May 9, 1939. S. S. HOLLAND 2,157,173

LOOM REED

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Fig. 6.

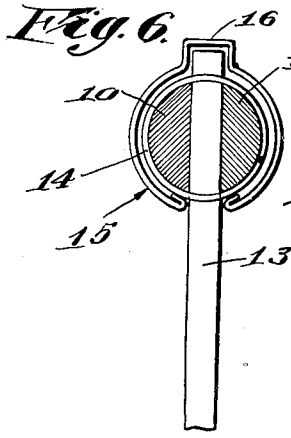


Fig. 8.

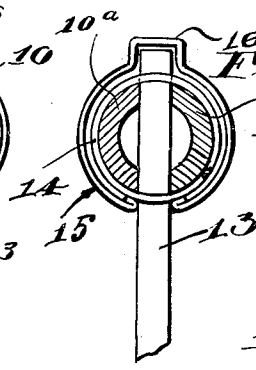




Fig. 9.

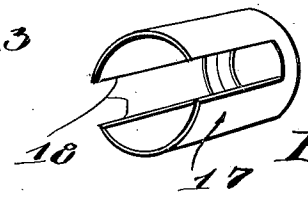


Fig. 7.

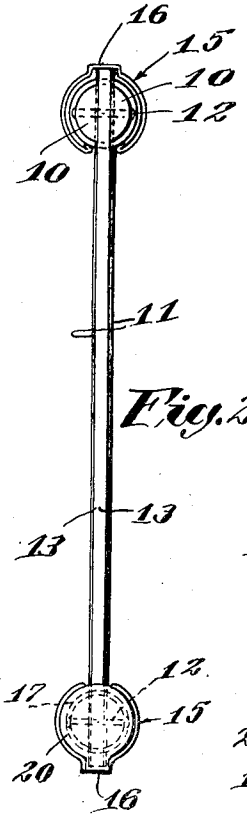


Fig. 2.

Fig. 1.

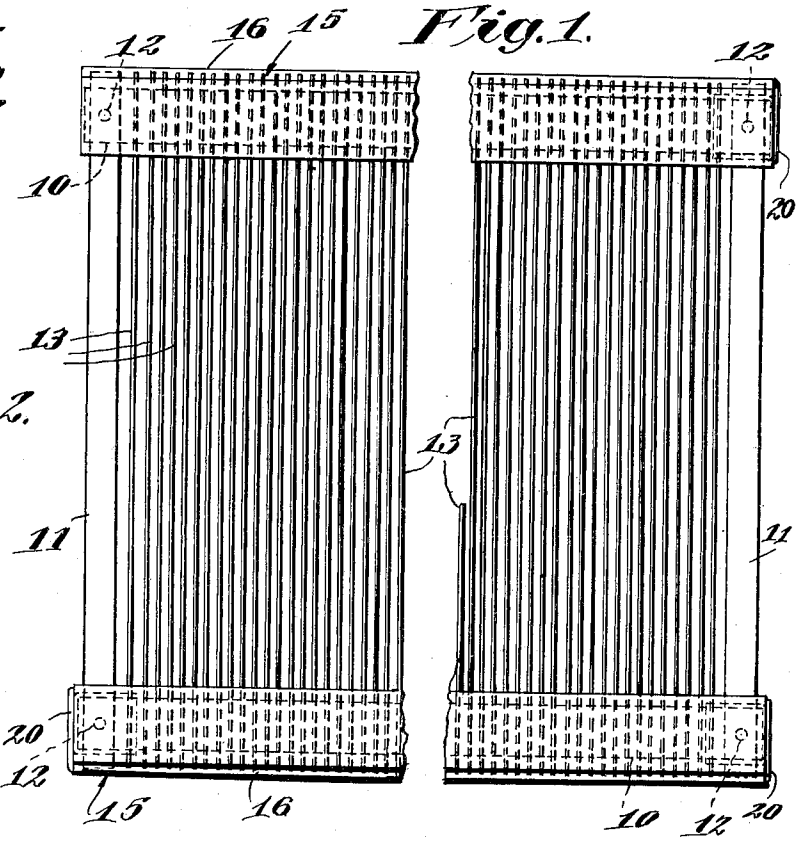
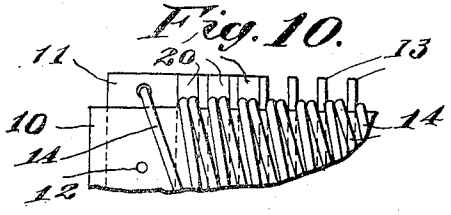


Fig. 10.



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LOOM REED

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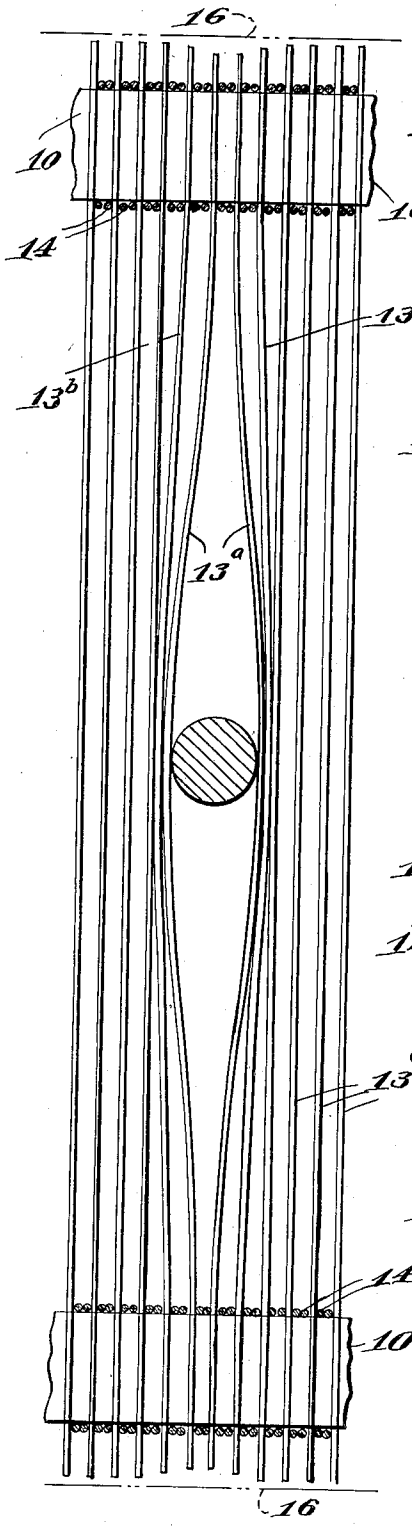


Fig. 5.

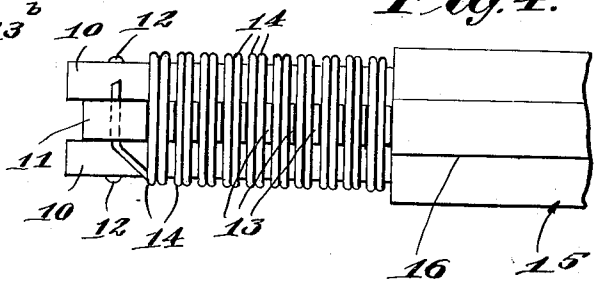


Fig. 4.

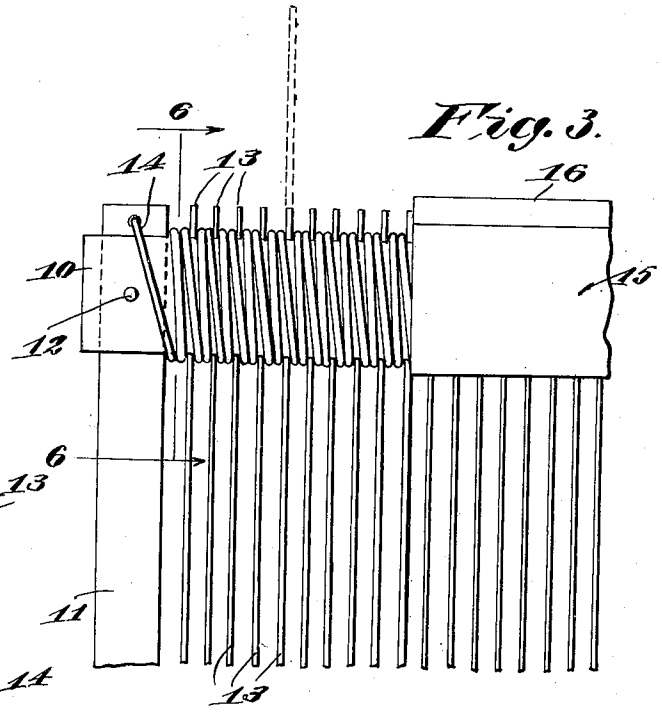


Fig. 3.

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UNITED STATES PATENT OFFICE

2,157,173

LOOM REED

Samuel S. Holland, Methuen, Mass.

Application April 12, 1938, Serial No. 201,585

4 Claims. (Cl. 139—192)

My present invention relates to reeds and more particularly to an improved reed for use in weaver's looms having dents which are not only flexible but which are adapted to move slightly in and out at their end portions where they are held in place in the reed frame.

Heretofore, it has been the practice to construct reeds so that the dents could not slide longitudinally on their major axis but could be slightly flexed by means of spring windings and various other means. Most reeds of conventional construction are provided with dents the ends of which are fixed in the reed frame by means of solder. Such reeds present a very limited amount of flexibility and are easily bent or broken in use. One of the difficulties of the soldered reed is the fact that it cannot be easily repaired due to the fact that it is necessary to unsolder portions of the reed where dents are to be replaced. This is a slow and laborious process. Furthermore, in most reed construction, hand labor is a necessary factor which naturally adds greatly to the cost of production.

In my present invention, I have obviated these difficulties and objectionable features and have developed a new reed which is not only much more inexpensive and simple to construct but is also more flexible; can be easily repaired, and assembled by machine without the aid of hand labor.

The principal object of my invention is an improved reed for weaver's looms and the like;

Another object is an improved reed having dents free to move longitudinally of their major axis;

Still another object is an improved reed which provides positive holding and alignment means for the dents without the use of solder, pitch or other binders of a similar nature;

Still another object is an improved reed the dents of which are readily removed and replaced without disturbing the windings or other dents;

And still another object is an improved reed having dents which are frictionally held in place;

A still further object is an improved reed which is provided with means for automatically maintaining the slidable dents in alignment, and

Other objects and novel features comprising the construction and operation of my improved reed will be apparent as the description of the same progresses.

In the drawings illustrating the preferred embodiment of my invention;

Fig. 1 is a side elevation of an assembled reed in which my invention is present, the central portion of which is broken away for convenience;

Fig. 2 is an end elevation of Fig. 1, the end of the upper frame being left unfinished to better show the relation of the various parts;

Fig. 3 is a fragmentary enlarged side elevation of the upper left-hand corner of Fig. 1, the guard casing having been slid back to better show the construction;

Fig. 4 is a plan view of Fig. 3;

Fig. 5 is a greatly exaggerated enlargement of a typical section of the reed showing the action of the dents when a knot in the warp passes through the dents;

Fig. 6 is a cross-section taken on the line 6—6 of Fig. 3;

Fig. 7 is a perspective view of a cap member which fits over the ends of the frame of the reed under the guard casing, as shown in the lower side portions of Figs. 1 and 2;

Fig. 8 is a cross-section similar to Fig. 6 but showing strips 10*a* formed from semi-tubular shapes;

Fig. 9 is a fragmentary side elevation of the upper left-hand corner of Fig. 3, the guard member 15 being removed, and showing one end of the dents 13 being soldered together, and

Fig. 10 is another modification similar to Fig. 9 except that the ends of the dents are not all soldered together at their extreme ends, as in Fig. 9, the dents 13 beyond the soldered portions 20 being free to slide between the wire 14.

Referring more in detail to the drawings, 10 indicates two half-round strips on the top and bottom sides of the reed, the ends of which are separated by means of the bars 11. The bars and strips are tightly bound together by means of the pins 12 which pass through the strips 10 and the bars 11.

At 13, I have shown a plurality of dents, the ends of which pass between the flat sides of the half-round strips 10 projecting out beyond the strips approximately the same distance as the ends of the bars 11. In all the views illustrated the dents are shown with their narrow edges in elevation except in Figs. 2, 6 and 8 where the broad side is shown in elevation. In Fig. 2, it will be observed that the narrow sides of the dents extend slightly beyond the sides of the bars 11. This is important as it produces the friction necessary between the strips 10 and the dents 13 when the reed is assembled, as shown in Fig. 1.

At 14, I have indicated a wire, the end of which, is anchored in the end of the bar 11, as shown in Figs. 3 and 4. This wire 14 is wound around the strips 10 and between the dents 13 in a progressive manner, as shown in Figs. 3 and 4 automatically binding and spacing the dents in between the flat sides of the strips and is finally anchored in the opposite end bar.

In Fig. 10, I have shown a slight modification of the end dents adjacent the bar 11. In this

modification, at 20, I have indicated the dents as being soldered together on their ends. The solder 20 also connects the wire 14 at these points. Preferably the strips 11 are not bonded to the wire and dents as the wire and dents are made of steel while the strips are preferably made of aluminum. The ends of all the other dents between this point and the last several on the other end of the reed are left free as in Fig. 3. This arrangement prevents any possibility of the wire becoming freed at the end of the reed and the accidental release of the dents.

In Fig. 9, I have carried this step further and in addition to bonding the wire at the end of the reed with several of the dents, as in Fig. 10, I have also bonded together at 21, the ends of all the reed dents on one side of the reed but not the wire except of the first several dents from the ends of the reed.

In Fig. 8, I have shown a hollow tubular half-round strip 10*a*. In this construction the friction contact surface between the dents and strips is greatly reduced.

With my preferred construction, a damaged dent may be pulled out of the assembly, as shown in dotted lines, with a pair of pliers and a new dent inserted in a short matter of a few seconds.

At Fig. 5, I have illustrated, in exaggerated scale, the action of the dents 13*a*, 13*b* etc. when the dents are passing over a knot in the warp, special attention being directed to the withdrawn end of the dents. Dents 13*a* and 13*b* slide in the strips 10 and between the wire 14 returning to their normal position after the obstruction has passed through the dents. Any other operation of the loom operator which requires the spreading of the dents causes them to operate in the same manner. It will be noted that with this construction, there is very little strain placed upon the dents which can produce a permanent set in the metal. As a matter of fact, these dents may be spread to a much greater degree than is possible in reeds in which the dents are rigidly fixed in the strips and frame. For the purpose of maintaining the dents in alignment and to prevent them from creeping in one direction, I have provided the guard casing 15, better shown in Figs. 2 and 6. This casing 15 consists of an open sided tubing provided with a channel portion 16 which is adapted to fit over the ends of the dents 13, as shown in Figs. 2 and 6 and which prevent the dents from working out of engagement with the strips and spring coils. While the wire 14, to a limited extent, may have certain spring effects its prime action is more in the nature of a binder to tightly bind the strips and dents together and at the same time space the dents.

Cap members 17 are fitted over the ends of the assembled strips and bars and the casing 15 slides over the caps, the slots 18 in the caps engaging over the bars 11. After these elements have been assembled together, as shown in the upper left-hand corner of Fig. 1, the end is filled with solder, as shown at 20 thereby binding the connecting units together.

It will thus be seen that I have designed a very simple and efficient reed which is extremely flexible in operation and which lends itself to quick repair and while I have shown my preferred form somewhat in detail yet it is to be understood that I may vary the design or proportions or make other alterations and changes all of which are within the spirit of the invention within wide limits.

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

1. An improved reed for looms comprising in combination, a plurality of dents, end bars, half-round strips attached to said bars, the said dents frictionally held between the said strips, a continuous wire anchored in said end bars and continuously and progressively wound around said strips and between said dents and separating said dents, an outer guard casing having a channel provided on one side, said channel being adapted to receive and limit the end motion of said dents, caps located over the ends of said strips and under said casing, said casing, end portion of said strips and caps being soldered together, said casing having an open side engaged over the narrow sides of said dents.

2. An improved reed for looms comprising in combination, a plurality of dents, end bars, longitudinal dent strips attached to said bars, the said dents being slidably held between the said strips, a continuous wire anchored in said end bars and continuously and progressively wound around said strips and between said dents and separating said dents, an outer guard casing having a channel provided on one side, said channel being adapted to receive and limit the end motion of said dents, caps located over the ends of said strips and under said casing, said casing, end portion of said strips and caps being soldered together, said casing having an open side engaged over the narrow sides of said dents.

3. An improved reed for looms comprising in combination, a plurality of dents, end bars, longitudinal dent strips attached to said bars, the said dents being slidably held between the said strips, a continuous binder member anchored at both ends of said reed and continuously and progressively wound around said strips and between said dents and separating said dents, an outer guard casing having a channel provided on one side, said channel being adapted to receive and limit the end motion of said dents, caps located over the ends of said strips and under said casing, said casing, end portion of said strips and caps being soldered together, said casing having an open side engaged over the narrow sides of said dents.

4. An improved reed for looms comprising in combination, a plurality of dents, end bars, longitudinal dent strips attached to said bars, the said dents adjacent the end bars being solidly fixed together in the said strips and at their ends, the intermediate dents being slidably held between the said strips, a continuous binder member anchored at both ends of said reed continuously wound around said bars and between said dents in a progressive manner thereby separating and spacing said dents, an outer guard member provided with a channel on one side to receive the ends of said dents and limit the end movement of the said slidable dents, means for attaching said guard member at its end to said reed, an open face on one side of said guard member adapted to engage over the narrow edges of said dents.

SAMUEL S. HOLLAND.