Oct. 7, 1930. V. GERONIMO 1,777,357

WEFT REPLENISHING LOOM

Filed July 23, 1928

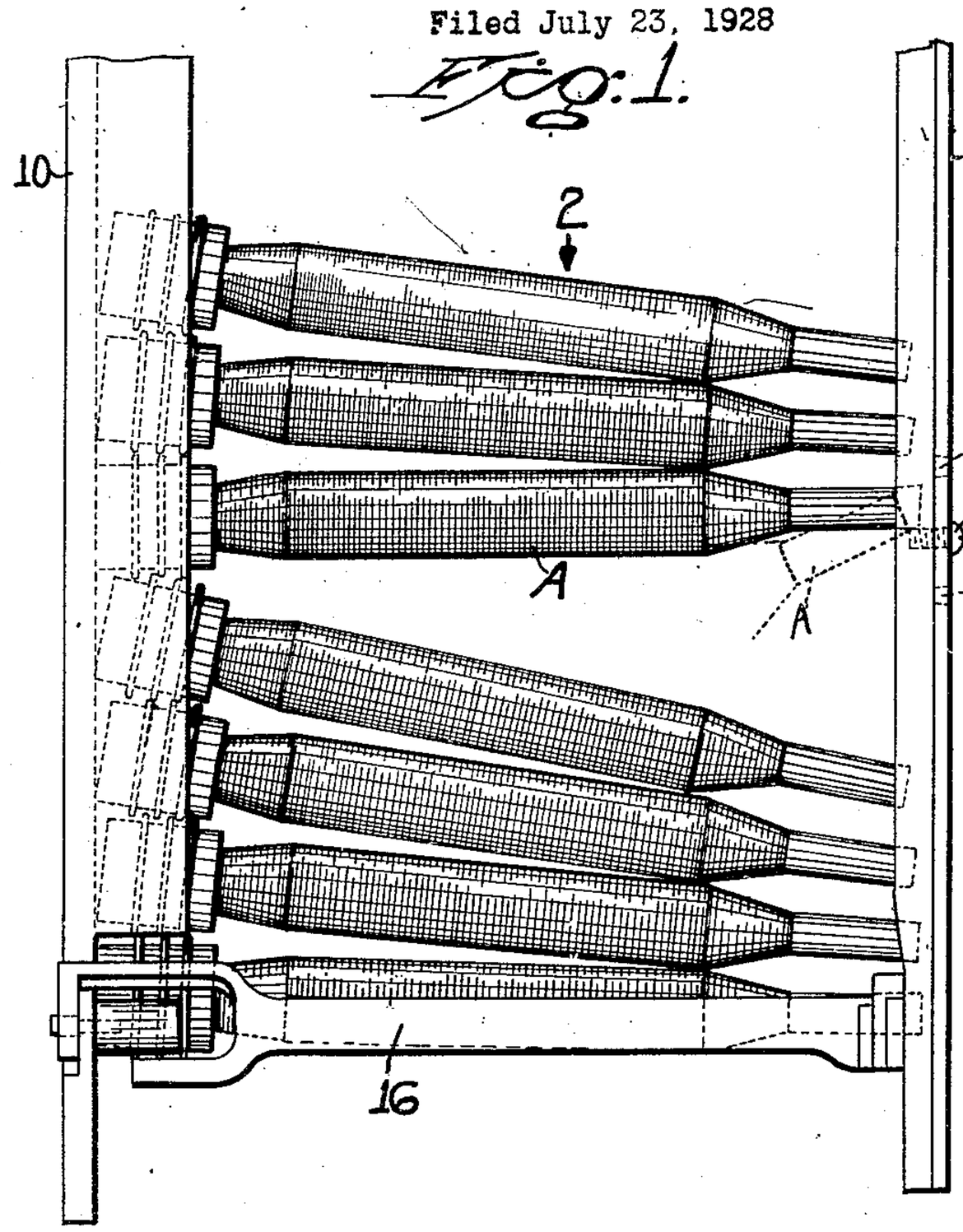
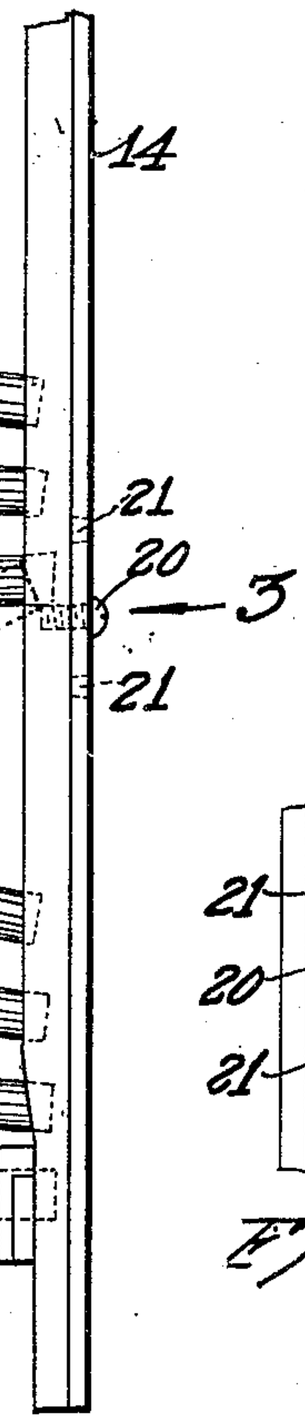


Fig. 1.



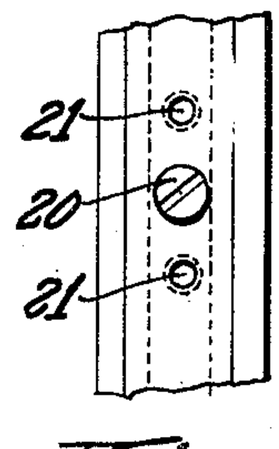


Fig. 3.

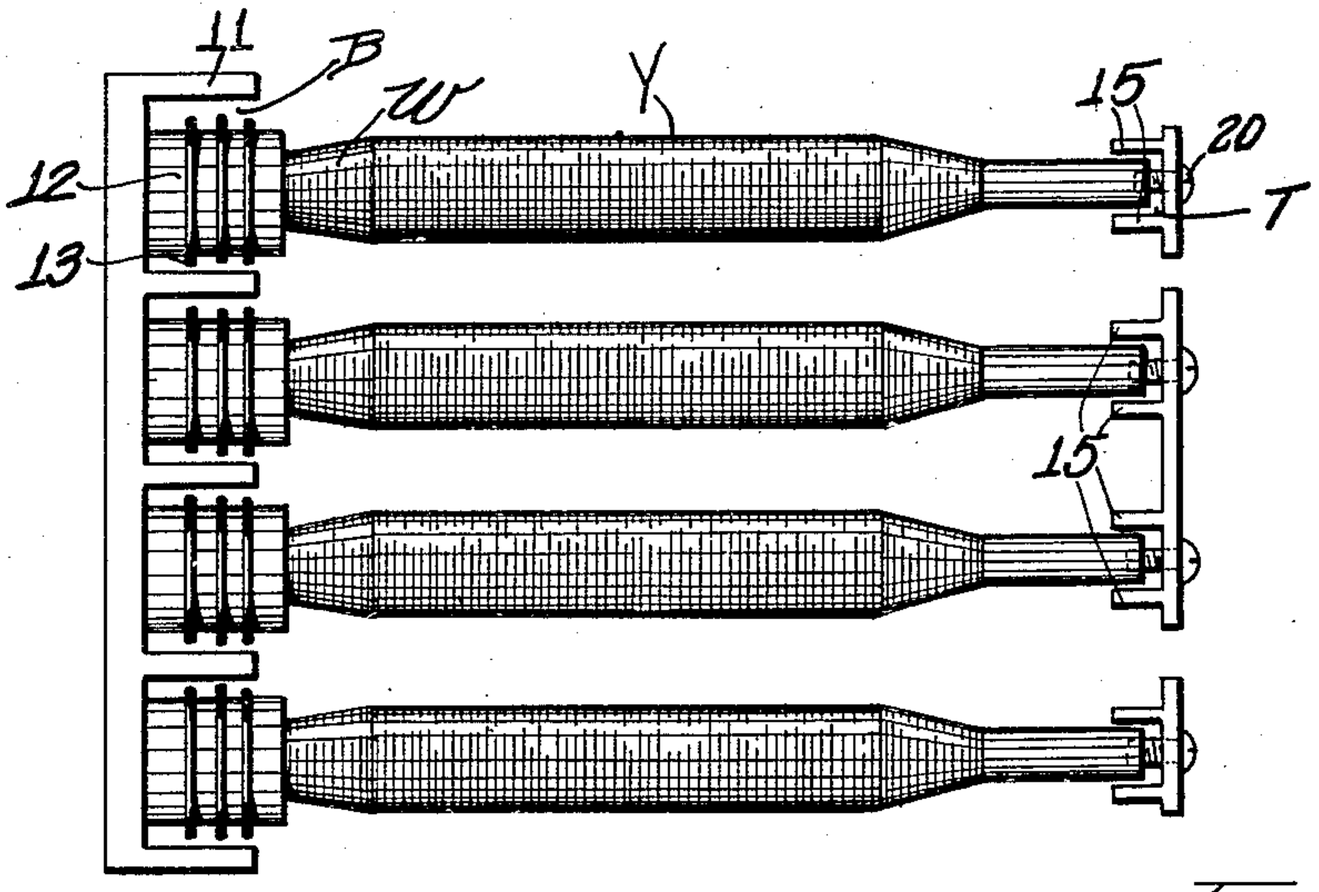


Fig. 2.

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Patented Oct. 7, 1930 1,777,357

UNITED STATES PATENT OFFICE

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WEFT-REPLENISHING LOOM

Application filed July 23, 1928. Serial No. 294,617.

This invention relates to weft replenishing mechanisms wherein the bobbins are moved toward transfer position by gravity and it is the general object of the invention to provide means for properly guiding and controlling bobbins the yarn diameter of which is substantially less than the diameter of the butt of the bobbin.

In the usual form of multicolor weft replenishing mechanism the bobbins as they await transfer are held in vertical stacks between parallel flanges or guides and at each transfer the bobbins move downwardly toward transfer position. It is customary in the weaving of silk, for instance, to wind the bobbins with a mass of yarn which is substantially less in diameter than the diameter of the rings on the head or butt of the bobbin and the result of this is that the upper bobbins of a stack slope downwardly to such an extent that their tips become disengaged from the tip guides. Because of the inclining of the bobbins very few bobbins can be placed in a magazine stack at a time and the purpose of the weft replenishing mechanism is largely defeated. It is an important object of my present invention to provide a trip or similar device located on the magazine end extending into the path of the bobbins and so located as to separate the bobbins in groups of relatively small numbers of bobbins so that the upper bobbin of each group, although inclined, will still have the tip thereof in proper engagement with the tip guide.

It is a further object of my present invention to make the trip or other device of such form that its position may be varied or adjusted with respect to the path of the bobbins, either along the length of the guideway or in a direction substantially parallel to the length of the bobbins.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of a multicolor weft replenishing mechanism having my invention applied thereto,

Fig. 2 is a top plan view looking in the direction of arrow 2, Fig. 1 and setting forth four parallel stacks of bobbins, and

Fig. 3 is a detailed elevation taken in the direction of arrow 3, Fig. 1 and showing a portion of the outside or tip supporting plate of the replenishing mechanism, together with the trip forming the subject matter of my present invention.

The invention will be described in connection with the form of multicolor weft replenishing mechanism set forth more particularly in Patent No. 1,030,748, although certain features of the invention are equally applicable to single color magazines wherein the bobbins are moved toward transfer position by means of gravity. The replenishing mechanism frame includes an inner plate 10 having flanges 11 which define compartments B for the butts 12 of the bobbins W. Said bobbins will ordinarily be provided with rings 13, the outside diameter of which as shown in the drawings is considerably more than the diameter of the yarn Y wound on the bobbin W. The outside plate 14 of the replenishing mechanism is provided with pairs of flanges 15 which define compartments T for the tips of the bobbins, and it is to be understood that the compartments B and T are in alignment so as to guide the bobbins downwardly in a path substantially parallel to the shuttle not shown.

For each stack of bobbins there will be a cradle 16 so that the lowermost bobbin of each stack will be substantially horizontal as shown in Fig. 1. As shown in Fig. 1 bobbins wound as illustrated herein arrange themselves so that the upper bobbins are inclined and it has been found that this inclination is sufficient to materially limit the capacity of the replenishing mechanism.

My invention consists in providing a trip or support for the tips of the bobbins and as shown herein I provide a screw 20 for each of the compartments T as shown in Fig. 2, said screw extending into the compartment a sufficient distance to be engaged by the tips of

all the bobbins. As shown in Fig. 3 I may provide a plurality of openings 21 to receive the screws 20 so that said screw or tip may be given the position best adapted for any particular diameter of yarn on the bobbins.

In operation, the bobbins will be placed substantially as shown in Fig. 1, the bobbins being divided into two groups as shown herein the lower group being below the trip 20 and the upper group being above and supported in part by said trip 20. The butts of the bobbins are arranged so that adjacent butts are in contact with each other as shown in Fig. 1 and all of the butts therefore are supported ultimately by the cradle 16.

As successive transfers take place in the operation of the mechanism the bobbins will move down to assume new positions. When a transfer takes place with the bobbins in the position shown in Fig. 1, for instance, the bobbin A will have the tip thereof held upwardly by the screw 20, but the butt will move downwardly, being unobstructed. This causes bobbin A to assume the dotted line position such as indicated at A′ depending upon the amount by which the screw 20 extends into the compartment T. If said screw is short the tip of bobbin A will become disengaged therefrom and will fall down to be the uppermost bobbin of the lower group, but if the screw 20 be relatively long it may require a second transfer before the bobbin A passes from the bottom of the upper group to the top of the lower group.

The trip 20 is given such a vertical position that the uppermost bobbin of the lower group will have the tip thereof properly guided by the flanges 15 and will not become disengaged from the magazine and fall out. While I have shown but one trip for each compartment yet if the replenishing mechanism be relatively high it is within the scope of my present invention to use two or more trips, each trip operating to divide the bobbins into a corresponding group and the groups all being sufficiently small so that the uppermost bobbin of each group will be held properly with respect to the tip compartment.

From the foregoing it will be seen that I have provided a very simple device to increase the capacity of weft replenishing mechanism which operates with bobbins having yarn diameters which are substantially less than the butt diameter. Also, said device may be moved to different positions both in regarding the height of the stack of bobbins and also the amount by which the device projects into the tip compartments. By these adjustments the number of bobbins in each group may be determined and also the number of transfers required to pass a bobbin from one group to a lower group. It will be seen that the device operates entirely by gravity and that the lowermost bobbin of a group supported by the trip will move to a position inclined oppositely to that of the inclination of the upper bobbin of the same group until said lower bobbin frees itself from the trip.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the butt diameter of the bobbin, means defining a guideway for the bobbins along which they move by gravity, a control member located at the bottom of the guideway to discharge the bobbins one at a time from the guideway, and a stationary support extending into the guideway to engage the tips of the bobbins as the latter move downwardly by gravity toward the member, said support dividing the bobbins into two groups the upper of which is supported partly by said support and partly by the butts of the bobbins thereunder, the horizontal length of the guideway measured along a horizontal line passing through the support being less than the length of a bobbin.

2. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the butt diameter of the bobbin, a stationary plate to guide the bobbin butts, a second stationary plate to guide the bobbin tips and prevent endwise movement of the bobbins away from the first plate, said plates defining a guideway along which both bobbin butts and tips move by gravity, a control member located at the bottom of the guideway to discharge the bobbins one at a time from the guideway, and a stationary trip supported by the second plate and extending into the guideway to engage the tips of the bobbins as the latter move downwardly, said trip dividing the bobbins into two groups, the lower bobbin of the upper group being supported in part by the trip.

3. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the butt diameter of the bobbin, a guideway for the butts of the bobbins along which the butts move by gravity without interruption, a second guideway for the tips of the bobbins, and a stationary trip extending into the latter guideway to be engaged by the tips of the bobbins to divide the bobbins into two groups one of which is above the trip, said trip assisting in supporting the upper group so that at least one bobbin of said upper group is substantially horizontal.

4. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is a less than the butt diameter of the

bobbin, a guideway along with the bobbins move by gravity only in the operation of the mechanism, and stationary means located along the guideway to engage the tips of the bobbins and to support in part a group of bobbins at least one of which is substantially horizontal.

5. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the butt diameter of the bobbin, a guideway along which both bobbin butts and tips move by gravity only, a control member to discharge the bobbins from the guideway, and stationary means extending into the guideway to engage the tips of the bobbins, the butt ends of all the bobbins being supported by the control member and the tips of the bobbins being formed in groups one of which is supported by the control member and the other of which is supported by said stationary means.

6. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the butt diameter of the bobbin, a guideway to support a plurality of bobbins along which both the bobbin butts and tips move by gravity, a control member located at the bottom of the guideway to support the butts of all the bobbins, and stationary means extending into the guideway to engage the tips of the bobbins as they move along the guideway, each bobbin as it moves while in operative relation with respect to the means passing through a horizontal position.

7. In a weft replenishing mechanism operating with bobbins having a yarn diameter which is less than the diameter of the butt of the bobbins, means defining a guideway along which the bobbins move by gravity, a control member located at the bottom of the guideway to discharge the bobbins from the guideway, the bobbins tending to become inclined in the guideway with the smaller ends below the larger ends, and stationary means to engage the small ends of the bobbins as the latter descend and separate the bobbins into two groups, one above and one below said means, in the guideway, said means being spaced above the control member such a distance as to prevent the top inclined bobbin of the group between the member and means from falling out of the guideway.

In testimony whereof I have hereunto affixed my signature.

VINCENT GERONIMO.