2 Sheets--Sheet 1.

J. WILLIAMSON.

Loom-Shedding Mechanisms.

No. 150,925. Patented May 12, 1874.

Fig: 1.

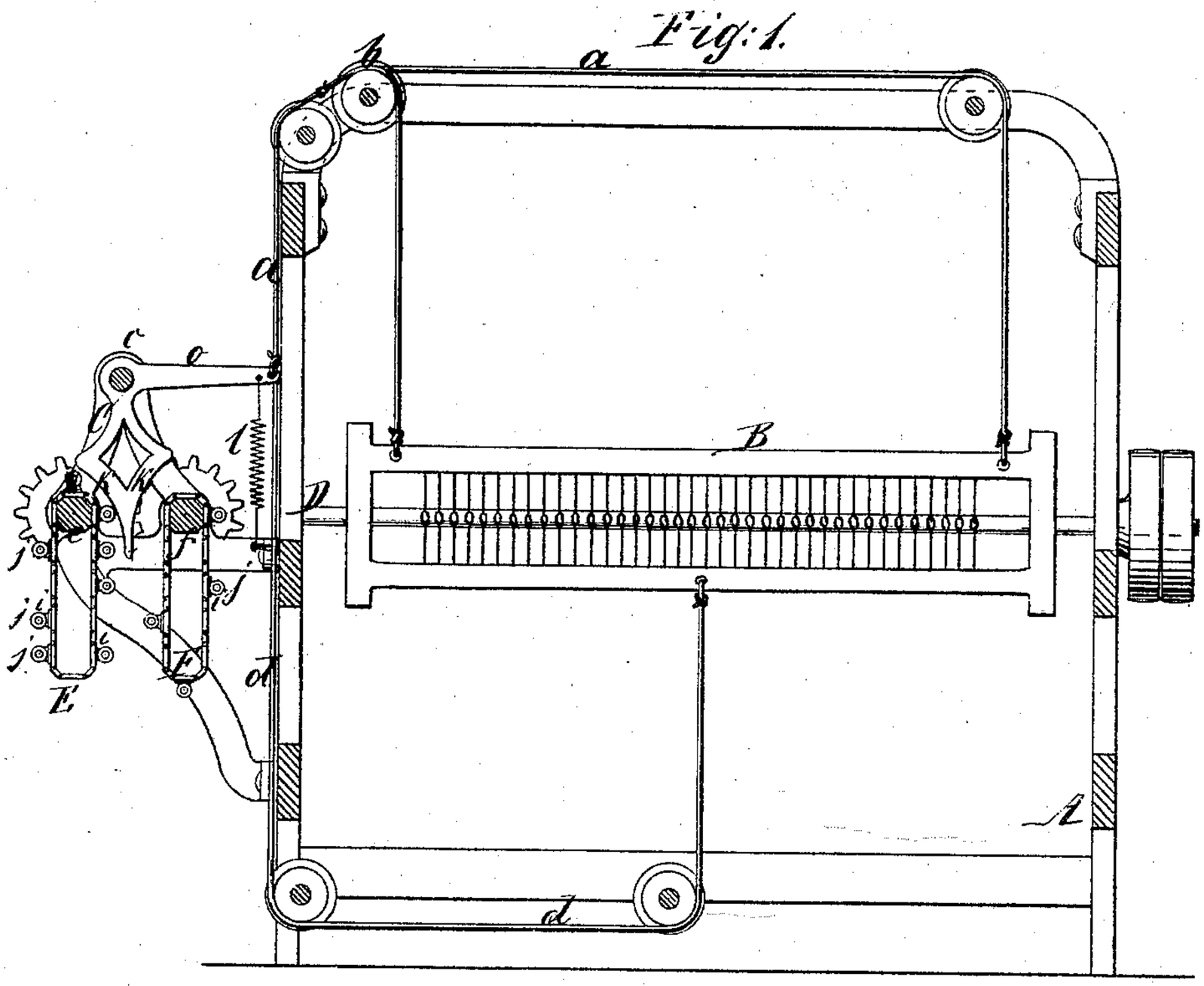
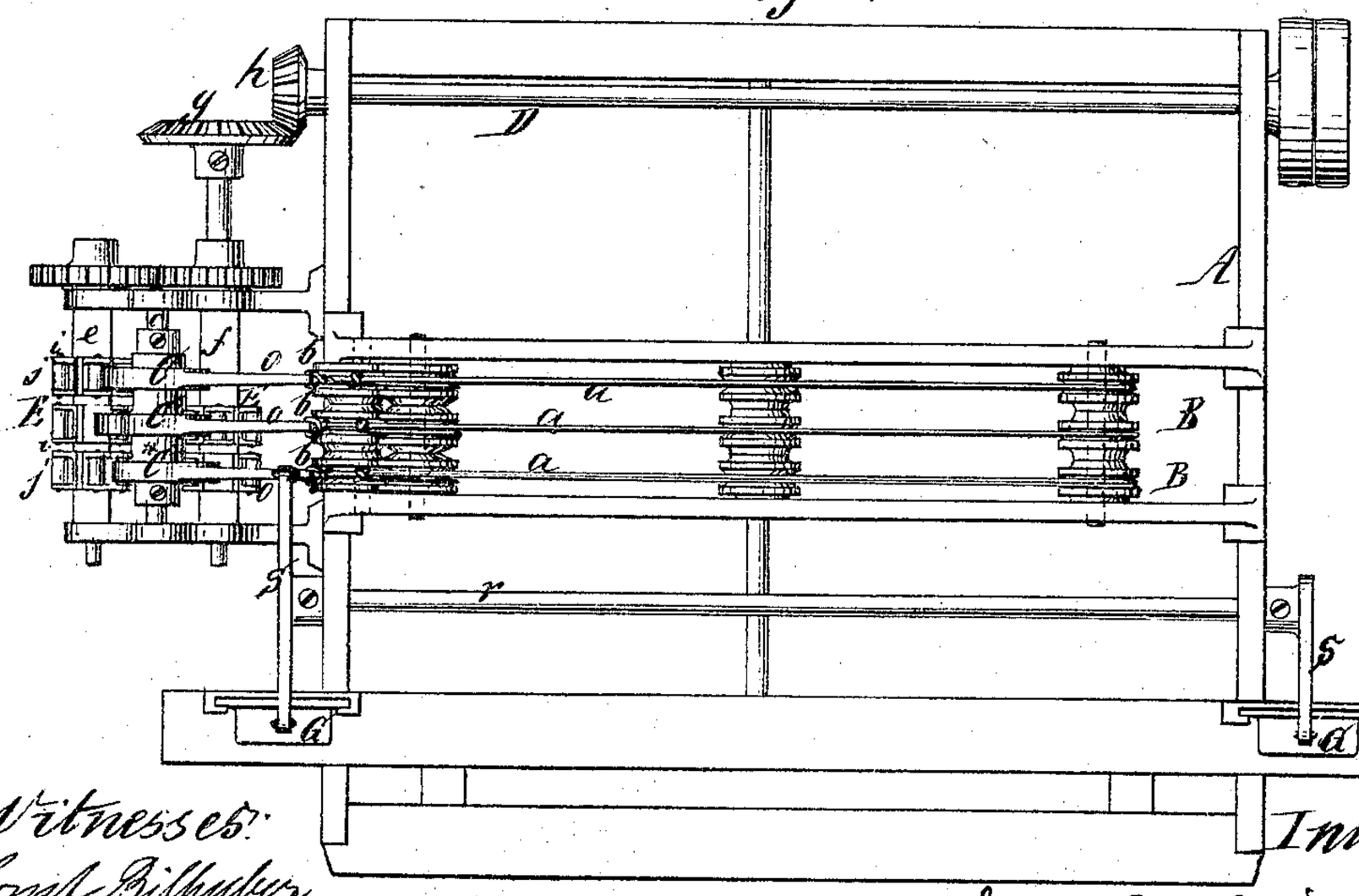


Fig: 2.



Witnesses:
Louis Bilhuber.
Henry Gentner.

Inventor.
Joseph Williamson
by Van Santvoord & Hauff
his attys

2 Sheets--Sheet 2.

J. WILLIAMSON.

Loom-Shedding Mechanisms.

No. 150,925. Patented May 12, 1874.

Fig: 3.

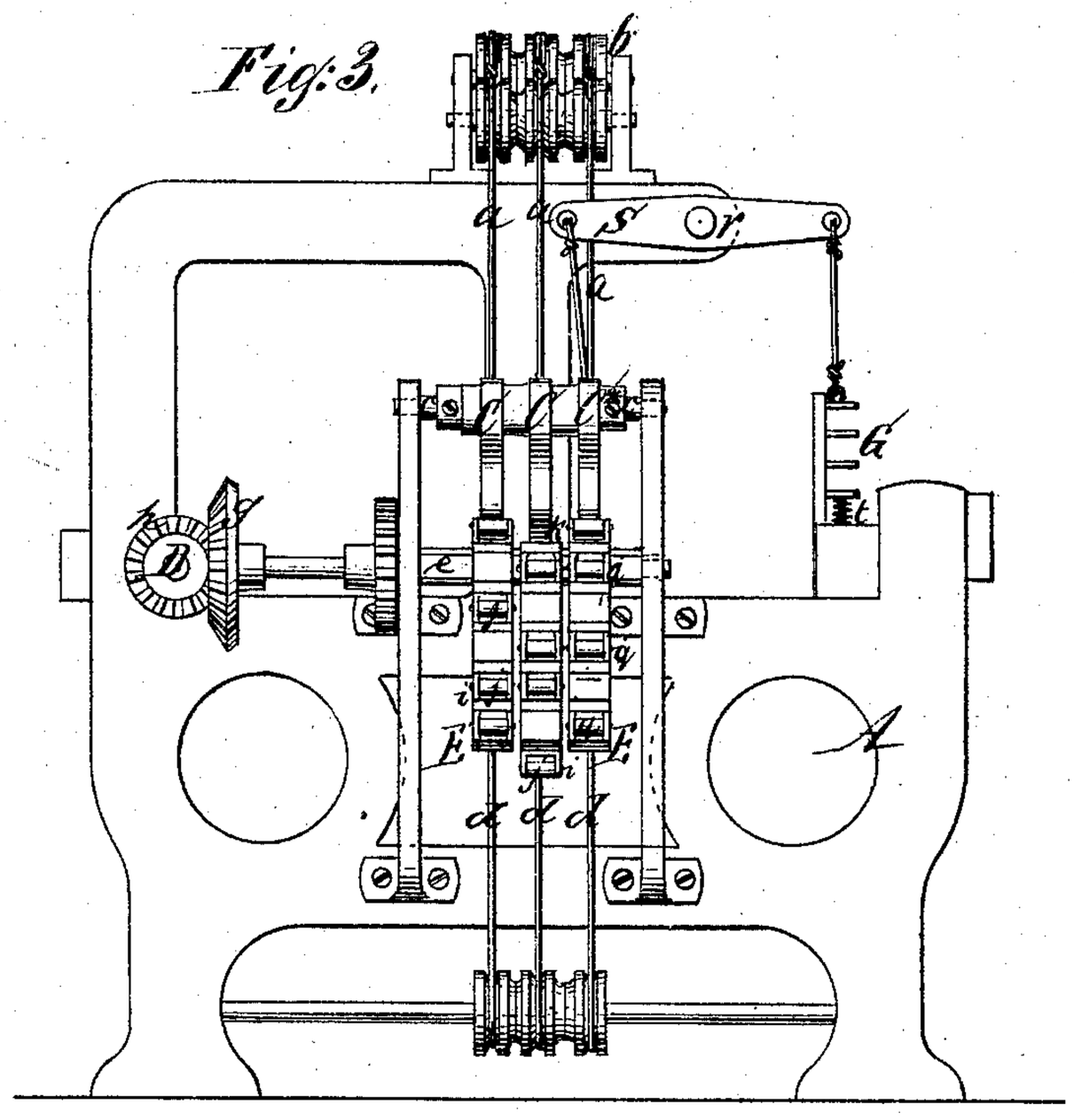


Fig: 4.

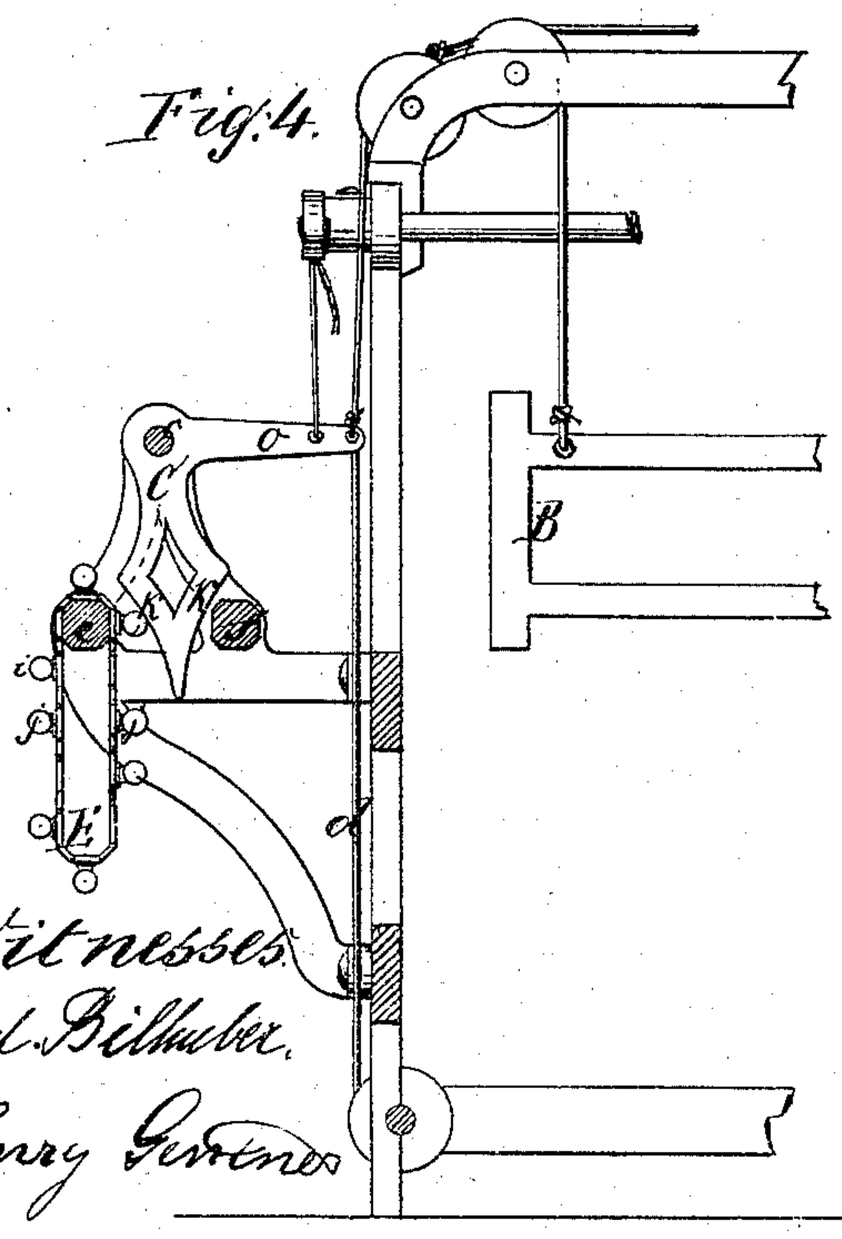


Fig: 5.

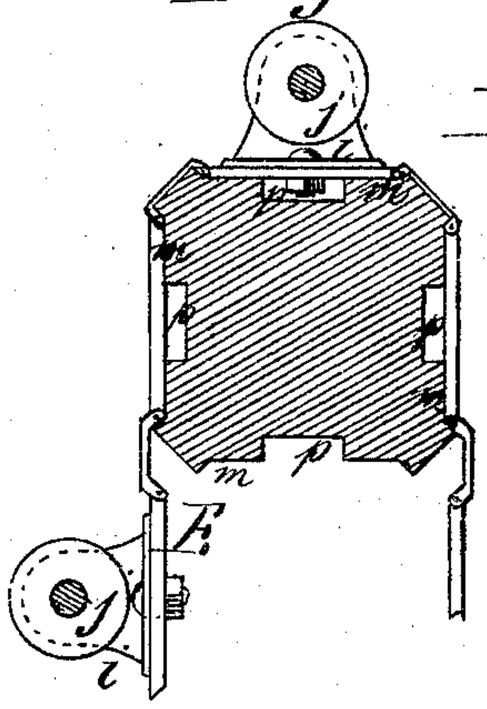
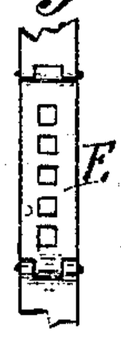


Fig: 6.



Witnesses.
Ernst Bilhuber.
Henry Gertner.

Inventor.
Joseph Williamson
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his Attys

UNITED STATES PATENT OFFICE.

JOSEPH WILLIAMSON, OF PASSAIC, NEW JERSEY.

IMPROVEMENT IN LOOM-SHEDDING MECHANISMS.

Specification forming part of Letters Patent No. **150,925,** dated May 12, 1874; application filed October 22, 1873.

To all whom it may concern:

Be it known that I, JOSEPH WILLIAMSON, of Passaic, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Looms; and I do hereby declare the following to be 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 drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention. Fig. 2 is a plan or top view of the same. Fig. 3 is an end view of the same. Fig. 4 is a detached sectional view of the mechanism for moving the drop-boxes. Fig. 5 is a transverse section of the shaft which carries the pattern-chain, in a larger scale than the previous figures. Fig. 6 is a detached plan of one of the leaves of the pattern-chain.

Similar letters indicate corresponding parts.

This invention consists in the combination, with the harness-moving mechanism of a loom, of two pattern-chains, which traverse shafts geared together so as to revolve continuously in opposite directions, said parts being combined with, and arranged on opposite sides of, levers having double cam-faces and arms which are connected directly with the top and bottom of the harness-frames, so that when such levers are moved in one direction by one of the pattern-chains the corresponding harness-frame is raised, and when the lever is moved in the opposite direction said harness-frame is depressed, and by these means the construction of the loom is materially simplified.

In the drawing, the letter A designates the main frame of my loom, which is of the usual form or construction. B are the harness-frames, which are suspended from cords *a* that pass over rollers *b* in the top of the main frame A, and are connected to arms *o* extending from cam-shaped levers C, one of which corresponds to each of the harness-frames. These levers swing on a common pivot, *c*, and their arms *o* connect also by cords *d* with the under edges of the harness-frames in such a manner that by swinging the levers in one direction the corresponding harness-frames are raised, and by moving said levers in the opposite direction the corresponding harness-frames are depressed. The levers C extend down between two square shafts, *e f*, which are geared together, so that they revolve in opposite directions, and which receive a continuous revolving motion from the driving-shaft D by means of gear-wheels *g h*, or by any other suitable mechanism. The square shafts *e f* carry the pattern-chains F F, the levers of which are connected to each other in the usual manner, so that, by the revolution of the shafts *e f* the pattern-chains are caused to move continuously in opposite directions past the levers C. On the leaves of the pattern-chains are secured lugs or ears *i*, (see Fig. 5,) which form the bearings for anti-friction rollers *j*, and said leaves are furnished each with a number of holes, (see Fig. 6,) so that the position of the lugs *i* can be changed to suit the pattern to be produced. The edges of the levers C are made curved, to form cams *k*, against which act the anti-friction rollers *j* of the pattern-chains. By the action of the two pattern-chains the levers C receive an oscillating motion on their pivots, and the harness-frames are alternately raised or depressed as the pattern demands, the cams K on the edges of said levers being so formed that each harness-frame is retained in its raised position for a sufficient length of time to allow the shuttle to pass though the shed, and, if desired, each harness-frame can be retained in its raised or depressed position for a number of successive picks by adjusting the lugs and anti-friction rollers on the pattern-chain accordingly. The weight of the harness-frames, which acts upon the levers C, and has a tendency to force the same outward against the pattern-chain E, may be balanced by a spring, *l*, one to each of the levers, as shown in Fig. 1, or, if desired, and if the nature of the pattern allows it, the pattern-chain F may be omitted and the springs *l* made of such a tension that they force their levers out against the pattern-chain E, thus keeping the harness-frames always in an elevated position, while the pattern-chain E serves to depress the same at the proper intervals.

For certain simple patterns the leaves carrying the anti-friction rollers may be secured directly to the shafts *e f*. These shafts are provided with recesses *m*, as shown in Fig. 5, for the purpose of receiving the leaves, and in said shafts are also cavities *p*, to make room

for nuts which serve to retain the lugs which carry the anti-friction rollers.

On the leaves of the pattern-chain E are also secured studs or anti-friction rollers *q*, of various height, which act on a cam-shaped bell-crank lever, C*, that connects by a rock-shaft *r* and lever S with the drop-box G. By the action of the roller-studs *q* on the lever C*, therefore, the drop-boxes are brought in the required position as the pattern demands, and by springs *t*, which have a tendency to draw the drop-boxes down, the lever C* is forced up against the pattern-chain E as far as the roller-studs will allow. By this arrangement the drop-boxes are operated by the direct action of the pattern-chain, without any intermediate mechanism.

The levers can be shaped so as to make either a close or open shed-loom.

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

1. The lever C, having the double cam-faces *k* and arm *o* and connected directly with the top and bottom of the harness-frame, for raising or depressing the same, in combination with the pattern-chains E E, having friction-rollers *j j*, substantially as herein shown and described.

2. The shafts *e f*, carrying the pattern-chains E E, geared together so as to revolve continuously in opposite directions, in combination with the double cam-faced levers C, having the arms *o* connected directly with the top and bottom of the harness-frame, in the manner and for the purpose specified.

3. The standards *i*, which form the bearings for anti-friction rollers *j*, in combination with the leaves of a pattern-chain, said standard and leaves being so arranged that the position of the standards can be readily changed, substantially as set forth.

This specification signed by me this 18th day of October, 1873.

JOSEPH WILLIAMSON.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.