J. H. CROWELL.
Harness for Looms.

No. 209,799. Patented Nov. 12, 1878.

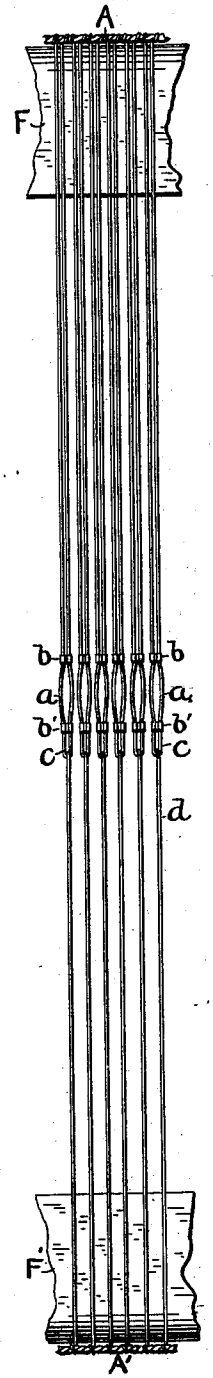


FIG. 1.

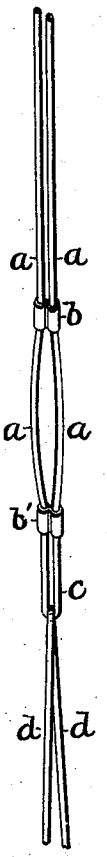


FIG. 2.



FIG. 3.



FIG. 4.

WITNESSES.

J. C. B. Woods

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UNITED STATES PATENT OFFICE.

JOHN H. CROWELL, OF PROVIDENCE, R. I., ASSIGNOR OF ONE-HALF HIS RIGHT TO KENDRICK LOOM HARNESS COMPANY, OF SAME PLACE.

IMPROVEMENT IN HARNESS FOR LOOMS.

Specification forming part of Letters Patent No. **209,799**, dated November 12, 1878; application filed May 1, 1878.

To all whom it may concern:

Be it known that I, JOHN H. CROWELL, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Harness for Looms, the same being fully described in the following specification and illustrated in the accompanying drawing, making a part of the same, in which—

Figure 1 represents a view of a portion of my improved harness mounted upon its shafts. Fig. 2 shows, in perspective, an enlargement of a portion of a single improved heddle, illustrating construction. Fig. 3 represents, in perspective, a portion of a heddle the eye of which is formed jointly by metal clasps and the harness-twines, the same being enlarged. Fig. 4 shows, in perspective, a portion of a heddle enlarged, the same being of the common "knob-and-loop" pattern.

Prior to my invention the description of weaver's harness in common use on looms for weaving cotton cloth is that known as "loop-harness," an illustration of which is shown at Fig. 4.

Each heddle comprising the harness is composed of two twines, one of which is concatenated so as to form an eye for a thread of the warp to pass through, and is secured to one of the "rig-bands" of the harness, while the other twine is interlocked with the eye so formed, and is attached to the other rig-band of the harness. This arrangement of the two twines enables each heddle-eye, when the harness is mounted on its proper shafts in the loom, to face to the front or stand in a plane at right angles with the line of warp-threads.

Prior to the present invention, also, heddles for weavers' harness have also been formed of two twines of equal length, extending from band to band, and having the eye formed by uniting the two twines by two metal clasps, separated by a distance equal to the desired length of the eye. A machine adapted to make this description of harness was patented to me June 30, 1874, No. 152,465, and the kind of harness so made is illustrated at Fig. 3 of the present drawings.

The advantage in a heddle which the metal clasp-eye possesses over an eye formed wholly of twine is that in the former the warp-thread has a smooth surface of metal to ride upon, while in the latter it is constantly chafing against the knotted or looped ends of the twine-formed eye. The disadvantage, however, of this description of heddle is that the eye does not look squarely to the front, and, as a consequence, the warp-threads and the twine sides of the eye are more or less abraded by chafing against each other, and also a considerable inconvenience is experienced from the angular position in which the eyes stand in the operation of drawing in the warp-threads when a fresh yarn-beam is supplied to the loom.

The purpose of my invention is to combine in the same heddle the better qualities of both the descriptions of heddles referred to; and it consists in forming that portion of each heddle of a harness to which the eye belongs of a single twine, which is secured to one of the rig-bands, and is doubled upon itself at a point beyond the central line of the harness, and returned and secured again to the same rig-band, thereby making a simple loop, and in making the eye by uniting the twine so doubled by two metal clasps located at a suitable distance apart to give the proper length of eye, the lower one of such clasps being placed far enough from the point where the twine doubles on itself to leave a loop; and it further consists in forming the residue of each heddle by means of a single twine, which is attached to the other of the two rig-bands, and is interlocked with the looped end of the eye side of the heddle, and returned upon itself and secured again to the same rig-band.

A harness-heddle thus formed stands, when mounted upon suitable shafts in a loom, with its eye looking squarely to the front, and has the ends of the eye formed of metal.

In the drawings, A A′ represent the two rig-bands, to which the heddle-twines are secured, and F F′ represent sections of the harness-shafts. The twine *a* is attached to the rig-band A, and extends for a distance something more than one-half the length of the entire heddle; then doubles upon itself, and is returned to the rig-band A and secured. The metal clasps which unite the twine *a*, so dou-

bled to form the eye, are indicated by *b b'*, and the lower one, *b'*, is so located as to leave the loop of twine indicated by *c*. The twine *d* is attached to the other rig-band, A', and is passed through the loop *c*, so as to interlock therewith, and is returned to the rig-band A' and secured thereto, thus completing the heddle.

I do not claim a weaver's harness the heddles comprising which are composed of two separate twines interlocked and secured to their respective rig-band; neither do I claim a heddle with an eye formed by uniting two lengths of twine by means of metal bands or clasps located at suitable distances apart to form a harness-eye; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

A weaver's harness the several heddles of which are composed of two twines interlocked, and each secured to its respective rig-band, as described, and the eyes of which are formed by uniting with metal clasps the heddle-twines, which are returned upon themselves and laid side by side, substantially as and for the purposes described.

JOHN H. CROWELL.

Witnesses:
J. C. B. WOOD,
W. H. THURSTON.