

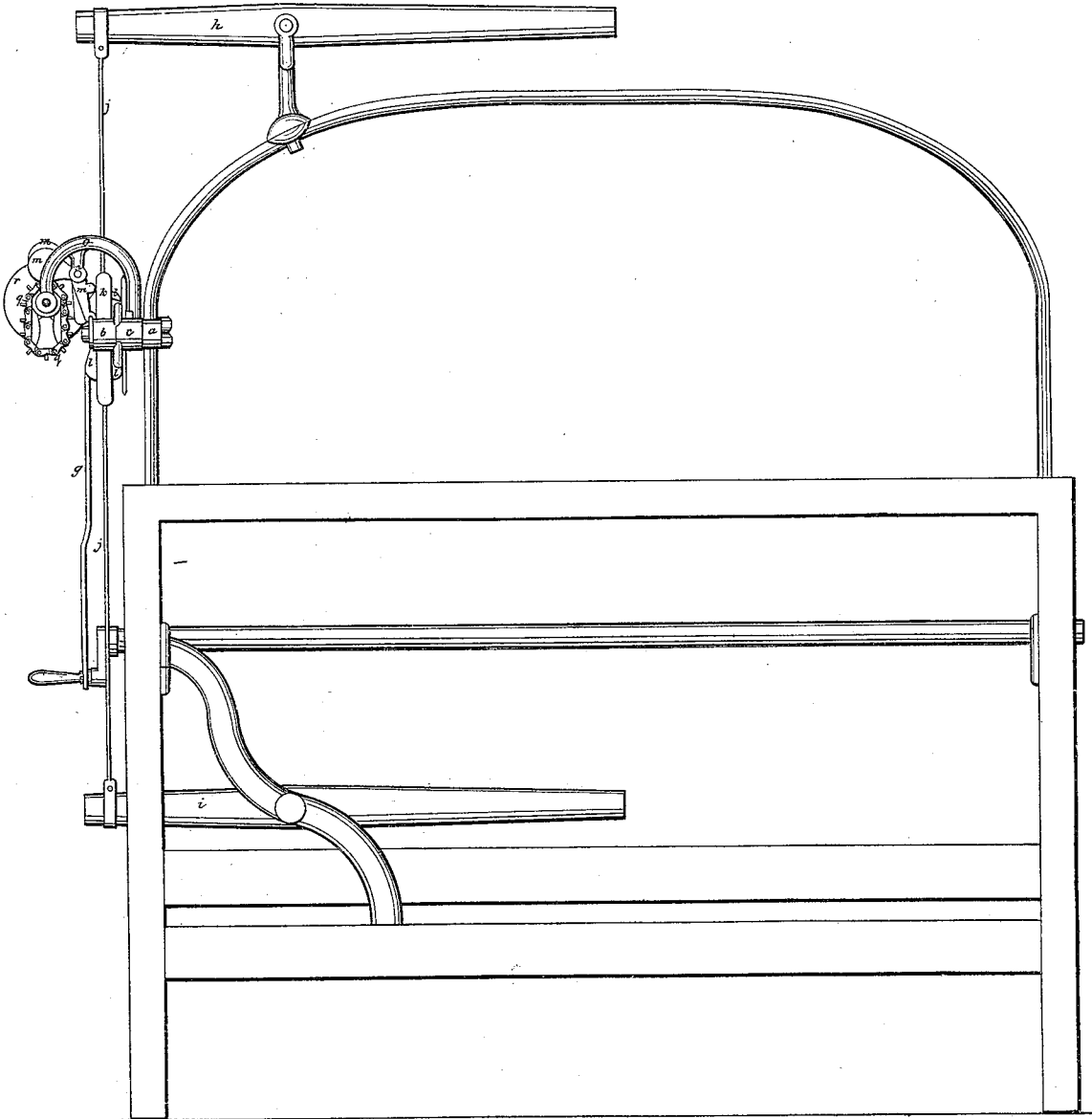
Sheet 1, 2 Sheets.

C. W. Blanchard.
Loom.

N^o 9,102.

Patented Aug. 3, 1852.

Fig. 1.



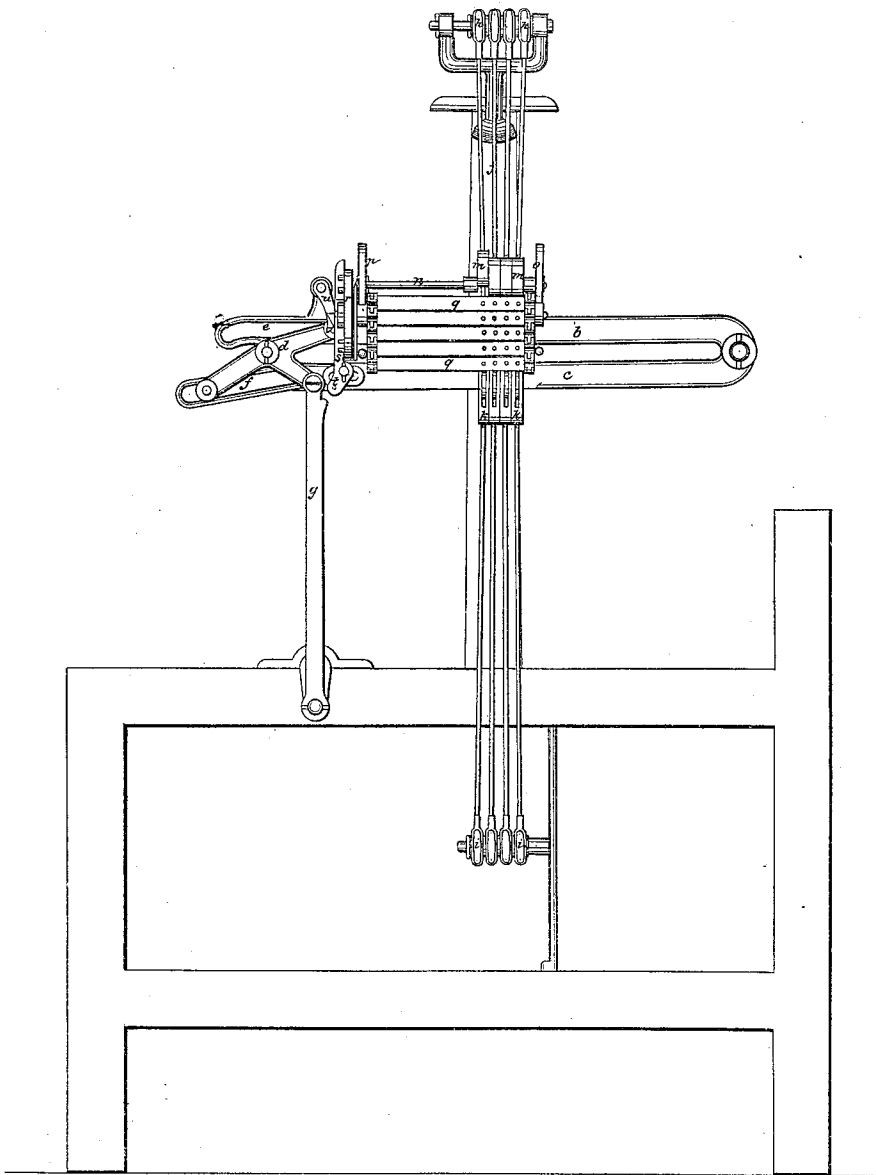
C. W. Blanchard.

Loom.

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Patented Aug. 3, 1852.

Fig. 2.



UNITED STATES PATENT OFFICE.

CORNELIUS W. BLANCHARD, OF CLINTON, MASSACHUSETTS.

LOOM FOR WEAVING FIGURED FABRICS.

Specification forming part of Letters Patent No. 9,162, dated August 3, 1852; Reissued January 3, 1854, No. 253.

To all whom it may concern:

Be it known that I, CORNELIUS W. BLANCHARD, of Clinton, in the county of Worcester and State of Massachusetts, have
5 invented certain new and useful Improvements in Looms for Weaving Figured Fabrics; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in
10 which—

Figure 1 represents a view from the front of the loom, Fig. 2 represents a view from that end of the loom whereon the machinery
15 for working the harness is arranged.

Similar letters in both the figures represent the same parts.

The nature of my invention consists
20 firstly, in the opening or raising and depressing the harness by means of levers or bars oscillating about a fixed point or points, in combination with hooks, or their equivalents, which catch upon these levers or bars,
25 and which constitute a part of the connection between the top and bottom jack levers, cords or other devices, for raising and drawing down the harness, thus raising or depressing the harness in a greater or less degree according as they are more or less distant
30 from the fell, or cloth making point, the motions of the harness commencing and ending at the same time. Secondly, in causing the said hooks to engage or disengage with the moving levers or bars, both for raising
35 and depressing the harness by weight or gravity in contradistinction from positive force communicated by other parts of the machinery. Thirdly, so connecting, the
40 parts for moving the figuring chain or cylinder, with the other parts of the machine, as that the said chain or cylinder will be carried back as well as forward as the machine is made to move back and forward.

To enable others skilled in the art to make
45 and use my invention, I will proceed to describe the same with reference to the drawings.

The main stand or support *a*, is bolted horizontally to the arch or gallows, used
50 in common looms for supporting the harness—and is placed on the side of the arch or frame at any convenient point above the level of the top of the lay.

b, *c*, are the working slotted levers, turn-

ing upon a stud or studs at the end of the
stand *a*, nearest the front side of the loom. 55

d is a three armed lever, turning upon a stud or pin at the opposite end of the stand *a*, and which carries upon the end of each of its arms a stud—the two studs, upon the ends
60 of the two arms standing more directly opposite each other, working in the slots *e*, *f*, in the levers or bars *b*, *c*.

g, is the connecting rod which connects the third arm of the lever *d* with a crank
65 upon the end of a common upper, or crank shaft of the loom.

The slots *e* and *f*, are made concentric with the three armed lever *d*, for a part of
70 their length, so that when the harness is fully opened or sprung, it should remain stationary while the shuttle is passing.

Upon turning the crank shaft of the loom a reciprocating motion will be given to the connecting rod *g*, which being connected by
75 a stud pin to the third arm of the aforesaid lever *d*, will cause that lever to turn upon its center through a certain part of a revolution, and then back again. The studs upon
80 the ends of the other two arms working in the slots aforesaid, will cause the levers *b*, and *c*, to open and close with each revolution of the crank shaft, and these levers turning
upon a stud at their ends nearest the front side of the loom, they will be opened at an
85 angle corresponding to the angle of the two portions of the warp which is to be opened to form the shed. It will be seen therefore that if any number of harnesses be connected with the levers or bars *b*, *c*, in the
90 order, from front to back, in which they hang in the loom, they will be opened or sprung apart more or less, as they are nearer or more remote from the front of the loom,
and consequently keep all these portions of
95 the warp which they carry in a line with each other, or in other words keep all the warp on the same side of the shed at a similar angle. The motions of the harness also, all commencing and ending at the same
100 time.

The harness is connected, with the common jack levers *h*, *h*, and *i*, *i*, above and below in the usual manner, by straps or rods, and the opposite and outer ends of the jack
105 levers are connected, the top *h*, with the corresponding bottom one *i*, by means of the rod *j*, consisting in part of wire, and in part

of the connecting piece *k*. This connecting piece *k*, is hollow or slotted through for a sufficient extent to receive in the slot the double hook *l*, having a hook at each end, and being hung upon a pin passing through the middle of the hook, and also through the sides of the connecting piece *k*. Upon this pin the hook turns freely, said hook being of sufficient length to embrace either the top or bottom working bar or lever *b*, *c*, when these levers are closed, and are placed outside of the said working levers, as are also the rods connecting the piece *k*, with the jacks:—the rods and connecting pieces may however, be placed inside of the levers, that is, between them and the side of the loom, and the hooks may then swing upon a pin passing through ears projecting from the piece *k*, through or between the levers *b* and *c*. The pins upon which the hooks *l* hang, is placed so far toward the side next the levers, that the weight of the hook, is mostly upon the opposite side and therefore the lower end will swing in and catch upon the under side of the lower lever, if no obstruction were interposed and consequently were the levers or bars to be opened, the hook would be carried downward, and the harness connected to the opposite end of the jack lever from the hook, would be carried up, or raised. To connect these hooks with the upper lever, I employ counterweight levers *m*, turning freely upon a rod *n*, which is supported by the two stands *o*, *p*, bolted to the main stand *a*. These weighted levers *m*, are bent, so that one part passes downward, and the end rests against the back or outer edge of the hook *l*, above its center, and the other or weighted end extends outwardly and rests upon the endless chain of bars *q*, in such manner that when it does so rest, its opposite end will press the upper part of the hook *l*, inward, and cause it to catch upon the upper working lever or bar *c* when it rises, and consequently will raise up the outer end of the bottom jack lever, and depress the harness attached to its opposite end. The counter weights, or weighted levers *m*, are raised from the chain of bars, or allowed to fall upon it by the presence or absence of the small wire pins inserted in the bars of the chain, as the chain is carried around with the shaft or cylinder upon which it hangs. The chain may be of the kind in common use, or instead of the endless chain a cylinder of bars containing the pins may be used.

The method of turning the chain of bars in order to bring different sets of pins to act upon the weighted levers at each successive shedding of the warp, is as follows: Upon the end of the shaft, or cylinder which supports and carries the chain, and which shaft is supported by the arched stands *o*, *p*, I place a disk *r*, having on its outer face,

that is, on the side next the back of the loom a number of pins, arranged in a circle, corresponding with the number of bars of the chain, which are required to reach around the shaft or cylinder. Upon the lower working lever *c*, is a stud projecting out nearly under these pins, and upon this stud, I place a click *s*, which as the lever rises when the two bars are closing, comes in contact with a pin, upon the face of the disk aforesaid and pushes it around—the inner side of the click being beveled; as the lever goes down again it slides over the next pin following. This click has an elongation *t* projecting downward below the stud on which it hangs, and which is so arranged with reference to the connecting rod *g* that, for a certain portion of the revolution of the crank shaft of the loom, while the crank pin is on the side next the front of the loom, this connecting rod comes in contact with the elongation *t* of the click and presses it forward, throwing the upper end of the click back, and away from the pins. This movement takes place ordinarily (when the crank shaft is revolving in its usual direction) when the working levers or bars *b*, *c*, are opening and therefore has no effect, but when the crank shaft for any purpose is turned in a contrary direction, this movement takes place when the levers are closing, and thus prevents the chain from being turned forward, when the loom is going backward. But it is desirable to turn the chain backward when the loom for any purpose is turned in that direction, and I therefore employ a second click *u*, upon a stud in the top lever opposite the first mentioned one which when the lower click is thrown back, is allowed to act upon the pins in the disk when the levers are closing, and thus turns the chain backward. To prevent this last click from coming in contact with the pins when the lower one is not thrown back from them, a part of the body of the latter extends upward beyond that part which engages the pins and at its end is beveled off, or wedge shaped, so as to run under the top click or between that and the disk, and throw it back sufficiently to clear the pins as they approach each other at the closing of the levers. As the levers at this point have greater extent of motion than the distance between the pins on the disk, the clicks slide on the face of the disk for a considerable distance before coming in contact with the pins and thus afford opportunity for being thrown back while the levers are closing before acting upon the pins.

By the above arrangement the operator can turn the chain backward and forward to any extent on ordinary looms, by swinging the lay, backward and forward through a portion of the extent of its sweep, by hand, thereby causing the crank to have a corresponding motion. The clicks are pressed

against the disk by helical springs coiled around their respective studs, in a manner well known to mechanics.

I do not claim the application of the above named levers to the trap or knot boards of the Jacquard loom, but,

What I do claim therein as new, and desire to secure by Letters Patent is—

1. The opening, or raising and depressing the harness by means of levers or bars oscillating about a fixed point or points, in connection with hooks or their equivalents which catch upon these levers or bars, and which constitute a part of the connections between the top and bottom jack levers, cords, or other devices for raising and drawing down the harness, thus raising or de-

pressing the heddles, in a greater or less degree according as they are more or less distant from the fell, or cloth making point—the motions of the harness all commencing and ending at the same time, as herein substantially described. 20

2. I also claim the method as described of arranging and combining the parts for moving the figuring chain or cylinder, with the other parts of the machine, so as to carry the said chain or cylinder back as well as forward as the machine is made to move backward and forward. 25

C. W. BLANCHARD.

Witnesses:

A. B. STOUGHTON,
L. C. DONN.

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