J. G. Spitzli.

Making Lappet.

No. 51,095. Patented Nov. 21, 1865.

Fig. 1.

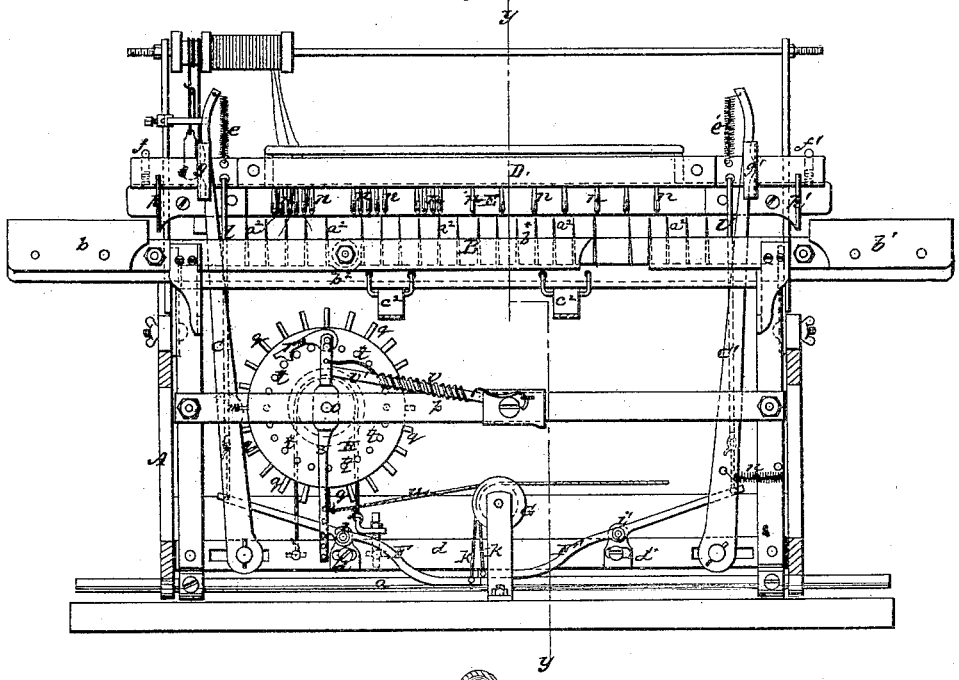
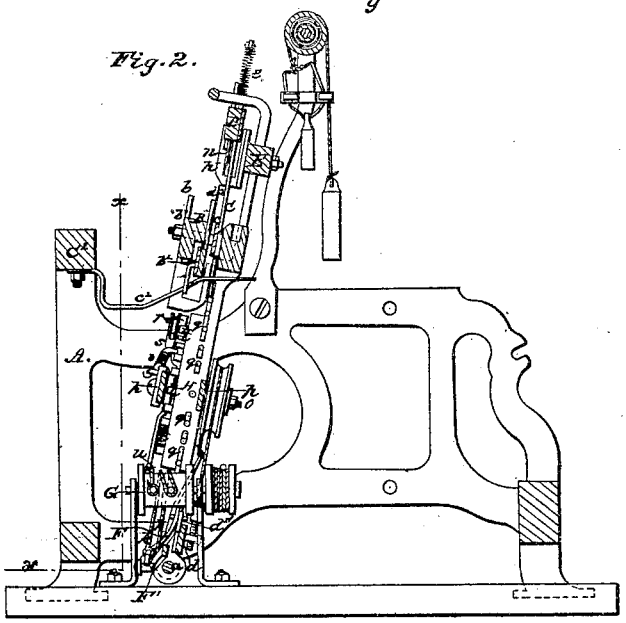


Fig. 2.



Witnesses.

Wm. Treyon

Thos Tusch

Inventor

J. G. Spitzl

UNITED STATES PATENT OFFICE.

J. G. SPITZLI, OF MILLVILLE, MASSACHUSETTS.

IMPROVEMENT IN LOOMS FOR WEAVING EMBROIDERED FABRICS.

Specification forming part of Letters Patent No. **51,095**, dated November 21, 1865.

To all whom it may concern:

Be it known that I, J. G. SPITZLI, of Millville, in the county of Worcester and State of Massachusetts, have invented a new and Improved Loom for Embroidery; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, Fig. 2, indicating the plane of section. Fig. 2 is a transverse vertical section of the same, the plane of section being indicated by the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in a pattern-wheel composed of a series of adjustable pins inserted into the periphery of a disk, in combination with oscillating spring-arms to which the needle-bar is secured, and with a suitable mechanism for turning the pattern-wheel in such a manner that by the action of the pins in the pattern-wheel on the spring-arms the required position is given to the needle-bar and needles, and by screwing or pushing the pins in or out the pattern-wheel can be adjusted for different patterns.

A represents a frame, made of cast-iron or other suitable material, in the ordinary form of frames for looms. The bottom rails of this frame are provided with boxes for a shaft or rod, *a*, which forms the bearings for the swords supporting the lay or batten B. This batten is constructed with shuttle-boxes *b b'*, one at each end, and with a shuttle-race, *b**, in the ordinary manner; but between the shuttle-race and the reed is a slot or gap, *c*, extending throughout the entire length of the batten. Through this slot rise two arms, C C', which are pivoted to a longitudinal rod, *d*, which connects the swords near their bottom ends. The arms C C' extend some distance above the batten, and are supported from their upper ends by means of spiral springs *e e'* or other equivalent connections in the needle-bar D. This bar is prevented from rising beyond a certain point by hooks *f f'*, secured in the top shell, E, of the batten, and it is guided and prevented from swaying to and fro by L-shaped guide-pieces *g g'*, which catch over the outer edges of the arms C C', as clearly shown in Fig. 1 of the drawings, and it is further guided by slotted pieces *h h'*, which are firmly secured to the top shell, E.

From the lower edge of the bar D project a series of needles, *n*, with their eyes below, and through the eyes of these needles is drawn the embroidering material.

A rising-and-falling motion is imparted to the needle-bar by means of two double-armed levers, F F', which have their fulcra on pivots *i i'*, secured in brackets *d* d**, which are firmly fastened to the rod *d*. The inner ends of these levers connect by means of cords *k k'* with the periphery of a drum, G, in such a manner that by turning the drum in the direction of the arrow marked on it in Fig. 1 the outer ends of said levers are depressed. Said outer ends connect, by rods *l l'* or any other suitable connection, with the needle-bar D, and if the same are depressed the needle-bar is drawn down against the action of the springs *e e'*; but as soon as the inner ends of said levers are released the needle-bar is free to follow the action of said springs, and it rises to its original position, carrying with it the levers F F' and causing the drum G to turn to its original position. The needle-bar also has a traversing motion in a horizontal or slightly-curved direction, imparted to it by the action of the pattern-wheel H on one of the arms, C. This arm is provided with a cam or projection, *m*, and said projection is forced against the periphery of the pattern-wheel by a spring, *n*, extending from the arm C' to the sword next to it. The pattern-wheel rotates on an axle, *o*, which has its bearings in two bars, *p p*, extending from one sword to the other, and secured to said swords by screws or other suitable means. From the circumference of said pattern-wheel project a series of radiating pins, *g*, of an equal length, and arranged so that their length from the circumference of the wheel can be regulated at pleasure. By imparting to the pattern-wheel an intermittent rotary motion the pins *g* are successively brought opposite the cam *m*, and the position of the needle-bar changes according to the different lengths of said pins. By this motion of the needle-bar the threads passing

through the eyes of the needles *n* are put into the warp of the fabric, which is at the same time being woven upon the loom in such figures or lines as the pattern-wheel may determine, and by using two or more needle-bars and a corresponding number of pattern-wheels, or one pattern-wheel with a corresponding number of sets of pins, patterns of any desirable shape may be produced in the fabric as the weaving proceeds.

The pattern-wheel receives its motion by the action of a gravitating hook-catch, *r*, which is pivoted to a lever, *s*, and catches over pins *t* projecting from the front side of the wheel. The lever *s* has its fulcrum on the axle of the wheel, and from its lower end extends a cord, *u*, to the circumference of the drum G. By turning this drum in the direction marked on it in Fig. 1 the lever oscillates and the hook *r* is moved in the direction of the arrow marked near it in Fig. 1, and on releasing the drum the lever *s* is drawn back by the action of a spring, *v*, and the pattern-wheel is caused to rotate in the direction of the arrow marked on it in Fig. 1.

The spring *v* is guided on a pin, *v'*, which extends from a bracket secured to the front bar, *p*, and its power is so adjusted that it effects the desired motion of the pattern-wheel after the hook-catch has taken a fresh hold, in the manner previously explained.

It will be noticed that the levers F, F', and *s* derive their motion from one and the same drum, G, and consequently the downward motion of the needle-bar and its traversing motion take place simultaneously, and the embroidering-threads are put into the fabric at the proper intervals, the depression of the needle-bar being necessary in order to bring the embroidering-threads down in the same place with the warp-threads.

The motion of the drum G may be effected by hand or foot power, or in power-looms it may be produced by suitable mechanism connecting the same with the working parts of the loom.

A suitable friction applied to a pulley on the shaft *o* of the pattern-wheel prevents the same from turning spontaneously, and retains it in any position into which it may be brought.

For the purpose of preventing the shuttle from running into the embroidering-threads, I apply a series of pins, a^2, attached to a bar, b^2, which is situated in the longitudinal gap *c* of the batten, and to which a rising-and-falling motion is imparted by means of cams c^2, which extend from the breast-beam C^2 under the batten, as clearly shown in Fig. 2 of the drawings. As the batten swings back and forth the bar b^2, with the pins a^2, rises and falls, and the shuttle is prevented from running into the embroidering-threads.

I claim as new and desire to secure by Letters Patent—

1. The pattern-wheel H, composed of a series of adjustable pins, *q*, in combination with a suitable mechanism for turning the same, and with oscillating spring-arms, to which one or more needle-bars are attached, substantially as and for the purpose specified.

2. The combination of the pattern-wheel H, needle-bar D, and pins a^2, all arranged and operating substantially as and for the purposes specified.

J. G. SPITZLI.

Witnesses:
M. M. LIVINGSTON,
C. L. TOPLIFF.