

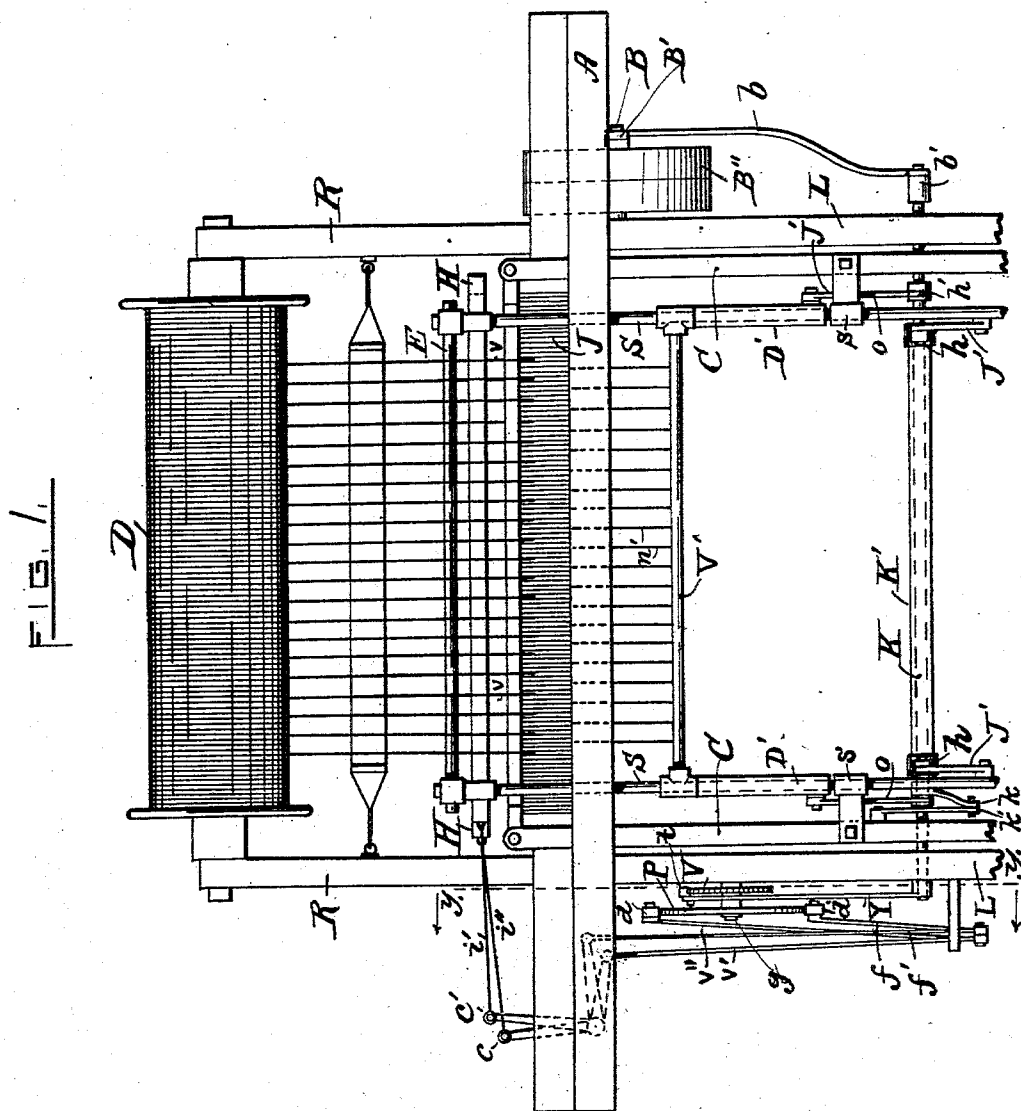
(No Model.)

3 Sheets—Sheet 1.

J. T. BOLTON.
LAPPET LOOM.

No. 561,648.

Patented June 9, 1896.



WITNESSES.

Charles T. Hannigan.
L. B. Dush

INVENTOR

John T. Bolton.
by Benj Arnold
Atty.

(No Model.)

3 Sheets—Sheet 2

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FIG. 3.

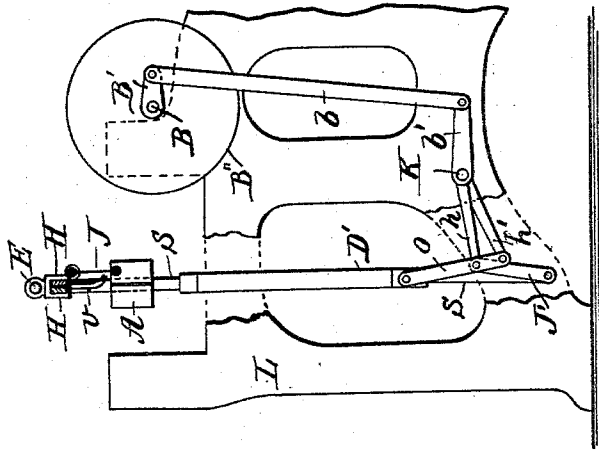
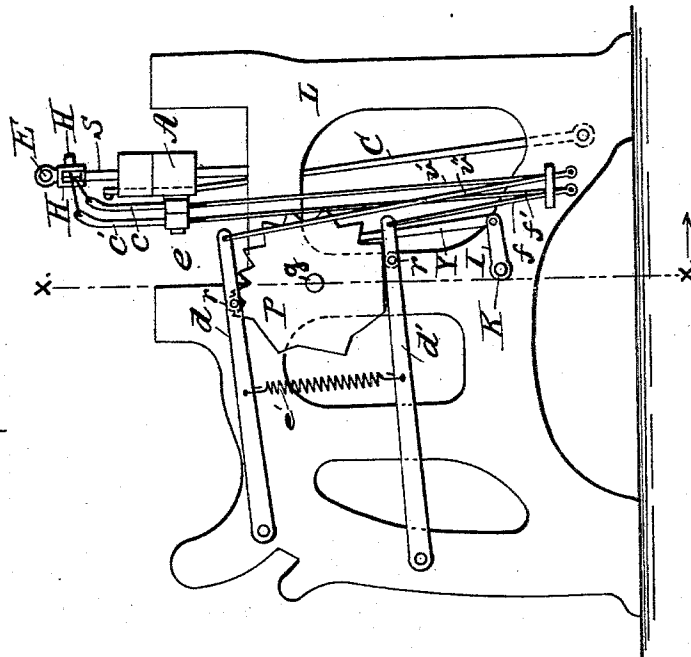


FIG. 2.



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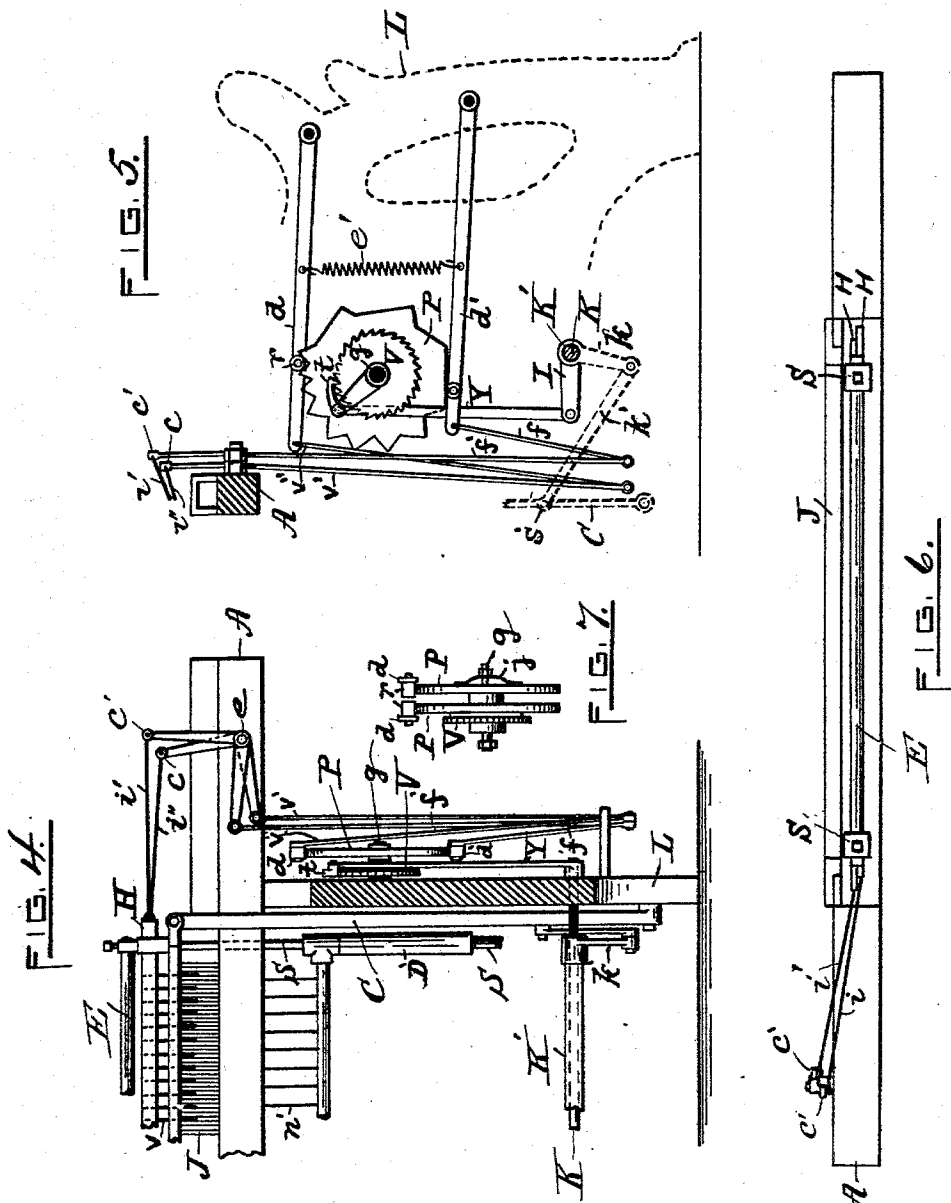
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LAPPET LOOM.

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UNITED STATES PATENT OFFICE.

JOHN T. BOLTON, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO GEORGE GRIME, OF SAME PLACE.

LAPPET-LOOM.

SPECIFICATION forming part of Letters Patent No. 561,648, dated June 9, 1896.

Application filed November 16, 1895. Serial No. 569,166. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. BOLTON, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Lappet-Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of looms known as "lappet-loom;" and it consists of improvements on the invention disclosed in my application for Letters Patent filed April 4, 1895, Serial No. 544,404.

It is fully described and illustrated in this specification and the accompanying drawings.

Figure 1 is a front elevation of the lathe of a loom with the improvements attached. Fig. 2 is an elevation of the left end of the loom with the gear-wheels connecting the crank and cam shafts left off. Fig. 3 shows an elevation of a part of the right end of the loom. Fig. 4 is a back elevation of a part of the left end of the lathe and a section of that end frame on line *xx*, Fig. 2. Fig. 5 is a vertical section of the loom, taken just outside of the left end frame on line *yy*, Fig. 1, looking to the left. Fig. 6 is a top view of the lathe. Fig. 7 shows a modification of the cam arrangement.

The mechanism of the improvement is adapted to be attached to looms already in use for plain weaving, using either one or more shuttles and harnesses. Its construction is as follows:

A is the lathe-beam of the loom.

C C are the swords that support the lathe-beam.

D is an auxiliary yarn-beam that holds the yarn that forms the figures on the cloth. It is held in the supports R R, that extend up from the end frames L L of the loom.

B is the crank-shaft that operates the lathe.

B' is the driving-pulley.

J is the reed.

S S are two vertical rods, one at each side of the loom, sliding in bearings in the lathe-beam A and also in guides *s s* on the lower part of the swords C C. A top rod E is made

fast at each end to the upper ends of the vertical rods S S, Fig. 1, and when the rods S S are moved up and down the rod E will move with them. Two flat plates H H are held movably in mortises in the upper ends of the vertical rods S S. These plates H H have set in their lower edges needles *v v*, with eyes in their lower ends.

The plates H H, with the needles *v v*, have independent motions endwise, which they receive from the cam P, held on a stud *g* in the left end frame L, one of the plates H receiving its motion from the lever *d*, which is pivoted at its back end (see Figs. 2 and 4) to the end frame L and has a friction-roll *r* bearing on the top of the cam P, and the other plate H receives its endwise motion from the lever *d'*, pivoted at its back end to the end frame L and having a friction-roll *r'* bearing up against the under side of the cam P. The cam P has the desired motion for the plates H H laid out on the contour of its periphery, and these motions are conveyed to the plates H by means of two knee-levers *c c'*, held on a stud *e* fast in the back of the lathe A, the vertical arms of the knee-lever being connected one with the front plate H by rod *i'* and the other with the back plate H by rod *i*, and the horizontal arms of the knee-levers are connected one with the lever *d*, through the rods *v' v''*, and the other arm with the lever *d'*, through the rods *f f'*. A close spiral spring *e'*, having its ends connected to the two levers *d d'*, draws them together on the cam P, so that the friction-rolls *r* will follow the outlines of the cam and move the sliding plates accordingly. The cam P receives a step-by-step motion through a ratchet-wheel V, fast on the inner side of the cam, which ratchet-wheel is moved by a vertical bar Y, carrying a pawl *t* on its upper end arranged to hook into the teeth of the ratchet-wheel and draw it over when the bar is drawn down by the arm I, to the outer end of which the lower end of the bar Y is attached, the arm I being held fast on the end of the auxiliary shaft K, having bearings in the lower part of the end frames L L.

The auxiliary shaft K receives motion from the crank-shaft B through an arm B', fast on the shaft outside of the driving-pulley, (see Fig. 3,) the arm B' being connected by the

rod *b* to the arm *b'*, fast on the auxiliary shaft. The shaft *K* has bearings in both end frames *L L*, and extends far enough beyond the right end frame to receive the arm *b'* to move it by
 5 and far enough beyond the left end frame to receive the arm *I*, that operates the cam *P* by the bar *Y* and pawl *t*, as described. The shaft *K* has two arms *h h* fast on it near each end of the loom, and the outer ends of these
 10 arms are connected by the rods *O O* to the sleeves *D' D'*, sliding on the vertical rods *S S*.

A bar *V'*, which is held at each end on the sleeves *D'* on bars *S S*, has a series of vertical wires *n'* inserted in its upper side. These
 15 wires stand at all times in holes made through the lathe-beam *A*, and are carried up high enough above the raceway to serve as guides to prevent the shuttles from falling back against the needles *v v* when the lathe falls
 20 back by the rising of the bar *V'*.

A sleeve *K'* is held loose on the shaft *K* and receives a reciprocating motion by an arm *k*, fast on it, that projects downward and is connected by a rod *k'* to a stud *s'* in the sword
 25 *C*, (see Fig. 5,) and the swinging motion of the sword gives motion to the sleeve *K'*, which, by the arms *h'* and the rods *J'*, connected to the lower ends of the vertical rods *S S*, give an up-and-down motion to those rods
 30 and the parts held on them. (See Fig. 3.)

In operation the sliding plates *H H* and needles *v v* are brought down as the lathe *A* falls back for the shuttle to pass, so that the yarns in the needle-eyes will be down in the lower
 35 part of the shed, where the shuttle with the filling will pass over them and bind them in the web. This is done by the arms *h' h'*, fast on the sleeve *K'*, that are connected by the rods *J'* to the rods *S S*, the sleeve *K'* receiving its motion from one of the swords *C*
 40 through the rod *k'* and arm *k* fast on the sleeve. As the lathe beats in the filling, the needles are raised and changed in position endwise of the lathe by the knee-levers *c c'*, moved by the

rods *v' v''* and *f f'*, which connect them with
 45 the levers *d d'*, that are moved by the cam *P* according to the pattern on the periphery of the cam. When the lathe again falls back to allow the shuttle to repass, the needles are
 50 again brought down in the shed, but in another place from where it descended before, and the figure on the web is formed by the yarn between the two places. This arrangement of the cam and the levers gives the in-
 55 dependent motion to each sliding plate and its needles required in making some designs. Two cams may be placed on the same stud *g* and the levers *d d'* placed over them. (See
 60 modification in Fig. 7.) This latter mode gives more opportunity for varying the relative time of the movements of the levers *d d'*, and in that way to vary the figures on the web.

In Fig. 7 the common device of a spring-washer *j* is shown put outside of cam to prevent the cam or cams from being turned back
 65 by the pawl.

Having thus described my improvements, I claim as my invention and desire to secure
 70 by Letters Patent—

In a lappet-loom an auxiliary shaft held in bearings in the lower part of the loom-frame and having an arm fast thereon, a crank-shaft having an arm fast on it connected to
 75 the arm on said auxiliary shaft, arms fast on said auxiliary shaft, a bar connected by rods with said arms on the auxiliary shaft and carrying a set of guard-wires under the lathe, a sleeve held on the auxiliary shaft having
 80 arms fast thereon, plates connected with the arms on said sleeve and carrying yarn-needles, and an arm on said sleeve connected by a rod to a stud in a sword of the loom, substantially as described.

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Witnesses:

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 L. J. BUSH.