April 5, 1932. E. R. HOLMES 1,852,052

WARP LET-OFF FOR NARROW WARE LOOMS

Filed Aug. 3, 1931

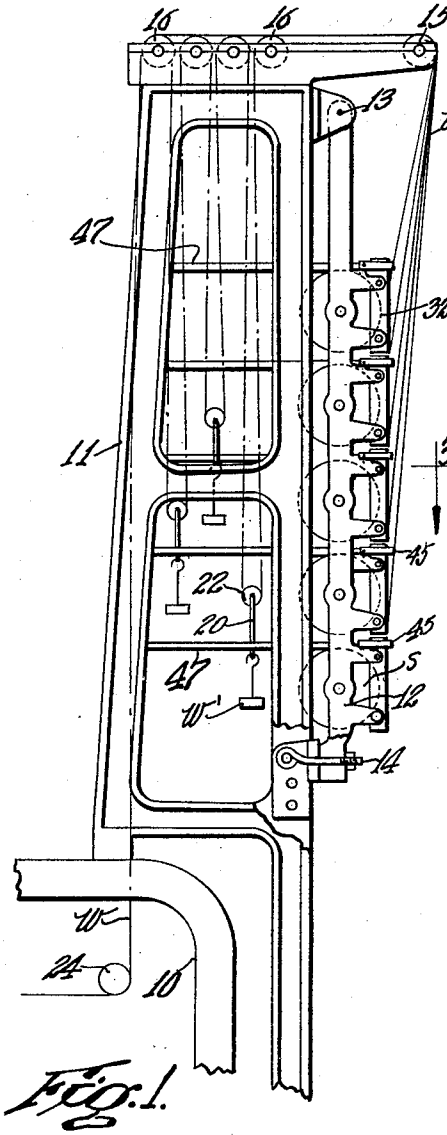

Fig. 1.

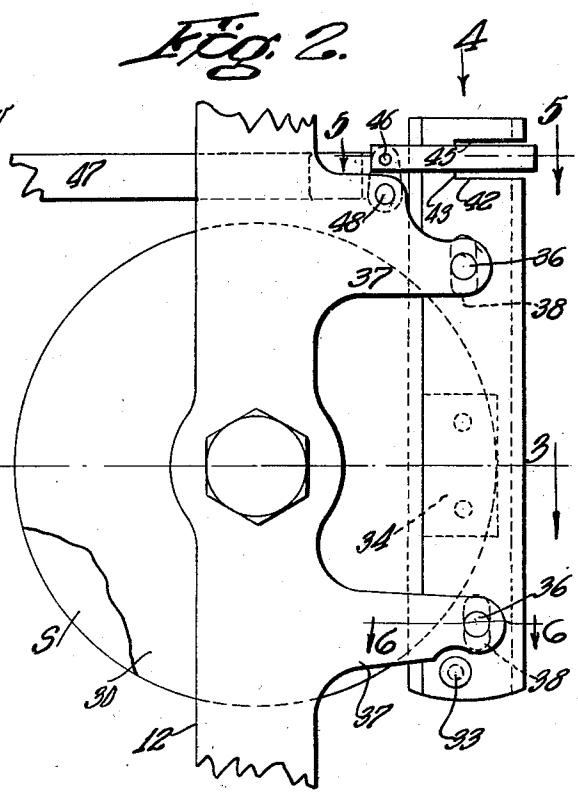

Fig. 2.

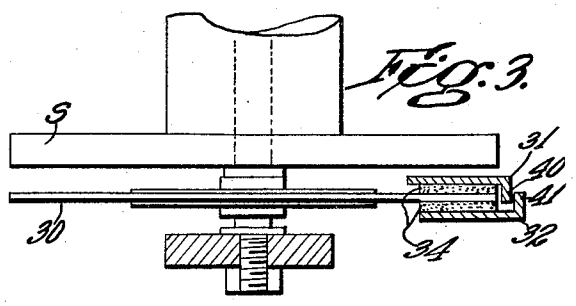

Fig. 3.

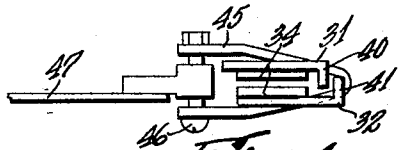

Fig. 4.

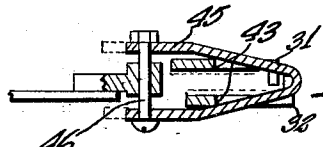

Fig. 5.

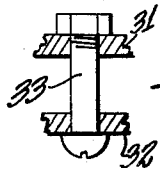

Fig. 6.

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UNITED STATES PATENT OFFICE

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WARP LET-OFF FOR NARROW WARE LOOMS

Application filed August 3, 1931. Serial No. 554,674.

This invention relates to narrow ware looms in which the warp threads are wound on a plurality of warp spools separately mounted for independent rotation.

In order to provide uniform warp tension in such looms, it is customary to arrange downwardly extending loops in the warp threads between the warp spools and the harnesses, and to suspend a weight from each warp loop, by which a predetermined tension will be applied to each warp thread or group of threads. It is also customary to hold each warp spool stationary for limited periods and until the weaving operation has shortened the associated warp loop and raised the corresponding weight to a point at which a spool holding device will be engaged and released thereby.

Such engagement releases the warp spool and allows the warp to be unwound therefrom until the weight is thereby lowered and disengaged from the holding device, which thereupon resumes holding position and prevents further unwinding of the warp.

Such warp let-off devices are in common commercial use and two forms of such let-off devices are shown and described in my prior Patent No. 1,517,510, issued December 2, 1924 and No. 1,546,582, issued July 21, 1925.

It is the general object of my present invention to improve the construction therein shown, simplifying the mechanism and substantially reducing the cost of manufacture.

More specifically, my invention relates to the provision of improved and simplified means for clamping a pair of friction plates against the opposite sides of a disc rotatable with a warp spool, and for allowing said plates to separate when additional warp thread is required by the loom.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a side elevation of a warp creel and let-off mechanism for a narrow ware loom;

Fig. 2 is an enlarged side elevation of one of the warp spools and its associated let-off devices;

Fig. 3 is a plan view, partly in section and taken along the line 3—3 of Fig. 2;

Fig. 4 is a plan view of certain parts, looking in the direction of the arrow 4 in Fig. 2, and

Figs. 5 and 6 are sectional plan views taken along the lines 5—5 and 6—6 in Fig. 2.

Referring to the drawings, I have shown a portion of the loom frame 10 having a creel frame 11 mounted thereon and supported thereby. A plurality of warp spools S are rotatably mounted in bearing bars 12 pivoted to the creel stand at 13 and secured in operative position by clamping bolts 14. The warp threads W extend upward from the spools S and over suitable guide pulleys or rolls 15 and 16.

Each warp or group of warps is looped downward between two successive guide pulleys or rolls 16. Weights W′ are suspended by open links 20, each of which is connected to a roll or pulley 22 disposed at the bottom of a warp loop. The warp threads W pass downward from the last upper guide roll 16 to a lower guide roll 24, from which they are drawn forward to the harnesses and reed.

All the parts thus far described are of the usual construction and are substantially similar to the corresponding parts shown in my prior patents.

My present invention relates more particularly to the improved means which I have provided for holding the spools S from rotation and periodically releasing the same.

For this purpose I provide each spool S with a disc 30 (Fig. 3), secured thereto and rotatable therewith. A pair of friction plates 31 and 32 are secured in spaced relation at their lower ends by a stud 33 and are provided with friction pads 34 engaging opposite faces of the disc 30.

The plates 31 and 32 are held from forward or rearward displacement by studs 36 (Fig. 2) mounted in rearwardly extending arms 37 of the spool-supporting bars 12 and extending through vertical slots 38 in the plates 31 and 32.

The plates 31 and 32 are provided with in-

wardly directed and overlapping flanges 40 and 41 (Fig. 3) by which the plates are materially stiffened. The plates are also provided with horizontal slots or openings 42 near the upper ends thereof and with transversely aligned shoulders 43 at the inner ends of said openings 42.

A strip of sheet metal 45 is bent to the V-shaped outline shown in Figs. 4 and 5, and is pivoted on a bolt 46 mounted in a lever 47 pivoted at 48 to the upper arms 37 which project rearward from the bars 12.

It will be noted that the pivot 48 of the lever 47 is directly below the pivot 46 by which the member 45 is connected to the lever 47. Each lever 47 extends forward through the creel frame and also extends through the loop 20 associated with the weight W′ supported by the warp thread or threads drawn from the particular spool S with which the lever 47 co-acts.

Having described the details of construction of my improved let-off mechanism, the operation thereof will be readily understood. As a particular loop of warp is gradually shortened by the weaving operation, the corresponding weight W′ and link 20 will be raised until the link engages the associated lever 47. Further shortening of the loop will raise the lever, releasing the cam pressure of the V-shaped member 45 on the friction plates 31 and 32, and thus allowing the plates to separate, freeing the corresponding disc 30 and allowing the warp spool S to rotate. As warp is thus unwound, the warp loop lengthens, lowering the weight W′ until the lever 47 is no longer suspended thereby. The lever 47 tehreupon acts upon the pivot stud 45 to again move the V-shaped member 45 forward against the shoulders 43 of the plates 31 and 32.

This produces a cam action on the friction plates, forcing the pads 34 against the sides of the disc 30 and again holding the spool from rotation. This let-off operation is repeated as often as more warp is required for the weaving operation.

All the parts may be simply and easily constructed and there are no adjustments, or parts which are liable to get out of order.

Having thus described my invention and the advantages thereof I do not wish to be limited to the details as herein disclosed, but what I claim is:—

1. In a narrow ware loom, a rotatably mounted warp spool, a friction disc rotatable therewith, friction plates engaging the opposite sides of said disc, a warp controlled lever, and a member pivoted to said lever and having a V-shaped opening therein through which portions of said plates extend, said member having a cam action to clamp said plates against said disc as said lever is moved by the taking-up of the warp.

2. In a narrow ware loom, a rotatably mounted warp spool, a friction disc rotatable therewith, friction plates engaging the opposite sides of said disc, a warp controlled lever, and a member pivoted to said lever and having oppositely inclined cam faces engaging outer portions of said friction plates and forcing said plates against said disc as said lever is moved by the taking-up of the warp.

3. In a narrow ware loom, a rotatably mounted warp spool, a friction disc rotatable therewith, friction plates engaging the opposite sides of said disc, a warp controlled lever, and a member formed of a single strip of sheet metal bent to V-shaped form and having its ends pivoted to said lever, with portions of said friction plates extending between the relatively inclined sides of said member and clamped against said disc by the cam action thereof as said lever is moved by the taking-up of the warp.

In testimony whereof I have hereunto affixed my signature.

ELBRIDGE R. HOLMES.