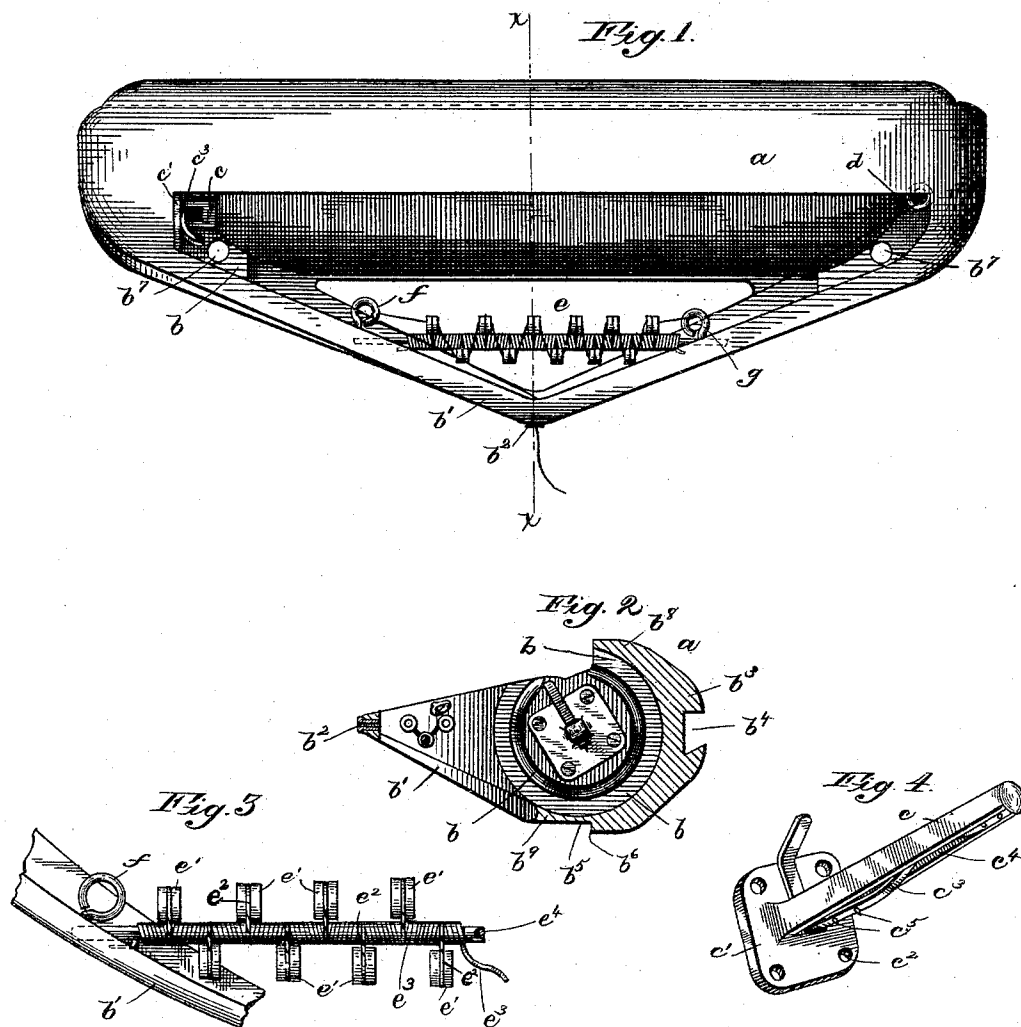


(No Model.)

G. C. MOORE.
LOOM SHUTTLE.

No. 488,214.

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Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE C. MOORE, OF EASTHAMPTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JOSEPH W. GREEN, JR., OF SAME PLACE.

LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 488,214, dated December 20, 1892.

Application filed April 6, 1892. Serial No. 428,006. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. MOORE, a citizen of the United States, residing at Easthampton, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Loom-Shuttles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates primarily to shuttles for use in narrow ware looms, but certain features thereof are adapted to be applied to loom shuttles in general.

The objects of my invention are to provide a shuttle of simple and strong construction which shall be fitted to hold a very much greater amount of weft yarn than the shuttles now ordinarily employed in narrow ware looms; to provide against the warp threads coming in contact with the coils of weft yarn within the shuttle during the passage of the shuttle through the sheds in the warp threads in the process of weaving; to provide for effectually holding a cop of yarn in place within the shuttle body while also enabling said cop to be quickly and readily removed from the shuttle body whenever desired; and to provide an improved means of putting a regular and uniform tension upon the weft yarn as it passes out of the shuttle.

My invention consists in certain novel features of construction which are hereinafter clearly defined, and it first will be described with reference to the accompanying drawings making a part of this specification and then will be particularly pointed out in the claims at the close hereof.

In the drawings Figure 1 is a view in plan of a shuttle for narrow ware looms embodying my invention. Fig. 2 is a view thereof in cross-section on the line $x-x$ of Fig. 1. Fig. 3 is a detail view illustrating the tension regulating device hereinafter described. Fig. 4 is a view in perspective of the cop holder and its cop-retaining device.

The shuttle body is shown at a . It is hollowed out internally to form a weft-yarn holding chamber b and is formed with a forwardly extending bow portion b' carrying the deliv-

ery eye b^2 . Ordinarily, the shuttle of a narrow ware loom fits between the adjacent edges of two vertical race-boards or rails, the said edges being fitted into grooves which are formed in the upper and lower sides, respectively, of the shuttle body. Usually in such shuttles the weft yarn receiving chamber is in advance or forward of the grooves just mentioned and the shuttle body is necessarily of restricted depth or thickness. Not only is a shuttle which is thus constructed and guided liable to cramp or bind at times between the edges of the race boards, as for example, when a warp thread breaks and becomes entangled with others, and also, after the shuttle and race boards have become worn, when the floor on which the loom stands is shaken, but its capacity for holding a load of weft-yarn is limited and when a fully wound quill is placed therein the surface coils of the weft-yarn are liable to be swept endwise of the quill over the heads or ends thereof and onto the supporting spindle.

I so construct the shuttle body as to dispense with the grooves in the top and bottom sides thereof, and I completely hollow or chamber out the said body, forming the latter between the solid ends thereof and to the rear of the bow portion b' into the shell b^3 which is semicircular or approximately so in cross-section as shown clearly in Fig. 2. This shell is of sufficient thickness to give strength and to have formed therein at the rear side of the shuttle the guiding groove b^4 , and on the bottom of the shuttle the longitudinal groove or rabbet b^5 having at one side thereof the shoulder b^6 extending lengthwise of the shuttle. The groove b^4 is of suitable shape in cross-section to fit a horizontal guiding rib or rail applied to the lathe or batten of the loom in which the shuttle is used. The said groove has the lower portion thereof beveled or dovetailed and this shape of the groove and the guide rail prevents the shuttle from being unnecessarily forced upward out of its normal working position by the action of the devices by which the shuttle is moved to and fro in the loom.

In practice I contemplate operating the

shuttle by means of a reciprocating carrier provided with pegs or levers which are caused to engage with holes b^7 b^7 formed in the shuttle body near the opposite ends of the latter.

5 The portion of the shuttle in which is formed the groove or rabbet b^5 slides on the upper edge of a vertical guide rail which is carried by the lathe or batten, the shoulder b^6 taking a bearing against the rear side of the said

10 guide rail. The shell b^8 partially surrounds the cop or load of yarn which is placed within the shuttle body, the upper portion b^8 of the said shell extending sufficiently far above and forward over the load of yarn to form an

15 over-arching or over-hanging hood or guard which protects the surface coils of the yarn load from being rubbed by the warp threads, and the lower portion b^9 forming a bottom to the chamber b and extending forward under-

20 neath the cop of yarn. A shuttle body formed as described may have placed therein if desired an ordinary quill or spool mounted upon a spindle having bearings in the shuttle body as usual. I prefer to apply the weft yarn to

25 the shuttle wound in cop form, inasmuch as I am enabled thereby to introduce a much greater quantity of weft-yarn into a shuttle of given dimensions.

To fit the shuttle for receiving a cop, I secure to one end of the shuttle body, within the chamber b , a cop holder such as that shown detached in Fig. 4, the same consisting of a stub spindle c having at one end thereof a flange or head c' having holes therein for the

30 passage of screws c^2 by means of which it is fixedly secured to the shuttle body.

For the purpose of securing the cop upon the spindle c I provide the latter with a spring c^3 , a portion of which fits within a groove c^4

40 in the under side of the spindle c , the said spring being fastened to the spindle by the end thereof which lies within the said groove. The spring is bent so that a portion thereof projects out of the groove c^4 , and the free end

45 of the spring is bent at an angle and passes through a hole which is formed through the spindle c , the said end being further bent or curved so as that it forms a finger-hold which may be pressed up by the finger of the loom attendant in order to bend the spring and

50 draw the body portion thereof wholly within the groove c^4 . This is done whenever it is desired to disengage from the interior of the cop the spurs or points c^5 with which the

55 spring c^3 is provided for the purpose of holding the cop on the spindle.

At the end of the shuttle body opposite to that to which the cop-holding spindle c is affixed I secure within the chamber, and

60 in line with the nose of the cop, a guiding eye d through which the yarn is drawn on its way from the cop. From the eye d the weft yarn passes to a guide eye g fixed in the bow, thence to and through a tension regulating device e ,

65 thence to and through a guide eye f in the bow located oppositely with reference to eye

g , and thence to and through the delivery eye b^2 .

The tension regulating device e is of peculiar construction, and is illustrated in detail in Fig. 3. It has a number of eyes e' through which the weft yarn is roved in succession, the said eyes being arranged in alternating succession on opposite sides of the middle line of the tension regulating device, which

70 latter extends transversely of the bow. The said eyes are preferably porcelain eyes, and are secured in the ends of the arms e^2 forming part of a spring wire e^3 which is wrapped in opposite spirals around a rod e^4 having its

80 ends seated in the bow of the shuttle, the ends of the wire being secured to the bow, as shown. The spirals extend around the axis of the rod in opposite directions alternately, and at the point where each change of direc-

85 tion occurs an arm e^2 is formed by carrying a loop of the wire outward, the sides of the said loop being compressed upon themselves, as by twisting, and a guide-eye e' being, by preference, inserted into the end of the loop.

90 These arms e^2 are of progressively varying lengths, being shortest next the eye f and longest next the eye g , this feature being intended to secure a gradually varying degree of flexibility.

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Having now described my invention and the best manner with which I am at present acquainted of reducing the same to practice, I claim as my invention:

1. The herein described shuttle having the

100 body thereof hollowed out to form the chamber b , and having the trough-shaped shell provided with the protecting portions b^8 b^9 extended forward to partially inclose the load of yarn within the shuttle and shield it from

105 contact with the warp-threads in a loom, the said shuttle having the guiding groove b^4 in the rear side thereof, and the rabbet and shoulder on the under side thereof, substantially as described.

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2. The combination with the shuttle body, of the cop-holder consisting of a spindle fixed rigidly to the said shuttle body and formed with a groove along one side thereof having

115 secured therein by one end a bent spring provided with cop-engaging spurs or points on a portion thereof which projects out of the groove, and formed with a finger-hold by means of which the spring may be sheathed within the groove, substantially as described.

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3. The combination with the shuttle body, of a tension regulating device consisting of a spirally wound wire having portions thereof projecting at intervals to form arms, the said

125 arms being alternately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

4. The combination with the shuttle body, of the tension regulating device consisting of a wire formed in alternating reversely wound

130 spirals and having portions thereof projecting at intervals to form arms, the said arms be-

ing alternately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

5 5. The combination with the shuttle body, of the tension regulating device consisting of a wire formed in alternating reversely wound spirals and having portions thereof projecting at intervals to form arms, the said arms radially varying in length and being alter-

nately disposed in different lines and provided with yarn-guiding eyes, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. C. MOORE.

Witnesses:

DAVID HILL,
S. JOSIE HILL.