T. CARTER.

FILLING END CONTROLLER FOR LOOMS.

APPLICATION FILED JAN. 26, 1918.

Patented Feb. 4, 1919.

1,293,030.

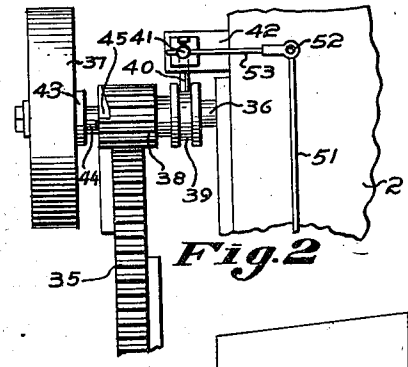
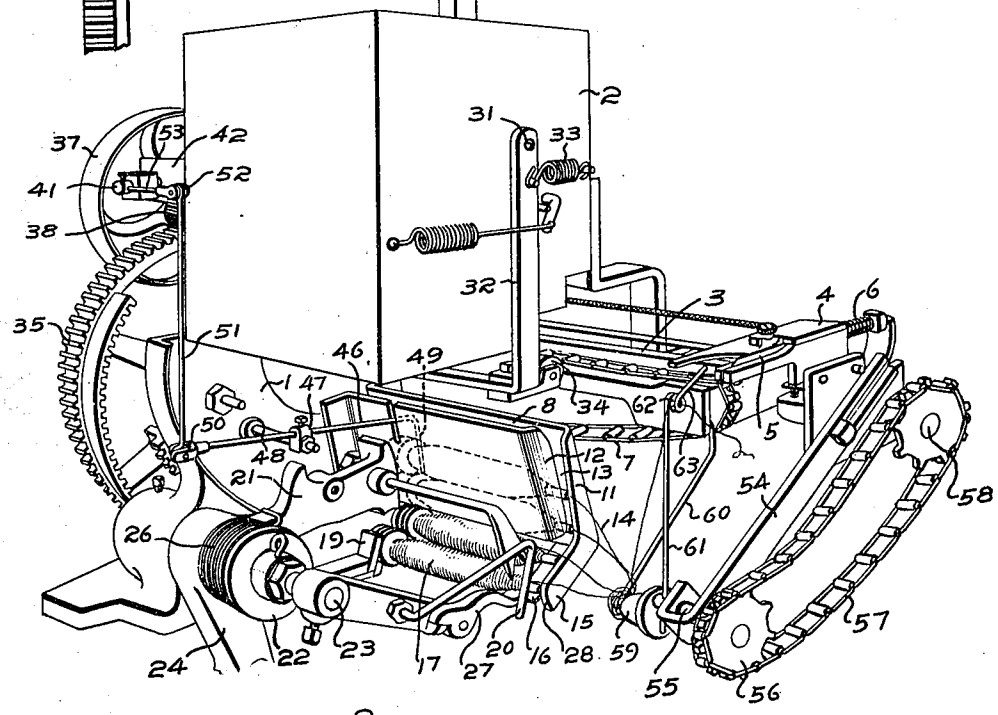


Fig. 2

Fig. 1



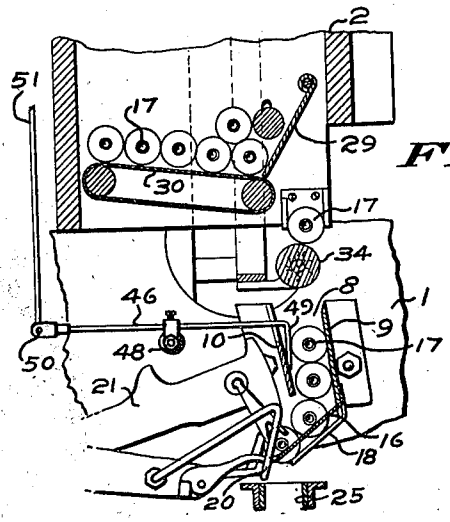


Fig. 3

Inventor:
Thomas Carter
by Robt. D. Adams
Attorney

UNITED STATES PATENT OFFICE.

THOMAS CARTER, OF BELTON, SOUTH CAROLINA, ASSIGNOR TO DRAPER CORPORATION, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING-END CONTROLLER FOR LOOMS.

1,293,030. Specification of Letters Patent. Patented Feb. 4, 1919.

Application filed January 26, 1918. Serial No. 213,845.

To all whom it may concern:

Be it known that I, THOMAS CARTER, a citizen of the United States, residing in Belton, county of Anderson, and State of South Carolina, 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 end controllers whereby the end of the filling wound upon a carrier or bobbin automatically is found and extended, and more particularly the present invention is directed to developments or improvements on the filling end controlling mechanism, disclosed in a prior application, Serial Number 87,358, filed March 28, 1916.

In filling replenishing looms, where, at times, a new supply of filling is provided while the loom continues to run, it is necessary to lead the filling end from the carrier or bobbin on which the supply is wound and hold it while the shuttle makes one or more picks to insure that filling be laid in the shed and, in case the supply is effected by a change in the carrier or bobbins, that the shuttle be properly threaded. It has been the usual practice for the attendant to find the end portion of the filling which clings to the mass of wound yarn and withdraw a portion sufficient to secure to some part of the loom after the carrier or bobbin has been placed by hand into the transfer or supply hopper. In the apparatus disclosed in the prior application above-noted, mechanical means was provided for finding the end portion of the filling wound upon the carriers or bobbins and then extending the end of the filling, so that when the filling carrier or bobbin was transferred to the shuttle, filling would be laid in the shed and the shuttle itself be properly threaded. The apparatus was described as preferably, though not necessarily, associated with a loom and as driven from a going part thereof, and hand-operated means was provided for rendering the mechanism operative from time to time. This arrangement has worked well and efficiently in practice, but required the attention of the weaver from time to time to start and stop the mechanism according to the supply of the carriers or bobbins prepared for the transferring operation.

An important feature of the present invention, therefore, consists in means for automatically starting and stopping the mechanism, so that a proper supply of wound carriers or bobbins from which the end of the filling has been extended is always available independently of any special attention on the part of the attendant. In carrying this feature of the invention into practical effect, the illustrated embodiment thereof provides a main and auxiliary or transfer hopper, from the latter of which filling carriers or bobbins having the filling ends extended therefrom are delivered to transferring position, means being provided for maintaining the supply of filling carriers or bobbins in the auxiliary or transfer hopper sufficient for working purposes.

The main and auxiliary or transfer hoppers are preferably so arranged and supported relative to the loom that as they pass from the main to the auxiliary or transfer hopper, the filling finder will act upon the wound mass of filling, find the filling end portion and extend it. In this relation of parts the means for controlling the operative or inoperative condition of the controlling mechanism is preferably combined with the parts so that when the number of filling carriers in the auxiliary or transfer hopper has reached a predetermined minimum, the parts will be made operatively effective to add to the auxiliary or transfer hopper filling carriers or bobbins, the ends of the filling of which are properly found and extended by the filling end finder.

It is desirable that the extended end of the filling be effectively secured after the end has been extended, and to this end the present invention contemplates means having filling grasping portions which engage the filling between them and hold it while the said means winds the filling upon a suitable holder or support.

The above and other features of the invention will best be made clear from the following description in connection with the

accompanying drawing, which shows one good, practical form of the invention, and such features will be made the subject of claims.

In the drawings:

Figure 1 is a perspective view of the apparatus or mechanism associated with certain operative parts of a filling replenishing loom and containing features of the present invention;

Fig. 2 is an enlarged detail showing the means for rendering the apparatus or mechanism operative and inoperative;

Fig. 3 is a vertical cross sectional view through the main and auxiliary hopper, also showing a good practical form of means for controlling the operative or inoperative condition of the mechanism.

Suitably mounted on a support such as the bracket 1 which may be secured to the loom frame or other sustaining means, is a main hopper 2 which may be of the same general character and construction as that described in the prior application to which reference has been made. Supported below the main hopper 1 is the supporting stand or bracket 3 on which the filling end finder carriage 4 is mounted for movement toward and from filling finding position. The filling end finder 5, its spring-actuated stem 6 and the means for actuating the filling end finder to act upon the mass of yarn wound upon the filling carrier or bobbin and find and engage the end portion of filling, and the sprocket chain 7 for moving the filling finder carriage 4 from its filling finding position may all be substantially as fully disclosed in said prior application. Likewise, the means for causing the filling end finder to extend, hold, and then release the end of the filling after such end has been extended from the filling carrier or bobbin may likewise be all as fully disclosed in said application.

Mounted upon a suitable support such as the bracket 1, is the auxiliary or transfer hopper 8 which is disposed below the main hopper 2, and in the present instance, is formed of the two side walls 9 and 10, a suitable opening being provided in the top of the hopper 8 for the reception of the filling carriers as they are delivered from the main hopper 2. The outer end walls 11 and 12 of the auxiliary or transfer hopper are formed to provide a slot 13 through which the ends 14 of the filling leading from the filling carriers or bobbins may extend. At the lower portion the rear end wall of the auxiliary or transfer hopper is turned frontwardly as at 15 over the edge of which the filling is guided, and a yielding support or plate 16 supports the tip end portions of the filling carriers or bobbins 17 as they are delivered to transferring position. A similar yielding support may be provided as indicated in Fig. 3, at 18, for sustaining the base end portions of the filling carriers or bobbins and suitable stops 19 and 20 are provided for properly positioning the leading filling carrier or bobbin for the action of the transferrer 21. The transferrer 21 may be of usual construction and is shown as provided with a hub portion 22 suitably mounted on a stud 23 for rocking movement under the impulse of an arm 24, which, upon call for filling replenishment, is actuated by a bunter mechanism common in filling replenishing looms for causing the transferrer to transfer a positioned filling carrier or bobbin from the auxiliary or transfer hopper to the shuttle 25, Fig. 3, beneath. A spring 26, of usual construction, may be employed to assist in returning the transferrer 21 to initial or inactive position. In order that the filling carrier or bobbin which is positioned for transfer may be properly directed into the shuttle from the transfer hopper as the transferrer descends, the positioning wall 19 and the tip support 27 may be yieldingly mounted to permit the filling carrier to pass. When the filling carrier is thus transferred from the auxiliary or transfer hopper to the shuttle beneath, the filling end leading therefrom slides over the curved wall 28 at the outer portion of the hopper without obstruction, so that the filling end may lead direct from the filling carrier after transfer to the shuttle.

The main hopper 2 is of suitable form and character to contain a series of filled carriers or bobbins as indicated in Fig. 3, and, as described in said prior application, said hopper may be provided with the gate 29 and supporting belt 30, both of which, as in said prior application, may be actuated to properly discharge the filling carriers one-by-one into position for the action of the filling end finder. Pivotally mounted on the main hopper at 31 is an arm 32 normally under the action of a spring 33, and said arm at its lower end portion carries a roll 34 which may be actuated at desired times through the master gear 35, as fully disclosed in said prior application. The roll 34, Fig. 3, when in normal position as indicated in Fig. 3, is adapted to receive upon it one of the filling carriers or bobbins from the main hopper 2, and to sustain and rotate said filling carrier while the filling end finder 5 acts upon the wound mass of filling to find and engage the filling end. These parts may be all as fully disclosed in said prior application, the construction being such that after the filling end finder has found the end of the filling and extended it or carried it to the right, Fig. 1, the arm 32 may be actuated in timed relation to release the filling carrier or bobbin the filling end of which has been engaged and extended by the filling end

finder and permit such filling carrier or bobbin to be delivered to the auxiliary or transfer hopper beneath.

Suitably mounted upon a stud 36, Fig. 2, is the main drive wheel or pulley 37, which may be continuously driven from any suitable source of power and, as pointed out in said prior application, may be actuated from some going part of the loom.

Loosely mounted upon the stud shaft 36 is the toothed wheel 38, the hub portion of which is extended and provided with a groove 39 which is engaged by a pin 40 supported by the rock shaft 41 which may be sustained in a suitable block or other support 42 secured to the main hopper 2. The toothed wheel 38 engages the teeth of the master wheel 35 as indicated in Figs. 1 and 2, the construction being such that should the toothed wheel 38 be actuated, it will impart operative movement to the master wheel 35 which, as more fully pointed out and disclosed in said prior application, effects operation of the various parts of the controlling mechanism.

Between the guiding pulley 37 and the toothed wheel 38 are clutch members whereby, at desired times, the toothed wheel 38 may be clutched to and thereby operate from the driving pulley 37. In the present instance of the invention, the hub portion 43 of the driving pulley 37 is provided with a pin 44 which, when the toothed wheel 38 is moved longitudinally to the left, Fig. 2, is adapted to engage a recess 45 in the face of the toothed wheel 38 and clutch such tooth wheel operatively to the driving pulley 37.

As hereinbefore indicated, the present invention seeks to provide means whereby the controlling mechanism may be automatically started and stopped independent of attention on the part of the attendant and thus maintain at all times a sufficient supply of filling carriers or bobbins in the auxiliary or transfer hopper for working purposes. In the present instance of the invention, means are provided to start the controlling mechanism into operation when the number of filling carriers or bobbins in the auxiliary or transfer hopper reach a predetermined minimum, and to stop the operation of said mechanism when a sufficient supply of filling carriers or bobbins have been delivered to the auxiliary or transfer hopper.

The means for thus controlling the operative or inoperative condition of the controlling mechanism may be variously contrived, and in the present instance a finger 46 is pivotally mounted at 47 on a stud 48 projecting from the bracket 1, said finger having a downturned portion 49 projecting into the auxiliary or transfer hopper, substantially as indicated in Figs. 1 and 3. Connected to the finger 46 at 50 is a link 51, the upper end portion of which is connected at 52 with an arm 53 secured to the rock shaft 41, the construction being such that should the finger 46 be rocked upon its pivotal support, such motion will be transmitted through the connections described, to the pin 40 and perforce, move the tooth wheel 38 toward or from the driving pulley 37. When a sufficient supply of filling carriers or bobbins is contained within the auxiliary or transfer hopper 8, the downturned end portion 49 of the finger 46 will be depressed, thereby lifting the link 51 and throwing the toothed wheel 38 to the right, Fig. 2, thereby disconnecting the clutch members 44 and 45 from operative relation and permitting the controlling mechanism to remain at rest. When, however, the transferrer has removed one or more filling carriers or bobbins from the auxiliary or transfer hopper 8, the downturned end portion 49 of the finger 46 will be freed from engagement by a filling carrier or bobbin and the weight of the link 51 and connected parts will cause the downturned end portion of the finger 46 to rise, thereby pulling down the link 51 and throwing the clutch members 44 and 45 into operative relation. The controlling mechanism will thus be made operative through the master gear 35, and as pointed out in said prior application, the filling end finder will be made effective to find and engage the filling on the filling carrier or bobbin which at the time rests upon the roll 34 and thereafter will be moved to the right of Fig. 1, to extend the filling from the filling carrier or bobbin, and the filling carrier or bobbin from which the end has thus been extended, will thereafter be transferred to the auxiliary or transfer hopper 8 by movement of the roll 34 from under the filling carrier or bobbin, as pointed out in the said application. This operative condition of the controlling mechanism will continue until the predetermined minimum number of filling carriers or bobbins have been treated and delivered to the auxiliary or transfer hopper, whereupon the downturned end portion 49 of the finger 46 will be depressed, thereby lifting the link 51 and through the described connections disengaging the clutch members, whereupon the controlling mechanism comes to rest.

Secured to the end portion of the bracket 3 is an arm or support 54, Fig. 1, which supports the lower shaft 55 carrying a sprocket wheel 56 which is actuated by the sprocket chain 57 from the shaft 58, substantially as described in said prior application. Secured in fixed position with respect to the shaft 55 is the yarn holder 59. This may be variously formed, but as indicated in the drawings, comprises an arm 60 secured to

the bracket 3 and having an enlarged head portion at its extremity. Secured to the shaft 55 is an arm 61 which, as the shaft 55 is rotated, is moved in a curved or circular path to engage the filling extended and held by the filling end finder 5. The arm 61 may be variously contrived, but in the present instance it is formed of wire material, and is bent into a circular or pig-tail form at 62, the end 63 of the arm being extended to first engage the extended filling held by the filling end finder. The coiled or pig-tail formation of the arm 61 at 62 provides grasping portions between which the extended portion of the filling will pass as the arm 61 travels in its curved or circular path past the filling end finder, the construction being such that the filling thus grasped between the circular portions of the parts 62 will be firmly held and caused to travel with the arm 61 and be by it wrapped a plural number of times about the holder 59. Obviously, the grasping portions of the arm 61 may be otherwise formed, the essential in this respect being that the extended portion of the filling be grasped with sufficient firmness and positiveness to insure its being carried a plural number of times about the holder 59 to thereby insure proper security of the end of the filling to prevent its withdrawal from the holder when, after a replenishing operation, the shuttle is picked.

In the illustrated form of the invention, the actuation of the finger 46 for starting the controlling mechanism into operation has been described as dependent upon the weight of the several parts between the finger 46 and the rock shaft 41, but it is evident, of course, that additional means may be provided for this purpose if found desirable or necessary.

What is claimed is:—

1. In a filling replenishing loom, the combination of a main hopper for holding wound filling carriers or bobbins, a transfer hopper for delivering the wound carriers or bobbins to position for transfer to the shuttle, a filling end finder for finding and engaging the end of the wound filling and extending it from a carrier or bobbin, and means controlled by the wound carriers or bobbins, the filling ends of which have been found, for rendering the filling end finder operative or inoperative.

2. In a filling replenishing loom, the combination of a main hopper, a transfer hopper, means for discharging wound filling carriers or bobbins from the main to the transfer hopper, a filling end finder to find and engage the end portion of the wound filling on a carrier or bobbin, and means controlled by the number of filling carriers in one of said hoppers for automatically rendering the filling end finder operative or inoperative.

3. A filling end controller, comprising, in combination, a filling end finder to find and engage the end portion of the wound filling on a carrier or bobbin and extend it from the carrier or bobbin, a hopper for delivering the filling carriers or bobbins to position for transfer after the filling ends have been found and extended by the filling end finder, and means controlled by the wound filling carriers or bobbins, the ends of the filling of which have been found for automatically rendering the filling end finder operative or inoperative.

4. A filling end controller comprising, in combination, a filling end finder to find and engage the end portion of the wound filling on a carrier or bobbin and extend it from the carrier or bobbin, means for securing the extended end of the filling, a hopper for delivering the filling carriers or bobbins to position for transfer after the filling ends have been found and extended by the filling end finder, and means controlled by the wound filling carriers or bobbins, the ends of the filling of which have been found, for automatically rendering the filling end finder operative or inoperative.

5. A filling end controller comprising, in combination, a hopper for directing wound filling carriers to transferring position, a filling end finder to find and extend the end portion of the wound filling before the carrier or bobbin reaches transferring position, and means controlled by a filling carrier in the hopper for automatically rendering the filling end finder operative or inoperative.

6. A filling end controller, comprising, in combination, a hopper for directing wound filling carriers to transferring position, a filling end finder to find and extend the end portion of the wound filling, means for securing the end portion of the extended filling, and means controlled by a filling carrier in the hopper for automatically rendering the filling end finder operative or inoperative.

7. A filling end controller mechanism, comprising in combination, a hopper for delivering wound filling carriers or bobbins to transferring position, a filling end finder, means for causing said finder to act upon the wound mass of filling on a carrier or bobbin to find and engage the end portion thereof and extend it from the carrier or bobbin, and automatic means for rendering said filling end finder operative when the supply of wound carriers or bobbins in the hopper reaches a predetermined limit.

8. A filling end controlling mechanism, comprising, in combination, a filling end finder to find and engage the end portion of

the filling on a wound filling carrier or bobbin, a hopper to receive carriers or bobbins the filling ends of which have been found by the finder, and automatic means for rendering the filling end finder operative when the number of filling carriers or bobbins in the hopper reaches a predetermined minimum.

9. A filling end controller mechanism, comprising, in combination, a filling end finder to find and engage the end portion of the filling on a wound filling carrier or bobbin and extend it, means for securing the extended end portion of the filling, a hopper to receive carriers or bobbins the filling ends on which have been found by the finder, and automatic means for rendering the filling end finder operative when the number of filling carriers or bobbins in the hopper reaches a predetermined minimum.

10. In a filling end controller, the combination of a filling end finder to find and engage the end portion of the wound filling on a carrier or bobbin, a hopper to hold wound carriers or bobbins, and means controlled by the carriers or bobbins in the hopper for automatically rendering the filling end finder operative or inoperative.

11. In a filling end controller, the combination of a filling end finder to find and engage the end portion of the wound filling on a carrier or bobbin, a hopper to receive wound carriers or bobbins the filling ends on which have been found by the finder, and means extending into the hopper and adapted to be moved by a filling carrier or bobbin for automatically controlling the operative or inoperative condition of the filling end finder.

12. In a filling end controller, the combination of a main hopper, an auxiliary or transfer hopper, a filling end finder between the two hoppers to find the end portion of the filling wound upon a carrier or bobbin and extend it therefrom, means for delivering a filling carrier to the auxiliary or transfer hopper after the end of the filling has been found by the finder, and means for causing the filling end finder and delivery means to become effectual when the number of filling carriers or bobbins in the auxiliary or transfer hopper reaches a predetermined minimum.

13. In a machine of the character described, the combination of a main hopper, an auxiliary or transfer hopper, means between the two hoppers for finding the end portion of the filling wound upon a filling carrier and extending the found end beyond the end of the auxiliary or transfer hopper, and automatic means for rendering the filling end finder operative when the number of carriers or bobbins in the auxiliary or transfer hopper reaches a predetermined minimum.

14. In a machine of the character described, the combination of a main hopper, an auxiliary or transfer hopper, means between the two hoppers for finding the end portion of the filling wound upon a filling carrier and extending the found end beyond the end of the auxiliary or transfer hopper, a start and stop element extending into the auxiliary or transfer hopper and automatically actuated by a filling carrier or bobbin, and means controlled thereby for causing operative or inoperative condition of the filling end finder.

15. In a filling end controller, the combination of a hopper or support for delivering wound filling carriers to transferring position, a filling end finder to find and extend the end of the filling wound upon a carrier, and automatic means controlled by the position of a filling carrier in the hopper or support for rendering the filling end finder operative or inoperative.

16. In a filling end controller, the combination of a hopper or support for delivering wound filling carriers to transferring position, a filling end finder to find and extend the end of the filling wound upon a carrier, means for grasping the extended filling end and winding it about a holder, and automatic means for rendering the finder and grasping means operative when the number of wound filling carriers, the ends of the filling of which have been found, reaches a predetermined minimum.

17. In a filling end controller, the combination of a filling end finder to find and engage the end portion of the filling wound upon a carrier or bobbin and extend it, an arm having a terminal coiled portion and a guiding end projecting therefrom, means for swinging the arm to cause the projecting end to first engage the filling and then direct it between the terminal coils as the arm is swung.

18. In a filling end controller, the combination of a filling end finder to find and engage the end portion of the filling wound upon a carrier or bobbin and extend it, an arm having a terminal clamping portion to positively hold the filling, a projection extended from the arm to direct the filling into the clamping portion of the arm as the latter is swung across the path of the extended filling, means for swinging the arm, and a holder about which the clamped filling may be wound a plural number of times as the arm is swung by said means.

19. In a filling end controller, the combination of a filling end finder to find and engage the end portion of the filling wound upon a carrier or bobbin and extend it, an

arm having filling grasping portions between which the extended filling may be grasped and taken from the filling end finder, and automatic means having a part extended for engagement with a filling carrier in the hopper for rendering the controller operative and inoperative.

20. A filling end controller, comprising, in combination, a supply hopper for filling carriers, a filling end finder, and means extended into the path of movement of the filling carriers in the hopper for automatically controlling the operative or inoperative condition of the finder.

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

THOMAS CARTER.