M. L. STONE.

FILLING END CONTROLLER FOR LOOMS.

APPLICATION FILED MAY 27, 1920.

1,362,121.

Patented Dec. 14, 1920.

2 SHEETS—SHEET 1.

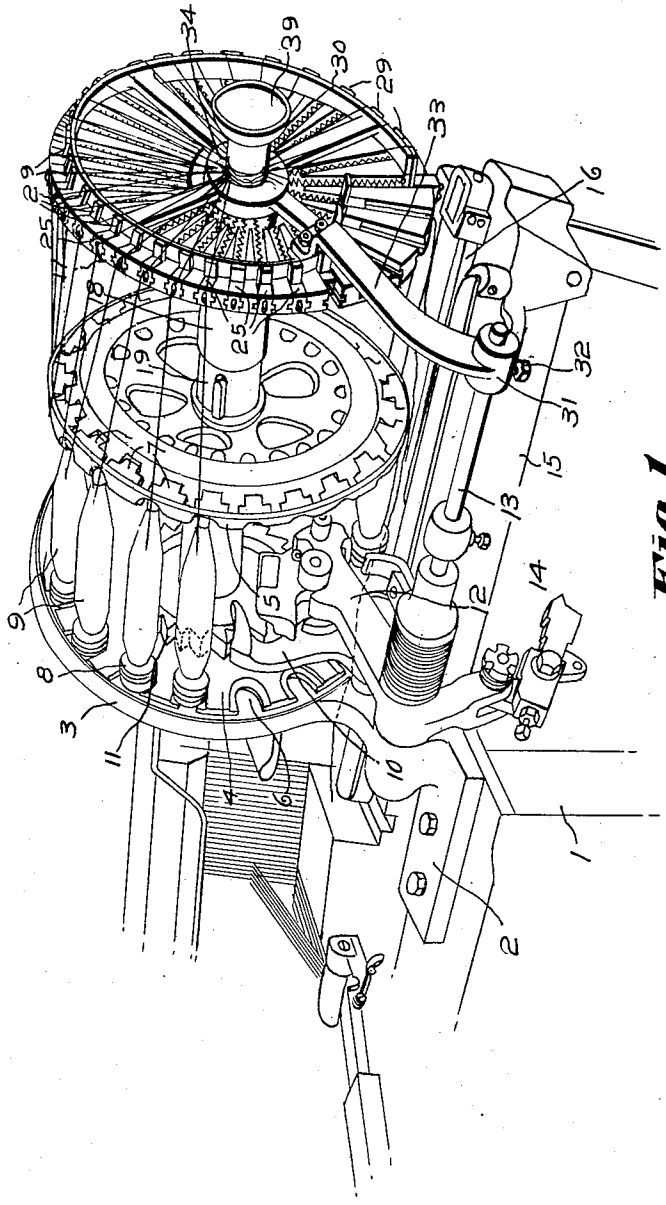


Fig. 1

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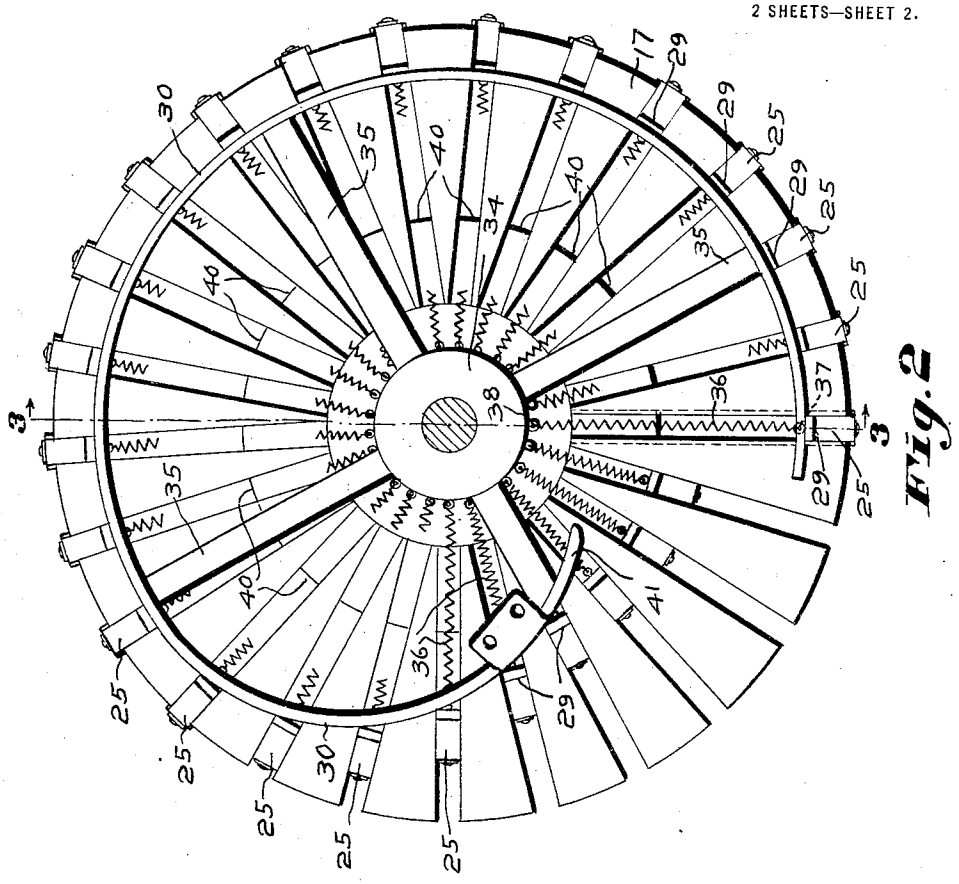



Fig. 2

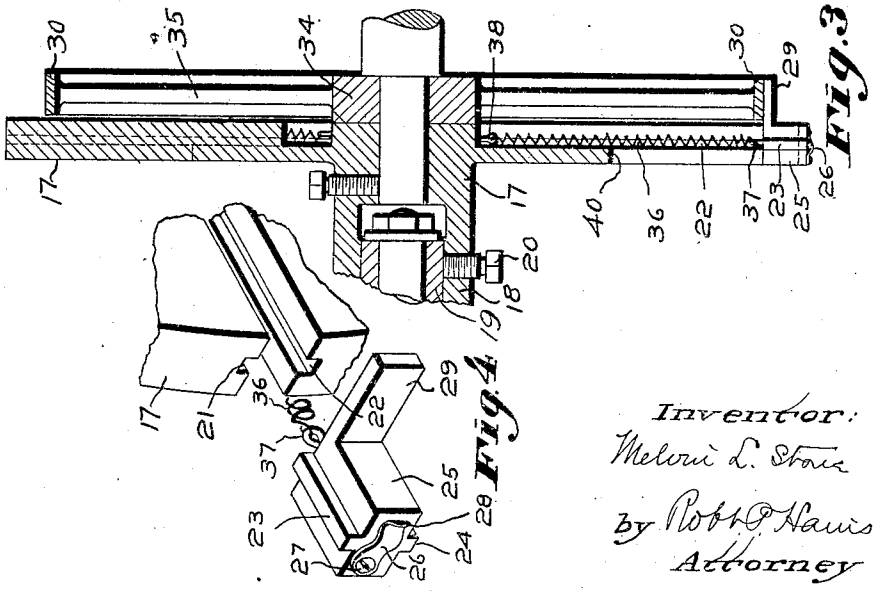



Fig. 3




Fig. 4

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# UNITED STATES PATENT OFFICE.

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## FILLING-END CONTROLLER FOR LOOMS.

1,362,121. Specification of Letters Patent. Patented Dec. 14, 1920.

Application filed May 27, 1920. Serial No. 384,610.

*To all whom it may concern:*

Be it known that I MELVIN L. STONE, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented an Improvement in Filling-End Controllers for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to filling replenishing looms wherein a fresh supply of filling is transferred from a source of supply to the shuttle when the filling in the shuttle has become substantially exhausted.

Looms of this general type are well known and understood by those familiar with the art, and therefore the loom structure will not require description and explanation. In looms of this type, the filling carriers or bobbins having filling wound thereon are placed in the hopper and the ends of the filling leading from the filling carriers are secured at a fixed point so that when the shuttle is picked following filling replenishment, the filling will be laid in the shed. The new filling thus introduced after a replenishing operation is usually parted or broken at the cloth selvage adjacent the replenishing side of the loom, and such filling end is liable to be carried into the shed by the shuttle on one of its picking movements. Various means have heretofore been suggested for removing the end of the filling from proximity to the shuttle-box and shuttle to obviate the liability of the end being carried into the shed and woven into the cloth.

The present invention more particularly relates to the means for withdrawing the end of the new filling or removing it so that it cannot be caught by the shuttle and be carried into the shed. An important feature of the present invention in this respect consists of a thread controller which acts upon the new filling end leading from the cloth selvage to remove or withdraw it from proximity to the shuttle-box after replenishment has been effected.

In carrying this feature of the invention into practical effect, the thread controller is mounted for radial movement relative to the axis of the usual rotary hopper, and is connected to the filling leading from the filling carriers, so that following the replenishing operation, the thread controller is given its radial or thread-withdrawing movement to remove the new filling end from a position in which it is liable to be carried into the shed.

The thread controller is normally under the action of a spring tending to impart a sudden radial or withdrawing movement when the controller is free to respond to the spring. In carrying this feature of the invention into effect, the controller is held in a normal position as it travels about the axis of the hopper, by a cam which is relatively fixed and from which the controller drops under the action of its spring after replenishment has been effected.

The above features of the invention, together with other novel combinations of parts will hereinafter be described in connection with the accompanying drawings which illustrate a good, practical form of the invention, wherein:—

Figure 1 is a perspective view of the filling replenishing side of a loom, showing more particularly the rotary hopper, the thread controller and associated mechanism;

Fig. 2 is a transverse sectional view through the axis of the rotary hopper at the right of the thread controller cam, the parts being shown on an enlarged scale;

Fig. 3 is a section on the line 3—3 of Fig. 2; and

Fig. 4 is a detached detail showing more particularly the thread controller and its guides.

The loom frame 1 has mounted thereon the bracket 2 from which rises the fixed head 3 for supporting the rotary hopper. The rotary hopper consists of the heads 4 and 5 which rotate together as usual, and each head is provided with suitable means such as at 6, 7, for supporting the filling carriers 8 on which is wound the filling 9. The rotary hopper is given its rotary movement from time to time by means of a pawl 10 and the ratchet 11, the latter of which is connected to the rotary hopper. The parts thus far described may be of usual construction.

The transferrer 12 is mounted for rocking movement about an axis 13 under the impulse of the beatup movement of the lay transmitted to the transferrer through the dog 14, as usual.

The lay 15 may be of usual construction, also, provided with the shuttle-box 16 at the

replenishing side of the loom, the construction being such that when the transferrer is actuated to replenish the filling, it will remove one of the filling carriers from the rotary hopper and transfer it to the shuttle beneath, such act also effecting the removal of the substantially depleted filling carrier or bobbin.

Connected to the rotary hopper to rotate therewith, is the thread controller head 17. In the present instance of the invention the thread controller head 17 has its hub portion 18 (Fig. 3) secured to the hub portion 19 of the rotary hopper by suitable means such as the set screw 20, the construction being such that the thread controller head 17 will rotate with the rotary hopper.

Mounted on the thread controller head 17 are a series of thread controllers corresponding in number with the number of filling carriers or bobbins in the hopper, and such thread controllers are movable radially of the thread controller head. In the present instance of the invention, the thread controller head 17 is provided with a series of radial guideways, Figs. 3 and 4, in which the thread controllers are mounted for radial sliding movement. In the present instance the guideways are formed by radially cutting the thread controller head 17 and providing therein the radial grooves 21 and 22, Fig. 4, which are constructed and arranged to receive complemental guiding rib portions 23 and 24 formed on a block 25 constituting one of the thread controllers, the construction being such that the thread controller 25 may move radially in the thread controller head 17 and be guided in such movement by appropriate guiding means between the controller and head.

Each controller 25 has a thread clamp for holding the filling leading from the filling carriers in the hopper. A good form of such clamp is indicated in Fig. 4, wherein a spring 26 is secured to the outer face or end of the thread controller at 27 and the spring is preferably provided with an upturned lip 28 to enable the filling thread to be readily passed beneath the clamp.

Each of the thread controllers has a laterally-extending shoe 29 which are adapted to ride upon a controller cam 30 which is fixed relative to the thread controller head 17. The controller cam 30 may be variously formed, and may be secured in fixed position by a variety of different means, but in the present instance the stud shaft 13 on which the transferrer 12 is mounted, is extended laterally (Fig. 1) and has secured near the end thereof the hub 31 by means of a set screw 32; and from the hub rises the supporting arm 33 which carries the controller cam. The supporting arm 33 is secured to or formed integral with the hub portion 34 of the controller cam 30, and from the hub portion 34 extend the spider arms 35 to which the controller cam 30 is secured.

Each of the thread controllers 25 is normally under the influence of a spring 36 which tends to draw or move the thread controllers radially inward relative to the controller head 17 and the controller cam 30. The springs 36 may be conveniently connected to the controllers by suitable catches or hooks 37, and the other end may be appropriately connected to the hub portion of the controller head 17 as at 38, the construction being such that each of the thread controllers is normally under a yielding force tending to move it radially inward of the controller head.

The ends of the filling leading from the filling carriers in the hopper are passed through or under the clamps 26 of the respective thread controllers, and are tied to or wrapped about a fixed part which, in the present invention, consists of the knob or filling end holder 39, Fig. 1. Thus the filling threads are held at the ends, and between the ends and the filling carrier each filling thread is engaged by a thread controller, so that should the thread controller be moved radially, it will take up any slack in the thread and withdraw it or move it longitudinally.

After the filling has been replenished in the shuttle, and the shuttle is picked, the new filling is parted between the cloth and the shuttle-box. This end of the new filling, the present invention seeks to remove from danger of being carried into the shed. The controller cam 30, therefore, is so formed that following replenishment of filling, the thread controller connected to the filling leading from the filling carrier which has been transferred to the shuttle, is picked to ride over the end of the cam 30, and respond to the inward impulse of its spring 36 to impart a sudden pull and withdrawing movement upon the filling end, thereby removing it from the shuttle-box and from the zone of danger where it may be carried into the shed. The controller cam 30 is of a scroll shape as indicated in Fig. 2, and as the respective thread controllers move inwardly under the impulse of the operating springs 36, they come to rest against a stop or shoulder 40 which may be formed as the bottom of one of the guide grooves in the controller head 17, as indicated in Fig. 3. When the head is further rotated following each replenishing operation, the shoe 29 of the controller will engage the inner end 41 of the cam 30 as indicated in Fig. 2, and gradually ride outwardly to its laterally projecting position.

What is claimed is:—

1. In a filling replenishing loom, the combination of a rotatable hopper or feeder for

supporting filling carriers, a transferrer for transferring the filling carriers from the hopper or feeder to the shuttle, a filling end holder to which the filling leading from the filling carriers is secured, a filling end controller secured to a thread extending from a filling carrier to the filling end holder, a support along which the controller travels as the hopper is rotated and which has an interrupted portion, and a spring for moving the controller in a radial direction relative to the hopper when the controller reaches the interrupted portion of the support.

2. In a filling replenishing loom, the combination of a rotatable hopper or feeder for supporting filling carriers for transfer from the hopper or feeder to the shuttle, a filling end holder to which the filling leading from the filling carriers is secured, a controller head, a series of filling controllers mounted on the controller head for radial movement relative thereto, a support constructed and arranged to move the controllers outwardly relative to the head as they are carried from transferring position and hold them in an outward position until they approach transferring position, and yielding means acting in opposition to the support to move them inwardly as they pass transferring position.

3. In a filling replenishing loom, a rotary hopper for containing filling carriers, a holder to which the filling ends are secured, a series of filling thread controllers engaging the filling between the hopper and holder, a controller head on which the controllers are mounted for radial movement, means for maintaining the controllers in an outward radial position on the controller head until they successively arrive at the position for transfer, and means then acting to move the controllers radially inward.

4. In a filling replenishing loom, the combination of a rotary hopper, a controller head connected to the hopper to rotate therewith and provided with radially extending guides, a thread controller movable in each of said guides toward and from the axis of the controller head, a spring acting to move each of the thread controllers radially in one direction, and a cam for moving the controllers radially in the opposite direction.

5. In a filling replenishing loom, the combination of a rotary hopper, a controller head connected to the hopper to rotate therewith and provided with radially extending guides, a thread controller movable in each of said guides toward and from the axis of the controller head, a spring acting to move each of the thread controllers radially in one direction, a fixed cam acting on the controllers to prevent movement thereof responsive to the springs and having an interrupted portion to permit the controllers to respond to the action of the said springs as each controller successively passes a predetermined point in the rotation of the controller head.

6. In a filling replenishing loom, the combination of a rotary hopper, a controller head connected to rotate therewith and provided with a series of radially extending guides, a thread controller mounted for movement in each of said radial guides, a spring connected to each thread controller and tending to move it radially in one direction, and means for holding the thread controllers from responding to the springs until the controllers successively reach a predetermined point in the rotation of the controller head.

7. In a filling replenishing loom, the combination of a rotary hopper, a controller head connected to rotate therewith and provided with a series of radially extending guides, a thread controller mounted for movement in each of said radial guides and having a thread engaging part to engage the filling threads leading from the carriers in the hopper, a spring connected to each thread controller and tending to move it radially in one direction, and means for holding the thread controllers from responding to the springs until the controllers successively reach a predetermined point in the rotation of the controller head.

8. In a filling replenishing loom, the combination of a rotary hopper, a controller head rotatable with the hopper and provided with a series of radially extending guides, a thread controller mounted for movement in each of the radial guides and provided with a laterally extending foot, a spring connected to each thread controller tending to move it radially of the controller head in one direction, and a cam acting upon the shoes of the controllers for holding the thread controllers from responding to the springs until the controllers successively reach a predetermined point in the rotation of the controller head.

9. In a filling replenishing loom, the combination of a rotary hopper, a controller head connected to rotate therewith, thread controllers mounted for radial movement upon the controller head, a spring connected to each controller tending to move it radially of the head in one direction, a fixed cam opposing the action of the springs until each controller reaches a predetermined position in the rotation of the controller head and then permitting the controllers successively to move radially of the controller head to withdraw the filling end from the shuttle-box.

In testimony whereof I have signed my name to this specification.

MELVIN L. STONE.