L. J. KNOWLES.

Device for Securing the Bars in Heddle-Frames.

No. 168,095. Patented Sept. 28, 1875.

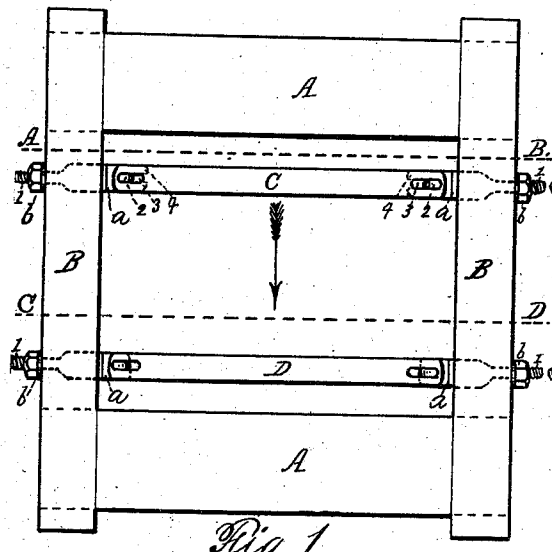


Fig. 1.

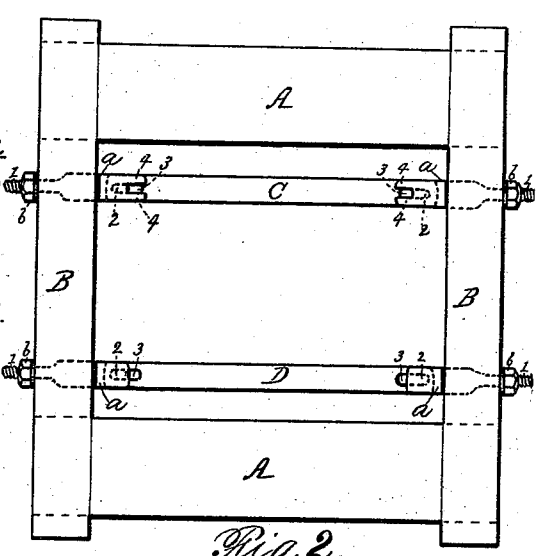


Fig. 2.

Fig. 3.

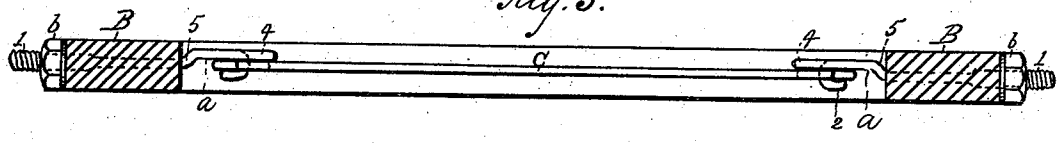


Fig. 4.

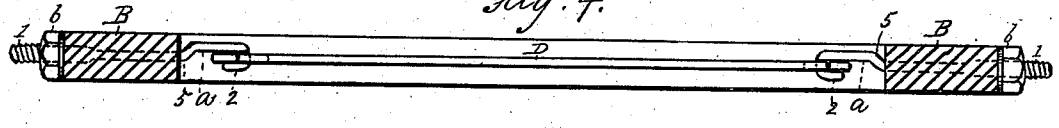


Fig. 5.

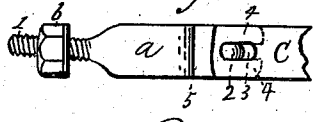


Fig. 7.

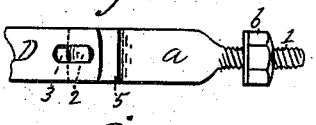


Fig. 6.

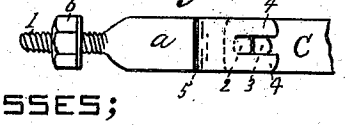
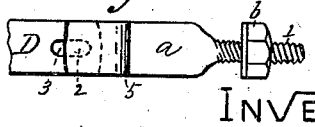


Fig. 8.



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UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN DEVICES FOR SECURING THE BARS IN HEDDLE-FRAMES.

Specification forming part of Letters Patent No. **168,095**, dated September 28, 1875; application filed August 26, 1875.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Devices for securing the Bars in Heddle-Frames; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a front or side view of a harness-frame with my improvements applied thereto. Fig. 2 represents an opposite side view. Fig. 3 represents a horizontal section on line A B, Fig. 1. Fig. 4 represents a horizontal section on line C D, Fig. 1; and Figs. 5, 6, 7, and 8 represent, upon an enlarged scale, side views of the ends of the heddle-supporting bars and their fastening devices, as will be more fully described hereafter.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the parts marked A A represent the top and bottom pieces, and the parts B B the end pieces of the harness-frame secured together in any well-known manner. The end pieces B B are mortised to receive the heddle-bar supporting and holding pieces *a a*, the outer ends of which are reduced, rounded, and provided with screw-threads and nuts *b*, as fully indicated in the drawings. The parts *a* are bent, as shown at 5 in the drawings, while their extreme inner ends are provided with hooks 2, which hook into the slots 3 in the ends of the heddle-bars C and D, as also fully indicated in the drawings. The hooks 2 being turned in the opposite direction from the bends 5, thereby causing the heddle-bars to stand, when secured in place, in central positions as respects the harness-frame, as shown in the drawings, whereby, when the heddles have been placed in position upon the bars C and D and the nuts *b* screwed up so as to draw the parts *a a* of each bar in opposite directions, the bars will be held securely in place and properly extended to support the heddles, so that those of one harness will not rub or chafe against those of another in the operation of the loom.

To put on or take off the heddles, the nuts *b* of two end pieces, *a*, are loosened sufficiently to allow of the withdrawal of their hooks 2, when the heddles can be put on or taken off, as may be desired, and that too without the withdrawal of the bars C and D.

The parts *a*, which fasten the bar C, are made from the same piece of material from which the bar itself is made. The bar C is first made with its ends reduced and screw-threaded, and provided with nuts *b*, after which the ends *a* are cut off by a die-punch, so made that the hook part 2 will be punched or forced out to leave the ears 4 4, which project beyond the hook and bear against the side of the end of the bar C, as shown in Figs. 1, 2, 3, 5, and 6, thereby rendering the connection more secure and firm.

In making the heddle-bars and their fastening connections in this manner, the bar, when first made, should be long enough to compensate for decrease in length occasioned by the lap-joint made at each end, as above described.

If preferred, however, the parts *a* may be made of separate pieces and with a full back, the hook 2 being on one side, as shown in Figs. 4, 7, and 8. In this case, however, as in the other, there are bearing-surfaces adjoining the hook, which serve to assure and steady the bar.

In many cases old bars can be altered over at slight expense, their length being sufficient to allow of the shortening to form the lap-joint.

Having described my improvements in harness-heddle-bar holding and connecting devices, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

The combination, with the end pieces B B, of the harness-frame and heddle-bars provided with end slots 3 3 of the holding and supporting pieces *a a*, provided with bends 5, hooks 2, bearing-surfaces adjoining the hooks for steadying the heddle-bars, and screws and nuts *b*, substantially as and for the purposes set forth.

LUCIUS J. KNOWLES.

Witnesses:
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