2 Sheets--Sheet 1.

E. K. DAVIS, dec'd.

SUSAN C. DAVIS, Adm'x.

Looms for Weaving Pile-Fabrics.

No. 149,292. Patented April 7, 1874.

Fig 1

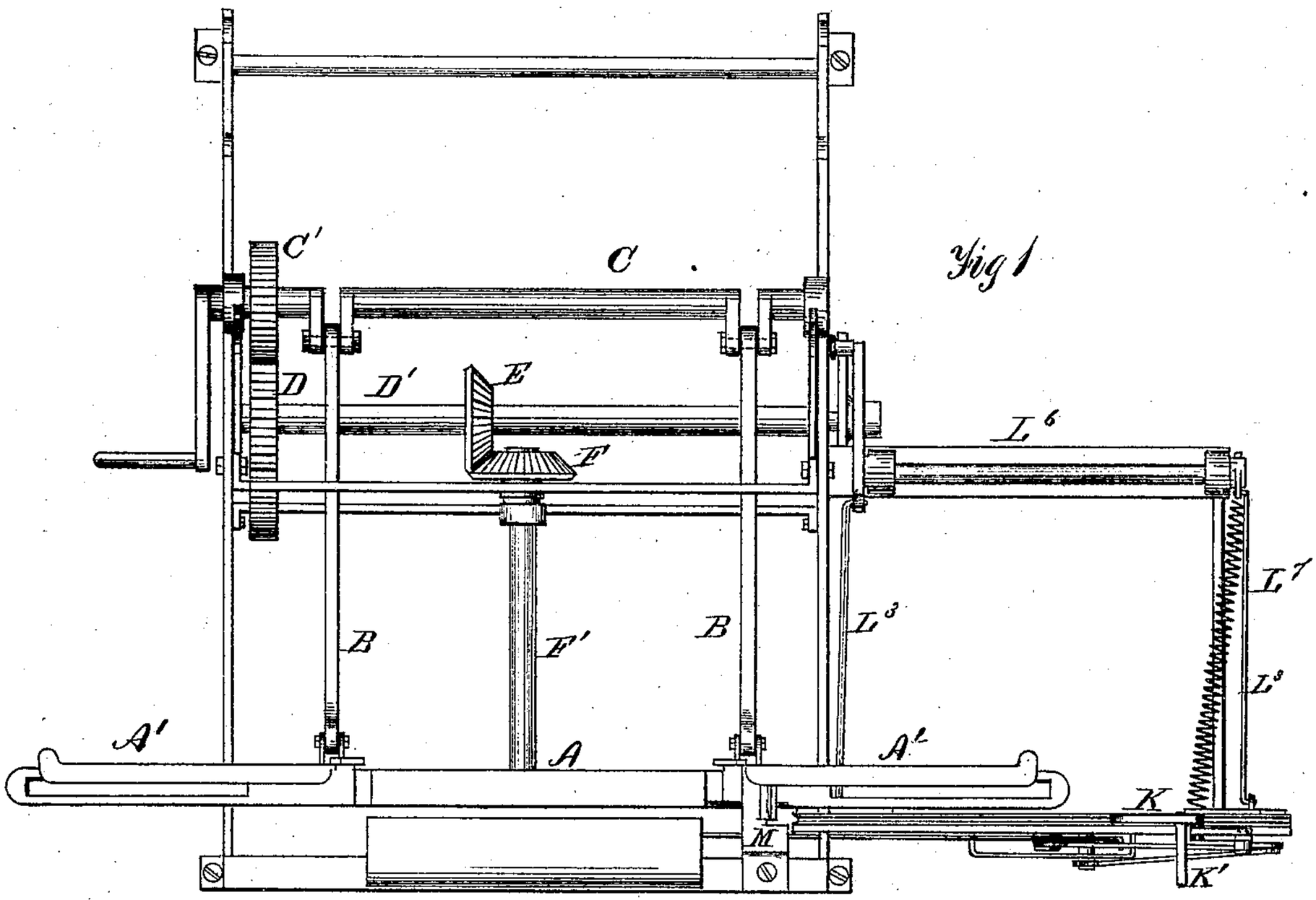
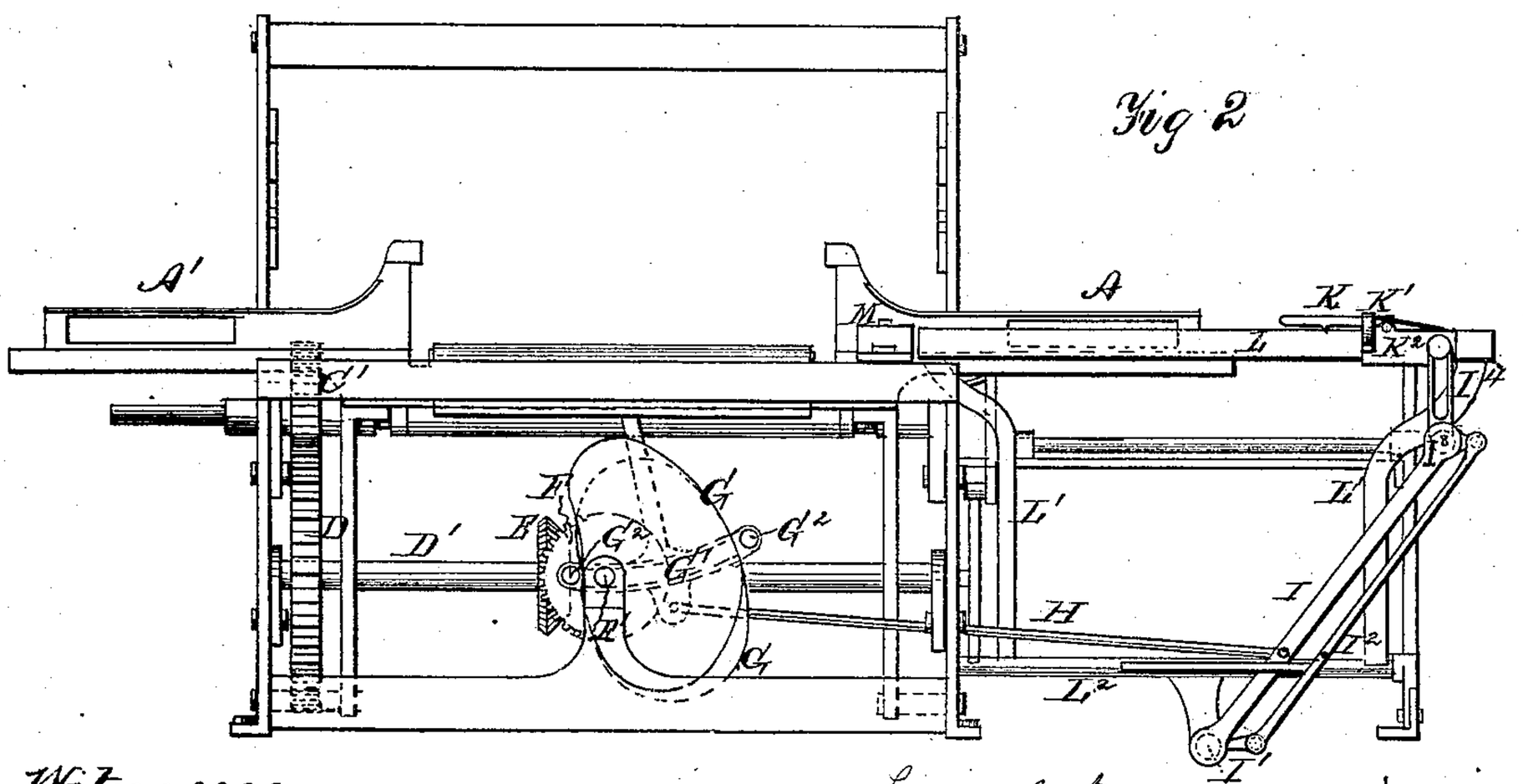


Fig 2



Witnesses
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E. Edwd. F. Eils

Susan C. Davis
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Attys

2 Sheets--Sheet 2.

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Fig 3

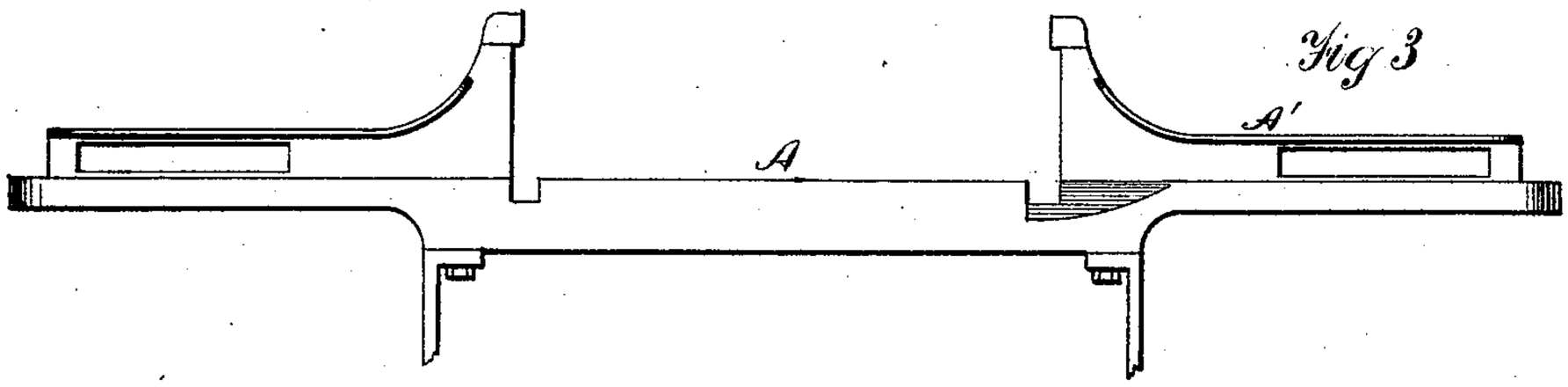


Fig 4

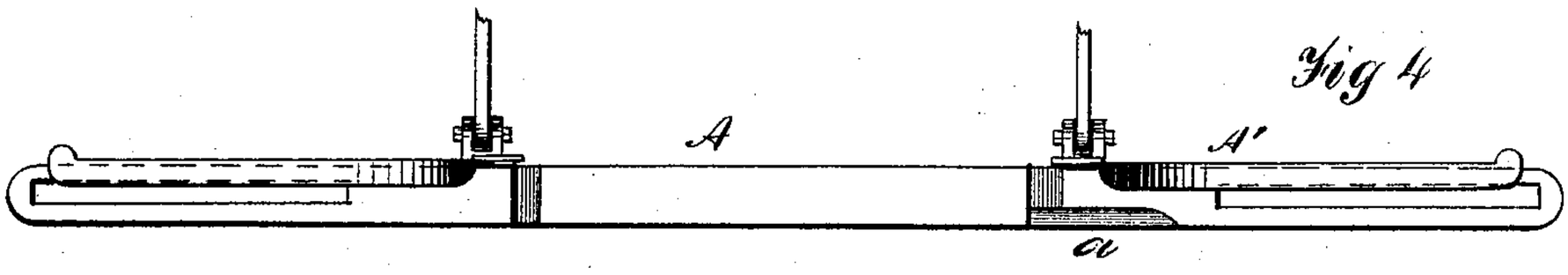
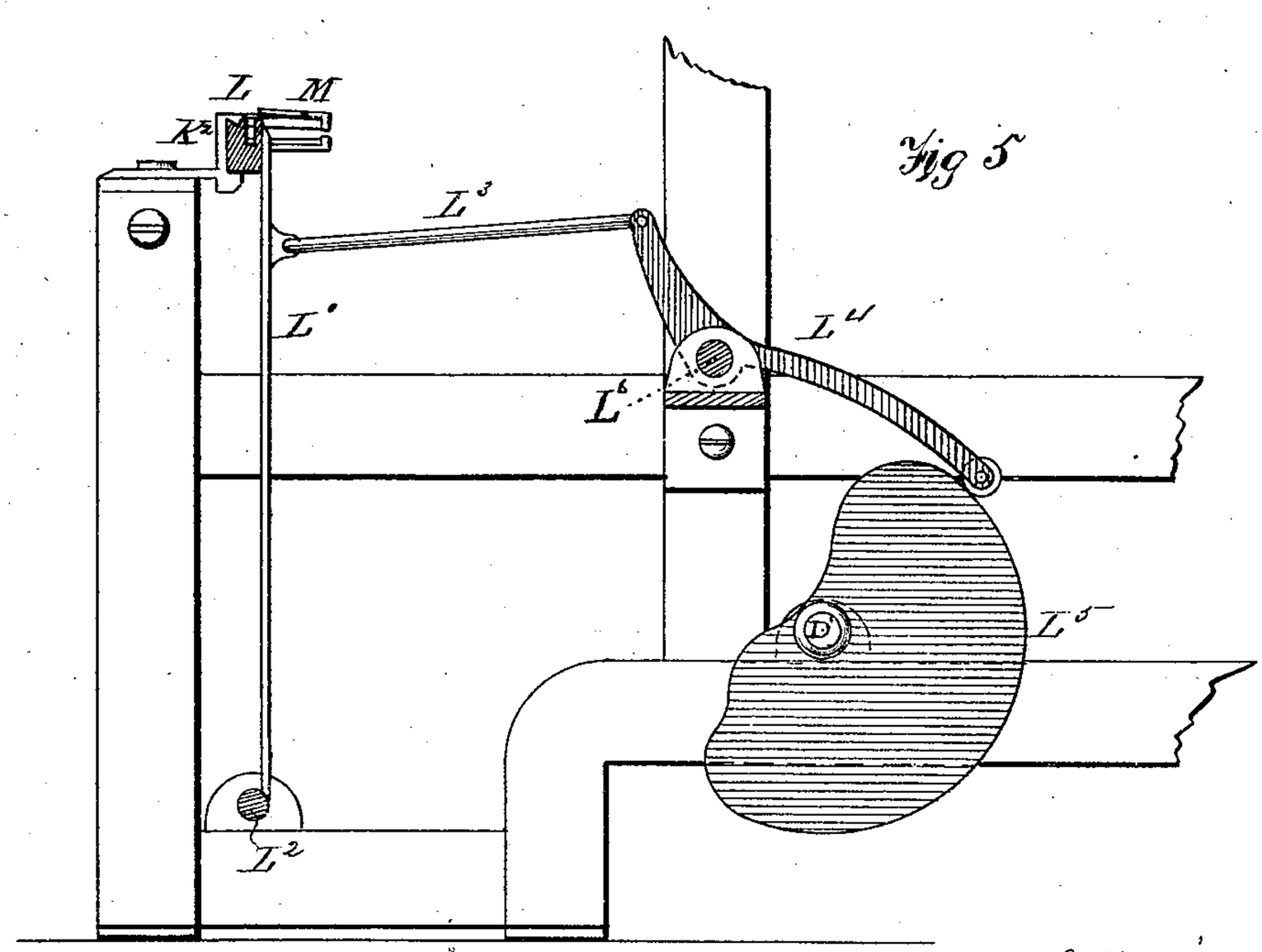


Fig 5



Witnesses

W. Bradford

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UNITED STATES PATENT OFFICE.

SUSAN C. DAVIS, OF NEW YORK, N. Y., ADMINISTRATRIX OF EZEKIEL K. DAVIS, DECEASED.

IMPROVEMENT IN LOOMS FOR WEAVING PILE FABRICS.

Specification forming part of Letters Patent No. **149,292**, dated April 7, 1874; application filed March 26, 1873.

To all whom it may concern:

Be it known that EZEKIEL K. DAVIS, late of the city, county, and State of New York, deceased, did invent certain new and useful Improvements in Looms for Weaving Pile Fabrics; and I, SUSAN C. DAVIS, his administratrix, of the same place, do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making part of this specification, in which—

Figure 1 is a top or plan view. Fig. 2 is a front elevation. Fig. 3 is an elevation of the lay. Fig. 4 is a plan of the same. Fig. 5 is a vertical transverse section of the wire-trough and the mechanism which operates it.

The same letters are employed in all the figures in the designation of identical parts.

The said E. K. DAVIS, in his lifetime, took out Letters Patent for improvements in looms for weaving pile fabrics, such improvements relating especially to the mechanism for operating the wires. The improvements to which the present application applies relate to certain modifications of the loom described in said former Letters Patent; and consist, first, in an improved device for operating the catch which draws the wire from the piles and afterward returns it to the shed, in which, by means of two cams, the said catch is positively actuated in both directions with a diminution of friction and a convenience of adjustment not attained by the original mechanism; also, in combining with the catch and cam a parallel motion, by which the catch is impelled in straight lines and with equal power through all parts of its path; also, in using, in combination with a shuttle-box, in one piece with a lay, a wire-trough oscillating on a fixed horizontal axis, and in the same plane with the lay, and having two parallel grooves in its upper edge, one to receive a wire-carrier sliding in it while the other holds the wire. In Wield's patent, No. 505, of A. D. 1855, a somewhat similar device was used for a wire-trough; but in that case the carrier and groove were overhung so as to pass over the shuttle-box; and it could not be used in combination with shuttle-boxes in the same plane; also, in combining with a lay, in one piece with the shuttle-box, a wire-trough oscillating on a horizontal axis, and always parallel with lay and race. In the original patent of said DAVIS the shuttle-boxes were separate from the lay, and were made to recede as the race came up to the wire-trough. In other cases a lay and race in one piece have been used in combination with mechanism for drawing the wires from the pile, either using only two wires, which were permanently attached to the reciprocating arm made to shift them from the pile to the shed, or having independent drawing and returning devices employed without the use of a wire-trough, or having a wire-trough swinging on a vertical axis and returning the wire to the shed at an angle to the line in which it is drawn from the pile; also, the combination, with the wire-trough oscillating on a horizontal axis, of a rock-shaft, lever, and cam, by means of which the power which operates the former is applied at both ends thereof, to insure its constant parallelism.

In the annexed drawings, a loom is shown embodying these improvements, in which A is the lay, having the race A′ permanently attached thereto. It oscillates upon a horizontal axis in the usual manner, and is operated by connecting-rods B B from cranks on the shaft C, on which is a spur-wheel, C′, meshing into another spur-wheel, D, on the shaft D′, carrying, also, a bevel-wheel, E, which drives the wheel F on the shaft F′, at right angles to the shaft D′. On this shaft F′ are fastened, by set-screws passing through their collars, by means of which they can be adjusted, two cams, G G, revolving in parallel planes. A slotted segment, G′, is placed between the cams, and embracing the shaft F′ and having upon each end and on opposite sides studs on which are friction-rollers G^2 G^2, bearing, respectively, against the edges of the two cams, on opposite sides of the shaft, so that, as the cams revolve, the segment is made to swing on the arm, by which the segment is suspended from the breast of the loom. The segment has a lug attached to its lower side by which the horizontal connecting-rod is operated. The other end of this rod is pivoted to the oscillating rod I, turning on a wrist-pin, I′, attached to an arm on the shaft I^2. A parallel wrist-pin, similarly supported, carries the rod I^2, which is pivoted above to the horizontal arm of a bell-crank lever pivoted to the rod I at I^3. The vertical arm of the

bell-crank lever I^4 is slotted and embraces a stud on the side K^2 of the reciprocating catch. This mechanism imparts a horizontal action to the catch, and applies the power equally in all positions of the latter. The catch K is formed to engage the hooked ends of the wires in the wire-box, and a horizontal arm, K^1, sets up the ends of the wires in the wire-box M. These parts are shown in the original loom patented by said DAVIS. They are attached to a slide, K^2, which moves in grooves in the upper and lower faces of the wire-trough. In said original patent there is only one slot which serves as a guide for the slide, and also for receiving the wire drawn from the pile. This slot passing entirely through the wire-trough, it was necessary to provide a pin to support the wire when drawn from the pile, and also to provide the means for retracting it, so as to be out of the way of the slide. In this improved loom the wire is drawn into an independent parallel groove, which supports it along its whole length, and so the pin is not required. The wire-trough is supported by arms L^1, which oscillate on the horizontal shaft L^2, to which they are fastened, as is also the arm H^2, which carries the rods I I^2. As the axis L^2 is parallel to the axis of the lay, protracted, it follows that the trough will always be parallel to the lay and the race. An oscillating motion is communicated to the trough by rod L^3 extending from the arms L^1 to arms attached to the shaft L^6. The lever L^4 fastened to said shaft carries a friction-roller, bearing on the edge of a cam, L^5, on the shaft D^1. A spring, L^7, extending from the arm L^1, to a short extension of the corresponding arm on the shaft L^6, below the shaft, keeps the friction-roller in contact with the edge of the cam, and, as it revolves, the wire-trough is oscillated in proper relation to the motion of the lay, so as to draw the wires and return them in the manner contemplated by the said original patent.

What I claim as being the invention of the said E. K. DAVIS, and desire to secure by Letters Patent, is—

1. In combination with the reciprocating wire-catch of a loom for weaving pile fabrics and connecting operative mechanism, two cams arranged to act alternately in shifting the catch, by means of a slotted swinging segment, substantially as set forth.

2. In combination with the reciprocating catch and operating cams, the parallel motion consisting of the rods I I^2 and bell-crank lever I^4 and provided with a slot, substantially as set forth.

3. In combination with a shuttle-box in one piece with the lay, a wire-trough oscillating upon a horizontal axis and arranged to move up to and in the same plane with the shuttle-box, and having on its upper edge two parallel grooves, one to receive a narrow wire-carrier, sliding within it, and the other to receive and retain the wires as withdrawn and reinserted, substantially as set forth.

4. In combination with the lay constructed in one piece with the shuttle-box, a wire-trough parallel to the lay and race, and oscillating on a fixed horizontal axis and in the same, or nearly the same, plane with the shuttle-boxes, so that the boxes do not run under the trough, and the withdrawing and inserting catch-slide moving on the trough, substantially as set forth.

5. In combination with the wire-trough oscillating upon a horizontal axis, the parallel rock-shaft L^6, connected to both arms of the trough, lever L^4, and cam L^5, substantially as set forth.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

SUSAN C. DAVIS,
As Administratrix of the estate of
E. K. Davis, deceased.

Witnesses:
JOHN CROSSLEY, JR.,
RICHARD G. DURKIN.