(No Model.) 2 Sheets—Sheet 1.

A. J. SHAW & G. W. MEYNER.

Stop Motions for Looms.

No. 238,812. **Patented March 15, 1881.**

Fig. 1.

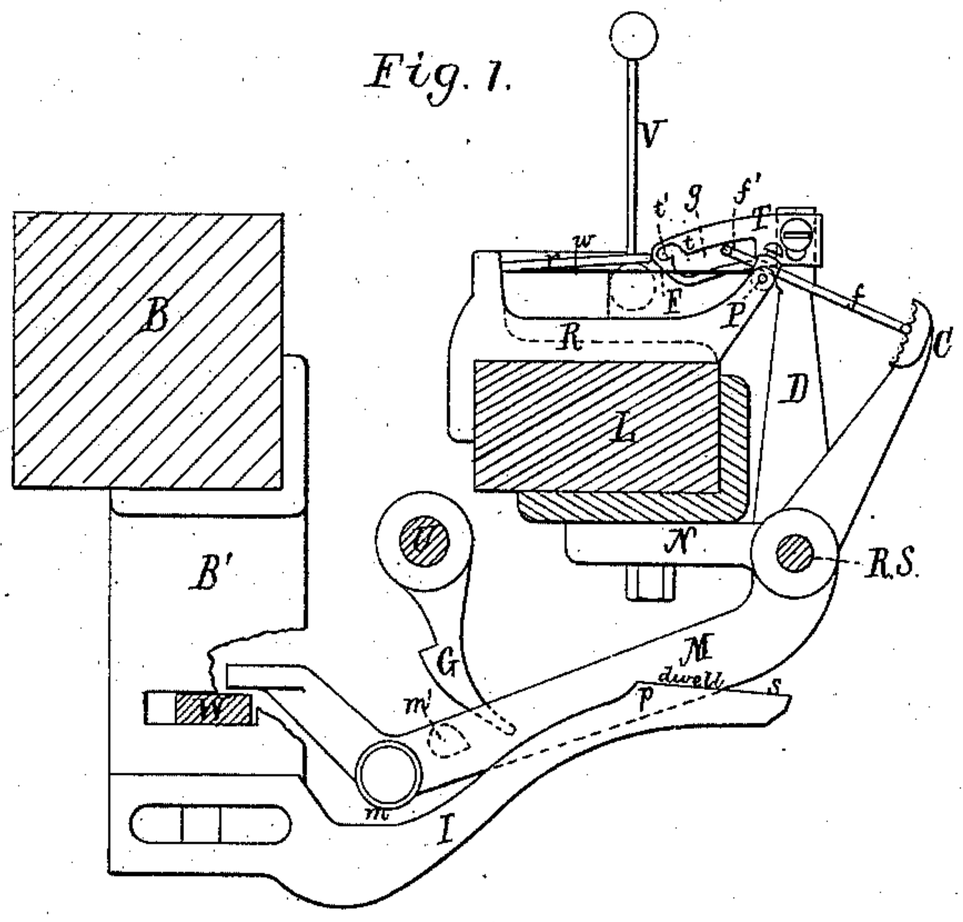


Fig. 2.

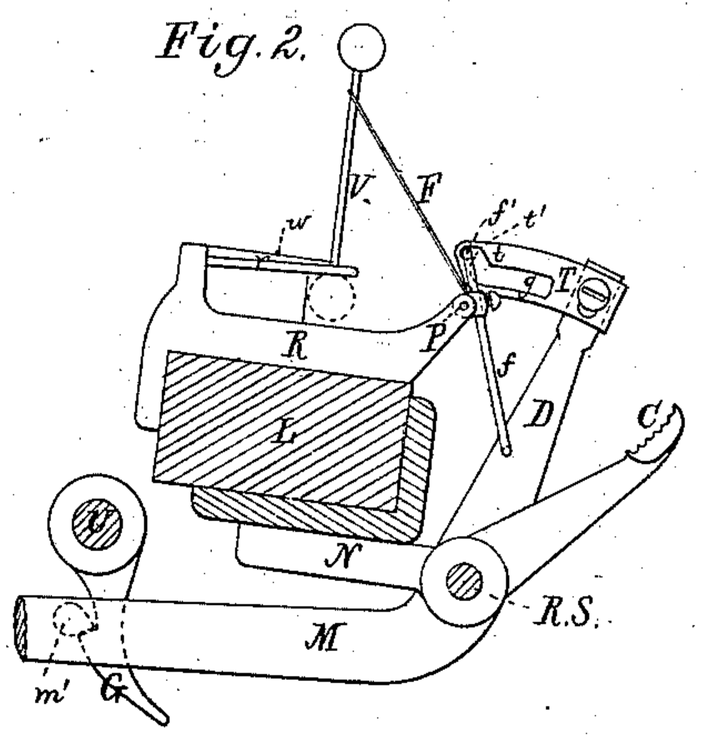


Fig. 3.

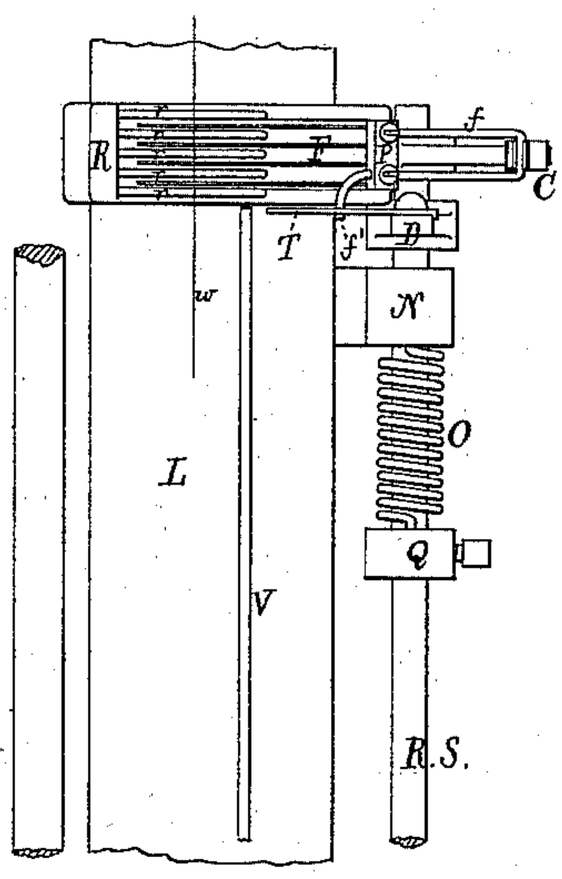
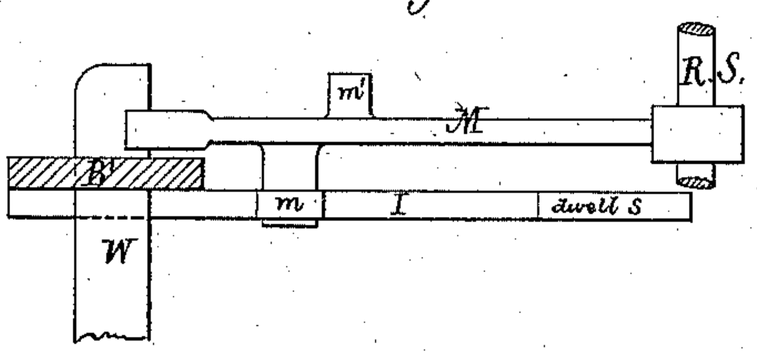


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

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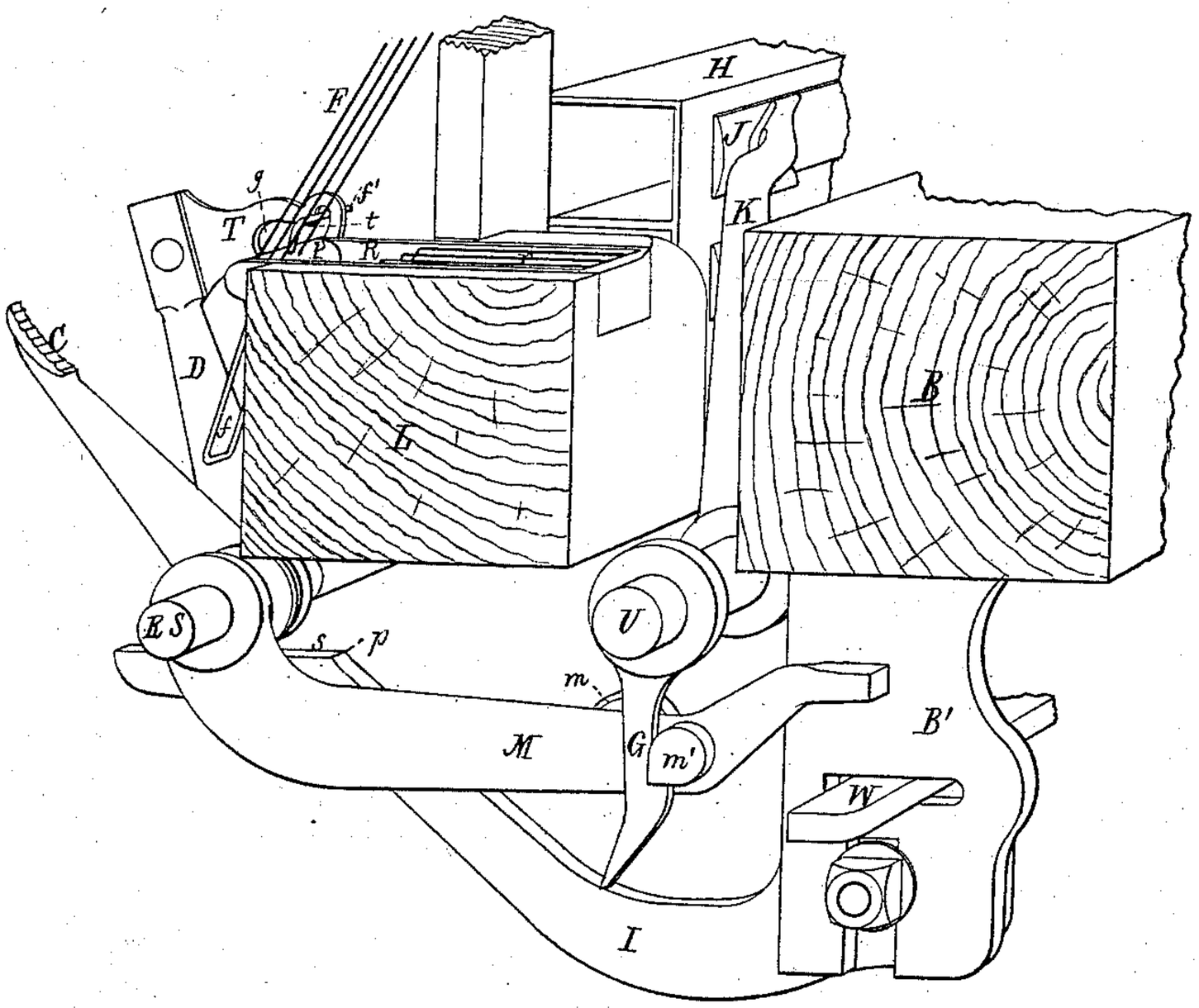
Fig. 5.



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UNITED STATES PATENT OFFICE.

ALTON J. SHAW, OF AUBURN, AND GUSTAVE W. MEYNER, OF LEWISTON, MAINE.

STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 238,812, dated March 15, 1881.

Application filed August 16, 1880. (No model.)

To all whom it may concern:

Be it known that we, ALTON J. SHAW, of Auburn, and GUSTAVE W. MEYNER, of Lewiston, in the county of Androscoggin and State of Maine, have invented a new and useful Improvement in Stop-Motions for Looms; and we do hereby declare the same to be described in the following specification and represented in the accompanying drawings.

The nature of our invention is duly set forth in the claims hereinafter presented.

Our invention belongs to that class of filling or weft stop motions designated as "pick and pick." It is so arranged that if the filling breaks during a throw of the shuttle the loom stops. So long as the filling continues entire the loom goes on. This stop-motion differs from all others of the same class, however, in that it uses, near each end of the reed, a single fork to engage with and drop upon a stationary rack or grid. All others, so far as we are aware, make use of a moving fork rack or grid, which, by the filling included between them, depresses a second or tilting fork, which actuates the "knock-off" mechanism; but the chief points of invention in the present motion consist not so much in the use of a single fork (as we are aware that single pivoted forks have before been used on plain looms) as in the mechanism for operating said fork relatively to the grid, and for throwing the entire stop-motion out of gear whenever the loom "slams" or a filling-thread breaks.

The invention may best be explained by reference to the accompanying drawings, in which—

Figure 1 is a cross-section of the breast-beam and lay or lathe with the filling present and the lay or lathe at its extreme forward stroke. Fig. 2 is a similar section of the lay or lathe at the extreme back stroke, with the fork raised for the passage of the shuttle across the race-beam. Fig. 3 is a plan of the lay or lathe and the stop-motion mechanism.

In all the figures corresponding parts are designated by the same letter.

B is the breast-beam, to which is secured a bracket, B′, to which is attached the "incline" or curved arm I.

L is the lay or lathe, at the back of which is a rock-shaft, R S, which is to be supposed to extend the entire length of such lay. Near each end of this rock-shaft R S are secured an arm, D, and a striker, C, although in the plan, Fig. 3, they are shown as near but one end of such shaft, in order to avoid confusion. The rock-shaft is carried by brackets N, projecting from the lay. To give motion to the rock-shaft we employ the arm M and friction-roll *m*, which projects from one side of the arm and runs on the upper edge of the inclined arm I.

O, Fig. 3, is a spring, which, applied to the bracket N and to a collar, Q, and arranged to encompass the rock-shaft is to keep the friction-roll in contact with the inclined arm I.

F is the tilting fork, whose pivotal center is shown at P. Attached to and forming a part of said fork is the tail *f*, which, as shown more plainly in Fig. 3, is bent around and forms, also, the working arm or pin *f′*, to project into the slot *g* of a plate, T.

R is the rack or grid supporting frame, and *r* the grid or bars between which play the fingers of the fork F. V is the reed.

Fig. 4 is a top view of the arms M and I and the shipper-lever W and part of the rock-shaft R S. The plate T projects from the arm D, and has the slot *g* formed in it, in manner as represented in Fig. 1.

Fig. 5 is a perspective view, showing a shuttle-box and the means by which the protector-rod is operated, and their relation to the stopping devices, H being the shuttle-box, J the shuttle-binder, and K the binder-finger, which is secured to and projects up from the protector-rod and rests against the shuttle-binder.

The operation of the mechanism may be thus described. We will follow the motion through one stroke of the lay, starting with the parts in the position shown in Fig. 2. The shuttle is to be supposed to have just "passed," leaving the thread of filling *w* stretched over the rack or grid *r* and the lathe to be just beginning its forward motion. If the shuttle has boxed properly, the protector-rod has been partially revolved by means of the binder J and finger K, and the hook G on the protector-rod U has swung back clear of the lug *m′;* but if the shuttle has not entered its box the protector-rod U is not rotated, and the hook G does not

disengage the lug m', so that it holds the stop-motion out of gear. As the lay moves forward, the friction-roll m passes from the "dwell" s to the slope of the arm I, (shown in Fig. 1,) and while it is descending such incline the rock-shaft R S will be partially revolved by the spring O. As the cam-roll drops over the point p of the inclined arm the arm D, carrying the cam-plate T, moves sharply forward, when the angle t of the curved slot g of such plate, striking the working-pin f', throws the fork down upon the rack or grid r, when, if the filling be present, the fork does not drop through the rack, but rests upon the filling, in manner as shown in Figs. 1 and 3. As the lay continues its forward movement the rotation of the rock-shaft brings the striker C against the tail f of the fork, thus arresting the rotation of said rock-shaft, so that the end of the "dagger" or arm M is held clear of the shipper-lever W. If, however, the filling be absent, the fork drops through or into the grid r, thus raising the tail f of the fork so high that the striker C passes under it, when the friction-roll follows the incline of the arm I to the bottom thereof and the dagger strikes the shipper-lever W, which stops the loom. As the loom at each end is provided with the parts described above, with the exception of the inclined arm I and the motion-arm M, it is evident that if the filling sustains the fork at either end in such position that the tail f engages the striker C, the arm M will be withheld from engaging the shipper W. As the lay moves back after making its "pick," the friction-roll, running up the incline of the arm I, moves the arm M, which thereby rotates the rock-shaft back, and thus lifts the fork in time for the passage of the shuttle.

The operation of the slotted cam-plate T upon the working-pin f' is somewhat peculiar, the angles t and t' acting as hammers, which strike the fork first up and next down as the plate runs backward or forward, thus giving the fork the peculiar "throw" motion essential to its perfect operation. While the arm f' is in the part of the slot which is in rear of the angle t, the slot has no action on the arm tending to move its prongs down. In this weft-stop motion the tilting fork is moved positively during a portion of its movement toward the grid, and is released during the rest of such movement, it descending upon the grid and the filling by the momentum generated in it, (the said fork.)

As stated partially above, an important feature of our invention consists in a fork which is thrown down on the filling, the motion of the fork being positive until just before the fork strikes the filling, the fork being then released and next caused to make the rest of the downward movement by the momentum already acquired by it.

An important part of the construction is the angle t of the cam-plate T, which, striking the working-pin f' of the fork, throws or strikes it forward. By the use of this cam-plate we are enabled to work the stop-motion on the fastest looms, as the fork must get down and must as certainly rise at the proper point.

The cam-roll m is not an essential part of the apparatus. A stud-pin would serve the same purpose.

What we claim as our invention is as follows—that is to say:

1. The combination of the tilting fork F and its stationary grid r with the lay, and with mechanism for advancing and retracting the fork, as explained, relatively to the grid, such mechanism consisting of the arm f', slotted plate T, arm D, rock-shaft R S, spring O, arms M and I, and friction stud or roll m, all being arranged and to operate substantially as set forth.

2. The combination of the striker C with the tilting fork and its grid, arranged and applied as described, and with the arm f', slotted plate T, and its arm D, and with the rock-shaft R S, provided with mechanism for operating it, as described.

3. The combination of the hook G and the stud m' with the protector-rod U and the arm M, the friction stud or roll m, stationary arm I, rock-shaft R S, spring O, striker C, arm D, slotted plate T, tilting fork F, and the grid r, all adapted and to operate substantially as specified.

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