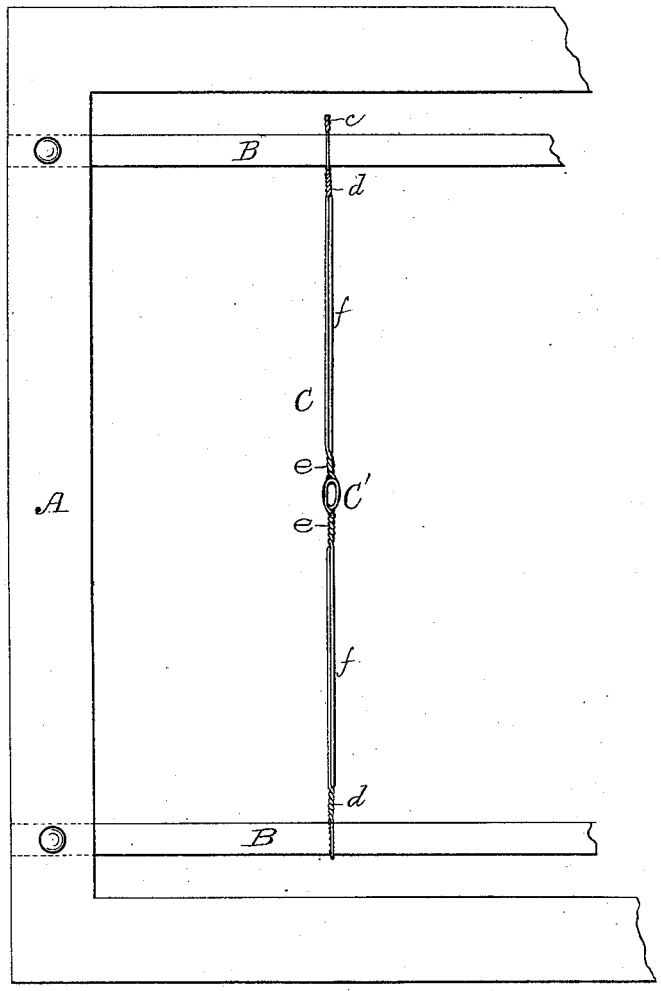
(No Model.) 2 Sheets—Sheet 1.

F. TAYLOR.

WIRE LOOM HEDDLE.

No. 347,138. Patented Aug. 10, 1886.

Fig. 1.



Witnesses:
Walter B. Nourse.
Lucius W Briggs

Inventor:
Frederick Taylor.
A. A. Barker.
Attorney.

(No Model.) 2 Sheets—Sheet 2.

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WIRE LOOM HEDDLE.

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Fig. 2.

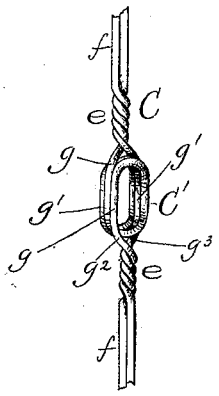

Fig. 4.

Fig. 3.

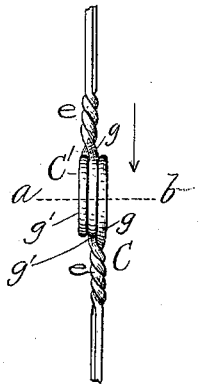

Fig. 5.

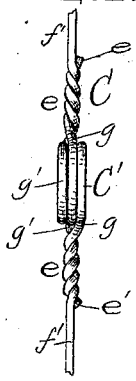

Fig. 6.

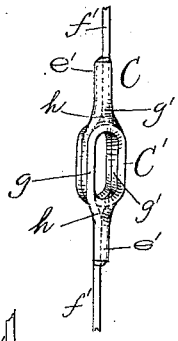

Fig. 7.

Fig. 8.

Witnesses;
Adin Johnson.
Walter B. Nourse.

Inventor;
Frederick Taylor.
By A. A. Barker.
Attorney

UNITED STATES PATENT OFFICE.

FREDERICK TAYLOR, OF LOWELL, MASSACHUSETTS.

WIRE LOOM-HEDDLE.

SPECIFICATION forming part of Letters Patent No. 347,138, dated August 10, 1886.

Application filed August 26, 1885. Serial No. 175,342. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK TAYLOR, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Wire Loom-Heddles; 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 part of a heddle-frame with an ordinary double wire heddle upon the same having my improvements applied thereto. Fig. 2 represents upon an enlarged scale so much of the heddle shown in Fig. 1 as is necessary to illustrate my said improvements. All of the following figures are also upon the same enlarged scale. Fig. 3 represents a side or edge view of the parts shown in Fig. 2. Fig. 4 represents a cross-section through the heddle, taken on line *a b*, looking in the direction of the arrow, Fig. 3. Figs. 5 and 6 represent modifications, hereinafter more fully described; and Figs. 7 and 8 represent side views of two spiral loops, which form my improved heddle-eye when placed together, as hereinafter described.

The object of my invention is to produce a wire loom-heddle having an eye-loop which shall offer the least possible resistance to the warp-thread passing through it in the operation of weaving; and the invention consists of a wire heddle provided with the usual single or double supporting wire or wires, and having an eye formed according to my invention, as hereinafter more fully set forth.

My said invention is more especially adapted and intended for use in connection with heddles having double supporting-wires, (such as shown in Figs. 1, 2, and 3,) although it may be used in making heddles having only a single supporting-wire (such as shown in Figs. 5 and 6, and hereinafter more fully described) without departing from the principle thereof.

To enable those skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe it more in detail, considering first the wire heddle having double supporting-wires, and then the modified form of wire heddle having a single supporting-wire.

In the drawings, the part marked A represents a portion of a loom-heddle frame, and B B the cross-bars thereof, to which are applied the heddles C in the usual manner, as shown in Fig. 1. The heddle shown in said Fig. 1, with the exception of the double loop forming its eye C′, is made similar to other wire heddles having double supporting-wires now in common use, being twisted at one end, as shown at *c*, also next to the cross-bars B B at *d d*, and for a short distance at each side of said eye-loop at *e e*, the parts *f f* between said twisted portions being left plain, as shown; or, if preferred, they may be twisted the whole distance from the eye to the cross-bars. In making said heddle C the eye C′ thereof is first made by bending the wire at the proper points to form the single spiral loops *g g′*. (Shown in Figs. 7 and 8 of the drawings.) Said wire is then doubled, and the loops *g g′* fitted together side by side, to form the double spiral loop shown in the other figures of the drawings, after which the twists *c*, *d*, and *e* are formed, as hereinbefore described. The heddle is then complete and ready for use. The single loops *g g′* are coiled spirally in opposite directions, and in fitting the same together the loop *g* shown in Fig. 7 is placed on top of *g′*, the one shown in Fig. 8, in the positions there represented. Therefore, as will be observed by reference to Fig. 2, the end g^2 of loop *g* comes upon the outside of the bottom of the double loop, while the end g^3 of the other single loop comes in the middle of said double loop; and as the opposite ends of said single loops are correspondingly arranged at the opposite end of the double loop after the wires have been intertwisted, as represented at *e e*, a firm and rigid eye-loop is produced, having a clear smooth opening, with no angles or corners in which the warp-thread may become caught, to retard or break the same in the operation of weaving.

By the usual construction the ends of the eye-loop opening where the wires come together to be intertwisted are V-shaped, said wires being simply bent outward to form the eye, instead of in the form of a loop, as in my improved heddle. The warp-thread in passing through is therefore very liable to be drawn into said V-shaped ends and pinched

thereby, so as to retard or even stop the passage of the same through said eye, thus causing frequent breakages in said warp-thread, which is not only a source of considerable annoyance and delay to the operator, but also of unnecessary expense to the manufacturer, all of which, as will at once be seen, is entirely obviated by making the eye-loop of a heddle in the manner hereinbefore described.

Although I prefer in practice to form the heddle having the double loop with double supporting-wires, as hereinbefore stated, it may be formed with only one supporting-wire, *f'*, as shown in Figs. 5 and 6, and thus considerably decrease the cost of manufacturing the same.

In making the heddle having the single supporting-wire and double eye-loop shown in Figs. 5 and 6 the short ends *e' e'* at each end of the eye-loop may be fastened by intertwisting the same with the main wire, as shown in Fig. 5, by means of solder, *h*, (see Fig. 6,) or in any other convenient manner.

In making the wire heddle having a single supporting-wire and double loop, hereinbefore described, it will be understood that the loop additional to the loop formed on said main supporting-wire is made from a short section of wire, and the ends *e' e'*, hereinbefore referred to, are the free ends thereof, which are fastened to the main wire at each end of the loop, as aforesaid.

I am aware of the patents granted, respectively, to J. Ashworth, January 29, 1867, No. 61,501, and M. Finkle, August 8, 1865, No. 49,251, for improvements in loom-heddles, and therefore limit my invention to the heddle made according to my invention, as hereinbefore described, and shown in the drawings. By reference to the Ashworth patent it will be seen that the eye is made in a very different manner from that of my heddle, the two loops thereof which form said eye being made by bending the wire back upon itself, and twisting said doubled portion next to the loop thus formed. After the two loops are thus made, they then being passed one through the other in opposite directions, as set forth in said patent, are interlocked or knotted together to form the eye. The heddle shown in the Finkle patent is unlike my invention, being made throughout of a single continuous wire, in which is formed the eye by bending said wire at the proper point into the shape of a single oblong spiral loop, similar to the single loops *g g'* of my improved heddle.

Having described my improvements in wire loom-heddles, what I claim as new therein and of my invention, and desire to secure by Letters Patent, is—

The improved wire loom-heddle having the eye composed of two single spiral loops of wire placed side by side, as described, and having the wires forming both loops united at the opposite ends of the eye, substantially as specified.

FREDERICK TAYLOR.

Witnesses:

ALBERT A. BARKER,

WALTER B. NOURSE.