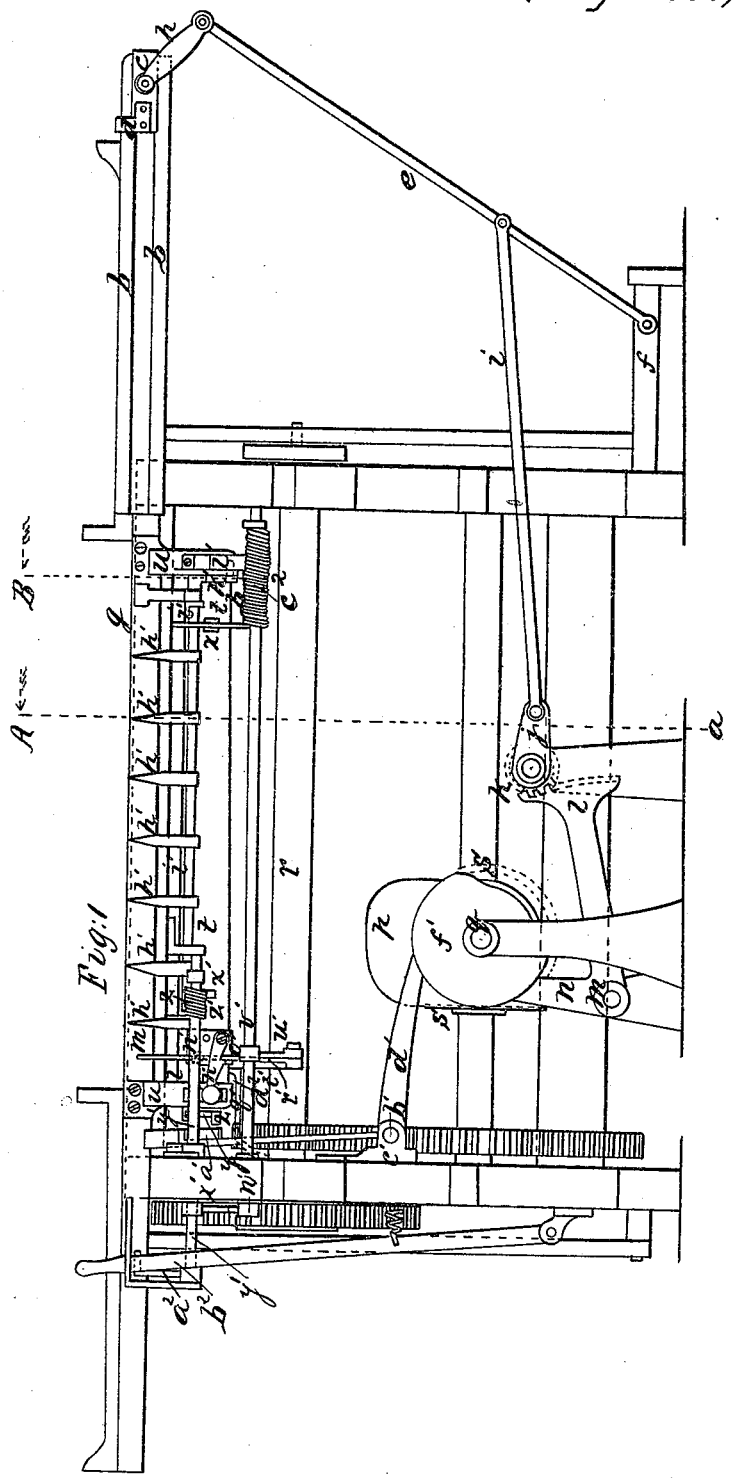
Sheet 1, 5 Sheets.

E. B. Bigelow.

Loom for Pile Fabric.

No. 7,660. Patented Sept. 24, 1850.



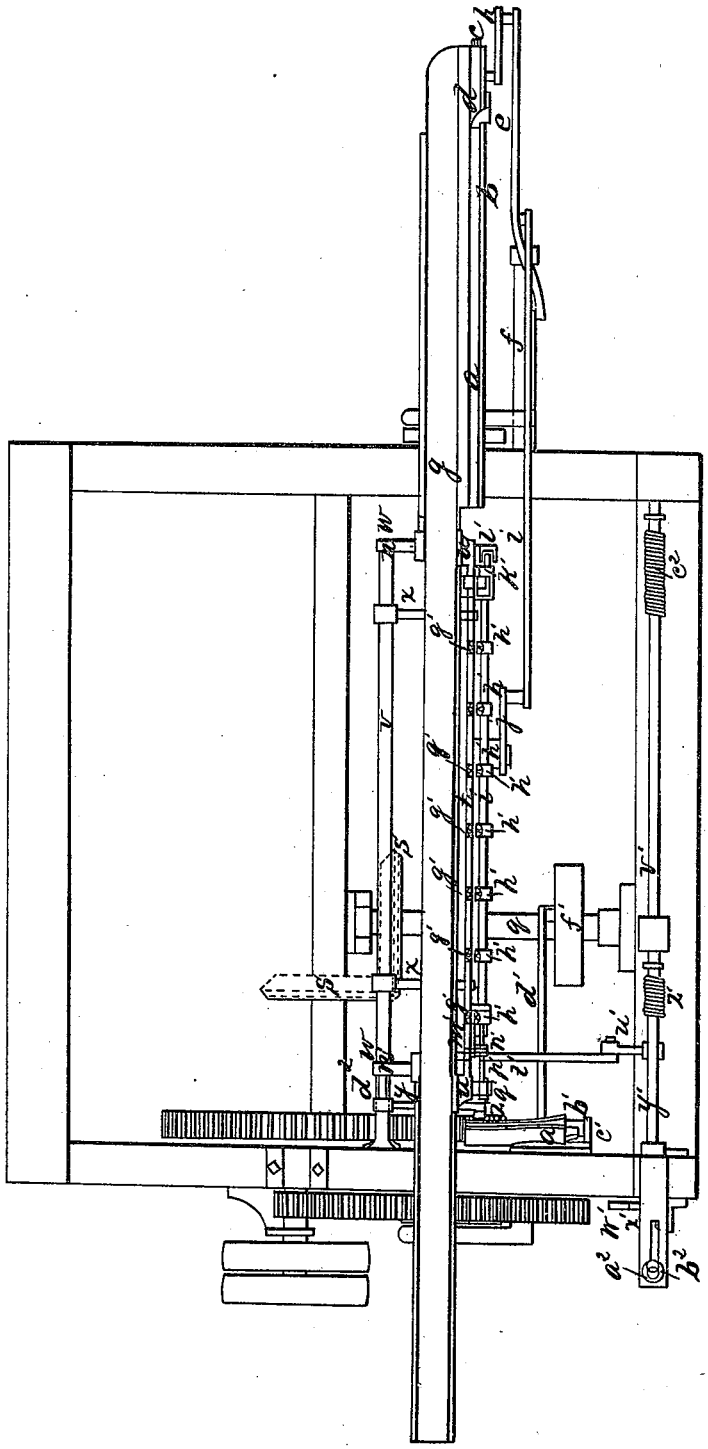
Sheet 2, 5 Sheets.

E. B. Bigelow.

Loom for Pile Fabric.

No. 7,660. Patented Sept 24 1850.

Fig. 2



E. B. Bigelow.

Loom for Pile Fabric.

No. 7,060. Patented Sept. 24, 1850.

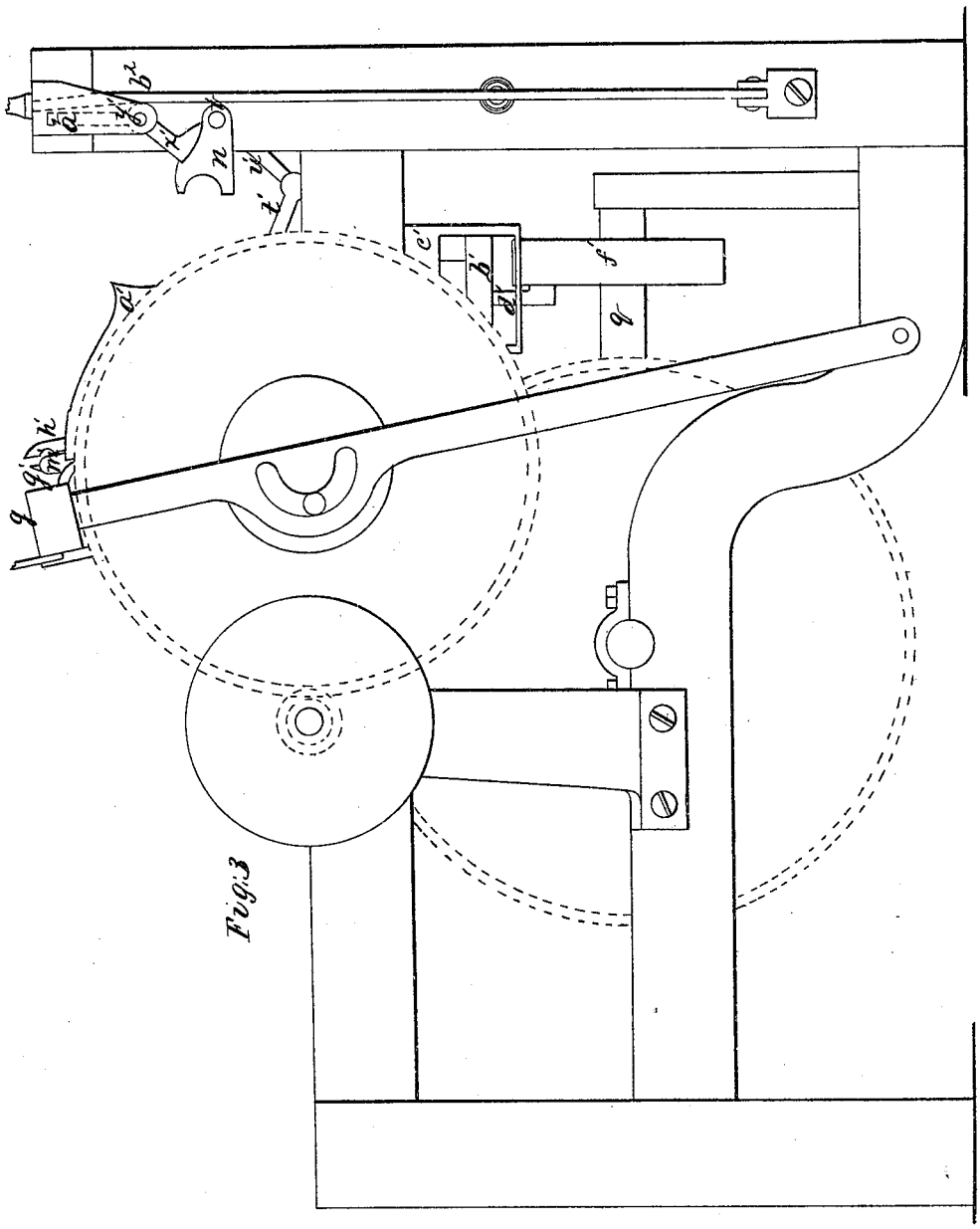
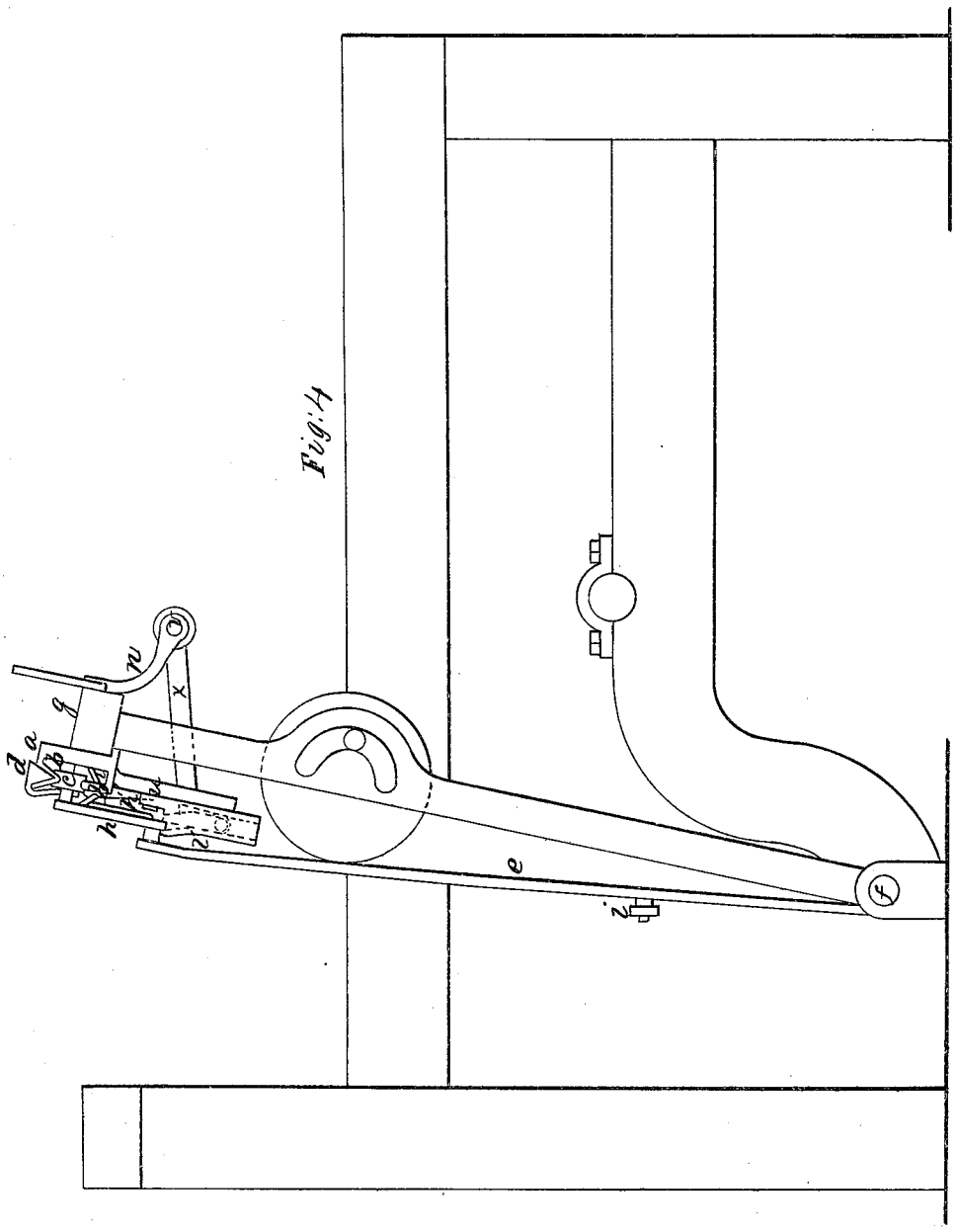


Fig. 3

E. B. Bigelow.

Loom for Pile Fabric.

No. 7,660. Patented Sept. 24, 1850.

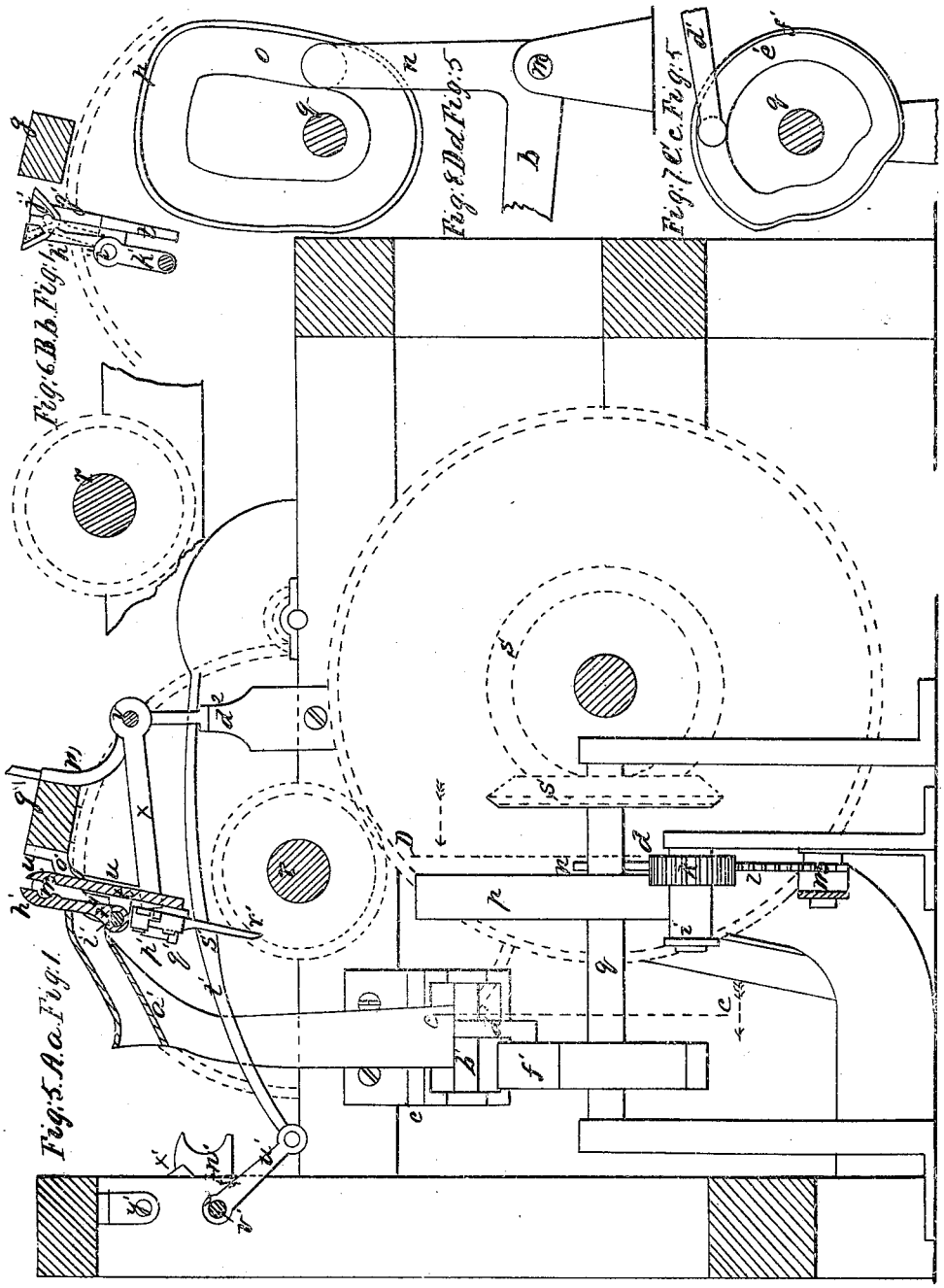


Sheet 5, 5 Sheets

E. B. Bigelow.

Loom for Pile Fabric.

No. 7,660. Patented Sept. 24, 1850.



UNITED STATES PATENT OFFICE.

E. B. BIGELOW, OF CLINTON, MASSACHUSETTS.

LOOM FOR WEAVING TAPESTRY AND BRUSSELS CARPET.

Specification of Letters Patent No. 7,660, dated September 24, 1850.

To all whom it may concern:

Be it known that I, ERASTUS B. BIGELOW, of Clinton, in the county of Worcester and State of Massachusetts, have invented a certain new and useful Improvement in Looms for Weaving Brussels and Tapestry Carpets and other Piled Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation with the front part of the frame represented in red lines; Fig. 2 a plan with the breast beam removed to exhibit the stop motion; Figs. 3 and 4, side elevations; Fig. 5, a vertical section taken at the line A, *a*, of Fig. 1; Fig. 6, a vertical section of the lathe at the line B, *b*, of Fig. 1; and Figs. 7 and 8 vertical sections taken at the lines C, *c*, and D, *d*, of Fig. 5, and looking from the back of the loom.

The same letters indicate like parts in all the figures.

In Letters Patent granted to me on the 10th day of March, 1849, and reissued on amended specification on the 9th day of October, 1849, the guiding and supporting of the pile wires as they are introduced between the warps is made the subject of claim. And the first part of my present invention is an improvement thereon and the nature of my said invention consists in causing the movable guides and supports—which have a vertical movement—to open and close so that the wire shall be introduced when they are closed to insure the introduction of it in a proper position, and when in place that it may be liberated by the opening of the guides or supports.

And the second part of my invention consists in the employment of a stop motion to be operated by the wires as they are introduced, so that when the wire fails to be introduced the loom shall be stopped.

The accompanying drawings represent the frame work and so much of a loom as is necessary to exhibit my improvements and their connections. On one end of the race beam there is a trough (*a*) in which the wires are dropped as they are withdrawn from from under the pile of the fabric, and below this and working between guides (*b*, *b*,) is a slide (*c*) with the wire driver (*d*) attached to it and extending down into the trough for the purpose of driving the wires into the open shed of the warps. The slide and driver are operated by an arm (*e*) which at its lower end is jointed to a rocker (*f*,) of the lathe (*g*,) and at its upper end by a joint link (*h*,) to the slide. And this arm in turn is connected by a joint rod (*i*) with a crank (*j*,) the shaft of which has a pinion (*k*,) which engages the cogs of a sector rack (*l*,) on one arm of a rocker (*m*,), the other arm (*n*) of which carries a friction roller or wrist which fits in the groove (*o*) of a cam (*p*,) on a shaft (*q*,) which receives motion from the main shaft (*r*) by means of bevel cog wheels (*s*, *s*,).

From this it will be seen that as the cam rotates, from the peculiarity of its form the driver will be carried in and back once for every rotation of the main shaft. And that from the position of the cam relatively to the lathe, the in motion will take place while the lathe is thrown back and the shed is open.

In front of the race beam and below the bottom thereof there is a plate (*t*) the ends of which slide vertically in ways (*u*, *u*,) attached to the race beam so that the whole will be carried back and forth with the lathe. Back of the race beam there is an arbor (*v*) having its bearings in bracket pieces (*w*, *w*,). Two arms (*x*, *x*) of this arbor enter mortises in the plate (*t*) near each end thereof, so that when the arbor vibrates the said plate shall be carried up and down. And for the purpose of giving the required movements the arbor is provided with another arm (*y*,) at one end which has a wrist pin (*z*) that fits into a cam groove in the upper end of an arm (*a'*) of a rock shaft (*b'*) which has its bearings in brackets (*c'*) attached to the side of the frame. And this rocker has another arm (*d'*) the outer end of which is provided with a wrist pin that fits a cam groove (*e'*) in a plate (*f'*,) on the same shaft as the previously described cam. It will be seen that as the lathe beats up, the wrist pin (*z*,) of the arm (*y*,) is carried forward of the front end of the cam groove in the upper end of the arm (*a'*) so that when this arm is moved in by the cam groove (*e'*) the wrist pin (*z*,) enters the groove of the arm (*a'*), and as the lathe moves back the wrist pin is carried up the inclined form of the groove which by the connections elevates the plate (*t*) and then the groove runs horizontally for a short distance to keep the plate in the same position while the driver is carried inward to introduce the wire; and at the end of the back

movement of the lathe the wrist pin passes out of the groove to permit the plate to drop down by its own weight.

As the lay shaft makes three revolutions to one of the main shaft, the above described movements will only take place once every third beat that there may be two intermediate picks for weaving in the loops. These proportions may however be varied if it be desired to increase or diminish the number of beats for each wire.

The above described movements of the plate (t) are for the purpose of operating a series of supports or guides for the wires. These supports or guides are made each in two parts, as follows: Projecting upward from the upper edge of the plate are a series of stationary semi-supports (g') beveled off on the two sides and brought to a point to pass in freely between the warps. In front they are flat with a semi-circular recess near the top and in front of these are the other semi supports (h') of the same form but attached to a rock shaft (i') having its bearings in brackets projecting from the front of the plate (t). When the front semi-supports are forced up against the others, the supports are complete, leaving a round hole (j') in each as shown by red lines in Fig. 6, for the reception of the looping wires, and when drawn forward or opened to liberate it that they may descend and leave the wire between the warps. The opening and closing of the supports or guides is effected by an arm (k') on the end of the rock shaft (i') the wrist pin of which runs in a groove in a bracket piece (l')—(see dotted lines in Fig. 4) so that when the plate (t) is elevated to carry up the supports to the line of motion of the wire, they shall be closed, and when descending they shall be opened to deliver the wire.

The first support or guide at the end toward the driver is formed with projecting lips as shown in the drawings, the better to guide the end of the wire when it first enters. In this way it will be seen that the wire when forced in is sustained by passing through the holes in the series of supports so distributed throughout the breadth of the loom as to give it efficient support however fine and pliable it may be, and that when introduced between the warps it is then deposited by the opening and descent of the supports.

Beyond the last support on the end of the lathe opposite the driver there is a spring stop lever (m') turning on a fulcrum pin (n') attached to the plate (t). When a wire is introduced and the end thereof forced against the upper end of this stop lever, a pin (o') on its lower arm is carried under the catch of a weighted arm (p') and there held until the plate (t,) descends, at which time the end of the weighted arm strikes against a spur (q',) on the lathe which liberates the stop lever preparatory to the insertion of another wire.

But when a wire fails to be introduced, as the lathe begins to beat up, a projection (r') on the lower end of the stop lever comes in contact with a shoulder (s') on a rod (t') jointed to an arm (u') of a rock shaft (v') and pushes forward this rod which rocks the shaft (v'), the outer end of which carries a catch (w') which liberates the arm (x') of another rocker (y',) provided with a helical spring (z') the tension of which forces another arm (a^2) against the shipper (b^2) to liberate it in the usual manner and thus stop the loom. The rock shaft (v') is also provided with a helical spring (c^2) the tension of which always tends to carry the rod (t') back, and the catch (w') against the arm (x') so that whenever the shipper is restored to start the loom, the arm (x') will be caught and held until liberated by the non-introduction of a wire. The rear end of the rod (t') slides in a support (d^2) to keep it in the required position.

Having thus pointed out the principle of the first and second parts of my invention and described the mode of constructing and operating the same as I have essayed them with success, I do not wish to be understood as limiting myself to this special mode of construction as this may be greatly varied within the range of my invention; as for instance the supports may be opened and closed by sliding the one part on the other by making the recess on the one part sufficiently large to receive the wires. And other mechanical arrangements as the equivalents of those above described may be substituted for giving the required movements to the supports or guides and for forming the connection between the stop lever and the shipper to stop the loom whenever a wire fails to be introduced. As there are merely the details for carrying the principles of my invention into practice, it will be obvious to mechanicians that they may be variously modified within the range of my invention.

What I claim therefore as my invention and desire to secure by Letters Patent is—

1. Closing and opening the supports or guides as they are raised and depressed to receive and support or guide the wires, and to liberate them in manner substantally as herein described.

2. And I also claim the employment of a stop motion in looms for weaving looped or piled fabrics in which the pile is formed on wires for the purpose of stopping the loom whenever a wire fails to be introduced, substantially in the manner described.

E. B. BIGELOW.

Witnesses:

ROBT. B. CAMPBELL,

C. A. WM. BROWNE.