(No Model.)

J. P. THOMPSON.

LET-OFF MECHANISM FOR LOOMS.

No. 376,353. Patented Jan. 10, 1888.

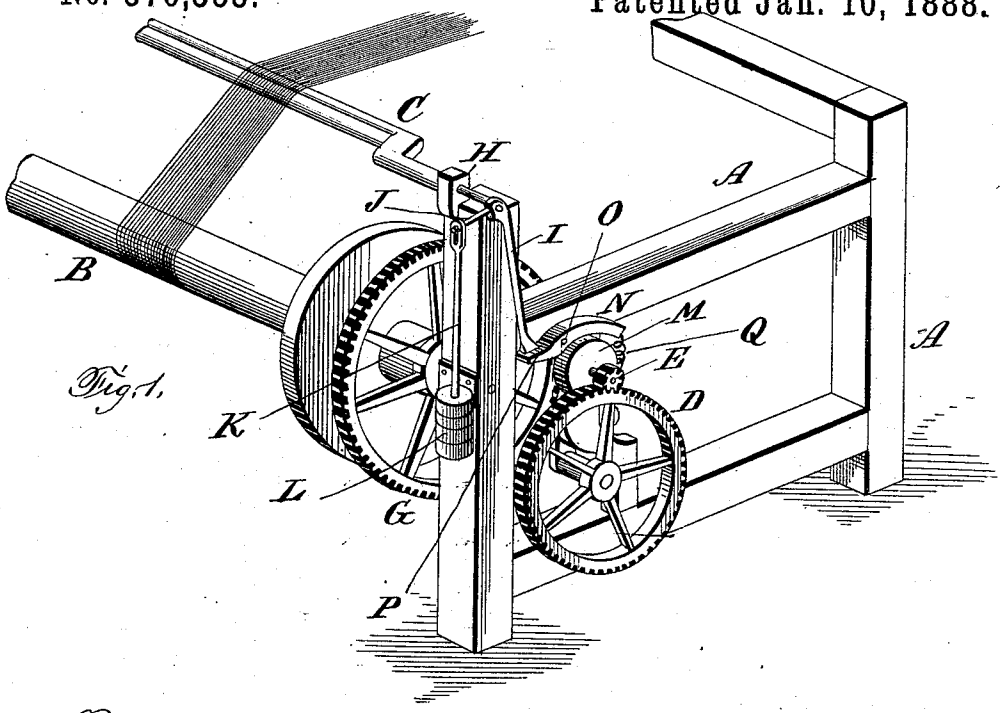


Fig. 1.

Fig. 2.

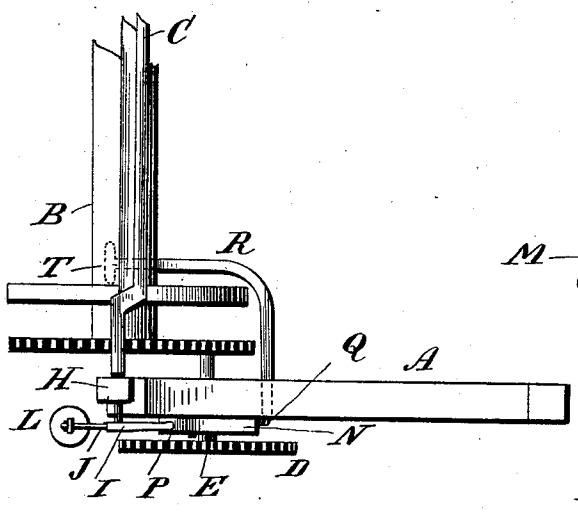
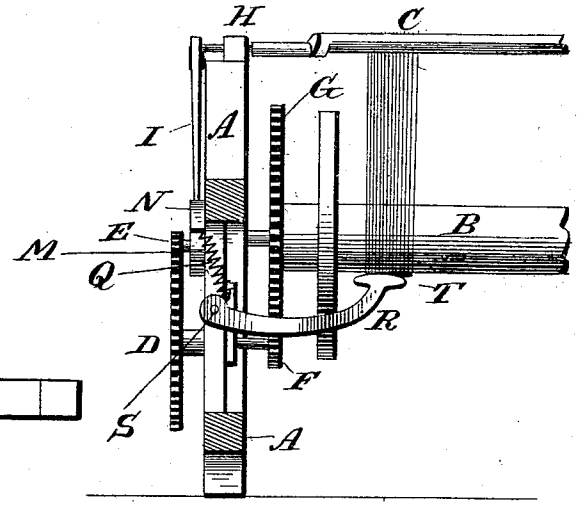


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN P. THOMPSON, OF FALL RIVER, MASSACHUSETTS.

LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 376,353, dated January 10, 1888.

Application filed April 29, 1887. Serial No. 236,542. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. THOMPSON, a citizen of the United States, and a resident of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Let-Off Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of a portion of a loom-frame with my improved let-off mechanism applied thereto. Fig. 2 is a plan view of the same, and Fig. 3 is a sectional view thereof.

Like letters of reference denote corresponding parts in the several figures.

My invention relates to improvements in the let-off mechanism or motion for looms, and has for its object the production of an automatically-operating friction mechanism, whereby the so-called "vibrator" or "whip-roll" in that type of looms wherein the let-off motion depends upon the tension exerted on the warp by the lay as it beats up the filling is connected with a detent adapted to operate a brake, by means of which the strain or tension on the yarn-beam may be regulated automatically and in exact accordance with the requirements of the weaving.

My invention further has for its object to prevent what are technically called "shuttle-smashes" by automatically regulating the strain or tension on the warp; and to the attainment of these several ends my improvements consist in the detailed construction and combination of parts of the brake mechanism and the means whereby the same may be regulated or adjusted automatically and with the greatest possible degree of accuracy.

Inasmuch as my improvements relate solely to the let-off mechanism, I have illustrated on the accompanying sheet of drawings only so much of a loom and loom-frame as is necessary to permit persons skilled in the art to which my invention relates to arrive at a correct understanding of the construction and operation of my improvements.

Referring to the drawings, the letter A denotes the frame of the loom, which may be of any desired shape and construction.

B is the yarn-beam or warp beam, and C the vibrator or whip-roll.

The letters D, E, F, and G are the gears by means of which the yarn-beam and its adjuncts are controlled. The whip-roll swings in bearings H, one end of said whip-roll projecting through its bearing and having fastened upon its projecting outer end an arm or detent, I, having a finger, J, projecting on one side, upon which is suspended a rod, K, carrying one or more weights, L, at its lower end.

The shaft of the gear-pinion E is provided with a concentric disk, M, above which is arranged the brake-shoe N, which has its fulcrum upon a stud or pin, O, projecting from the loom-frame. The rear end of this brake N is extended to form a finger or projection, P, which extends below the lower end of the detent I, without, however, being connected thereto. The other or free end of the brake-shoe is connected by a spiral spring, Q, to the inner end of an arm, R, which has its fulcrum upon a pin or stud, S, the point of attachment of the lower end of spring Q on the arm R being in close proximity to its fulcrum S. The outer or free end of this arm R is broadened to form a head, T, adapted to bear against the under side of the yarn wound upon the beam, the head T being held against the yarn as it unwinds from the beam with a light pressure, owing to the arrangement of the spring Q, which, as we have seen, connects the inner end of said arm with the outer end of the brake-shoe N.

From the foregoing description, taken in connection with the drawings, the operation of this device will readily be understood. As the yarn unwinds or pays off from the beam across the whip-roll at a given pressure—say, for example, a strain of twenty-five pounds—any excess of this pressure will cause the whip-roll to yield in the well-understood manner, and this downward motion of the whip-roll or vibrator will bring its detent I in contact with the rearward projection, P, of brake N, thus lifting the brake off the brake-disk M, and thereby easing the beam until the normal pressure has been restored, when the weight L will cause the whip-roll to resume its normal position. The tension of the spiral spring Q

operates, it will be seen, in two ways—viz., it causes the brake-shoe to bear against the brake-disk under normal conditions, and at the same time it causes the head at the outer end of arm R to bear against the under side of the yarn wound upon the beam. Now, as the diameter of the yarn-wound beam is gradually reduced by the paying off of the yarn as the weaving progresses, it follows that the arm R will gradually move in an upward direction, thus gradually decreasing the strain or tension of the spiral spring Q, which connects it with the brake, and thereby gradually, evenly, and automatically reducing the pressure of brake N upon disk M, thus gradually and proportionately easing the running of the beam as its diameter is gradually reduced by the unwinding of the yarn. In this manner it will be seen that the beam will run evenly and steadily without regard to the quantity of yarn upon it, thus producing even texture in the weaving, together with all the other advantages well known to the trade which result from an absolutely even and automatic let-off mechanism. Among these several advantages resulting from my improvement I desire to make special mention of the certain prevention of shuttle-smashes. A loom provided with my improvement may be started up with the shuttle in the shed or with two shuttles in the shed, and it is impossible to smash or injure the yarn. The reason of this is, that when the pressure comes against the shuttle the strain upon the threads of the warp against which the shuttle is forced will draw the whip roll down, which in turn will throw the detent against the projection upon the brake, and thus remove the pressure from the warp-beam and permit it to pay off enough warp to prevent the shuttle breaking the threads against which it bears. Again, as the beam decreases in diameter and the strain upon it grows correspondingly greater, this strain is equalized by the operation of the arm R, as hereinbefore described, the results which I produce being accomplished by the co-operation of the detent I and arm R upon the friction-brake N.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

The combination of the whip-roll, a detent fastened at the outer end of the same, a pivoted brake-shoe having a finger projecting under the lower end of the detent, a brake-disk in frictional contact with the brake, the yarn-beam, gearing for connecting the disk with the beam, a movable arm projecting under the yarn-beam and bearing against the yarn wound upon the same, and a spring connecting the said arm with the free end of the brake, substantially as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN P. THOMPSON.

Witnesses:
ELI BENCE,
HENRY H. EARL.