No. 673,499. Patented May 7, 1901.

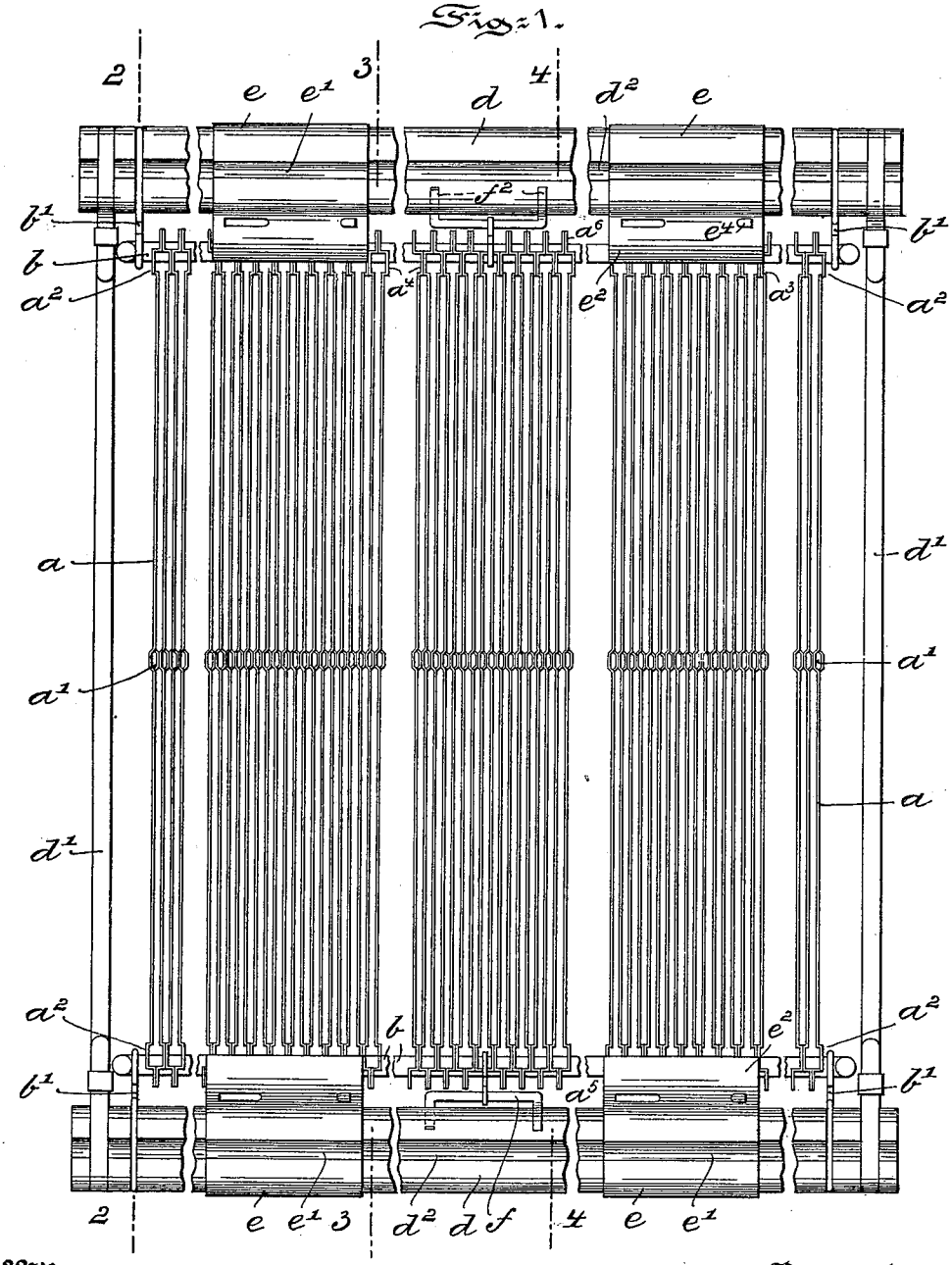
W. FEHR.

HEDDLE AND HEDDLE FRAME.

(Application filed Dec. 3, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

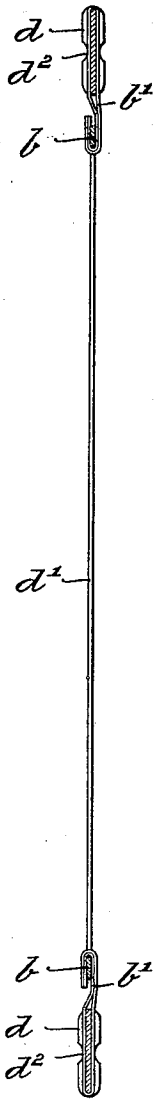


Fig. 3.

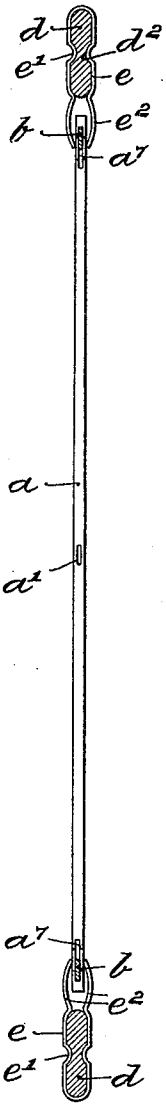


Fig. 4.

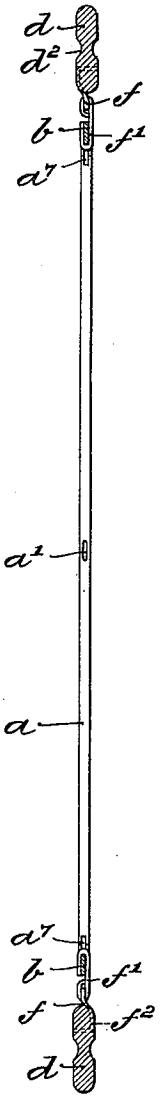


Fig. 5.

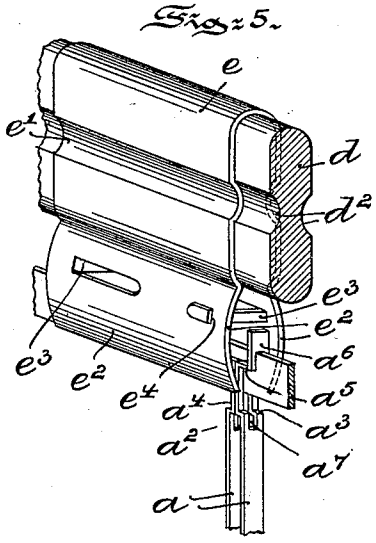
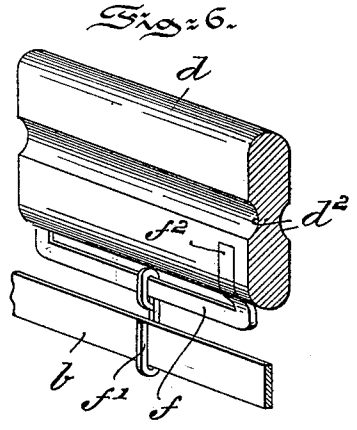


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM FEHR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE STEEL HEDDLE MANUFACTURING COMPANY, OF SAME PLACE.

HEDDLE AND HEDDLE-FRAME.

SPECIFICATION forming part of Letters Patent No. 673,499, dated May 7, 1901.

Application filed December 3, 1900. Serial No. 38,389. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FEHR, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Heddles and Heddle-Frames, of which the following is a specification.

My invention has relation to a heddle-frame or harness and to the heddles arranged therein; and in such connection it relates to the construction and arrangement of the heddles and of the frame wherein they are supported.

My invention consists of the improvements in heddles and heddle-frames hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevational view of a heddle-frame embodying main features of my invention. Fig. 2 is a vertical sectional view taken on the line 2 2 of Fig. 1. Figs. 3 and 4 are similar views taken on the lines 3 3 and 4 4, respectively, of Fig. 1. Fig. 5 is an enlarged perspective view illustrating in detail one of the cross-pieces, one of the cross-bars, a hollow bar, and two heddles inclosed by the lower open end of said hollow strip; and Fig. 6 is a view similar to Fig. 5, but illustrating one of the cross-pieces with the hollow strip removed and the improved support for the cross-bars of the frame.

Referring to the drawings, a represents the heddles, each of which consists of a flat strip or band of metal having an eye a', formed by expanding the strip in a manner well known in the art. The heddles at either extremities are offset to form box-like enlargements a^2 when two are placed side by side—that is, in right and left relationship to each other—so as to assure parallelism between the eyes and respective terminals of the heddles and to be maintained thereby in such condition in use through the peculiar formation of the said upper and lower extremities, thereby avoiding friction of the warp-threads and also obviating entanglement of the yarn in its passage through the eyes and alongside the respective heddles. Each extremity of a heddle is formed by first bending the strip at right angles to itself, as at a^3, for a short distance, then bending the strip parallel to its main body, as at a^4, then bending the strip again at right angles to the main body, as at a^5, for a distance longer than the distance of the bend a^3, and finally bending the extreme end or terminal a^6 in a plane parallel to the main body of the heddle. The terminal a^6 by preference should lie in a plane midway of the two planes of contiguous heddles and forms one of the abutting points of two adjacent heddles. It will be readily seen from Figs. 1 and 4 that adjacent heddles have oppositely-arranged offsets and abut not only at the terminals a^6, but also at the parallel portions a^4 of the offset, and that this would be equally true if they were arranged reversely to the manner shown and as hereinabove explained. The offset is recessed or perforated, as at a^7, to receive the cross-bars b of the frame. The frame proper comprises the two cross-pieces d d, preferably of wood, united at their ends by the metallic straps d' d'. The cross-pieces d are longitudinally grooved or channeled, as at d^2, to form a slideway or guide for a plurality of hollow strips e, which are adapted to be advanced or shifted along the pieces d d at will. The heddle cross-rods b of the frame are suspended or supported at either end from the cross-pieces d d by means of hooks b', as illustrated in Figs. 1 and 2. The heddle cross-rods b are further supported, intermediate of the ends, by means of a support comprising a staple-like bracket f, depending from the cross-pieces d d and provided with a hook f', sliding on the horizontal portion of the bracket f and adapted to receive the heddle cross-rod b, as illustrated in Figs. 1, 4, and 6.

The hollow strips e are arranged in sections upon each cross-piece d, and consist of a plate of metal bent around the piece d and indented, as at e', to form a tongue engaging the channel d^2 of said piece. The free ends e^2 of the strip e depend below the under or inner edge of the pieces d, so as to inclose the offset ends of the heddles a, as clearly illustrated in Figs. 1, 3, and 5. By reason of this

construction of the strips *e* and their arrangement on each cross-piece *d* in sections the strips *e* may be shifted along the cross-pieces to readily expose the terminals of the heddles *a* no matter what position said heddles may occupy in the frame, and yet said strips *e* will serve to prevent lateral bending of the heddle cross-rod *b* and do away with the use of a plurality of supports *f*. The inclosing ends e^2 of the strips *e* may be locked together to prevent separation of said ends by forming on each end a pin or projection e^3, adapted to enter and lock in an opening formed in the other end, as at e^4, Fig. 5. The supporting-bracket *f* by preference has its free ends f^2 driven into opposite sides of the wooden pieces *d*, as clearly illustrated in Fig. 6.

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

1. The heddles *a*, of flat strips or bands having a central eye *a'*, the ends of said heddles being formed with a box-like enlargement a^2, extending alternately toward the right and left of the medial line of the heddle, the adjacent main portions a^4, of the offsets of the heddles abutting throughout their length, one against the other, and the adjacent flat ends a^6, of the heddles, also abutting throughout their length, one against the other, whereby a firm, unyielding bearing of the offset portions of the terminals upon each other is secured, substantially as and for the purposes described.

2. In a heddle-frame, in combination with a longitudinally-grooved cross-piece, heddles provided with suitable terminals, complementally-grooved strips surrounding said cross-piece and adapted to be shifted along said cross-piece and so arranged as to form a longitudinal channel or way for the terminals of said heddles, a heddle cross-rod, a staple-like device having its ends secured in opposite faces of said cross-piece and hook means adapted to slide on said staple and to support said heddle cross-rod, substantially as and for the purposes described.

3. In a heddle-frame, the combination with a grooved cross-piece, grooved strips engaging said cross-piece and adapted to be moved on said cross-piece, of heddles, a heddle cross-rod, a staple-like device having its ends secured into said cross-piece and hook means arranged and adapted to slide on said device and to support and permit of the release of said heddle cross-rod therefrom, substantially as and for the purposes described.

4. In a heddle-frame, the combination with a cross-piece, of heddles, a strip adapted to surround said cross-piece, the ends of which are fastened together by a pin or projection formed from one end and entering and engaging the other and without interfering with the said strip being slid along said cross-piece, a heddle cross-rod, a staple-like device having its ends secured into said cross-piece and hook means arranged and adapted to slide on said device and to support and permit of the release of said heddle cross-rod therefrom, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WILLIAM FEHR.

Witnesses:
J. WALTER DOUGLASS,
THOMAS M. SMITH.