Sept. 4, 1928.

1,683,215

W. H. WAKEFIELD

SEPARATOR FOR WARP STOP MOTIONS

Filed May 27, 1927

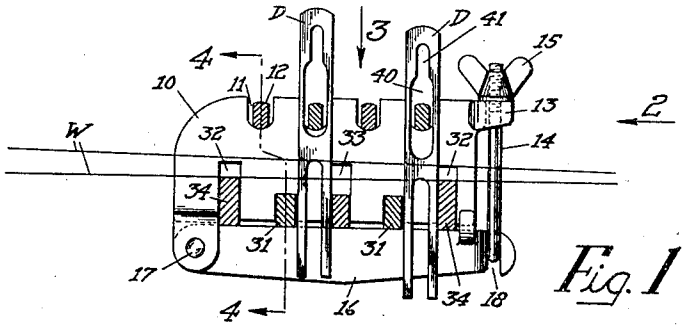

Fig. 1

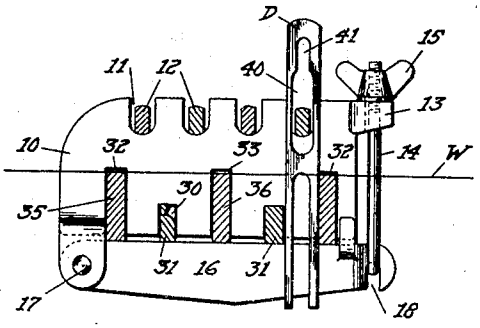

Fig. 5

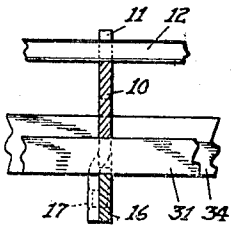

Fig. 4

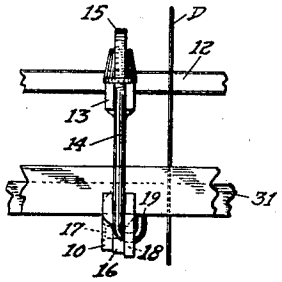

Fig. 2

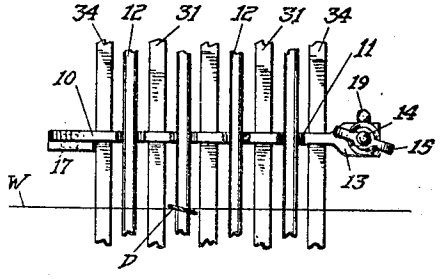

Fig. 3

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UNITED STATES PATENT OFFICE.

WALTER H. WAKEFIELD, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SEPARATOR FOR WARP STOP MOTIONS.

Application filed May 27, 1927. Serial No. 194,804.

This invention relates to separator devices for the separator bars and oscillating detector rods of warp stop motions and it is the principal object of the invention to provide means for using a plurality of different forms of warp guiding separator bars to the end that the warp line so far as the warp stop motion is concerned may be raised or lowered with respect to the detector rods.

In warp stop motions of the kind set forth in patent to Regan No. 1,265,112 there is a non-circular oscillating detector rod which passes through slots formed in the upper ends of the drop wires. The tops of the slots are restricted to arrest oscillation of the detector rods when any drop wire is in lowered position. The separator bars constitute guideways for the lower ends of the drop wires and furnish relatively fixed surfaces against which the lower ends of the drop wire may be held during the stopping of the oscillation of the detector rod. The warp threads pass between the separator bars and the detector rods and under certain conditions it is desirable to change the distance between the tops of the separator bars which determine the shed line and the detector rod.

In weaving such fabrics as georgette the harnesses are moved two up and two down and this results in a uniform motion on the part of the drop wires, all of the drop wires undergoing substantially the same vertical motion during each pick of the loom. If the same loom is to be used for weaving satin the harnesses will be given a motion of one up and four or more down and this change in the shedding produces an uneven movement on the part of the drop wires.

Certain fabrics are built according to a pattern which permits such a drawing-in of the warps as will allow the drop wires nearest the harness frames to be in substantially the same relative position with respect to the detector rods as are the drop wires most remote from the harness frames or those nearest the warp beam. Certain other fabrics require the warp threads to be drawn in through the harnesses in such a way that the drop wires nearest the harness frames will be in a relatively high position with respect to the detector rods whereas the rearmost drop wires will be in low position. There is a certain minimum distance between the narrow part of the drop wire slot and the detector rod which cannot be reduced without causing undesirable stopping of the loom due to occasional uneven letting-off of the warp.

In any of the cases mentioned it is desirable to have the drop wires so placed that the narrow part of the slots will be as near the detector rods as possible. The reason for this is that if a warp thread should break several inches forwardly of the warp stop motion and become entangled with neighboring warps several picks might elapse before the drop wire would fall into stopping relation with respect to the detector rods. It is because of this possibility of entanglement between the broken warp threads and neighboring warp ends that the distance between the top of the drop wire slot and the detector rod should be as small as possible.

In order to be able to maintain the tops of the drop wires in proper position with respect to the detector rods in all of the various conditions heretofore described it has been proposed to provide vertical adjustment for the separator bars relatively to the detector rods so that under certain conditions the drop wires can be in lowest position such as when weaving georgette while in other conditions the drop wires will be in a relatively higher position such as when weaving satin. Mechanism for accomplishing this adjustment is described and set forth in co-pending application filed by Shutt, Ser. No. 194,178, the adjustment therein being accomplished by the use of movable brackets or supports for the separator bars.

The same result may be attained by using separator bars of different heights, the supports or brackets for the separator bars being always in the same position. With different bars it is necessary to provide a corresponding adjustment for the separators which hold the separator bars and detector rods in proper spaced relation on relatively wide looms.

Separators of the kind set forth in the patent to Regan No. 1,496,377 have gone into general use and constitute a central body portion to which is hinged a bottom cap serving to clamp the separator to the outside bars. It is these outside bars which

I propose to use in varying heights and I accordingly provide a separator which is clamped to the intermediate bars of constant height and leave a space for the outside bars which determine the warp line so far as the warp stop motion is concerned. In this way the separator clamp can be held in fixed relation with respect to the low bars and the outside bars can be of different heights without requiring changes in the separator.

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 vertical transverse section through a warp stop motion showing my improved form of separator with relatively low outside bars on which the warp threads rest,

Fig. 2 is a rear elevation taken in the direction of arrow 2, Fig. 1,

Fig. 3 is a fragmentary top plan view taken in the direction of arrow 3, Fig. 1,

Fig. 4 is a vertical detailed section taken on line 4—4 of Fig. 3, and,

Fig. 5 is a view similar to Fig. 1 but with relatively higher outside separator bars.

Referring to the drawings the separator comprises a body portion 10 in the upper end of which may be formed a plurality of upwardly opening relatively short slots 11 which serve to position the oscillating noncircular detector rods 12. A forked projection 13 extends to the right from the upper part of the portion 10 as viewed in Fig. 1 and receives a securing bolt 14 the upper end of which is provided with a winged nut 15 which bears on the top of the forked projection 13.

A bottom cap 16 is pivoted to the body portion 10 as at 17 and has the right hand end thereof formed with the open slot 18 which receives the lower hooked end 19 of the bolt 14. The matter thus far described may be of common construction and forms no part of my present invention and for a further description of the purpose and function of the separator reference may be had to the aforesaid Regan Patent No. 1,496,377.

My invention relates more particularly to the means for using separator bars of varying heights and in carrying my invention into effect I provide the lower part of the body portion 10 with relatively short slots 30 which receive separator bars 31. Said bars when the parts are in the position shown in Figs. 1 and 5 constitute the support for the separator, the hinge cap 16 and the body portion 10 adjacent the upper ends of the slots 30 being clamped against said bars and held in position by the winged nut and bolt.

The outside bars are housed in slots 32 which are relatively longer and extend above the slots 30. If desired a central slot 33 of the same height as the slots 32 may also be provided as clearly shown in Figs. 1 and 2. The outside bars as shown at 34 in Fig. 1 are somewhat higher than the bars 31 but do not reach to the top of the slot 32 and therefore serve no function as supporting the separator. When changing conditions of the loom require the drop wire D to be in a relatively higher position with respect to the warp W larger bars 35 may be placed in the slots 32 as shown in Fig. 5 the effect of which will be held higher with respect to the oscillating detector rods 12. Said drop wires are provided with slots 40 the upper ends of which are restricted as at 41 so as to arrest oscillation of the detector rods when a warp thread breaks and thus stop the loom. Where desired the central bar 36 may be of the same height as the outside bars corresponding either to the relatively low bars 34 of the relatively high bars 35.

As previously stated differing conditions in the same loom render it desirable to change the relation between the narrow parts 41 of the drop wire slots and the detector rods 12. The drop wires are positioned vertically by the warps and therefore indirectly by the outside bars and by changing the latter from one height to another the desired adjustment can be obtained.

From the foregoing it will be seen that I have provided a separator for warp stop motions having provision for receiving outside separator bars of differing heights, the separator being held clamped in fixed position by intermediate bars which have no effect in determining the warp line and therefore could not conveniently be used to position the warp. It is to be understood that the driving of the warp stop motion may be as set forth in Patent to Holmes No. 1,360,638 and that the separator bars at the ends of the stop motion are held by the brackets shown in Regan Patent No. 1,375,729. The Holmes patent and the last named Regan patent form no part of my present invention and the parts shown therein are not illustrated herein. Although I have described the invention as making provision for varying the outside bars in order to determine the warp line yet I do not wish to be limited to this arrangement as it is apparent that other bars could determine the warp line especially in stop motions employing more banks of drop wires but it is sufficient for the purposes of this invention if certain of the bars remain constant for all conditions of weaving and that these bars be those which support the separator.

Having thus described my invention it will be apparent 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. A separator for high outer and low intermediate separator bars which lie below the outer bars and oscillating detectors of a warp stop motion, said separator having a body portion with provision for clamping the same to certain of the intermediate separator bars and having provision for loosely guiding the outer separator bars which extend above the bars to which the separator is clamped.

2. A separator for high outer and low intermediate separator bars which lie below the outer bars and oscillating detectors of a warp stop motion, said separator having openings to receive certain of the separating bars to which said separator is secured, and said separator further being provided with guidways extending above the openings for the bars to which said separator is clamped, said guideways to receive loosely the outer bars which extend above the bars to which the separator is clamped.

3. A separator for the separator bars and oscillating detectors of a warp stop motion, said separator comprising a body portion having slots therein of different heights and a hinged cap by which the body portion is clamped to the bars located in the lower openings, the other openings extending above the lower openings to receive separator bars which extend above the bars to which the separator is held.

4. In a warp stop motion, having relatively low intermediate and relatively high outer separator bars, a separator supported by the intermediate bars only, said separator having an opening therein extending above the lower bars, a relatively high separator bar located in said opening extending above the lower bars and being loosely guided by said last named openings.

5. In a warp stop motion, a plurality of relatively low separator bars, a separator having relatively short slots to receive the low separator bars and having longer slots extending above the shorter slots, and separator bars loosely guided in the longer slots and extending above the lower separator bars.

6. In a warp stop motion, a plurality of relatively low separator bars, a separator having relatively short slots to receive the low separator bars and having longer slots extending above the shorter slots, and separator bars loosely guided in the longer slots and extending above the lower separator bars, and means engaging the underside of the lower bars to hold said separator in fixed position with respect to said lower separator bars.

7. In a warp stop motion, a plurality of relatively low separator bars, a separator having a body portion with downwardly extending open short slots to receive the relatively low separator bars, a cap pivoted to the body portion and engaging the undersides of the low separator bar, and other separator bars extending loosely through and guided by longer slots formed in the body portion, the upper parts of said other bars being spaced from the tops of the slots containing the same and being above the tops of the lower separator bars.

8. In a warp stop motion, a plurality of separator bars certain of which are relatively low and others of which are relatively high and extend above the relatively low bars, an oscillating detector rod, a separator for the bars and rod, means to clamp the separator in fixed position on the low bars, said separator being provided for guideways extending above the low bars to receive the relatively high bars, and said separator having a supporting portion for the detector rod, the said supporting portion being always the same distance from the low separator bars, and the guideways in the separator being capable of receiving any one of a plurality of relatively high separator bars any of which extend above the low bars.

In testimony whereof I have hereunto affixed my signature.

WALTER H. WAKEFIELD.