

B. ELSASER.

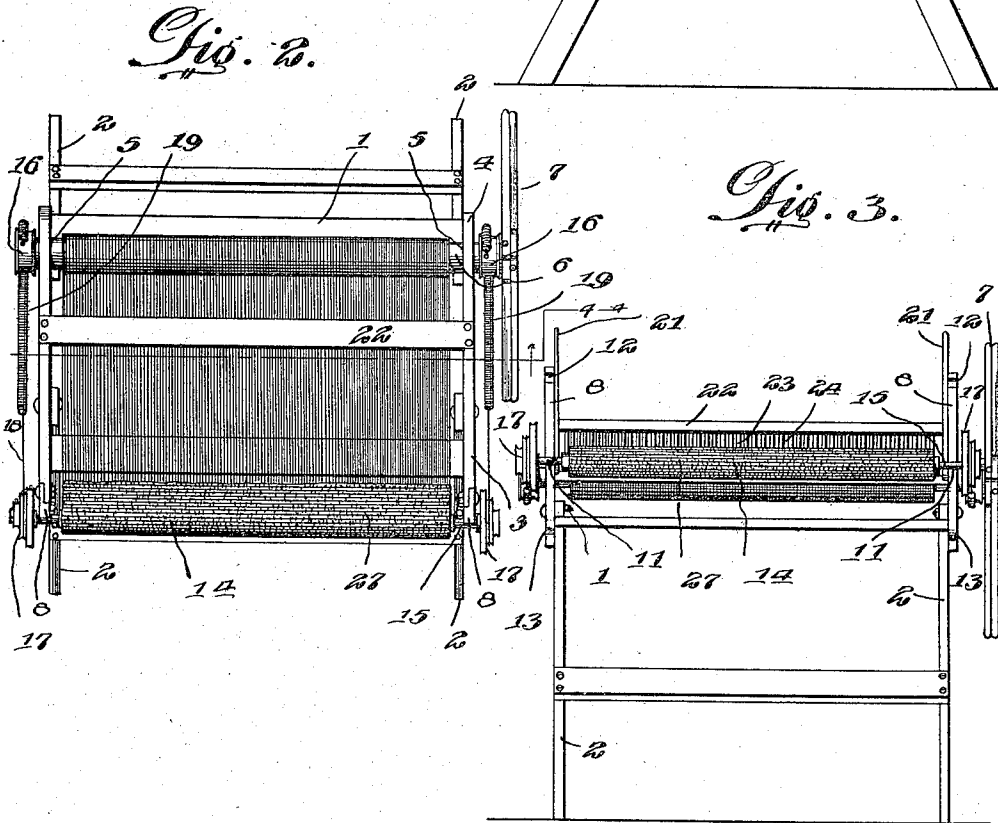
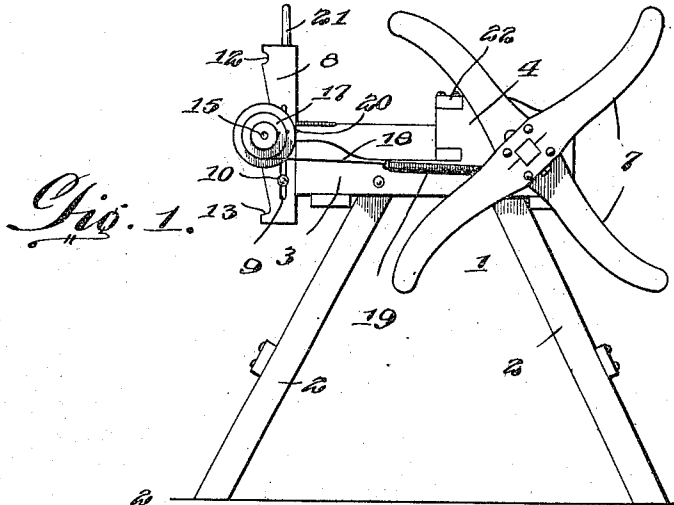
LOOM.

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1,176,822.

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2 SHEETS—SHEET 1.



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Witnesses

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Fig. 1.

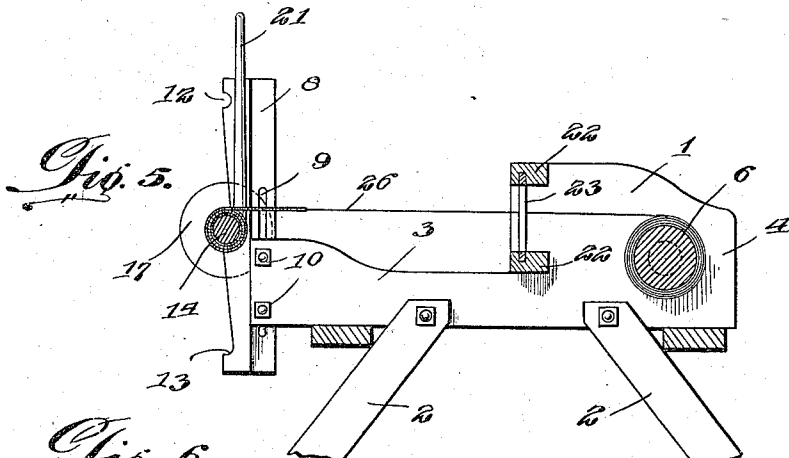
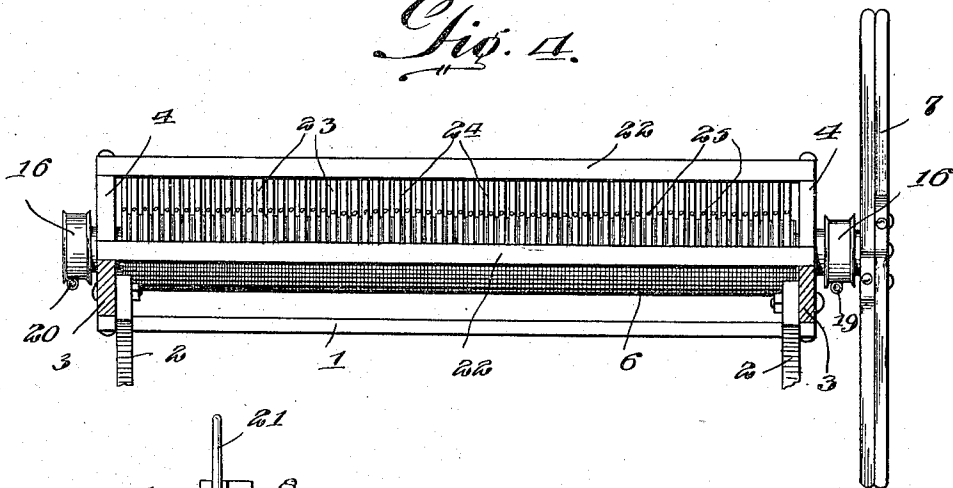


Fig. 6.

Fig. 7.

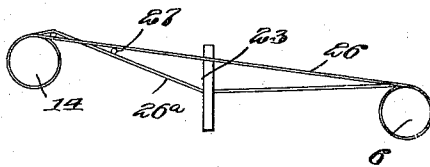
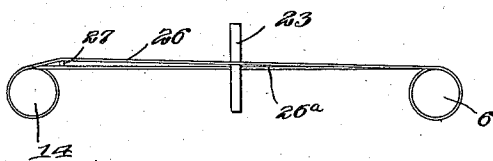
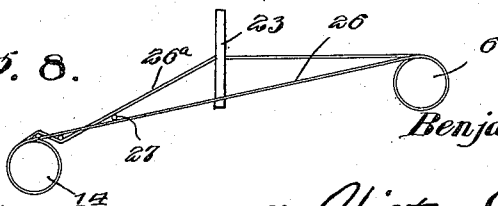


Fig. 8.



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UNITED STATES PATENT OFFICE.

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LOOM.

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Specification of Letters Patent.

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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, while directed more particularly to hand looms designed for household use in weaving rugs and rag carpets, is not limited to looms of this special class, but may be employed generally in loom structures for which it is adapted.

The primary object of the invention is to provide a weaving mechanism embodying improved means for beating in the wool and crossing and spreading the warp, whereby simplicity of structure and action is secured.

Another object of the invention is to provide a novel construction of reed and movable cloth or carpet beam, together with means for holding the beam in proper position for the beating-in action and spreading and crossing of the warp, whereby the use of a batten and an ordinary harness mechanism is dispensed with.

A still further object of the invention is to form spring connections between the warp and cloth beams, whereby the cloth is wound up and the warp held under proper tension, said means also serving to hold the cloth beam in predetermined position for the weaving and warp spreading and crossing action.

A still further object of the invention is to provide supports for the cloth beam which are adjustable so that the operative positions of said beam may be varied, together with means whereby the beam may be released in a convenient manner for adjustment to its several positions.

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 to-

ward the reed. Fig. 5 is a vertical longitudinal section. Figs. 6, 7 and 8 are diagrammatic views showing the 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 positions.

For the purposes of illustration, I have in the present instance shown my invention as embodied in a hand loom for domestic use in weaving carpets and rag rugs from old clothes and carpets, although it is to be understood that the invention, as before stated, 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 and including side bars 3. The side bars 3 are provided with or carry at the rear of the frame 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.

At their forward ends the side bars 3 carry brackets or uprights 8 which are adjustably secured thereto in any preferred manner. In the present instance each bracket or upright is shown as provided with a longitudinal slot 9 for the passage of clamping bolts 10 whereby it is adapted to be vertically adjusted and clamped in adjusted position. The outer edges of the respective brackets or uprights are formed with seat shoulders or notches 11, 12 and 13 to support the cloth or carpet beam 14 at different working elevations.

As shown, the beam 14 has the ends of its shaft 15 extended and adapted to seat within the said notches 11, 12 and 13, said beam being vertically adjustable on the outside of the uprights 8 and adapted to engage and be supported by the shoulders or notches 11 when in an intermediate or weaving position, and to be respectively supported by the notches 12 and 13 when in upper and lower warp spreading and crossing positions.

Upon the ends of the beam or roll and the shaft of the beam or roll 14 are respec-

tively fixed pulleys 16 and 17, between which sets of pulleys at the opposite sides of the loom extend flexible connections 18 each including a spring 19, which connections are adapted to wind upon and off the respective pulleys as the beams are turned in opposite directions. These connections 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 to wind up the woven fabric. When the beams are moved in a forward direction for the binding or weaving action the flexible connections are wound upon the cloth beam and unwound from the warp beam, thus permitting the warp threads and fabric to feed forward for the beating-in or weaving action, while on the rearward motion of said beams the flexible connections will be wound upon the warp beam and unwound from the cloth beam, thus winding up the fabric and moving the warp threads forwardly for spreading and crossing operations, in all of which movements the warp and fabric are held under proper tension. The pulleys 16 and 17 are preferably of stepped construction, each having a plurality of surfaces of different diameters and provided with pins or pegs 20 adapted to be engaged by loops at the ends of the flexible connections, by which the relative speeds of rotation of the beams may be properly varied at different periods in the weaving of the rug or carpet. Levers 21 are supported upon the frame or upright for movement to engage and release the cloth beam from engagement with the holding shoulders or notches on the uprights, thus facilitating the adjustment of said beam to its different operative positions.

The reed mechanism shown in the present instance, comprises a suitable transverse frame 22 extending between and secured to the uprights 4 and reed sections or dents 23 carried by said frame, said reeds or dents being arranged in spaced relation to provide elongated vertical thread passages 24 and provided with openings 25 so forming thread passages. In the use of this improved loom, the warp threads are arranged in two sets, the threads 26 of one set extending through the passages 24 and the threads 26^a of the other set extending through the openings 25, and the parts of the reed are disposed in relatively fixed position so that the warp threads 26 are capable of free vertical movement in the passages 24 to a predetermined extent while the warp threads 26^a are held from vertical movement and simply feed through the passages or openings 25.

It will thus be evident from the foregoing description that when the cloth beam 14 is disposed in an intermediate position in which it is held by the shoulders or notches 11 the parts of the loom are in the proper relative

position for a beating-in or weaving action, while when the cloth beam is supported by the shoulders or notches 12 in an elevated position or by the shoulders or notches 13 in a depressed position the sets of warp threads will be spread and crossed respectively above and below the weaving position for the insertion of the woof 27. These operative positions are illustrated respectively in Figs. 6, 7 and 8 from which the action of the loom mechanism may be readily understood. It is evident that the adjustability of the uprights 8 enables the notches or shoulders to be varied in position or elevation as circumstances may require according to the character of the warp or woof employed and the nature of the carpet or rug which is being woven.

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 is performed by moving the already woven cloth or carpet against the reed by rotating the warp beam in a rearward direction and then moving it backward again by turning the warp beam forward so that the warp may be crossed and spread and another strip of woof be put in. This beating-in action is performed when the cloth roll is seated in the notches 11, as previously explained. In the operation of the loom the cloth beam is first adjusted into engagement with the upper notches 12 thus spreading and crossing the warp threads above the beating-in line, whereupon a strip of woof is inserted by means of a suitable shuttle, the cloth beam is then lowered into engagement with the notches 11 and the beating-in or weaving action carried out as above set forth, after which the beam is lowered into engagement with the lower notches 13 to spread and cross the warp threads below the weaving lines, whereupon a new strip of woof is inserted, the cloth beam elevated into weaving position and the cycle of operation above described repeated.

By means of the levers 21 it will be evident that the cloth beam may be released from the notches against the action of the tensioning springs so that its adjustment may be facilitated, and that by reason of the construction described simplicity is secured, both in the structure of the machine itself and the weaving action in entirety, since the use of a batten and reed harness mechanism is dispensed with, thus enabling a very simple type of loom to be produced and sold at a comparatively low cost. It will be evident that the same action of disposing the warp threads in the different specified positions may be attained by the use of a vertically adjustable reed, under which conditions the cloth beam may be mounted to rotate in fixed bearings, but, while this broad idea is contemplated by

the present invention, the structure disclosed is specifically claimed herein, the alternative construction specified being set forth and claimed in a separate application of even date herewith.

I claim:—

1. In a loom, a warp beam, a cloth beam, means for rotating said beam, a reed having passages for two sets of warp threads, 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 permitting adjustment of the cloth beam to different working positions for the purpose of forming the shed.

2. In a loom, a warp beam, a cloth beam, flexible winding and tensioning connections between said beams, means for rotating one of said beams, a reed having sets of passages for two sets of warp threads, one set of passages being adapted to permit both feeding and vertical movements of the threads and the other to permit feeding movement of the threads while holding the same from vertical movement, and means for vertically adjusting the cloth beam to different working positions for the purpose of forming the shed, said means being adapted to retain the beam in such positions of adjustment.

3. In a loom, a warp beam, a reed having two sets of warp thread passages, one adapted to permit both feeding and vertical movement of the threads and the other to permit feeding movement of the thread while holding the same from vertical movement, whereby the threads are adapted when disposed at different elevations to be spread and crossed above and below the line thereof, a cloth beam and means for vertically adjusting the cloth beam to different positions to effect such adjustments of the threads for the purpose of forming the shed.

4. In a loom, a frame having a series of seats at different elevations, a warp beam, a cloth beam vertically adjustable for the purpose of forming the shed and adapted to engage said seats, pulleys upon said beams, flexible winding and tensioning connections between said pulleys including coiled springs, means for rotating the warp beam, and a reed provided with passages for separate sets of warp threads, one adapted to permit both feeding and vertical motion of the threads and the other adapted

to permit feeding motion only of the threads.

5. In a loom, a frame having a series of seats at different elevations, a warp beam, a cloth beam vertically adjustable for the purpose of forming the shed and adapted to engage said seats, stepped pulleys upon the beams, flexible winding and tensioning connections between said pulleys adapted for detachable engagement with the stepped surfaces of the pulleys, said connections including coiled springs, means for rotating the warp beam, and a reed provided with passages for separate sets of warp threads, one adapted to permit both feeding and vertical motion of the threads and the other adapted to permit feeding motion only of the threads.

6. In a loom, a warp beam, a vertically adjustable cloth beam, means for holding the same at different working elevations for the purpose of forming the shed, means for rotating said beam, and a reed having passages for two sets of warp threads, one adapted to permit both feeding and vertical motion of the threads and the other to permit feeding motion only of the threads.

7. In a loom, a frame having a series of seats at different elevations for the purpose of forming the shed, a cloth beam vertically adjustable and adapted to engage said seats, a warp beam, flexible winding and tensioning connections between said beams, means for rotating the warp beam, and a reed provided with passages for separate sets of warp threads, one adapted to permit both feeding and vertical motion of the threads and the other adapted to permit feeding motion only of the threads.

8. In a loom, a frame structure provided with upper, lower and intermediate sets of receiving seats or notches, a cloth roll adapted to engage said seats or notches, a warp roll mounted to rotate in fixed bearings, flexible winding and tensioning connections between said rolls, means for rotating the warp roll, means for shifting the cloth roll out of engagement with said seats or notches, and a reed provided with two sets of warp thread passages, one adapted to permit both feeding and vertical motion of the threads and the other to permit feeding motion only of the threads.

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

BENJAMIN ELSASER.

Witnesses:

JOHN H. ELSASER,
FAY C. MARTIN.