Nov. 20, 1951 S. A. FERRARY 2,576,005

COMBINED HEDDLE AND LINGO AND METHOD OF MAKING THE SAME

Filed March 1, 1949

Fig 1

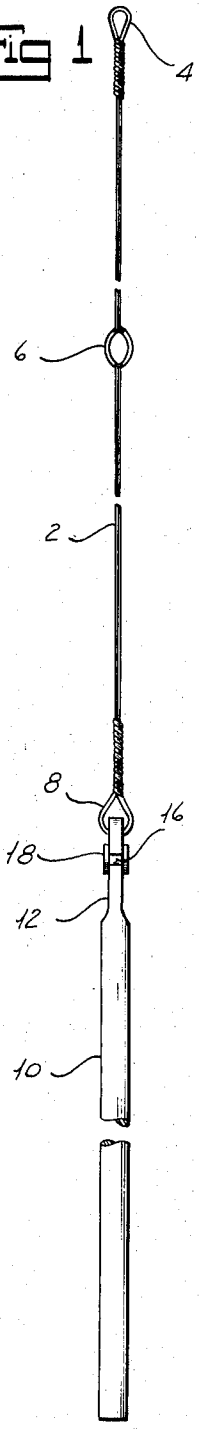


Fig 2

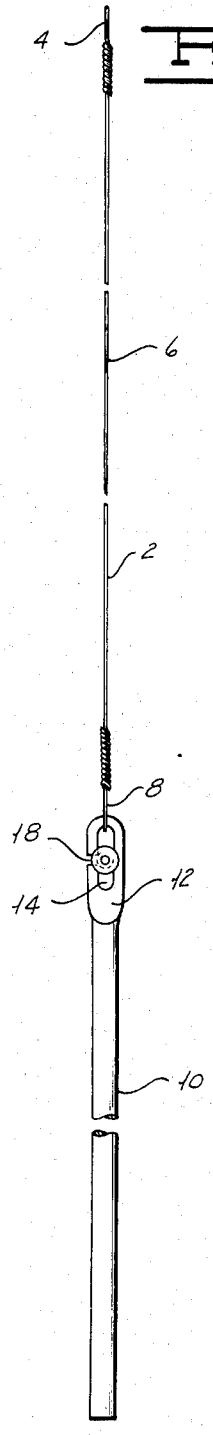


Fig 3

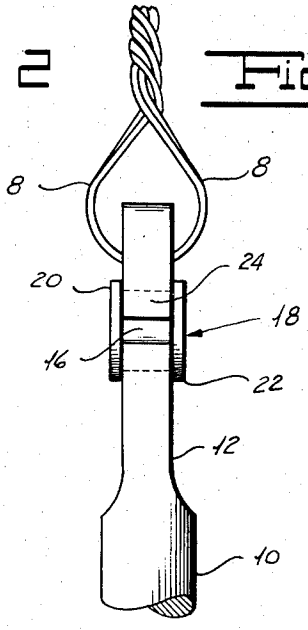
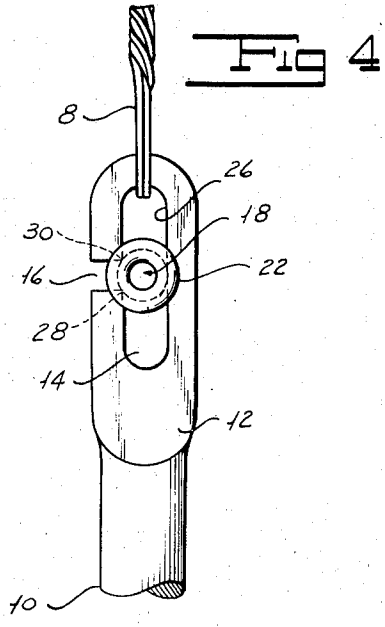


Fig 4



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Patented Nov. 20, 1951 2,576,005

UNITED STATES PATENT OFFICE

2,576,005

COMBINED HEDDLE AND LINGO AND METHOD OF MAKING THE SAME

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Application March 1, 1949, Serial No. 79,005

7 Claims. (Cl. 139—90)

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This invention relates to combined heddles and lingoes and to the method of making the same. More particularly the invention relates to the connection between a lingo and a heddle, and to the method of making such connection, whereby there is produced a composite article particularly adapted for use in Jacquard looms and the like.

The heddles now being used in the United States in Jacquard looms and the like are very largely those made of thin flat metal or wire of integral structure. Consequently the lingoes now available are those designed to make connection with such thin flat metal heddles. Such lingoes are of the type having a flattened portion at the top, such flattened portion incorporating an eye having a slot through one side thereof. The eye at the top of the lingo is connected to the eye at the bottom of the heddle, such latter eye being punched in the thin flat stock of the heddle, by turning the lingo sufficiently relative to the heddle to allow the thin flat portion at the bottom of the eye of the heddle to enter the eye in the lingo through the open slot therein. After such assembly the lingo is turned so as to lie as a prolongation of the heddle, the design of the eye on the heddle being such that the lingo cannot be withdrawn therefrom unless it is turned to an appreciable angle with respect to the heddle.

Although such described connection between heddle and lingo is satisfactory when the heddle is of the thin flat wire type, it is not when such lingoes are used in connection with a heddle, usually imported from abroad, which is made up of two round wires combined side by side and incorporating between them a separate thread guiding eye. The lingo attaching eye on such latter type of heddle has its loop formed from the two round wires. Consequently such loop is of such thinness that it readily slips out of the eye in the lingo through the open slot at the side. Thus considerable difficulty has been experienced in the use of the conventional type of lingo with the latter described heddle, the lingoes being dislodged from the heddle very easily both during installation of the combination of heddle and lingo, and also during operation of the loom.

It is accordingly an object of my invention to provide an improved connection between a heddle and a lingo whereby the two cannot become accidentally disengaged.

It is a further object of my invention, in a preferred embodiment thereof, to provide such novel connection between the heddle and the lingo whereby the conventional lingo may be satisfactorily employed with the latter described heddle discussed above, that is, that formed from two combined round wires.

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Another object of the invention resides in the provision of a novel method for effecting a permanent connection between the lingo and heddle, such connection, however, being permanent only so long as desired, the connection being readily broken by means of easily manipulated tools.

These and further objects of the invention will be more readily apparent in the following description of a preferred embodiment thereof.

In the drawings accompanying the disclosure and forming a part thereof:

Fig. 1 is a view in front elevation of a combined heddle and lingo made in accordance with the invention;

Fig. 2 is a view in side elevation of the combined heddle and lingo shown in Fig. 1;

Fig. 3 is a view in front elevation, in enlarged scale, of the connection between the lingo and heddle shown in Fig. 1; and

Fig. 4 is an enlarged view in side elevation of such connection between the heddle and lingo.

Referring to the drawings, in the particular embodiment of my invention therein shown, 2 is a Jacquard heddle made, in this instance, of two round wires soldered together and combined as explained, such heddle having an eye 4 at the upper end for the attachment of the control cord of the Jacquard mechanism. A warp eye 6 is incorporated in the heddle intermediate its ends, as shown, and an eye 8 is provided at the lower end of the heddle for the attachment of the lingo 10.

The lingo 10 which, as above explained, is designed for attachment to the ordinary thin flat metal heddle, is provided on its upper end with a flat portion 12. Within portion 12 there is provided a longitudinal slot or eye 14, there being a transverse slot 16 through the forward wall of the eye, such slot extending inwardly into communication with slot 14. The portions of the sidewall of the lingo eye abutting the said slot 16 are substantially rigid, so that slot 16 remains of substantially constant width. It is through such slot 16, which, in the embodiment shown, is located substantially midway between the top and bottom ends of eye 14 and at a right angle to the length of eye 14, that the eye 8 of the heddle is introduced into eye 14. It will be apparent from the drawings that the eye 8, which is formed from two combined parallel round wires, may quite readily slip out through the slot 16 during operation of the loom, particularly if

the lingo 10 is jarred upwardly and becomes turned slightly out of the vertical.

The present invention provides readily applied means whereby the eye 8 of the heddle is prevented from detachment from the eye 14 of the lingo after the lingo and heddle have been assembled as shown. More specifically, such means is in the form of a stud stably held within the eye of the lingo and blocking the inner end of the slot 16. Such means, in the preferred embodiment, takes the form of a hollow, easily deformed rivet 18 made, for instance, of copper, such rivet having a preformed head 20 and a cylindrical stem 24. Rivet 18 is preferably so chosen as to size that before it is headed or clinched in the lingo eye its stem 24 fits snugly and is held stably in position by engagement with the rear wall 26 of eye 14 and with the two confronting inner corners 28 and 30 of the slot 16. The rivet, unheaded on its forward end, is inserted in a direction from left to right in Fig. 3 into the eye 14 after eye 8 has been inserted into eye 14 of the lingo, and with the loop of eye 8 located in the upper end of eye 14, following which the previously unheaded end at the right in Fig. 3 is upset or headed to form the flange 22. The heads or flanges 20 and 22 of the rivet overlie inner portions of the side faces of part 12 of the lingo bordering the eye 14 and thus prevent axial motion of the rivet with respect to part 12.

It will be apparent that, with rivet 18 so positioned, escape of eye 8 of the heddle from eye 14 of the lingo is effectively prevented. At the same time, however, the upper portion of slot 14 in the eye of the heddle is left free and unencumbered, thereby allowing the heddle and lingo to move angularly relative to each other to a substantial degree about the connection between them. This allows the lingo to maintain the heddle in the desired vertical position, and produces a combination which functions much more satisfactorily than does the combination of heddle and lingo in which a rigid connection is employed between such parts.

The connection of the invention displays the further advantage that the heddle and lingo may readily be disassembled if so desired. When it is desired to detach the lingo from the heddle, all that is necessary is that the rivet 18 be removed. This may be accomplished in a variety of ways including for instance, by the grinding off of one of the heads 20 or 22 of the rivet, allowing its axial withdrawal, and by the drilling of the rivet from the eye. Preferably, however, removal of the rivet is effected by the punching out of the rivet from the eye 14 by a hand pressing tool.

Although I have disclosed as preferable the use of a hollow rivet to block the entrance to the slot 16 in the eye of the lingo, it is to be understood that within the scope of the invention various other stud providing means functioning in a similar manner may be employed for such purpose. Included among such means are, for example, a solid rivet, a bolt, and a cotter pin. Furthermore, although it is preferred to employ a deformable stud member, the central portion of which is of such diameter that it is stably held between the rear inner wall 26 of the lingo eye and the inner corners 28 and 30 of the transverse slot before the stud member is headed or deformed, it is possible to employ a deformable stud member, the central portion of which is of smaller diameter, so that, for example, it will slide along eye 14. When such smaller diameter stud member is employed, the deformation thereof to form a head thereon will be carried out so as simultaneously to upset the central portion to increase its diameter so that it snugly engages the wall 26 and the corners 28 and 30 of the lingo eye, thereby to immobilize the stud member and to block slot 16.

Although for purposes of illustration I have described and illustrated preferred embodiments of the combined heddle and lingo of my invention and of the method of making the same in accordance with my invention, it is to be understood that my invention is not limited thereto since it is capable of considerable variation as to details. The invention is therefore to be defined by the scope of the claims appended hereto.

I claim as new the following:

1. A combined heddle and lingo, the heddle having an eye near the lower end thereof and the lingo comprising a rod having an eye in its upper end, there being a slot of appreciable width in the forward sidewall of the eye in the lingo through which the heddle eye may be threaded into the lingo eye, the portion of the sidewall of the lingo eye abutting the slot being substantially rigid, the heddle and lingo being so connected, and means inserted in the eye of the lingo and in contact with the rear wall thereof and with the inner edges of the slot in the forward wall thereof closing the slot in the sidewall of the lingo eye to prevent escape of the heddle eye therethrough.

2. A combined heddle and lingo, the heddle having an eye near the lower end thereof and the lingo comprising a rod having an eye in its upper end, there being a slot of appreciable width in the forward sidewall of the eye in the lingo substantially intermediate the ends of such eye through which the heddle eye may be threaded into the lingo eye, the portion of the sidewall of the lingo eye abutting the slot being substantially rigid, the heddle and lingo being so connected, and means in the form of an inserted stud in the eye of the lingo, such stud being in contact with the rear wall of the eye of the lingo and with the inner edges of the slot in the forward wall thereof to prevent escape of the heddle eye through the slot in the eye of the lingo.

3. A combined heddle and lingo, the heddle having an eye near the lower end thereof and the lingo comprising a rod having an eye in its upper end, there being a slot of appreciable width in the forward sidewall of the eye in the lingo substantially intermediate the ends of such eye through which the heddle eye may be threaded into the lingo eye, the portion of the sidewall of the lingo eye abutting the slot being substantially rigid, the heddle and lingo being so connected, means in the form of an inserted stud in the eye of the lingo, such stud being in contact with the rear wall of the eye of the lingo and with the inner edges of the slot in the forward wall thereof to prevent escape of the heddle eye through the slot in the eye of the lingo, and means to prevent axial withdrawal of the stud from the lingo eye.

4. A combined heddle and lingo, the heddle having an eye near the lower end thereof and the lingo comprising a rod having an eye in its upper end, the eye in the lingo being elongated and in line with the length of the lingo rod, there being a slot of appreciable width in the forward sidewall of the lingo eye substantially intermediate the ends thereof, the heddle eye being adapted to be threaded through the slot in the lingo eye, the portion of the sidewall of the lingo eye abutting the slot being substantially rigid, the heddle and lingo being so connected, the eye of the heddle lying within the upper portion of the eye of the lingo, and a rivet inserted in the lingo eye and headed over therein to prevent escape of the

heddle eye through the slot in the lingo eye, the central portion of the rivet lying snugly in contact with the rear wall of the eye of the lingo and with the two inner edges of the slot of the forward wall of such eye, there being heads on both ends of the rivet overlying partially the inner edges of the lingo eye in the vicinity of the slot through the sidewall thereof, whereby the rivet is prevented from axial withdrawal from the lingo eye.

5. A combined heddle and lingo, the heddle having an eye near the lower end thereof and the lingo comprising a rod having an eye in its upper end, the eye in the lingo being elongated and in line with the length of the lingo rod, there being a slot of appreciable width in the forward sidewall of the lingo eye substantially intermediate the ends thereof, the heddle eye being adapted to be threaded through the slot in the lingo eye, the portion of the sidewall of the lingo eye abutting the slot being substantially rigid, the heddle and lingo being so connected, the eye of the heddle lying within the upper portion of the eye of the lingo, and a hollow rivet inserted in the lingo eye and headed over therein to prevent escape of the heddle eye through the slot in the lingo eye, the central portion of the rivet lying snugly in contact with the rear wall of the eye of the lingo and with the two inner edges of the slot of the forward wall of such eye, there being heads on both ends of the hollow rivet overlying partially the inner edges of the lingo eye in the vicinity of the slot through the sidewall thereof, whereby the rivet is prevented from axial withdrawal from the lingo eye.

6. The method of making a combined heddle and lingo which comprises providing a heddle with an eye at its lower end, providing a lingo with an eye at its upper end, the eye in the lingo having a transverse slot in its forward sidewall, inserting the eye of the heddle into the eye of the lingo through the transverse slot in the forward sidewall of the latter, and closing the slot in the forward sidewall of the lingo eye to prevent escape of the heddle eye therefrom by inserting into the lingo eye a rivet having a head at one end, positioning the stem portion of the rivet

opposite the transverse slot in the lingo eye sidewall, and heading the forward end of the rivet to form a flange which overlies the inner side edges of the lingo eye in the vicinity of the transverse slot therein, the thus positioned and headed rivet stably fitting within the lingo eye in contact with the rear wall of such eye and with the inner two corners of the transverse slot in its forward wall.

7. The method of making a combined heddle and lingo which comprises providing a heddle with an eye at its lower end, providing a lingo with an eye at its upper end, the eye in the lingo having a transverse slot in its forward sidewall, inserting the eye of the heddle into the eye of the lingo through the transverse slot in the forward sidewall of the latter, positioning and maintaining the loop of the eye of the heddle in the upper end of the eye in the lingo, and closing the slot in the forward sidewall of the lingo eye to prevent escape of the heddle eye therefrom by inserting into the lingo eye a rivet having a head at one end, the stem portion of the rivet being of such diameter that it stably fits within the lingo eye in contact with the rear wall of such eye and with the inner two corners of the transverse slot in its forward wall, so that travel of the rivet longitudinally of the lingo eye is prevented, and heading the forward end of the hollow rivet to form a flange which overlies the inner side edges of the lingo eye in the vicinity of the transverse slot therein.

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