

(No Model.)

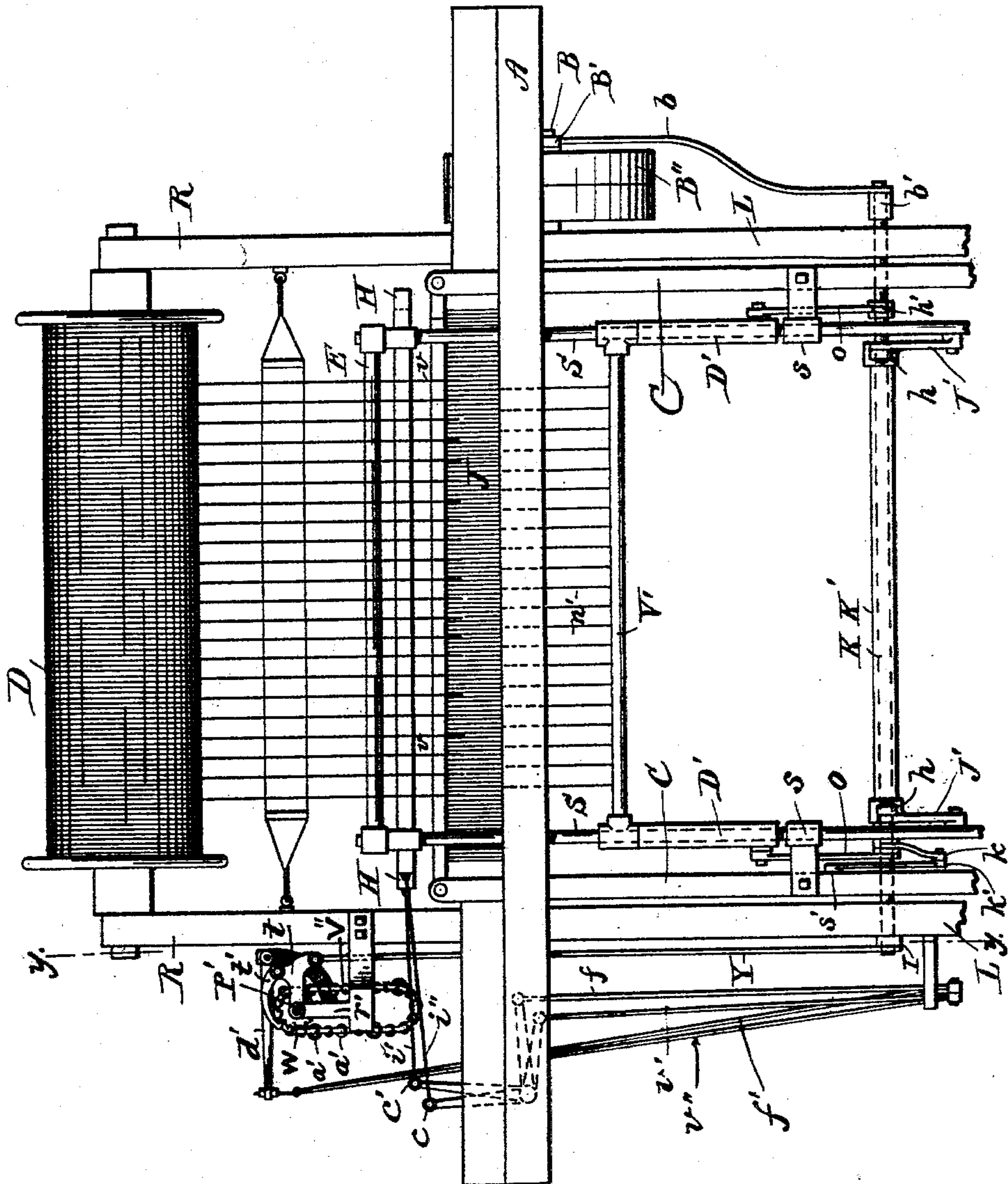
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J. T. BOLTON.
LAPPET LOOM.

No. 561,649.

Patented June 9, 1896.

FIG. 1.



WITNESSES.

Charles T. Hamigan
L. J. Pushe

INVENTOR.

John T. Bolton
By *Benj. Arnold*
Atty.

(No Model.)

3 Sheets—Sheet 2.

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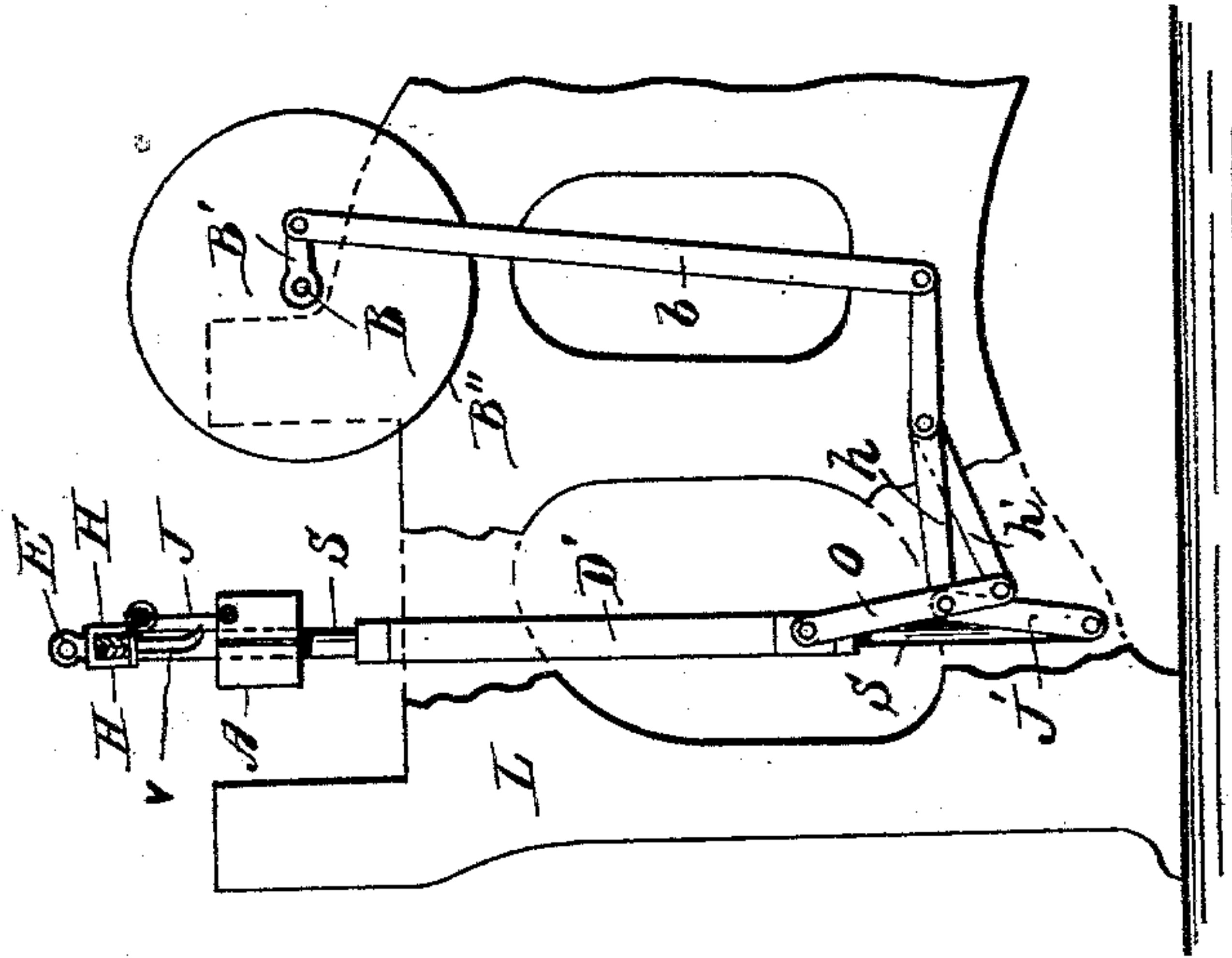


FIG. 3.

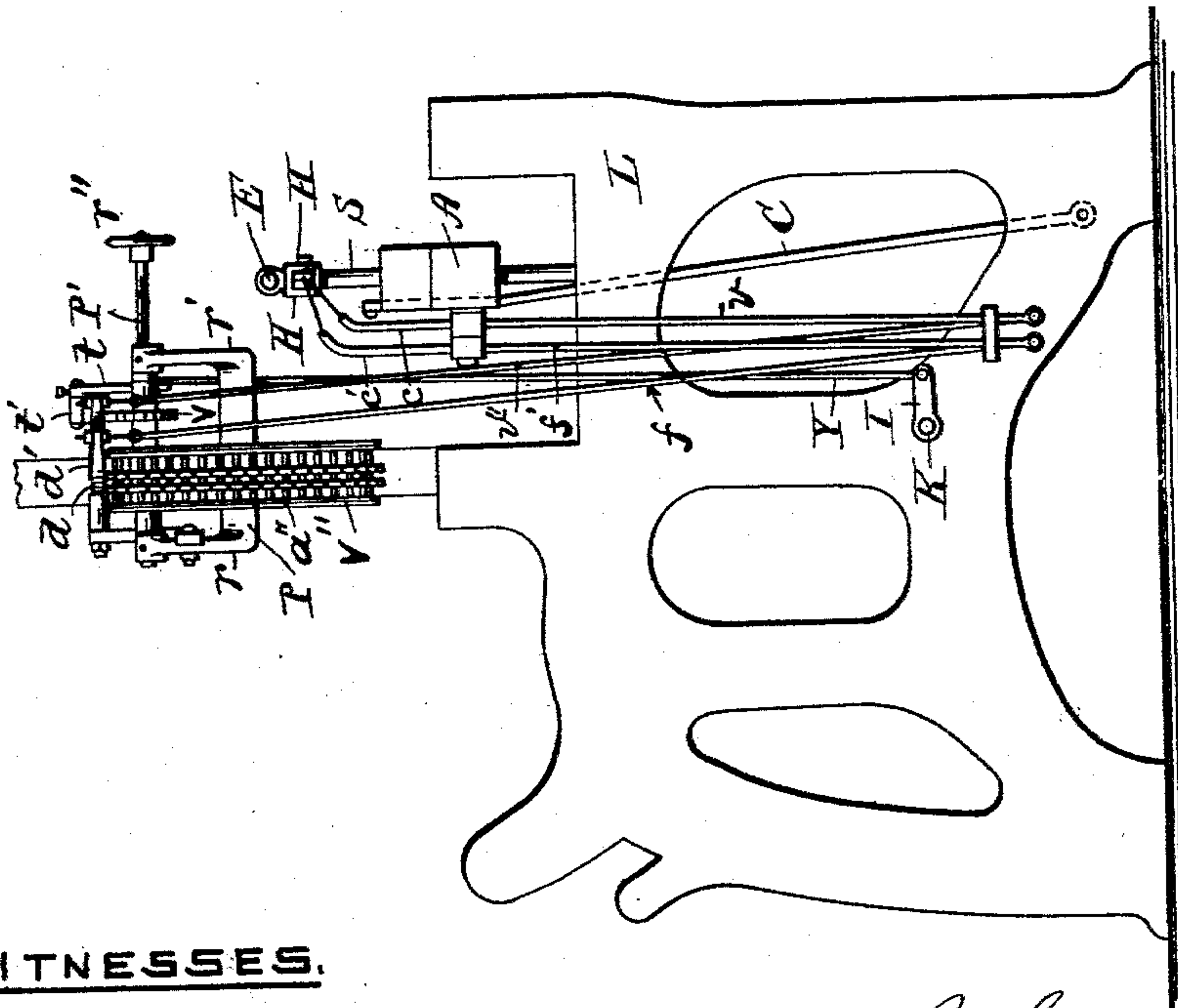


FIG. 2.

WITNESSES.

Charles P. Harrington.
L. J. Pugh.

INVENTOR.

John T. Bolton.
By Benz Arnold.
Atty.

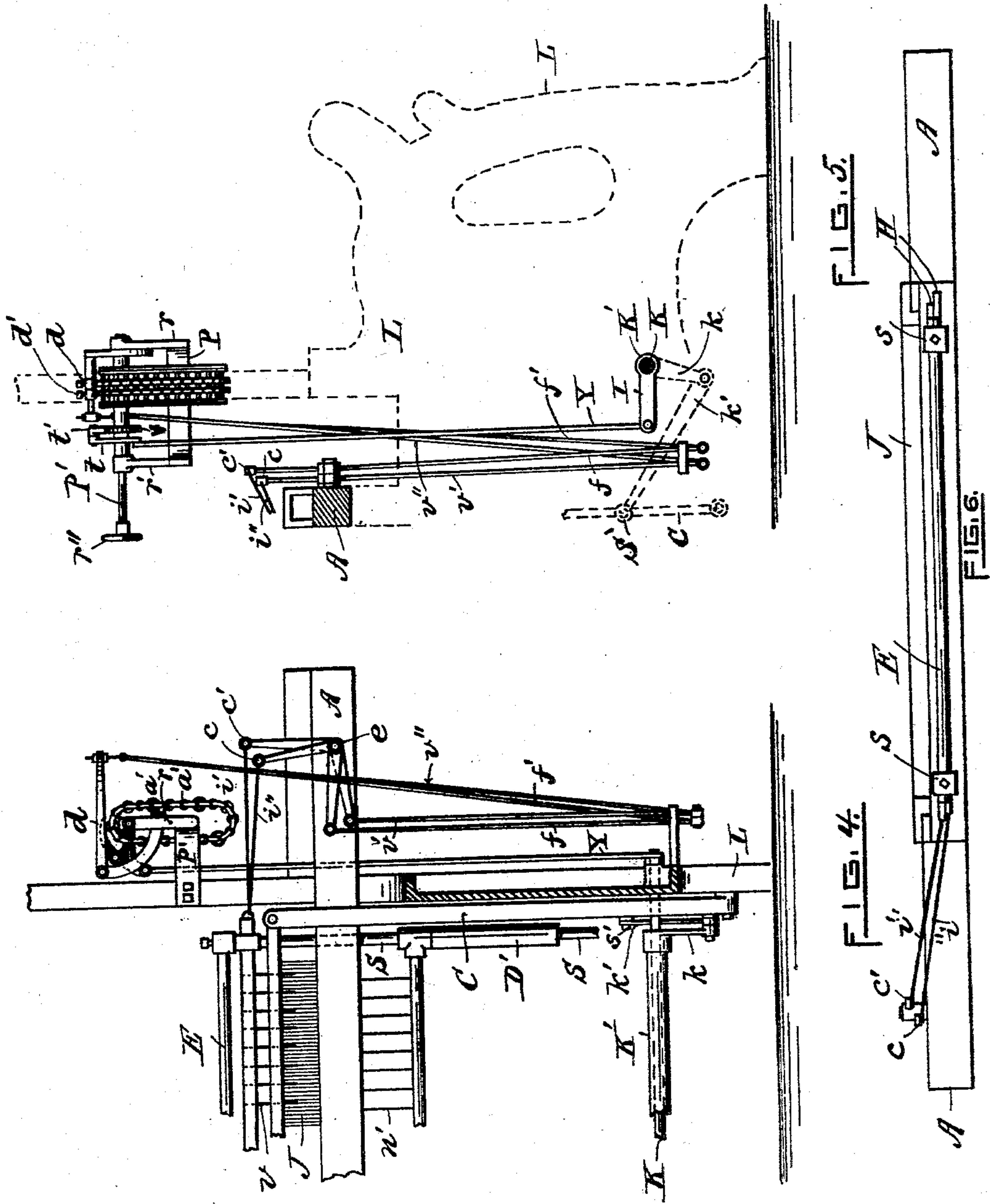
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WITNESSES.

Charles T. Hannigan.
L. J. Gush.

INVENTOR

John T. Bolton
By Benj. Arnold
Atty.

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. 561,649, dated June 9, 1896.

Application filed November 16, 1895. Serial No. 569,167. (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.

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 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 ver-

tical 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 motion endwise independent of each other, which they receive from a chain motion attached to the arch of the loom-frame. The frame of this chain motion consists of a bar P, by which it is secured to the arch, having uprights at each end *r r'*, in the top of which bearings are made to hold a small transverse shaft P', that extends out over the lathe, with a hand-wheel *r''* on its front end, by which it can be turned. A ratchet-wheel V is made fast on this shaft P', and an arm *t* is hung loosely on the shaft by the side of the ratchet-wheel, carrying a hooked pawl *t'*. The shaft P' receives an intermitting motion through this ratchet-wheel and pawl from the arm I on the auxiliary shaft K, to which it is connected by the bar Y. Two notched wheels *w w* are also made fast on the shaft P' to carry the chain V'', which consists of two series of flat links connected together by studs *a''*, removably inserted in the links. The studs of the chain fit into the notches in the wheels *w w* and are made removable for the purpose of being taken out to receive rollers *a'* or "balls," as they are technically called, of different sizes.

Two horizontal levers *d d'* are held on a stud fast in an arm projecting up from the upright stand *r*. These levers *d d'* are so placed as to rest on the rollers *a'* on the studs of the chain, so that as the chain is passed under the levers by the turning of the shaft P' by the ratchet-wheel V and the pawl *t'* the levers will be raised by the larger rollers and allowed to drop by the smaller rollers, thus giving a vertical motion to the outer end of the levers, which is communicated to the two knee-levers *c c'* by the rods *v' v''* and *f f'*, which connect with the horizontal arms of the two knee-levers *cc'*, held on a stud *e* in the back of the lathe-beam. The vertical arms of the knee-levers are connected by rods *i'' i'*, lever *c* to the front plate H and the lever *c'* to the back plate H. It will

be seen that the motions endwise of the plates H H, with needles *v v*, that make the figures on the cloth, are controlled by the rollers *a'* on the chain P and that the difference in size of the rollers and the order of succession of the different sizes will determine the design of the figures; also, that the size and order of the rollers can be readily changed to produce any desired pattern.

10 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.
 15 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 and far enough beyond the left end frame to receive the arm I, that operates the ratchet-wheel P by the bar Y and pawl *t*, as described.
 20 The shaft K has two arms *h h* fast on it near each end of the loom, and the outer ends of these arms are connected by the rods O O to the sleeves D' D', sliding on the vertical rods
 25 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 upperside. These wires stand at all times in holes made through the
 30 lathe-beam A and are carried up high enough above the raceway by the rising of the bars V' to serve as guides to prevent the shuttles from falling back against the needles *v v* when the lathe falls back.

35 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 C, (see Fig. 5,) and the swinging motion of the
 40 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, gives an up-and-down motion to those rods and the parts held on them. (See Fig. 3.)

45 In operation the sliding plates H H and the 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 which are received from the beam D will be down in the lower
 50 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 through
 55 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
 60 the levers *d d'*, that are moved by the rollers on the chain P according to the order in which the different sizes of rollers are placed thereon. When the lathe again falls back to allow the
 65 shuttle to repass, the needles are 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 laid by the needles between the two places.

The auxiliary shaft K and sleeve K' thereon, 70 with the connections and other parts, are specifically claimed in application Serial No. 569,166, of even date.

Having thus described my improvements, I claim as my invention and desire to secure 75 by Letters Patent—

In a loom the combination with the lathe of vertical sliding bars having bearings in the lathe-beam and the swords below, a top bar connecting the upper ends of said vertical
 80 bars, plates sliding in mortises in the upper ends of said vertical bars, needles in the lower edges of said sliding plates, two knee-levers held on a stud on the back of the lathe, one of said knee-levers being connected by a rod
 85 with the front sliding plate, and the other knee-lever connected in like manner with the back sliding plate, a chain for carrying rollers of different sizes, levers arranged to bear on said rollers, rods connecting the levers with
 90 said knee-levers, a ratchet-wheel fast on the shaft carrying said chain, with arm and pawl, a rod connecting the arm with an arm on an auxiliary shaft in the lower part of the loom, a rod connecting an arm on said auxiliary
 95 shaft with an arm on the crank-shaft of the loom, substantially as described.

JOHN T. BOLTON.

Witnesses:

BENJ. ARNOLD,
 L. J. BUSH.