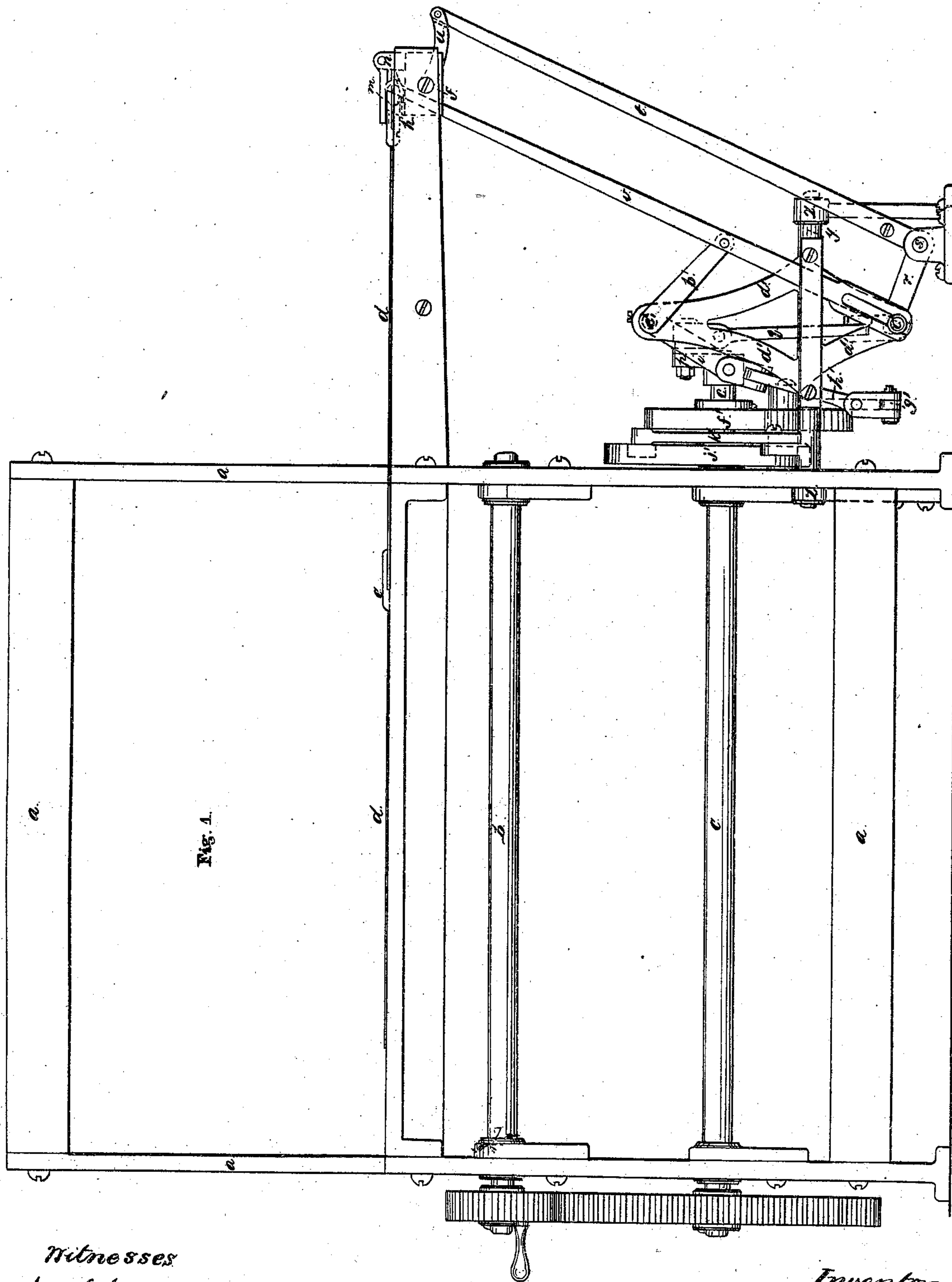


E. B. Bigelow.
Loom for Weaving Piled Fabric.

Nº 93,800.

Patented Aug. 17, 1869.



Witnesses
Nancy E. Means.
Herbert T. Whitman

Inventor
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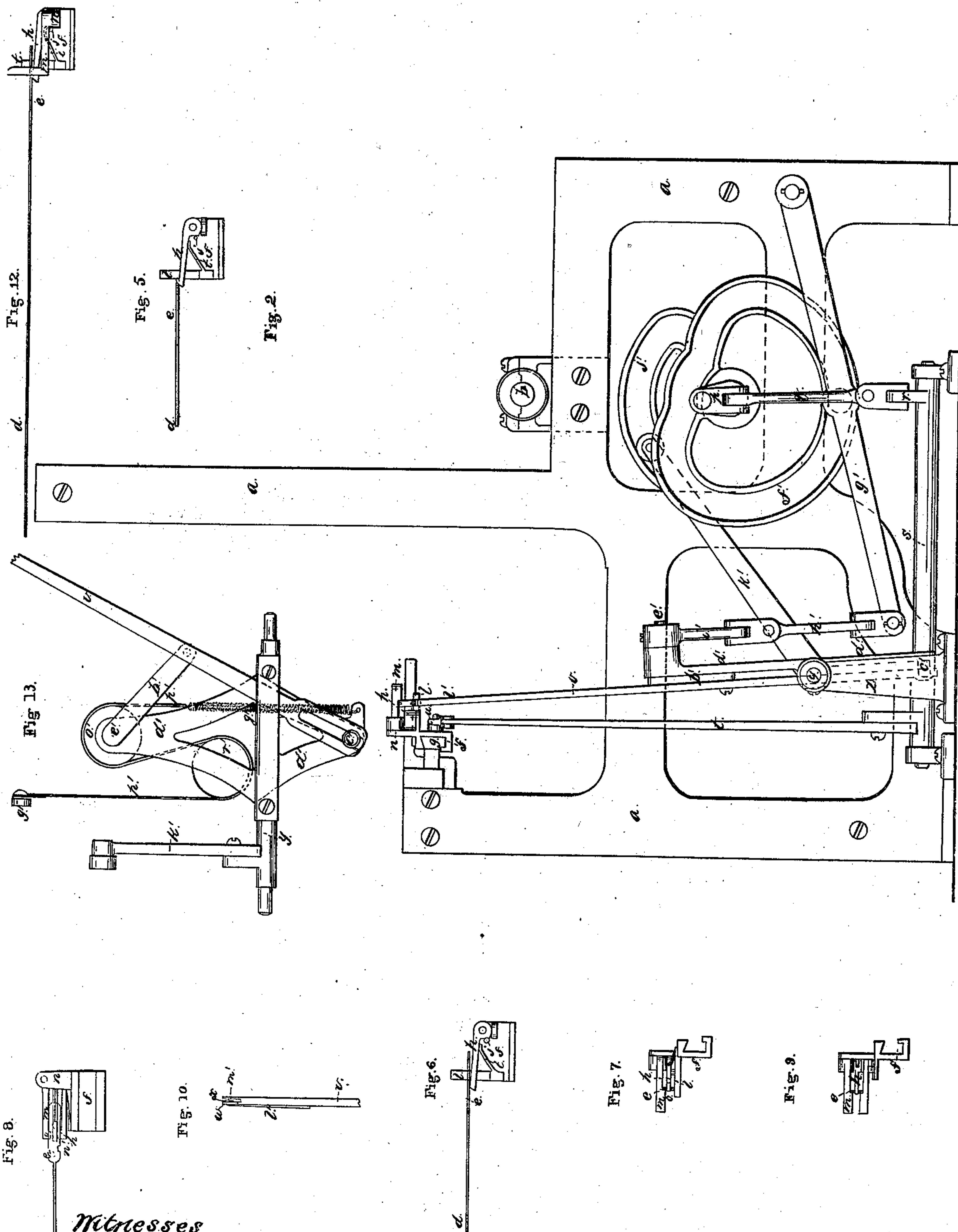
Sheet 2-3 Sheets.

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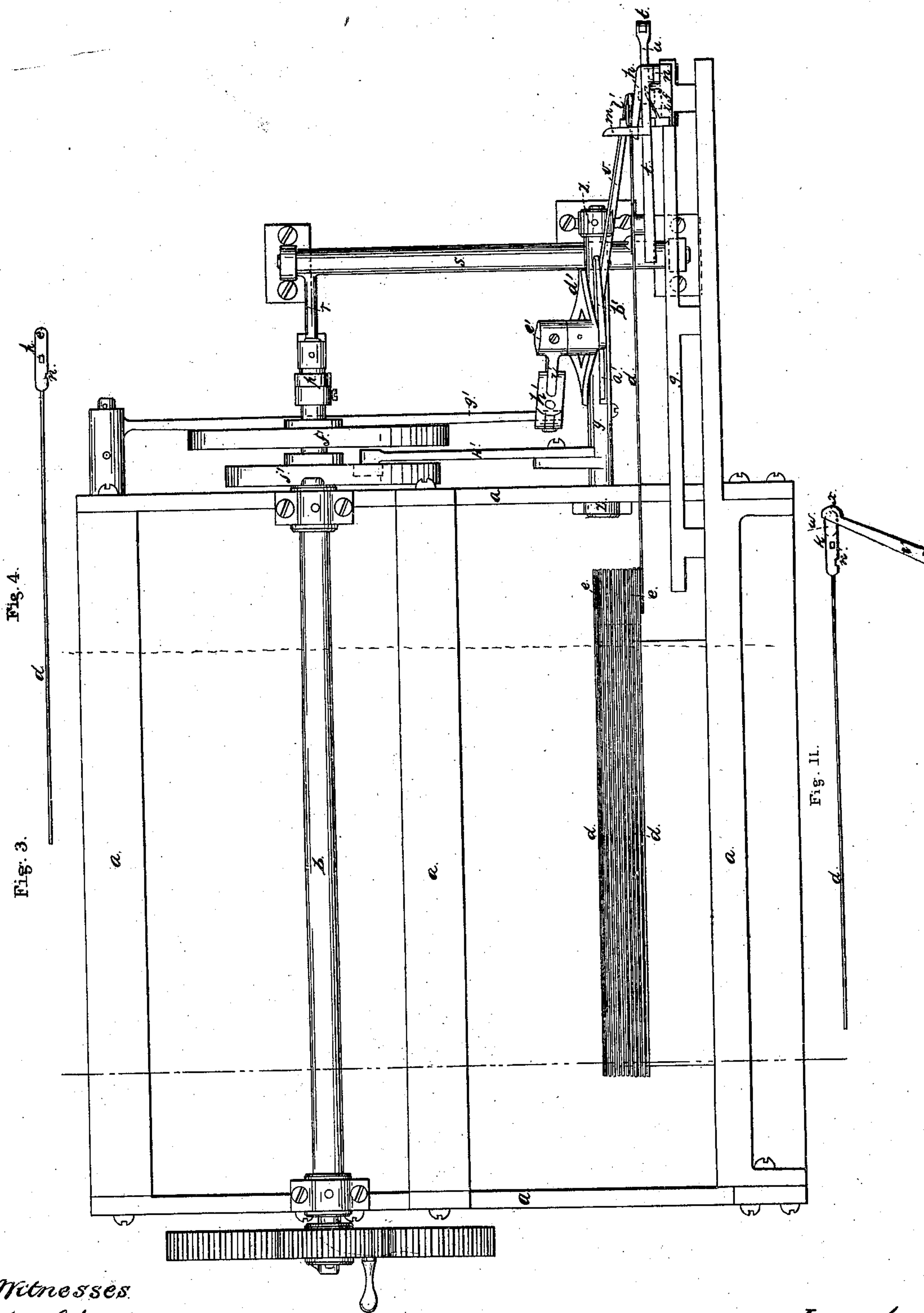
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United States Patent Office.

ERASTUS B. BIGELOW, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 93,800, dated August 17, 1869.

IMPROVEMENT IN POWER-LOOM FOR WEAVING PILED FABRICS.

The Schedule referred to in these Letters Patent and making part of the same

Be it known that I, ERASTUS B. BIGELOW, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in the Wire-Motion of Power-Looms for Weaving Piled Fabrics; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a front elevation of my improvements, with such other parts of the loom as are necessary to exemplify them;

Figure 2, a right-hand end elevation; and

Figure 3, a plan.

My invention is particularly applicable to looms in which a series or optional number of pile-wires is employed; and one part of it relates to a mode of drawing the pile-wires from the cloth, and another part, to a mode of receiving the pile-wires from the withdrawing-mechanism and inserting them in the shed.

The frame-work of the loom is marked *a*, the lay-shaft, *b*, and the cam-shaft, *c*.

The pile-wires are formed with a head, as represented in Figure 4, the wire part being marked *d*, and the wire head, *e*. A series of these wires, as they lie in the cloth, is represented in fig. 3, the position of the cloth being indicated by red lines.

The pile-wire heads *e* may be held in position, to be acted on by the withdrawing-mechanism herein to be specified, by a wire-box or holder, such as is described in a patent granted to me, the 5th day of May, 1857, and numbered 17,198; but as the wire-box or holder, and the mechanism for carrying the inner ends of the pile-wires from the position when they are drawn from the cloth, to the position where they are inserted in the shed, and for guiding them therein, make no part of my present invention, they are not represented in the drawings.

The withdrawing-mechanism is supported and carried by a sliding bar, *f*, which is moved toward and from the cloth on a guide-bar, *g*, affixed to the loom-frame.

A withdrawing-hook, *h*, by which the pile-wires are drawn from the cloth, is jointed to the sliding bar *f*, in such manner as to allow the withdrawing-hook to swing toward and from the heads of the wires in the cloth, the hook being pushed toward the wire-heads by a spring, *i*, and limited in its movement in that direction by a stop-pin, *j*.

When the withdrawing-hook approaches the cloth, it strikes against the wire-head, on which it is to act, as shown in Figure 5, and when it completes its movement in that direction, it glides over the wire-head, (which is held in position by a wire-box, as before explained,) and hooks into the square hole *k*, formed therein, and engages with it, as shown in Figure 6.

It will be obvious that the withdrawing-hook, thus engaged with the wire-head, will, when it is moved from the cloth, draw out the wire; but should the loom be stopped during the withdrawing-movement, the wire-head would be likely to escape from the withdrawing-hook. To prevent this, I combine, with the withdrawing-hook, a supporting-bed, *l*, and a latch-guard, *m*.

The supporting-bed prevents the wire-head from falling away from the withdrawing-hook, and the latch-guard prevents it from escaping laterally.

The supporting-bed projects from and is affixed to the sliding bar *f*, and the latch-guard is jointed to a projection, *n*, extending upward from the sliding bar *f*, in such manner as to be capable of swinging up and down.

When the withdrawing-mechanism is moved toward the cloth to act on a pile-wire, the supporting-bed passes directly under the wire-heads, while the latch-guard glides upon their rounded ends, as upon a fixed cam, and the withdrawing-hook engages with the head of the wire to be drawn out, as before explained. Then when it is moved away from the cloth to draw out the pile-wire, the latch-guard, after it leaves the wire-heads, falls down by its own weight, and causes its depending arm *o* to latch on to the side of the wire-head, as shown in Figure 7, and hold it in position.

As the withdrawing-mechanism approaches the completion of its outward movement, it delivers its wire-head to an inserting-carrier, presently to be described, and returns for another wire, the withdrawing-hook, supporting-bed, and latch-guard, being freed from the wire-head by their return movement.

In place of, or in addition to the supporting-bed *l*, I sometimes apply a latch-guard to the under edge of the pile-wire head, similar to the latch-guard *m*, herein described as applied to the upper edge of the wire-head, the lower latch-guard being pressed upward by a spring. A front view of the double latch-guard is given in Figure 8, and an end view in Figure 9.

The withdrawing-mechanism is moved to and fro on the guide-bar *g*, to draw out the pile-wires, by a crank, *p*, on the cam-shaft *c*.

The crank *p*, through a double-jointed connecting-rod, *q*, and arm *r*, oscillates a shaft, *s*, which carries an upright lever-arm, *t*, which is connected by a link, *u*, to the sliding bar *f*, before described, so that each revolution of the crank imparts a reciprocating movement to the withdrawing-mechanism.

The inserting-carrier, which receives the pile-wires from the withdrawing-mechanism and inserts them in the shed, I will now describe. It consists of a socket, *x*, suitably formed to receive the heads of the pile-wires, the face or opening of which is represented in Figure 10. It is formed in or affixed to a vibrating

staff, *v*, presently to be described, and has a wing, *w*, extending from its rear side, which serves to guide the wire-heads into the socket, and also to hold the wire-heads in position, while the inner ends of the wires are deflected, to bring them to the proper place for insertion in the shed.

The vibrating staff *v* has a movement toward and from the cloth, to receive and insert the pile-wires; and, also, a movement from and toward the breast-beam, to transfer the pile-wires from the line where they are withdrawn from the cloth to the position where they are inserted in the shed. It is guided and supported by a shaft, *y*, which oscillates in stands *z*. It vibrates in a slot, *a*, and is maintained in a proper position, during its vibrations, by a lever-arm, *b*, acting as a "parallel motion," the slot in its lower end plying on a stud, *c*.

From the shaft *y*, arms *d* extend, which severally support the stud *c* and the axis *e* of the lever-arm *b*. The staff is vibrated by oscillating the axis *e*, which receives its motion from the grooved cam *f*, on the cam-shaft *e*, the action of the grooved cam *f* being transmitted to the axis *e* by a treadle, *g*, double-jointed connecting-rod *h*, and lever-arm *i*.

The shaft *y* is oscillated, to move the upper end of the staff to which the inserting-carrier is affixed, from and toward the breast-beam, by a grooved cam, *j*, acting on a lever-arm, *k*, extending from said shaft.

Now, suppose the withdrawing-mechanism to be armed with a pile-wire, as represented in Figure 12, and about to complete its outward movements, and suppose, also, that the inserting-carrier is in its outer position, and opposite the pile-wire head, it will be obvious that when the withdrawing-mechanism completes its outward movement, it will draw the outer end of the wire-head into the inserting-carrier, as shown in figs. 3 and 11. Then, by means previously explained, the inserting-carrier is moved toward the lay, to transfer the wire to the position in which it is to be inserted in the shed, (the inner end of the wire being carried back and guided into the shed by the usual means,) then toward the cloth, to insert the wire in the shed, and then toward the breast-beam, to bring the wire to the cloth-forming line, where the wire-head is held in position by the wire-box, before alluded to. It then returns for another wire.

The wire-heads are suitably retained in the inserting-carrier, while the wires are being inserted, by a spring, *l*, affixed to the vibrating staff *v*, which has a projection, *m*, (see fig. 10,) entering into the socket of the inserting-carrier, and terminating in a spherical

face, which engages with a countersunk cavity formed in the side of the wire-head.

The spring *l* allows the spherical face of the projection *m* to glide over the side of the wire-head when it is drawn into the socket until it enters the countersunk cavity, and also allows it to give back when the inserting-carrier is withdrawn from the wire-head, to return for a new wire, the wire-head being held in the wire-box by a guard entering a notch, *n*, in the under side of the wire-head.

The form and construction of the mechanism by which my invention is operated may be greatly varied, without essentially changing its character; as, for example, instead of moving the vibrating staff *v* in both directions, by a grooved cam, as above described, it may be drawn toward the cloth by a spring, and moved away from it by a single-action cam, by an arrangement represented in Figure 13.

A pulley, marked *o*, is affixed to the axis *e* of the lever-arm *b*, and has a strap, *p*, attached to it, one end of which is connected with a spiral spring, *q*, while the other passes around a guide-pulley, *r*, and is connected with the treadle *g*.

From this description it will be seen, that when the treadle *g* is raised by its cam, it will draw the vibrating staff *v* away from the cloth; then, when the cam allows the treadles *g* to descend, the spring *q* will draw it toward the cloth.

Having described my invention, and pointed out some of the modifications of which it is susceptible, without departing from its distinguishing principles,

What I claim as new therein, and desire to secure by Letters Patent, is—

The combination, with the withdrawing-hook, which draws the pile-wires from the cloth, of a supporting-bed, or its equivalent, and a latch-guard, by which the pile-wire heads are prevented from escaping from the withdrawing-hook while the pile-wires are being drawn out, substantially as specified.

Also, in combination with the withdrawing-mechanism herein described, an inserting-carrier, which receives the pile-wire heads from the withdrawing-mechanism, and inserts the pile-wire in the shed, when said inserting-carrier is operated by a vibrating staff, having imparted to it a parallel motion, and maintained in a proper position while moving toward and from the cloth, substantially as specified.

E. B. BIGELOW.

Witnesses:

NANCY E. MEANS,

HERBERT T. WHITMAN.