Aug. 24, 1937. D. D. GOLDEN 2,090,726

LOOM APPARATUS

Filed May 5, 1936 2 Sheets-Sheet 1

Fig. 1.

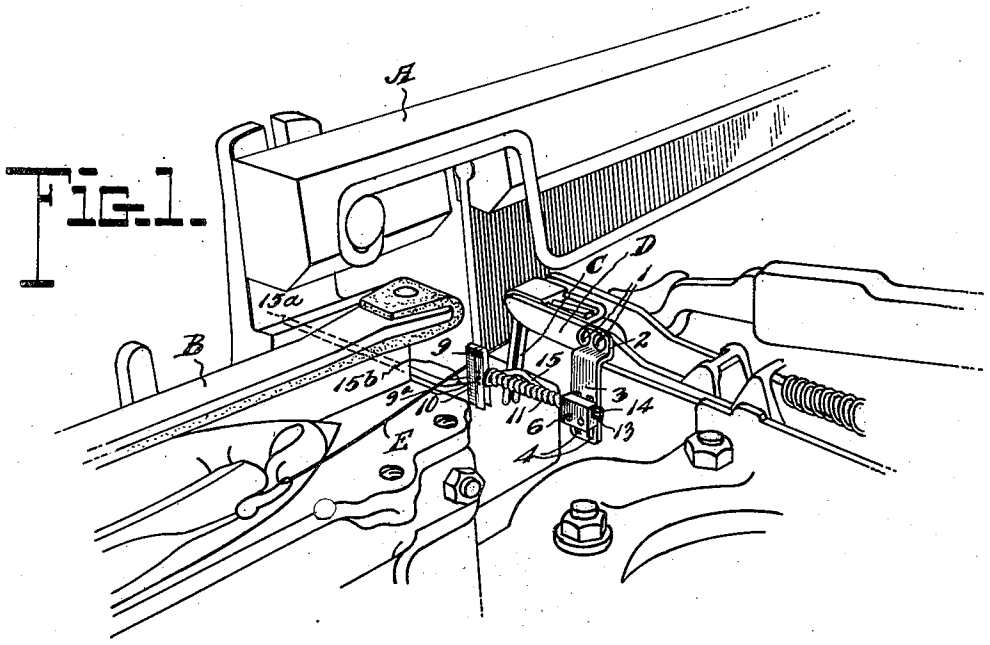
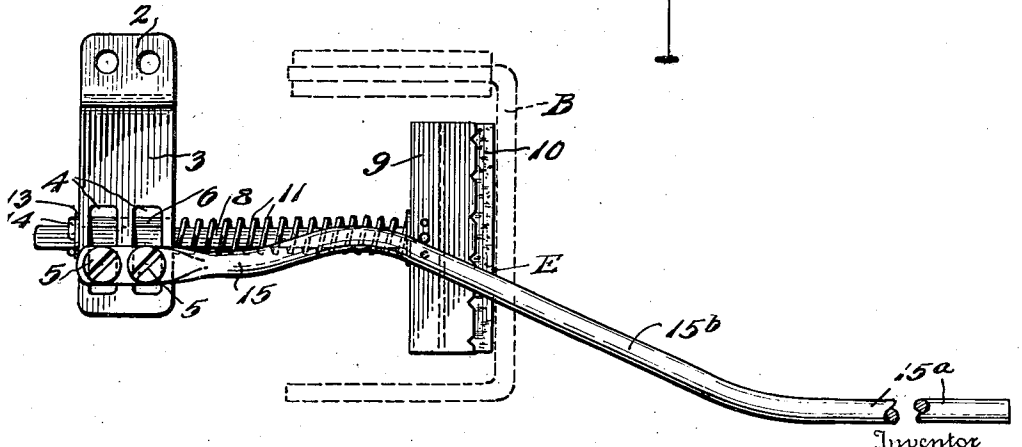


Fig. 2



Inventor
D. D. Golden

By Robb & Robb
Attorneys

Aug. 24, 1937. D. D. GOLDEN 2,090,726

LOOM APPARATUS

Filed May 5, 1936 2 Sheets-Sheet 2

Fig. 3.

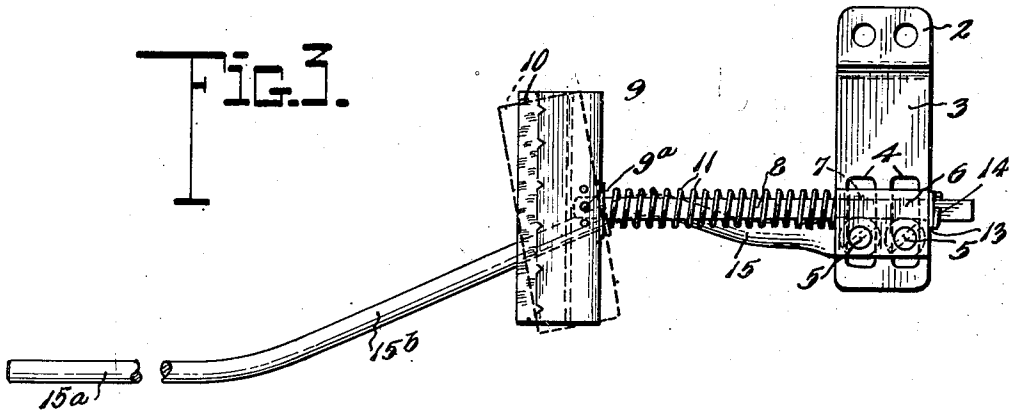


Fig. 4.

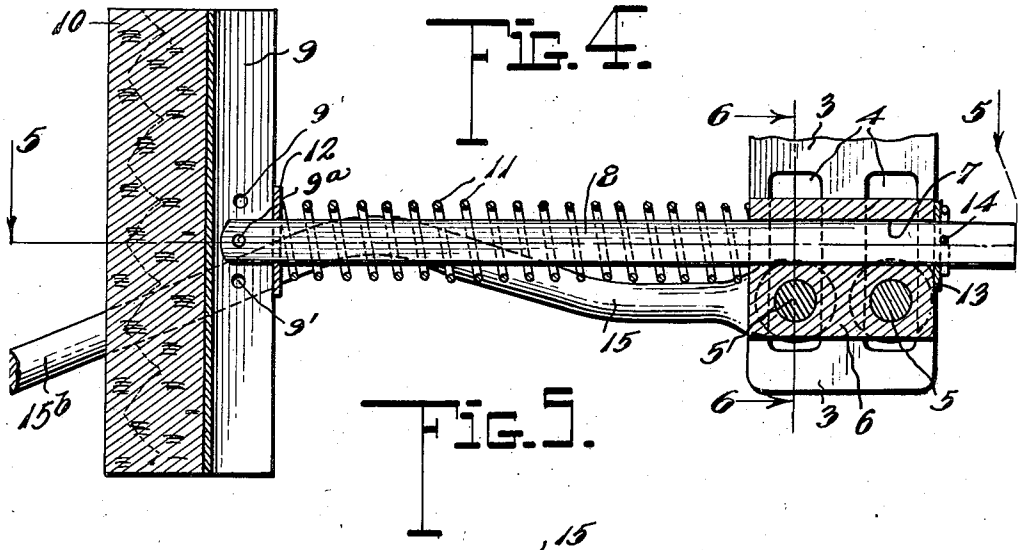


Fig. 5.

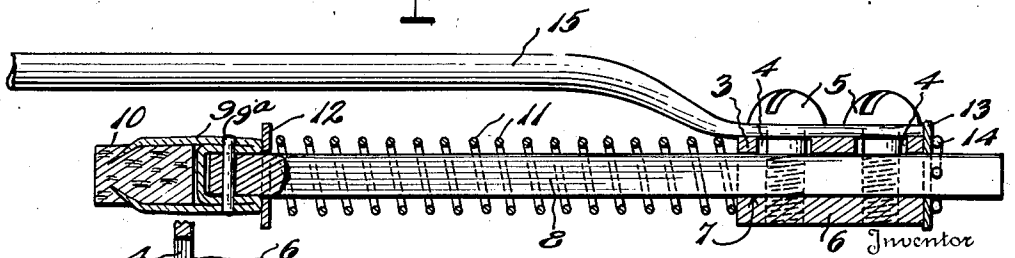
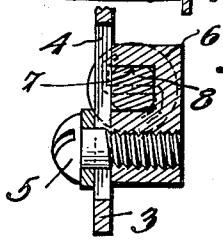


Fig. 6.



Inventor
D. D. Golden

By Robb & Robb

Attorneys

Patented Aug. 24, 1937 2,090,726

UNITED STATES PATENT OFFICE

2,090,726

LOOM APPARATUS

David D. Golden, Tallassee, Ala.

Application May 5, 1936, Serial No. 78,067

8 Claims. (Cl. 139—194)

This invention appertains to improvements in loom apparatus and in particular to filling tensioning means therefor, the primary object of which is to positively direct the filling thread into contacting relation to the detector fork of the loom and to insure its operation by said thread as an incident to the beat up movement of the lay.

A further object of the invention is to provide a filling holding device in the form of a unitary attachment designed to clamp the filling thread at a point between the shuttle box and the cloth for producing tension upon the held thread which will insure the operation of the detector fork as above premised without the use of a filling grid or grate so as to prevent the occurrence of thin places or misspicks in the weaving of the cloth.

I am aware that it has been proposed heretofore to provide a clamping means per se for holding the filling both with and without the usual grid which, when used, cooperates with the fork, but such devices in no instance insure sufficient tension of the filling to cause the operation of said fork, resulting in unnecessary stopping of the loom or operation of filling transfer mechanism, according to the type of loom to which these devices are applied.

In the majority, if not all, of the looms in commercial practice today, the filling grid is an essential adjunct to insure the provision of a sufficient tension of the filling to actuate the detector fork which of necessity, for reasons well known to those skilled in the art, must be heavy to take care of stresses imposed thereon incident to operation of the loom stopping mechanism, but these grids have a number of disadvantages which make dispensing therewith a thing much to be desired.

On the other hand, the omission of the grid has been up to now just as disadvantageous because of the uncertainty of the proper operation of the detector fork.

My invention, therefore, has been designed to meet these difficulties by providing as a part of the filling holding device, a tensioning means which will act as an incident to the movement of the lay to tension the filling between the cloth and the holding device sufficiently to elevate the loop of the fork upon each full beat up stroke of said lay, so long as a single thread is present, and without the aid of the undesired grid.

In carrying out my invention, I provide a guide member which is so constructed and arranged in combination with a novel clamping head as to always guide the filling to a predetermined position to be clamped by the head against a part of the loom and after such clamping to operate the filling as the lay beats up the same into tensioned contact with the fork, whereby said fork is assuredly tilted and the weaving continued without interruption which would otherwise cause a thin place or misspick.

An essential object is to provide the foregoing mechanism in the form of a complete attachment unit having adjustment features for the constituent members thereof to enable its application to conventional types of looms and take care of varying types or conditions in such apparatuses.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings:

Fig. 1 is a fragmentary view of a conventional loom mechanism showing my invention applied thereto in operative position;

Fig. 2 is a side elevation of my invention showing the clamping head in cooperative relation to the back wall of the shuttle box;

Fig. 3 is a similar view from the opposite side of the attachment unit alone and showing the pivotal character of the clamping head;

Fig. 4 is a longitudinal sectional view on an enlarged scale;

Fig. 5 is a longitudinal sectional view on the plane indicated by the line 5—5 of Fig. 4; and

Fig. 6 is a transverse section on the line 6—6 of Fig. 4.

Like reference characters designate corresponding parts in the several figures of the drawings.

Referring to the drawings and specifically describing this invention, it is to be understood that the attachment unit forming its embodiment may be applied to the conventional looms in present day use without any radical change in construction, excepting the elimination of the usual grid which formed an essential feature of such apparatus. In Fig. 1, therefore, it is sufficient to point out that A designates the lay, B the shuttle box at one end thereof, and C the detector fork, the association with which parts alone of my attachment device will enable a full comprehension of its features and functions.

As seen in Fig. 1, this attachment unit is connected to the side wall of the filling fork slide guide D by means of fastening screws 1 which pass through openings in a flange 2 at the upper end of a bracket or support 3. This bracket de-

pends a short distance and is formed at its lower end with a pair of vertical slots 4 adapted to loosely and adjustably receive a pair of screws 5 which pass therethrough into a guide block and support 6 which is clamped against one face of the bracket by said screws.

This block is provided with a horizontal rectangular groove 7 to slidingly receive a correspondingly shaped shank or bar 8 to the outer end of which is pivotally connected at substantially its mid point, a clamping head 9 preferably provided on its clamping side or edge with a cork abutment face 10. The member 9 is preferably formed with a series of openings 9' to permit adjustment of the pivot pin 9a, as necessity may require. It is to be understood that other material than cork may be used for the clamping face of this head such as rubber, felt, and the like, any one of which when in use is designed to prevent injury to the filling thread when clamped by said head against a part of the loom as hereinafter described.

As will be noted in Fig. 4, this head is held in vertical position normally by means of the coiled spring 11 which extends about the supporting bar 8 between the block 6 and the rear of the head where it abuts with a washer 12 which acts to hold the head in a vertical position as before stated. Such spring also tends to hold the bar 8 in its extended or outermost position limited by the stop washer 13 carried by the innermost end of the bar and the pin 14 passing therethrough.

It will be observed that as pressure is exerted against the head 9, the yieldable mounting will allow it to move inwardly or toward the forward end of the loom through the supporting block 6, this being the usual action under the pressure produced by the lay, as will be hereinafter more specifically set forth.

The second essential feature of my invention is the provision of a guide rod 15 which is clamped against the side of the bracket 3 opposite that occupied by the block 6. This rod extends rearwardly of the loom in a position in line with the point usually occupied by the filling grid when such element is employed in the construction and the outer end of the rod 15a extends sufficiently far to insure its passage beneath the filling thread E which is to be acted upon in a manner to be set forth. This extremity 15a of the rod may therefore be substantially horizontal and the rod is formed further with an inclined portion 15b, up which the filling thread slides in the operation of this device. The purpose of this guide rod is to insure the proper positioning of the filling thread E to be engaged and clamped by the head 9 against the rear wall of the shuttle box B. This is its primary function, but of equal importance, said rod acts to place the filling thread, which has been clamped under sufficient tension to insure the operation of the filling fork C when said thread has been directed into contact therewith by the inclined portion 15b of the rod as an incident to the beat up movement of the lay.

The operation of this device will be more or less clear from the foregoing description, but it is appropriate to say that my tensioning attachment, when applied to the loom as shown in Fig. 1, will overcome the difficulties hereinbefore mentioned in the following manner when the shuttle has moved over into the shuttle box B and laid the filling thread. This thread will pass over the rear end of the rod 15 as the lay moves to beat up the filling. When the thread reaches the inclined portion 15b, it is moved upwardly into a position, if it has not already reached such position for any reason, to be engaged by the head 9 which, upon the continued movement of the lay, will cause the thread to be clamped between the face 10 and the rear wall of the shuttle box. Continued movement of the lay forces the head 9 in a forward direction against the tension of the spring 11 and at the same time the filling thread is carried farther up the incline 15a while held by the clamping head 9. This causes the thread between the head and the cloth to be tensioned sufficiently to lift the detector fork as the beat up movement is completed, the rod 15 having insured the positioning of the thread in proper actuating relation to the fork C under the guiding action of the inclined plane as before mentioned.

It will thus be seen that upon every full beat up movement of the lay, the filling is first clamped and then tensioned sufficiently to insure the lifting action of the detector fork, preventing the stop mechanism of the loom from being operated so long as a filling thread is present to be operated upon.

The structure of the parts forming the attachment unit is such that adjustments may be made of the clamping head and the rod to accommodate variations in the loom to which it is applied and to properly position the guide rod at the necessary angle to insure the filling passing thereover in the manner above set forth.

As shown in Fig. 3 of the drawings, the head 9 is automatically adjustable to insure the proper contact of the gripping surface with the face of the wall of the shuttle box or other part of the loom with which it may co-act, this automatic adjustment being possible because of the yielding action of the spring 11 at its abutting extremity.

Obviously slight changes may be made in the details of construction of the attachment without departing from the spirit of the invention and within the scope of the claims hereto appended.

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

1. In loom apparatus of the class described the combination with a lay and detector fork, of means for holding the filling thread between the shuttle box and cloth, and cooperating means for directing said thread into a predetermined position to be gripped by said holding means while actuating said detector fork, and common supporting means for the holding and directing means for sustaining said means in cooperative relation.

2. Loom apparatus as claimed in claim 1 wherein the directing means acts to positively guide the filling thread into actuating relation to the fork while held by the holding means.

3. In loom apparatus of the class described, the combination with a lay and detector fork, of a guide member adjacent said fork and extending rigidly substantially beyond the same and toward the lay, said member having an incline portion for moving the filling thread under tension into actuating relation with the fork on the beat up movement of the lay, a slotted supporting bracket for said guide member and clamping block to which said guide means is connected for vertical adjustment on said bracket.

4. In loom apparatus of the class described, the combination with a lay and detector fork, of a guide member adjacent said fork and extending

substantially beyond the same and toward the lay, said member having an incline portion for moving the filling thread under tension into actuating relation with the fork on the beat up movement of the lay, yieldable holding means associated with the guide member for gripping and holding the thread while acted upon by the incline portion aforesaid, and a bracket member carried by the loom for sustaining said guide member and holding means as a unit on the loom.

5. A filling tensioning attachment for loom apparatus comprising a supporting bracket, a tensioned bar yieldably mounted on said bracket, and a head pivotally connected to said bar and tensioned to normally hold a position at an angle to the bar, said head having a flat face and being yieldable to rock about its pivot when engaged with an arcuately moving part of the loom to grip the filling.

6. A filling tensioning attachment for loom apparatus comprising a supporting bracket, a guide block adjustably connected thereto, a bar member slidable in said block, a filling gripping head connected to one end of the bar member, and spring means for tensioning said bar member to hold it in its extended position, said spring means coacting with the head to yieldably hold it in operative position.

7. A filling tensioning attachment for loom apparatus comprising a bracket, a guide rod extending therefrom in position to receive the filling thread in the beat up movement of the same, and a yieldable filling thread gripping member connected to said bracket adjacent the rod for holding the thread during the beat up movement for holding and causing tensioning of the thread by the guide rod.

8. A filling tensioning attachment for loom apparatus comprising a bracket, a guide rod adjustably connected to said bracket and adapted to extend toward the lay of the loom, said rod having an incline intermediate its length to guide the filling thread when contacted therewith upwardly into actuating position against the detector fork of a loom, and spring tensioned supporting means slidably carried by the bracket and extending substantially parallel to the guide rod, said support having a clamping head at the end thereof to which the thread is guided by the guide rod.

DAVID D. GOLDEN.