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ADJUSTABLE SUSPENSION MEANS

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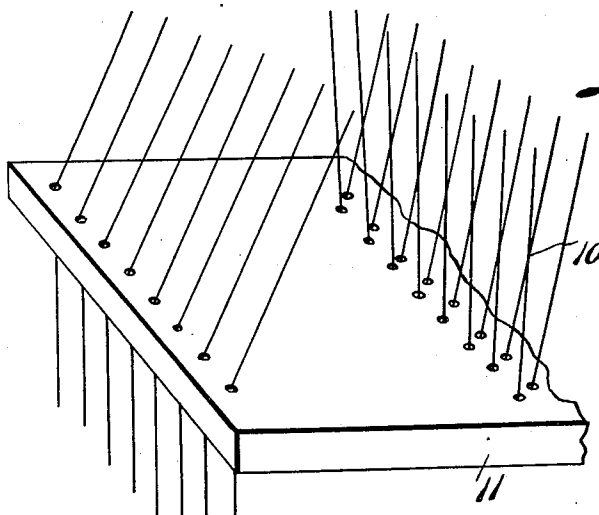


Fig. 1.

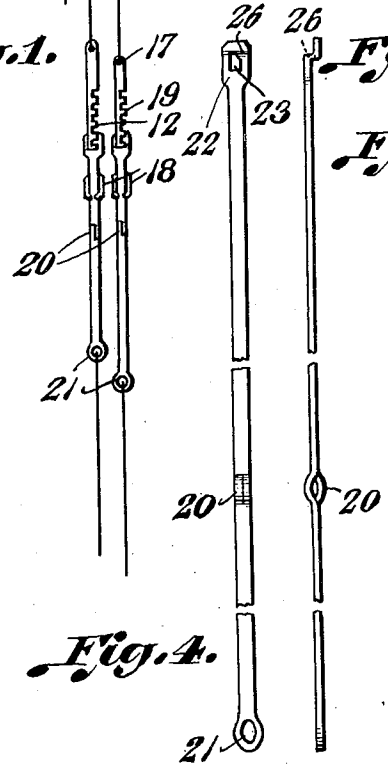


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

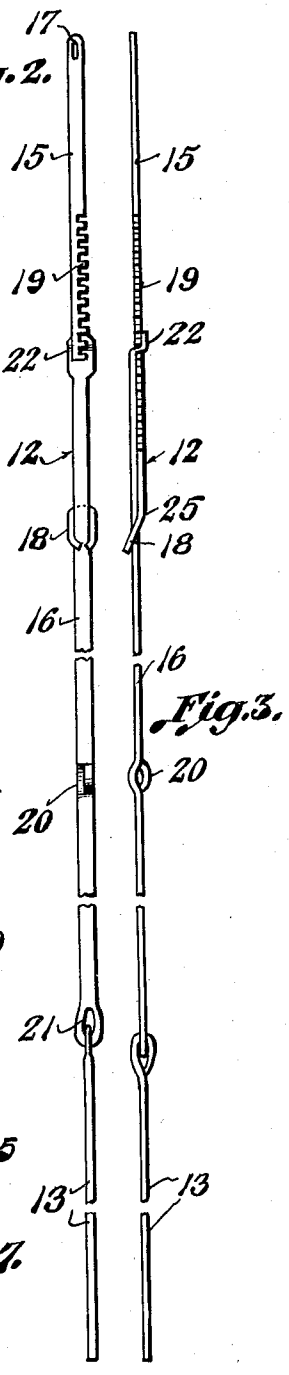


Fig. 2.

Fig. 3.

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ADJUSTABLE SUSPENSION MEANS

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3 Claims. (Cl. 139—88)

Our invention relates to suspension devices and more particularly to such a device wherein the suspension means is vertically, horizontally or otherwise adjustable, and it consists in the constructions, arrangements and combinations herein described and claimed.

It is a particularly important object of our invention to provide an adjustable heddle especially applicable to the harness of looms, thereby permitting lengthening or shortening of the heddle while still connected with the loom harness.

It is also an important object of the invention to provide novel interlocking means between a pair of aligned strap members which will permit a quick and ready attachment or detachment and which will be free of objectionable surface projecting portions which might interfere with required movements of the connected strap members.

It is a specific aim of our invention to provide an adjustable heddle which obviates the occurrence of knots which are made by securing the heddles to the harness thread, at the same height, thus avoiding interference between the heddles, which is a common difficulty with present heddles when used in weaving heavy count material. It also includes advantages in saving of harness building and harness changing, especially when different counts are required, in other words, when more ends or less ends per inch are necessary to weave a certain cloth, that the levelling of harness, "twisting-in" and "entering" and other labor pertaining to such change will be eliminated by the use of the adjustable heddle.

Other objects, advantages and features of invention will be apparent from the following description and accompanying drawing forming a part of this application, wherein

Figure 1 is a fragmentary perspective view of a jacquard harness with attached heddles.

Figure 2 is a front elevation of our adjustable heddle with attached lingo.

Figure 3 is an edge view thereof.

Figure 4 is a front elevation of the lower member of the heddle.

Figure 5 is an edge view thereof.

Figure 6 is a front elevation of the upper member of the heddle.

Figure 7 is an edge view thereof.

While our present drawing illustrates the adjustable suspension means as applied to a jacquard harness, we do not confine ourselves to this specific application of the invention, since it will be apparent that the structure may be applied to various suspension means requiring adjustment vertically, horizontally or otherwise although it is especially applicable to the adjustability of heddles, as will be set forth in detail hereinafter.

In the weaving industry, a great deal of difficulty and expense has been encountered in adjusting our heddles to a uniform height, and at the present must be accomplished by shortening or lengthening the harness threads at the juncture with the heddles, which practice produces knots which materially affect the weaving operations, especially when weaving heavy count material, since in such a situation the knots are thus brought into abutting relation, or in some instances may even encounter the comber board. The interference thus set up between the heddles would result in a defective weave.

In the drawing, Figure 1 illustrates generally a harness 10 as associated with a jacquard machine, including a comber board 11 through which the harness threads pass and suspend heddles 12, which in turn support lingoes 13. The harness 10 is connected to collets (not shown) as customary and well understood.

Our heddle, generally indicated by the reference character 12 is formed in two separate elements 15 and 16 constituting upper and lower elements respectively, and are constructed for adjustable interlocking engagement.

The upper element 15 includes an aperture 17 at one extremity for securement of a harness thread and at its other extremity there is formed an elongated open loop 18. One edge of the element 15 has formed therein serrations or teeth 19. The teeth 19 may have various formations, although in the present instance, we have illustrated the teeth of angular formation, and may have any suitable pitch and spacing.

The lower element 16 includes the usual eye 20, formed intermediate its length, and in operation of a loom these eyes should be maintained at the same height, in order that the weaving operation may progress properly. The lower extremity of the element 16 has formed therein an aperture 21 by means of which the lingoes are attached, and the upper end of the element 16 has a head 22 within which there is formed an irregular slot or aperture 23. As clearly shown in Figures 3 and 5, the head 22 is offset from the main body of the element 16, by virtue of a right angular shoulder 24. It should also be noted that the loop 18 is given a slight bend as indicated at 25, and the construction of the head 22 and loop 18 as specified is essential to assembly and interlock-

ing of the elements 15 and 16, as will be explained.

In practice, the elements 15 and 16 will be formed from flat or round steel or alloyed material so as to have the required flexibility, which is necessary during assembly of the elements 15 and 16.

The aperture 23 is of angular formation readily accommodating the element 15 therethrough and has a tooth 26 formed upon the inner edge of the offset portion adapted to register with spaces between the teeth 19 of the element 15, as may be clearly seen in Figure 2.

In assembling our heddle, the element 16 has its lower end inserted through the loop 18 and the outer end of the element 15 is then inserted through the aperture 23 of the head 22. With the element thus held in overlapped relation, in order to adjust the heddle to the proper length, it is only necessary to flex the elements 15 and 16 so as to "bow" them outwardly away from each other slightly, when the elements 15 and 16 will be free to slide longitudinally of each other. In order to obtain an interlocking of the elements, it is only necessary to allow the elements 15—16 to assume their normal state, in which case, the tooth 26 will register with one of the spaces defined by the teeth 19 and due to the inclination of the loop 18, a light frictional binding action is set up upon the element 16. It will thus be seen that a heddle is provided which may be quickly and readily adjusted while interconnected between the loom harness and the lingoes.

We claim:—

1. An adjustable suspension means comprising an upper and lower member, the upper member having an aperture for suspending the same, teeth formed upon the upper member, said upper member having a loop at its lower end for passage of the lower member therethrough, said lower member having an aperture for passage of the upper member therethrough, a tooth formed upon one edge of the last named aperture adapted to register between pairs of teeth of said upper member, and said loop being disposed at a slight angle to the vertical whereby to frictionally bind the lower member.

2. An adjustable heddle comprising an upper and lower member, the upper member having an aperture for attachment to a thread of the loom harness, teeth formed upon the upper member, said upper member having a resilient loop at its lower end for passage of the lower member therethrough, said lower member having an aperture for passage of the upper member therethrough whereby to overlap the upper and lower members, a tooth formed upon one edge of the last named aperture adapted to register between pairs of teeth of said upper member, an eyelet formed in the lower member intermediate its ends, and said lower member having an aperture at its lower end for suspension of a lingo.

3. An adjustable heddle comprising upper and lower flexible members arranged in overlapped contacting relation, the upper member having an aperture for attachment to a thread of a loom harness, teeth formed upon the upper member, said upper member having a resilient open loop at its lower end for passage of the lower member therethrough, the loop being disposed at a slight angle from the vertical whereby to frictionally bind the lower member, said lower member having an offset apertured head for passage of the upper member therethrough, projections formed upon the aperture of the head adapted to register between pairs of teeth of the upper member, an eyelet formed in the lower member intermediate its ends, and said lower member having an aperture at its lower end for suspension of a lingo.

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