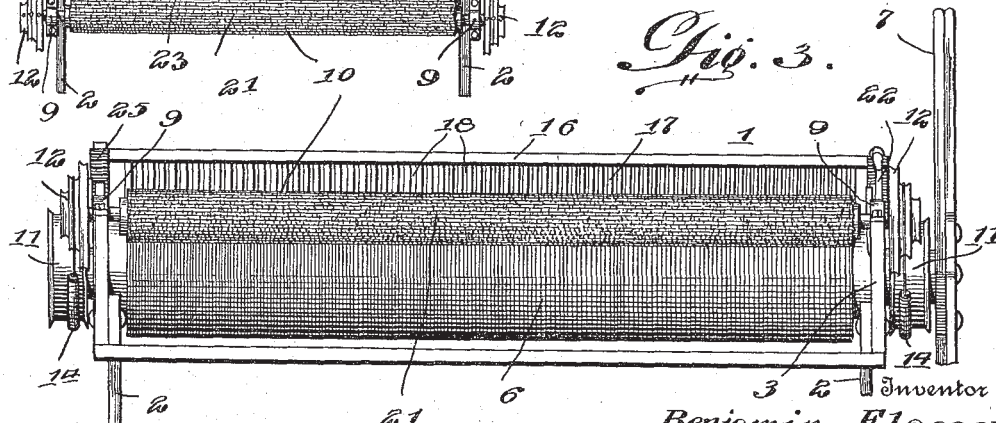
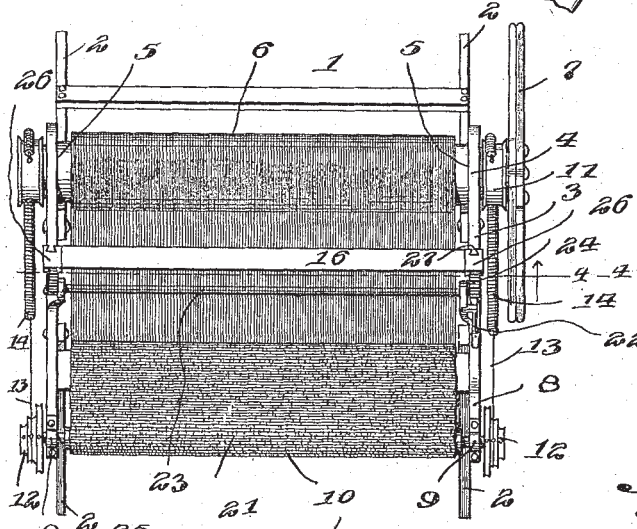
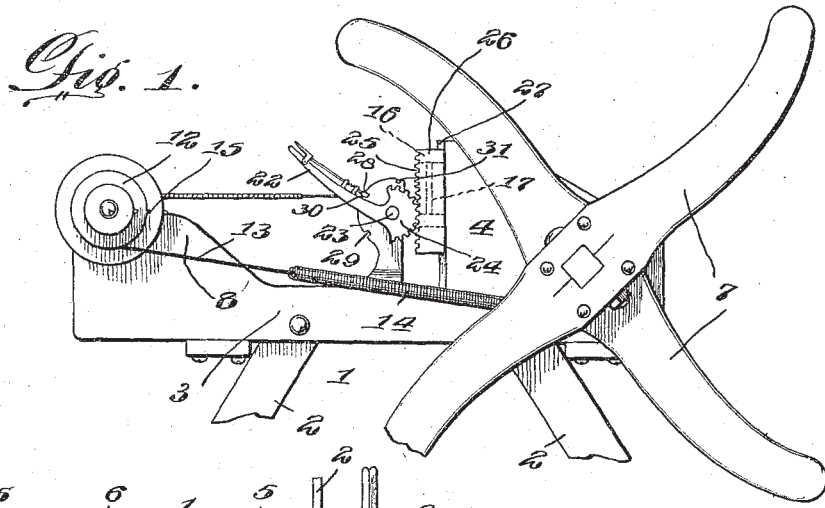


B. ELSASER.
 LOOM.
 APPLICATION FILED MAR. 3, 1915.

1,176,823.

Patented Mar. 28, 1916.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

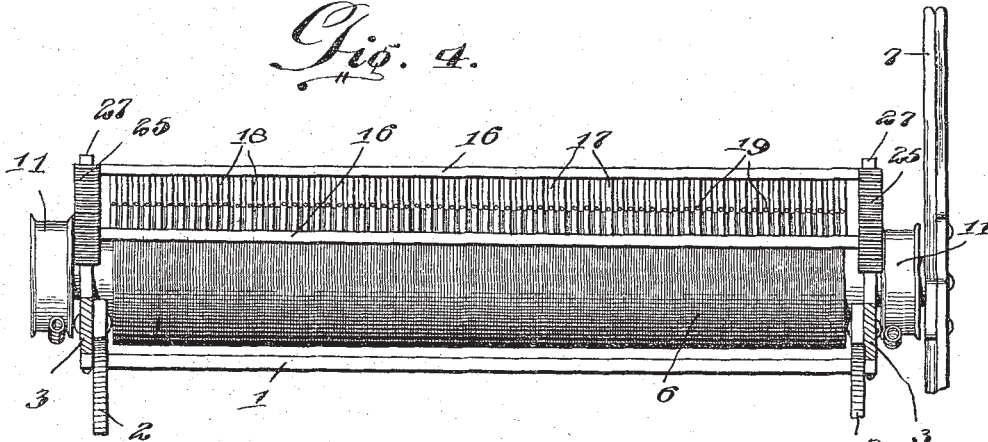


Fig. 5.

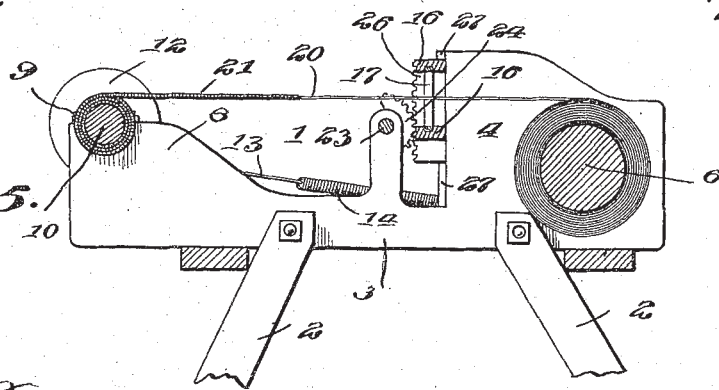


Fig. 6.

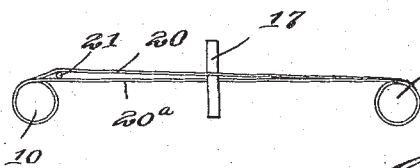


Fig. 7.

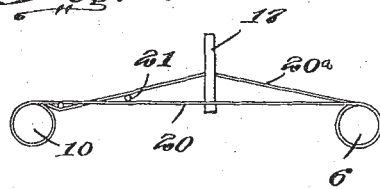
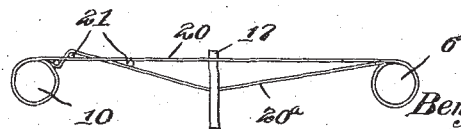


Fig. 8.



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UNITED STATES PATENT OFFICE.

BENJAMIN ELSASER, OF BOONVILLE, NEW YORK.

LOOM.

1,176,823.

Specification of Letters Patent.

Patented Mar. 28, 1916.

Application filed March 3, 1915. Serial No. 11,854.

To all whom it may concern:

Be it known that I, BENJAMIN ELSASER, a citizen of the United States, residing at Boonville, in the county of Oneida and State of New York, have invented new and useful Improvements in Looms, of which the following is a specification.

This invention relates to certain new and useful improvements in looms, and particularly to a novel and improved combination reed and harness for hand looms designed for household use in weaving rugs and rag carpets, although the invention is not restricted to looms of this special class, as the essential features thereof may be employed generally in any of the loom structures for which they are adapted.

The primary object of the invention is to provide a combination reed and harness which is adapted to dispose and maintain the warp threads in two different sets, and which is adjustable to dispose the threads in proper position for the beating-in action and also for spreading and crossing actions, the construction being such that the use of an additional or auxiliary harness mechanism, as such, is dispensed with and simplicity of structure and action secured.

Another object of the invention is to provide a combination reed and harness comprising a vertically adjustable frame having reed dents spaced to form said passages for one set of warp threads, whereby said threads maintain a relatively fixed position and are simply guided by the reed and not influenced by the vertical adjustment thereof, the dents being themselves provided with other passages for a separate set of warp threads which are adjustable therewith, whereby the two sets of warp threads are adapted to be properly disposed above and below the plane of the weaving action to receive the woof.

The invention consists of the features of construction, combination and arrangement of parts herein fully described and claimed, reference being had to the accompanying drawings in which:—

Figure 1 is a side elevation of a hand loom embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a front elevation. Fig. 4 is a vertical transverse section on the line 4—4 of Fig. 2, looking toward the combined reed and harness. Fig. 5 is a vertical longitudinal section. Figs. 6, 7 and 8 are diagrammatic views showing the

partly woven fabric and threads when the weaving mechanism is arranged respectively in the intermediate weaving position and in the upper and lower warp spreading and crossing position.

The present invention discloses a type of loom similar to that filed in another application of even date herewith, Serial No. 11,853, in which the reed, instead of being adjustable as in the present case for the purposes described, is stationary and the adjustment of the warp threads is effected by movements of the cloth beam. In the present structure the cloth beam is journaled in fixed bearings while the reed is vertically adjustable and the claims herein are directed to an organization of this character, the loom structure being otherwise substantially the same, while, as previously stated, the invention is shown for purposes of illustration as embodied in a hand loom for domestic use in weaving carpets and rag rugs from old clothes and carpets, it is not restricted in this particular, but may be employed in any type of loom structure for which it is adapted.

In carrying my invention into practice, I provide a suitable frame structure 1 mounted upon supporting legs 2, including side bars 3. The side bars 3 are provided or carry at the rear of the frame suitable uprights 4, formed with bearing openings 5 for the warp beam or roll 6 on which the warp threads are wound. In the structure illustrated, this beam is provided with suitable handles 7 whereby it may be turned or rotated in opposite directions. The side bars 3 also carry or are provided with at the front of the frame uprights 8, formed with bearing openings 9 for the cloth beam or roll 10 on which the fabric which is being woven is wound, and to which beam the free ends of the warp threads are attached for the warp feeding action as the weaving operation progresses.

Upon the ends of the shafts of the beams or rolls 6 and 10 are respectively fixed pulleys 11 and 12, between which sets of pulleys at the opposite sides of the loom extend flexible connections 13, each including a spring 14, which connections are adapted to wind upon and off the respective pulleys as the beams are turned in opposite directions. The connections are arranged to wind upon the pulleys of one roll while unwinding from the pulleys of the other roll, and vice

versa, and serve both as motion transmitting elements and tensioning devices, by which the warp is held under the desired tension and the cloth beam is turned in a counter-clockwise direction to wind up the woven fabric instead. When the beams are moved in a clockwise direction for the binding or weaving action, the flexible connections are wound upon the cloth beam and unwound from the warp beam, thus moving the warp threads and partially woven fabric toward the reed for the beating-in or weaving action. In the first-named or counter-clockwise motion of the beams, the flexible connections will be wound upon the warp beam and unwound from the cloth beam, thus winding up the partially woven fabric and moving the warp threads forwardly for spreading and crossing operations, in all of which movements the warp and fabric are held by the connection springs under proper tension. The pulleys 11 and 12 are preferably of stepped construction, each having a plurality of surfaces of different diameters and provided with pins or pegs 15 adapted to be engaged by loops at the ends of the flexible connections, by which such connections may be connected at will with the different surfaces of the pulleys so that the relative speeds of rotation of the beams may be properly varied at different periods in the weaving of the rug or carpet.

The combination reed and harness comprises an open oblong rectangular reed frame 16 carrying a desired number of reed sections or dents 17 spaced to provide passages 18 and each formed with an opening or passages 19. In the use of this improved loom, the warp threads are arranged in two sets, the threads 20 of one set extending through the passages 18 and the threads 20^a of the other set extending through the openings 19, the construction and arrangement thus being such that the reed frame when adjusted upwardly or downwardly from a normal or neutral position will carry with it the threads 20^a but will not effect or change the position of the threads 20, the length of the passages 18 permitting the reed frame to be adjusted without influencing the threads 20.

When the reed is arranged in a normal or neutral position, the sets of threads 20 and 20^a will be properly disposed for the beating-in of the inserted woof 21, while when the reed frame is adjusted upwardly and downwardly from such normal or neutral position the sets of threads will be crossed and spread, as illustrated particularly in Figs. 6, 7 and 8, for the insertion of the woof threads or pieces, which may be inserted by means of a shuttle or in any suitable manner.

Suitable means may be provided for raising and lowering the reed, and in the present instance I have shown the use of a lever 22 fixed to a transverse shaft 23 provided with

gear segments 24 meshing with rack teeth 25 on carrier brackets 26 movable vertically in guides 27 carried by the side bars 3 and suitably fastened to the reed frame, so that by proper movements of the lever 22 the reed may be raised and lowered for disposal in its three operative positions set forth. The lever is provided with a spring actuated dog 28 to engage notches 29, 30 and 31 of a locking rack by which the extent of motions of the lever for adjusting the reed to the proper positions is determined and the firm locking of the reed in each of its positions insured. The adjusting or harness mechanism may be operated by hand, foot or other power while the beams are manually controlled, or all the parts of the loom may be in gear for automatic action in the application of the invention to a power loom.

In the operation of the loom, assuming the warp threads to be extended between the beams and through the reed as described, it will be understood that the beating-in or pounding action is performed by moving the already woven portion of the cloth or carpet against the reed by rotating the beams in a clock-wise direction, whereby the newly introduced woof will be engaged with the reed and beaten in. This action is performed when the reed is disposed in its normal or neutral position. Prior to this beating-in action the reed is elevated to spread and cross the warp threads above the weaving position, as illustrated in Fig. 7, and the woof then introduced, after which the reed is lowered to central or normal position and the introduced woof woven in, and finally the reed is depressed to the lower and reverse warp thread spreading and crossing position shown in Fig. 8, in which another woof thread or strip is inserted and the reed elevated to normal position and said strip beaten in, after which the cycle of operation above described is repeated.

It will be evident from the foregoing description that by reason of the construction described simplicity is secured, both in the machine structure *per se* as well as in the weaving action, since the use of a batten and reed harness mechanism as such is dispensed with, thus enabling a very simple, and yet reliable and efficient type of loom to be produced and sold at a comparatively low cost.

In some cases the adjusting mechanism shown may be dispensed with and the reed adjusted by hand and suitably locked in adjusted position, and this and similar modes of adjusting the same are held to fall within the spirit and scope of my invention.

I claim:—

1. In a loom, a warp beam, a cloth or carpet beam, pulleys carried by said beams, flexible connections between the pulleys on the beams including tensioning springs, a reed having two sets of thread passages, one

adapted to permit both vertical and feeding motions of the threads, and the other adapted to permit feeding motion of the threads while holding the same from vertical movement, and means for affecting a relative vertical adjustment between the reed and warp beam, to adjust the threads to form the shed.

2. In a loom, a warp beam, a cloth or carpet beam, stepped pulleys carried by said beams, flexible connections detachably connected with the pulleys of the beams and including tensioning springs, a reed having two sets of openings, one adapted to permit both vertical adjustment and feeding motion of the threads, and the other adapted to permit feeding motion of the threads while preventing vertical adjustment thereof, and means for effecting a relative adjustment be-

tween the reed and warp beam to adjust the threads to form the shed.

3. In a loom, a warp beam, a cloth or carpet beam, pulleys carried by said beams, flexible connections between the beams including tensioning springs, a vertically adjustable reed having elongated vertical passages for a portion of the warp threads and intervening restricted openings for passage of the remainder of the warp threads, and means whereby said reed may be adjusted to different positions.

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

BENJAMIN ELSASER.

Witnesses:

JOHN H. ELSASER,
FAY C. MARTIN.

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