Nov. 27, 1956 G. E. ULRICH 2,771,909

LOOM REED AND ACTUATING MEANS THEREFOR

Original Filed March 7, 1952 3 Sheets-Sheet 1

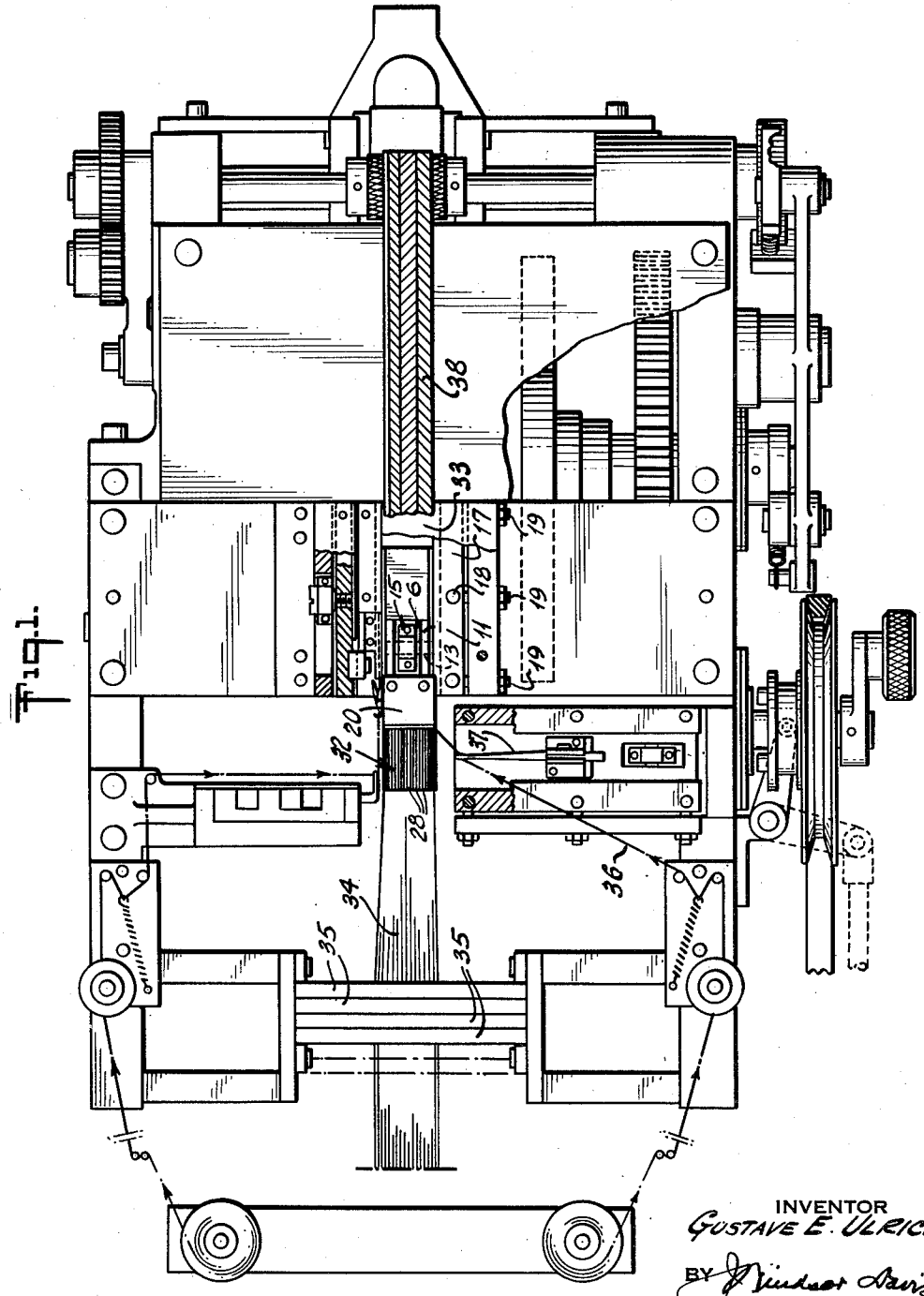



Fig. 1.

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Fig. 2.

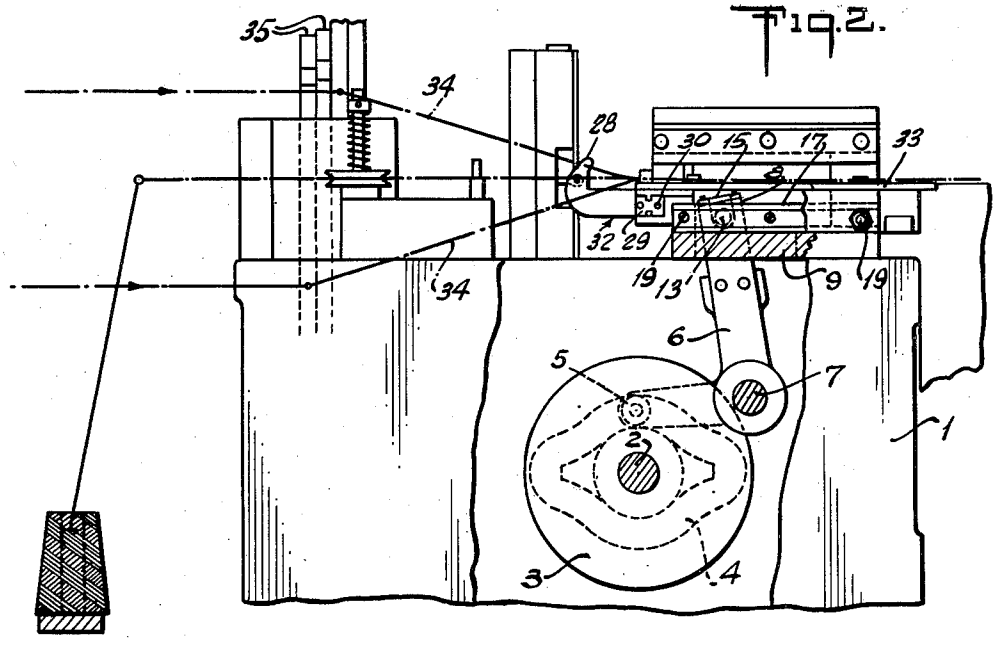
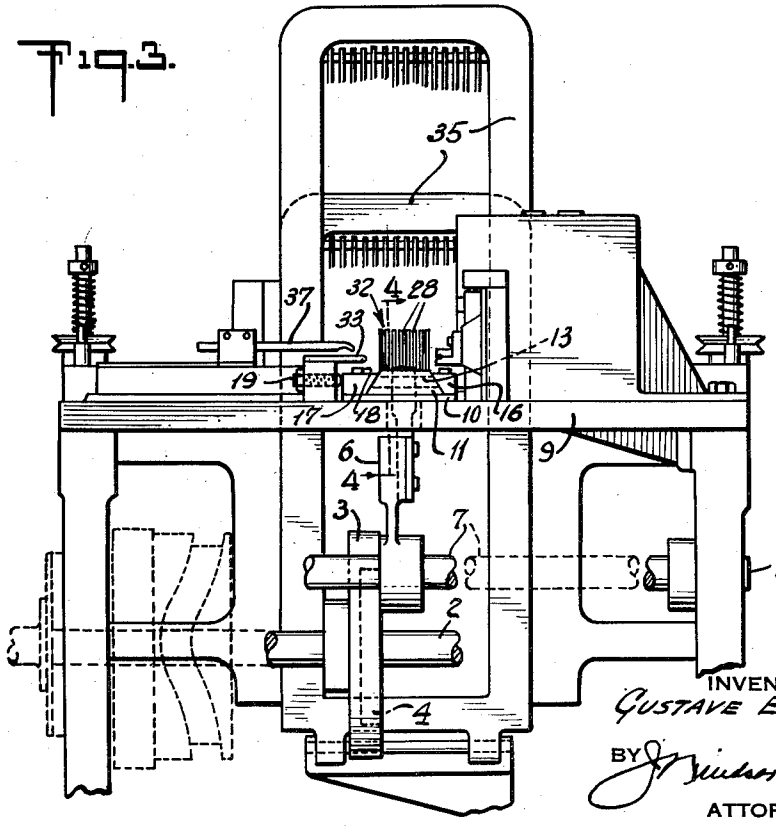



Fig. 3.




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Fig. 4.

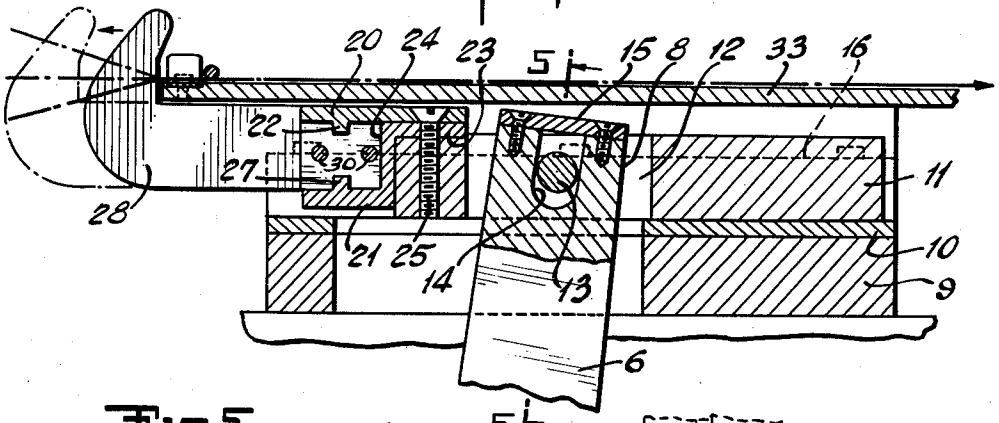



Fig. 5.

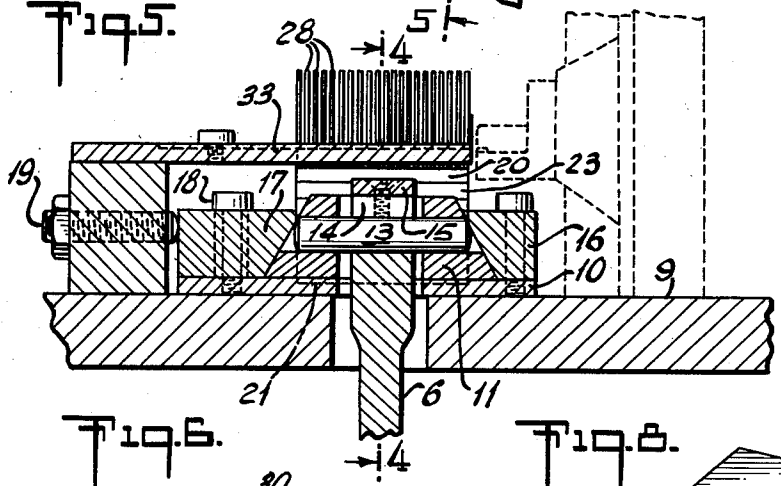



Fig. 6.

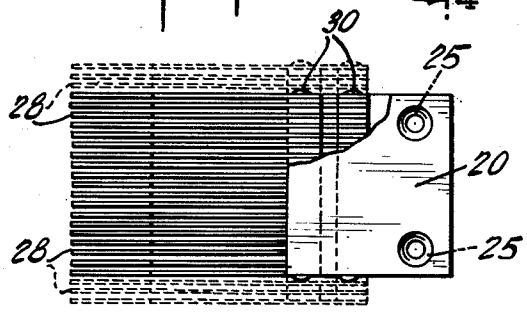



Fig. 8.

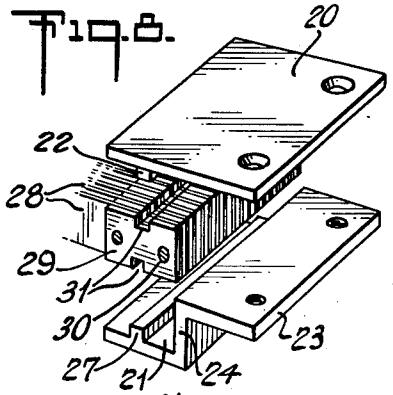



Fig. 7.

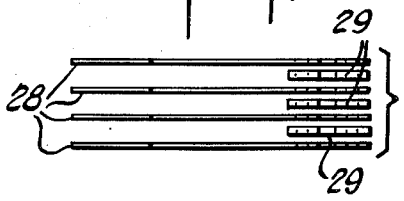
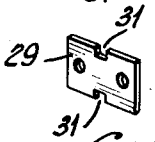



Fig. 9.




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2,771,909

# LOOM REED AND ACTUATING MEANS THEREFOR

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Original application March 7, 1952, Serial No. 275,329. Divided and this application December 8, 1952, Serial No. 324,613

3 Claims. (Cl. 139—192)

This invention relates to shuttleless looms for weaving narrow fabrics such as tape, ribbon and the like, and has for its object to provide an improved reed or beater for packing the weft threads thereof. This application is a division of my co-pending application Serial Number 275,329, filmed March 7, 1952.

The principal object of this invention is to provide an improved reed of lighter weight which is adaptable for operation at substantially increased speeds, which will have precision movement and which will impose a minimum friction on the warp threads guided thereby.

Another object is to provide means for actuating the reed in a linear path, the means being of small mass and adaptable to precision movements with small inertia thereby providing a mechanism of long life which will operate with small maintenance.

A specific object is to provide a reed having individually flexible blades so that they may accommodate themselves to the direction of the individual warp threads. It is, in part, by virtue of this flexibility that friction of the warp threads against the blades is held to a minimum.

Another object is to provide a reed having blades held together on a base but not connected at their outer ends. The reed thus does not contact the warp threads in any manner which will cause these threads to be deflected vertically during their travel from the headles to the slider plate where the fabric takes form. It is by this freedom of the warp threads from vertically guiding action by the reed that fraction and undue vertical stresses on the threads is avoided. Machine wear on the threads is thus reduced to a minimum with the result that there is less thread breakage in the loom and, also, a stronger and more uniform product is manufactured by the loom.

Other objects and advantages will become hereinafter more fully apparent as reference is had to the accompanying drawings wherein my invention is illustrated and in which:

Fig. 1 is a top elevation of a loom equipped with my improved reed or beater;

Fig. 2 is an elevation taken at the left side of Fig. 1; partially broken away to show the reed and reed actuating mechanism;

Fig. 3 is a front elevation of the loom;

Fig. 4 is an enlarged detail vertical section of the reed and its environment, taken along the line 4—4 of Fig. 3 and also along the line 4—4 of Fig. 5;

Fig. 5 is a vertical section taken along the line 5—5 of Fig. 4;

Fig. 6 is a top elevation of the reed;

Fig. 7 is a detail vertical exploded view of several reed blades and spacers;

Fig. 8 is a detail perspective exploded view of the reed blade ends and the end retainer plates therefor; and

Fig. 9 is a perspective of one blade spacer.

More particularly, the numeral 1 refers to the base of the loom which houses and supports, among other



things, a shaft 2 having a cam wheel 3 fixed thereon. A cam groove 4 in the wheel 3 receives a roller 5 which is journalled on a bellcrank 6 pivotally mounted by means of a shaft 7 on the base 1. Rotation of the cam wheel 3 by a motor or other suitable source of power (not shown) actuates the bellcrank 6 imparting to its upper end 8 an oscillatory movement.

The top plate 9 of the base 1 has a reed carrier bed 10 secured thereto and both of these members 9 and 10 have aligned openings through which the upper end 8 of the bellcrank projects. The reed carrier 11 rests upon the bed 10.

The reed carrier 11 is best seen in Figs. 4 and 5, arranged in the form of a solid metallic member having a central vertical opening 12 through which a pin 13 extends transversely. The pin 13 is engaged by the end 8 of the bellcrank, this end being bifurcated at 14 and equipped with a retainer plate 15, thus forming a yoke for the pin 13. The carrier 11, as shown in Fig. 5, has inclined sidewalls which are in sliding contact with inclined guide blocks 16 and 17 secured to the base top 9. The block 17 is adjustable with respect to the top 9 and the carrier by virtue of an oversized slot which receives a hold down screw 18 together with a manually adjustable lateral screw 19. The carrier 11 is thus reciprocated along the path defined by the guides 16 and 17 on the bed 10.

Two clamp plates 20 and 21 hold the reed on the carrier 11. The plate 20 is essentially flat on both sides except for a machined ridge or transverse lineal tongue 22 along the bottom thereof. The plate 21 has a flat horizontal portion 23 which underlies half of the plate 20 and which is integral with a vertical wall portion 24. Screws 25 pass through the plate 20 and through the portion 23 and secure the clamps 20 and 21 to the carrier 11, the wall portion 24 lying against the front end of the carrier. A horizontal portion 26 integral with the vertical wall 24 has a ridge or transverse lineal tongue 27 on its upper surface which, along with the ridge or transverse lineal tongue 22 of the upper plate engages the blades and spacers of the reed. It will be noted that the bottom of the clamp 21 is supported above the bed 10, out of contact therewith as these clamps should not constitute a part of the surface sliding on the bed 10.

The reed blade assembly is assembled as a unit before being inserted between the clamps 20 and 21. Thus, a multiplicity of reed blades 28, each having a shape as illustrated, are assembled with a spacer 29 separating each blade from contact with each adjacent blade. All blades and all spacers have aligned holes therethrough so that bolts, screws or rivets 30 hold them in firm assembly. The spacers and the adjacent blade ends also have aligned grooves 31 top and bottom thereof for reception of the ridges or transverse lineal tongues 22 and 27 of the clamp plates 20 and 21. The transverse lineal tongues 22 and 27 and the coacting grooves 31 are so spaced from the rear ends of the reed blades 28 and the spacers 29 that the vertical wall portion 24 of plate 21 provides an abutment for the rear end of the removable and replaceable reed blade assembly for firmly maintaining the assembly on the carrier 11. Thus, as the carrier 11 reciprocates the reed, generally indicated by the reference character 32, the outer ends of the blades 28 recede from and approach the end of the fabric slide 33 fixedly mounted above the carrier 11.

The function of the reed is to cause the warp threads 34 to converge from their spread or fanned out formation, which they have as they emerge from the headles 35 (see Fig. 1), and to press or beat each pass of the weft thread 36 as it is fed between the warp threads 34 by the needles 37, in the fabrication of the fabric 38.

A detailed description of the loom and its operation may be found in the parent application of which this application is a division.

Since the reed functions to cause convergence of the warp threads, it is apparent that the blades, and particularly those blades toward the outer ends of the reed, have rubbing contact with the outer warps. It is an important feature of this invention that the blades flex laterally to relieve the friction and also to cause the rubbing to occur against the surfaces rather than against the leading edges of the blades.

As stated, the reed **32** is composed of the blades **28** and spacers **29** which are held on the carrier **11** by the clamping plates **20** and **21**. It will be noted that the combined width of the blades and spacers need not correspond to the width of the plates **20** and **21**. In Fig. 6 this width does not correspond but, as shown in dotted lines, if the bolts **30** are replaced by longer bolts then additional spacers **29** and blades **28** may be added. Since the bolts hold the spacers and blades in assembly it is not necessary that all of the grooves **31** have engagement with the ridges **22** and **27** of the clamping plates.

Various alterations in the design of the several parts may be made without departing from the spirit of my invention and I therefore desire to be extended protection as defined by the scope of the appended claims.

What I claim is:

1. A loom reed assembly comprising in combination with a reed carrier a pair of coacting clamp plates, each of said plates having flat parallel extending contacting portions, means extending through said portions and forming a fastening means for said plates on said reed carrier, one of said plates projecting coplanar with the aforesaid flat contacting portion thereof and the other of said plates having a right angular bend therein forming an abutment wall disposed in abutment with one side of said reed carrier, said last mentioned plate having an integral portion extending from said abutment wall in spaced offset parallel relation to the coplanar projection of the aforementioned plate, lineally extending transverse tongues carried on the aligned interior surface of the integral portion of said second plate and the coplanar projection of said first plate, a reed assembly comprising a multiplicity of reed blades and spacers disposed in alternate parallel relationship and fastening means for securing said reed blades and spacers together as a replaceable unit, said reed blades and spacers having aligned transverse grooves therein adapted to establish interfitting clamping relationship with said lineally extending transverse tongues when the flat parallel extending contacting portions of said plates are mounted in contacting position with the edges of said reed blades and spacers and with the ends thereof in abutting relation with the abutment wall of said second mentioned plate.



2. A loom reed assembly as set forth in claim 1 in which said lineally extending transverse tongues on said plates and said grooves in said reed blades and spacers are polygonal in cross section and form interlocks for mounting said reed blades and spacers as a unit with respect to said reed carrier.

3. A loom reed assembly as set forth in claim 1 in which said reed carrier is slidable and has a perforation extending therethrough, a pin extending transversely through the perforation in said reed carrier and substantially parallel to the abutment wall of said second mentioned clamp plate and a driving bell crank extending through the perforation in said reed carrier, said bell crank being bifurcated on the end thereof for engaging said pin and imparting reciprocating movement to said reed carrier in a direction coplanar with the direction of said reed blades.

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