

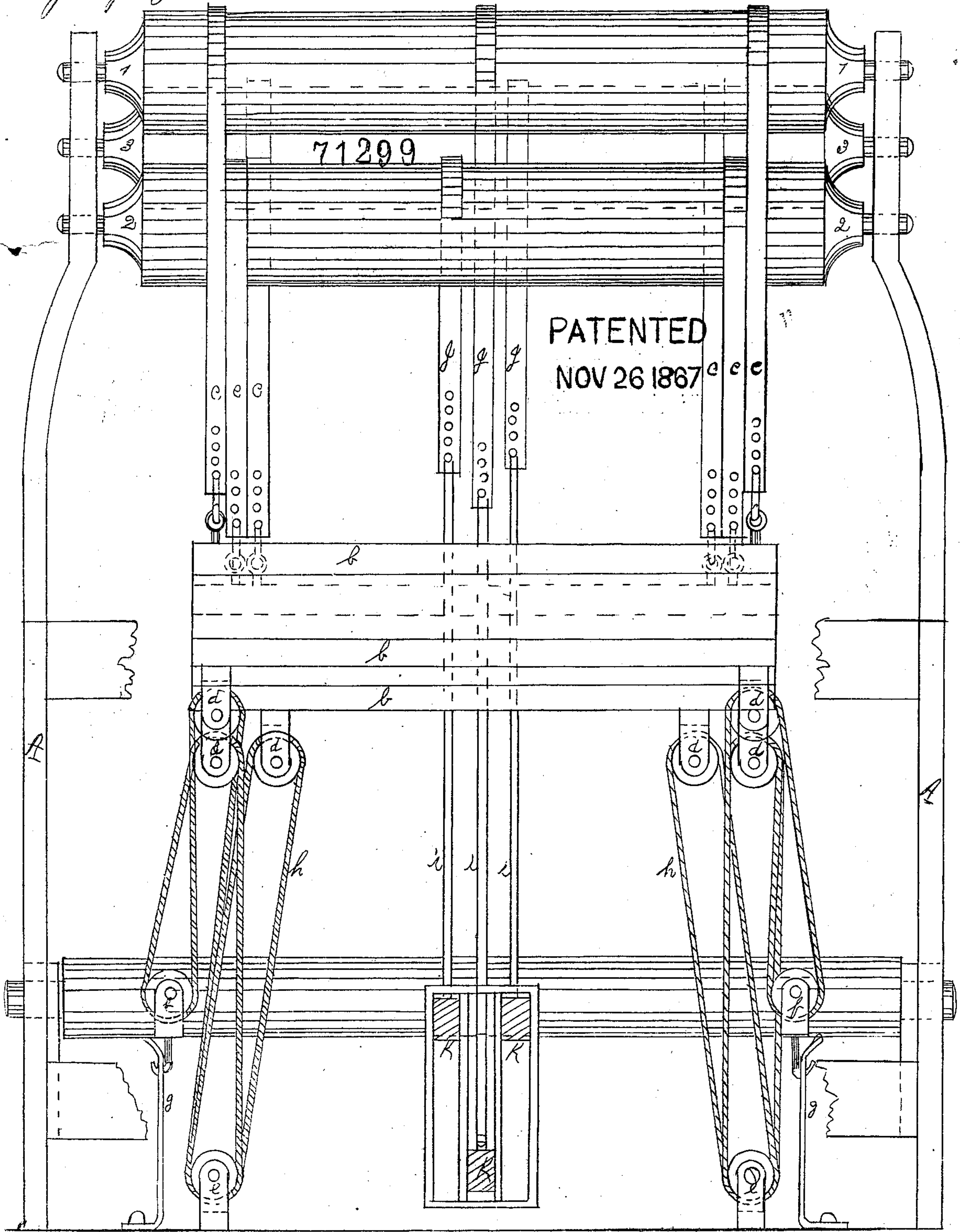
2. Sheets.
Sheet. 1.

W^m Hainsworth's

Improvement in Power Looms

Witnesses
Wm. Brown
George Glaue

W^m Hainsworth
Inventor



W^m Hainsworth's

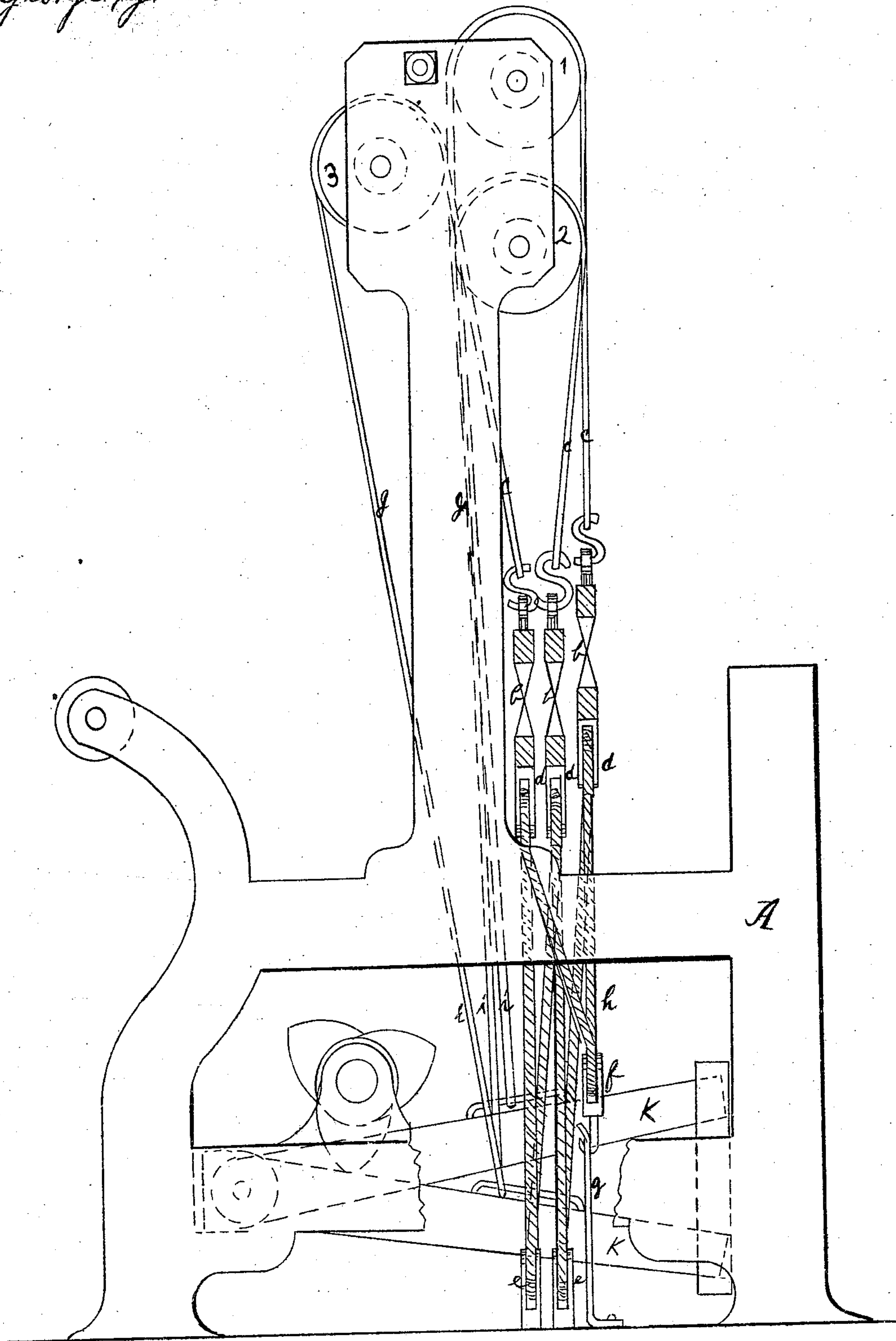
Improvement in Power Looms

Sheet 2.

Witnesses.
W. H. Brown
George Glaue.

Patented Nov 26 1867

W^m Hainsworth
Inventor



United States Patent Office.

WILLIAM HAINSWORTH, OF PHILADELPHIA, ASSIGNOR TO HIMSELF AND
AMOS GARTSIDE, OF CHESTER, PENNSYLVANIA.

Letters Patent No. 71,299, dated November 26, 1867.

IMPROVEMENT IN LOOMS.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM HAINSWORTH, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Power-Looms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Sheet 1 is a front view of a loom-frame and the improvement.

Sheet 2 is an end view.

Similar letters in the drawings refer to like parts.

The nature of my invention consists in the arrangement of an endless cord and a series of pulleys to the lower parts of a series of leaves of heddles or harness, and operating them by means of treadles, "streamers," and rollers. The construction is as follows:

A represents the loom-frame, to the upper part of which are hung the rollers 1 2 3 in the usual manner. The heddles *b b b* are connected to these rollers by the straps *c c c c c*. At the bottom of each leaf of the heddles are pulleys *d d*, one at each end. Fastened to the floor, directly under the upper pulley, are other pulleys, *e e*, four in number, for working three heddles. There are also two other pulleys, *f f*, connected to the floor by means of straps *g g*. These pulleys are connected by the cord *h*. This cord *h* is first passed over the pulley *d* on the first leaf, and then under pulley *e*; then up and over the pulley on the second leaf of the harness. It is then carried down to the next pulley on the floor; then up and over the pulley on the third leaf of harness; then down under the pulley, when the cords are connected, making an endless cord. *i i i* are wires (called streamers) connected to the rollers 1, 2, and 3 by straps *J J J*. The other ends of the streamers are connected to the treadles *k k k*; and these treadles are constructed and operated in the usual manner. The pulleys *f f* are connected to the straps *g g* by hooks; and these straps have a series of holes punched in them to admit tightening the cords *h h*.

The operation is as follows: The treadles are depressed by cams or tappets in the usual manner, and as the treadles are depressed, being connected to the rollers 1, 2, and 3, will cause them to oscillate, and raise the heddles in turn, as connected to the treadles. Suppose the middle treadle is depressed. It is connected to roller 1, and roller 1 is connected to the front heddle. The depressing of the middle treadle will raise it, and, as the tappet depresses the next treadle either to the right or left in raising, either the middle or back heddle will draw down the front heddle, and so on, as one raises it, the other draws it down. The proper tension on the cords is regulated by the pulleys *f f*, and the holes in the straps *g g*. In weaving different twills and patterns of cloths, a greater or less number of heddles is used. With my improvement one top roller is required for each leaf of harness; but one treadle may be made to raise one, two, three, or more leaves of harness by connecting the strap from the rollers to the streamers; but, when more than one heddle is connected to the same streamer, the regulating-pulleys *f f* are disconnected from the straps *g g*; and to each regulating-pulley is hung a small weight. This will be readily understood by any weaver of ordinary ability, and must be arranged to suit the twill to be woven.

With my improvement any twill that can be woven on a treadle-and-roller loom may be woven face side up, which cannot be done with the ordinary present arrangement of the treadle-and-roller loom.

Claims.

1. I claim, in combination with a series of leaves of harness, the endless cords and pulleys, connected and operating as described for the above purpose.

2. I claim the regulating-straps *g g*, in combination with the endless cords *h h*, as described for the above purpose.

WM. HAINSWORTH.

Witnesses:

WM. H. BROWN,
GEORGE GLAUSE.