

940,330.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

WITNESSES

Wm. Bell.

John Kaufmann.

George H. Kaufmann.

John Kaufmann.

INVENTOR,

BY

ATTORNEY.



# UNITED STATES PATENT OFFICE.

GEORGE W. KUENNETH, OF PATERSON, NEW JERSEY.

LET-OFF MECHANISM FOR NARROW-WARE LOOMS.

940,330.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed May 6, 1908. Serial No. 431,128.

*To all whom it may concern:*

Be it known that I, GEORGE W. KUENNETH, a citizen of the United States, residing in Paterson, Passaic county, New Jersey, have invented a certain new and useful Improvement in Let-Off Mechanisms for Narrow-Ware Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention relates to let-off mechanisms for narrow-ware looms and it has for its object, among others, to provide a let-off mechanism which shall be adapted to maintain an easily adjustable though regular or uniform tension on the warp, which shall be inexpensive, simple and compact in construction and capable of being conveniently and quickly disassembled and cleared from the warp whenever independent access to the latter or to the parts of said mechanism is required for any purpose, and which shall be further adapted to allow the warp to be conveniently relieved of the tension whenever what is known as "picking back" is necessary.

A further object of the invention is to provide a cheaper construction of warp-roll than is now commonly used.

In the accompanying drawing, in which my invention will be found fully illustrated, Figure 1 is a view of the improved let-off mechanism in side elevation; Fig. 2 is a plan view thereof, the upper guide-roller brackets and certain other parts being removed and others shown in section; Figs. 3 and 4 show the members of the lever system as adapted to the edge warps; Figs. 5 and 6 are side and plan views, respectively, of the controlling lever for the body warp; Fig. 7 is a sectional view of one of the controlling levers through the weight attaching portion thereof, showing one way of attaching the weights; Figs. 8 and 9 are side and sectional views of a lever adapted particularly as the controlling lever of the edge warp lever system and showing another way of attaching

the weights; Fig. 10 shows one form of brake-shoe; and, Fig. 11 is a vertical sectional view of my improved warp-roll and another form of brake-shoe.

In said drawing, *a* designates a fixed part of the loom, to which the upper ends of stands or brackets, such as *b*, are secured, and *c* is another fixed part to which the brackets, such as *d*, for the warp guide rollers *e*, are attached. The stands *b* are provided with upwardly opening bearings *e* and *f* for the ground or body warp rolls *g* and the edge warp rolls *h* and with other upwardly opening bearings *i* and *j* for the lever systems (to be described) corresponding to the said rolls; back of each bearing *i* and *j* are the laterally projecting studs *k*. A single rod or shaft *l* is arranged in the aligned bearings *i* and a similar rod or shaft *m* in the aligned bearings *j*, such shafts being held in place by the set-screws *o*.

Each of my lever systems preferably comprises two members one of which is fulcrumed on the rod or shaft *l* or *m* and the other of which is fulcrumed on the first-named member, the arrangement being such that the weight of both levers tends to apply a braking action to the corresponding warp-roll, this tendency being substantially constantly overcome, however, when the mechanism is operating properly, by the second-named member being drawn by the warp into moving engagement with the first-named member so that the latter relieves the braking action.

For facility of expression, I herein term the first-named member the "brake-lever" and the other member the "controlling lever"; and, in reference to the expression "brake-lever", it is to be understood that, while I prefer to employ a lever which exerts a substantially direct braking action on the corresponding warp-roll, I am not correspondingly limited. Referring, first, to the brake-levers: For the ground or body warp roll, this lever comprises two parts *p* of similar form and connected by the rod *q* which lies in either end of the longitudinal slot *r* of each of said parts (for a purpose to appear later) and is held in place therein by the set-screw *s*, so that the two parts form one rigid structure; each part *p* has its



rear end formed with the rearwardly inclined downwardly opening bearing *t* and with the rearwardly projecting tail *u* and it has its forward end upturned and formed with an upwardly opening bearing *v* for the guide-roller *w*, with a stop *x* and with the curved surface *y* which forms an arc whose center is substantially the rod *q*, the lower end of said surface terminating in the shoulder *z*. The brake-lever, thus formed, is arranged on the shaft *l* with its open bearings *t* receiving the same and (whenever the warp-roll is removed) is supported in substantially a horizontal position by its tails *u* bearing against the studs *k*; the tails are upturned slightly so that the brake-lever cannot be unshipped from the shaft *l* except it is first elevated slightly. Each part *p* has a vertical slot 1 formed forward of the horizontal slot *r* and in this is received the bolt 2 forming a bearing for the brake-shoe shown in Fig. 10 and which comprises the metallic body part 3 and the leather face 4, which leather face bears in the groove of the periphery of the warp-roll *g*, thus insuring the brake lever and warp-roll against relative lateral displacement; it will be understood that the slots 1 permit adjustment of the brake-shoe vertically in the lever.

The parts 5 for the edge-warp brake-lever are substantially like the parts *p* already described except in the following particulars: The parts 5 are levers movable independently of each other because the two edge warps (for each body warp) require independent tension mechanisms and, according to conditions in the goods to be woven, adjustability of said levers relatively to each other; they therefore have no rod, such as rod *q*, connecting them, but have, instead, the outwardly projecting studs 6 which are secured in their horizontal slots 7 by the set-screws 8; instead of having open bearings, they have the closed widened bearings 9, receiving the shaft *m*, and insuring the stability which might otherwise not exist in view of their independent mounting, and instead of the warp guiding rollers 10 therefor being carried by both levers there is one for each lever, the same being journaled on a stud 11 which is secured in the recess 12 by the set screw 13. 14 designates the pivoted brake-shoes for these levers.

The controlling levers may be thus described: Each controlling lever comprises the two parts 15 and, referring to the controlling lever for the body warp, each such part 15 has its rear end turned downwardly and formed with the downwardly open rearwardly inclined bearing 16 which is adapted to receive the rod *q* of the corresponding brake-lever, while its forward end forms a handle 17; between its ends, each part 15 has a longitudinal slot 18 in one end of

which lies the end of a rod 19 which connects the parts 15 and which is secured in the slots by the set-screws 20; each part 15 further has an upwardly extending hook 20' forming an open bearing for the trunnion of the warp guiding roller 21 and it is provided with the stop 22 adapted to engage the stop *x* of the corresponding part *p* of the brake lever and with the projection 23 coacting with the curved face *y* of said part *p*.

The controlling levers for the edge warp are independently movable (relatively to each other) the same as the corresponding brake-levers, as above described; they are substantially the same in form as the parts 15 of the other controlling levers excepting that their rear ends have the closed widened bearings 24 arranged on the studs 6 of the brake levers and the warp guiding roller 25 is journaled on a stud 26 secured in a recess 27 of the lever by a set-screw 27', there being one such roller for each lever. The weights 28 may be attached to the controlling levers either by means of the headed studs 29 shown in Figs. 2, 4, 5, 6 and 7, or by the double-headed removable studs 30 arranged in the recesses 31 of said levers as shown in Figs. 8 and 9, or by hanging them on the rod 19.

My improved warp-roll, shown in Fig. 11, comprises a wood cylindrical body part 32 to which, against the opposite faces thereof, are attached by screws or the like 33 the dished sheet metal heads 33', the edge portions of said heads being turned outwardly and receiving the grooved leather bands 34 having a round cross-section; this construction of warp roll is much cheaper to make than the ordinary warp roll because it requires the simplest operations in order to secure the necessary concentricity as between the periphery of each flange or head and the surface of its body part; the brake-shoes designed to be used therewith, marked 35, are grooved to receive the leather bands 34. I preferably mount each warp roll for the body warp on a spindle 36, loosely, between collars 37; thus, upon removing the spindle from its bearings *f* and detaching one collar, a warp roll of different size may be readily substituted, the collars being adjustable so that the proper disposition of the warp roll on the spindle may be secured. Collars 39, open on one side as shown in Fig. 2, may be employed to hold the brake-levers for the edge warps in proper spaced relation to each other, such collars being adjustable on the shaft *m* by virtue of their set-screws 38.

A and B designate the body and edge warps, respectively. In each instance the warp extends over the guide roller on the brake lever and then under the guide roller



on the controlling lever, before passing up over the guide rollers on the brackets *d*. It will be understood that the action of the warp on the lever system is intermittent to allow the weight of the system to brake the warp-roll and stop such braking action by the warp drawing the controlling lever up until it engages the brake lever and lifts it; these two operations follow in such rapid succession that a most delicate and sensitive tension effect is produced and one which is not only constantly uniform but capable of regulation according to the weighting of the controlling lever. My arrangement of the parts makes it possible for the controlling lever to have relatively great range of movement in "picking back", although the entire mechanism is very compact and space-saving.

One of the principal features of advantage by my arrangement is the fact that the lever system may be removed if it is desired to have free access to the warps. In the case of the lever system for the warp A, the controlling lever would be raised until its projections 23 cleared the curved surfaces *y* of the brake lever, whereupon the controlling lever may be freely removed from its fulcrum in the brake lever; the brake lever is now removed by simply raising it until the tails thereof clear the studs, so that the lever may be detached from its fulcrum shaft. In the case of the system of levers for warp B, it is not required to remove each controlling lever from its brake lever, since the warp may be slipped over the ends of the guide rollers and thus clear them.

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

1. In a let off mechanism for looms, the combination, with a suitable support and a warp roll, of a brake-lever for the warp-roll, and a controlling lever for the brake-lever, the fulcrum for the controlling lever forming an open bearing and one of said levers comprising means for locking the controlling lever against displacement from its fulcrum in the normal position of said lever, substantially as described.

2. In a let-off mechanism for looms, the combination, with a suitable support and a warp roll, of a brake lever for the warp-roll and a controlling lever for the brake-lever fulcrumed in the brake-lever, the fulcrum for the controlling lever forming an open bearing and one of said levers comprising means for locking the controlling lever against displacement from its fulcrum in the normal position of said levers, substantially as described.

3. In a let-off mechanism for looms, the combination with a suitable support and a warp roll, of a brake lever for the warp-roll

and a controlling lever for the brake-lever, the fulcrum for the controlling lever forming an open bearing and said levers having the one a curved face and the other a projection opposed to each other in the normal positions of said levers but adapted to clear each other in the abnormal positions of said levers, substantially as described.

4. In a let-off mechanism for looms, the combination, with a suitable support and a warp-roll, of a lever structure exerting a braking control on the warp-roll and fulcrumed in said support, the fulcrum forming an open bearing and said lever structure and the support having parts engageable with each other to limit the movement of said structure on its fulcrum in the direction for braking, substantially as described.

5. In a let-off mechanism for looms, the combination, with a suitable support and a warp-roll, of a lever structure exerting a braking control on the warp-roll and fulcrumed in said support, the fulcrum forming an open bearing, and said lever structure and said support having the one a hook-shaped tail and the other a stud engageable with each other to limit the movement of said structure on its fulcrum in the direction for braking, substantially as described.

6. In a let-off mechanism for looms, the combination, with a suitable support and peripherally flanged means on which the warp is wound, of a lever fulcrumed in said support, and a brake carried by the lever and movable laterally thereon, said brake being engaged with one of the flanges of said means and the one being grooved to receive the other, substantially as described.

7. In a let-off mechanism for looms, the combination, with a suitable support and a warp roll, of a brake lever fulcrumed in said support, a brake shoe carried by the brake lever and bearing against the warp-roll, and another lever fulcrumed in said brake lever between the fulcrum of the latter and the brake shoe, substantially as described.

8. The combination, with a suitable support and a peripherally flanged means on which the warp is wound, a spindle sustained at its ends in the support and affording the bearing for said flanged means, adjustable collars confining the flanged means against sidewise movement on the spindle, a lever fulcrumed in said support, and a brake carried by the lever and movable laterally thereon, said brake being engaged with one of the flanges of said means and the one being grooved to receive the other, substantially as described.

9. In a let-off mechanism for looms, the combination of a suitable support, lever systems fulcrumed in said support side by side and movable independently of each other, warp guiding means carried by said lever



systems, independent warp rolls, one for  
each lever system, and another lever system  
and warp roll corresponding to each two of  
the first-named lever systems and the corre-  
5 sponding warp rolls, substantially as de-  
scribed.

In testimony, that I claim the foregoing,

I have hereunto set my hand this 5th day of  
May, 1908.

GEO. W. KUENNETH.

Witnesses:

JOHN W. STEWARD,  
WM. D. BELL.