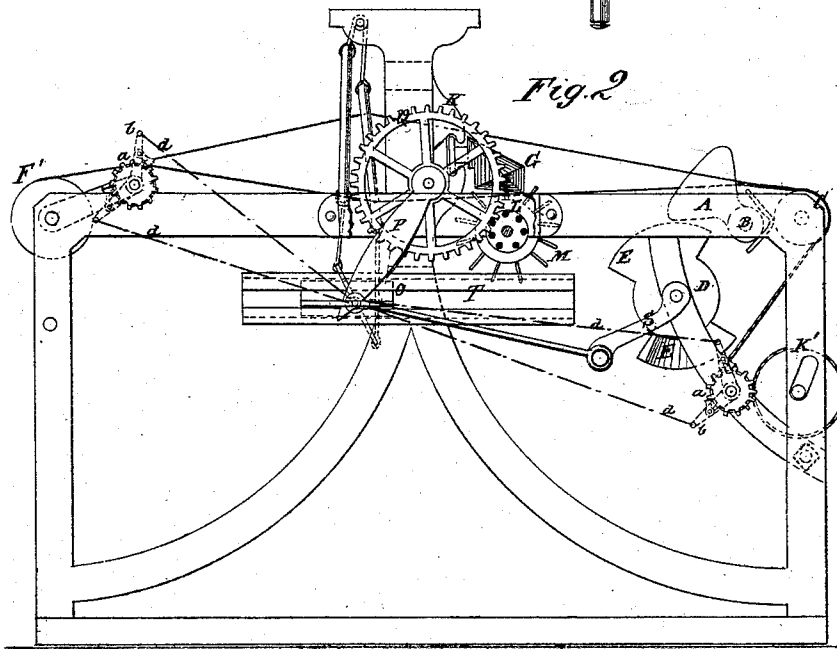
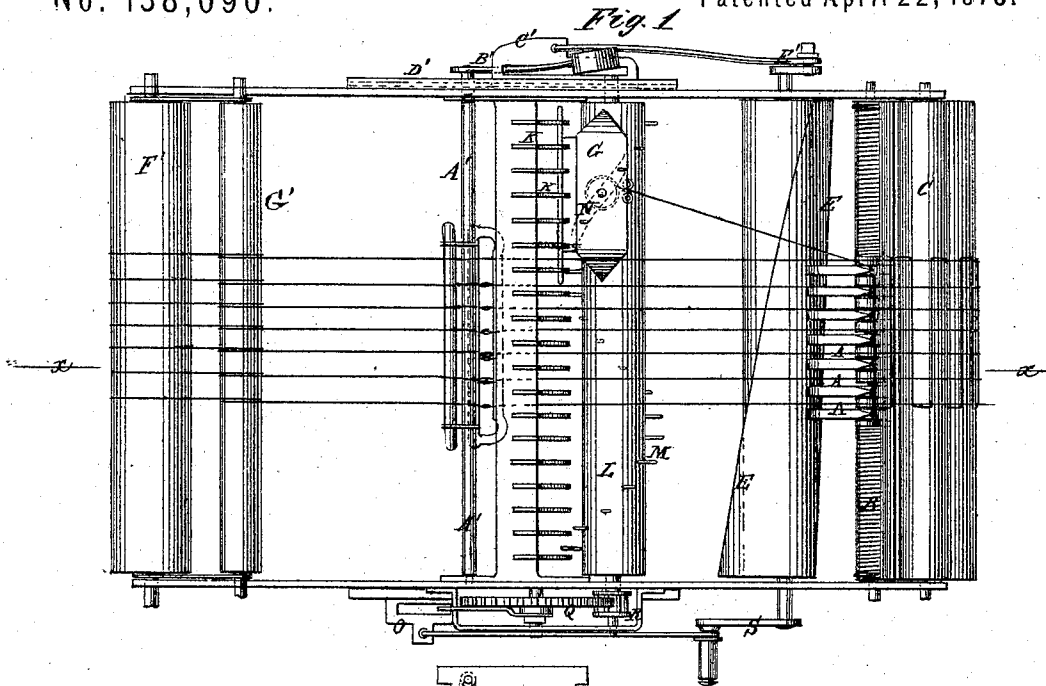


S. HOLDSWORTH.
Looms for Weaving Wire.

No. 138,090.

Patented April 22, 1873.



Witnesses:

A. W. Almquist
C. Sedgwick

Inventor:

S. Holdsworth

PER

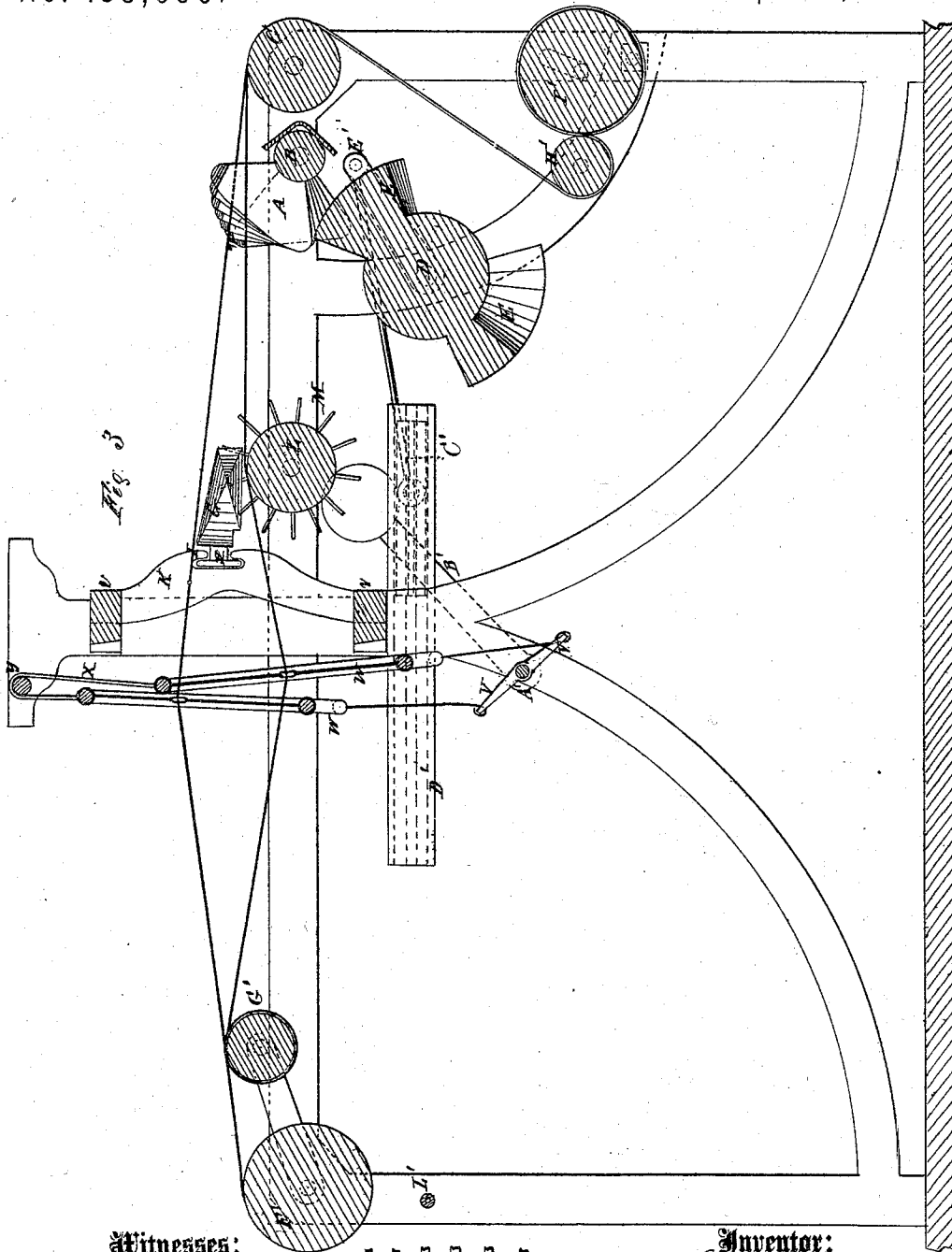
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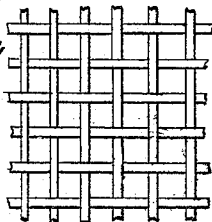
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UNITED STATES PATENT OFFICE.

SAMUEL HOLDSWORTH, OF MASPETH, ASSIGNOR TO HIMSELF AND JAMES BLACK, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN LOOMS FOR WEAVING WIRE.

Specification forming part of Letters Patent No. **138,090**, dated April 22, 1873; application filed January 18, 1873.

To all whom it may concern:

Be it known that I, SAMUEL HOLDSWORTH, of Maspeth, in the county of Queens and State of New York, have invented a new and Improved Wire-Cloth Loom, of which the following is a specification:

The invention consists in the improvement of looms, as hereinafter described and pointed out in the claim.

Figure 1 is a plan view of my improved loom. Fig. 2 is a side elevation. Fig. 3 is a longitudinal elevation taken on the line *x x* of Fig. 1. Fig. 4 is a plan of a section of the fabric which the loom is designed to make.

Similar letters of reference indicate corresponding parts.

A represents the series of blades, for beating up the weft, which consists of small triangular or appropriately triangular-shaped pieces of metal, and are pivoted at the apex side by side on a rod, B, behind the front beam or roll C of the loom, with their bases fronting the shuttle-race, and lower corners resting on a cam-roller, D, so that the upper corners can be thrown up between the warp-wires, as shown in Fig. 3, by the spirally-arranged ribs E of the cam-roller. There are two of these ribs to correspond with the two throws of the shuttle during each revolution of the drive-shaft, and they are spiral to cause the blades to act successively. G represents the shuttle, which has a T-shaped projection, H, on one side fitted in the notches I of the vertical plates K, forming a horizontal way, and it rests on the top of the roller L placed in front of the plates a little below the notches, and having the radial pins M arranged in a spiral row and working in an oblique slot, N, (see dotted lines in Fig. 1,) in the bottom of the shuttle to force it upward and back, the roller being turned to the right for moving the shuttle across in one direction, and to the left for moving it in the other direction. This motion is imparted to the roller by a reciprocating piece, O, arm P, and wheels Q and R, the said sliding piece being worked to and fro in ways T on the loom side by a crank, S, on the shaft of the roller D, and having a slot through which the arm P projects at the free end. The

plates K are arranged in front of the heddles in stationary supports on the cross-beams *b b*, the one above and the other below the warp.

In practice the shuttle will have a circular cavity or socket in the upper surface for a flat circular spool or bobbin, and it will have a hole through the front side at or about the center for the weft to run out.

The harness-frames W, being connected together at the top by straps X passing over a roller, Y, in the usual way, are connected at the bottom to the arms V V of a rock-shaft, A', one upon one side and the other on the other side. At one end of the rock-shaft, and outside of the loom-frame, is a weighted arm, B', extending upward and passing through a horizontal sliding piece, C', arranged in ways D' on the side of the loom-frame, and worked by a crank, E', on the end of the shaft of the roller D. The slot in this sliding piece, through which the weighted arm passes, is long enough to allow the arm to complete the changing of the harness by falling after it has been raised to and carried a little past the vertical line by the slide, and the weight of the arm is sufficient to continue the motion without the aid of the slide; also to hold the harness in position after the shifting.

To effect the shifting the weighted arm has only to be raised to the vertical line or slightly beyond by the slide, in which it is greatly aided by the tension of the warps, so that its weight being only little more than the force of the tension the slide has little actual work to do, and this is accomplished without much friction; also, in holding the harness there is no loss by friction; whereas with cams and treadles there is loss by the continuous rubbing of the faces of the cams on the treadles. I also dispense with the cam-shaft.

For letting off the warp and taking up the fabric I place a small roll, G', a little in advance of the warp-roll F', around which the warps are carried one turn; another roll, C, at the front of the loom, over which the fabric passes, and another one, H', alongside of the cloth roll I', under which the fabric passes before going onto the cloth roll, which is so mounted in slotted bearings as to constantly bear against the said roller H', no matter

what is the size of the roll of fabric on it, and so receive a uniform motion from it.

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

1. The combination, with the blades A, of the rotating cam-roll D, having reverse cams, substantially as specified.

2. A shuttle-driver, consisting of a rotary reciprocating-roller, having a spiral row of pins engaging an oblique slot in the shuttle, substantially as specified.

3. The combination of the stationary plates K, shuttle G, and shuttle-driving roller L,

having the pins M arranged spirally, substantially as specified.

4. The combination of the oscillating-shaft A', arms V V, weighted arm B', and a device for actuating the latter with the harness, substantially as specified.

5. A shuttle-driving roller, provided with pins, arranged in the planes of the plates K, as and for the purpose described.

SAMUEL HOLDSWORTH.

Witnesses:

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