W. TOWNSEND.

Loom.

No. 93,500. Patented Aug. 10, 1869.

Fig. 1.

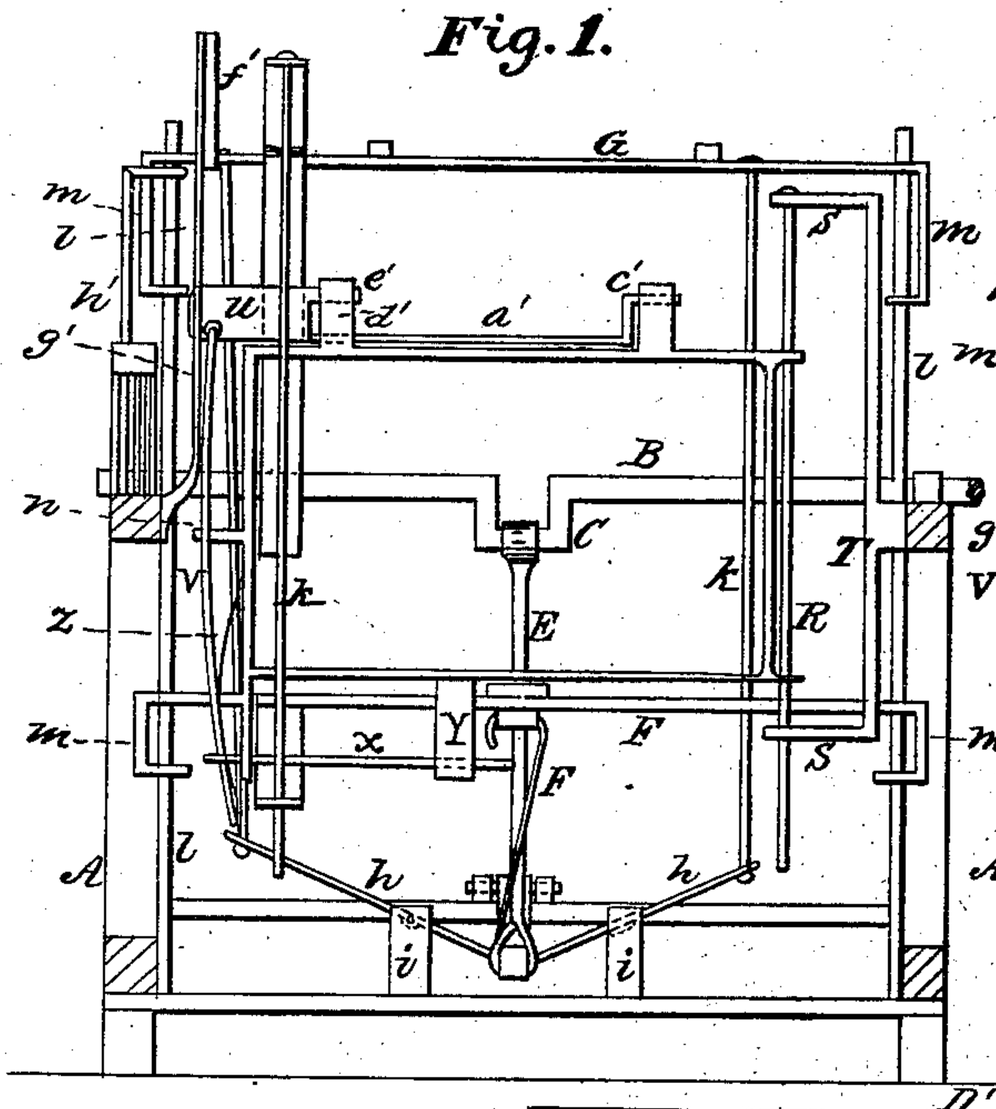


Fig. 2.

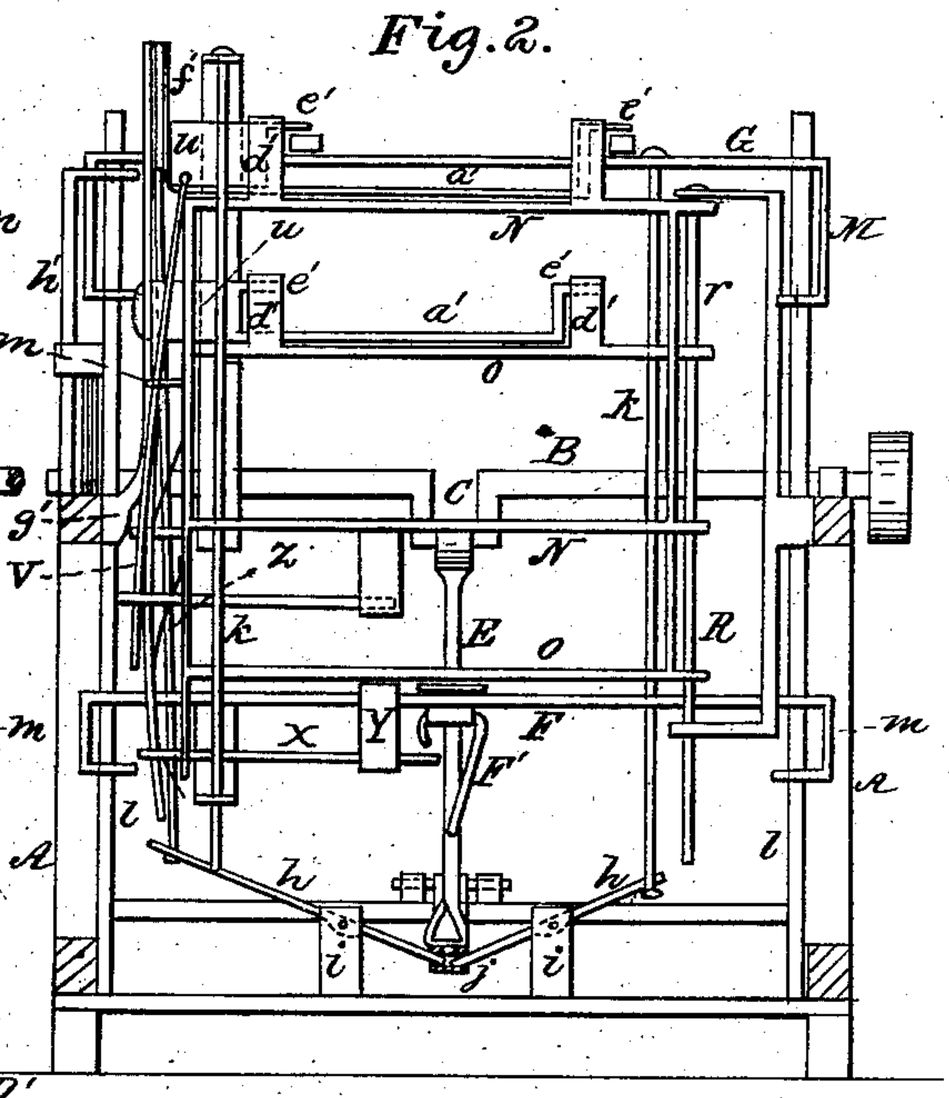
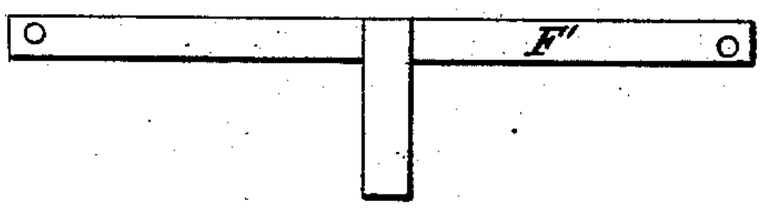


Fig. 3.

Fig. 4.



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WILLIAM TOWNSEND, OF SENECA FALLS, NEW YORK.

Letters Patent No. 93,500, *dated August* 10, 1869.

IMPROVEMENT IN LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM TOWNSEND, of Seneca Falls, in the county of Seneca, and State of New York, have invented a new and useful Improvement in Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improvement in looms, for weaving fancy cassimeres and other goods, having particular reference to the method of operating the harnesses or heddles of the loom; and

The invention consists in operating the heddles by revolving a horizontal crank-shaft, in combination with sundry bars, rods, slides, and harness or heddle-governors, as will be hereinafter more fully described.

Figure 1 is an elevation of the loom, showing the heddles which it contains, as squared, or as standing in one position, showing also the other parts of the loom in their proper positions.

Figure 2 is an elevation, showing the same parts of the loom, but with the heddles changed, or occupying different positions.

Figure 3 is a top or plan view.

Figure 4 is a detailed view of the rail of the lower governor.

Similar letters of reference indicate corresponding parts.

The object of this invention is to so construct a loom as to dispense with the great mass of levers and pulleys which are now used for operating the harness or heddles of looms in weaving fancy goods, such as fancy cassimeres, &c.

In carrying out my invention, I provide a properly-constructed frame, which, in the drawing, is seen partly in section and is marked A.

Transversely across the frame, I place the lay-shaft B, having a crank, C, in its middle, by which motion is imparted to operate the heddles.

In this example of my invention, I show but two heddles, but the operation for any number would be the same, while two will serve to illustrate the method and show the mechanism by which they are operated.

D, fig. 3, is a horizontal bar, one end of which is hinged to the frame, as seen at D'.

This bar is connected, near the other end, to the crank C by the rod E, so that as the shaft is revolved, the bar D is given a vertical motion, corresponding in extent with the throw of the crank.

F is the lower heddle-governor, the horizontal portion of which is shown in fig. 4.

G represents the upper governor.

The lower one, F, is attached directly to the bar D by the connecting-rod F'.

The upper one, G, is made to partake of the motion of the bar D through two rock-bars, *h h*, which are hung by pins on stands *i i*, supported by the frame.

The inner ends of these rock-bars *i i* rest on the vibrating bar D, as seen at *j*, fig. 2, where they are confined by guard-rods to force them down, so that they partake of the motion imparted by the crank, C.

The other ends of these rock-bars are connected with the upper governor G by rods *k k*.

The action of the governors F and G is such that they approach each other, and recede at every revolution of the crank.

The ends of each of these heddle-governors are bent at right angles, so as to form guides, which slide up and down on the guide-rods *l l*, as seen at *m*.

The two harnesses or heddles of this loom are marked respectively, N and O, and they may be distinguished in the drawing by the shading or coloring, the one marked O being orange, and the other pale blue, as seen in fig. 2.

In fig. 1 only one heddle is seen, as they are squared by the governors, and in the view given, one is covered by the other.

The tops of both are seen in fig. 3.

Motion is imparted to the heddles by the governors, which have projecting arms.

The upper one, G, has two arms, *p p*, which project over the heddles, and by which any one or more of the heddles are supported, when their positions are changed in the process of weaving.

The lower governor has one arm in its middle, which raises the heddles. This arm is marked *q*, and is seen in fig. 3.

The heddles are supported or kept in an upright position by a vertical rod passing through the projecting ends of the top and bottom rails of each, as seen in the drawing at R.

These rods R are confined by brackets S, projecting from the plate marked T.

Each heddle is provided with a sliding plate, *u*.

These plates stand on edge on top of each heddle, and the change in the position of the heddle, (when a change is desired,) is effected by the motion imparted to this plate by any suitable mechanical device.

The motion which is common to all looms for weaving fancy goods, and which is imparted by the "Crompton chain," is suitable for this purpose.

To the outer end of the plate *u* is attached a hanging rod, *v*, which passes through a bracket on the heddle, as seen at *w*, and also through the eye of a horizontal rod, *x*.

The inner end of this rod x is supported by a hanger, y.

Between the ends of the heddle and the vertical rod v, there is a spring, z, one end of which is attached to the end of the heddle.

The other end passes through the eye of the rod x, in contact with the rod v.

The effect of this arrangement is to throw out (or back) the slide u, by the recoil of the spring, for liberating the heddles from the upper governor-arms.

The way the heddle is held and controlled by the upper governor, is as follows:

To the inner end of the plate u there is a rod, a', attached, with a hooked end, c'.

The rod rests on the top of the heddle, as seen in the drawing.

d' represents guide-loops, which are attached to the top of the heddle, which guide the slide u, and also the hook c'.

The rod a', it will be seen, is attached to the lower edge of the slide u.

On the upper edge there is also a piece or pin, marked e'.

When the crank on the lay-shaft stands upright, the heddle may be changed by crowding in the slide u, when the pin e' and the hook c' will catch over or on to the top of the arms $p\ p$, as seen in fig. 2.

In this position, the heddle may be held as long as desired, and be carried up or down, while the outer end of the slide will bear against the plate f', which may be made of glass, or of any suitable material, to lessen the friction.

The friction-plate f' is supported by a stand, g', which is attached to the frame.

h' is a spring, which is attached to the frame.

The upper end of this spring is bent at right angles with the slide u, as seen more clearly in fig. 3, so that the horizontal portion bears against the outer end of the slide u when the heddle is up, or the heddles are squared by the governors.

The Crompton chain, or other mechanical device for actuating the slide, is brought in contact with this spring, and the required motion is imparted to the slide through the spring.

When not acted upon by the chain or other mechanism, the spring recoils, or flies back, and leaves the slide free.

It will be understood, that in speaking of one heddle and the parts connected therewith, I speak of all, as they (be the number more or less) are operated in the same manner.

I do not confine myself to the particular construction or arrangement of parts shown in the drawing.

The details may be varied without affecting the main features of my invention.

When the slide u is not acted upon by the pattern-cylinder, the heddle is drawn down by means of the arm on the lower governor, the spring forcing the rod x under the same.

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

1. The governors F and G, constructed as described, and acting in combination directly with the harness-frames, substantially as herein set forth for the purpose specified.

2. The sliding plate u, and the parts connected therewith, and marked $a'\ e'\ c'\ v\ z\ x$, in combination with the harness or heddle-frames of a loom, arranged substantially as described, for the purposes specified.

3. The friction-plate f' and spring h', in combination with the heddle-frames, arranged substantially as and for the purposes described.

4. The combination of the bar D and rock-bars $h\ h$, with the governors F G, arranged as herein described, for the purpose specified.

WM. TOWNSEND.

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