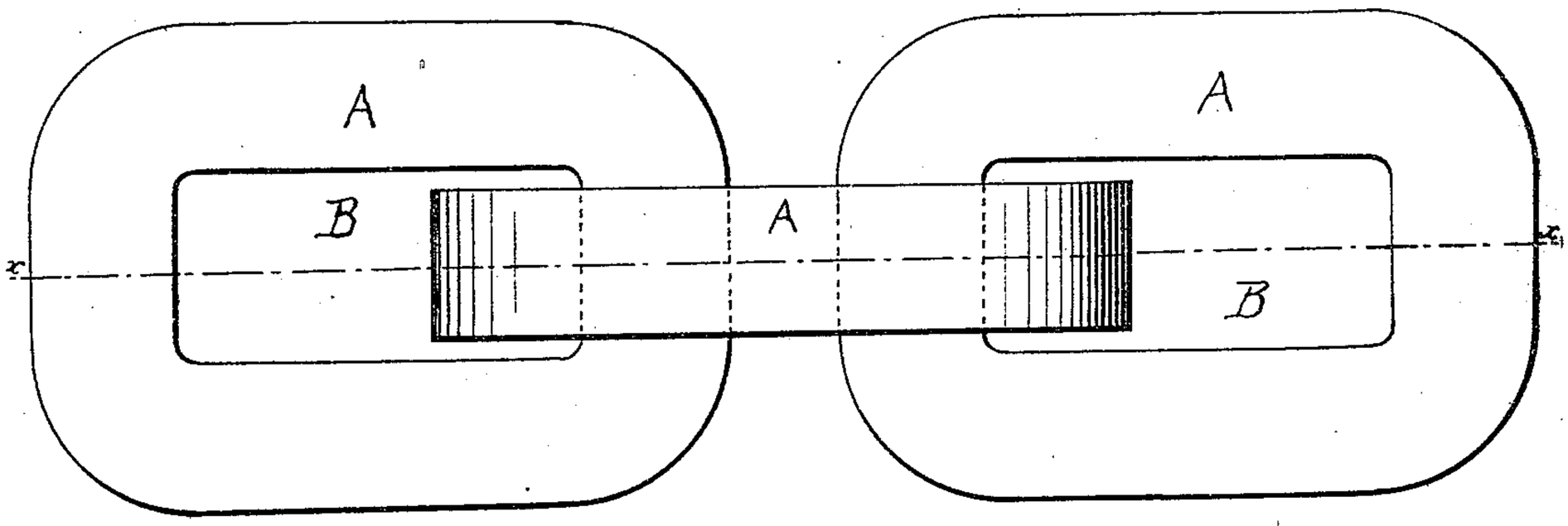


Fig. 2.

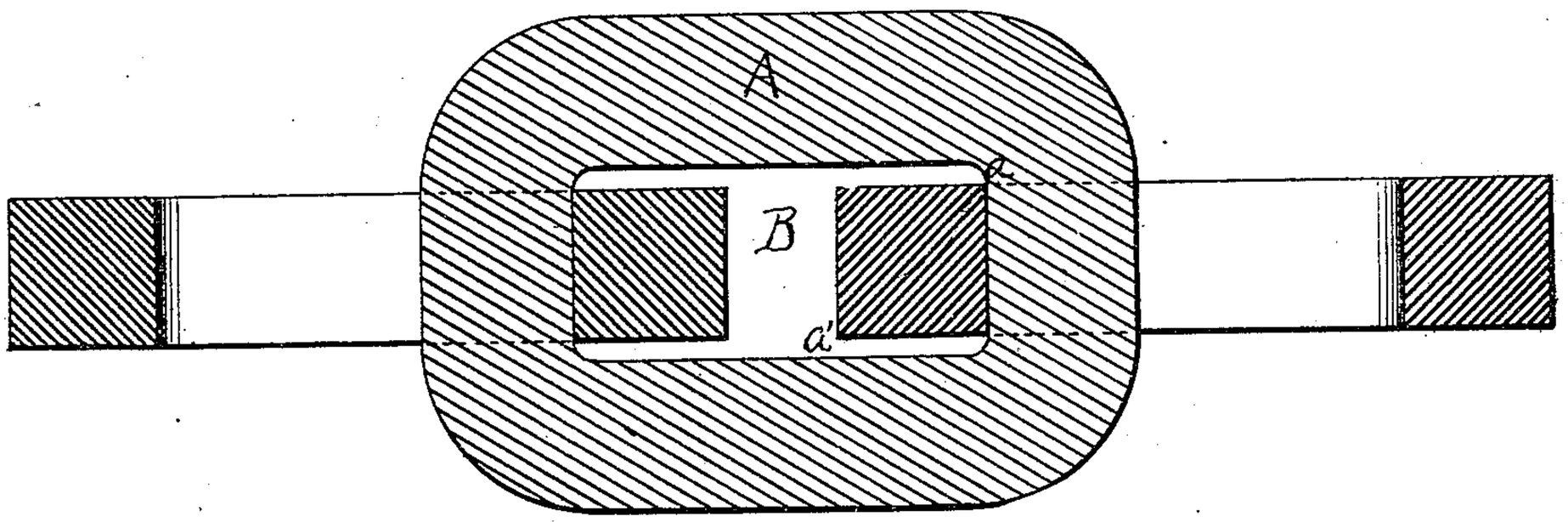
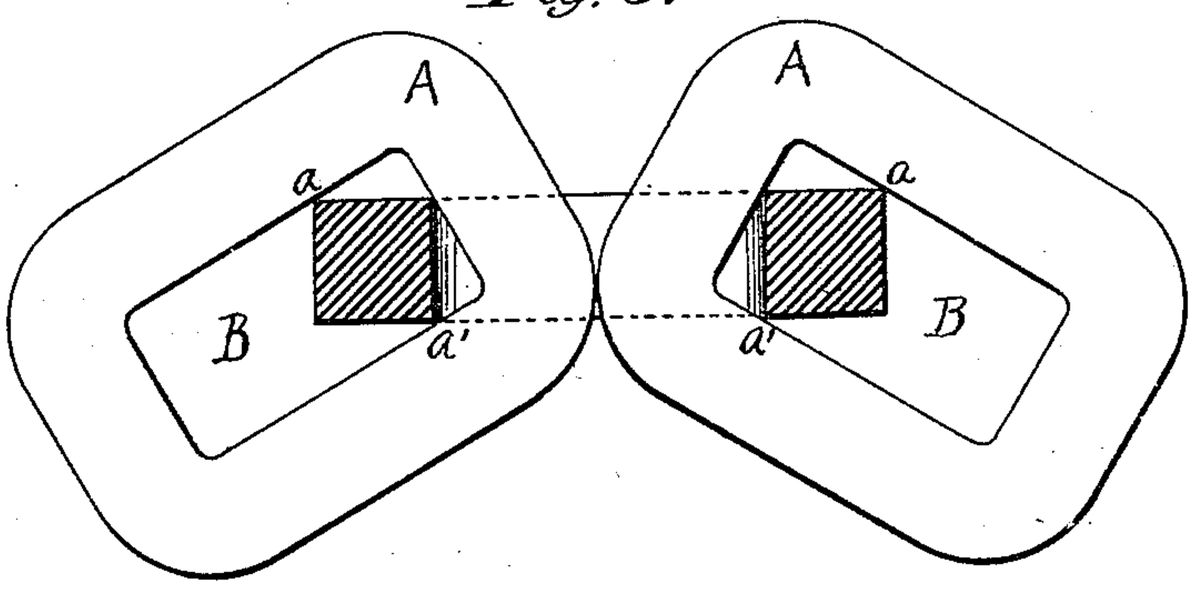


Fig. 3.



Witnesses:

Edwin James.

John K. Jones.

Inventor:

James W. Bonta.

per J. E. J. Holmead

Attorney.

UNITED STATES PATENT OFFICE.

JAMES W. BONTA, OF NEW BRIGHTON, PENNSYLVANIA.

IMPROVEMENT IN CHAINS.

Specification forming part of Letters Patent No. **166,334**, dated August 3, 1875; application filed March 26, 1875.

To all whom it may concern:

Be it known that I, JAMES W. BONTA, of New Brighton, in the county of Beaver and State of Pennsylvania, have invented certain Improvements in Chains, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is a longitudinal sectional view on the line *x x*, Fig. 1. Fig. 3 is a plan view, partly in section.

It is a fact well known to all familiar with the handling of ordinary chains and cables that great difficulty exists in connection with their use, arising from the liability of the links locking or kinking, and of which there is always danger when the chain or cable is allowed, especially when hurriedly handled, to draw or play out freely; as, for instance, in casting an anchor some of the links will almost invariably so cross themselves in the adjoining links as to insure of their kinking, or of their being locked in such a position that any future or after strain which the chain will be caused to resist will not draw on such links as are kinked on a line with the tensile strength of the fibers of the iron, but with, as it were, a torsional twist or strain, and which wrenches the fibers, and necessarily weakens, and very frequently, as is well known, breaks the link. To remedy this defect—and it is one which exists in connection with all chains or cables now known to me, whether hand-made or the product of a machine—is the object of my present invention.

The nature of my invention consists in constructing the chain out of square bars having rectangular edges, instead of out of round bars or blanks, as has hitherto been the practice, and in forming the slotted or open center of the link, which its welded wall incloses, of less width or breadth than is the diagonal diameter of the blank, and thus, when the links are connected together and welded, the diagonal corners of one link being of a greater diameter than the slotted section of the link with which it is connected, or through which it passes, it is impossible that one link should ever so turn crosswise of the link in which it is connected as to render possible its kinking or locking. A chain thus formed and possessing the positive advantages indicated is, as a product, essentially a new article of manufacture.

The construction of my invention is as follows: The chain is composed of links A A, which are formed from bars or blanks of square iron, and which may be of any desired size or dimensions. These blanks are bent, their open sections scarfed, and then welded precisely in the same manner as the round blanks are treated in manufacturing ordinary chains. The dies, through whose joint action the welding of the scarfed ends of the link is effected, must of course have cavities of such contour as will correspond in form and size with the shape and dimensions of the bent blank. In the accompanying drawing neither the dies nor their operating mechanism is shown, as my present invention relates entirely to the chain itself. To accomplish the results designed to be attained in connection with this improved chain it is essential, in the formation of the link A, that, as to its different features, proportions relatively the same as those shown in the accompanying drawing should be observed—that is, in its cross-section the slot or opening B of the link must be of a width or breadth less in extent than the diagonal diameter *a a'* of the blank, and which renders it impossible for one link to turn crosswise of the link with which it is connected, while the free movement of one link within the other is provided for. The result is, when the links, from slack of the chain or any other cause, turn in the link with which they are connected, the corners *a a'* prevent their passing farther around in the link with which they are connected than is illustrated in Fig. 3, and consequently all danger of kinking or locking is rendered impossible; and consequently, if any of the links of the chain are turned back, as shown in Fig. 3, the instant the chain is drawn on, the links are instantly caused to assume their natural position, such as is shown in Figs. 1 and 2, and in which position the strain on the link is, exerted on a line with the direct tensile strength of the fibers of the iron, and all the

destructive twisting or wrenching of the fiber, as is the case when the links are kinked or locked, is rendered impossible.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

As a new article of manufacture, a cable or draft-chain composed of links A A, having rectangular edges, when the width or breadth of the slot B of the link is less than the diagonal diameter *a' a'* of the bar, as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES W. BONTA.

Witnesses:

EDWIN JAMES,

JOS. T. K. PLANT.