Dec. 29, 1925. 1,567,102

L. BALDERSTON

HEDDLE

Filed Nov. 4, 1925

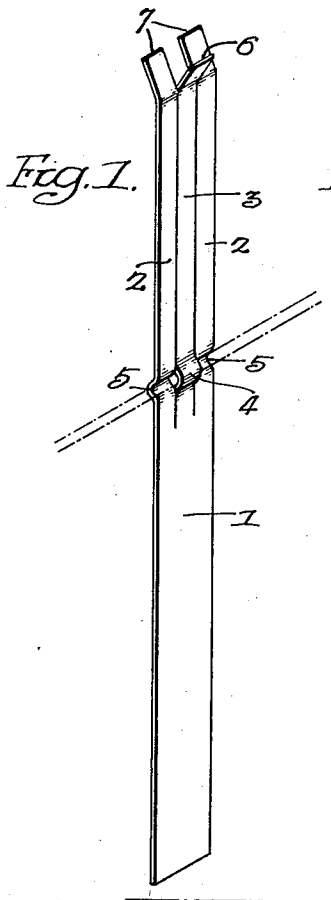


Fig. 1.

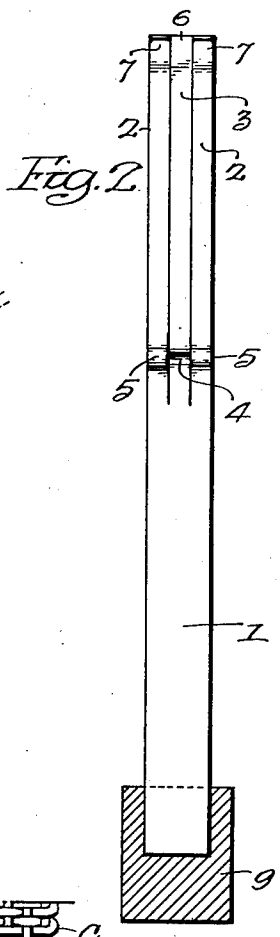


Fig. 2.

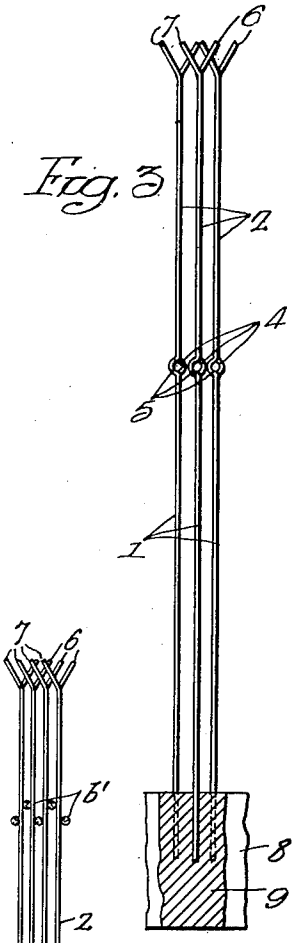


Fig. 3.

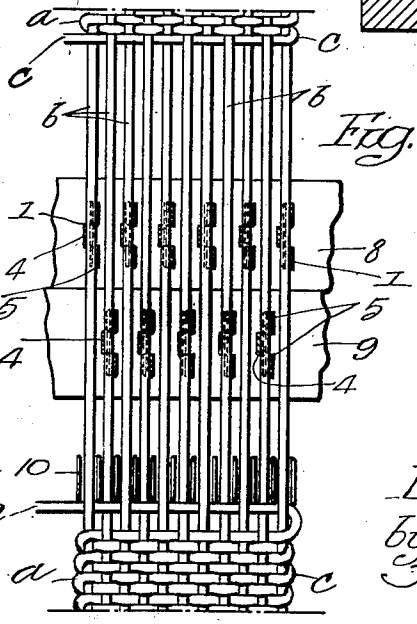


Fig. 4.

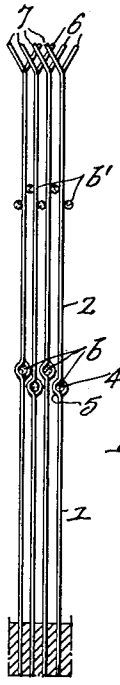


Fig. 5.

Inventor:—
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by his Attorneys.—
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UNITED STATES PATENT OFFICE.

LLOYD BALDERSTON, OF WILMINGTON, DELAWARE, ASSIGNOR TO J. E. RHOADS & SONS, OF PHILADELPHIA, PENNSYLVANIA, AND WILMINGTON, DELAWARE, CONSISTING OF GEORGE A. RHOADS, WILLIAM E. RHOADS, AND JOSEPH EDGAR RHOADS.

HEDDLE.

Application filed November 4, 1925. Serial No. 66,849.

To all whom it may concern:

Be it known that I, LLOYD BALDERSTON, a citizen of the United States, residing in Wilmington, Delaware, have invented Improvements in Heddles, of which the following is a specification.

One object of my invention is to provide a heddle for use in weaving endless fabric, and particularly endless belts.

A further object of my invention is to so design the heddle that, after the belt has been woven, the belt can be removed from the loom by simply withdrawing the entire complement of warp-threads from the heddles at one time. The space between the two ends of the completed belt left void of weft-threads is completed by hand.

These and further objects are attained in the following manner, reference being had to the accompanying drawings, in which—

Fig. 1 is a perspective view of my improved heddle;

Fig. 2 is a side view showing the heddle mounted on a base block;

Fig. 3 shows a series of heddles mounted on their base blocks;

Fig. 4 is a diagrammatic view showing the unfinished portions of an endless belt, and illustrating the warp-threads passing through the heddles; and

Fig. 5 illustrates a staggered arrangement of the heddle eyes to accommodate the warp-threads of a closely woven belt, having approximately double the number of warp-threads in a given space as that shown in Fig. 4.

The heddle 1 is made of very thin steel in the present instance, and has three tongues 2—2 and 3. The central tongue 3 is offset at 4, to form one-half of an eye, and the side tongues 2—2 are offset at 5 to form the other half of the eye. The tongues extend past the eye as clearly shown in Fig. 1.

The upper end of the central tongue 3 is bent in one direction as shown at 6, while the side tongues are bent in the opposite direction as shown at 7, providing an easy means for the introduction of threads between the center and side tongues, so that they will pass into the eye formed by the offset portions of the tongues, as shown by dotted lines in Fig. 1.

These heddles are preferably made of very thin steel, and are arranged as close together as possible, allowing only sufficient room for the passage of threads which extend through the eyes of the adjoining heddles.

The invention is particularly adapted for use in weaving endless driving belts of fabric, and, as shown in the diagram of Fig. 4, 8 and 9 are the two sets of heddles, and 10 is the reed. The endless belt is shown at *a*, and has a series of warp-threads *b* and weft-threads *c*. The weft-threads are introduced into the shed of the warps by shuttles.

When a belt is woven as far as possible in the loom, then the entire complement of exposed warps, which are in the heddles, are withdrawn from the heddles by a single upward movement of the hand which is passed under the warps. This movement causes the tongues to yield and release the warps. The balance of the wefts between the two unfinished ends are then filled in by hand, so as to complete the endless belt.

In threading the heddles, the warp-threads are located in the space between the two flared portions 6 and 7 of each heddle, and by downward pressure the tongues are separated and the thread is forced into the eye formed by the offset portions 4 and 5. After the heddles are completely threaded, then the loom is set in motion and the endless belt woven.

While the lower ends of the heddles are held in alignment, the upper ends are free and open, to allow for the insertion of the warps or the removal of the partly completed belt.

By providing the heddles with three tongues, a single thickness of thin metal can be used, as the eye formed in the three tongues holds the thread in perfect alignment. This allows the placing of the heddles close together, so as to weave a very close fabric belt.

To further facilitate the passage of the warp-threads past the heddle eyes, I may stagger the eyes as illustrated in Fig. 5, wherein the warp-threads *b* of one series are shown passing through the eyes 4—5 of the heddles, and a second series of warp-threads *b'* is shown passing between the bodies of the heddles. The staggered arrangement of the eyes permits of the passage of the warp-threads of one series past the eyes of the

other series, when the shed changes, without pinching the warp-threads between the eyes, as would be the case when the eyes are in horizontal alignment and an extremely close fabric is being woven.

I claim:

1. A heddle made of metal having three tongues, one of the tongues being offset in one direction, and the other tongues being offset in the other direction to form an eye at the base of the tongues.

2. A heddle made of metal having three tongues, one of the tongues being offset in one direction, and the other tongues being offset in the other direction to form an eye at the base of the tongues, the tongues being flared at their outer ends to allow for the ready insertion of the warps.

3. The combination in a heddle structure, of a base, and a series of heddles secured at the lower ends of the base and free at the upper ends, said heddles having tongues offset to form eyes.

4. The combination in a heddle structure, of a base, and a series of heddles secured at the lower ends of the base and free at the upper ends, said heddles having tongues offset to form eyes, the tongues being flared in opposite directions at the free ends to allow for the ready insertion of warp-threads.

5. The combination in a heddle structure, of a base; and a series of heddles secured at one end to the base and free at the other end, said heddles having tongues offset to form eyes, the eyes of alternate heddles being on a different plane from those of the other heddles.

LLOYD BALDERSTON.