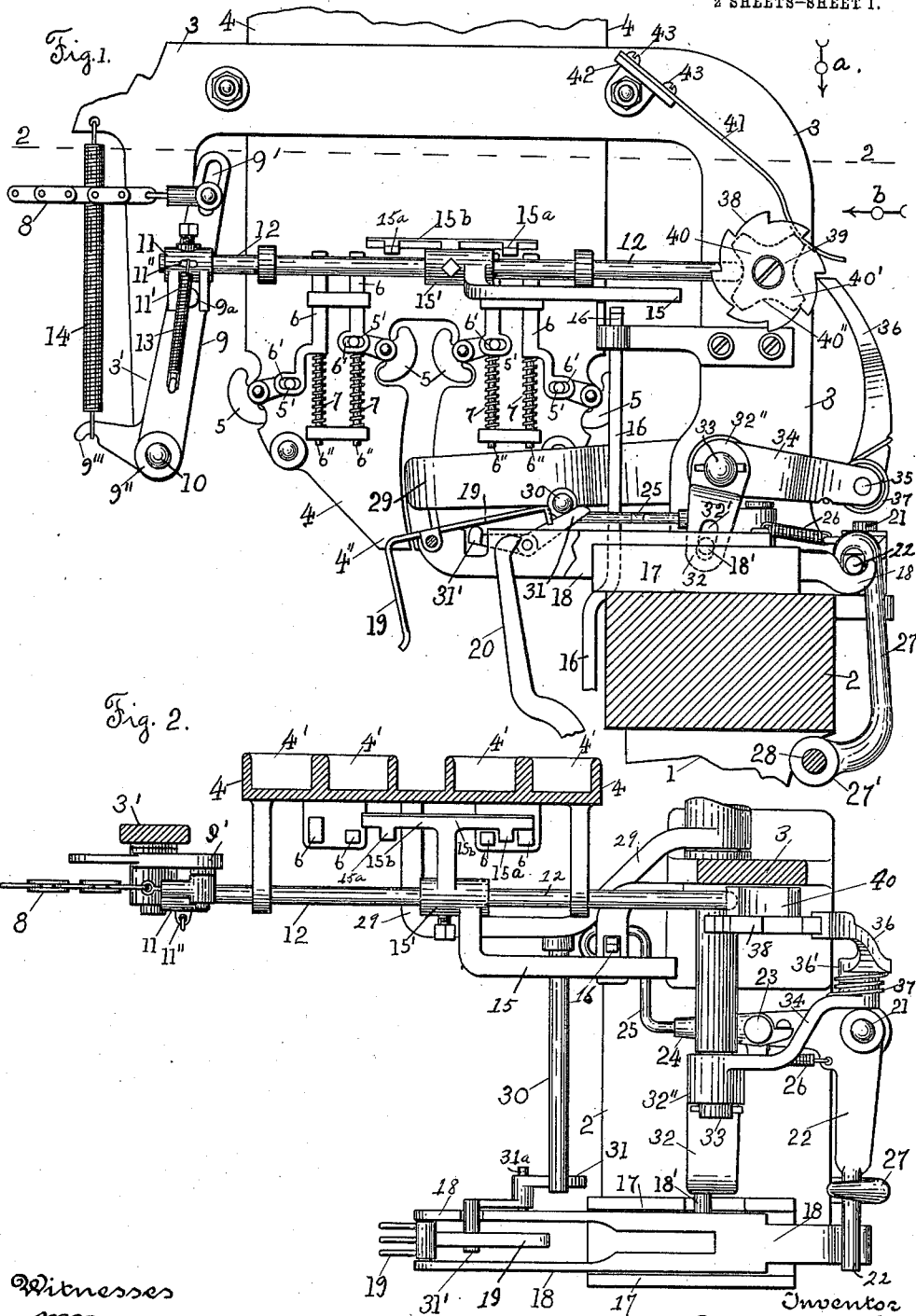


A. A. GORDON, JR.
WEFT REPLENISHING LOOM.
APPLICATION FILED NOV. 11, 1911.

1,030,077.

Patented June 18, 1912.

2 SHEETS-SHEET 1.



Witnesses
M. Bredt.
W. Case.

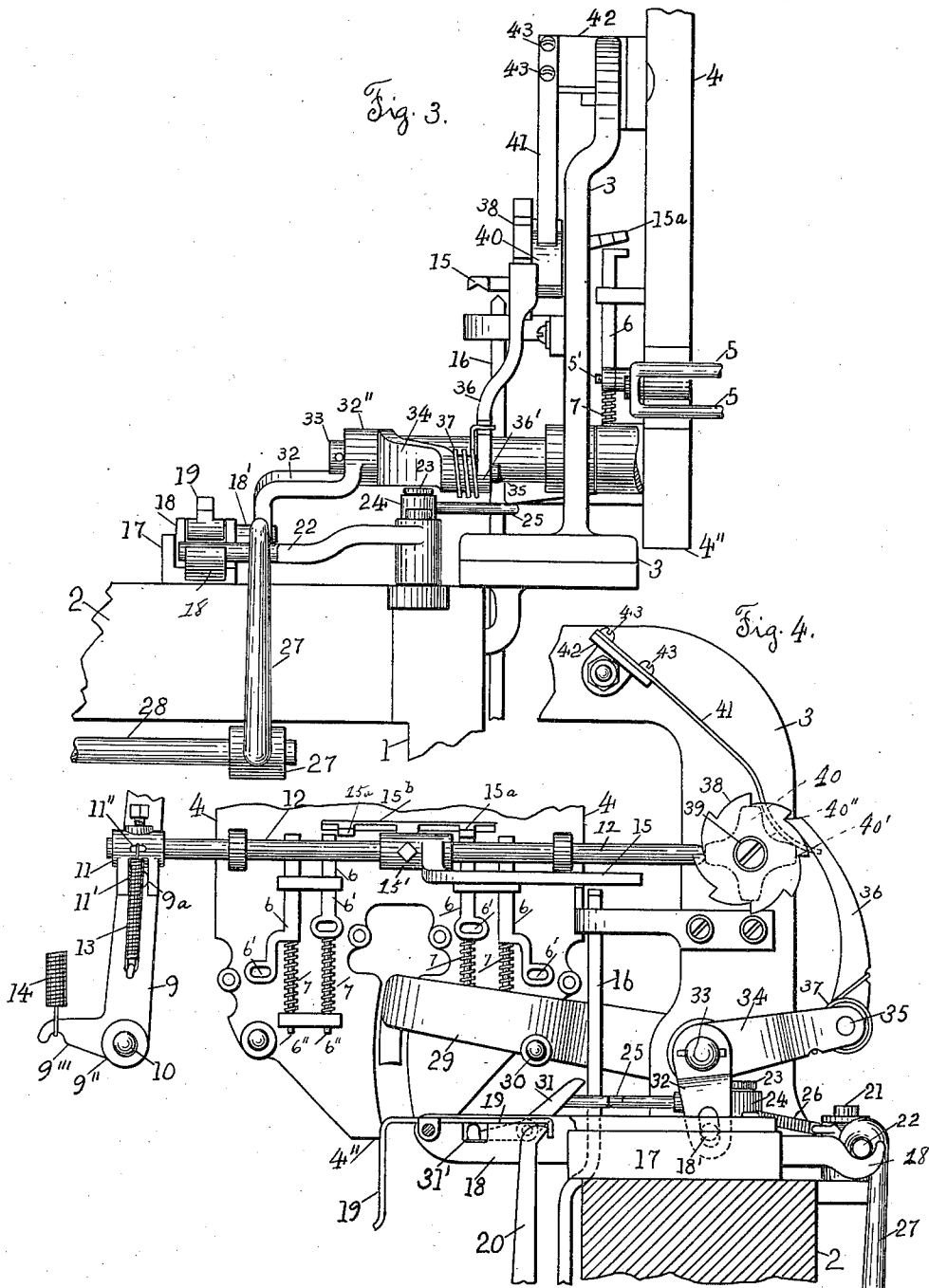
Inventor
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UNITED STATES PATENT OFFICE.

ALBERT A. GORDON, JR., OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WEFT-REPLENISHING LOOM.

1,030,077.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed November 11, 1911. Serial No. 659,697.

To all whom it may concern:

Be it known that I, ALBERT A. GORDON, Jr., a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Weft-Replenishing Looms, of which the following is a specification.

My invention relates to weft replenishing looms, and particularly to that class of weft replenishing looms which have a stationary magazine with a plurality of compartments for bobbins, and supports for said bobbins, and selecting mechanism for operating said supports, and connections from said selecting mechanism to pattern mechanism, which causes the operation of said selecting mechanism at the desired time.

The object of my invention is to provide a supplemental device or mechanism to control the selection of the bobbins, independent of the ordinary pattern mechanism, and in addition to the ordinary bobbin selecting mechanism above referred to.

My improvements are intended to be used on looms of the class above referred to, which are used for weaving blankets, towels, handkerchiefs, or similar fabrics, which have a border of two different colors or characters of filling, and the central part plain, and of a single color or character of filling.

I have shown in the drawings parts of a loom of the type shown and described in U. S. Letters Patent, No. 948,568, with my improvements combined therewith. I have shown a stationary magazine with four compartments or guide-ways for bobbins or filling carriers, two of the compartments for filling carriers or bobbins having filling which correspond with the filling in the two change shuttles for weaving the border on a blanket or other fabric; the plain center portion of the blanket or other fabric is woven by a single shuttle having a filling therein which corresponds with the filling in the two other compartments or guide-ways of the magazine, consequently in a four box loom, only three shuttles are used, leaving one cell or box vacant.

I have shown in the drawings supports for the bobbins, and selecting mechanism for operating said supports, and connections

from said selecting mechanism to pattern controlled devices. I have in this instance combined with the parts of the loom above referred to, my improvements, which consist of a separate device or mechanism, to control the selection of the bobbins, independent of the ordinary pattern mechanism, and means for operating the same, by means of which a single shuttle, used for weaving the central portion of the blanket, or other fabric of a plain color, will receive its bobbin from either one of the two compartments of the magazine containing said bobbins.

In my improvements, as shown in the drawings, I have a cam which acts on the longitudinally moving rod of the bobbin selecting mechanism. This cam acts as a supplemental or separate device to control the selection of the bobbins, in addition to the pattern mechanism, which, through intermediate mechanism, operates the longitudinally moving rod of the ordinary bobbin selecting mechanism. I provide means for operating said cam, which means, as shown in the drawings and described herein, are connected with and operated by a filling fork slide, but said means may be connected with and operated by a filling detector, or by some other movable part of the loom.

The engagement of the cam, referred to, with the longitudinally moving rod of the bobbin selecting mechanism, referred to, to move it in one direction, will control the selection of bobbins from one of two compartments, and the withdrawal of the cam surface on said cam, by the rotation thereof, will allow said rod to be moved in the opposite direction by a spring or similar device, to control the selection of the bobbins from all four of the compartments, through the operation of the pattern mechanism, in the usual way. As above stated, I have shown in the drawings parts of a loom of the type shown and described in U. S. Letters Patent, No. 948,568.

Referring to the drawings:—Figure 1 is an inner end view of a stationary magazine having four compartments or guide-ways, and mechanism connected therewith, in the class of looms referred to, and my improvements combined therewith. Fig. 2 is a sec-

tion, on line 2, 2, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a front view of some of the parts shown in Fig. 1, looking in the direction of arrow *b*, same figure, and, Fig. 4 shows some of the parts shown in Fig. 1, in a different position.

In the accompanying drawings, 1 is a detached portion of a loom side, 2 is the breast beam, and 3 a stationary stand secured to the loom side 1, and having mounted thereon the inner end 4 of the stationary magazine, which in this instance has four vertically extending compartments or guideways 4' for the heads of bobbins, not shown. The bobbins drop down in the compartments by gravity, to the lower discharging end 4'', see Fig. 1, preparatory to being transferred into the shuttle, in the usual and well known way.

The bobbin holding and releasing mechanism shown in the drawings, corresponds to the bobbin holding and releasing mechanism shown and described in the Patent, No. 948,568, above referred to, and consists of a rocking support or cradle 5, see Fig. 3, at the lower end of each compartment in the magazine. One arm of the cradle 5 has a pin 5', see Fig. 1, which loosely extends in an elongated slot 6' in the lower end of a vertically moving bar 6, which moves in guides on the rear end 4 of the magazine. A helically coiled expansion spring 7 encircles a rod 6'' extending down from the bar 6, and acts to move upwardly said bar to rock a cradle 5, to allow a bobbin to drop into the hollow part of the cradle.

One end of a flexible connection 8 is connected with a pattern indicator lever, or with the shuttle box operating levers, not shown, the operation of which is controlled by pattern mechanism, not shown; said flexible connection extends across the loom, and the other end 8 of said flexible connection, see Figs. 1, 2, and 4, is adjustably connected, in this instance by means of an elongated slot 9', to the upper end of a lever 9, the hub 9'' of which is pivotally mounted on a stud 10 on the downwardly extending end of an arm 3'.

The lever 9 has a pin 9^a, which is adapted to engage the downwardly extending projections 11' on a collar 11, fast on a longitudinally moving rod 12. A helically coiled contraction spring 13 is attached at one end to the lever 9, and at the other end to an extension 11'' on the collar 11, said spring acts to rock the rod 12 in one direction. A helically coiled contraction spring 14 is attached at one end to the stand 3, and at its other end to an arm 9''' on the lever 9, and acts to move said lever to the right, and with it the rod 12, the flexible connection 8 being slack and allowing said movement. Said flexible connection 8 acts to move the

lever 9, and with it the rod 12 in the opposite direction.

On the longitudinally moving rod 12 is fast the hub 15' of an arm 15. The upper end of a vertically moving rod 16 extends under the arm 15. The rod 16 has an up and down movement communicated thereto, through connections to a driven cam, not shown, and the upward movement of said rod, causes the engagement of its upper end with the arm 15 on the upward movement of said arm, and the rocking of the rod 12, and the downward movement of the arms 15^a on a bar 15^b, connected with the hub 15' of the arm 15. The downward movement of the arms or engaging ends 15^a, said ends extending above the vertically moving bars 6, causes the downward movement of said bars 6, against the action of the springs 7, and through connections to the cradles 5, rocks a cradle, and allows a bobbin to drop to the discharging end of the magazine to be transferred into the active shuttle, all as fully described in the Patent, No. 948,568, above referred to.

17 is a guide on the breast beam 2 for the filling fork slide 18, carrying the filling fork 19, pivotally mounted on said slide at its inner end in the usual way, and having a downwardly extending portion to be engaged by the filling on the forward movement of the lay, to tilt or raise said fork and carry the downwardly extending end out of the path of the upper end of the weft hammer 20. The weft hammer or lever 20 is operated every other pick of the loom, and on the failure of filling, the filling fork extends in the path of, and will be engaged by the upper end of the weft hammer or lever 20, and the slide 18 will be moved backward, from the position shown in Fig. 1, to the position shown in Fig. 4.

Pivotally mounted on the stud 21 on the breast beam 2, is a lever 22, which is adapted to be engaged by the filling fork slide 18. The lever 22 is in this instance made as a give-way or yielding lever, and has a stud 23 thereon, on which is pivotally mounted a boss 24, which carries a wire 25 of angular shape. A helically coiled contraction spring 26 is attached at one end to the lever 22, and at its other end to a projection on the boss 24, and acts to hold said boss in alinement with one arm of the lever 22, and forms a yielding or give-way part on said lever. The wire 25 has a loop at its inner end, which is adapted to inclose the vertically moving rod 16.

In case of the breaking or exhaustion of filling in the running shuttle, the filling fork slide, as shown in Fig. 4, operates the lever 22, and through the wire 25 moves the vertically moving rod 16 under and in the path of the arm 15, to rock said arm, to cause the release of the bobbin desired, and

allow it to drop to the lower discharging end 4" of the magazine 4 in the usual and well known way.

Between the time of indicating absence of filling and the transfer of a bobbin, the drop boxes are prevented from changing, through mechanism, which consists of an upright lever 27, having its upper hooked end engaged with the lever 22. The hub 27' of the lever 27 is mounted on the transverse rod 28, which has its other end, not shown, suitably connected to the pattern mechanism, not shown. The rocking of the rod 28 causes the pattern mechanism to stop, so that the same shuttle in which the absence of filling has been detected through the filling fork slide, will be returned to the magazine end of the loom, to receive a fresh bobbin.

To prevent the filling fork 19 from indicating the failure of filling, when a bobbin is transferred from the magazine, the transferrer arm 29 is provided with a stud 30 extending out therefrom, which, on the downward movement of the transferrer arm 29, engages one arm of a lever 31 pivotally mounted on a stud 31^a on the filling fork slide 18; the other arm of the lever 31 has a projection 31' thereon, which extends underneath the hooked end of the filling fork 19, and acts to raise said hooked end out of the path of the weft hammer 20, as shown in Fig. 1.

All of the above mentioned parts, except the mechanism last described, connected with the filling fork slide, may be of the usual and well known construction, and are particularly shown and described in said Patent, No. 948,568, above referred to.

I will now describe my improvements combined in this instance with the parts above referred to.

The slide 18 of the filling fork slide mechanism has in this instance a pin or stud 18' extending out on one side thereof, which is adapted to enter an elongated slot 32' in an arm 32, which has its hub 32'' loosely mounted on a stud 33 on the stand 3. Extending forwardly from the hub 32'' is a second arm 34. The end of said arm 34 carries a stud 35, on which is loosely mounted the hub 36' of a pawl 36. A helically coiled torsion spring 37 encircles the hub 36', and is attached at one end to the arm 34, and at its other end to the pawl 36, and acts to yieldingly move the upper end of said pawl toward, and hold it in engagement with the ratchet wheel 38, which is loosely mounted on a stud or screw 39 on the stand 3. Connected with the ratchet wheel 38, to revolve therewith, is a cam 40, having in this instance four projections 40' thereon, and four depressions intermediate the projections 40'. A spring blade 41 is secured at its upper end on a lug 42 on the stand 3, by

screws 43, and at its other free end bears on the periphery of the cam 40, to hold said cam in its adjusted position.

The operation of my improvements will be readily understood by those skilled in the art, and is briefly as follows:—When the loom is running normally, and the border of the blanket, or other fabric, is to be woven, the two shuttles, which contain the filling corresponding to the filling on the bobbins which are held in the two compartments at the left in Fig. 1, are in operation. The selection of said bobbins from the magazine is controlled in the usual way, through the movement of the longitudinally moving rod 12, according to the movement of a pattern surface, or of the shifting or change shuttle boxes, not shown, and this selection takes place, in case of the exhaustion of the filling on the bobbin, through the operation of mechanism used on the loom, and above described.

When the central portion of the blanket, or other fabric is to be woven, the pattern surface, or the box operating levers, have moved the longitudinally moving rod 12 toward the right, as shown in Figs. 1, and 2. The exhaustion of a filling in the running shuttle, will cause the releasing of a bobbin from either one of the two compartments at the right, according to the position which the engaging lever 15^a occupies, and the position of the cam 40. The longitudinally moving rod 12 will remain in this position as long as the shuttle is running normally.

If a filling is exhausted or breaks, and the filling fork remains in its lowered position, and the filling fork hammer 20 moves the filling fork slide 18 outwardly or toward the right, the ratchet wheel 38, through the operation of the pawl 36, by the movement of the slide 18, will have a partial rotation communicated thereto, and the cam 40 will have an eighth revolution communicated thereto, and be moved from the position shown in Fig. 1, to the position shown in Fig. 4. The rotation of the cam 40 will cause the movement of the longitudinally moving rod 12 to the left, and bring the engaging arm 15^a to a position to operate the cradle 5 of the next compartment, to supply bobbins from said compartment on the exhaustion of filling in the running shuttle. On another breakage or exhaustion of filling, another partial rotation will be communicated to the ratchet wheel 38 and to the cam 40, and the longitudinally moving rod 12 and the engaging arm 15^a will, through the action of the spring 14, be moved to the right, as shown in Fig. 1, and bring the engaging arm 15^a, into a position to operate a cradle 5 of the other compartment, and this operation is repeated.

By my improvements, the bobbins for the central portion of the blanket or other fab-

ric, are supplied from two compartments instead of one, as heretofore, and at the same time the bobbins from the other compartments for the border of the fabric are supplied in the usual way.

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

My improvements may be combined with different types of weft replenishing looms, having stationary magazines with a plurality of compartments for bobbins, and supports for bobbins, and selecting mechanism for operating said supports, and pattern mechanism, or pattern controlled devices for operating said selecting mechanism. Instead of operating my supplemental or separate bobbin selecting device, in this instance shown as a cam, by the filling fork slide, said device may be operated by any other suitable means.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a weft replenishing loom, a stationary magazine with a plurality of compartments for bobbins, supports for said bobbins, a device to operate said supports, connections from said device to pattern mechanism, and mechanism, independent of said pattern mechanism, to control the position of said device.

2. In a weft replenishing loom, a stationary magazine with a plurality of compartments for bobbins, supports for said bobbins, a device to operate said supports, connections from said device to pattern controlled devices, and mechanism, independent of said pattern mechanism, to control the position of said device which operates said supports.

3. In a weft replenishing loom, a stationary magazine, with a plurality of compartments for bobbins, supports for said bobbins, a device for operating said supports, connections from said device to pattern

controlled devices, and a separate device, independent of said pattern mechanism, to control the position of said device which operates said supports, and filling detecting mechanism for operating said separate device.

4. In a weft replenishing loom, a stationary magazine with a plurality of compartments for bobbins, supports for said bobbins, a device for operating said supports, connections from said device to pattern controlled devices, and a separate device, independent of said pattern controlled devices to control the position of said device which operates said supports, and means for operating said separate device at each transfer of a bobbin of a certain color.

5. In a weft replenishing loom, the combination with the filling fork slide, and a bobbin selecting mechanism having a longitudinal sliding rod, of a rotating cam to engage and move said rod, and connections, intermediate said cam and the filling fork slide, to cause the rotation of said cam on the movement of said slide.

6. In a weft replenishing loom, a bobbin selecting mechanism having a longitudinal sliding rod, a rotary cam to engage and move said rod in the direction of its length, a filling fork slide, connections, intermediate said filling fork slide and said cam, to rotate said cam on the movement of said filling fork slide.

7. In a weft replenishing loom, a filling fork slide, a pivotally mounted two armed lever connected with said slide, a pawl carried by said lever, a ratchet wheel operated by said pawl, a cam connected with said ratchet wheel to rotate therewith, and a bobbin selecting mechanism, having a longitudinally moving rod to be engaged and moved by said cam.

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