Sheet 1. 2 Sheets.

Seaman & Henderson.

Hand Loom

No. 50,041. Patented Sept. 19, 1865.

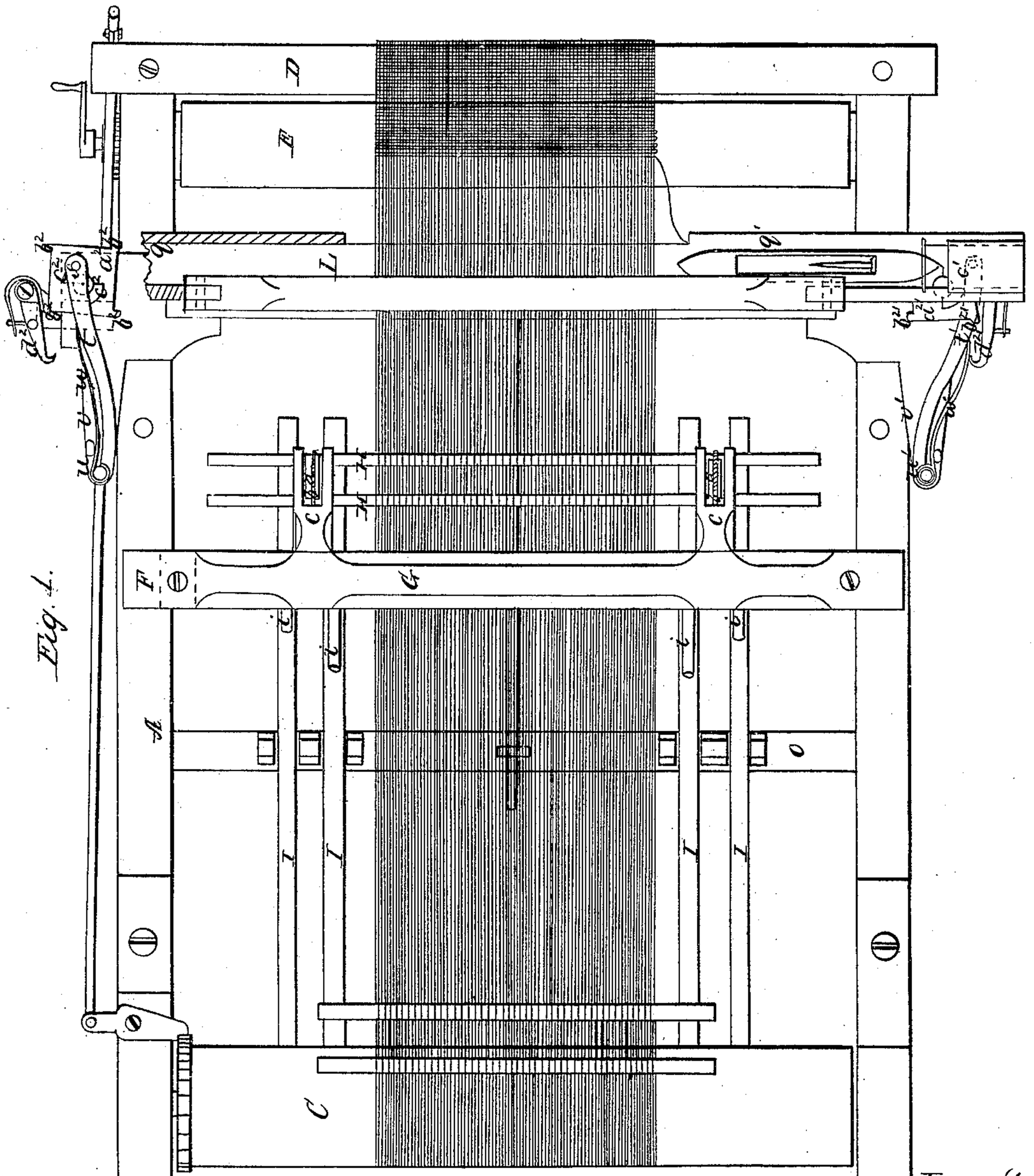

Fig. 1.

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Sheet 2 - 2 Sheets.

Seaman & Henderson.

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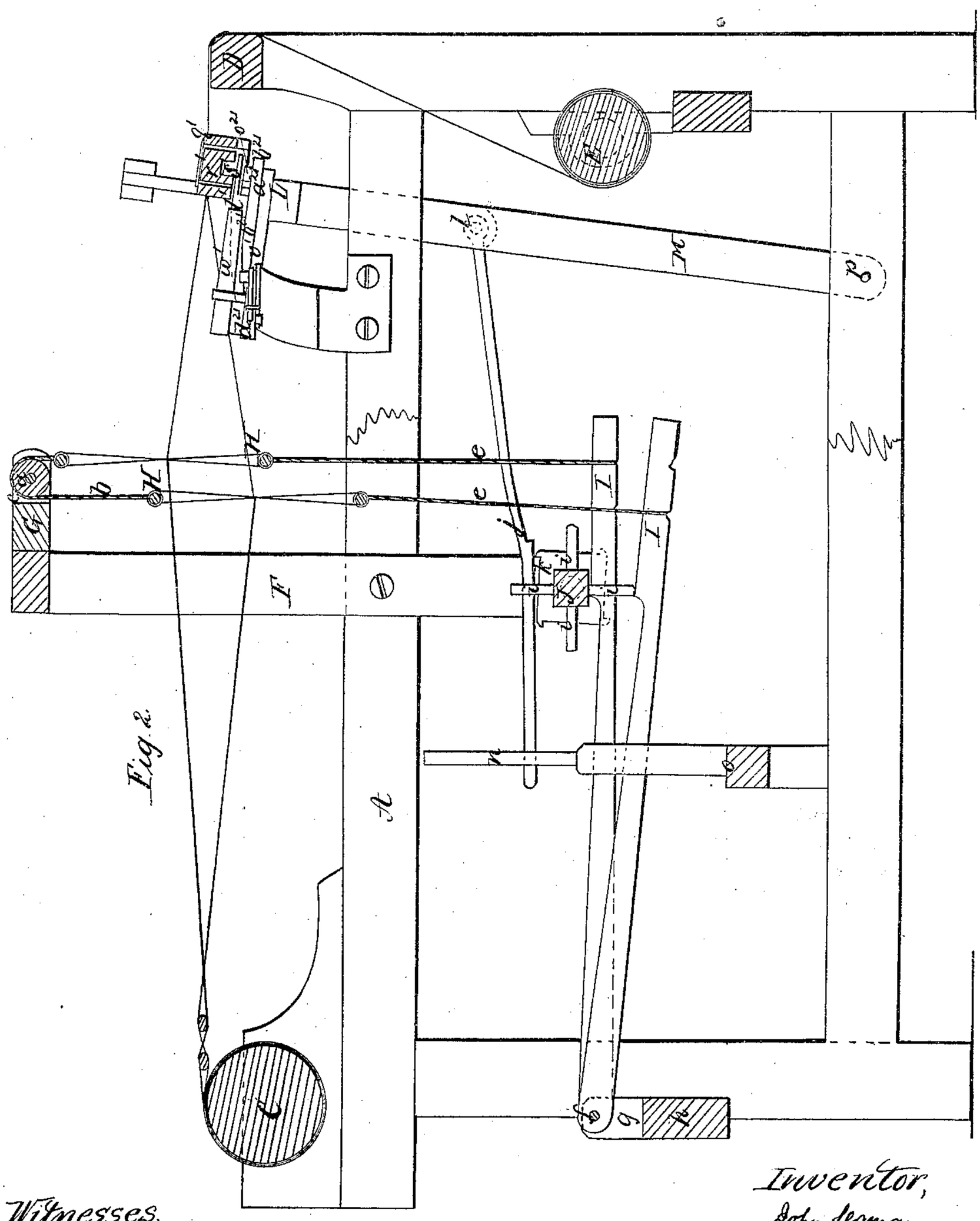

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN SEAMAN AND WM. Y. HENDERSON, OF ANDOVER, NEW YORK.

IMPROVEMENT IN HAND-LOOMS.

Specification forming part of Letters Patent No. **50,041**, dated September 19, 1865.

To all whom it may concern:

Be it known that we, JOHN SEAMAN and WILLIAM Y. HENDERSON, of Andover, in the county of Allegany and State of New York, have invented a new and useful Improvement in Looms; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention, a portion of one of the shuttle-boxes being removed the better to display other parts. Fig. 2 is a longitudinal vertical section of the same.

Similar letters of reference indicate like parts.

The object of this invention is to construct a hand-loom so that the motions both of the harness and of the shuttle shall depend upon the motion of the lay or batten. The harness motion is effected by an arm extending from the batten and connected by a pivot with a lever-catch that acts upon a lantern-shaped cam mounted on the treadle-shaft, in combination with suitable arms or tappets inserted in said treadle shaft in such a manner that for each stroke of the batten a quarter-revolution (more or less) is imparted to the treadle-shaft and the harness is changed by the action of the tappets on the treadles. The shuttle-motion is effected by means of sliding blocks secured in each end of the batten and operated each by a spring lever or driver, which is set automatically by the combined action of square disks, hook-catches, and cams in such a manner that on each forward stroke of the batten a partial revolution is imparted to each of the square disks and the driver on one end of the batten is set, while that on the other end (having been set on the previous stroke) is liberated, and by its action on the sliding block connected to it the shuttle is propelled to the opposite end of the batten.

A represents a frame, made of wood or any suitable material in the usual form and shape of frames for looms. One end of this frame forms the bearings for the yarn-beam C, and the other end supports the breast-beam D, which is situated above the cloth-beam E, having its bearings in suitable boxes secured to the uprights of the frame A in the usual manner.

From the upper side of the side rails of the loom rise two uprights, F, which support the heddle-bearer G, and from this heddle-bearer extend two forked arms, *c*, which form the bearings for the axles of rollers *a*, supporting cords *b*, from the ends of which the heddles H are suspended. Said heddles are constructed in the usual manner, each of two shafts, one on top and one on bottom, and the lower shafts connect by wires *e* or other suitable connections with the treadles I. These treadles are connected by pivots *f* to standards *g*, rising from a cross-bar, *h*, of the frame A, or they may be arranged in any other convenient position, and they are alternately depressed by the action of tappets *i*. These tappets are secured in the proper positions in the treadle-shaft J, to which an intermittent rotary motion is imparted by the action of a hooked lever-catch, *j*, on a lantern-shaped disk, *k*, which is mounted on said treadle-shaft, as shown in Fig. 2 of the drawings.

The lever-catch *j* is connected by a pivot, *l*, to an arm which is suspended from the sole of the lay or batten L, and it (the lever-catch) is guided by a slotted standard, *n*, rising from the cross-bar *o* of the frame A. It is so shaped that on the forward stroke of the lay its hook catches over one of the projecting corners of the disk *k*, and on the backward stroke of the lay a quarter-revolution is imparted to said disk and to the treadle-shaft and by the consequent action of the tappets *i* on the treadles the requisite harness motion is produced. It is obvious that more than two heddles may be operated by this arrangement, and we do not wish to confine ourselves to the precise number of heddles shown in the drawings. It must also be remarked that the disk *k*, instead of being made with four projecting corners or teeth, might be made with more or less such teeth; or, instead of this, wires might be inserted in its sides or two disks might be used connected by wires similar to pinions in watch or clock movements, though we use, by preference, a disk such as shown in the drawings, because the same can be easily made and secured to the treadle-shaft in the proper position.

The tappets *i* (shown in the drawings) con-

sist of simple wires inserted in the treadle-shaft at right angles to each other, so as to correspond to the number of teeth on the disk *k*. If the number of these teeth is changed, the number and position of the tappets must be changed accordingly.

The lay L is supported by swords M, which have their bearings on pivots *p* in the bottom side rails of the frame A or on a rocking tree in the usual manner. Said lay is provided at each end of its shuttle-race with a box, *q* or *q'*, to receive the shuttle, and with a sliding block, *r'*, which acts on the shuttle and causes it to fly from one end of the shuttle-race to the other.

Each of the blocks *r'* is provided with a socket to receive a stud, *s s'*, which projects from the upper surface of the driver or spring-lever *t t'*. These drivers have their fulcra on pivots *u u'*, secured in arms *v v'*, which extend from the sole of the lay toward the heddle-bearer G, as clearly shown in the drawings, and they (the drivers) are subjected to the action of strong springs *w w'*, that have a tendency to force the same inward, causing the sliding blocks *r'* to bear against projections inside the boxes *q q'*.

In order to set the drivers and to release them at the proper intervals, cam-disks a^2 a^{21} are employed, which turn on suitable studs rising from the arms *v v'*, and which are situated under the sliding blocks *r'*, as shown particularly in Fig. 2 of the drawings. Said cam-disks are provided with four (more or less) teeth, b^2 b^{21}, on their peripheries, and with two (more or less) cams, c^2 c^{21}, on their upper surfaces; and as the lay moves in toward the heddles the teeth b^2 b^{21} catch against spring-hooks d^2 d^{21}, and a quarter-revolution (more or less, according to the number of teeth) is imparted to each of the cam-disks a^2 a^{21}. By this motion the cams c^2 c^{21} on the surfaces of the cam-disks are brought in contact with shoulders on the under side of the drivers *t t'*, and the drivers are forced back against the action of the springs *w w'*, and on the next stroke of the lay the driver previously set is released and allowed to impart to the sliding block an impulse which causes the shuttle to fly from one and of the shuttle-race to the other. At the beginning of the operation the cam-disks a^2 a^{21} are placed in such a position that while one of the drivers is being set the other is released, and vice versa, so that on each forward stroke of the lay one of the drivers is in the proper position to propel the shuttle.

It is obvious that the number of teeth on the peripheries of the cam-disks and the number of cams on their surfaces may be varied without altering the result, and we do not wish to confine ourselves in this respect to the precise arrangement shown in the drawings.

By this construction of the loom the operator is enabled to produce all the requisite motions of the loom by imparting to the lay an oscillating motion, for it will be readily understood that the let-off motion can be governed by the motion of the lay in any of the well-known methods.

We claim as new and desire to secure by Letters Patent—

1. The drivers *t t'* and cam-disks a^2 a^{21}, in combination with the lay L and with the shuttle of a loom, constructed and operating substantially as herein described.

2. The method herein described of producing the motion of the heddles and that of the shuttle by the action of the batten, as and for the purpose set forth.

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WILLIAM Y. HENDERSON.

Witnesses:
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