J. V. CUNNIFF.

LET-OFF MECHANISM FOR LOOMS.

APPLICATION FILED SEPT. 7, 1909.

973,344. Patented Oct. 18, 1910.

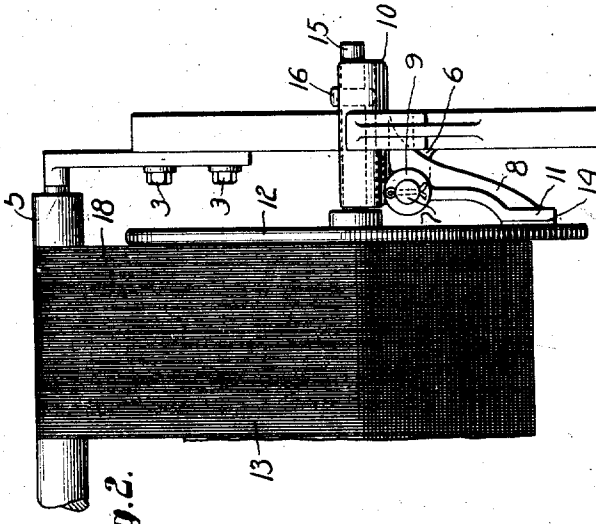

Fig. 2.

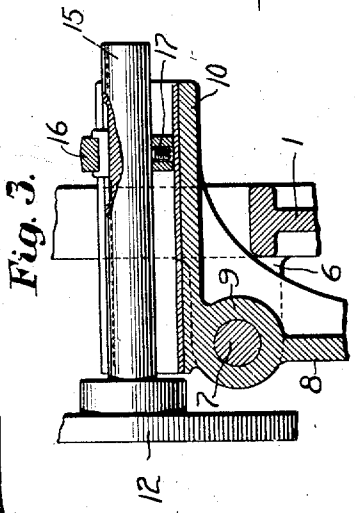

Fig. 3.

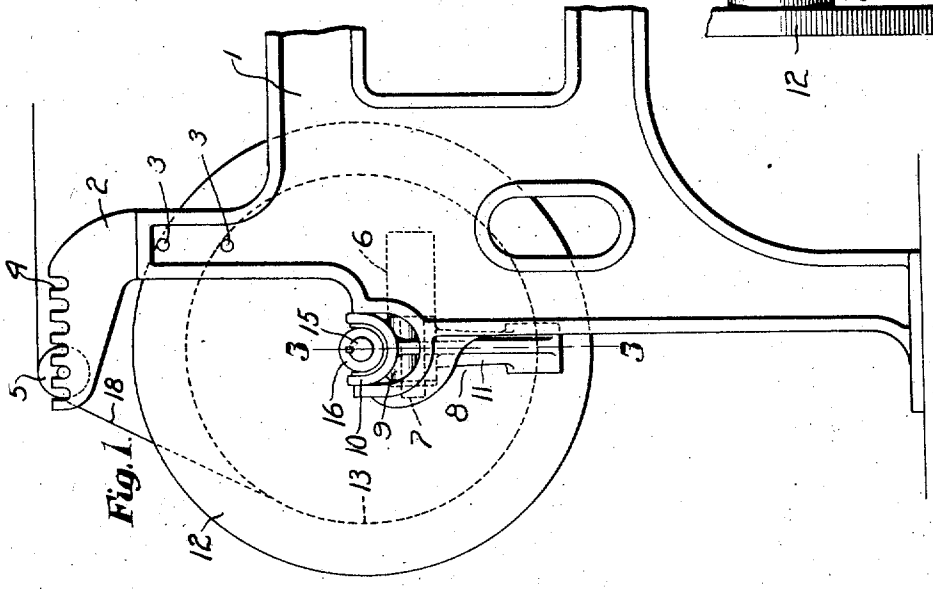

Fig. 1.

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UNITED STATES PATENT OFFICE.

JOHN V. CUNNIFF, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR TO WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS; CLARE H. DRAPER AND OLIVER H. LANE EXECUTORS OF SAID WILLIAM F. DRAPER, DECEASED.

LET-OFF MECHANISM FOR LOOMS.

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To all whom it may concern:

Be it known that I, JOHN V. CUNNIFF, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented an Improvement in Let-Off Mechanisms for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The invention to be hereinafter described relates to let-off mechanisms for looms, and more particularly to the type known as friction let-offs.

The aims and purposes of the present invention are to provide a let-off mechanism wherein the adjustment of the warp tension is effected automatically by a combination of the results due to the decreasing weight and diameter of the yarn mass as the beam unwinds, and is designed as a simple form of such device, as will hereinafter more fully appear.

The following description and accompanying drawings disclose one form or embodiment of means for carrying the present invention into practical effect, it being understood that the invention in its true scope is not restricted to the particulars or details except as hereinafter pointed out by the claims.

In the drawing: Figure 1 is a side view, showing the loom frame, the warp beam and the features of the present invention as related thereto; Fig. 2 is a rear elevation of one end of the warp beam and a part of the loom framing with the present invention associated therewith; and Fig. 3 is a sectional detail on the line 3—3 of Fig. 1 with parts broken away.

The loom frame 1 may be of any suitable character and, if desired, it may be provided with the whip roll supporting brackets 2 secured to the loom frame as by bolts 3, said brackets being provided with a series of sockets 4 to support the whip roll 5 in desired position, it being understood that while the present drawings show only one end of the warp beam and adjacent framing that the other end and adjacent parts may be and preferably are duplicates thereof.

The loom frame 1 is provided with a supporting bracket 6, preferably, though not necessarily, extending inward therefrom, to which is pivotally connected the frictional retarding device. The frictional retarding device in the present form of the invention comprises an angular lever, which may, for the present description and illustration of the invention, be formed substantially as a bell crank lever 8 having a bearing 9 supported by the stud 7 carried by the bracket 6 projecting from the loom frame. The outwardly extending arm 10 of the bell crank is formed as a bearing to support the journals of the warp beam, while the other arm 11 of the frictional retarding device is provided with a friction pad 14 adapted to bear upon the head 12 of said beam, the construction being such that the friction pad 14 will be pressed against the head 12 of the warp beam with a degree of pressure dependent upon the weight of the warp beam and its load.

The warp beam 13 has journals 15 projecting from the ends thereof, and means are provided to adjust the point of transmission of the weight of the warp beam and its load to the bearing arms 10 of the frictional retarding device. As one means for varying this point of transmission and consequently altering the leverage or frictional retarding effect of the pad 14 on the warp beam, the journals 15 of the warp beam are provided with an adjustable bearing collar 16 preferably splined thereto, as indicated in Fig. 3, and held in adjusted position longitudinally thereof by means of a set screw 17 or the like, the construction being such that, upon adjustment of the bearing collar 16 to different points on the journals 15 of the warp beam, the frictional retarding effect of the pad 14 on the warp beam will be varied, as is obvious.

Obviously various means might be employed to vary the point of transmission of the weight of the warp beam and its load to the bearing arm 10 of the frictional retarding device whether the adjustable element be carried by the journals of the warp beam or by the bearing arms 10 of said frictional retarding device. It will likewise be obvious that while the frictional retarding device may be formed as a bell crank lever, such as herein indicated, its form may be variously changed, the essentials in this respect being that the weight of the warp beam delivered upon one por-

tion of the lever or frictional retarding device may be transmitted to the warp beam in a manner to retard its rotation in proportion to the weight of the warp beam and its load.

From the construction described it will be apparent that when a pull or tension is placed upon the warp threads 18 which pass from the warp beam over the whip roll 5, such tension will tend to rotate the warp beam in opposition to the frictional retarding effect of the frictional retarding device, which is itself dependent upon the weight of the beam and its load. As the warp beam unwinds, it will likewise be obvious that its weight will decrease, while at the same time the leverage or pull exerted by the tension of the warp threads will be correspondingly less, the effect being that a substantially uniform tension will be placed upon the warp threads as the warp beam passes from a full to empty condition.

By the adjustable means for transmitting the weight of the warp beam and its load to the frictional retarding device, proper adjustment may be made for the varying conditions of use.

What is claimed is:

1. In a friction let-off mechanism for looms, the combination of a warp beam, and a frictional retarding device to automatically govern the rotative movement of the warp beam in proportion to the weight thereof and comprising a lever pivoted between its ends to form two arms, one having a bearing portion to sustain the warp beam and the other arm of said lever having a portion to engage the beam.

2. In a friction let-off mechanism for looms, the combination of a warp beam, a lever pivoted between its ends and having one arm extending from its fulcrum to sustain the warp beam, and another arm extending from the fulcrum in another direction and carrying a member bearing directly upon the warp beam to control the rotative movement of the warp beam according to the weight thereof sustained by the first mentioned arm.

3. In a friction let-off mechanism for looms, the combination of a warp beam, and a lever fulcrumed between its ends on the loom frame and having two arms, one to support the warp beam and the other extending from the fulcrum in a different direction and provided with a friction pad to engage the head of the warp beam and govern the rotative movement of the beam in proportion to its weight.

4. In a friction let-off mechanism for looms, the combination of a warp beam, a lever fulcrumed on the loom frame and having one arm for sustaining the warp beam, means for adjusting the point of support of the warp beam on said arm, and another arm acting directly upon the head of the warp beam to govern its rotation in proportion to the effective weight of the warp beam.

5. In a friction let-off mechanism for looms, the combination of a warp beam having journals, a lever fulcrumed between its ends on the loom frame and having a bearing arm to sustain a journal of the warp beam, and another arm acting on the warp beam to govern the rotative movement of the warp beam in proportion to the effective weight sustained by the bearing arm, and means for adjusting the point of support of said journal on the bearing arm.

6. In a friction let-off mechanism for looms, the combination of a warp beam having journals, a lever fulcrumed on the loom frame and having a bearing arm to sustain a journal of the warp beam, and another arm acting to govern the rotative movement of the warp beam in proportion to the effective weight sustained by the bearing arm, and an adjustable collar mounted on the journal and interposed between the journal and bearing arm.

7. In a friction let-off mechanism for looms, the combination of a warp beam, and a bell-crank lever fulcrumed on the machine frame and having a bearing arm to sustain the warp beam, the other arm of said bell-crank lever acting on the head of the warp beam to retard the rotative movement of the warp beam in proportion to the weight of said beam transmitted to the bearing arm.

8. In a friction let-off mechanism for looms, the combination of a warp beam, a lever pivoted between its ends on the loom frame and having a bearing arm for sustaining the journal of said beam, and an adjustable block movable along said bearing arm and interposed between it and the warp beam journal, the other arm of said lever having a friction pad and arranged to bear upon the head of the warp beam.

9. In a friction let-off mechanism for looms, the combination of a warp beam, a lever fulcrumed on the loom frame and having an arm extending from the fulcrum in a direction longitudinally of the warp beam, and an adjustable bearing-member disposed between the journal of the warp beam and said arm of the lever, the other arm of said lever extending from the fulcrum in a different direction and bearing against the warp beam.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN V. CUNNIFF.

Witnesses:
S. W. ASHTON,
JOHN BUCKLEY.