No. 635,897. Patented Oct. 31, 1899.

G. POOLE.

PILE FABRIC LOOM.

(Application filed Oct. 3, 1898.)

(No Model.)

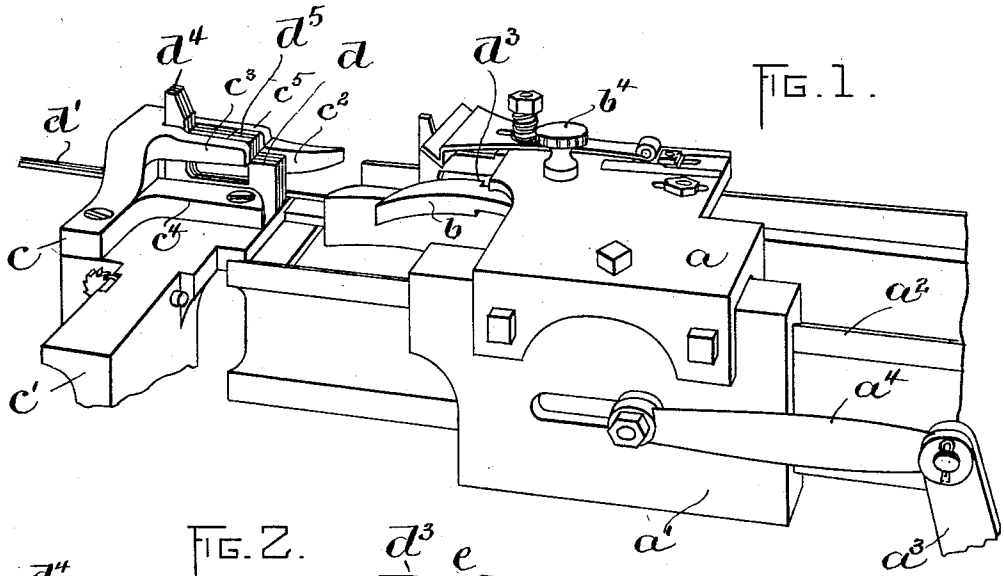


FIG. 1.

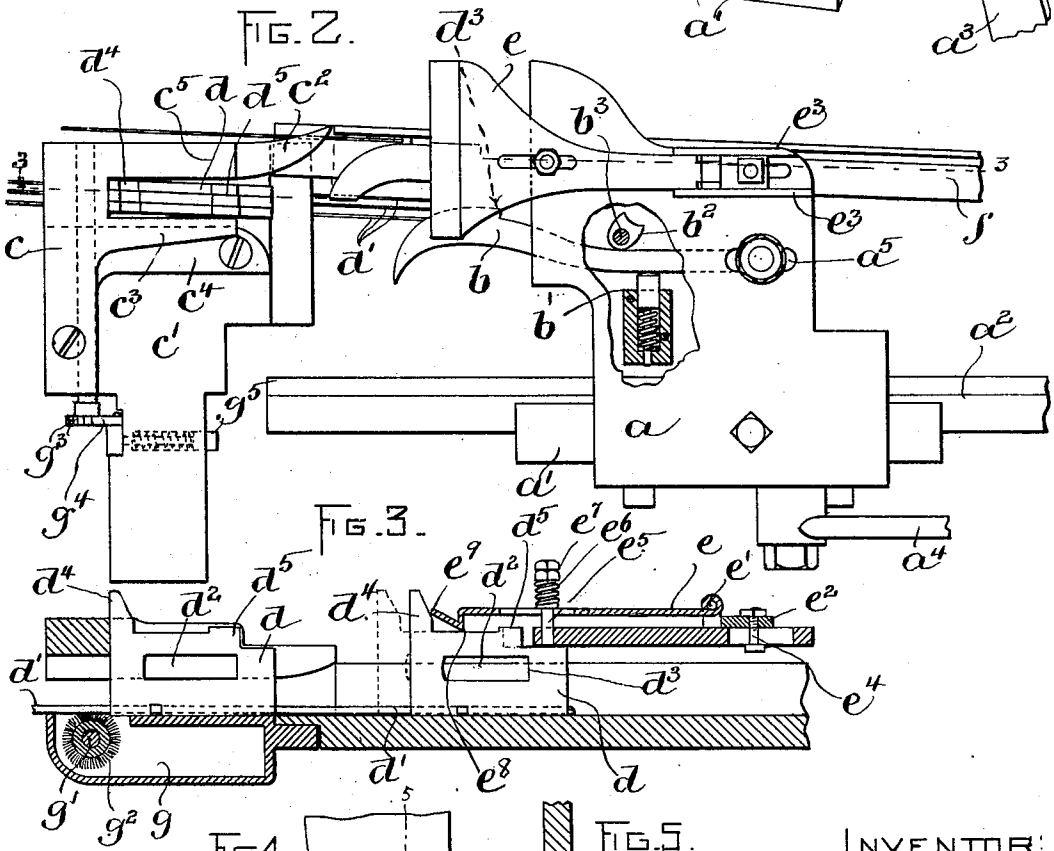
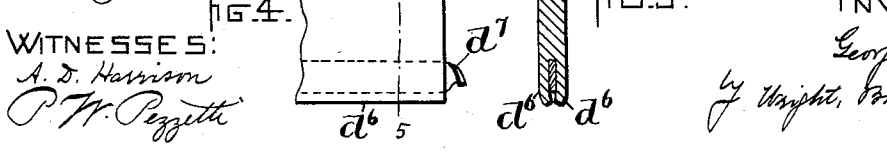


FIG. 2.

FIG. 3.



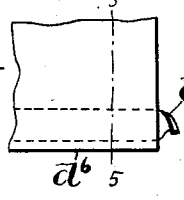


FIG. 4.

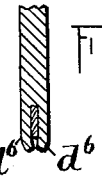


FIG. 5.

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UNITED STATES PATENT OFFICE.

GEORGE POOLE, OF THOMPSONVILLE, CONNECTICUT.

PILE-FABRIC LOOM.

SPECIFICATION forming part of Letters Patent No. 635,897, dated October 31, 1899.

Application filed October 3, 1898. Serial No. 692,477. (No model.)

To all whom it may concern:

Be it known that I, GEORGE POOLE, of Thompsonville, in the township of Enfield, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Pile-Fabric Looms, of which the following is a specification.

This invention has relation generally to pile-fabric looms, and more particularly to the wires and the mechanism for operating them.

The object of the invention is to secure a more accurate placing of the wires in position in the shed to prevent their being displaced and thrown from the carriage by the sudden stoppage of the loom due to any cause, such as the breakage of a warp or filling thread or a mispick, to provide for the withdrawing-hook being thrown temporarily out of operation whenever desired for any purpose, and to secure certain other results whereby the general efficiency of the loom is enhanced and the production thereof increased. The means for accomplishing these various objects and ends are clearly illustrated upon the accompanying sheet of drawings, which portray one embodiment of the invention selected as being the best form now known to me.

On the said drawings similar letters indicate similar parts or features, as the case may be, wherever they occur.

Referring to the drawings, Figure 1 represents a perspective view of a portion of a pile-fabric loom embodying my invention. Fig. 2 represents a plan view of the same. Fig. 3 represents a longitudinal section on the line 3 3 of Fig. 2. Figs. 4 and 5 represent in detail a wire-head and my improved means for securing the wire therein.

The carriage, which comprises the horizontal plate a and the vertical plate a', to which the same is bolted, slides upon the guide or slide bar a^2, being reciprocated by the arm a^3 and the connecting-rod a^4 in the ordinary way, all being of the usual construction.

Under the horizontal plate of the carriage is adjustably pivoted the withdrawing-hook b, by means of which the wires are drawn backward from the magazine c, located upon the stand c' at the side of the loom. A spring-pressed pin b' bears against the hook to thrust it yieldingly into engagement with a wire-head; but the action of said pin may be nullified by a cam b^2 on the end of a pivot-stud b^3, projected through the plate a and having a milled head b^4. The cam is concaved or flattened, so that when it is rotated to engage the hook it throws it into an inoperative position and locks it there.

The magazine c is formed with an outwardly-diverging guide-finger c^2 and shorter parallel fingers c^3 c^4, separated therefrom to permit of the entrance of the wire-heads between them. The end of the finger c^2 is reduced to form a raised cam-surface c^5 for a purpose to be described.

Heretofore it has been the practice to move the wires into operative positions by a pusher engaging the rear ends of their heads; but this has in many instances been unsatisfactory by the tendency of the pusher to raise the free end of the wire and cause it to slide over the upper threads of the shed or to be otherwise misplaced. Hence to overcome this defect, frequently seriously injurious to the fabric, I construct the heads d of the wires d', which heads have the ordinary slots or apertures d^2 to form the engaging portion or edge d^3 for the hook b, with an upwardly-projecting wedge-shaped lug d^4, located at the front end thereof—*i. e.*, in front of the middle transverse line thereof, as best shown in Fig. 3. This lug is sufficiently high to project above the fingers or guides of the magazine when the head is between them. Each head is likewise provided with another stop or lug d^5 near its reduced rear end, which, however, is flush with or below the cam-surface c^5 when the head is in the magazine.

Upon the top of the plate a of the carriage I mount a thin metal strip e, having a reduced rear end pivoted on a stud e', passed through two ears projecting upwardly from a block e^2. The block lies between two guide ribs or flanges e^3 on the carriage and is adjustably secured in place by a nutted bolt e^4, passed through a slot a^5 therein. The strip is resilient; but to increase its effectiveness I secure an upright threaded post e^5 in the carriage, passing it through a slot in the strip, and place a coiled spring e^6 around it, which, bearing against nuts e^7 on the post, presses downwardly against the strip. The front or free end of the strip is bent downward, as at e^8, to form a hook or latch for engaging the

lug d^5, and then upward, as at e^9, to form an abutment or stop to engage the inclined edge of the lug d^4. The strip e has sufficient rigidity to prevent the end e^9 from being raised when it is in engagement with only the wire-head. Thus the strip performs two functions, serving, first, as a pusher to force the wire into place, and, second, as a latch to prevent the wire from being thrown violently out of the wire-guide in case the loom be suddenly stopped. In forcing the wire through the pivoted wire-guide f, which may be of the ordinary construction, to place it in the shed the abutment or pusher e^9, bearing against the lug, tends to hold the free end of the wire downward and prevent it from rising so as to clear the warp. At this time the point of the hook is below the upper edge of the lug d^5, and consequently if the carriage should be suddenly stopped the hook would prevent the wire from continuing and would hold it against movement. When, however, the carriage reaches the latter part of its forward movement, the pusher strikes against the cam-surface c^5 on the finger c^2 and is lifted slightly above the lug d^5, though not so far as to disengage it from the lug d^4, which it continues to bear against while the carriage completes its forward movement to force the head into the magazine when the lug d^5 is flush with or below said cam-surface c^5. Therefore when the carriage commences its retrograde movement and the hook b, engaging the first head in the magazine, draws it back through the wire-guide that has in the meantime been moved into alinement with it the latch e^8 slides back past the other heads in the magazines without engaging their lugs d^5.

It is evident that the pusher and latch may be adjusted upon the carriage and that the pressure of the spring e^6 be varied to suit any particular requirements or conditions.

In the stand underneath the magazine I form an oil box or tank g, as shown by dotted lines in Fig. 2 and in section in Fig. 3. Through the tank projects a shaft g', having thereon a brush g^2, partially submerged in the oil and arranged to engage the under edges of the wires and lubricate them as they are withdrawn from the fabric to cut the loops in the warp. The shaft is rotated with a step-by-step movement, being provided on its projecting end with a ratchet-wheel g^3, with which a pawl g^4 on a spring-retracted plunger g^5 is adapted to engage and advance one step each time the plunger is reciprocated. The plunger projects through the stand c' and is in alinement with the vertical plate a' of the carriage, extending into position to be engaged by the latter at the extremity of its forward movement. The lubrication of the wires renders it easier to withdraw them from the fabric, as is obvious. I have also provided novel means for affixing the wires d' in their heads d. The heads are slotted in their bottom edges, the slots being adequate to receive the wires, though deep enough to cause the flanges d^6 to project beyond the wires. After a wire is placed in the slot in a head the flanges are upset or forced inward, so as to tightly bind the wire between them, the flanges being assisted by the bend or head d^7 on the end of the wire.

By examining the mechanism hereinbefore described in connection with the results which I stated in the first part of this specification I desired to obtain it will be seen that the objects of my invention are all reached by the employment of devices in themselves simple in construction and easy to repair or replace.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A pile-fabric loom comprising wires and their heads, and a pusher adapted to engage and push forward against the front portions of said heads in placing the wires in the shed.

2. A pile-fabric loom comprising wires and their heads, said heads being provided at their front portions with suitable abutments or stops, and a pusher adapted to engage and push forward against said abutments or stops in placing the wires in the shed.

3. A pile-fabric loom comprising wires and their heads, said heads having upwardly-projecting lugs or stops at their front ends, and a pusher adapted to engage and push forward against said lugs or stops in placing the wires in the shed.

4. A pile-fabric loom comprising wires and their heads, and a pusher having means to engage and push forward against the front portions of the said heads, in placing the wires in the shed, said pusher having means for preventing the rear portions of said heads from rising under the impulse of said engaging and pushing means.

5. A pile-fabric loom comprising wires and their heads, a carriage having a latch arranged to engage the wire-head and push the same into the shed, said latch also operating to lock the wires against further movement when the loom is stopped.

6. A pile-fabric loom comprising wires and their heads, said heads each having two lugs or stops, a carriage having a latch adapted to engage either said lugs or stops to shove the wires into the shed and hold the wires against continued forward movement in case the carriage is suddenly stopped.

7. A pile-fabric loom comprising wires and their heads, and a carriage having a combined pusher and latch, for the purposes set forth.

8. A pile-fabric loom comprising wires and their heads, said heads each having two lugs or stops, and a pusher adapted to engage one lug of a head to place the wire into the shed and to engage the other lug and hold the wire against continued movement in case the loom be stopped.

9. A pile-fabric loom comprising a wire, a

head therefor having two separated lugs or stops, and a carriage having a hooked member adapted to lie between said lugs or stops whereby when the carriage is advanced, the wire is moved forward, by the member engaging one lug, and when the carriage is stopped, the wire is held against further movement by said member engaging the other lug or stop.

10. A pile-fabric loom comprising a wire, a head therefor having two separated lugs or stops, and a carrier having a spring-tensioned strip formed at its operative end with a hook and an abutment to engage said lugs alternately.

11. A pile-fabric loom comprising a wire, a head therefor having two separated lugs or stops, a combined pusher and latch adapted to engage either of said lugs as set forth, and a magazine having means for throwing said pusher and latch into an inoperative position with respect to one of said lugs or stops.

12. A pile-fabric loom comprising a wire-carriage, a hook, a pivot for said hook, means for securing said pivot adjustably in a slot in said carriage, a spring exerting its pressure against one side of said hook, and a cam on the other side of said hook for holding it in an inoperative position against the tension of the spring.

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

GEORGE POOLE.

Witnesses:
C. F. BROWN,
A. D. HARRISON.