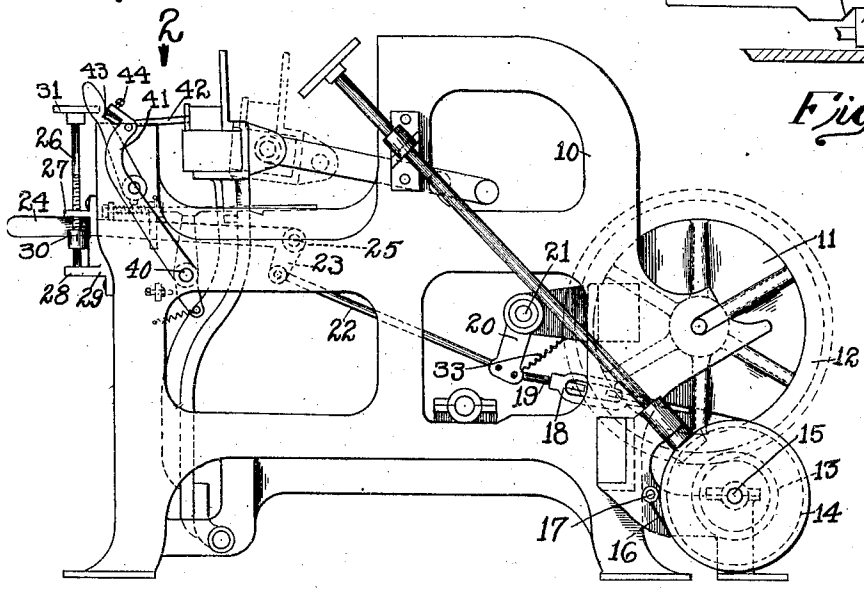
Sept. 27, 1927. 1,643,412

E. L. LANE

PROTECTOR MECHANISM FOR LOOMS

Filed Dec. 30, 1924

Fig. 1.



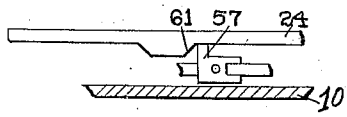




Fig. 4.

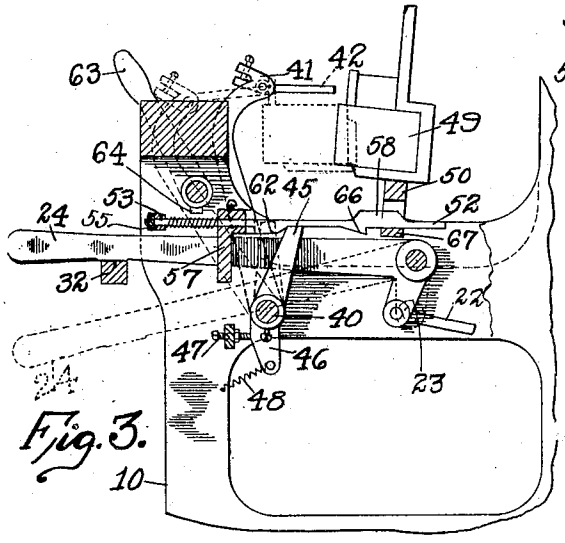



Fig. 3.

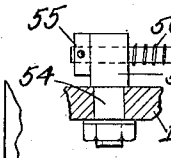



Fig. 7.

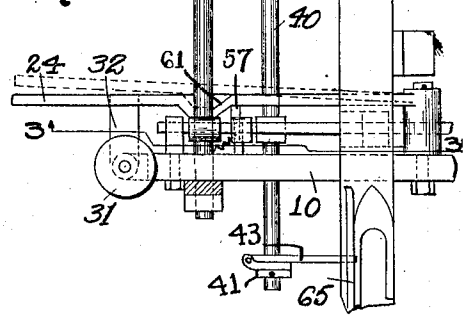



Fig. 2.

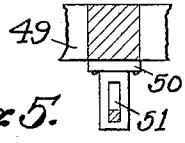



Fig. 5.

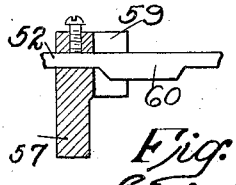



Fig. 6.

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# UNITED STATES PATENT OFFICE.

EDWARD L. LANE, OF MOORESVILLE, NORTH CAROLINA, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## PROTECTOR MECHANISM FOR LOOMS.

Application filed December 30, 1924. Serial No. 758,915.

This invention relates to smash preventers for looms and more especially to means for stopping the loom and releasing the let-off simultaneously.

One object of my invention is to provide a smash preventer controlled by means of shuttle feelers which pass through the binders and come in direct contact with the shuttle to move stopping mechanism out of knocking off position when the shuttle is properly boxed.

A further object of my invention is to provide means whereby the let-off is released to relieve the tension of the warp threads whenever the loom is stopped because of improper boxing of the shuttle, so that if the latter is caught in the shed the warps may yield to prevent a smash.

With these and other objects in view will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings,

Fig. 1 is a side elevation of a loom having my invention applied thereto,

Fig. 2 is a top plan view looking in the direction of arrow 2, Fig. 1,

Fig. 3 is a vertical section taken on line 3—3 of Fig. 2,

Fig. 4 is a fragmentary plan view showing the let-off lever and the device by which it is released,

Fig. 5 is rear elevation of a portion of the lay showing a guide for the knock-off rod,

Fig. 6 is a detail of the knock-off block, and

Fig. 7 is a detail of the swivel mounting for the knock-off rod.

Referring more particularly to Fig. 1 it will be seen that the loom side 10 has mounted thereon warp beam 11 having a gear 12 which meshes with pinion 13 secured to drum 14 which is pivoted on stud 15. In order to apply friction to the drum 14 for the purpose of tensioning the warp I provide a flexible band 16 anchored to some fixed part of the loom as at 17 and having the upper end connected to turnbuckle 18. A link 19 extends from the turnbuckle to an arm 20 which is fastened to shaft 21, a second link 22 extending from the arm 20 to one leg 23 of a lever 24 which is pivoted to the loom frame as at 25. The shaft 21 extends across the loom to control the warp releasing mechanism at the opposite end of the loom.

In order to adjust the tension of the flexible bands 16 I provide a vertical screw 26 mounted between bearings 27 and 28 formed on bracket 29 which is secured in any approved manner to the loom side. A support 30 for the lever 24 is mounted on the screw 26 and may be moved up or down by turning the screw 26 by means of hand wheel 31. The inner end of the support 30 is extended to provide a notch 32 in which the lever 24 normally rests. When it is desired to relieve the friction of the warp the lever 24 is flexed inwardly away from support 30 and moved downwardly, spring 33 assisting in this operation. The matter thus far described is of common construction and forms no part of my present invention.

My improvements relate particularly to the devices with knock off the loom and release the warp tension if the shuttle is not properly boxed. In carrying out my invention I provide a shaft 40 which extends across the loom and has secured to each end thereof a lever 41. To the upper end of each lever is pivotally connected a shuttle feeler 42 having an extension 43 in engagement with set screw 44 by means of which it may be adjusted. Fastened to shaft 40 is a lever 45 having a lower arm 46 which is held against set screw 47 by means of spring 48.

Depending from the lay 49 is a bracket 50 having a guide slot 51 to receive the rear end of knock off rod 52. The forward end of the rod slides through swivel stud 53, the shank 54 of which is somewhat longer than the thickness of the loom side and extends therethrough and is loosely mounted therein. The forward end of the rod 52 has fastened thereto a collar 55 which is held against the swivel stud 53 by means of spring 56 interposed between the stud 53 and a knock off block 57 (see Fig. 7). The block is adjustably fastened to the rod 52 by means of a set screw. In order to prevent the rotation of rod 52 I may provide the latter with an upward extension 58 which extends through the slot 51 of the bracket 50 to hold the same

against any tendency to rotate and I may also provide the block 57 with extensions 59 which lie on each side of the thickened portion 60 of the rod 52. In this way the block and rod are held against rotation.

Referring to Figs. 2 and 4 it will be seen that when the levers 41 are in their normal rearward position the block 57 will be located to the rear of a cam face 61 formed on lever 24 and a cam face 62 formed on the lower surface of rod 52 is slightly in advance of the upper end of lever 45. The shipper handle 63 is provided with a depending finger 64 which is normally in the path of the block 57 when the latter moves forwardly.

In the normal operation of the loom, when the shuttle is properly boxed, the feelers 42 will pass through the binders 65 (one of which is shown) and one of said feelers will engage the shuttle and be moved forwardly, thereby rocking the levers 41 from the full line position to the dotted line position shown in Fig. 3. This motion of levers 41 rocks shaft 40, which in turn moves lever 45 under cam face 62 to raise the rod 52 so that detent 66 formed on rod 52 is raised above the lower portion of the bracket 50 and the lay moves forwardly without acting upon said rod 52. However, when the shuttle is not properly boxed, the feelers 42 will extend into the boxes without being moved forwardly, the result of which is to leave the lever 45 in the position indicated in full lines in Fig. 3 and as the lay advances the lower end 67 of the bracket 50 engages detent 66 and moves the rod 52 forwardly against the action of spring 56. As this occurs the block 57 will engage the face 61 to move the lever 24 laterally out of the notch 32 of the support 30 and at the same time engage fingers 64 to move shipper 63 to knock-off position. The let-off lever 24 will immediately fall to the position indicated in dotted lines in Fig. 3 to release the tension of the warp so that should the lay continue to move after the shipper handle is thrown off and the shuttel is in the shed the beam will be free to turn so as to prevent a smash.

From the foregoing it will be seen that I have provided a smash preventing mechanism which is dependent for its operation upon the direct engagement of the shuttle with shuttle feelers to control knock-off mechanism which is normally positioned to stop the loom but which is moved out of knock-off position when the shuttle is properly boxed. Also it will be seen that I have provided means to release the tension of the warps whenever the loom is stopped by the improper boxing of the shuttle so that the beam may be free to turn and pay off sufficient warp to prevent a smash.

Also it will be seen that the lever 24 may be controlled by hand, as usual, or by the knock-off mechanism, neither form of control interfering with the other form.

Having thus described my invention it will be apparent that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details disclosed herein but what I claim is:

1. In a loom having a warp beam, a friction let-off to resist movement of the beam, a lever controlling the friction let-off, a support for said lever, loom knock-off mechanism, and a smash preventer to operate the knock-off mechanism when the shuttle is improperly boxed, the knock-off mechanism engaging the lever to move the same from the support therefor to relieve the warp beam of the resistance offered by the let-off.

2. In a loom, a lay, shipper mechanism, a warp beam, tensioning devices therefor including a hand lever, a support for said lever, a longitudinally movable member normally in the path of the lay and extending substantially parallel to said hand lever, means to move the member out of the path of the lay when the shuttle is properly boxed, and a device carried by said member to engage the shipper mechanism to stop the loom and also engage the hand lever to flex the same laterally off the support therefor to release the warp when the shuttle is improperly boxed.

3. In a loom having a warp supply means movable about an axis thereof to supply warp as required by the loom, a friction let-off to resist movement of the warp supply means, a smash preventer mechanism to cooperate with the shuttle and normally inoperative when the shuttle is properly boxed, and connections between the smash preventer mechanism and the friction let-off independent of the warp to release the let-off to relieve the warp beam of the resistance offered by said friction let-off when one of the shuttles is improperly boxed, thus releasing the warp beam to move on its axis in response to any demand made by the improperly boxed shuttle.

4. In a loom having a warp supply movable about an axis thereof to supply warp as required by the loom, a friction let-off to resist movement of the warp beam about the axis thereof, a lever to control the extent of resistance offered by the friction let-off, a smash preventer to cooperate with the shuttle and normally inoperative when the shuttle is properly boxed, and means independent of the warp operatively connected with the smash preventer to move the lever to friction releasing position when the smash preventer is operated by improper boxing of a shuttle, thus releasing the friction and leaving the warp beam free

to move on its axis to supply any demand for warp created by the improperly boxed shuttle.

5. In a loom having a warp beam movable about an axis thereof to supply warp, a friction device operatively connected to the warp beam to resist movement thereof, a smash preventer to cooperate with the shuttle and normally inoperative when the shuttle is properly boxed, and connections between the smash preventer and the friction let-off independent of the warp to release the latter to relieve the warp beam of the resistance offered thereby to warp supplying movement of the beam, whereby said beam will be free to move on its axis to supply an amount of warp conditional upon the demands of the improperly boxed shuttle.

In testimony whereof I have hereunto affixed my signature.

EDWARD L. LANE.