

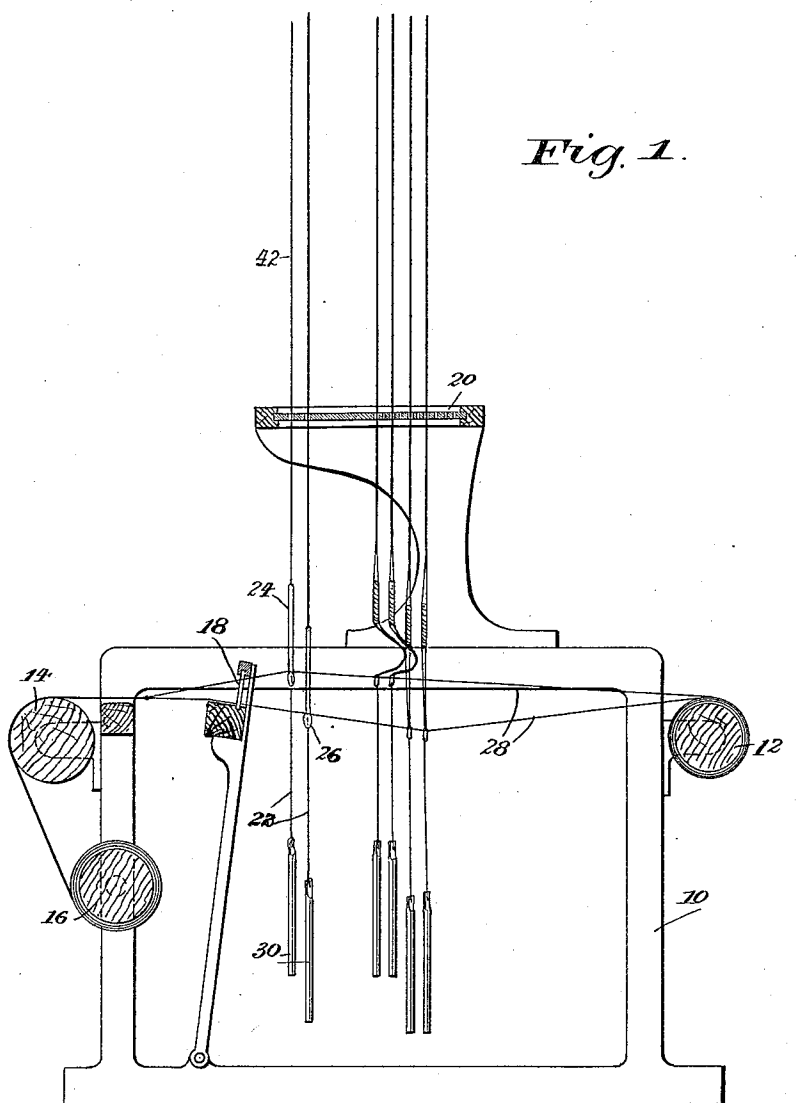
(No Model.)

2 Sheets—Sheet 1.

W. A. GRANT.
LOOM HARNESS.

No. 461,752.

Patented Oct. 20, 1891.



WITNESSES:

Paul J. Hotz
C. Sedgwick

INVENTOR:

W. A. Grant
BY *Munn & Co.*
ATTORNEYS

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Fig. 2.

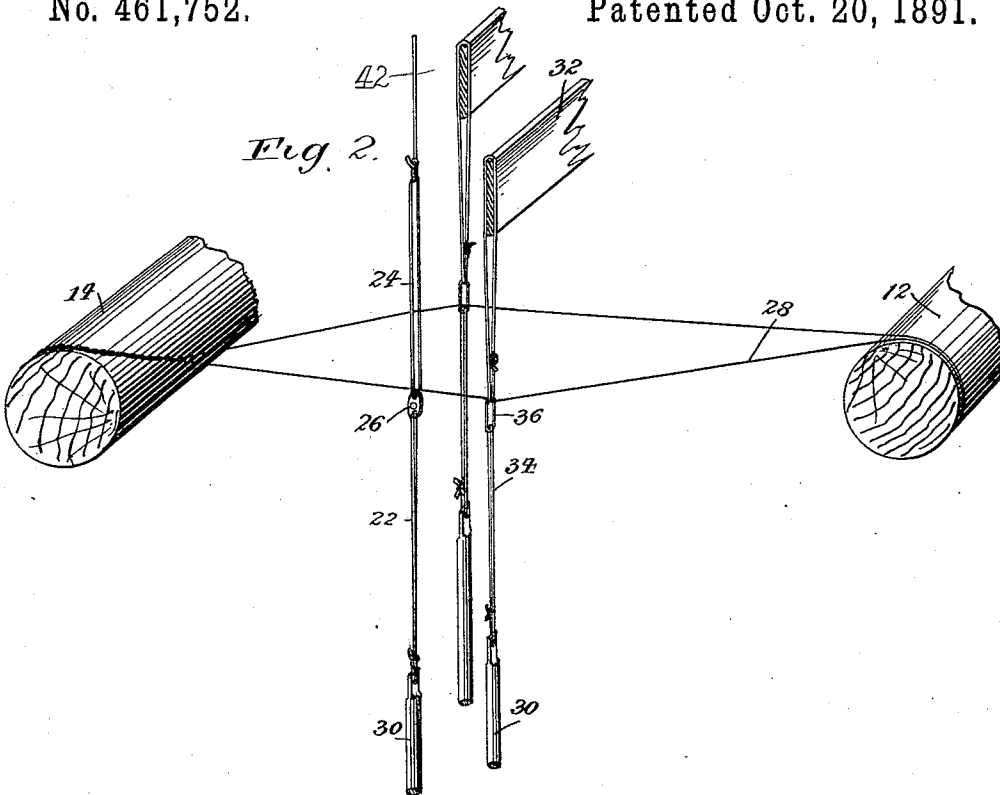
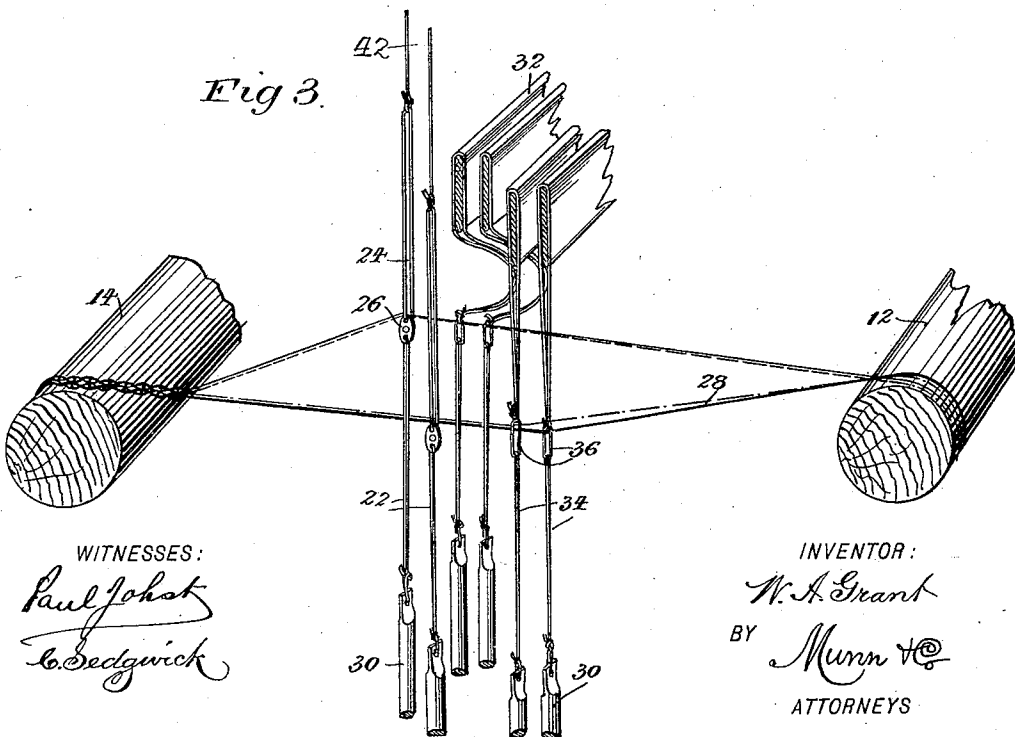


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM A. GRANT, OF PATERSON, NEW JERSEY.

LOOM-HARNESS.

SPECIFICATION forming part of Letters Patent No. 461,752, dated October 20, 1891.

Application filed December 2, 1890. Serial No. 373,330. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. GRANT, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and Improved Loom-Harness, of which the following is a full, clear, and exact description.

My invention relates more particularly to a loom employed in the finer grades of fancy weaving, and has for its object to provide a harness that will be simple in construction and that will relieve the irregular tension placed on the warp-threads by the harness at present employed. It is a common expedient to relieve the warp-thread of this tension to separate the heddles operated by the jacquard from the ordinary heddles or harness and place them both at some distance back in the loom. This, however, gives a longer shed and necessitates a higher lift of the cords, which tends to increase the tension on the warp-threads. It is also very difficult under these circumstances to obtain a fine close weave in consequence of the long shed formed by this arrangement.

My invention aims to overcome the disadvantages set forth; and it consists in the construction and arrangement of parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a loom provided with my improved harness. Fig. 2 is a perspective view showing a shed formed by the movement of the heddle portion of the harness, and Fig. 3 is a similar view with the shed formed by the Jacquard apparatus.

In Fig. 1, 10 is the frame of a loom; 12, the warp-beam; 14, the breast-beam; 16, the cloth-beam; 18, the reed, and 20 the compass-board.

In carrying out my invention I confine the harness compactly in the center of the loom, with the Jacquard heddles in front of the ordinary heddles, the cords of both passing through the compass-board. The couplings 22 of the Jacquard heddles are provided with loops 24, extending from the mails 26 to the lifting-cords 42 for the passage of the warp-threads 28. The usual lingos or weights 30 are attached to the ends of the couplings. 32 represents the upper shafts of the ordinary

heddle-leaves and 34 the heddles thereof. Said heddles are suspended independently from the shaft 32 and are provided with the weights 30 at their free ends. The eyes 36 for the warp-threads are of the usual construction.

In Fig. 2 is shown the warp-threads engaging two heddles on separate leaves, both threads passing through the loop of the Jacquard heddle, and the shed formed is for the ground-weaving, the first leaf 32 lifting with the jacquard at rest. As this shed is formed, it will be seen that the warp-threads have free play within the loop 24, thus relieving the threads of tension at this point.

In Fig. 3 is shown the shed formed by the Jacquard apparatus for figure-weaving, with the threads doubled, engaging four heddles, two of each passing through the loops 24. The shed is here shown as formed by the lift of a single cord of the jacquard with the warp-threads controlled by the said cord lifting the two heddles, with which they engage independently of the remaining heddles of the same leaf. The weights 30 return the heddles so engaged to their pendent position for the next shed.

From the foregoing it is obvious that when the heddles lift the warp-threads will be relieved of irregular tension, the upper threads of the shed working freely in the loops 24. The lower threads of the shed will not slack and bunch up, as it will not be necessary to have a long lift of the cords. When the jacquard lifts, the threads will be relieved of the weight of the entire leaf of heddles, excepting those engaged by the said threads.

My invention will be found adaptable to many varieties of weaving. There will be less wear and tear of the parts and more perfect goods can be produced, as there will not be so many stops of the loom to pick up ends.

It is understood that by this device a double-scale harness is made by the arrangement of two shafts located either in front or rear of the jacquard or figure harness. The two shafts work solely the warp for the ground of the fabric, and when the figure or design is to appear in the fabric then the jacquard lifts the respective coupling and the pair of threads therein are raised, the said threads being connected with the eyes of the two different independent heddles.

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

In a loom, the combination, with the upper
5 shafts, heddles suspended independently from the said shafts and provided with weights at their free ends, and eyes held in the said heddles for the passage of the warp-threads, of Jacquard cords, each provided with an elon-

gated loop or eye for the passage of several warp-threads passing through eyes in different heddles, substantially as shown and described.

WILLIAM A. GRANT.

Witnesses:

B. F. HOLSKE,
EDGAR TATE.