

C. LAVALLEE.
LET-BACK MECHANISM FOR LOOMS.
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1,022,370.

Patented Apr. 2, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

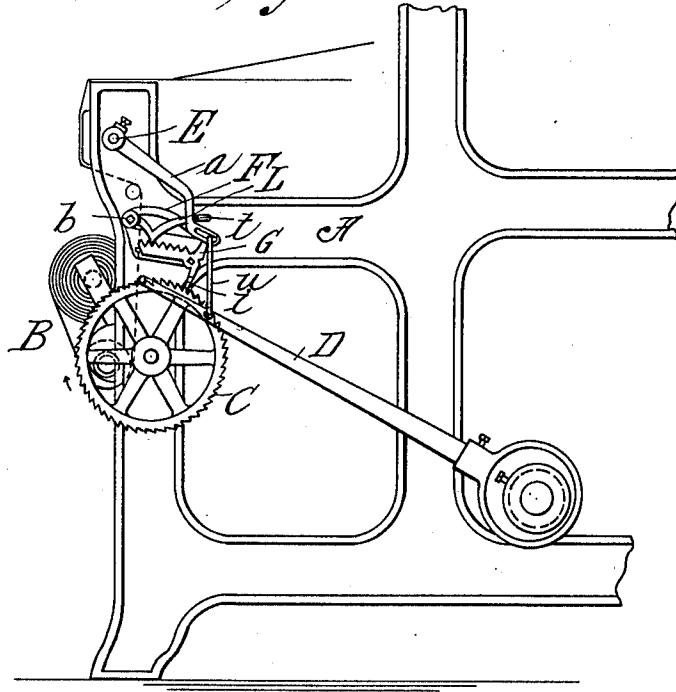
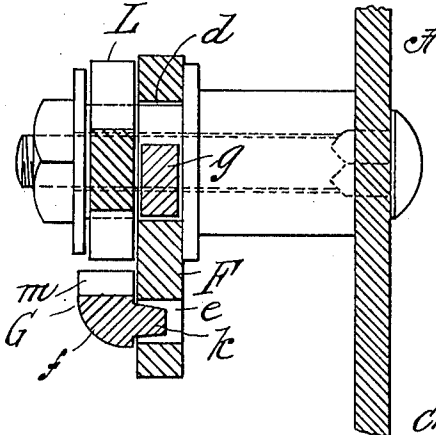


Fig. 5.



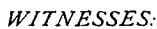
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1,022,370.

2 SHEETS--SHEET 2.



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LET-BACK MECHANISM FOR LOOMS.

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To all whom it may concern:

Be it known that I, CHARLES LAVALLEE, a British subject, and resident of New Market, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in Let-Back Mechanisms for Looms, of which the following is a full, clear, and exact description.

As well known, most looms are equipped with a weft stop motion which is operative, upon the failure from any cause of the filling to be laid in, to establish conditions to result shortly, but not immediately, in the stoppage of the loom; but several picks usually transpire between the time when the stop motion is actuated and the time when the loom is actually stopped, and in this little interim the cloth take-up mechanism advances the warps so that on the replenishment of the filling and the resumption of the operation of the loom the further filling would be laid in more or less behind the previously made cloth to leave an unwoven or "thin" place in the fabric.

The present invention relates to a let-back mechanism which is operative after the stoppage of the loom by reason of the failure of the weft, to secure a "let-back", or slight rearward returning of the warps in a predetermined extent as regulated by the adjustment of the let-back device so that upon the resumption of the weaving the filling will be further laid in as an unbroken continuation of the already made cloth. And an important capability of the device is constituted by means embodied in the let-back mechanism whereby the extent of the let-back may be comparatively little or considerable according to the fineness or coarseness of the weave and according to the celerity, or lack thereof, with which the loom responds to the action of the weft stop motion.

In the carrying out of my invention, I provide a device to act in conjunction with a toothed wheel which is appurtenant to the cloth take-up means of the loom, and which includes a member slidably mounted on the side of the loom frame having a regulator piece adjustable on said member, and a pawl tooth having an engagement with the said toothed wheel, and means located on the loom adjacent said slidable member and with which the regulator piece coacts for checking the variable movements of the regulator and pawl carrying member,—it

being understood that accordingly as the slidable device has its movements controlled by the regulator for a comparatively long or short distance, so will be the retrograde movement of the pawl engaged toothed wheel which is appurtenant to the cloth take-up motion in a considerable or comparatively slight extent for a corresponding amount of let-back of the made cloth and the warps forming the shed to the rear thereof. In other words, the let-back mechanism when properly adjusted to any given weaving conditions to which the loom is rendered susceptible will, after failure of the filling, cause the let-back to be just so much that on the resumption of the weaving the replenished filling on the first pick will be laid in in its proper close relation to that which had been laid in on the last pick next previous to the breaking or exhaustion of the filling.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings:—Figure 1 is a side elevation of a portion of a loom which comprises the cloth take-up and adjacent which my present improved adjustable let-back mechanism is represented as having the parts thereof in their relations which are assumed thereby under normal conditions and while the loom is running. Fig. 2 is a side elevation of the attachment, on a larger scale, and having the parts thereof in the positions assumed thereby when they have operated to permit the let-back action. Fig. 3 is a perspective view of the parts comprised in the let-back mechanism in separated relations. Fig. 4 is substantially a horizontal longitudinal section through the let-back device as taken on line 4—4, Fig. 2. Fig. 5 is a vertical cross section as taken on line 5—5, Fig. 2.

In the drawings, A represents a side portion of the loom frame, adjacent the cloth take-up means provided as usual, and which is represented in a general way at B,—and which take-up mechanism comprises a toothed wheel,—the same in Figs. 1 and 2 being represented as a ratchet wheel C, which coacts with the eccentric operating pawl carrying bar D for rotatively operating the cloth-roll of the loom and for holding the warps in tension all as usual and well known.

Projecting from the side of the loom frame, suitably adjacent the ratchet wheel

C and also near the rockshaft E comprised in the stop motion and which carries the lever arm *a* which is connected with the pawl carrying bar D of the take-up motion, is a stud *b*, comprising a bolt and a surrounding bushing and a confining nut; and F represents a longitudinally apertured plate which embraces, and is slidable relatively to, the said stud. This plate has below the longitudinal aperture *d* therein also a longitudinal slot *e*.

G represents a regulator piece which in the specific design thereof represented comprises a toothed body or bar-like portion *f*, a bar-like abutment portion *g*, above, slightly to the rearward of, and connected to, the portion *f* by the uniting portion *h* and a downwardly extending pawl tooth *i* which has a constant engagement with the ratchet toothed edge of the wheel C which is appurtenant to the cloth take-up means.

The straight ledge-like lower boundary *j* of the plate F constitutes a longitudinal guide way for the regulator piece; and the regulator piece moreover is provided with a lug *k* which has a supporting and guiding engagement in the longitudinal slot *e* of the slidable member or plate F. The said regulator piece G, of which *m* are the teeth, is confined in any given set adjustment along the length of the slidable plate F by the headed bolt *n* and nut *n*².

The slidable member having the longitudinal aperture *d*, and which embraces the stud *b* may oscillate slightly in a vertical plane in order that in the regular running of the loom the teeth of the ratchet wheel may click past the pawl tooth *i*.

L represents a dog pivotally hung for oscillation on the stud *b* alongside and in front of the slidable plate F, its tooth *o* being by its gravitative action normally in mesh with the teeth *m* of the adjustable regulator piece. This dog has at its free extremity a horizontally projecting stud *t* which has a position of engagement above the free extremity of the lever arm *a* which is an appurtenance of the weft stop motion and which arm is by the link *u* connected with the pawl bar D which operates the cloth take-up means.

The left hand extremity *x* of the bar-like portion *g* of the regulator piece constitutes a right hand end boundary for the aperture *d* and the slidable plate F, and accordingly as the regulator piece is set to the rightward or more or less to the leftward, so will be the extent of the sliding movement of such plate F which carries as an equipment thereof the pawl *i*.

Now, assuming the loom is running on coarse woven fabric so that a maximum of let-back movement is desired after the operation of the weft stop motion, the regulator piece will be set comparatively far to

the right ward on the oscillatory and slidable plate and securely confined by the binding nut *n*²; and the dog normally in engagement with the teeth *m* of the regulator piece will prevent any shifting of the parts of the attachment from their properly set positions during the running of the loom. Now so soon as there is a failure of the weft the stop motion operating in its usual manner is effective to rock the shaft E, elevate the lever arm *a*, raise the pawl of the pawl bar B out from engagement with the ratchet wheel C and at the same time swing the dog L upwardly to disengage it from the teeth *m* leaving the slidable plate and its equipments free to slide to the leftward in an extent equal to the distance between the abutment end *x*, shown as a part of the regulator piece, and the stud *b* which serves as the fixed limiting abutment. This sliding movement of the plate F and the parts thereon mounted and connected is brought about by the tension in a rearward direction of the weft which through the made cloth exerts a retrograding force on the cloth take-up mechanism in which the ratchet wheel C is comprised and with which the pawl tooth *i* is always in engagement.

For conditions consistent with the weaving of finer fabric, the let-back attachment is adjusted so that the stop shoulder *x* is normally nearer the abutment stud *b* and so that as manifest a lessened extent of let-back action is permitted.

The regulator piece need not necessarily be adjusted on the plate for securing different extents of let-back within a reasonable range as the plate which in a broad sense is provided with a series of teeth (without regard being taken of any adjustability of the part, in which the teeth is formed, relatively to the plate) may be positioned and retained by the dog with the stop portion *x* quite near or comparatively far from the abutment stud *b*,—the engagement of the dog in one or another of the teeth *m* regulating the limited variability of let-back action; but by rendering the regulator piece longitudinally adjustable or extensible and contractible, relatively to the abutment stud, the device is thereby susceptible of a far greater range of adjustability and variability of action.

I claim:—

1. In a let-back mechanism for a loom, the combination with a stop-motion-actuated-lever, a toothed wheel appurtenant to the cloth take-up means, of a device, slidably mounted on the loom and comprising a frame and a regulator piece, adjustable on such frame provided with a pawl-tooth having an engagement with said toothed wheel, also provided with a series of teeth, means located on the loom adjacent said slidable device and with which it coacts for checking

the movement of the slidable device, and a dog movably mounted and normally in engagement with one of the teeth of the regulator piece, and with which the said stop motion lever coacts.

2. In a let-back mechanism for a loom, the combination with a fixed abutment on the loom, a toothed wheel appurtenant to the cloth take-up means, and a stop-motion-actuated lever, of a device slidably mounted on the loom relatively to said fixed abutment and comprising a frame, a regulator piece adjustable on the frame, and made with a series of teeth, and a pawl having an engagement with the teeth of said wheel,—a dog movably mounted and normally in engagement with one of the teeth of said adjustable regulator piece, and with which dog said stop motion lever coacts.

3. In a let-back mechanism for a loom, the combination with a fixed abutment on the loom, and a toothed wheel appurtenant to the cloth take-up means, of a member slidably mounted adjacent said abutment and having a toothed regulator piece, adjustable thereon, and which is provided with a pawl tooth having an engagement with the teeth of said wheel,—said regulator piece having a portion arranged to be brought to movement-limiting coaction with said fixed abutment, and a pivoted dog normally in engagement with a tooth of said adjustable regulator piece.

4. In a let-back mechanism for a loom, in combination a fixed abutment stud on the loom, a toothed wheel appurtenant to the cloth take-up means, a longitudinally apertured plate embracing and slidable relatively to said stud, and having a longitudinal slot therein, a regulator piece, provided

with a pawl-tooth for engagement with said toothed wheel, provided with a series of teeth along its length and provided with a portion located in the longitudinal aperture of said plate which is adapted to have the end thereof brought to a movement-limiting abutment against said stud, a bolt engaged through said longitudinal slot and through the regulator piece and having a binding nut for securing the latter in its adjustment on the slidable plate, and a dog movably mounted and normally in engagement with a tooth of the regulator piece.

5. In a let-back mechanism for a loom, in combination a fixed abutment stud on the loom, a toothed wheel appurtenant to the cloth take-up means, a longitudinally apertured plate embracing and slidable relatively to said stud, and having a longitudinal guideway therein, a regulator piece fitted in said guideway, provided with a pawl-tooth for engagement with said toothed wheel, provided with a series of teeth along its length and provided with a portion which is adapted to have a movement limiting abutment against said stud, means for confining the regulator piece in any given adjustment on the plate, a dog movably mounted and normally in engagement with a tooth of the regulator piece, and a stop-motion-actuated lever coacting with the dog for automatically releasing the latter from its engagement with the toothed regulator piece.

Signed by me at New Market, N. H., in presence of two subscribing witnesses.

CHARLES LAVALLEE.

Witnesses:

F. MARCOTTE,
CARL F. BRACKETT.