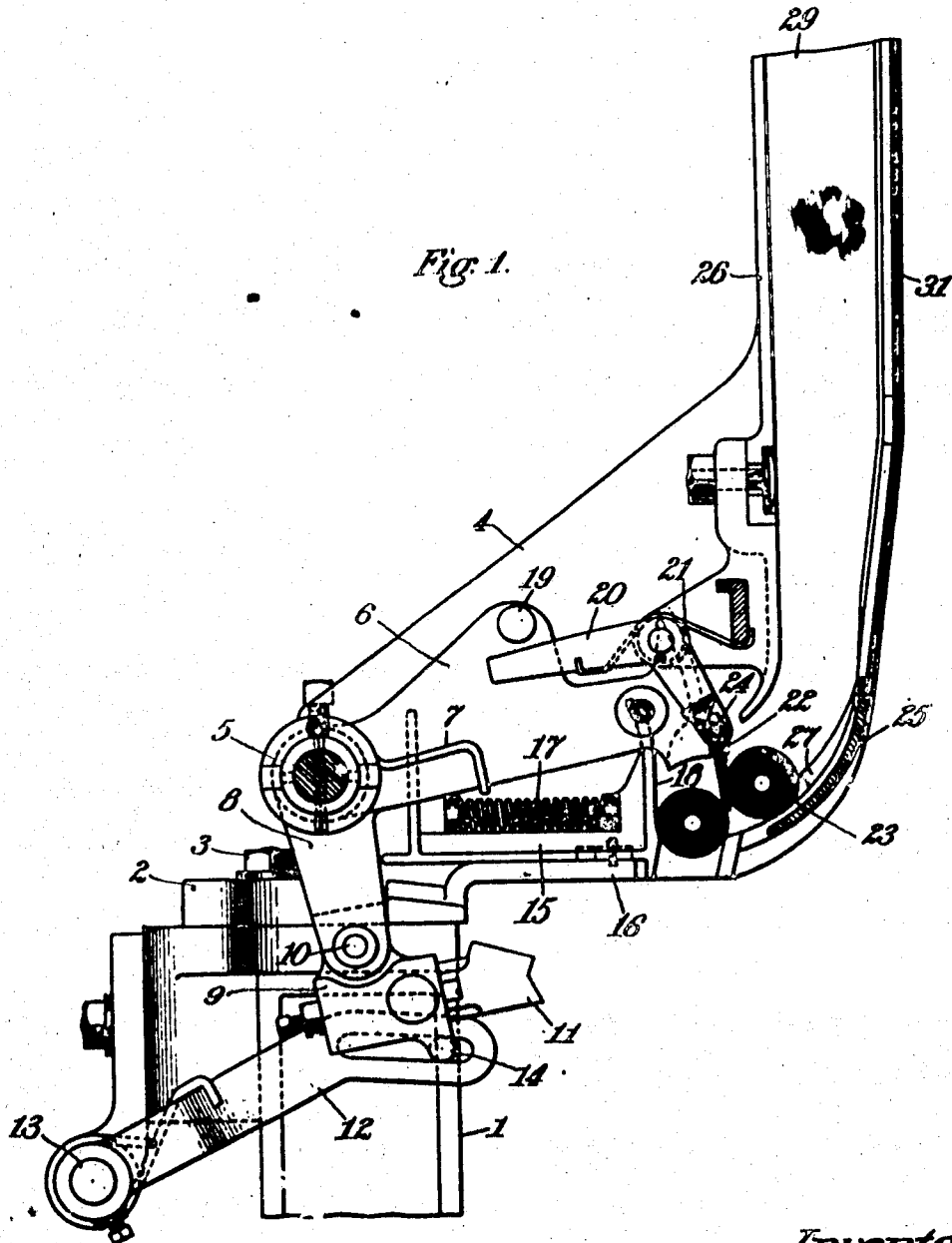


E. S. WOOD.
FILLING REPLENISHING HOPPER.
APPLICATION FILED OCT. 22, 1909.

Patented Oct. 18, 1910.
2 SHEETS-SHEET 1.

973,094.



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Inventor:

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By Robt. A. Harris.
Atty.

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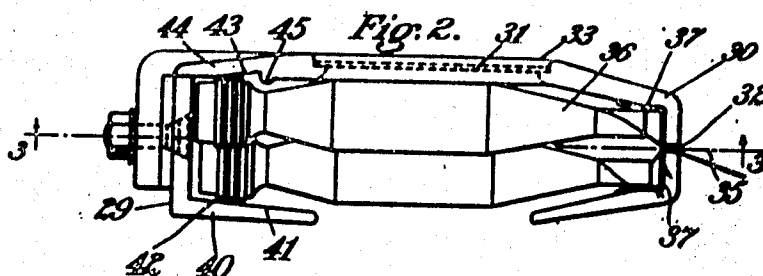
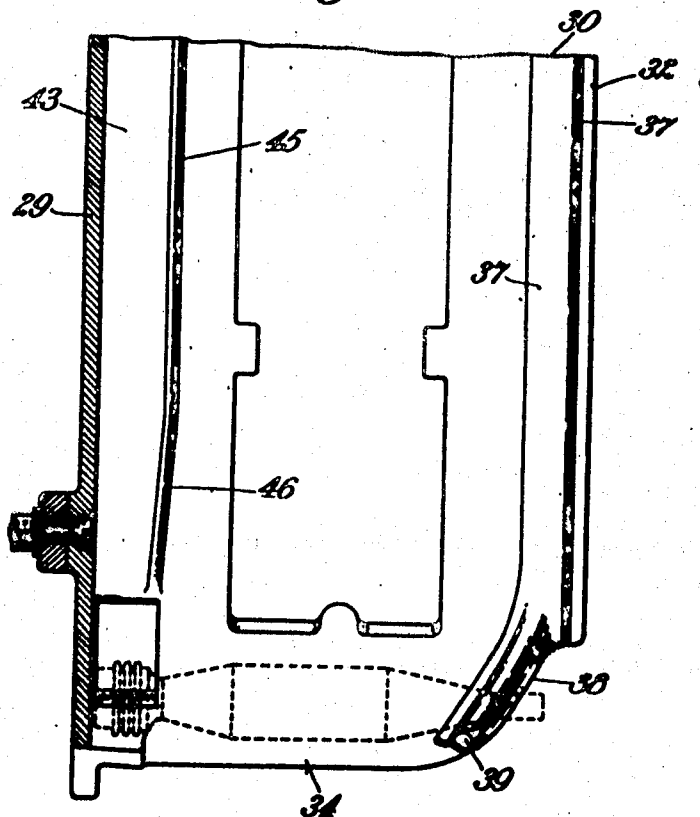


Fig. 3.



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UNITED STATES PATENT OFFICE.

EVERETT S. WOOD, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO WILLIAM F. DRAPER
OF HOPEDALE, MASSACHUSETTS; CLARE H. DRAPER AND OLIVER H. LANE EXECU-
TORS OF SAID WILLIAM F. DRAPER, DECEASED.

FILLING-REPLENISHING HOPPER.

973,094.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed October 23, 1909. Serial No. 524,151.

To all whom it may concern:

Be it known that I, EVERETT S. WOOD, a citizen of the United States, residing at Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Filling-Replenishing Hoppers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The invention to be hereinafter described relates to filling replenishing hoppers, and more particularly to the filling carrier supplying means employed therein.

The aims and purposes of the present invention are to provide an improved character of filling carrier supplying means, wherein the filling carriers and the filling ends leading from such carriers may be properly controlled, all as will more fully hereinafter appear in connection with the accompanying drawings showing one form of means for carrying the invention into practical effect.

In the drawings:—Figure 1 is a central sectional view of one form of filling replenishing mechanism and its associated parts embodying features of the present invention; Fig. 2 is a top view looking into the filling carrier supplying means or hopper; and Fig. 3 is a sectional view of the hopper, substantially on the line 3—3, Fig. 2.

The loom frame 1, the bracket 2 secured thereto by suitable means, such as the bolts 3, the web 4, the stud shaft 5 carried by said bracket, the transferer arm 6 mounted on the stud shaft 5, the spring 7 for normally maintaining the transferer arm 6 in raised position, the arm 8 to which the latch carrier 9 is pivoted at 10, the latch 11 to be engaged at times by the bunter on the lay, the controller 12 carried by the transverse shaft 13 and engaging the pin 14 of the latch carrier to position it for coaction with the bunter when the filling is to be changed, may all be of any usual or well known construction, or as fully set forth in detail in the prior application, Serial No. 516,240, filed Sept. 4, 1909, or otherwise as desired. Likewise the slide 15 mounted to move on the web 16, and normally under the influence of the spring 17 and having the filling carrier engaging face 18, may be as described in said prior application, and as they form no essen-

tial part of the present invention, further detail description will be unnecessary. As set forth in said application, the transferer arm 6 is provided with a pin 19 adapted when depressed to engage the arm 20 of a filling carrier positioner, normally held as in Fig. 1 by a spring 21, and move the other portion 22 of said positioner over the filling carrier 23 next to be brought to transferring position, the said portion 22 of said positioner being flexibly jointed at 24; and when the transferer arm is raised, as described in said application, to permit the spring 21 to act and cause the positioner to move or force the filling carrier next to be transferred to transferring position. As the end 22 of the positioner moves to engage the filling carrier next to be brought to transferring position, it may sometimes happen that the filling carrier 23 will retreat before the moving end 22 of the positioner, so that said end may not ride over and engage the filling carrier 23 on its rear portion. In such event, obviously, no filling carrier would be brought to transferring position when the transferer returns from making a transfer. This action is more liable to occur when the hopper is nearly empty. To meet this condition the present invention contemplates means for preventing back or retreating movement of the filling carrier next to be moved to transferring position, one form of which is best indicated in Fig. 1, wherein, on the inner portion of the wall 25 of the hopper 26, is formed a shoulder or stop 27, preferably so disposed that when the end 22 of the positioner rises to engage back of the next filling carrier 23 in the hopper, the shoulder or stop 27 will prevent backward or retreating movement of the filling carrier. This shoulder or stop 27 may be disposed to engage any suitable part of the carrier next to be moved to transferring position, but in the present and preferred form of the invention it is located to engage near the head end of the filling carrier, and is preferably formed as a fixed part of the hopper wall, though this may be otherwise if desired. The hopper 26 is preferably formed of greater dimension from front to rear at its upper portion, to the end that filling carriers may arrange themselves in more than a single line or in staggered relation in said upper portion of the hopper, but,

at its lower portion, the hopper is contracted to cause the filling carriers to move into single line formation as they approach transferring position. In the present embodiment of the invention the hopper preferably comprises the end portions 29 and 30 forming a directing channel-way for the carriers, said end portions being connected at the rear by a plate 31. At one end the hopper has a slot or opening 32 for the passage of the filling ends which may be led to some point exterior of the hopper or to a suitable take-up device to take up the slack in the filling ends as the carriers move toward transferring position. In the form of hopper shown the end portions 29 and 30 are preferably of cast metal having upper and lower web portions 33 and 34, but obviously this characteristic of the hopper may be changed within the true scope of the present invention.

Owing to the vibrations of the hopper caused by the moving parts of the loom, the filling ends 35 leading from the carriers in the hopper through the slot or opening 32 to a take-up or other device are liable to become injured or weakened by the pounding or rubbing action thereon between the tip portion of the carrier and the metal wall of the hopper, so that the filling ends are liable to break at this weakened point when any strain is placed thereon, as for instance when the carrier is transferred to the shuttle, or when the shuttle is picked. The filling ends extend in a downward and outward direction from the filling carriers either to a take-up or other device, and, in the absence of any means to maintain proper tension on the filling ends, those ends leading from the upper filling carriers are liable to become entangled with the tips of filling carriers below, so that such entangled filling end becomes broken when the filling carrier with which it is entangled is transferred to the shuttle. This may happen even where a take-up is used to act upon several of the filling ends for the purpose of taking up the slack as the carriers move toward transferring position, because more slack will occur in the ends leading from the upper carriers down in the hopper and consequently more nearly in horizontal relation with the take-up. With these facts in mind the present invention contemplates a control of the filling ends themselves, regardless of whether they pass to a take-up or to a fixed point exterior of the hopper, to the end that not only may they be protected from the pounding or rubbing action which is liable to weaken them and be held from entanglement with the tips of filling carriers below, but unwinding of the filling from the carriers may be prevented even where the filling ends are under the action of a take-up. One form of a simple expedient to these

ends is shown by Figs. 2 and 3 of the drawing, wherein the inner surface of the wall of the hopper adjacent the tip portions of the filling carriers 36 is provided with a lining 37 of felt or other suitable yielding or fibrous material. The lining 37 is preferably secured to the inner surface of the hopper by means of an adhesive, though any suitable means may be employed, and is extended to a point sufficiently remote from the end slot 32 to provide a yielding cushion for the tip portions of the filling carriers, as indicated in Fig. 2; the construction being such that the filling ends 35, should they get between the tips of the carriers and the lined wall of the hopper adjacent thereto, will not be subjected to the injurious pounding and rubbing effect, heretofore indicated. The lining 37 also preferably extends to or slightly over the slot 32 so that the filling, in passing from the carriers to the take-up or other device, is held from sagging even though it becomes slack, the fibrous nature of the lining acting as a holding or tension means, and the construction being such that the filling ends leading from the upper carriers cannot become entangled with the tips of filling carriers below or the filling ends be unwound from the carriers by the action of the take-up. It will thus be seen that the lining 37 acts to control the filling ends, prevents them from becoming injured or weakened, holds or maintains a filling end from dropping down ahead of the filling carrier from which it extends, and provides a tension means to prevent unwinding of the filling from the carriers, a characteristic of special importance where a take-up is employed, as will be obvious to those skilled in the art. At the lower portion the back wall of the hopper preferably curves inward, as at 38, Fig. 3, and is provided with a rib 39 over which the lining of felt or other yielding material extends to support the tip portions of the filling carriers and prevent such portions getting under the edge of the front wall of the hopper, as they move toward transferring position.

Rotation of the filling carriers in the hopper is obviously objectionable, because thereby either too much slack is produced in the filling ends leading therefrom, or such filling ends become wound upon the tip portions of the carriers and broken. Experiment and practical experience has shown that when the base portions of filling carriers have an extended area or line of contact with the adjacent wall of the hopper, much rotation of the filling carriers occurs, due to the loom vibration, but where such contact is reduced, less rotation is observable. With this fact in mind the present invention contemplates forming the inner surfaces of the hopper walls adjacent the base portion of the filling

carriers in such manner that only a single point of contact will occur between the base portion of a carrier and said wall. In the present form of the invention the end portion 20 of the hopper is provided with a flange 40, the inner surface 41 of which is flared outwardly, the construction being such that when a filling carrier having the usual metal rings on its base portion is resting against this surface 41, only the endmost ring 42 will be in contact with the inner surface of said wall. Likewise the inner surface 43 of the back wall 44 is inclined or grooved as shown, and terminates with a bead or flange 45, the construction being such that only the end ring on the base of the filling carrier will contact with the surface 43. Owing to the vibrations*hereinbefore mentioned the filling carriers are liable to move longitudinally to the right, Fig. 2, and, dependent upon the amount of filling thereon, are liable to assume an inclined position with the tip end of the carrier depressed or lower than the base. The bead or flange 45 on the rear wall coacting with the base portion of the filling carriers limits this endwise movement of the filling carrier contacting therewith, and the base rings of such carrier engaging the base rings of an adjacent carrier, as in Fig. 2, limit the endwise movement of the said adjacent carrier, it being noted that only one bead or rib 45 is employed. The rib 45 extends downward of the hopper and at its lower portion gradually inclines away from the top portions of carriers in said hopper. Fig. 3, the construction being such that any filling carrier which may be inclined downward at its tip portion will be straightened by the bead or flange as the carrier moves toward transferring position.

While the present invention has been shown and described in connection with a particular type of filling changing mechanism, and as associated with a hopper having an enlarged upper portion for the accommodation of filling carriers in more than a single line formation or in staggered relation, it is to be understood that the invention is not restricted to these features but is adaptable to any character of filling replenishing mechanism and to various forms or types of hoppers, the invention in its true scope being defined by the claims.

Herein the term felt or fibrous material is used in a generic sense, and includes any character of substance which will act to protect the filling ends and control them in the manner stated, so that movement thereof may be retarded.

What is claimed is:

1. In a filling replenishing loom, the combination of filling replenishing mechanism, a filling carrier supplying hopper, a filling carrier positioner for engaging a filling

carrier while in the hopper and moving it to transferring position, and means to prevent backward movement of a filling carrier in the hopper as the positioner moves to engage the same.

2. In a filling replenishing loom, the combination of filling replenishing mechanism, a filling carrier supplying hopper, a filling carrier positioner movable from in front of to the rear of a filling carrier in the hopper, and a stop to hold a filling carrier from backward movement in the hopper and for engagement by the positioner.

3. In a filling replenishing loom, the combination of filling replenishing mechanism, a filling carrier supplying hopper, a filling carrier positioner having a finger to move over and engage back of a filling carrier, and a stop in said filling carrier supplying hopper to hold a filling carrier for engagement by the positioner.

4. In a filling replenishing loom, a hopper for containing a series of filling carriers, said hopper having a stop therein past which the carriers travel to transferring position, said stop acting to prevent backward movement of a filling carrier in said hopper after said carrier has once passed said stop.

5. In a filling replenishing loom, a hopper for containing a series of filling carriers, means for engaging and moving a filling carrier to transferring position, and stopping means in said hopper past which the carriers travel to transferring position, said stopping means acting to hold a filling carrier for the action of engaging and moving means after said carrier has once passed said stopping means.

6. In a filling replenishing loom, a hopper for containing a series of filling carriers, means for engaging and moving a filling carrier to transferring position, and a stop past which the carriers travel to transferring position, said stop acting to hold a filling carrier in position for engagement by said means after it has once passed said stop.

7. In a filling replenishing loom, the combination of a hopper for containing a series of filling carriers, means for moving a filling carrier to transferring position, and a stop extending into the hopper and past which the carriers travel to transferring position, said stop acting to hold a filling carrier in position for the action of said means after it has once passed said stop.

8. In a filling replenishing loom, a hopper having a lower portion to contain filling carriers in single line formation, and a stop 27 in said hopper projecting from the wall thereof to prevent retreating movement of a filling carrier in said hopper.

9. In a filling replenishing loom, a hopper having a slot or opening for the passage of filling ends, and a lining of fibrous material secured to the hopper adjacent said slot to

protect and control the filling ends passing therethrough.

10. In a filling replenishing loom, the combination of filling carrier supplying means for delivering filling carriers to be transferred, and means acting to increase the retarding effect of the walls of the supplying means on the filling ends extending from the supplying means to retard unwinding the filling ends from the carriers.

11. In a filling replenishing loom, the combination of filling carrier supplying means for delivering filling carriers, and yielding means acting on the filling ends extending from the supplying means to retard movement of the filling ends in a direction away from the filling carriers.

12. In a filling replenishing loom, a hopper having a slot for the passage of filling ends, and tension means acting to increase the retarding effect of the walls of the slot on said filling ends projecting through said slot to retard movement thereof.

13. In a filling replenishing loom, a hopper having a slot for the passage of filling ends, and a cushion of yielding material interposed between the hopper and the ends of filling carriers therein.

14. In a filling replenishing loom, a hopper having a slot for the passage of filling ends, and a strip of fibrous material secured to the hopper at each side of said slot.

15. In a filling replenishing loom, a hopper having a slot for the passage of filling ends, and a strip of fibrous material extending along a wall of said slot.

16. In a filling replenishing loom, a hopper for containing a series of filling carriers having a slot for the passage of filling ends, and a rib at one side of said slot, the wall of said slot and rib being lined with fibrous material.

17. In a filling replenishing loom, a hopper having an end portion, the inner surfaces of whose walls adjacent the base of filling carriers contained therein diverge toward the tips of the filling carriers.

18. In a filling replenishing loom, a hop-

per having an end portion, the inner surfaces of whose walls adjacent the base of filling carriers contained therein diverge toward the tips of the filling carriers, and a bead or rib extending toward the discharge end of the hopper, said bead or rib being inclined at its lower portion.

19. In a filling replenishing loom, a hopper having a compartment for containing filling carriers in plural line formation, the end portion of said hopper having walls, the inner surfaces of which diverge toward the other end portion of the hopper to provide a single bearing point between said walls and the base of a filling carrier adjacent thereto.

20. In a filling replenishing loom, a hopper having a compartment for containing filling carriers in plural line formation, the end portion of said hopper having walls, the inner surfaces of which diverge toward the other end portion of the hopper to provide a single bearing point between said walls and the base of a filling carrier adjacent thereto, and a bead or rib on one of said walls.

21. In a filling replenishing loom, a hopper having a compartment for containing filling carriers in plural line formation, the end portion of said hopper having walls, the inner surfaces of which diverge toward the other end portion of the hopper to provide a single bearing point between said walls and the base of a filling carrier adjacent thereto, and a bead or rib on one of said walls, the portion of said bead or rib toward the delivery portion of the hopper being inclined to straighten the filling carriers as they proceed to transferring position.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EVERETT S. WOOD.

Witnesses:

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WENDELL WILLIAMS.