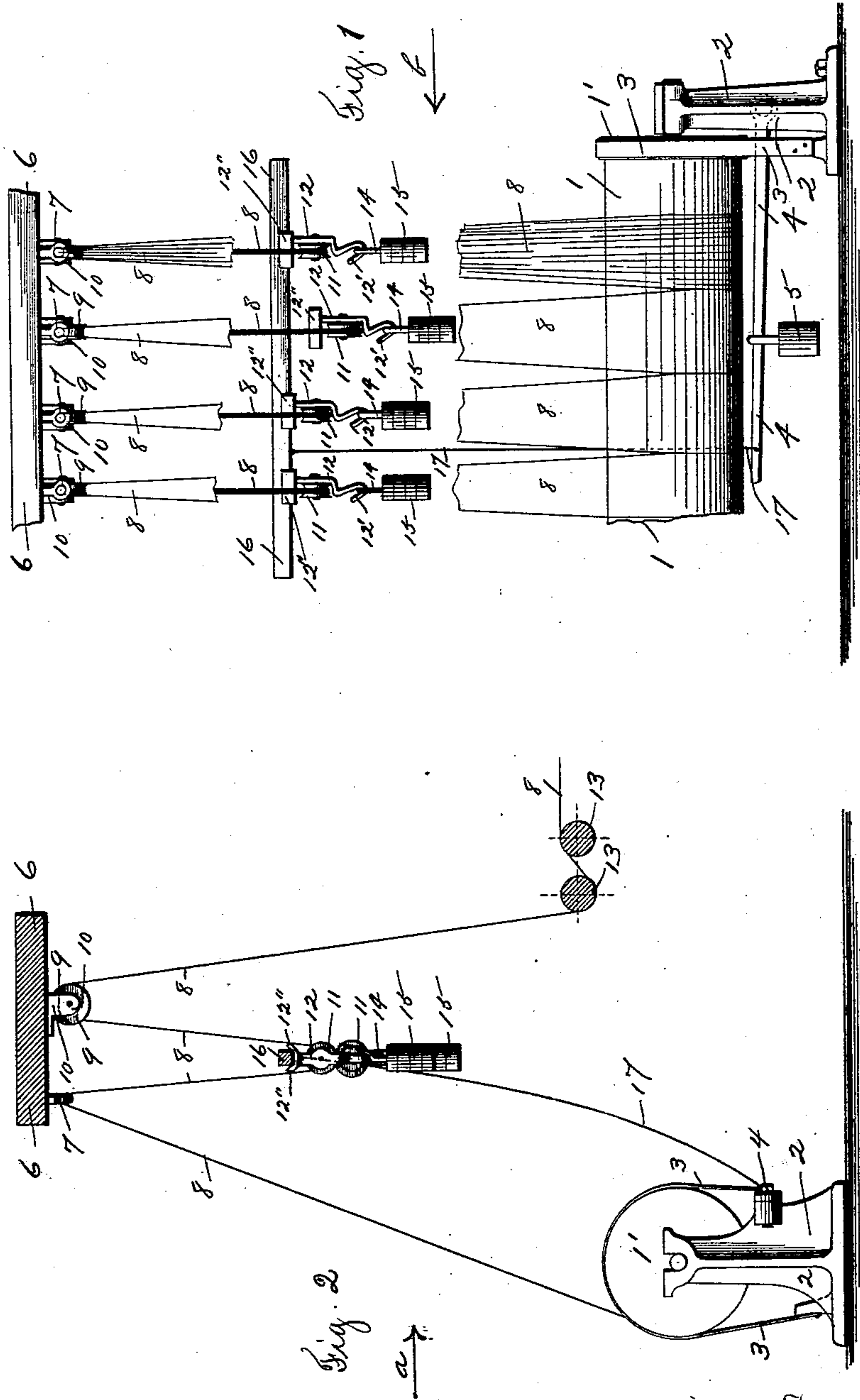


No Model.)

S. WAITE.  
LET-OFF FOR NARROW WARE LOOMS.

No. 562,989.

Patented June 30, 1896.



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# UNITED STATES PATENT OFFICE.

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## LET-OFF FOR NARROW-WARE LOOMS.

SPECIFICATION forming part of Letters Patent No. 562,989, dated June 30, 1896.

Application filed October 3, 1895. Serial No. 564,496. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL WAITE, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Let-Offs for Narrow-Ware Looms, of which the following is a specification.

My invention relates to the let-off mechanism of narrow-ware looms. Heretofore in narrow-ware looms there has been a separate warp-beam for each set of warps that are used in making one of the narrow-ware fabrics, as suspender goods, lamp-wicks, &c., and a separate weighted pulley-block, carrying a pulley around which the warps pass, said weighted pulley block or frame acting to apply the proper tension to the warp as it is drawn into the loom. In this construction the tension on each set of warps is independent of the tension on any other set, and the tension is liable to vary in the operation of the loom, so that the finished fabrics will vary, and will not be of uniform tension. Some will stretch more than others.

It is very desirable in manufacturing narrow-ware goods that all the goods manufactured on one loom should be made uniformly, and the same tension applied to all the sets of warps simultaneously, so that the finished product will all correspond, and one fabric will not stretch or give more than another, and will not be woven closer or more open than another, &c.

The object of my invention is to obtain the desired result mentioned above, and this I do by using one warp-beam for a number of sets of warps, as twelve, instead of an individual warp-beam for each set. Ordinarily I use two warp-beams in an ordinary narrow-ware loom, and by using a supplemental attachment or device, combined with all the weighted pulley blocks or frames used for the sets of warps on one beam, there being one weighted pulley-block and pulley for each set of warps, said attachment consisting of a heavy metal bar or rod, which I term an "evenner-bar," and which rests and is supported directly on top of the weighted pulley-blocks, and extends between the warps in the

direction of the width of the loom, and is of a length corresponding to the length of the warp-beam, or the width of all the warps wound thereon.

The weight of the evenner-bar, which is considerable, ordinarily about fifty pounds, increases the tension on the warps over what is ordinarily given to them by the weighted pulley-blocks, so that I obtain this additional tension, which I have found very desirable in making narrow-ware goods, as the finished goods are substantially non-stretchable.

By means of the evenner-bar, which rests on all the pulley-blocks, as above stated, an almost uniform tension is maintained on all the warps, for in case the tension on one set of warps in weaving the goods tends to raise the weighted pulley-block, the evenner-bar prevents it from raising, as the weight thereof is sufficient to overcome the extra tension. In case several of the pulley-blocks are raised simultaneously by increased tension on several sets of warps, the tension being sufficient to raise the evenner-bar, I provide a connection from said bar to the friction let-off of the warp-beam, to release the friction and allow the beam to let off faster, until the evenner-bar returns to its normal position, resting on all the pulley-blocks.

My invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described, and the nature thereof indicated by the claims.

Referring to the drawings, Figure 1 is a rear view of a portion of a warp-beam and let-off attachment of a narrow-ware loom, sufficient to illustrate my improvements applied thereto, looking in the direction of arrow *a*, Fig. 2; and Fig. 2 is an end view looking in the direction of arrow *b*, Fig. 1.

In the accompanying drawings, 1 is a portion of a warp-beam, mounted to turn, in this instance, in stands 2, (only one stand is shown,) located at the rear of the loom. (Not shown.) The beam 1 is provided with a head 1', around which a friction-band 3 passes in the usual way. The band 3 is attached at one end to the stand 2 and at its other end to a lever 4, pivoted at one end, in this instance on the stand 2, and provided with an



adjustable weight 5 at its other end in the usual way. The top castle 6 is provided with a series of eyes 7, through each one of which one set of warp-threads, as 8, pass, and a series of pulleys 9, mounted in brackets 10.

Each set of warp-threads, as 8, pass from the beam 1, through an eye 7, and around a pulley 11, mounted in a pulley block or frame 12, then over pulleys 9, mounted in blocks 10, to the rolls 13, (shown in Fig. 2,) and to the loom (not shown) in the usual way.

Each pulley-block 12 is provided with a hook 12', on which is hung a rod 14, carrying weights 15, of the desired size, to produce the desired tension on the warp-threads.

Combined with the pulley-blocks 12 is a metal bar or rod 16, of the desired weight. Said bar 16 rests on the top of the blocks 12, and is held in position, preferably, by ridges or projections 12'' on each block.

The bar 16, which I term the "evenner-bar," extends between the sets of warp-threads in the direction of the width of the loom, and bears evenly on all the pulley-blocks, when they are in their proper position, and increases the tension on all the warp-threads, over the tension produced by the weights 15, by the weight of said bar 16. The weight of said bar is sufficient to prevent any one of the pulley-blocks 12 raising said bar out of a horizontal plane, in case the tension on any one set of warp-threads is sufficient to overcome the weight of the weights 15, but in case of an increased tension on all or several of the sets of warp-threads the bar 16 may be raised with the weighted pulley-blocks 12, and when raised to a predetermined point will, through cord 17, attached at one end to said bar and at its other end to the free end of the lever 4, raise said lever and release the friction-band 3 to allow the warp-beam to let off more warp. The letting off of additional warp allows the bar 16 and weighted pulley-blocks 12 to drop down to their normal position.

In case the tension on any one set of warp-threads is lessened for any reason, the weighted pulley-block 12 may temporarily drop down below the evenner-bar 16, as shown in the drawings, but the tension will ordinarily keep each pulley-block 12 in engagement with said evenner-bar.

By using one warp-beam for a number of set of warps, and by using the evenner-bar 16, as above described, I obtain a very uniform tension on all the sets of warps, and produce

fabrics which are very uniformly made and are substantially non-stretchable.

The advantages of my improvements will be readily appreciated by those skilled in the art.

The details of construction of my improvements may be varied if desired.

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

1. In a narrow-ware loom having a warp-beam mounted in stands, a friction-band engaging said beam, a weighted lever pivoted at one end to said stand and having secured thereto one end of said friction-band, a top castle having a series of eyes and one of blocks with pulleys mounted therein, through which eyes and about which pulleys the warps pass, and depending pulley-blocks with pulleys secured therein engaging said warps between said eyes and pulleys, said blocks having ridges on the outer edges of their upper faces, an evenner-bar adapted to engage said depending blocks between said ridges and connected with said lever, and a hooked arm on the lower side of each of the said depending blocks and pulleys with adjustable weights thereon, said parts being combined substantially as described.

2. In a narrow-ware loom having a warp-beam with weighted lever secured thereto and engaging a friction-band thereon, a top castle having eyes and pulleys secured thereon, pulleys depending from warps passing through said eyes, adjustable weights secured to said pulleys, an evenner-bar adapted to rest on the upper face of said depending pulleys, and connected with said lever, said parts being combined substantially as described.

3. In a narrow-ware loom, a warp-beam having a friction-band, and a weighted lever, a top castle provided with a series of eyes through which the warp-threads pass, the two sets of blocks 10 and 12 with the pulleys 9 and 11 mounted respectively thereon, and around which pulleys the warp-threads pass, the rod 14 having weights thereon and supported by the block 12 and the block 16 resting on said blocks 12 and connected with said weighted lever, said parts being combined substantially as described.

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Witnesses:

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