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Isaac Lindsley's  
Improvements in Looms for Weaving Hair Cloth.

No. 119,276. Patented Sep. 26, 1871.

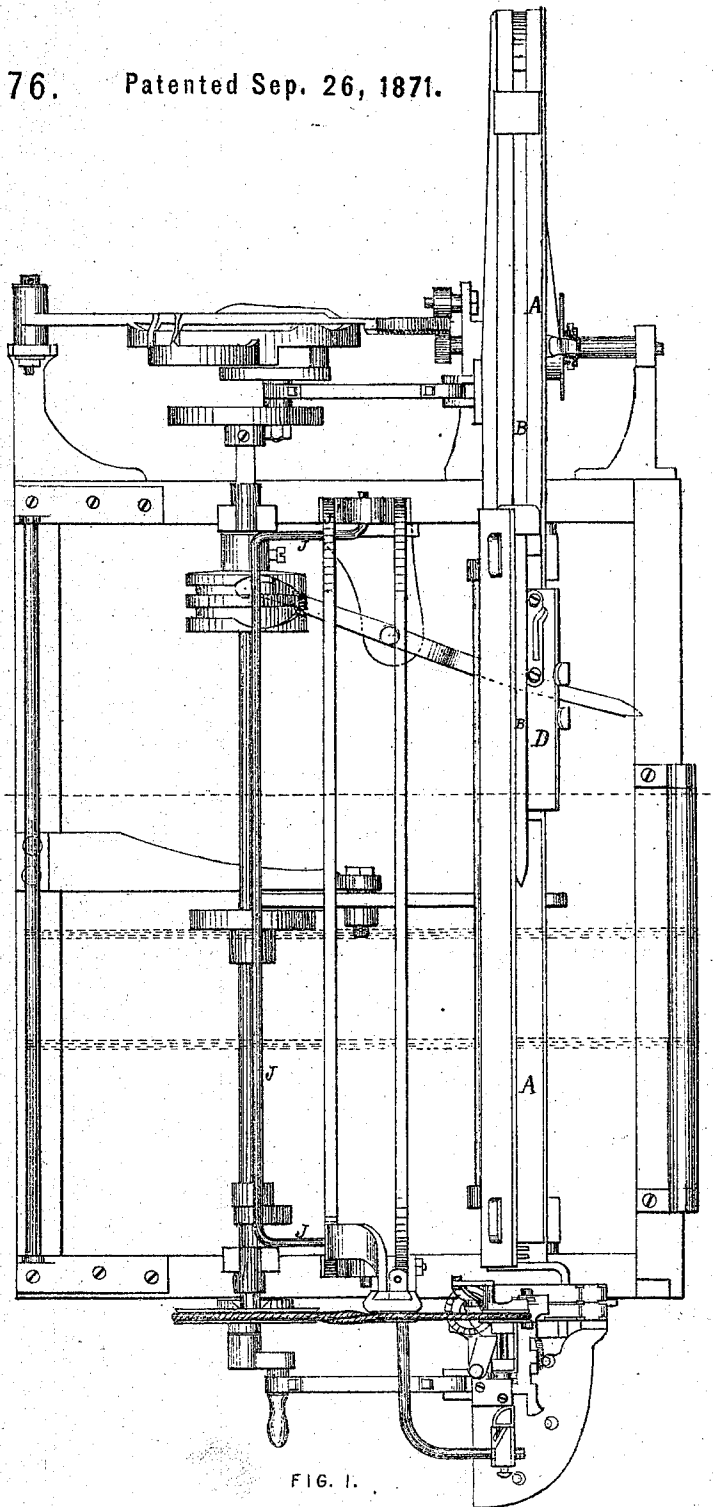


FIG. 1.

WITNESSES.

Bank H. Rogers.  
Ambrose Looms.

INVENTOR.

Isaac Lindsley

[60.]

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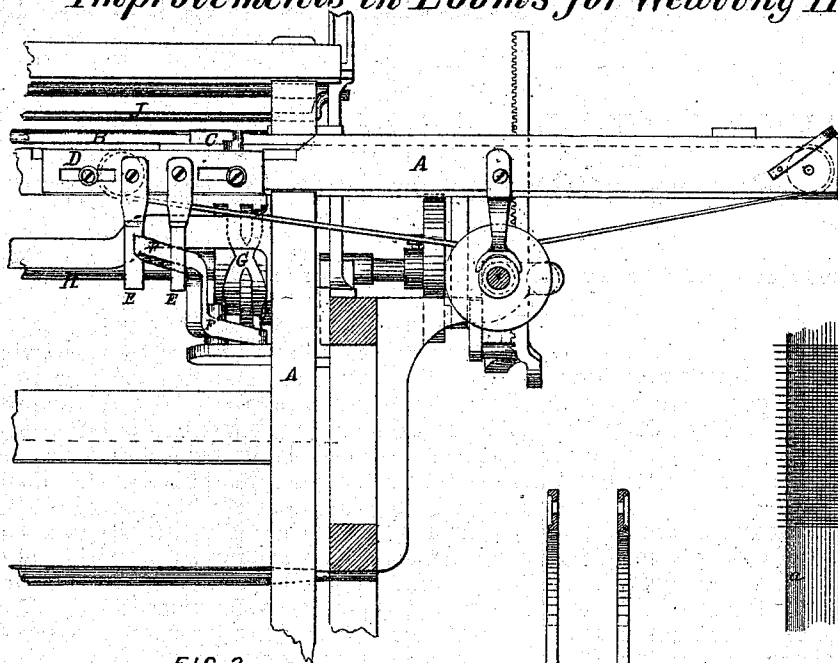


FIG. 3.

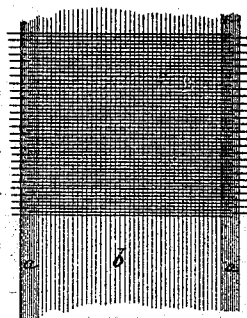


FIG. 4.

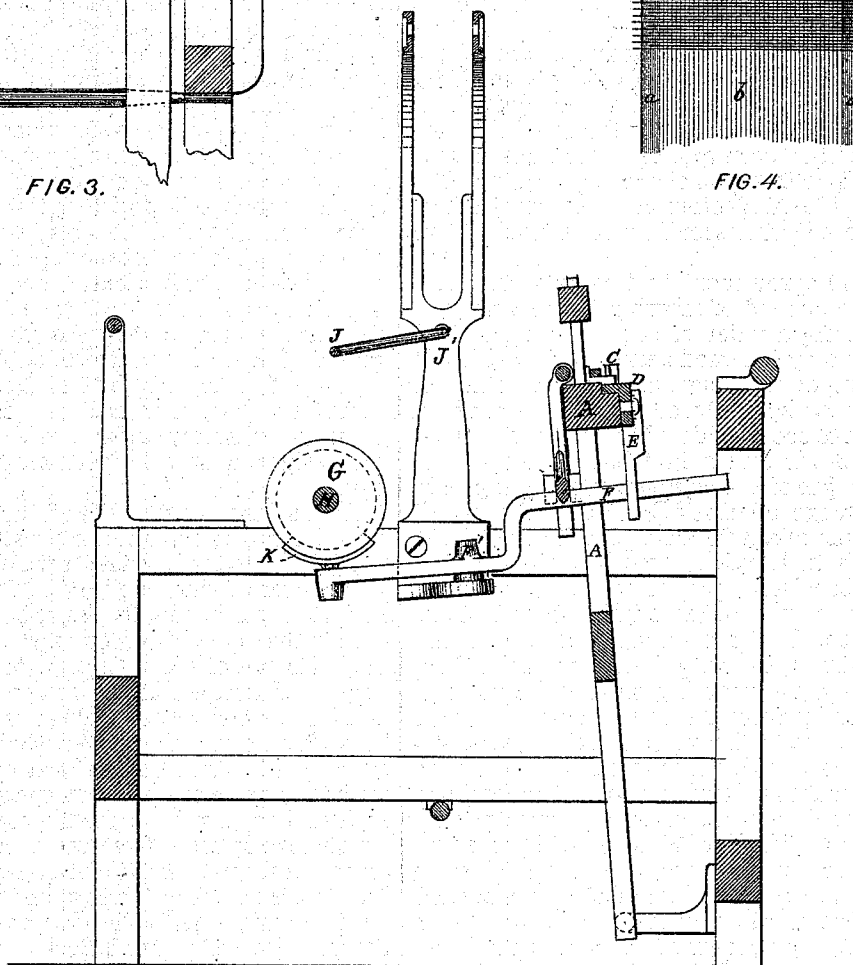


FIG. 2.

WITNESSES.

*Frank M. Rogers-*  
*Amrose Loris.*

INVENTOR.

*Isaac Lindsley*

# UNITED STATES PATENT OFFICE.

ISAAC LINDSLEY, OF PAWTUCKET, RHODE ISLAND.

## IMPROVEMENT IN LOOMS FOR WEAVING HAIR-CLOTH AND FABRICS PRODUCED THEREON.

Specification forming part of Letters Patent No. 119,276, dated September 26, 1871.

### *To all whom it may concern:*

Be it known that I, ISAAC LINDSLEY, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain Improvements in Looms for Weaving Hair-Cloth and other similar fabrics, of which the following is a specification:

The improvements herein described are intended to be used in connection with the loom for weaving hair-cloth invented and modified by me, and for which several Letters Patent of the United States have been granted, dated, respectively, June 25, 1861, and October 25, 1864, and November 15, 1864, with other modifications thereof, for which applications for Letters Patent are now pending.

The first improvement in this application relates to the method of drawing in the weft-hairs so that thereby a wider web or fabric is produced than is done by the mode usually adopted. In the weaving of ordinary hair-cloth the width of goods that can be produced when measured from the outside to the outside of the selvage is about one inch to one and a half inch less than the extreme length of the hair employed for the weft, and the selvage or list is about one inch in width and is woven of a different figure from the body of the cloth, as is well known. This part of my invention consists in preparing the warp for the web about an inch or more wider than is usual with the length of the hairs to be used as the weft, and then, in drawing the hairs into the shed, to deposit them so that they shall each alternately at one end project the usual distance beyond the selvage and at the other end shall be deposited in the selvage, by which means a fabric from one to two inches wider than is usual can be made from the same lengths of wefts, constituting a new manufacture. This is effected by making the nipper-box—such, for instance, as is described in my patent No. 45,107, by which the nipper is opened to release the hair after it is drawn in—movable upon the lay and moving it back and forth, by suitable devices, the distance required to release the hairs alternately at different distances from the selvage, as will be described. The second improvement in this application relates to the employment of a device for keeping the warps of the top of the shed sufficiently tense to have the shed open clear, so as to afford a free passage for the nipper under the conditions in which the warps

are arranged, as is usually practiced by me, which is to have the whip-roll placed much higher than a line drawn from the breast-beam through the mails of the heddles at half-stroke, so that when the shed is opened the lower part of the same is deflected much further from that line than the upper part; and, as the lower part contains about four-fifths of the warps, they virtually determine the length of the warp from the cloth-making point to the whip-roll. For these reasons, when the shed is opened, as the warps used in hair-cloth have but little elasticity, those in the upper part of the shed will be slack and liable to swag so low as to interfere with the proper working of the nipper. To avoid this result I employ a metal rod, which rests loosely upon the top of the warps behind the heddles, which, when the shed is opened, rests upon the top part alone and is of sufficient weight to keep the warps from swagging and insures the clear opening of the shed.

In the drawing, Figure 1 is a plan of the loom. Fig. 2 is a transverse section. Fig. 3 is a front elevation of a part of the loom. Fig. 4 is a diagram, showing how the wefts are deposited in the cloth.

In the drawing so much of the loom is shown as will serve to explain the construction and operation of the improvements which form the subject-matter of this application, to which the description will be mainly limited.

A is the lay of the loom and B is the nipper-staff, the end of which is provided with a nipper such as described in my aforesaid patent No. 45,107, but is not here shown. C is the nipper-box, which opens the nipper when the weft is to be released. It is constructed and co-operates with the nipper to open it in the same manner as is described in my aforesaid patent No. 45,107; but instead of being fixed upon the race-beam, as is therein shown, it is attached to the sliding piece D, which slides lengthwise upon the race-beam in suitable guides, as is shown. To this slide is attached a pair of jaws, E E, which embraces the end of the lever F, by which the slide D is moved and held. This lever has its fulcrum at F', and at its back end carries a swiveling shoe, K, which works in the cross-groove in the cam G upon the crank-shaft H. By this arrangement the slide D is moved alternately in opposite directions and held at rest for a time after each vibration, at each alternate revolution of the crank-shaft, so

that the nipper is opened and the hair released alternately in two positions, with one end of each hair only projecting beyond the selvage and the opposite end left within the selvage, as is shown in the diagram, Fig. 4. Many forms of mechanism may be used to place the nipper-box C in two or more positions, but that shown is simple and direct and clearly explains the principle and mode of operation of the mechanism employed in producing this manufacture. J is a small bar of iron which rests upon the web to keep the upper warps tense, as has been explained, the ends of which are bent, as shown, to form radial arms and fulcrums, upon which it vibrates and by which it is attached to the heddle-standards J', and is left free to rise and fall upon the warps in an obvious manner. In the diagram, Fig. 4, the lines *a* may be supposed to represent the selvage or listing warps and the lines *b* the body-warps, and with the wefts alternately projecting at one end at opposite sides and the other end

left in the selvage a sufficient distance only to bind the weft properly to the selvage. This may be woven plain or twilled, as will best hold the wefts.

What I claim is—

1. The new manufacture of hair-cloth, having its weft-hairs disposed in the fabric in the manner described.
2. The combination of the nipper-box C with the devices shown, or their equivalents, by which the box is moved, so as to release the weft-hairs at different points in the web, substantially as described.
3. The presser-bar J, constructed and operating substantially as described.

Executed March 31, 1871.

ISAAC LINDSLEY.

Witnesses:

FRANK K. ROGERS,  
AMBROSE LOVIS.

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