

M. M. KINNEY.
HAND LOOM,
APPLICATION FILED MAY 6, 1911.

1,020,292.

Patented Mar. 12, 1912.

3 SHEETS—SHEET 1.

Fig. 3.

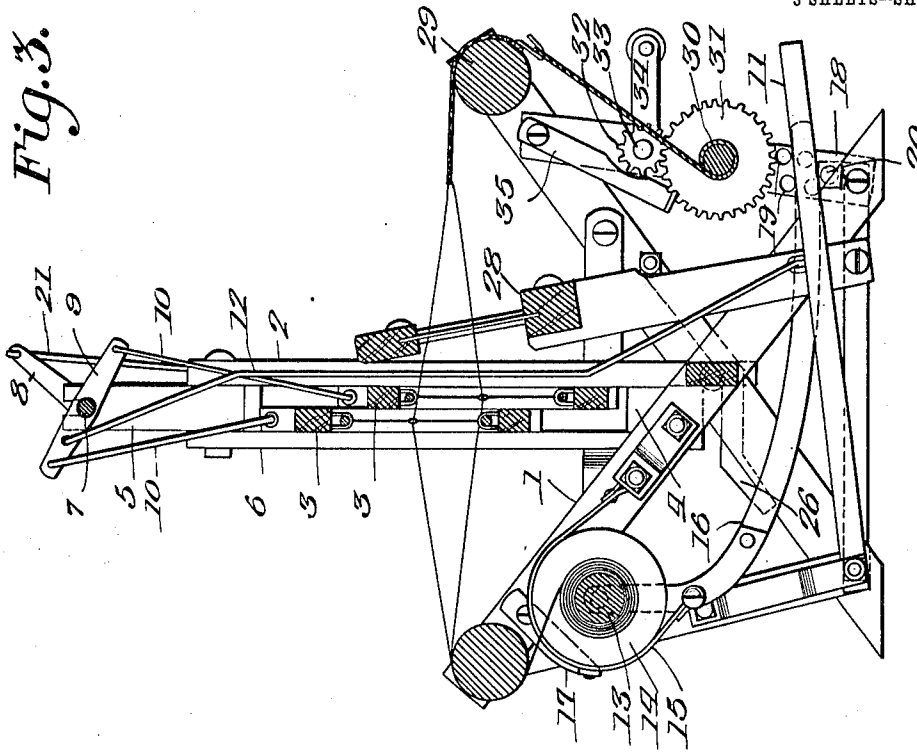
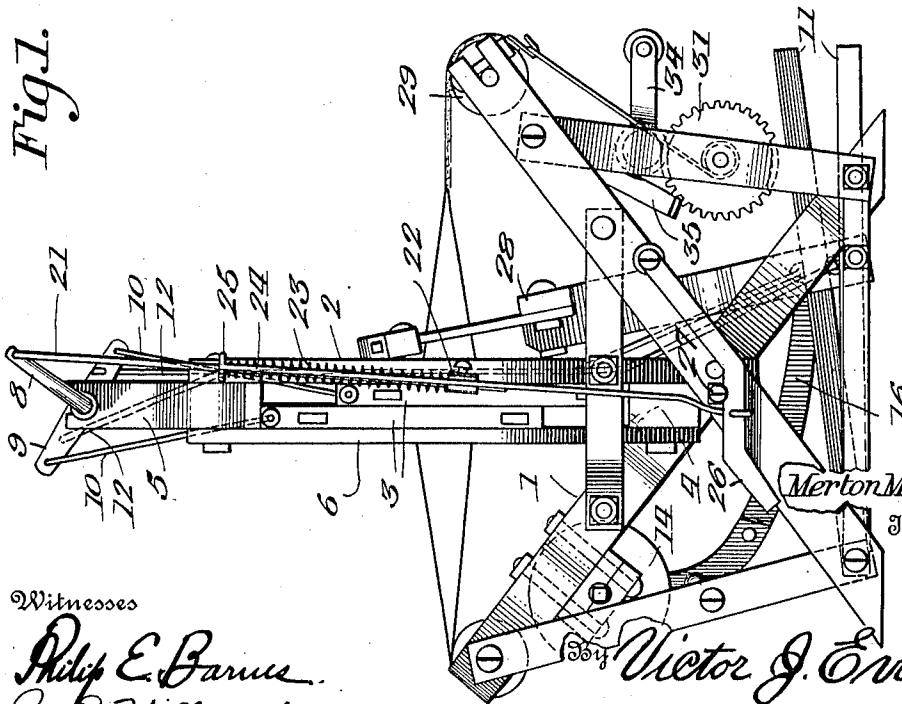


Fig. 1.



Merton M. Kinney.
Inventor

Witnesses

Philip E. Barnes.
O. B. Hillyard.

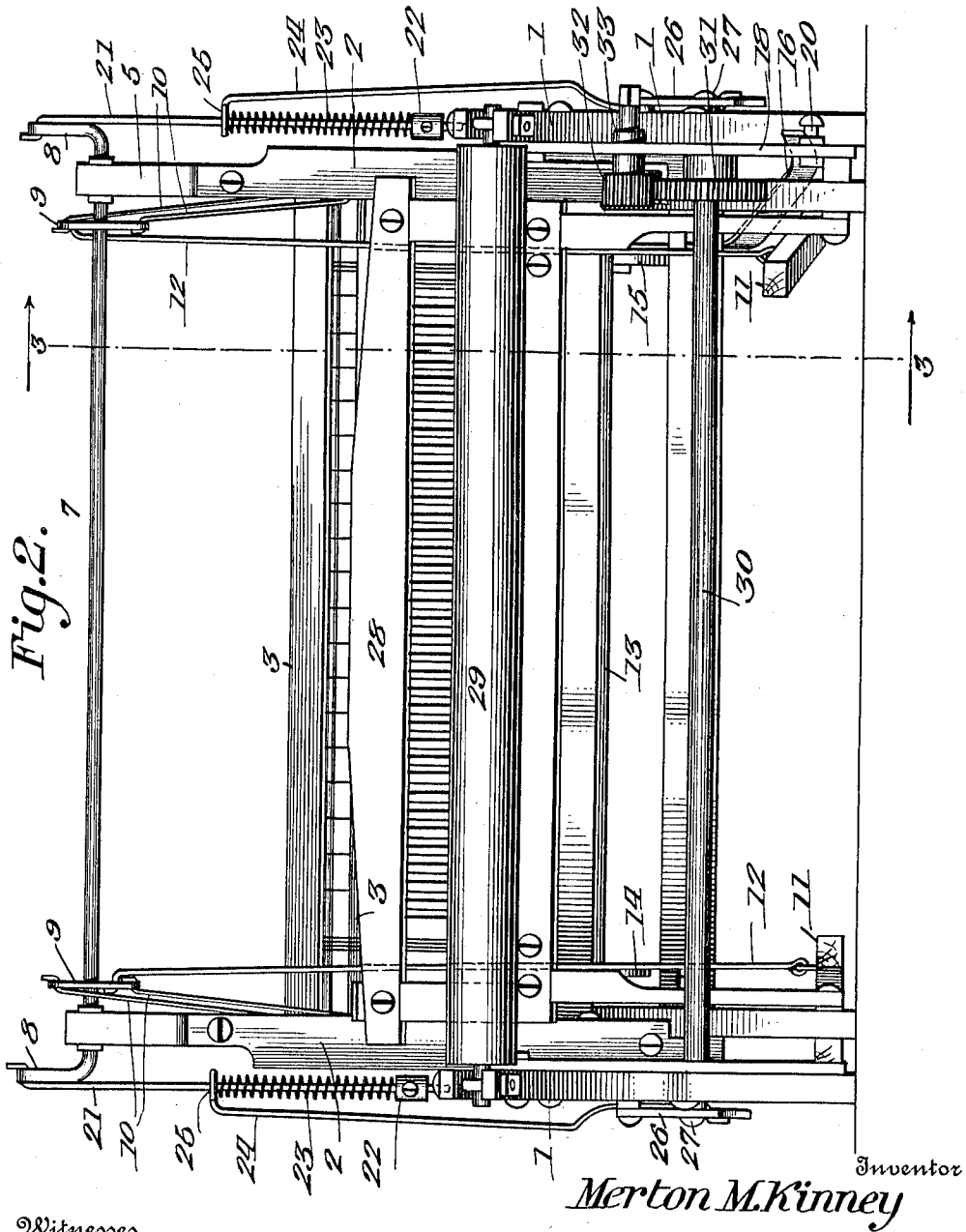
Victor J. Evans
Attorney

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3 SHEETS—SHEET 2.



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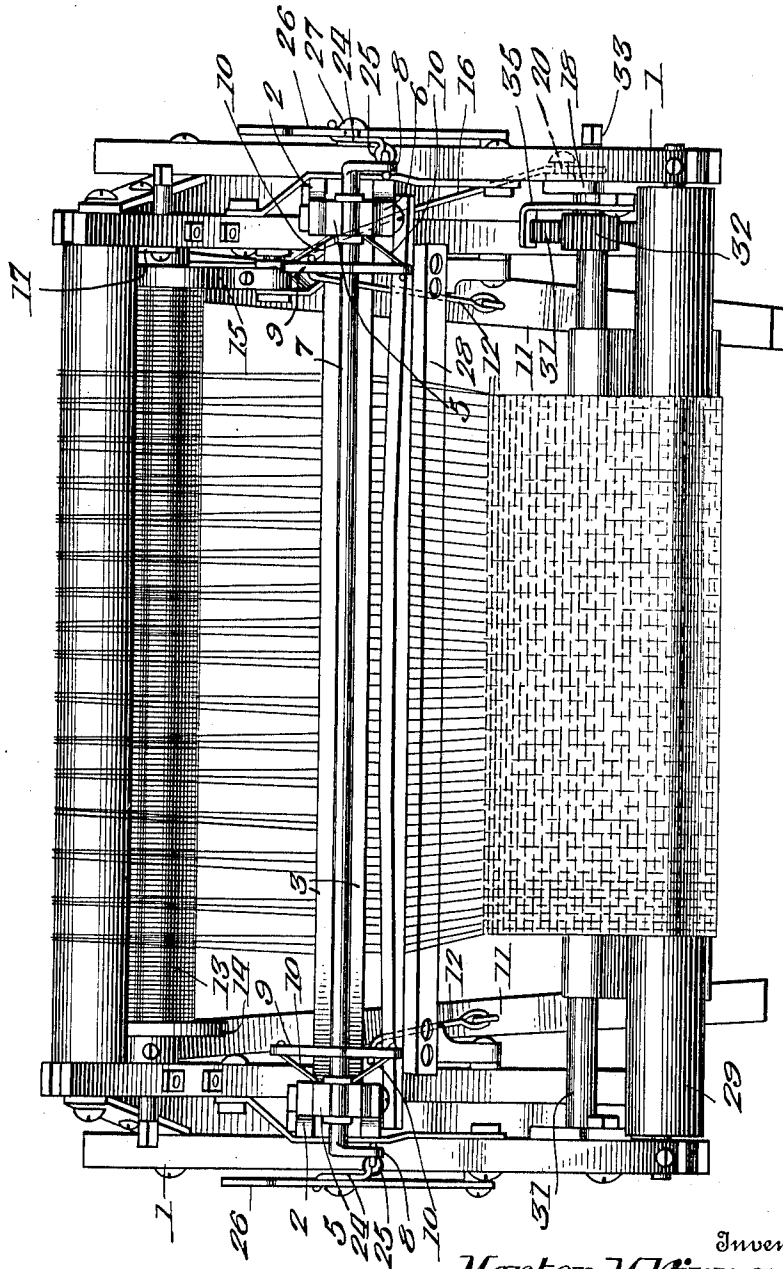
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3 SHEETS—SHEET 3.

Fig. 4.



Witnesses

Philip E. Barnes
U. B. Hilgard.

Inventor
Merton M. Kinney

By *Victor J. Evans*

Attorney

UNITED STATES PATENT OFFICE.

MERTON M. KINNEY, OF CLOQUET, MINNESOTA.

HAND-LOOM.

1,020,292.

Specification of Letters Patent.

Patented Mar. 12, 1912.

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To all whom it may concern:

Be it known that I, MERTON M. KINNEY, a citizen of the United States, residing at Cloquet, in the county of Carlton and State of Minnesota, have invented new and useful Improvements in Hand-Looms, of which the following is a specification.

The present invention provides a hand operated loom designed chiefly for weaving rugs, carpets and like fabrics and aims to provide a structure which will lessen the steps of the operator and enable the loom to be manipulated with a minimum expenditure of energy.

The invention also provides a novel mechanism for holding the heddle frame in the adjusted position when moved to open the warp after each throw of the weft or filling.

The invention further supplies a tension mechanism for the warp roller which will prevent injury to the warp and overcome excessive strain upon the bearing in which the warp roller is mounted.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawings, and pointed out in the appended claims.

Referring to the drawings, forming a part of the specification, Figure 1 is a side view of a hand loom embodying the invention. Fig. 2 is a front view of the loom. Fig. 3 is a vertical section on the line 3—3 of Fig. 2, looking to the right, as indicated by the arrows. Fig. 4 is a top plan view.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The main frame of the loom is indicated at 1 and comprises uprights 2, which receive the heddle frames and direct them in their vertical movements. Blocks 4 are located at the lower ends of the uprights 2 and standards 5 are secured to the upper ends of the uprights 2. Strips 6 are secured at their lower ends to the blocks 4 and at their upper ends to the standards 5 and act jointly with the uprights 2 to hold the heddle frames 3 in place. The strips 6 may be quickly removed, thereby admitting of the replacement of the heddle frame or the detachment of the same from the machine for any desired purpose.

A rock shaft 7 is mounted in the upper ends of the standards 6 and is provided at each end with a crank arm 8 and near each end with a cross bar 9. Rods 10 connect the ends of the cross bars 9 with the heddle frames 3 so that at each movement of the rock shaft one of the heddle frames is moved upwardly and the other carried downwardly so as to open the warp to receive the filling in the shed thus formed.

A pedal 11 is located at each side of the loom and a rod 12 connects each of the pedals with the cross bar 9 on the same side of the machine therewith. The pedals are so arranged that when one is up or elevated the other is down or lowered. The depressed pedal is at the side of the machine from which the filling or weft is passed between the warp so that when the operator passes to the opposite side of the machine the elevated pedal may be depressed to effect an interlacing of the warp about the filling either preliminary to or after operation of the lay or batten. By this arrangement of the pedals the work of the weaver is greatly facilitated and the energy required to be expended in operation of the loom reduced to the smallest amount possible.

The warp roller 13 is provided at its ends with heads 14. A brake band 15 is arranged to cooperate with one of the heads 14 and is connected at one end to the main frame and has its opposite end connected to a lever 16, which is mounted upon the shaft or journal of the warp roller. A brace 17 has one end attached to the brake band 15 and its opposite end is connected to the main frame. By mounting the brake lever 16 upon the journal or shaft of the warp roller the strain upon the bearing of said roller is reduced to the smallest amount possible. The manner of mounting the brake band insures holding of the same in proper position to engage the head 14 and reduces the liability of the end warp threads coming in contact therewith. The brake lever 16 is adapted to be set so as to cause the brake band to grip the head 14 with a greater or less force, thereby varying the resistance to the turning of the warp roller so that the weft or filling may be packed or driven up close. A bar 18 is connected to members of the main frame and is provided with a series of openings 19 in which a pin 20 is fitted, said pin engaging the outer end of the

brake lever 16 to hold the same in the adjusted position.

The heddle frames are retained in place by the following means: A rod 21 is pivotally connected at its upper end to each of the crank arms 8 and a set collar 22 is mounted upon the lower portion thereof. A coil spring 23 is mounted upon the rod 21 and is supported upon the set collar 22. A rod 24 has an eye 25 at its upper end through which the rod 21 passes and the lower end of the rod 24 is connected to a lever 26, which is pivoted at one end to the main frame. A stop 27 is adapted to engage the lever 26 and hold the same in the adjusted position. The coil spring 23 is normally under tension and is confined between the set collar 22 and the eye 25. The coil spring 23 exerts a downward pull upon the crank arm 8. The parts are arranged so that the crank arms 8 incline to a plane passing vertically through the rock shaft. The crank arms 8 extend in the same direction which is in a plane at a right angle to the plane of the cross bars 9. The movement of the rock shaft in each direction is limited by the higher heddle frame coming in contact with the lower ends of the standards 5. When the heddle frames are thrown to open the warp they occupy different relative positions, the one being higher than the other and these positions relatively change at each throw to cross the warp threads in the rear of the filling. The springs 23 normally tend to draw the outer ends of the crank arms 8 downward, but the turning of the rock shaft is limited by the upper heddle frame in the manner stated. This arrangement precludes the necessity of holding either one of the pedals 11 depressed.

The lay 28 may be of any construction and arrangement and is adapted to be operated after each throw to pack the weft or filling in the manner well understood. The fabric passes over the breast roll 29 and is adapted to be wound upon the fabric roll 30, which latter is provided with a gear wheel 31, the teeth of which is in mesh with the teeth of a pinion 32 on a shaft 33 to which a crank 34 is fitted. A pawl 35 pivoted to the main frame engages the teeth of the gear wheel 31 to prevent unwinding

of the fabric so as to hold the same under tension.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention what is claimed as new, is:—

1. In a loom of the character described, the combination of heddle frames, a rock shaft, connecting means between the rock shaft and heddle frames, pedals at opposite sides of the loom frame and connected with the rock shaft, and yieldable connecting means between the rock shaft and frame to exert a force upon the rock shaft in each of its extreme positions.

2. In a loom, the combination of heddle frames, a rock shaft, connecting means between the rock shaft and heddle frames, a rod having crank connection with the rock shaft, a lever, a second rod connected with the lever and having sliding connection with the first mentioned rod, a tension spring between the two rods, and means for holding the lever in the desired position.

3. In a loom, the combination of heddle frames, operating means for throwing the heddle frames including a rock shaft, a rod having crank connection with the rock shaft, a second rod having slidable connection with the first mentioned rod, and a spring connection between the two rods for carrying the rock shaft past a dead center in each direction and exerting a pressure to hold the heddle frames in the adjusted position.

In testimony whereof I affix my signature in presence of two witnesses.

MERTON M. KINNEY.

Witnesses:

F. A. HAISH,

M. K. WHITEMORE.