

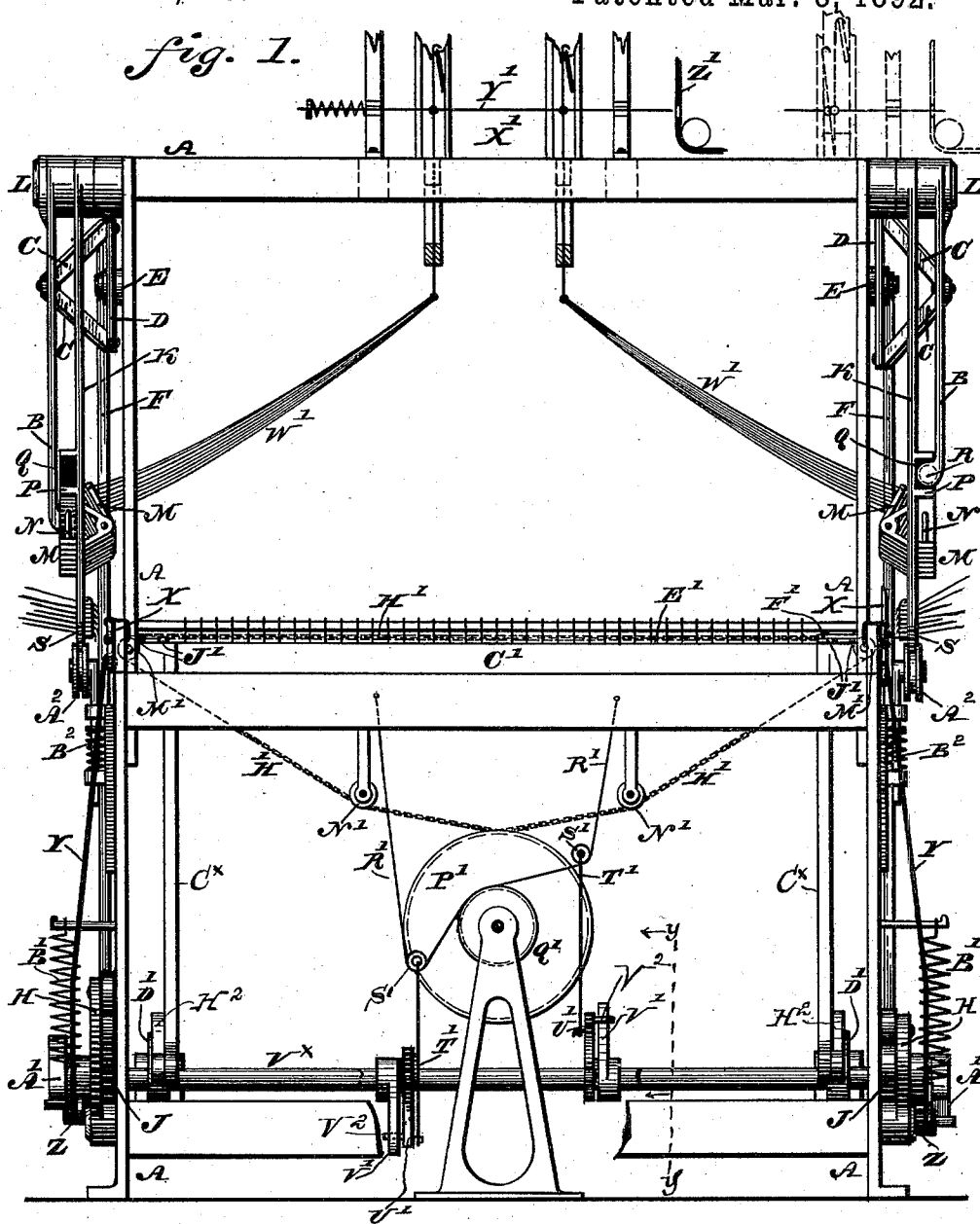
(No Model.)

4 Sheets—Sheet 1.

R. HARTLEY.
LOOM FOR WEAVING CHENILLE WEBS.

No. 470,426.

Patented Mar. 8, 1892.



WITNESSES:

L. Douville,
P. F. Nagle

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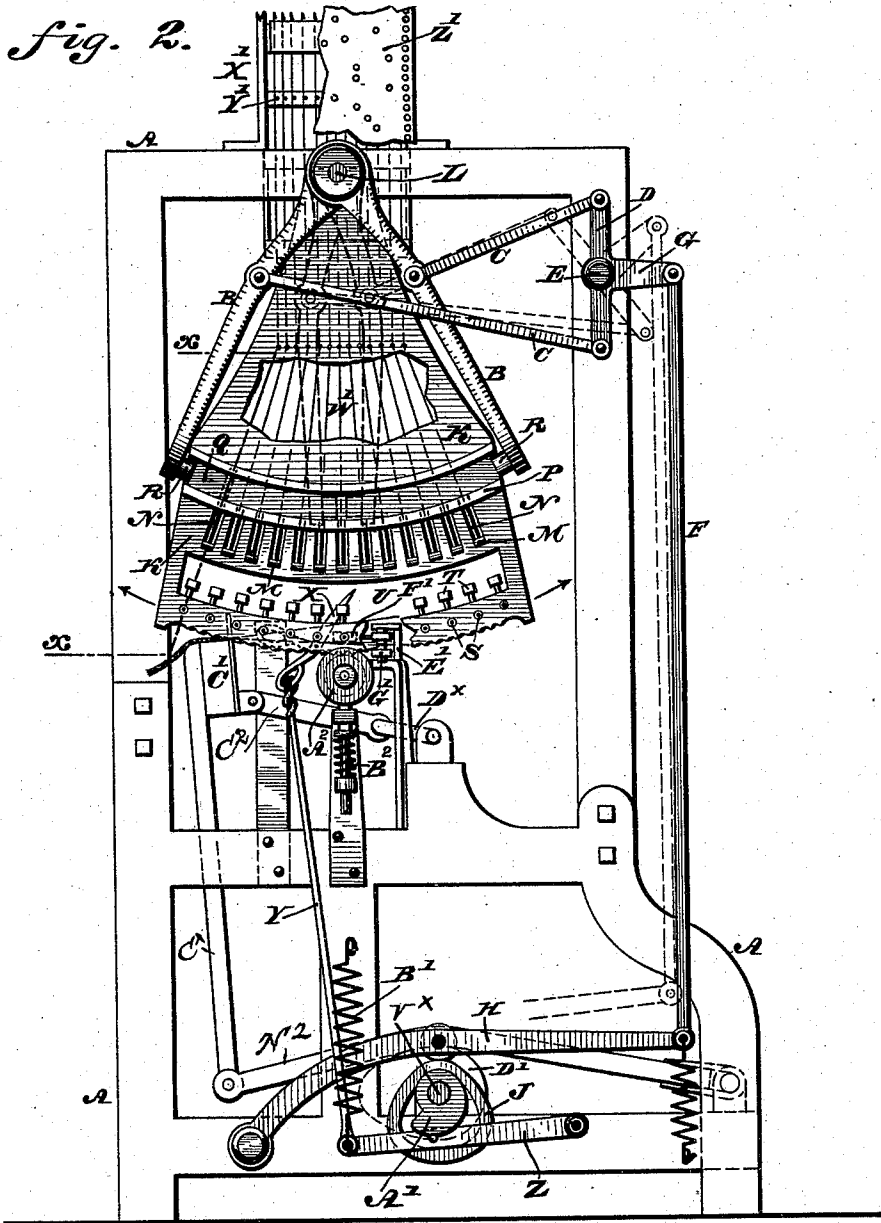
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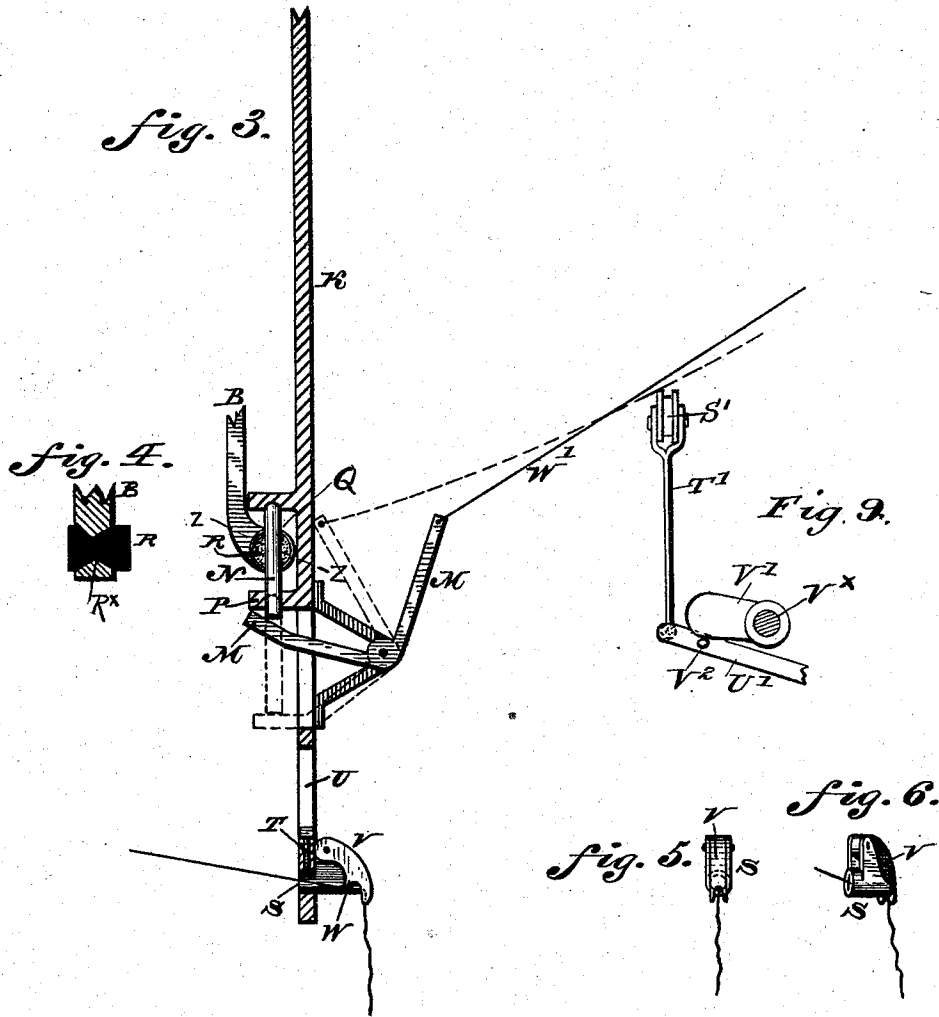
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UNITED STATES PATENT OFFICE.

RICHARD HARTLEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF FIVE-EIGHTHS TO HENRY FOULDS AND ALBERT FOULDS, OF SAME PLACE.

LOOM FOR WEAVING CHENILLE WEBS.

SPECIFICATION forming part of Letters Patent No. 470,426, dated March 8, 1892.

Application filed May 23, 1889. Serial No. 311,771. (No model.)

To all whom it may concern:

Be it known that I, RICHARD HARTLEY, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Looms for Weaving Chenille Webs, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in looms more particularly designed for weaving chenille webs, the same embodying means for bringing the yarn of the required color into position to be grasped and carried by the shuttle.

It further consists of the combination and arrangement of parts hereinafter set forth.

Figure 1 represents a front view of a loom embodying my invention. Fig. 2 represents a side elevation thereof. Fig. 3 represents a section on line $x x$, Fig. 2, on an enlarged scale. Fig. 4 represents a vertical section of a detached portion on line $z z$, Fig. 3, on an enlarged scale. Fig. 5 represents an end view of a guide or eye employed. Fig. 6 represents a perspective view of the guide shown in Fig. 5. Fig. 7 represents a detail view of parts, illustrating diagrammatically the operation of the web-gripping devices or shuttles. Fig. 8 represents a vertical sectional view of the parts shown in Fig. 7. Fig. 9 represents a vertical section on line $y y$, Fig. 1. Fig. 10 represents an end view of one of the shuttle-jaws.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the frame of the loom, on the upper portion of the sides of which are mounted the swinging arms B, which depend from their axis L and are connected with the links C, the latter being attached to the arms D on the studs E on the frame A.

F designates rods, whose upper ends are pivoted to the arms G on the studs E and whose lower ends are pivoted to the levers H, which are pivoted on the lower portion of the

frame A and bear upon the cams J, secured to the driving-shaft V^x , suitably journaled in the lower part of the said frame A.

K designates swinging frames, which depend from each side of the upper portion of the frame A and are mounted on the axis or shaft L, on which the arms B are mounted. Each of the said frames K is provided with a series of pivoted elbow-levers M, which are arranged in an arc of a circle and have bearing or resting upon their horizontal limbs the movable pins N, which are vertically arranged in the guides P, projecting from the sides of the frame K. It will be readily seen that the movement of the elbow-levers M will either raise or lower the said pins. In the sides of the said frames K are circular grooves or ways Q, having movable within them the elastic heads R, which are fitted in openings in the lower ends of the arms B and project therefrom, as shown in Fig. 4. To prevent the easy displacement of the heads from the arms B, the walls of the openings in the said arms are provided with projecting portions R^x , which enter grooves in the heads, so that when the latter are sprung or forced into the openings they are reliably held thereon.

The lower portion of each frame K is provided with a series of openings having therein the eyes S arranged in circular form, and through which the ends of the filling threads or yarns are passed. In each of the frames K, above the eyes S, are the screw-bolts T, having their heads in the slot U of the frames and their points bearing against the walls of the eyes S, so as to keep the latter in place. Pivoted to the inner side of each of the eyes S is a dog or pawl V, having a tooth W on its lower side adapted to press the filling-yarn against the base of the eye, and thereby prevent it from slipping from the eye.

On the sides of the loom-frame A are secured the shears X, the movable blades of which are connected with the rods Y, whose lower ends are pivoted to the levers Z, which latter are engaged by cams A' , secured on the driving-shaft V^x , whereby the shears are

opened, their closing motion being effected by means of the springs B', attached to the levers Z and to proper parts of the loom-frame.

The side arms or swords C^x of the lay C' are pivoted at their lower ends to the arms H², which are pivotally secured to the frame of the loom, said arms riding on cams D' on the driving-shaft V^x, and to the lay are secured the pitmen C², which are connected with the crank-shaft D^x, journaled in the frame A, whereby the proper motion is imparted to the lay, so that it may properly beat up the fabric, the said mechanism causing the lay to move in a horizontal direction instead of the usual arch; but such form of construction for connecting the lay and operating the same is old and well known and not claimed *per se* herein.

E' designates the shuttle-race, extending across the lay of the loom.

The shuttle F' (shown in Fig. 7) has the spring-jaws H^x and J^x, normally closed, mounted at each end thereof and pivoted thereto, the inner portions of said jaws being preferably serrated or corrugated to reliably retain a hold on the filling-thread while carrying it across the shuttle-race. The shuttle-carrier G' is secured at its ends to the ends of a chain or band H' and has raised end portions, between which the shuttle F' is held, the said shuttle having depending anti-friction wheels and the carrier having wheels above the top thereof for readily allowing the lower warp-threads of the shed to pass between the shuttle and the carrier as the carrier, with the shuttle, is shot across the loom in the groove G^x of the shuttle-race. Pivotaly connected with the shuttle-race and adjacent to the sides of the loom are the pairs of cam-heads J', J², J³, and J⁴, said heads being normally held against the stop-pins L' on the shuttle-race by the springs K' and adapted to engage the shanks F^x of the jaws of the shuttle in the travel of the latter across the race. The said stops limit the movement of the cams in one direction only, so as to afford a firm bearing when opening the jaws, either to release the thread which has passed through the shed or to clasp the thread which is to be passed through, and permitting a free movement in the other direction, so as to allow the jaws to readily ride over the same without opening when the filling is to be passed through the shed.

The chain or band H', which may be of any suitable material, as catgut, &c., passes around the pulleys M' on the lay and then around the guide-pulleys N' and a pulley P' below the shuttle-race. On the shaft of the pulley P' is a pulley or wheel Q', around which passes a cord or strap R', the ends of which are secured to the loom-frame. (See Fig. 1.) Bearing against the said strap R' on opposite sides of the pulley Q' are the rollers S', which are journaled on the upper ends of the rods T'. Each of the latter is pivotally

connected to the front end of a lever U', which is pivoted at its rear end to a cross-bar or other portion of the frame of the loom and is provided at or near its front end with a laterally-projecting pin V², which is engaged by a cam-arm V', secured to and rotatable with the driving-shaft V^x, the said arms V' being on opposite sides of the shaft V^x, so as to alternately contact with their respective pins V², and thus draw down the rods T' and roller S' with the cord R', thereby imparting oscillating motion to the wheels Q' and P', and thereby moving the chain H', so as to reciprocate the carrier and shuttle across the race.

The elbow-levers M have their upper limbs connected with the cords W' of any ordinary Jacquard attachment X', the needles Y' and card Z' of which are clearly shown in Fig. 1.

The lower end of each of the frames K is arc-shaped and rides on anti-friction rollers A², whose bearings are on spring-pressed stems B², fitted on the sides of the frame, the said rollers acting as checks in connection with the corrugated lower end of the frame for keeping it in place.

The operation is as follows: Yarns of different or required colors are inserted in the openings S on both sides of the loom, as seen in Fig. 1. The jacquard is now operated so as to place the yarn of the desired color in position to be grasped by the shuttle. The proper cord W' is drawn or raised by the jacquard, thus operating the attached elbow-lever M, and thereby lifting the pin N, which said lever engages. As the cam J operates the lever H and rod F, and consequently the arms D and links C C, the arms B B are moved toward the center of the box or frame K, as seen by the dotted lines, Fig. 2. The selected pin N, being in the path of motion of the heads R, is now engaged by the advancing head or heads, whereby the box or frame K is moved the distance required to bring the pin to a position coincident with the shuttle-race, the yarn thus being placed in line with the shuttle. The shuttle, which now may be at the right of the race, is moved across the same, the jaw H^x thereof leaving or passing the pair of cam-heads J², which are readily moved on their pivots, so that the said jaw is not opened, while at the same time the jaw J^x, which was held opened by contact with the heads J', is released therefrom, so that it closes, grasping the filling-thread. As the shuttle comes in contact with the outer pair of cams J³ on the opposite end of the race, the jaw J^x, which holds the filling, is opened, so that the latter is released therefrom, while at the same time the other jaw H^x is opened by contact with the cams J⁴, so as to be adapted to grasp another filling-thread. As the shuttle starts to return, the removal of the jaw H^x from the cam-heads J⁴ permits the latter to close and grasp the thread, so that the shuttle carries it through the shed and across the race, when it is released

from the said jaw H^x by the contact of the cam-heads J² therewith. When the yarn is carried along by the shuttle, it rides freely under the latch or dog V, the latter then rising; but
 5 when the yarn is cut by the shears described and the end of the following yarn hangs from the eye S the latch or dog falls by gravity and its tooth W bites the yarn and holds it
 10 against the base of the eye, so that outward or return motion of the yarn is prevented.

It is evident that the yarn of the desired color may always be placed in position to be grasped and carried by the shuttle, this being accomplished by lifting the relative pin
 15 N by the action of the jacquard and the intermediate elbow-lever M, so that when an arm B advances it comes in contact with the pin N as raised, and thus moves the box or frame K to the required extent in order to
 20 bring the eye that contains the desired yarn in line with the shuttle-race, it being evident that such operation may be accomplished by the action of either of the arms B, which, as will be seen, advances in opposite directions
 25 toward the center of the box or frame K, and thus comes in contact with any pin N that may be in the path of the heads R in the grooves Q, such pin being properly raised, so as to be engaged by the head of either of the
 30 arms B, the box or frame K being thereby moved in a direction from front to rear of the loom, or vice versa, thus placing the yarn of the desired color at the proper spot or place.

The mechanism for shedding may be of any suitable form.

The particular form of shuttle and carrier described herein is not claimed, forming *per se* no part of this invention, as any other suitable operative shuttle or carrier therefor
 40 can be employed in connection with the other parts of the loom.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

45 1. In a loom, a swinging frame provided with a way or groove and eyes for the filling-thread, levers pivoted on said frame, means for moving said levers, and movable pins engaging said levers, in combination with means, substantially as described, for operating said
 50 frame through engagement with one of said pins, whereby any one of said eyes can be placed in line with the shuttle-race of the loom, substantially as described.

55 2. A swinging frame with pivoted levers thereon and a swinging arm, substantially as described, in combination with Jacquard mechanism connected to the levers on said frame and operating the same and pins working in projections of said frame, said pins being
 60 movable by the action of said mechanism and levers, so as to be placed in the path of the arm, whereby the box is operated, as stated.

3. The swinging frame K, having a groove
 65 or way Q, and the elbow-levers M and pins N carried thereby, in combination with the

swinging arms B, the links C, arms D, studs E, the arm G, rod F, lever H, cam J, and the cords of a Jacquard mechanism, said cords being connected with said elbow-levers M,
 70 substantially as described.

4. The swinging frame K, provided with a way Q, the elbow-levers M, pivoted to said frame, and the pins N, guided on said frame and engaged by said levers, in combination
 75 with a Jacquard mechanism having cords connected with said levers, a swinging arm with head adapted to contact with one of said pins, and mechanism, substantially as described,
 80 for operating said swinging arm, whereby the frame is moved when the pins are placed in the way Q by the operation of the levers, substantially as described.

5. The swinging frame K, having the way Q therein and provided with the pivoted levers M, the swinging arms B, with the heads R, moving in said way Q, the pins N in said ways and operated by the levers M and adapted to be brought in contact with either of the
 85 said heads, a Jacquard mechanism having the cords W', said cords being attached to the said levers M, and mechanism, substantially as described, connected with said swinging
 90 arms for oscillating the same, said parts being combined substantially as described.

6. The swinging frame K, having way Q, slot U, and opening therein, and provided with the pivoted levers M, the swinging arms B, with the heads R, the movable pins N, a Jacquard mechanism having cords attached to said levers, the eyes S in said openings in the frame, the screws T, bearing on said eyes, and mechanism, substantially as described, for oscillating
 100 said arms B, said parts being combined substantially as described.

7. In a loom, a carrier for a shuttle, in combination with the chain H', connected therewith, a series of pulleys on which said chain is guided, the pulley Q' on the shaft of one of said series of pulleys, the strap R', passing
 110 around the said pulley Q', having its ends secured to the frame of the loom, the pivoted lever U', with the rods T', carrying the rollers S', bearing upon the strap R', and a rotary shaft with cams engaging said levers U', so as to alternately raise and lower the rods T', and thereby oscillate said pulley Q', substantially as and for the purpose set forth.

8. In a loom, a pivoted frame with a groove in one of its sides and provided with a series
 120 of slots, arms loosely mounted on the pivotal stud of the said frame and provided with pins adapted to move in said groove, mechanism, substantially as described, connected with the said arms for oscillating the same, and means, substantially as described, consisting of the pins N, elbow-levers M, and the cords W', for regulating the contact-point of the arm-pins with the frame, said parts being combined
 125 substantially as described.

9. In a loom, a pivoted frame having a groove
 130 in one of its sides and provided with a series

of slots, elbow-levers pivoted to said frame, pins adapted to be projected into said groove by the movement of said elbow-levers, arms freely mounted on the pivotal stud of the
5 frame, mechanism, substantially as described, operatively connected with said arms and the driving-shaft of the loom for oscillating said arms relative to said frame, and mechanism, substantially as described, connected with

said elbow-levers for operating the same, the latter having openings for filling-threads, said parts being combined substantially as described.

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Witnesses:

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