

1,048,540.

The drawing consists of several figures illustrating a mechanical device:

- Fig. 1:** A large, complex mechanical assembly shown in a cross-sectional view. It features a central vertical shaft (1) passing through a series of components including a gear (2), a housing (3), and various internal parts labeled 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.
- Fig. 2:** A detailed view of a component, possibly a gear or a housing, showing its internal structure and mounting.
- Fig. 3:** A cross-sectional view of a component, showing its internal structure and mounting.
- Fig. 4:** A cross-sectional view of a component, showing its internal structure and mounting.
- Fig. 5:** A cross-sectional view of a component, showing its internal structure and mounting.
- Fig. 6:** A cross-sectional view of a component, showing its internal structure and mounting.

At the bottom of the drawing, there is a signature block with the following text:

Witnesses
 Inventor

Witnesses
M. Bredt.
W. Haas.

Inventor
George F. Hutchins.

By John C. Dewey.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE F. HUTCHINS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

NARROW-WARE OR RIBBON LOOM.

1,048,540.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed July 21, 1911. Serial No. 639,724.

To all whom it may concern:

Be it known that I, GEORGE F. HUTCHINS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Narrow-Ware or Ribbon Looms, of which the following is a specification.

My invention relates to narrow ware, or ribbon looms, and more particularly to the shuttle rack for narrow ware or ribbon looms, and the object of my invention is to improve upon the ordinary construction of the shuttle rack and its guide, in a narrow ware or ribbon loom.

In the class of looms referred to, the lay consists ordinarily of a wood beam, which is recessed or grooved upon its upper edge, to receive the reciprocating rack, which operates the rotary pinions which communicate a reciprocating motion to the swivel shuttles, in the well known way; said shuttle rack bears at its lower edge against the wood in a recess in the lay beam, and is pressed downwardly through its engagement with the shuttle pinions, thus having considerable friction on its lower surface.

In my improvements I combine with the lay beam, and the reciprocating rack which operates the rotary pinions which communicate a reciprocating motion to the swivel shuttles, roll or ball bearings, and means for spacing said roll or ball bearings, and holding them at predetermined distances relative to each other. In the present instance in carrying out my improvements I provide the lower edge of the shuttle rack with a metal strip or bar having a series of holes or perforations therethrough, which are located at regular distances apart. I also provide the bottom of a longitudinal groove in the lay beam, under said rack, with a metal strip or bar which has a series of holes or perforations therethrough, which are located at regular distances apart. I also provide in this instance a plurality of metal rolls, preferably made of tubular steel, which have projections or teeth thereon, and which are located between the metal strip on the bottom of the shuttle rack and the metal strip on the bottom of the groove above referred to. The rolls have no fixed axes, but are free to travel with the shuttle rack, in the direction of the length of the shuttle rack. The projections or teeth on the rolls are adapted

to freely enter the holes in the two strips or bars, and said teeth act to space said rolls, and hold them at predetermined distances relative to each other. The moving of the shuttle rack will cause the rolls to revolve easily, and to move with the rack and impart a substantially frictionless movement to the rack; said rolls will not slide but will have to revolve, through the teeth thereon entering the holes in said strips or bars.

I have only shown in the drawing a detached portion of a lay of a narrow ware, or ribbon loom, and a shuttle rack embodying my improvements, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawing:—Figure 1 is a front view of a detached portion of a lay, and shuttle rack, with my improvements combined therewith, looking in the direction of arrow *a*, Fig. 2. The lay beam is shown partially in section. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 is, on an enlarged scale, a sectional view of the shuttle rack, and my improvements, detached. Fig. 4 is a section, on line 4, 4, Fig. 3, looking in the direction of arrow *c*, same figure. Fig. 5 is a plan view of the perforated strip or bar, detached. Fig. 6 shows a modified construction of the shuttle rack, and, Fig. 7 is a section, on line 7, 7, Fig. 6, looking in the direction of arrow *d*, same figure.

In the accompanying drawings, 1 is the lay beam, which has its upper side recessed or grooved in the direction of its length, to receive the longitudinally moving rack 2, which is operated in the usual way by straps passing over rolls or sheaves, not shown, carried on the lay, not shown. The rack 2 engages with and operates a series of pinions 3, which engage and operate the swivel shuttles, not shown, to cause them to move in the guides 4' in the guide blocks 4. The guide blocks 4 are secured at their upper and lower ends by screws 5, to vertically extending stands 6, which are secured at their lower ends to the lay beam 1. A rail 7, which is secured to the upper part of the stand 6, extends transversely across the loom, and forms the main rail. All of the above mentioned parts may be of the usual and well known construction.

I will now describe my improvements. I provide in this instance a strip or bar 9,

preferably of metal, which is secured to the lower edge of the reciprocating rack 2. said strip or bar 9 has a series of holes or perforations 9' therein at equal distances apart.

- 5 A second strip or bar 10 is secured in the bottom of a recess or groove 1', in the lay beam 1, below the recess for the rack 2. The strip or bar 10 has a series of holes 10' therein, corresponding in number and position to the holes 9' in the strip or bar 9.

- 10 There is an open space between the strip or bar 9, and the strip or bar 10, as shown in Fig. 1, and in said space are in this instance a series of rolls 11, preferably of tubular metal, which are provided with teeth, or toothed projections 11; adapted to enter freely the holes 9' and 10' in the strips or bars 9, and 10, respectively. The rolls 11 have no fixed axes, but are free to rotate, and to move with the longitudinally moving rack 2, in the direction of the length of said rack.

- 25 On the longitudinal reciprocating movement of the shuttle rack 2, the rolls 11 act as roller bearings for the shuttle rack, and as the teeth 11' on said rolls enter the holes 9' and 10' respectively, in the bars 9 and 10, the rolls 11 are spaced, and held at a fixed or predetermined distance relative to each other, and are prevented from sliding, and form a substantially frictionless bearing for the reciprocating rack 2.

- 30 In the modified construction of the shuttle rack, shown in Figs. 6, and 7, the shuttle rack is provided with a U shaped casing 12,

preferably of metal, extending upon the sides and bottom thereof, as shown in Fig. 7. A series of holes 12' are provided in the bottom of said casing 12; said holes corresponding in number and location to the holes 9' in the strip or bar 9, and are adapted to receive the teeth 11' on the rolls 11.

It will be understood that the details of construction of my improvements may be varied if desired.

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

In a narrow ware loom, the combination with the lay recessed or grooved upon its upper edge, and a rack having a reciprocating movement in said recess or groove, said rack having a metal U shaped casing extending upon the sides and bottom thereof, with a series of perforations in the bottom of said casing, of a second strip or bar in a recess or groove in the lay, and having a series of perforations therethrough, and tubular metal rolls having projections thereon, and located between said U shaped casing, and said last mentioned strip or bar, said projections adapted to enter perforations in said U shaped casing, and in said strip or bar, to space the rolls and hold them at predetermined distances relative to each other.

GEORGE F. HUTCHINS.

Witnesses:

JOHN C. DEWEY,
MINNA HAAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."