(No Model.) 3 Sheets—Sheet 1.

H. & C. TOPHAM.

LOOM FOR WEAVING LENO FABRICS.

No. 383,838. Patented May 29, 1888.

FIG. 1.

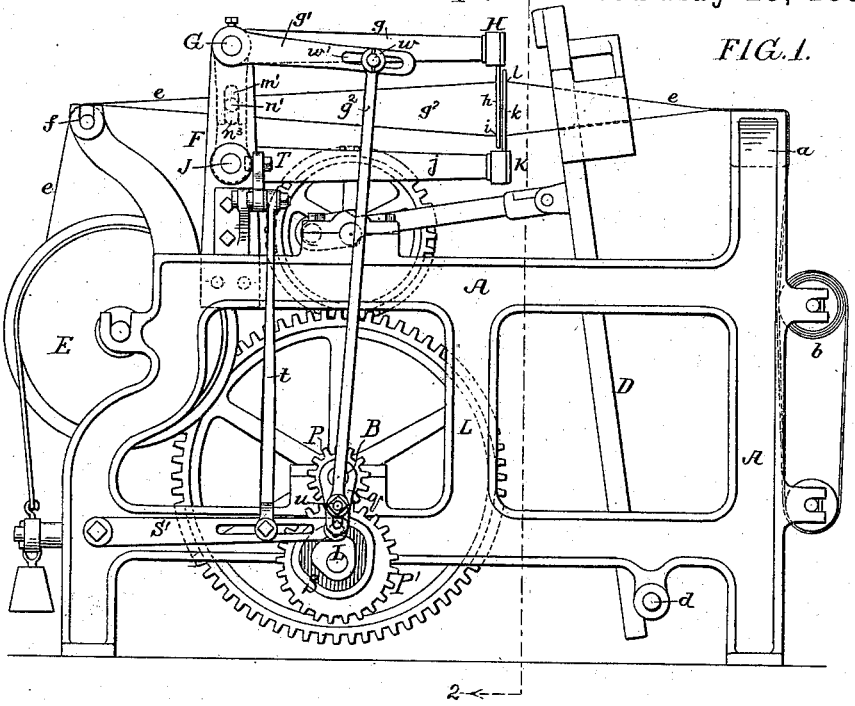

FIG. 2.

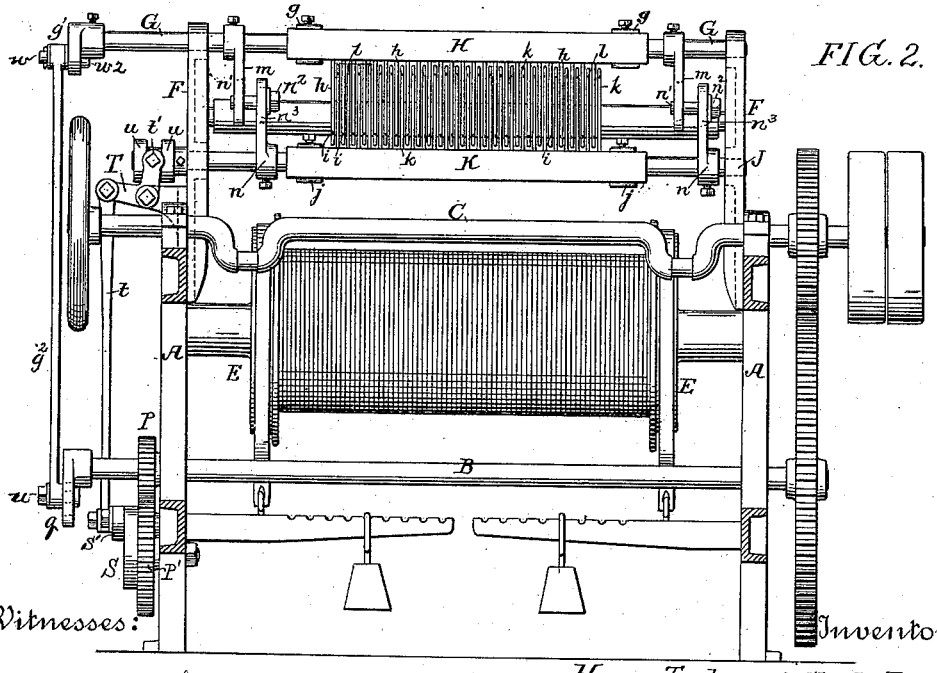

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FIG. 3.

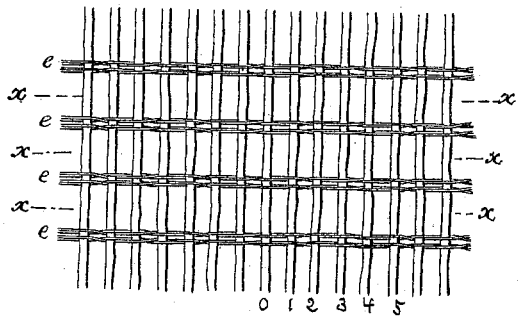

FIG. 7.

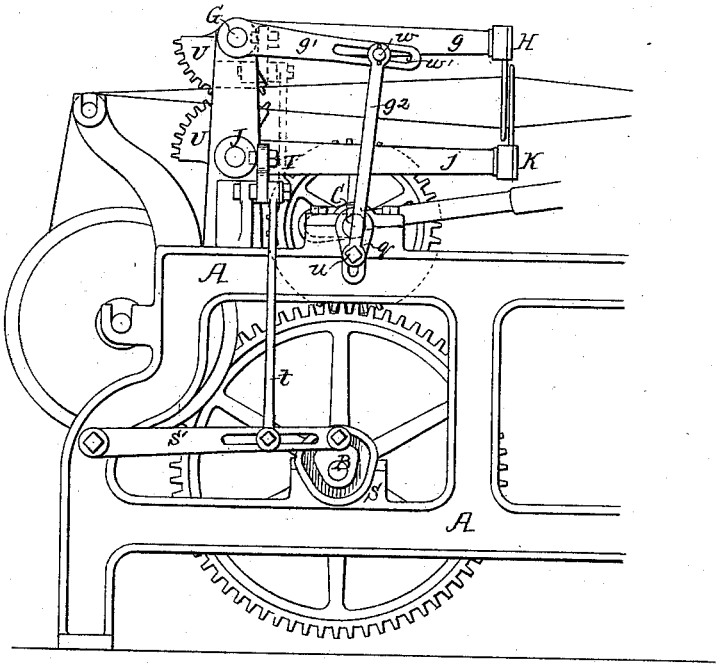

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FIG. 4.

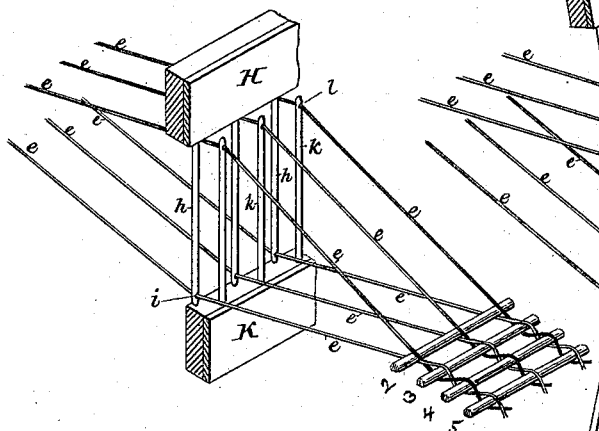


FIG. 5.

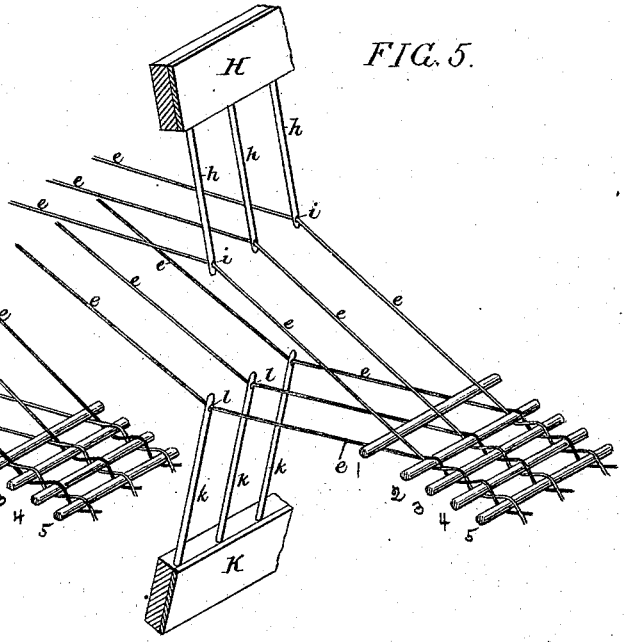


FIG. 6

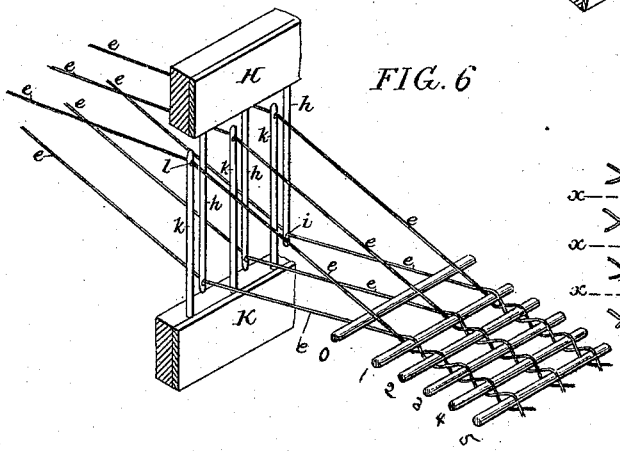
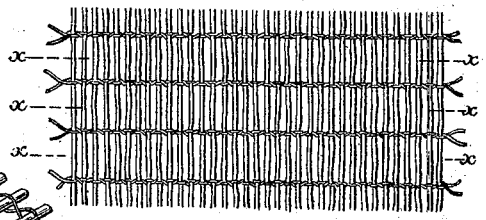


FIG. 8.



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By their Attorneys.

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UNITED STATES PATENT OFFICE.

HENRY TOPHAM AND CHARLES TOPHAM, OF PHILADELPHIA, PENNSYLVANIA.

LOOM FOR WEAVING LENO FABRICS.

SPECIFICATION forming part of Letters Patent No. 383,838, dated May 29, 1888.

Application filed September 13, 1887. Serial No. 249,581. (No model.)

To all whom it may concern:

Be it known that we, HENRY TOPHAM and CHARLES TOPHAM, both citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented an Improved Loom for Weaving Leno Fabrics, of which the following is a specification.

Our invention relates to looms for cross-weaving for the production of leno or gauze fabrics, our invention consisting of certain features of mechanical construction, as fully described hereinafter.

In the accompanying drawings, Figure 1 is an end view of a loom illustrating our improvements. Fig. 2 is a longitudinal section on the line 1 2, Fig. 1. Fig. 3 is an enlarged diagrammatic view of the fabric. Figs. 4, 5, and 6 are perspective diagrams showing the prongs carrying the warp-threads in their different positions. Fig. 7 is an end view of a loom, showing a modification; and Fig. 8 is a view of a modified weave.

Referring to Fig. 3, which illustrates the fabric woven on the loom, it will be noticed that the weft-threads are tied in by the crossing or twisting of the warp-threads, the weft-threads in the example shown being cut between the sets of warp-threads on the lines *x x* and then used for filling-threads for making chenille, rugs, and other fabrics.

A A are the side frames of the loom.

B is the main shaft, and C the crank-shaft, both mounted in bearings on the side frames.

D is the lathe of the loom, pivoted at *d*, as usual, and provided with the usual shuttle-boxes; and *a* is the breast-beam, and *b* the cloth-roller.

E is the warp-beam, mounted on suitable brackets on the frames of the loom, and *e* represents the warp-threads, which pass over suitable guide-pulleys, *f*, from the beam.

On two upright extensions, F, of the side frames, A A, is a rock-shaft, G, extending from one side of the loom to the other. This rock-shaft carries two arms, *g g*, having at their outer ends a comb, H, provided with downwardly-projecting prongs *h*, which have suitable eyes, *i*, at their outer ends, through which pass one set of the warp-threads, *e*. Situated below the rock-shaft G, but having its bearings in the same upright extensions F F, is a rock-shaft, J, having two arms, *j j*, which carry a comb, K, the prongs *k* of which project upward, and are also provided with suitable eyes, *l*, through which the remaining set of warp-threads passes. These two rock-shafts G and J are connected together by any suitable gearing; but we have shown in Figs. 1 and 2 two arms, *m*, on the rock-shaft G and two arms, *n*, on the rock-shaft J. The arms *n* in the present instance are slotted at n^3, and adjustably secured in these slots are pins *n'*, fastened therein by means of nuts n^2, the pins passing into grooves *m'* in the arms *m*, the movement of the rock-shaft G being thus transmitted to the rock-shaft J, but in the reverse direction, so that as the comb H is raised the comb K is lowered.

The rock-shaft G derives its motion from the main shaft B, which is provided with a crank, *q*, connected to an arm, *g'*, on the shaft G by a rod, g^2. A pin, *w*, is adapted to a slot, *w'*, in the arm *g'*, and can be adjusted on said arm and secured thereto by means of a nut, w^2, in the rear. The crank *q* is also slotted, and carries a crank-pin, *u*, adapted to be adjustably secured therein, so that the rod g^2 can be adjusted either on the crank *q* or arm *g'* to regulate the movement of the comb.

The lower rock-shaft, J, has in the present instance an independent sidewise movement, so that the prongs of the comb K will have a sidewise motion as well as the vertical motion, as described hereinafter. This motion is given to the shaft J by a cam, S, on a stud, L, driven from the main shaft B through gear-wheels P P'. A lever, S', pivoted to the frame A, has a pin engaging with the cam S, and this lever S' is connected to a bell-crank lever, T, by a rod, *t*, this bell-crank lever being pivoted to a bracket on the upright extension, and having a pin, *t'*, which projects between two collars, *u u*, on the rock-shaft J; but other connecting mechanism may be used without departing from our invention.

The mechanism is so timed that when the prongs of the combs are parted the sidewise movement of the lower comb and its shaft takes place.

The operation of the mechanism is as fol-

lows: The eyes in the ends of the prongs of the combs are threaded with the warp-threads *e*, and the weft-thread is thrown across, as shown in Fig. 4, while the combs are in the position shown in that figure. The combs are then parted, as shown in Fig. 5, which will tie in the weft-thread previously thrown. Another pick is then made, as shown in Fig. 5, after which a sidewise movement is given to the lower comb, which will cause the warp-threads to be twisted around each other when the combs come together, as shown in Fig. 6. The last weft-thread is then tied in and another pick is made, throwing another weft-thread across the loom. It will be understood that the rock-shaft G and its comb H may have endwise movement in place of or in addition to the rock-shaft J and its comb K, as shown by dotted lines in Fig. 7.

In the modification shown in Fig. 7 the cam S is on the main shaft B and the crank *q* is on the main crank-shaft C, and the two rock-shafts G and J are geared together by segmental gears U U. With the connections made as shown in this view, the loom will weave the fabric shown in Fig. 8, the wefts being inserted only when the combs are together, and the warps being twisted between successive wefts, instead of between successive pairs of wefts, as in Fig. 3.

We claim as our invention—

1. The combination of two rock-shafts, each carrying a comb with eyed prongs through which the warp-threads pass, with mechanism for rocking said shafts and for moving one of them laterally, substantially as described.

2. The combination of a rock-shaft carrying a warp-threaded comb, mechanism for rocking said shaft, a lever acting thereon, an operating-cam, a lever acted on thereby, and a rod connecting the two levers, all substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY TOPHAM.
CHARLES TOPHAM.

Witnesses:
WILLIAM D. CONNER,
HARRY SMITH.