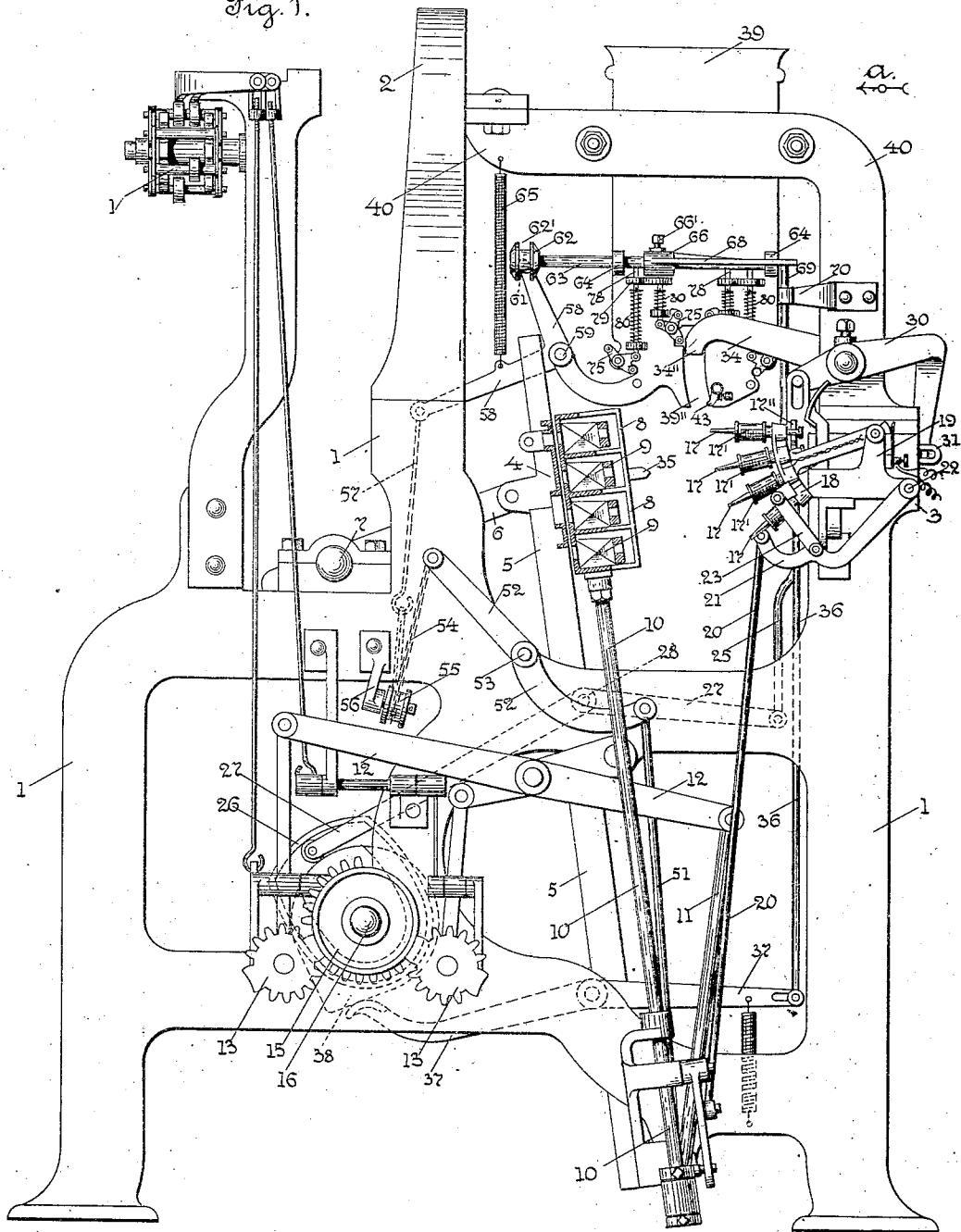


H. WYMAN & J. T. CYR.
WEFT REPLENISHING LOOM.
APPLICATION FILED FEB. 1, 1906.

941,179.

Patented Nov. 23, 1909.
3 SHEETS—SHEET 1.

Fig. 1.



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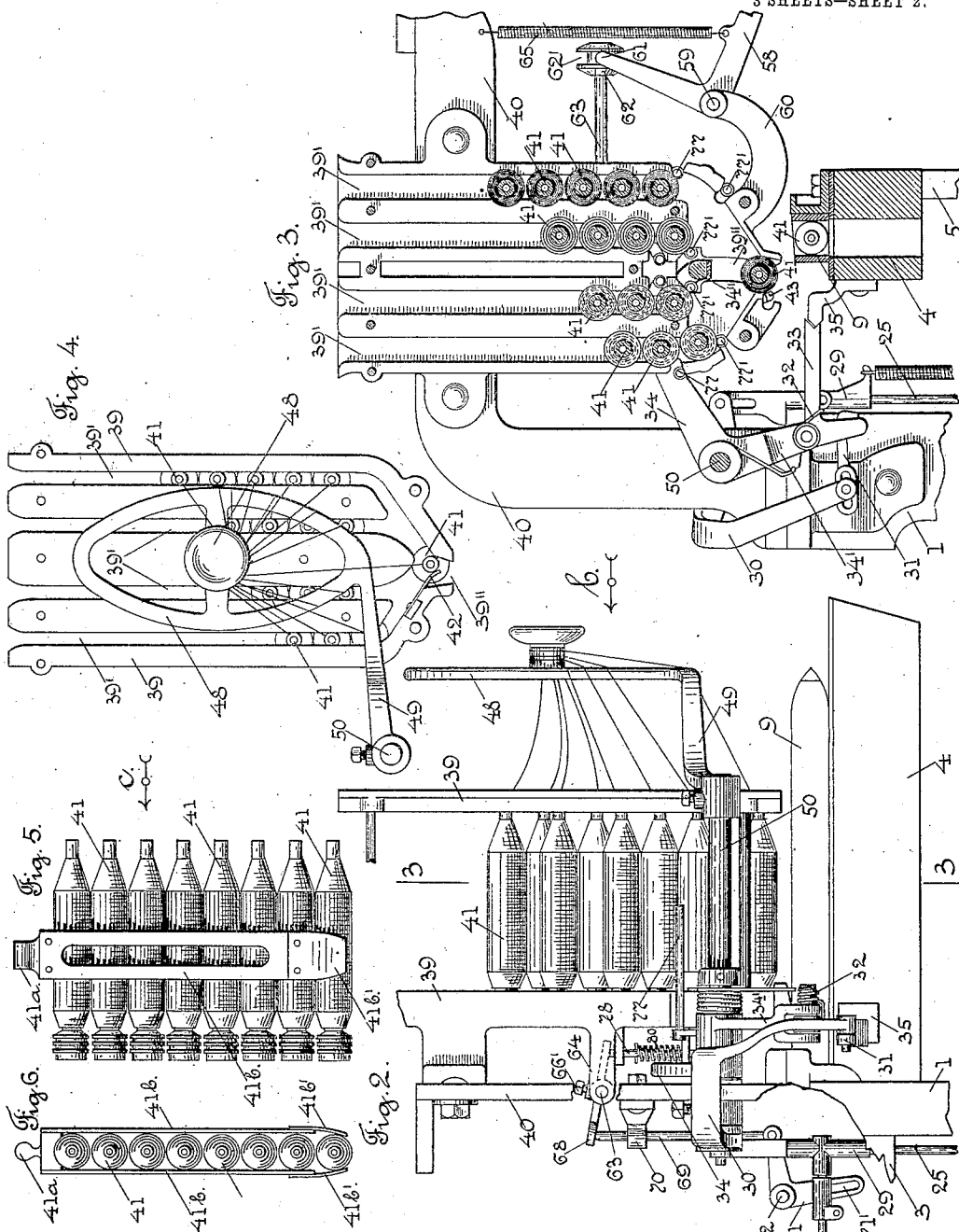
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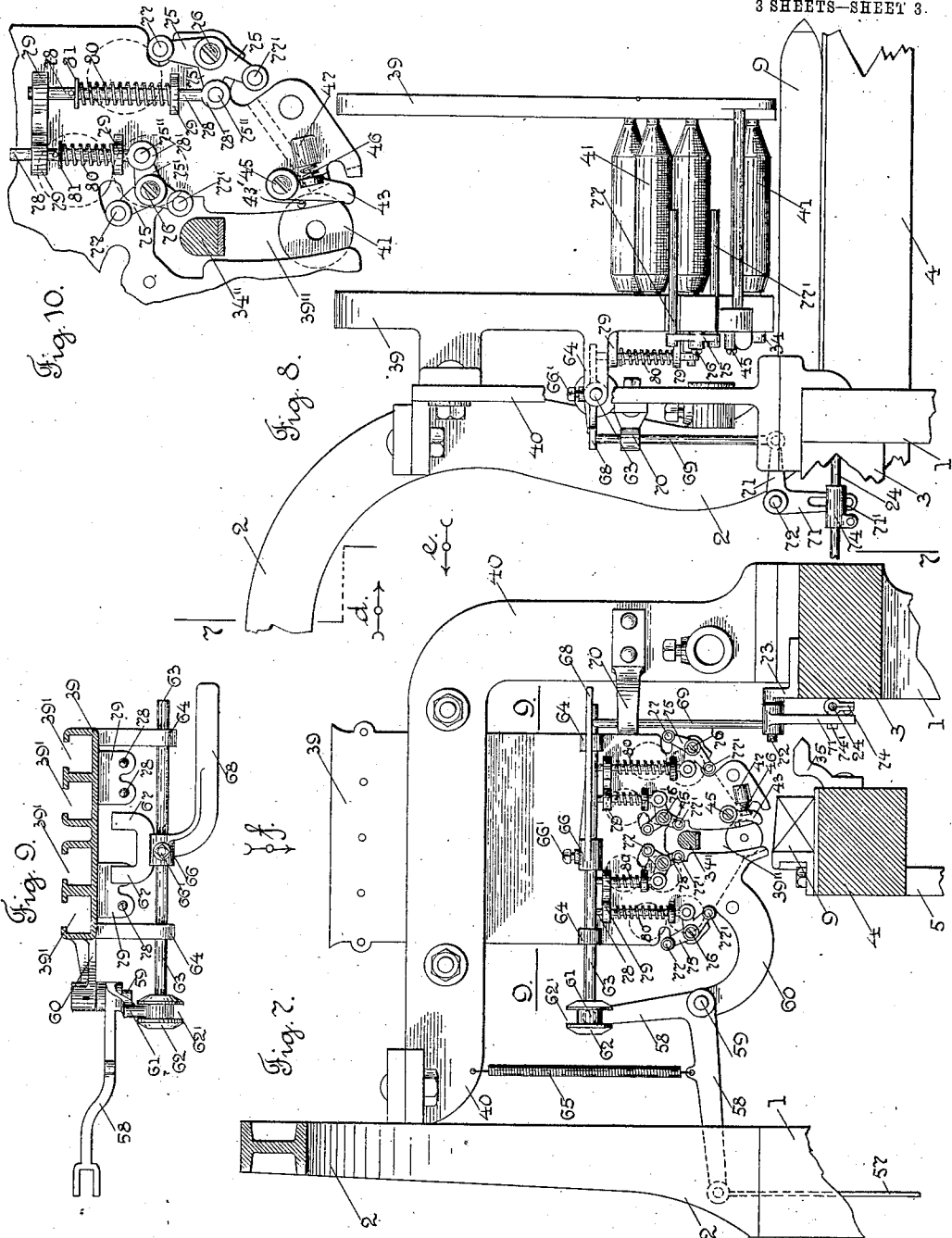
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3 SHEETS—SHEET 3.

941,179.



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UNITED STATES PATENT OFFICE.

HORACE WYMAN AND JOSEPH T. CYR, OF WORCESTER, MASSACHUSETTS, ASSIGNORS
TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

941,179.

Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed February 1, 1906. Serial No. 298,939.

To all whom it may concern:

Be it known that we, HORACE WYMAN and JOSEPH T. CYR, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have jointly invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

Our invention relates to weft replenishing looms, and particularly to the class of weft replenishing looms in which there are two or more drop or shifting shuttle boxes at one end of the loom, and a magazine at the other end of the loom, having two or more compartments or guide-ways for bobbins or filling carriers, which preferably are superposed and drop down to the discharging end of the magazine by gravity, and are preferably arranged in sets or groups, each set having fillings of different colors, corresponding to the colors on the bobbins in the shuttles of the drop or shifting shuttle boxes. And in connection with the shifting shuttle boxes, filling detector mechanism is used, which feels for and detects the substantial exhaustion of filling on the bobbin in the active or running shuttle, and through connections to the transferrer mechanism of the magazine, causes the operation of the transferrer mechanism to supply fresh filling to the running shuttle, all in the usual and well known way.

The object of our invention is to improve upon the construction of weft replenishing looms of the class referred to, and more particularly to improve upon the construction of the magazine for the bobbins or filling carriers, and the construction of the mechanism for selecting and releasing the bobbins or filling carriers from the several compartments or guideways of the magazine.

In our improvements, we provide a stationary magazine secured in a fixed position, which has two or more compartments or guide-ways for bobbins or filling carriers: each compartment may contain a set of bobbins or filling carriers of a color or character different from the color or character of the sets of bobbins or filling carriers in the other compartments. Each set of bobbins or filling carriers is superposed, one above the other, in a compartment, and drop down therein by gravity, and the lowest one passes through a chute or guide-way at the lower end of the compartment, into a chute

or guide-way having a discharging end common to all the compartments, and into a position under the transferrer preparatory to being transferred into the running shuttle on the substantial or practical exhaustion of the filling in said shuttle. Each compartment is preferably provided with means to retain the set of filling carriers therein, and means to release the lowest filling carrier from the filling carriers above it, and to guide it into a position under the transferrer. The next filling carrier above the one released will move into the place of the one released, and be held there until it is released, preparatory to being transferred into the running shuttle. The mechanism for holding and releasing the filling carriers in their compartments is connected with what we term a "selecting" mechanism, which determines from which compartment the filling carrier shall be released, in order to supply a bobbin having the same colored filling as the filling in the active or running shuttle. The selecting mechanism is preferably connected with and operated by the shifting or drop shuttle boxes, so that the shifting of said boxes, according to the indications of a pattern surface, will operate said selecting mechanism, preparatory to the operation of the releasing mechanism to release a bobbin from its compartment.

The transferrer mechanism which transfers the bobbin from the magazine into the running shuttle, may be of any usual and well known construction, and operate in the usual way. In case of a magazine having four compartments, as shown in the drawings, there are preferably two compartments on each side of the transferrer, and the transferrer occupies a central position at the lower discharging end of the magazine.

In connection with our improvements, filling detector mechanism of any ordinary and well known type, located at the shifting shuttle box end of the loom, and feeling for and detecting the amount of filling on the bobbins in the shuttles, may be used. The filling detector mechanism is connected with the transferrer mechanism, to cause the operation of the same, and the transfer of fresh filling into the running shuttle, on the substantial exhaustion of filling in said shuttle, in the usual and well known way.

We have shown in the drawings sufficient parts of a weft replenishing loom of the

class above referred to, and particularly shown and described in U. S. Letters Patent, No. 805,109, with our improvements applied thereto, but having in this instance four drop or shifting shuttle boxes, and four filling detectors, instead of two boxes and two filling detectors, shown in said patent, to enable those skilled in the art to understand the construction and operation of our improvements.

Referring to the drawings:—Figure 1 is an end view of parts of a loom of the class referred to, having our improvements applied thereto; the shifting shuttle boxes are shown in section. Fig. 2 is, on an enlarged scale, a front edge view of the magazine, and the transfer mechanism, detached, looking in the direction of arrow *a*, Fig. 1; some parts are left off in this figure for the sake of clearness. Fig. 3 is a section, on line 3, 3, Fig. 2, looking in the direction of arrow *b*, same figure. Fig. 4 is an end view of the magazine, and thread holder, shown in Fig. 2, looking in the direction of arrow *b*, same figure. Fig. 5 is a side view of a bobbin holder and bobbins, adapted to be used for inserting bobbins into the compartments in the magazine. Fig. 6 is an end view of the holder, looking in the direction of arrow *c*, same figure. Fig. 7 is a section, on line 7, 7, Fig. 8, looking in the direction of arrow *d*, same figure. Fig. 8 is a front edge view of the parts shown in Fig. 7, looking in the direction of arrow *e*, same figure. Fig. 9 is a section, on line 9, 9, Fig. 7, looking in the direction of arrow *f*, same figure. Fig. 10 shows, on an enlarged scale, a detached portion of the lower part of the magazine, and the holding and releasing mechanism shown in Fig. 7, showing a different position of some of the parts.

As all the parts of the loom shown in the drawings, except our improvements, are of substantially the same construction and operation as similar parts shown in U. S. Letters Patent, No. 805,109, above referred to, only a brief description of the same will be required.

In the accompanying drawings, 1 is the loom side, 2 the loom arch, 3 the breast beam, 4 the lay carried on the lay-swords 5, pivotally mounted at their lower ends, and operated through crank connectors 6 by the crank shaft 7, in the usual way.

8 are the drop or shifting shuttle boxes, in this instance four in number, carrying shuttles 9, each of which preferably has a bobbin or filling carrier of a different color. The shifting shuttle boxes 8 are supported on the upper end of a vertically moving rod 10, which, through a link or connector 11, is connected with a box lever 12, of the well known box motion of the Crompton type, which is shown and described in U. S. Letters Patent, No. 805,109, and comprises two

mutilated pinions 13 having movable teeth, which are operated, through connections to the pattern chain 14, and moved into and out of operative connection with a master gear 15, fast on the bottom shaft 16, connected with and driven by the crank shaft 7, through gears not shown, all in the usual and well known way.

The filling detector mechanism shown in Fig. 1 of the drawings is located at the shifting shuttle box end of the loom, and is of the Wyman type, shown and described in U. S. Letters Patent, No. 805,109, above referred to. In this instance there are four filling detector feelers 17, one for each shuttle box, adapted to enter the shuttle boxes to detect the substantial exhaustion of filling on the bobbins therein, and in case of the substantial exhaustion of filling in the active or running shuttle, to cause the operation, through intermediate connections, of the transfer mechanism at the opposite or magazine end of the loom, to supply fresh filling at that end of the loom; in the usual and well known way, and as fully set out in said patent, No. 805,109.

The feelers 17 have a longitudinal movement within the center of a coil of wire 17', through which an electric current is adapted to pass, and the frame or support 18, carrying the coils of wire 17', is in this instance pivotally mounted at its outer end on a stand 19, and has a pivotal movement in a vertical plane. The movement of the frame 18 corresponds to the vertical movement of the shifting shuttle boxes, and said movement is communicated to the frame 18, through a connector 20, pivotally connected at its lower end to the vertically moving box rod 10, and at its upper end to a lever or arm 21, pivoted at 22, and connected by a link 23 with the frame 18, see Fig. 1.

As above stated, the filling detector mechanism shown in the drawings, Fig. 1, is of the same type as the filling detector mechanism shown in the patent, No. 805,109, but the details of construction of the parts of the filling detector mechanism is somewhat different from the construction of the filling detector mechanism shown and described in said patent. The particular construction of the filling detector mechanism shown in Fig. 1, forms the subject-matter of another application for a patent, and therefore it is not necessary to describe the same in detail herein.

Intermediate the filling detector mechanism, at the shifting shuttle box end of the loom, and the transfer mechanism at the opposite or magazine end of the loom, are connections for operating the transfer, to supply fresh filling to the running shuttle upon substantial exhaustion of filling in said shuttle. Said intermediate connections are in this instance of substantially the same

construction as the connections, intermediate the filling detector mechanism and the transfer mechanism, shown and described in said patent, No. 805,109, and are operated in substantially the same way, and therefore a detail description thereof is not required.

There is a detector arm 17", see Fig. 1, located at the rear of the feelers 17, which is operated to pass by the rear end of a feeler, when on the substantial exhaustion of filling in the running shuttle, said feeler is drawn forward through the action of a metallic band on the bobbin in said shuttle, in the well known way. The movement of the detector arm 17" by the rear end of a feeler 17, acts to communicate a longitudinal movement to a rod extending through the loom at the rear of the breast beam, and causes the opposite end of said rod, shown at 24, in Figs. 2, 7, and 8, to move into the path of a vertically moving rod 25, see Figs. 1, and 2, which has a positive up and down movement communicated thereto at regular intervals, through a cam 26 on the bottom shaft 16, and a cam lever 27 pivoted at 28, see Fig. 1. The upward movement of the vertically moving rod 25, through a vertically moving plate 29, a pivoted arm 30, and a link 31, allows a spring 32 to act, to raise the finger 33, pivotally supported on a downwardly extending arm 34' on the transfer arm 34 carrying the transferer 34" into the path of a bunter 35, on the lay 4, see Fig. 3, so that the engagement of the bunter 35 with the finger 33, on the forward stroke of the lay, will operate the transfer arm 34 and move down the transferer 34", to transfer a bobbin from the magazine into the shuttle, all as fully described in said patent, No. 805,109. The detector arm 17" for the feelers 17, is positively operated at regular intervals, to move the same, and the mechanism connected therewith, to their normal position, after a feeler has indicated for a change of filling, through a connector 36 to a cam lever 37, operated by a cam 38 on the bottom shaft 16, see Fig. 1, in a similar manner as described in said patent, No. 805,109.

All of the above mentioned parts of the loom may be of any usual and well known construction, and form no part of our present invention, except that our improvements are shown combined therewith.

We will now describe our improvements, which relate more particularly to the magazine, and to what we term "selecting" mechanism for determining what filling carrier or bobbin from the magazine shall be selected and released, to be acted on by the transferer, and transferred into the running shuttle, in which a filling carrier or bobbin of a similar color or character has the filling thereon substantially exhausted. The selecting mechanism is preferably connected with, and

operated by the shifting shuttle boxes, or through the vertical movement of the shuttle box lifter rod, and the mechanism for releasing the selected bobbin, preparatory to its being transferred into the running shuttle, is preferably operated by mechanism intermediate the filling detector mechanism and the transfer mechanism, which mechanism is operated by the operation of said intermediate mechanism.

Our improved magazine for the filling carriers or bobbins is preferably located at the opposite end of the loom from the shifting shuttle boxes and the filling detector mechanism, as shown in the drawings, and is stationary and secured in a fixed and immovable position. The magazine 39 in this instance is attached in an immovable position to a stand 40 bolted to the loom frame, and has in this instance four compartments or guide-ways 39', in this instance open through from top to bottom, for four sets of bobbins 41, each set of bobbins may have filling of a different color, corresponding to the color of filling in the four shuttles in the shifting shuttle boxes.

The inner end or plate of the magazine 39 preferably has its guide-ways 39' provided with inwardly extending lips or flanges, as shown in Fig. 9, which embrace the shoulders of the heads of the spindles to retain them in said guide-ways longitudinally. The outer end or plate of the magazine 39 has the guide-ways 39', which are open from top to bottom, as shown in Fig. 4, to allow the outer ends or tips of the bobbin to extend through said guide-ways, whereby the thread from each filling carrier may pass directly from its filling carrier into the shuttle, without obstruction, as the filling carrier descends from the top of the compartment.

The bobbins 41 in each set of bobbins are superposed, and move down by gravity in the compartments or guide-ways of the magazine. The compartments or guide-ways in the magazine 39 are in this instance so arranged, that two will be on one side of the transferer 34", and two on the other side, and each compartment at its lower end has a chute or guide-way, see Fig. 4, leading to a single guide-way or chute, forming the discharging end 39" of the magazine, which is directly under the transferer, as shown in Fig. 3.

Each compartment has at its lower end retaining means for its filling carriers, consisting of a movable stop to hold and release its lowest filling carrier, and a cooperating stop, to retain the filling carrier above in its position, while the lowest filling carrier is being released. Between the lowest filling carrier in each compartment, and the discharging end common to all of the compartments, there is a free and unobstructed chute or guide-way so that a filling carrier from

any compartment may, when released, be conveyed by gravity directly to the discharging end under the transferrer, where it will be retained until transferred into the active shuttle.

In Fig. 3, the movable stop at the lower end of the compartment to the right, has released the lowest filling carrier, which has fallen through the unobstructed guide-way to the discharging end of the magazine, and a cooperating stop has retained the filling carrier above it, which filling carrier, when the movable stop and its cooperating stop have been returned to their normal positions, will drop into the position of the lowest filling carrier, and all of the superposed filling carriers will drop with it, as shown in the compartment at the left in said figure.

The bobbin which is selected and released, to drop to the lower discharging end 39'' of the magazine 31, is yieldingly held at said discharging end, preparatory to being engaged by the transferrer 34'' and transferred into the running shuttle, when in the forward movement of the lay said shuttle comes directly under the discharging end of the magazine, as shown in Fig. 7, by any suitable yielding means, in this instance by a leaf spring 42, secured to the discharging end of the magazine at the tip end of the bobbin, and an arm 43 having an engaging projection thereon, at the head end of the bobbin, pivoted on a stud 45, and actuated by a small spiral spring 46, inclosed in a boss 47 on the lower inner end of the magazine 39, see Fig. 10. A pin 43' limits the inward movement of the arm 43. The magazine 39 has in this instance a thread holder 48 on an arm 49, attached in this instance to the stud 50 on which the transferrer arm 34 is pivotally supported; which thread holder is so placed on the magazine above the filling carrier about to be transferred, that the loose thread from the filling carrier to the holder will have a suitable tension, to cause it to be threaded into the shuttle when being transferred therein. The magazine 39 may be of any desired shape, and instead of having straight compartments or guide-ways for the bobbins, it may have curved guide ways or compartments, as shown in our application for a patent, Serial No. 259,360, and the number of compartments may be two, or more, according to the number of the shifting shuttle boxes. Instead of having two guide-ways, one for the heads of the bobbins, and the other for the tips of the bobbins, only one guide-way may be used for the heads of the bobbins, if preferred.

In order to supply the straight compartments of the magazine with bobbins, we may use a bobbin holder of the type shown in Figs. 5, and 6, and consisting of a handle portion 41^a, having two parallel strips or bars 41^b attached thereto, and provided with

spring ends 41^{b'}, for holding the bobbins 41 in place. The bobbins 41 are first placed between the strips 41^b, and then the strips are inserted in a compartment or guide-way of the magazine, through the upper open end thereof, and the top bobbin is held down while the holder is drawn out, leaving the bobbins in the compartment.

We will now describe the selecting mechanism, and the releasing mechanism for the bobbins contained in the magazine. We have shown in the drawings one form of selecting and releasing mechanisms for the bobbins, but it will be understood that we do not limit our invention to the particular form of mechanisms shown, as any other equivalent mechanisms may be used.

We will first describe what we term the selecting mechanism, that is the mechanism which determines the sets of bobbins in the magazine from which the lowest bobbin shall be released and allowed to move into a position to be engaged by the transferrer, and transferred into the running shuttle. The selecting mechanism is in this instance connected with the shifting shuttle boxes, and operated by the vertical movement of said shifting shuttle boxes. The lower end of a connector 51, see Fig. 1, is in this instance connected with the vertically moving box rod 10; the upper end of said connector 51 is connected with one arm of a lever 52, centrally pivoted on a stud 53. The opposite end of the lever 52 has a flexible connection, in this instance shown as a chain 54, connected thereto, said chain passes over a guide sheave 55 supported on a stand 56, and over a second guide sheave, not shown, at the opposite end of the loom, and is attached to the lower end of a rod or wire 57, see Figs. 1 and 7. The upper end of the rod or wire 57 is attached to one arm of an angle lever 58, pivoted at 59 on a stand or projection 60, in this instance forming a part of the rear part of the magazine 39. The other arm of the angle lever 58 has a pin 61 thereon, which is adapted to extend into an annular groove 62' in a boss or head 62 on the longitudinally moving and rocking rod 63, which is supported and moves in this instance in bearings 64 on the rear side of the inner part of the magazine 39, see Fig. 4.

A spring 65, attached at one end to the angle lever 58, and at its other end to the stand 40, acts to move the angle lever 58 and the rod 63 in one direction, or toward the front of the loom, upon the upward movement of the shifting shuttle boxes. The rod 63 has secured thereon a hub or sleeve 66, adjustable through a set screw 66'. The hub 66 has extending out therefrom, in this instance on its outer side, a yoke shape plate 67, which we term an "actuator", which operates the releasing mechanism of the bobbins, to be hereinafter described. The hub

66 also has thereon an arm 68, in this instance extending toward the front of the loom, and in a direction parallel to the rod 63. The free end of the arm 68 extends over the upper end of a vertically moving rod 69, and is adapted to slide thereon. The rod 69 is guided at its upper end by an arm 70 secured to the stand 40, see Figs. 7, and 8, said arm 70 preferably having an opening there-through through which said rod 69 loosely passes. The lower end of the rod 69 is pivotally attached, in this instance to one arm of an angle lever 71, pivotally mounted on a stud 72 on a stand 73 secured to the breast beam 3, see Fig. 7. The other arm of the angle lever 71 has a slot 71' therein, into which extends a pin 74' on a collar 74, adjustably secured on the longitudinally moving rod 24 of the transferrer operating mechanism. The longitudinal movement of the rod 24 in this instance will move the angle lever 71, and raise and lower the rod 69 to cause it, through arm 68, to rock the rod 63, and through the actuator 67 to operate the releasing mechanism, to be herein-after described.

The retaining and releasing mechanism for the bobbins in the magazine, is preferably constructed as shown in the drawings, but may be of any suitable construction.

There is an independent retaining and releasing mechanism for each set of filling carriers or bobbins, and the retaining and releasing mechanisms are located at the lower end of each compartment. Each retaining and releasing mechanism is of a similar construction, and the description of one will answer for the description of all.

Referring to Figs. 7, 8, and 10; upon the inner side or back of the magazine, at the lower end of each compartment is pivotally mounted, midway between its ends in this instance by a screw 76, a rocking two-armed lever 75. The two arms of the lever 75 have thereon two rods or pins 77, and 77' which extend outwardly, through an opening or recess in the rear part of the magazine, as shown in Fig. 8, in such a position that the lowest rod 77' will form a movable stop to extend under, and support and retain the lowest bobbin in a compartment, and the upper rod 77 will be in a position to be moved under the bobbin above the lowest bobbin, see Fig. 10, and form a movable stop to retain and support the same, when the lever 75 is moved to release the lowest bobbin. Each lever 75 has in this instance an arm 75' carrying a stud 75'', on which is loosely mounted an eye 78' on the lower end of a vertically moving rod 78, which is supported and has a vertical movement in ears or bearings 79 on the rear of the magazine. Each rod 78 has a spiral expansion spring 80 thereon, which bears at one end against the lower bearing 79, and at its up-

per end against a washer 81 on the rod 78, and acts to return the rod to its raised or normal position, and to move the rocking lever 75, and the pins or rods 77 and 77' thereon, after said rod 78 has been moved downwardly by the engagement of its upper end with the actuator 67, of the selecting mechanism above described, and the pins or rods 77 and 77' have been moved to release the lowest bobbin, and to retain the one above it. The retaining and releasing pins or rods 77, and 77' may be so located, relative to each other, and to the lowest bobbin when in its normal position, that the operation of the rocking lever 75, to release the lowest bobbin, will cause the upper pin 77 to engage the lowest bobbin just as it is being released by the lowest pin 77', and accelerate its movement. When the rocking lever 75 and the pins 77, and 77' are moved back to their normal position, the bobbin next to the released bobbin will be free to drop down, and will with the superposed bobbins drop down by gravity, and be held or retained by the lowest pin 77'.

The operation of the selecting and releasing mechanism will be readily understood by those skilled in the art.

The position of the actuator 67 over the pins 78, is controlled by the position of the shifting shuttle boxes, and the actuator 67 will always be in a position to operate the releasing mechanism of the set of bobbins having filling thereon of the same color as the filling in the active or running shuttle. Upon the operation of the filling detecting mechanism, on the substantial exhaustion of filling in the running shuttle, preparatory to transferring new filling into said shuttle, the rod 24 is moved, and the angle lever 71 is moved, and the rod 69 is raised to raise the arm 68 and rock the rod 63, and cause the actuator 67 to engage and move down the pin 78 over which it extends. The downward movement of a pin 78 moves the lever 75 with which it is connected and causes the downward movement of the lower retaining pin 77', to release the lowest bobbin in the compartment, and allow it to drop down into a position under the transferrer, preparatory to being transferred by the operation of the transferrer mechanism. At the same time the upper retaining rod 77 passes under the bobbin above the lowest bobbin in the compartment, and holds the same in position, and the other bobbins superposed above it, until the return movement of the longitudinally moving rod 24 of the transferrer mechanism causes the rocking motion of the angle lever 71, and the downward movement of the rod 69, and allows the spring 80 on the pin 78 to move up said pin, and return the actuator 67 to its normal position. The upward movement of the pin 78 moves the lever 75, and with it the upper

retaining pin 77 to its normal position out of the path of the bobbin which it is supporting, allowing said bobbin and the superposed bobbin to drop down until said bobbin engages the lower retaining pin 77', which has resumed its normal inner position.

It will be understood that the details of construction of our improvements may be varied if desired.

The stationary magazine for the bobbins or filling carriers may have two or more compartments or guide-ways thereon, and there may be two or more shifting shuttle boxes, and any ordinary filling detector mechanism, and filling transfer mechanism may be used. A filling fork detector mechanism for detecting exhaustion of filling, of ordinary construction and operation, may be used, as set out in Patent No. 805,109.

We have shown in the drawings filling carriers in the form of bobbins, but instead of bobbins, only cases containing bobbins may be placed in the magazine, as has been done heretofore, or the shuttles themselves containing bobbins may be placed in the magazine. The terms "compartments," or "guide-ways" are intended to cover any device for holding the filling carriers, which are preferably arranged in sets or groups.

We have shown in the drawings the selecting mechanism of the releasing mechanism for the filling carriers in the magazine, connected with and operated through the vertical movement of the shifting shuttle boxes, which movement is controlled by a pattern surface, in the usual way. If preferred, the selecting mechanism may be connected directly with and operated by the box pattern chain, or by some other pattern chain.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a weft replenishing loom, a stationary magazine having a plurality of compartments or guide-ways for the heads and the tips of bobbins or filling carriers, and open ways in the magazine at the tip ends of the bobbins or filling carriers, for the passage of the filling, said ways having guiding surfaces for the filling and extending from the top of the magazine to a common discharging position under the transfer.

2. In a weft replenishing loom, a stationary magazine for superposed filling carriers, having vertically extending guide-ways for the heads and tips of bobbins or filling carriers, and guiding surfaces for the filling threads from said carriers, open ways at the ends of the tips of the bobbins or filling carriers, and extending from the top to the bottom of the magazine, and a filling thread holder for the ends of the filling, so located as to have a suitable tension on the filling being threaded into the shuttle.

3. In a weft replenishing loom, a stationary magazine having a plurality of guide-ways for the heads and tips of filling carriers, and open ways at the ends of the tips of the filling carriers, having guiding surfaces for the filling through said open ways, which extend from the top of the magazine to one discharging position under the transfer.

4. In a weft replenishing loom, a magazine, having two or more compartments or guide-ways for filling carriers, and rigidly secured in a fixed position, and said compartments open at their upper ends to receive the filling carriers, and open at their lower ends to discharge the filling carriers into a chute or guide-way and said chute or guide-way leading to a discharge opening below the transfer of the transferring mechanism.

5. In a weft replenishing loom, the combination with a stationary magazine, having two or more compartments for filling carriers, and a discharging end common to all the compartments, of mechanism for each compartment, to retain the filling carriers in each compartment, and to release the lowest filling carrier in a compartment to allow its passage to the discharging end of the magazine, and to retain in said compartment the other filling carriers.

6. In a weft replenishing loom, the combination with a stationary magazine, having two or more compartments for filling carriers, and mechanism for each compartment to retain the filling carriers therein, and for releasing the lowest filling carrier, and for retaining the filling carriers above the lowest filling carrier, of selecting mechanism for determining which releasing mechanism shall be operated, and means for operating said selecting mechanism, and said releasing mechanism.

7. In a weft replenishing loom, the combination with a stationary magazine, having two or more compartments for filling carriers, and mechanism for each compartment to retain the filling carriers therein, and for releasing the lowest filling carrier, and for retaining the filling carriers above the lowest filling carrier, of selecting mechanism for determining which releasing mechanism shall be operated, and means for operating said selecting mechanism, the action of said means regulated by a pattern surface and said pattern surface, and means for operating said releasing mechanism, said means connected with the filling detector mechanism.

8. In a weft replenishing loom, having two or more drop or shifting shuttle boxes, and filling detector mechanism therefor at one end of the loom, the combination of a stationary magazine at the opposite end of the loom having two or more compartments

for filling carriers, mechanism for retaining the filling carriers in each compartment, and releasing the lowest filling carrier in a compartment, selecting mechanism for determining which releasing mechanism shall operate, connections intermediate the shifting shuttle boxes and the selecting mechanism, and connections intermediate the filling detector mechanism and the releasing mechanism.

9. In a weft replenishing loom having a stationary magazine with a plurality of compartments or guide-ways for bobbins, and rigidly secured in a fixed position, and having a discharging end common to all of the compartments, and means for yieldingly holding a bobbin at said end, a movable stop normally retaining the lowest bobbin in each compartment, and a second movable stop to retain the bobbin next above, when the first mentioned stop is moved to release the lowest bobbin, each stop contacting directly with the filling on the bobbin, when the stop is operative to retain the bobbin.

10. In a weft replenishing loom, a stationary magazine having two or more compartments for superposed filling carriers, a transferer located between the two central compartments and in a vertical plane between said compartments, and in position to engage a filling carrier from any of the compartments.

11. In a weft replenishing loom, having a stationary magazine with a plurality of compartments for filling carriers, means to retain the filling carriers in said compartments, and means to separate the lowest filling carriers in any of the compartments from its superposed ones, and allow it to move from its retained position.

12. In a weft replenishing loom, a stationary magazine having compartments for filling carriers, means to retain the lowest filling carrier in each compartment, a guide-way or chute to convey a filling carrier from any one of the compartments to a common position under the transferer of the transferring mechanism.

13. In a weft replenishing loom, a stationary magazine having compartments for filling carriers open from top to bottom, movable means for each compartment to retain the superposed filling carriers therein, and means to release the lowest one of any set of filling carriers, and allow it to be moved into a position to be transferred.

14. In a weft replenishing loom, a stationary magazine having compartments for filling carriers, releasing mechanism to re-

lease the lowest one of any set of filling carriers in any one of said compartments, and means to retain the superposed filling carriers when the lowest one is released.

15. In a weft replenishing loom magazine having two or more compartments for filling carriers, retaining means for superposed filling carriers, and means to release the lower one in any of said compartments, and cause it to move with an accelerated motion.

16. In a weft replenishing loom, a stationary magazine having a plurality of compartments or guide-ways for bobbins, and having a discharging end common to all of the compartments, and means for yieldingly holding a filling carrier at said end, retainers contacting directly with the bobbins, to hold the lowest bobbin in each compartment, and an actuator to move either of said retainers, said actuator connected with the filling detector mechanism.

17. In a weft replenishing loom, a stationary magazine having a plurality of compartments for superposed filling carriers of different character of filling, a plurality of shifting shuttle boxes carrying shuttles with corresponding character of filling, a filling detector mechanism, and selecting means, cooperating between the shuttle boxes and the magazine, to release a filling carrier having the same character of filling as the one in the active shuttle, when the filling detector mechanism indicates for a supply of fresh filling.

18. In a weft replenishing loom, a magazine having compartments for a series of superposed filling carriers, and a chute or guide-way from each compartment to a common position under the transferer, retainer means to hold the filling carriers in each compartment, an actuator to move a retainer and release the lowest filling carrier.

19. In a weft replenishing loom, a magazine having compartments for a series of superposed filling carriers, retaining means in each compartment to hold the filling carriers, an actuator movable endwise, and also having a rocking movement to engage either retainer, a shuttle box or pattern mechanism to determine which retainer should be engaged, and a filling detector mechanism to determine the time of movement of said actuator.

HORACE WYMAN.
JOS. T. CYR.

Witnesses:

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M. HAAS.