

Oct. 12, 1937.

G. E. SPOFFORD

2,095,840

LOOM

Filed Jan. 3, 1936

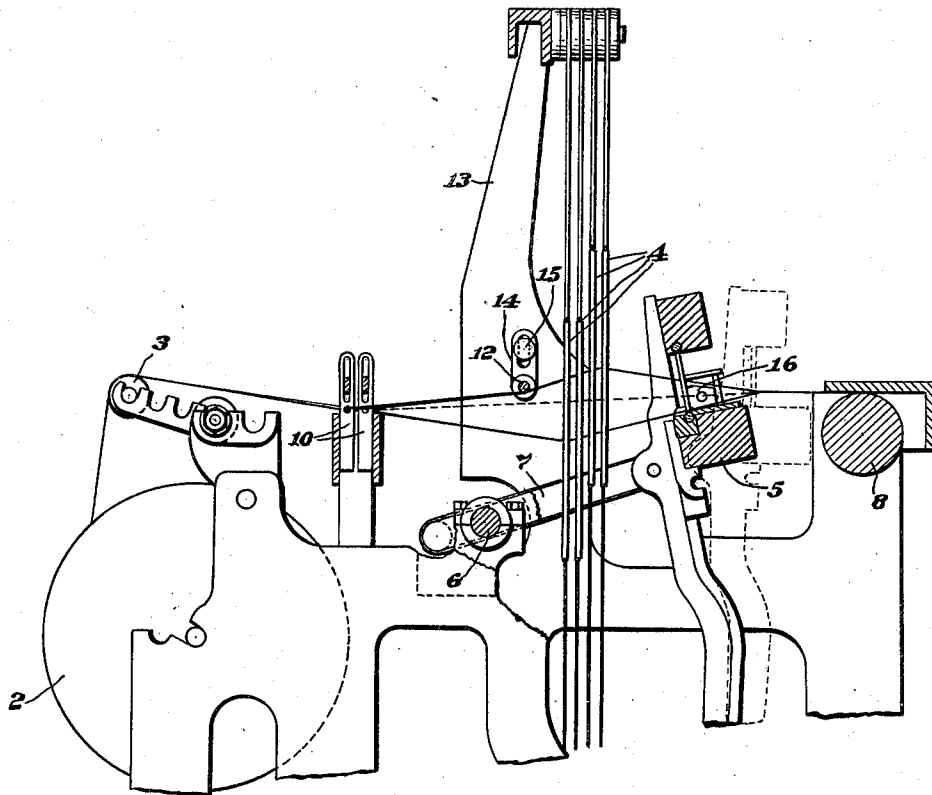


Fig. 1

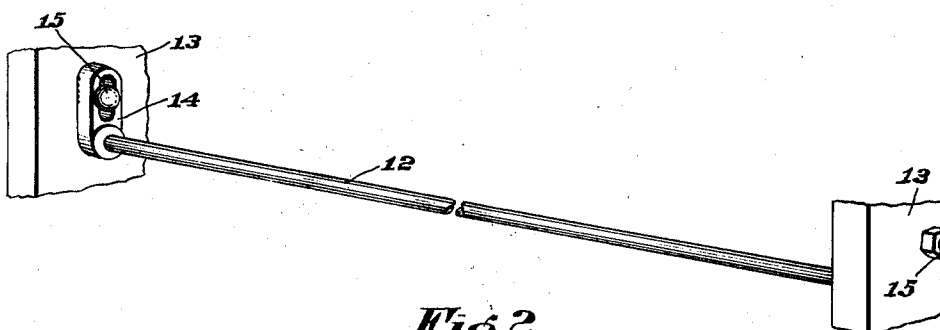


Fig. 2

INVENTOR:
George E. Spofford,
BY *J. M. Cready,*
ATTORNEY.

UNITED STATES PATENT OFFICE

2,095,840

LOOM

George E. Spofford, Augusta, Maine

Application January 3, 1936, Serial No. 57,390

2 Claims. (Cl. 139-97)

This invention relates to looms and to methods of weaving in looms.

In weaving certain fabrics the nature of the yarn and of the weave or pattern are such that the goods are given a somewhat thin or "reedy" appearance. Various expedients have been proposed to overcome this difficulty and to improve the "cover" of goods in which this problem is presented. So far as I have been able to learn, however, none of these expedients has gone into practical use, and no mechanism of which I am aware is commercially available for handling situations of this character.

The present invention is especially concerned with this problem, and it aims to devise a thoroughly practical solution for it.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawing, and the novel features will be particularly pointed out in the appended claims.

In the drawing,

Figure 1 is a view, partly in vertical section and partly in side elevation, illustrating those parts of a loom with which the invention is more especially concerned; and

Fig. 2 is a perspective view showing one method of mounting the bar which applies tension to the warps, as hereinafter described.

Preliminary to a detailed description of the construction shown in the drawing, it may be pointed out that an important reason for the reedy appearance of woven fabrics is the necessity for maintaining a very considerable tension on the warp yarns during the weaving operation. It is recognized in this art that a lessening of the tension will improve the cover of the goods, or, in other words, will reduce the reedy appearance. The high warp tension, however, is necessary in order to prevent the shuttle from passing over certain of the warps which it should pass under, or vice versa, and thus producing faults in the pattern or even causing the shuttle to fly out of the machine altogether.

The present invention overcomes this difficulty by increasing the tension on the warps in the upper half of the shed during that period in the cycle of operation of the loom in which the shed is open and the shuttle makes its flight, and releasing this increased tension immediately prior to and during the beat-up. This method therefore applies the necessary tension to those warps which it is most essential to keep tight during the pick but relieves that tension during the beat-up when slack in the warps is desired in order to

increase the "cover." Such a method permits a reduction in the normal tension so that the required slack in the warp is available at the instant it is needed. Preferably the increase in tension on the warps in the upper half of the shed during the pick is produced by the movement of the warp threads themselves.

A typical arrangement designed to operate in accordance with the method above described is illustrated in the drawing. They show a loom of a common form equipped with the usual warp handling mechanism including a beam 2, whip roll 3, and harnesses 4. A lay is shown at 5 connected with the main shaft 6 through the usual pitman 7. The usual cloth roll is indicated at 8. Also a warp stop motion of a common type is shown at 10. All of these parts may be constructed, arranged and operated in the usual manner.

The means above referred to for increasing the tension on the upper shed during the pick comprises, in the particular form shown, a bar 12 running from one of the side frames 13 to the other. Its opposite ends are mounted in holders, one of which is shown at 14, these holders being slotted to receive bolts 15 extending through the frame members 13 and securing them rigidly to these parts. Such an arrangement permits considerable range of adjustment of the bar 12 relatively to the warp. It will be observed that this bar is mounted immediately behind the harnesses where it will engage the upper rear slope of the shed when the shed is open. At this time the bar bears on the warps of the upper shed sufficiently to deform this slope of the shed and thus serves to increase very substantially the tension on the yarns in the upper warp sheet while the shuttle 16 makes its flight through the shed. Immediately after the shuttle has been boxed the harnesses start to shift, thus collapsing the shed, and the lay swings forward to beat up the pick, the final beat-up occurring at approximately the instant when the shed is completely collapsed, or, in other words, when the warp threads are all in approximately the same plane. It will be clear from an inspection of Fig. 1 that as the yarns of the upper half of the shed are moved downwardly, their pressure against the bar 12 will be decreased, thus reducing the tension on them, and that this action will continue until said warp yarns are moved completely out of contact with the bar, at which time the increased tension is completely removed and the warp yarns are subjected merely to the action of the normal ten-

sioning mechanism. As the shed begins to open again preparatory to the next pick, the yarns in the upper half of the shed will again rise into contact with the bar 12, thus again applying an increased tension to the upper half of the shed in the manner above described. The foregoing operations are repeated in each cycle of the loom.

By holding the upper warp yarns under high tension while the shed is open, in the manner just described, the conditions necessary to good weaving are produced at the time the shuttle makes its pick, while the subsequent release of this tension produces those conditions necessary to give the fabric the desired cover. At the same time the construction of the loom is not complicated in any material degree. As above pointed out, the mounting of the bar 12 is such that it can readily be adjusted to suit the requirements of different weaving conditions.

While I have herein shown and described a preferred embodiment of my invention, it will be understood that the invention may be applied to other looms and may be embodied in other forms without departing from the spirit or scope thereof.

Having thus described my invention, what I desire to claim as new is:

1. In a loom provided with shed forming mechanism, a relatively stationary bar extending horizontally across the warps behind the harnesses, and means for supporting said bar in a substantially fixed position above the warp sheet where it will be engaged by the warps forming the upper rearward slope of the shed during the opening of the shed to cause the bar to bear upon said warps and thereby to increase the tension in them when the shed is fully open, said bar being so located that the collapsing movement of the shed carries the warps substantially out of pressure relationship to the bar.

2. In a loom provided with shed forming mechanism, a bar extending horizontally across the warps behind the harnesses, and means for supporting said bar in a substantially fixed position above the warp sheet where it will be engaged by the warps forming the upper rearward slope of the shed during the opening of the shed to cause the bar to bear upon and to deform said warps and thereby to increase the tension in them when the shed is fully open, said means being adjustable to support said bar in different operative positions such that the degree of pressure which it exerts on the warps can be adjusted.

GEORGE E. SPOFFORD.