Jan. 22, 1957 W. H. BANKS 2,778,382

BOBBIN REPLENISHING MEANS FOR LOOMS

Filed Aug. 17, 1955 3 Sheets-Sheet 1

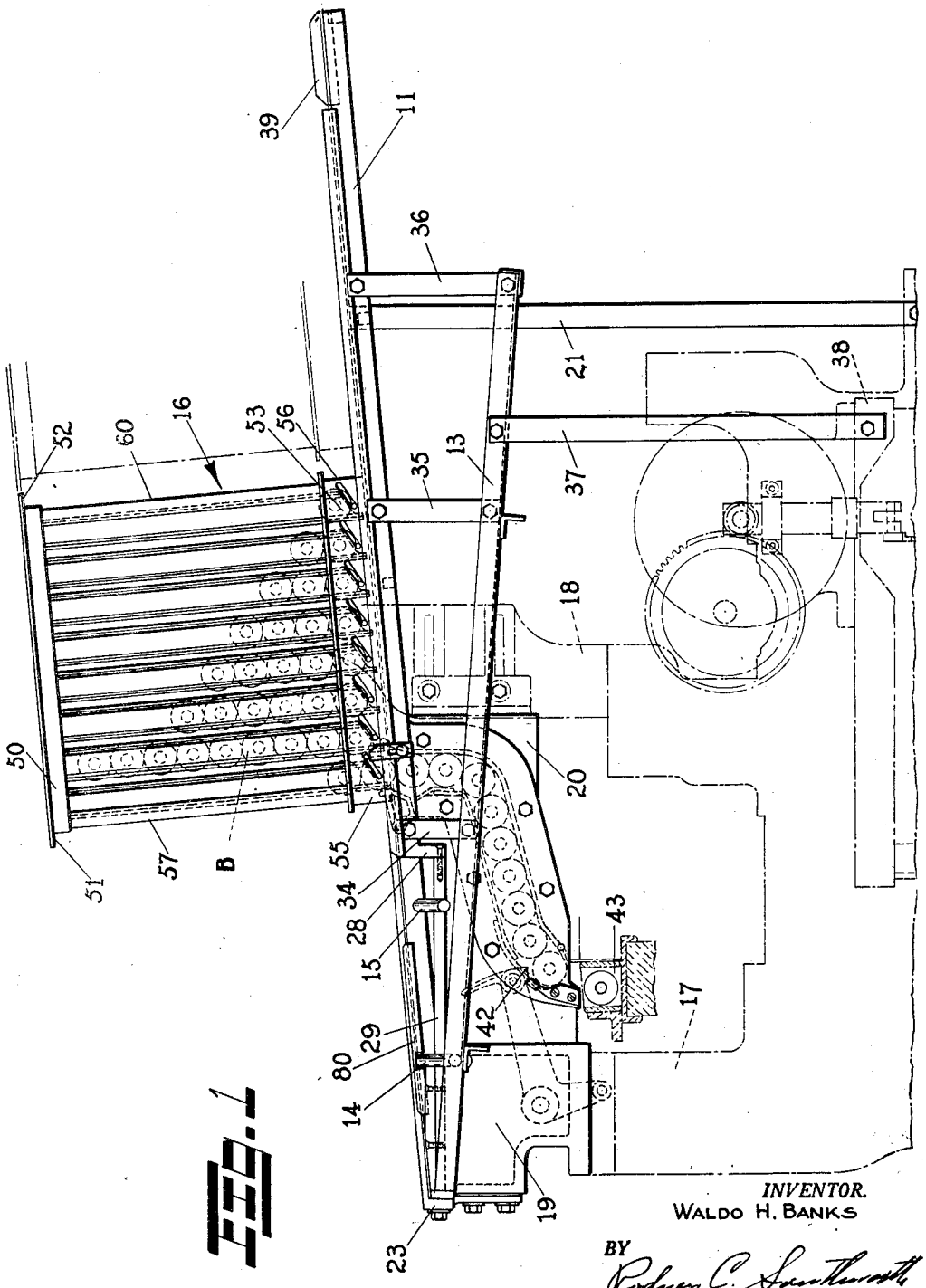


FIG. 1

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BOBBIN REPLENISHING MEANS FOR LOOMS

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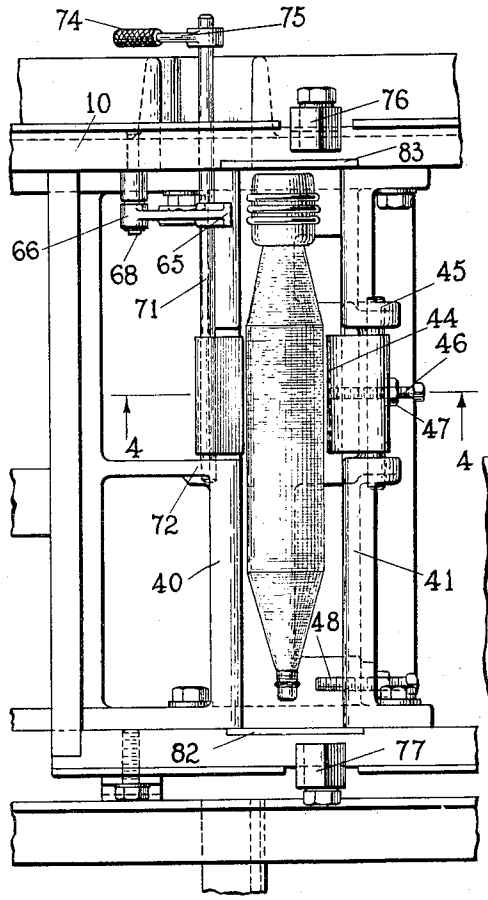


Fig. 3

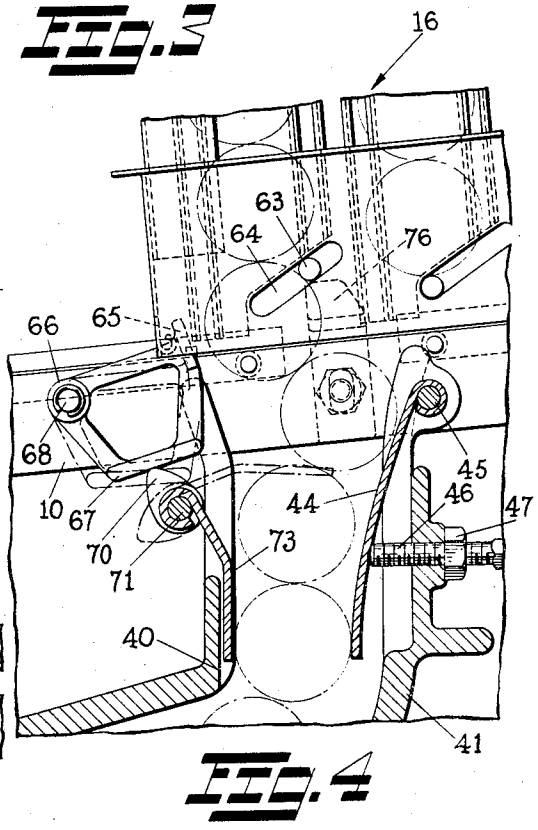


Fig. 4

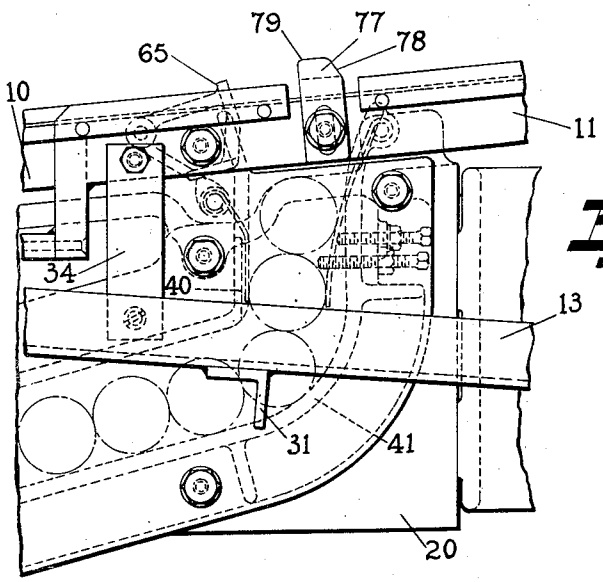


Fig. 2

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BOBBIN REPLENISHING MEANS FOR LOOMS

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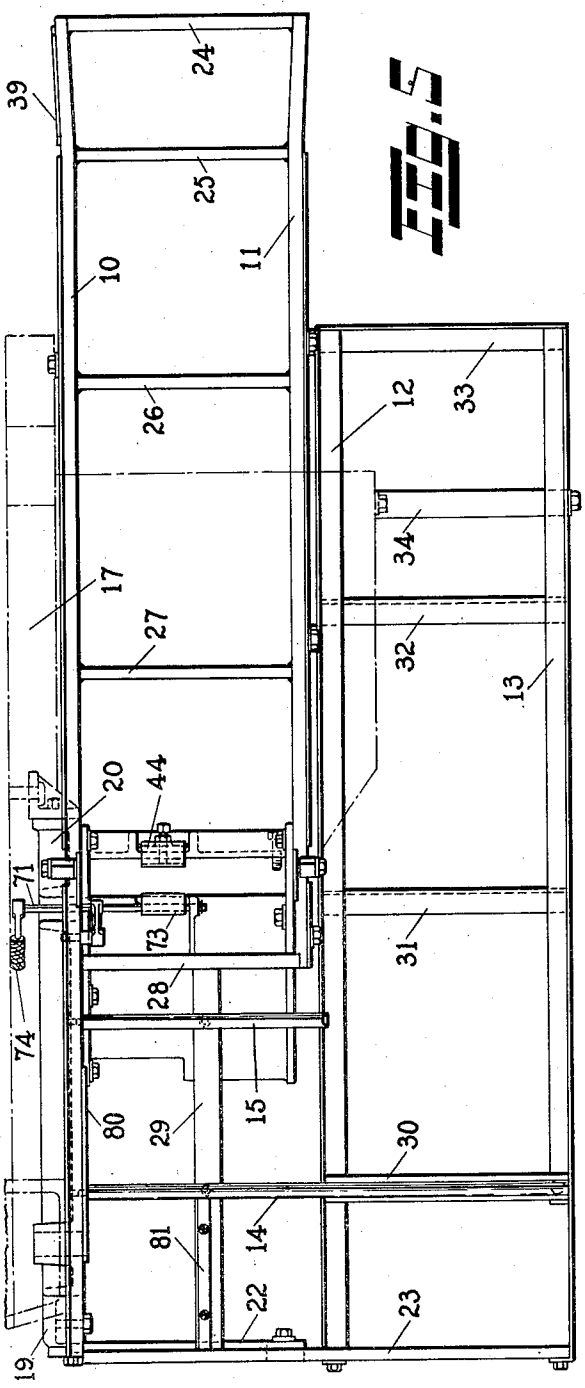


FIG. 5

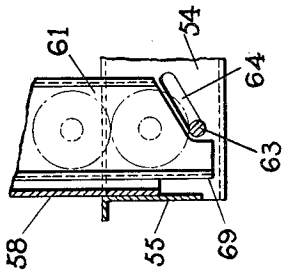


FIG. 8

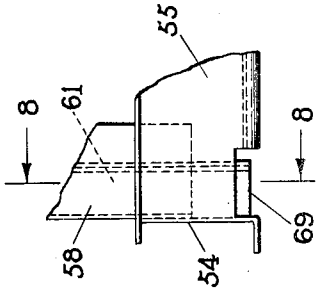


FIG. 7

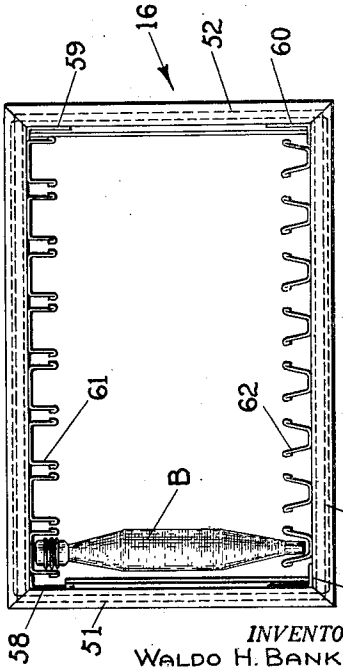


FIG. 6

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BOBBIN REPLENISHING MEANS FOR LOOMS

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Application August 17, 1955, Serial No. 528,928

17 Claims. (Cl. 139—245)

This invention relates to looms for weaving, and, more particularly, to mechanism for supplying filling packages to the battery and replenishing means in such looms.

It is a general object of the invention to device filling replenishing means for looms which shall save considerable labor heretofore considered necessary to the production of fabric.

It is a more specific object of the invention to devise effective and simple means which shall function without power to maintain a supply of filling packages in the battery of a loom and by which the labor incidental to maintaining a supply of filling in the loom may be greatly diminished.

A further object is that of maintaining said supply for a very extended period of time and entirely automatically, once a full container of filling packages has been placed on the loom.

It is a further object to improve such means in a manner to require no power and to take all indications from the filling package at the entrance end of the battery thereby doing away with all need for connecting linkages to the bobbin transfer mechanism or to other positively operated parts of the loom.

It is a further object to devise means for the purpose which shall function under the influence of gravity, once a container of filling packages has been placed in position and further, which shall function with a plurality of containers, a second of which moves into position as the first becomes exhausted, whereupon the first moves out of the way and is retired to an inactive position.

Another object of the invention is that of devising mechanism of the type described which shall be inexpensive, easily incorporated in new looms and applied as an attachment to old looms, and which shall be relatively trouble free over a long period of use.

Other objects will be apparent from the following disclosure.

Most automatic looms function with a rotary or other battery from which filling wound on bobbins is transferred to the shuttle. The supply of bobbins in a battery is not great, usually numbering from twenty to thirty, and each must be put into the battery by an attendant who inserts each bobbin individually. To do that he has to get a supply of bobbins wound with the required filling, take them in a truck or other carrier and going about the looms, insert bobbins before any battery becomes empty by pulling off the thread end, pushing the bobbin into place and wrapping the end about a knob or in some way making it fast in whatever end holding means is provided.

This matter of maintaining a supply of filling in the loom batteries thus involves considerable labor which represents a definite and appreciable proportion of the cost of the woven goods being produced. It varies for different types of goods woven and can become rather high where the loom runs only a matter of seconds between filling transfers. It has been desired to provide

labor saving means for the purpose by which an appreciable saving can be realized.

Several mechanisms have been suggested for use with automatic, fly shuttle looms for supplying the battery of the loom with filling. Usually these have been applicable to rotary batteries, have been exceedingly complicated and expensive, and have come into no commercial use for obvious reasons. The initial cost of such means cannot be high and if the mechanism is complicated and interconnected for timing and actuation by or through the replenishing means, added loads are thrown on those critical parts and the functioning of the loom adversely affected so that its efficiency is lowered.

While some simple schemes have been attempted, they have involved no more than feeding hoppers applied to a loom battery with insufficient control to render them reliable or efficient in practice.

According to the present invention, a combined gravity and vibrational feed means utilizing an inclined track and compartmented container or magazine makes possible the supplying of a very large number of filling bobbins to the loom directly from the spinning, winding, treating or other department, and the feeding of those bobbins to a battery and transfer means at the loom without special control timed from the filling transfer means. However, the battery is kept supplied with a reserve of bobbins so that one shall always be in the transfer position.

Preferably, the battery and transfer mechanism are of the type to handle bobbins on which filling packages are formed with the end wound into a finding bunch as shown in United States Patent No. 2,558,198. The battery may be of the general class illustrated in United States Patent No. 2,566,880 in which bobbins prepared as above mentioned are introduced and from which they may be transferred to the shuttle with the filling end held and disposed of as described.

The bobbin container is, in effect, formed into vertical compartments and vertical rows of bobbins are held in place by a retaining means at the lower end of each row and such a container when placed on the inclined track is moved or will move to a position in which its first row of bobbins aligns with the entrance to the battery and is there held by a stop means. At the same time the stop means arrests the travel of the magazine in its movement down the track, other means affects the retaining means for that row only to permit its bobbins to descend by gravity into the battery.

The magazine will remain in its position until all bobbins have been exhausted from the particular row being used and until the battery itself has become empty of bobbins at its entrance end, for example, two or three bobbins positioned at that point. There a bobbin feeler member is released and by a counterweight or other appropriate means, acts to release the stop from holding the magazine, thus permitting it to slide along until the next succeedingly row or compartment is nearly aligned with the battery entrance. At that time the row of bobbins is released and just as soon as a bobbin or two have entered the battery the stop means is interposed in the path of the magazine. This procedure is repeated until the entire magazine becomes exhausted.

The track may be long enough to accommodate two or more magazines so that as one is exhausted, the next immediately moves to feeding position, while the exhausted one is returned to a position to be taken away later. Thus by keeping a full magazine in place at all times continuous production is assured, yet the need for frequent refilling of the conventional rotary or other battery by bobbin boys is no longer necessary. The larger magazines constitute a convenient means for transporting bobbins and, in instances, may even be used to present the filling to steam or other treatments. By the instant

system the bobbins are subjected to less handling, friction, tumbling, etc., so that the effectiveness of the entire weaving process is improved.

The invention will be described by reference to a preferred embodiment thereof as illustrated in the accompanying figures of drawings, wherein:

Fig. 1 is a side elevation of the invention applied to a loom.

Fig. 2 is a detail view of parts of the invention at the battery entrance.

Fig. 3 is a plan view of the mechanism of Fig. 2.

Fig. 4 is a section at line 4—4, Fig. 3.

Fig. 5 is a plan view of the entire track and control means.

Fig. 6 is a plan view of a bobbin magazine.

Fig. 7 is a detail view of one part of that magazine.

Fig. 8 is a section at line 8—8, Fig. 7.

Now referring to Figs. 1 and 5, the invention is shown applied to a loom only a small portion of which is illustrated. The right hand or side at which replenishing is accomplished has attached to it by several brackets an inclined track which includes a forwardly inclined part, a laterally inclined and then a rearwardly sloping portion. The rails 10 and 11 extend forwardly and downwardly, rail 10 being considerably longer than rail 11 for reasons which will appear later. Rails 12 and 13 extend to the rear and downwardly in that direction, while bars 14 and 15 slope laterally. The rails 10, 11, 12 and 13 are in the form of angle irons, either standard shapes or fabricated sections, and may preferably be provided at their horizontal bearing surfaces with a fiber or other facing so that a container or magazine generally indicated by numeral 16 will slide thereon when the loom is running. The cross supports 14 and 15 are preferably rods of circular section, but, of course, the structural details may vary widely without departing from the general inventive concept.

These track members are supported at several points. At the top of loomside 17 and at a part 18 of the arch structure there is attached a bracket 19 which continues rearwardly to form a side member 20 of a battery. This bracket and battery support the longest rail 10 which is also braced at its rear end by a strut 21 connected at its lower end to the loomside adjacent the beam support. The bracket 19 extends laterally at 22 to support the front end of the tracks and attaches at about the middle of a front stop bar 23.

Rail 11 is connected to rail 10 by a number of crossbars 24, 25, 26, 27 and 28, this last being connected by a stringer 29 to the stop member 23. While these rails and crossbars may be fixed together in any suitable manner, they are preferably welded.

The rails 12 and 13 are attached at their forward ends to stop bar 23 and are spaced by crossbars 30, 31, 32 and 33. The rails 11 and 12 are tied together along their length to be maintained in proper angular position by vertical struts 34, 35 and 36. Outer rail 13 sustained by a brace 37 extending down to motor bracket 38, or to some other rigid part of the loom structure.

The space between the vertical side members of the angle irons between which the filling container 16 slides is sufficient to permit the latter to pass with reasonable clearance and at the rear a plate 39 aids in positioning a full magazine. For that purpose the ends of that track are slightly divergent.

The replenishing means at the loom may be of any type which can be fed by a discharge of bobbins to it by gravity and which has the capability of handling bobbins wound with a tip finder bunch as in the Fiset et al. patent to which reference is made. Here it is not necessary to describe such a battery in detail, but referring to Figs. 1–4, one battery in use comprises an inclined chute formed by guides 40 and 41 which are vertically disposed to form a divergent entrance. Here this entrance is directly below the level of the track and in a position to cooperate with container 16 in a manner to be described. At its lower front end the battery presents the leading bobbin for action by the transfer hammer 42, Fig. 1, by which, at the proper time, it is transferred to the shuttle 43, ejecting an exhausted bobbin in the usual way.

As can be seen, this particular battery accommodates nine bobbins of one size, but if different diameters of packages are used, more or fewer bobbins are involved; however, there are always enough in the battery so that considerable time is available to replace an exhausted container without the loom stopping for lack of filling.

At the battery entrance it is desired that bobbins be guided so they pass close to the front inner surface of the guide 40. For that purpose a plate 44 is pivoted at 45 and is maintained in an adjusted position by screw 46 locked by nut 47. At the outer end of the battery entrance an adjustable screw 48 is locked in position to limit the space through which the bobbin tips may pass. This will prevent a bobbin butt from passing and thus prevent a bobbin getting into the battery in reversed position if somehow the magazine should be loaded improperly.

Now referring to Figs. 1, 6, 7 and 8, the bobbin magazine generally denoted by numeral 16 may be fabricated by welding structural shapes easily obtained, or may be formed in various ways from metal, plastic, fiber or other materials. Preferably, it is spot welded using side pieces 49 and 50 and ends 51 and 52 in the form of angle irons at the top and channels 53 and 54 for sides at the bottom along with end angle sections 55 and 56. These are wrapped around slightly at the corners and welded and are then formed into a box-like structure by welding to upright or corner pieces which are preferably of angle section, see parts 57, 58, 59 and 60, Figs. 1 and 6.

Bobbins B are maintained in independent, vertical columns and thus the magazine is in effect compartmented by the channels 61 and 62 welded or otherwise fixed in vertical position. The channels 61 are wide enough to take the butts of the largest bobbins contemplated to be used while the opposed channels 62 receive the bobbin tips. Of course, a unit is preferably built for a particular size of bobbin and for a specific type and size of loom, but bobbins slightly smaller than the maximum size accommodated may be substituted without any practical difficulty.

The magazine is open at top and bottom although a cover may be used to protect the filling supplies from dirt and lint. Each row of bobbins is held in place by a rod 63, Fig. 8, normally lying at the lower end of a slot 64 in the side member 54 and also in a similar slot in the opposite side channel 53. When a rod is moved to the upper end of its slots as will be described, that particular row of bobbins is permitted to fall into the battery as needed.

The angle at which the track is set (about 5°) is such that when the loom is running vibration of the parts causes the container to move down the track with continuous although not fast progress, except at such times as it is latched or stopped in position. This slow movement makes it possible for the stopping and releasing parts to work under action of the bobbins in the battery entrance without danger of overtravel, etc.

At the track adjacent the entrance of the battery a means is provided to control the advance of the magazine and release of bobbins in it. At the rail 10 a latch 65 having a hub 66 and a depending cam engaging surface 67 is pivoted on a stud 68. The latching surface, as shown in Figs. 2 and 4, may be elevated enough to act as a stop against which the front edge 69 of each channel 61, Figs. 7 and 8, may engage. The rearwardly positioned or opposite side of each of these channels is cut away as is a part of the central web to avoid interference with rod 63 and slots 64 and also to assure that the latch 65 may engage only the front of each channel member. The

front, lower box member 55 is cut out or notched as shown so that part of the magazine may clear the latch.

This latch is controlled by a cam 70 fixed to one end of a spindle 71 borne in guide 40 and in a second bearing at a central web 72 of the battery. Intermediate these a flat plate 73 is fixed to the spindle and acts as a feeler to sense the presence of a bobbin at the entrance of the battery. The cam and feeler are counterbalanced by a weight 74 at the end of arm 75 fixed to the outer end of spindle 71 so that the parts normally move to the dot-and-dash line position, Fig. 4, if no bobbin is in position to press the feeler to the full line position. The counterweight is adjustable for different weights of bobbin and filling, but while it quickly rocks the parts to permit the cam to let the latch fall, a bobbin on the feeler should easily raise the latch. The front, inner face of the battery is recessed as shown, Fig. 4, to let the feeler enter it so the filling package may be guided by the entire battery surface insofar as possible. Adjustable plate 44 assures that, no matter what diameter of package is used, the latch is always raised to the same position.

As the magazine is advanced, bobbins are released, one compartment after another, by action of the adjustable lugs 76 and 77 fixed to rails 10 and 11, respectively. These are slotted and clamped in any adjusted position by bolts passing through their slot and the rail. Each has an inclined surface 78 and a top, more or less horizontally disposed surface 79. In action, as the magazine is moved down its track, a rod 63, each end of which extends about an inch or so beyond the magazine, is cammed up and back toward the high end of its guide slots 64 until it rides upon the top surfaces 79 of the lugs. Proper adjustment should permit a rod to rest on these surfaces 79 when the magazine is held in stopped position and when the rod is about at the end of its slots 64. Of course, displacement of a rod allows the bobbins of that row or compartment to fall and fill the battery.

When a bobbin is no longer resting on the feeler 73 it rises and permits the latch to fall so that the magazine moves forwardly to the next row; of course, the rod for that row is moved aside and the bobbins from that row feed into the battery. This continues, row by row, until the entire magazine is exhausted whereupon it will be released to move down the track and to be retired to the second track. A guard 80 at the inside of rail 10 assures that the magazine moves forwardly in a straight pathway until it becomes exhausted and moves beyond rail 11. Then it no longer has support at its right side and falls onto the cross bars 14 and 15. Prior to that it is in contact with a short track member 81 at its front end so that it cannot tip. However, as soon as rail 11 offers no support the weight of the magazine over-balances it toward the side and the magazine lower side member 54 is lifted to clear guard 80 so it can slide down bars 14 and 15 until it registers or aligns with rails 12 and 13. It then moves slowly to the lower or rear end of that track to be removed when it is convenient to do so.

The track extends to the front far enough so there is clearance for a magazine to fall from rail 11 and still move a little farther before stopping against the end member 23. This permits the magazine to become misaligned a little, yet clear the end of rail 11 so as to start down the cross feed.

Bar 14 of the cross feed is positioned so that when the magazine reaches stop 23 or starts down the cross feed, it will rest with the majority of its weight to the rear of the bar. When it has moved off bar 15 it will then start rearwardly down the lower track to the retirement position. The bars 14 and 15 are preferably of non-corroding material and the rails may be although it is easier to apply strips or sliders to these parts, e. g., strips of Teflon or the like, impregnated with graphite.

To review the operation, it is better to start with a full battery since with the inclination of the battery employed, there is danger that a bobbin will become misaligned in

rolling all the way down the battery chute. A magazine is then placed on the track to be guided down rails 10 and 11 and may be pushed all the way down to be stopped in feeding position by the latch 65. The magazine may be pushed down to feeding position manually or, since the loom will run for several minutes on filling in even a partially filled battery, may be set on the top end of the track and permitted to move down itself.

After such initial starting of the mechanism, the magazine will move one row at a time as feeler 73 is released permitting latch 65 to drop. Under automatic operation, the inclination of the track along with natural vibration of the loom is just enough to advance the magazine slowly so that there will be ample time for the latch to be set again as the battery is filled and to catch on the next edge 69 of a succeeding channel 61.

This cycle continues until all bobbins have been exhausted and the magazine is freed to pass forwardly onto crossbars 14 and 15. It is intended that a second magazine shall always be in position behind that feeding and thus the second will move to feeding position as the exhausted one is retired. The margin of two or three bobbins to be transferred before feeler 73 can release the magazine merely means that a magazine or compartment therein becomes empty and the device does not advance until two or three bobbins have been transferred. However, there are enough bobbins in the battery so that considerable time is available to bring a full magazine into place without the loom stopping due to lack of filling. When the second magazine is in place behind that feeding, it moves forwardly just as soon as the first is released to be retired. The change-over then becomes entirely automatic.

If the loom has an amount of filling sufficient to run for a few minutes, it is not necessary to push a magazine into position to release the first row of bobbins, since it may be placed on the track and will move down to proper position itself.

In timing, the lugs 76 and 77 affect rod 63 to release a row of bobbins when the magazine has a short distance more to go before stop latch 65 is contacted. That gives time for the feeler to raise the latch before the magazine moves too far to be caught by it.

After a magazine becomes exhausted and the latch releases it, it slides further toward the front and its right side (as seen from the front of the loom) becomes unsupported by rail 11. Instead of being supported by rail 10, short track member 81 and the end of rail 11, it falls to rods 14 and 15. In so doing the left side is raised and is no longer guided by guard 80 so that it slides to the side until stopped by rail 13. It then slowly moves to the rear on rails 12 and 13 to be removed when at the operator's convenience.

To provide for smooth flow of bobbins from the magazine and to prevent any interference at the track, the latter is bevelled at 82 and 83, Fig. 3. Thus the magazine may be displaced slightly and the bobbins will still fall from it to the battery without tipping or catching.

The term bobbins has been used since filling is most frequently wound on pirns or bobbins, but it is to be understood that the term is broadly used that it includes all packages of filling no matter how wound.

The magazine may vary in size within rather wide limits, but one used in a practical installation has eight rows of bobbins in each row of which there may be about twelve bobbins. For many mills this means that two magazines will run from two hours to a day, thus the bobbin boys' work involves putting a full magazine on the track from perhaps every hour at the most to once in a half day, although he may let a loom go twice that long. The work of placing the magazine involves much less time than is needed to fill a part of the conventional battery to which the employee must return after not over about twenty bobbins are used. The term compartment refers to the space within which each row of bobbins is

held and it does not imply that the space is necessarily closed off completely from those adjacent.

The inclination of the tracks is preferably such that each will permit the magazine to move downwardly at a slow rate so long as vibration is present. Usually the vibration is that of the loom itself, but it may be that induced by adjacent looms or by other means. Depending upon the amount of vibration present in any installation, the angle of the track may vary, but it has been found that a slope of 5° functions positively enough and not too fast.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. This invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.

I claim:

1. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging said partitioned container to stop it so its compartments align with the battery as successive compartments become empty, and means responsive to the presence of a filling package at the entrance portion of said battery for controlling the said stop means.

2. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment aligns with said battery, and means responsive to filling at the battery entrance for controlling said stop means.

3. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging parts of the partitions of said container and means for controlling said stop means from the filling packages in said battery to release the container so it may move whenever filling becomes exhausted from a compartment, and for stopping the container with the next succeeding compartment aligned with the battery.

4. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and a pivoted detent at the track and in the pathway of the container for engaging parts of the partitions thereof, and means controlled by the absence of filling packages at the entrance of said battery for withdrawing said detent as a compartment becomes exhausted of filling, and for immediately interposing it in position to stop said container with the next succeeding compartment in position to feed its filling packages to the battery.

5. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and a pivoted detent at the track and in the pathway of the container for engaging parts of the partitions thereof, and means controlled by the absence of filling packages at the entrance of said battery for withdrawing said detent as a compartment becomes exhausted of filling, and for immediately interposing it in position to stop said container with the next succeeding compartment in position to feed its filling packages to the battery, means at the lower end of each compartment for retaining the filling supplies therein, and trip means carried by said track for moving said retaining means to release the filling supplies in that compartment aligned with the battery as the container reaches a feeding position.

6. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track, means at the lower end of each compartment for retaining filling supplies therein, stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment shall align with said battery, other means effective upon said means at the lower end of that compartment for releasing the filling supplies therein, and a filling supply actuated member at the entrance end of said battery for controlling said stop means.

7. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track, means at the lower end of each compartment for retaining filling supplies therein, stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment shall align with said battery, other means effective upon said means at the lower end of that compartment for releasing the filling supplies therein, a rod for each compartment held at each end in an inclined slot in the container side members for retaining the filling supplies in that compartment, stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment shall align with said battery, and an adjustably positioned abutment at each side of said track effective upon said rod at the lower end of that compartment for releasing the filling supplies therein, and a filling supply actuated member at the entrance end of said battery for controlling said stop means.

8. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track, means at the lower end of each compartment for retaining filling supplies therein, stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment shall align with said battery, other means effective upon said means at the lower end of that compartment for releas-

ing the filling supplies therein, and means for controlling said stop means which comprises a cam, a feeler member for sensing presence of a filling package at the entrance of said battery and a means for affecting said feeler and cam to render the stop means ineffective upon non-presence of filling at the battery entrance.

9. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track, means at the lower end of each compartment for retaining filling supplies therein, stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment shall align with said battery, other means effective upon said means at the lower end of that compartment for releasing the filling supplies therein, and means for controlling said stop means which comprises a cam, a feeler member for sensing presence of a filling package at the entrance of said battery and a counterweight for raising said feeler so that the cam may permit the stop means to release the container.

10. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment aligns with said battery, and means responsive to filling at the battery entrance for controlling said stop means and other track means for retiring said filling container after all filling therein has been exhausted.

11. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment aligns with said battery, and means responsive to filling at the battery entrance for controlling said stop means and other track means for retiring said filling container after all filling therein has been exhausted which comprises a rearwardly inclined track parallel to the track first mentioned, and a laterally extending track from the first to the second track.

12. Mechanism as defined in claim 11 wherein each said track is inclined at an angle such that, while the loom is in operation, the track angle in combination with the vibration of the loom will advance the container slowly.

13. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises a partitioned container, an inclined supporting track the angle of inclination of which is such that in combination with the natural vibration of the loom the container will move slowly down the track, and stop means at the track for engaging said partitioned container to stop it so its compartments align with the battery as successive compartments become empty, and means responsive to the presence of a filling package at the entrance portion of said battery for controlling the said stop means.

14. In combination with a loom having a shuttle, a battery for holding a plurality of filling packages from which the loom shuttle is periodically replenished, means for automatically supplying filling packages to said battery which comprises an inclined supporting track, a partitioned container movable by gravity along said track and stop means at the track for engaging parts of said partitioned container for releasing it to permit it to move along said track as a compartment becomes empty and to stop the container in a position so that its next succeeding compartment aligns with the battery, means responsive to filling at the battery entrance for controlling said stop means, and other track means for retiring said filling container after all filling therein has been exhausted, said track means having such angle of inclination that in combination with the natural vibration of the loom the container will move slowly down the track.

15. A bobbin container for use in replenishing a loom battery which comprises side and end members, bobbin guide means for dividing said container into compartments, and releasable means for retaining bobbins in each compartment which includes slots in said side members and a rod extending from side to side and movable in said slots from a position blocking the exit of bobbins from the compartment to one in which bobbins may fall from the compartment without restraint.

16. A bobbin container for use in replenishing a loom battery which comprises side and end members, bobbin guide means for dividing said container into compartments, and releasable means for retaining bobbins in each compartment which includes inclined slots in said side members and a rod extending across the compartment and being guided in said slots at its ends, said rod aligning substantially with the row of bobbins in a compartment when in the lower ends of the slots, but offering no restraint to the bobbins dropping from a compartment when moved to the opposite ends of the slots.

17. A bobbin container for use in replenishing a loom battery which comprises side and end members, bobbin guide means comprised as channels in which the bobbin ends are guided, said channels being vertically disposed to divide the container into compartments, and releasable means for retaining bobbins in each compartment which includes slots in said side members and a rod extending from side to side and movable in said slots from a position blocking the exit of bobbins from the compartment to one in which bobbins are free to fall from the compartment.

No references cited.