This invention concerns a weight for a Jacquard heddle, adapted to be engaged thereto or removed therefrom directly without the interposition of a connecting ring or the use of other aids.

Jacquard weights are usually connected to the Jacquard heddle by rings known as connection rings. This traditional connection between the heddle and weight allows the weight to pendulate on the heddle. Under certain conditions of working conditions where higher loom speeds, tightly adjusted warps and sensitive warp yarns are used this loose connection is not always sufficient.

Attempts have been made to omit the connection rings, as they tend to interfere with the adjacent heddles and cause operational faults, and to connect the Jacquard weight directly to the heddle.

The majority of these attempts provide a rigid connection between the Jacquard heddle and weight. The rigid connection has however certain disadvantages in that such heddles require an especially careful handling so that, whilst preparing the harness, drawing in the warp and tying broken warp threads, the relatively thin heddles are not bent out of shape and in consequence requiring an additional room for building the shed and causing damage to adjacent warp threads by rubbing.

It is likewise not possible to use Jacquard heddles rigidly connected to the weights if due to temporary changes of the loom for dobby weaves, the heddles and weights hanging on the cords of the harness have to be bundled together, put in a case and drawn up to hang below the Jacquard machine. Far too many heddles would be snapped or bent so that the harness would be unusable.

Other known solutions have a direct articulated connection between the heddle and weight. These, as also do those having the rigid connection have the disadvantage that the connection can only be effected with a great expenditure of working time and by using a shell stretching of the heddle, that the connection, cannot be undone without destroying the heddle or the weight, and that the weights, provided with only a hook shaped head, come undone during the preparation of the harness.

Another type of connection consists in extending the lower end of the heddle to a tongue, pushing this tongue through a hole in the head of the weight, turning it back, drawing it through the end eyelet hammering it over and pressing it flat.

This method of securing however has the disadvantage that it can only be used with flat steel heddles. The special provision of end loops for the heddles increases the cost of their production and the bending of the flat steel band over too narrow a radius may cause a breakage at the bend.

According to the invention a weight adapted to be connected to the loop on the lower end of a Jacquard heddle, has at least one position therealong forming opposed spaced jaw members, and a projection or a peg carried by one of said shanks or jaw members in the region of said enlargement and adapted to bear resiliently against the opposed wall surface of the other shank, so arranged that the shanks or jaw members may be forced apart to allow said end loop to be introduced therebetween and released to trap the end loop with the peg or pin projection passing therethrough, said end loop being free to move between the shanks.

The invention will be apparent from the following description with reference to the accompanying drawings, which show by way of example only, one embodiment thereof.

Of the drawings:

FIG. 1 shows a Jacquard heddle having a head constructed according to the invention.

FIG. 2 shows the head of the Jacquard heddle weight held apart for securing on the lower end loop of a heddle.

FIG. 3 shows a side elevation corresponding to FIG. 2.

FIG. 4 shows the head of the Jacquard weight hung in the lower end loop of a heddle.

FIG. 5 shows a side elevation corresponding to FIG. 4.

The Jacquard weight 1 illustrated in FIG. 1 consists of an elongated metal rod of circular cross section.

The weight 1 has a specially constructed head 2, which is illustrated in FIGS. 1, 4 and 5 in the closed position and in FIGS. 2 and 3 in the open position. The head 2 is chamfered on two opposite faces down to a thickness of at least the inner diameter of the lower end loop 10 of a Jacquard heddle 9 and is provided with a longitudinal slit or longitudinally extending slot 3, forming two yielding longitudinal opposed spaced jaw members or shanks 4 and 5.

The longitudinally extending slot or slit 3 is enlarged at 7 to the thickness of the double wire or flat steel band of which the lower end loop 10 is made to form opposed internal walls. As can be seen the slit or slot 3 extends longitudinally considerably beyond the enlargement 7 so that the latter lies substantially in the longitudinal centre of the slit or slot 3. The shank 4 has a transverse pin or peg 6 in the area of enlargement 7, having a size which is nearly the same as the inner diameter of the lower end loop 10 of the Jacquard heddle 9. The projection, pin or peg 6 protrudes transversely of said enlarged portion from one of said opposed internal walls a distance at least as far as the thickness of the double wire or steel band of which the lower end loop 10 is made and into engagement with the other opposed wall.

Due to the inherent springiness of the shanks 4 and 5 which is achieved by the length of the longitudinally extending slot or slit 3 there is normally no clearance between peg 6 and shank 5. To prevent the end loop 10 of Jacquard heddle 9 when secured by the head 2, from pivoting laterally over the end of shank 4 or shank 5 on severe oscillating movement in the loom or during transport and jamming in such a position, the shanks 4 and 5 are extended outwardly beyond the transversely extending pin or peg 6 to provide extensions 4a and 5a.

FIGS. 2 and 3 show how the two shanks 4 and 5 can be parted apart by inserting a spike 8 into the slit 3. In this way a passage is opened between the peg 6 and the internal wall of the shank 5 which allows the lower end loop 10 of heddle 9 to be introduced therein. As soon as the transversely extending pin or peg 6 enters the end loop 10, the spike 8 is withdrawn whereupon the shanks 4 and 5 spring together, and the longitudinally extending pin or peg 6 presses against and engages the opposed internal wall of the shank 5 and secures the loop 19 to the head 2. FIGS. 4 and 5 show that the weight 1 when secured to the lower loop 10 of heddle 9 can freely pendulate on the end loop 10 of the heddle 9 in one direction, but not in the other. The desired lateral play of the end loop 10 can (FIG. 4) be influenced by size of the transversely extending pin or peg 6 and clearance between the extensions 4a and 5a of shanks 4 and 5 respectively.

As the end loop 10 of the heddle 9 encircles the transversely extending pin or peg 6 with only small freedom for
vertical movement relative thereto ware of the loop 10 by the constant raising and lowering thereof during weaving is prevented to a very appreciable extent.

Since the cross-section of the head 2 does not exceed that of the weight 1 a relatively smooth operation of the jacquard cords or harness is ensured.

The weight 1 as illustrated combines all the advantages of the known weights without their disadvantage. The weight 1 may be connected directly to the head without the interposition of connecting rings or the aid of shells or rivets, and may be secured to any normal trade jacquard heddles, Jacquard heddles and so on having normal lower end loops.

The construction of the head 2 allows an articulate pendulate connection, and has no lateral openings of any description which could entangle with adjacent heddles or weights.

Neither heddle 9 nor the weight 1 have to be soldered, welded, heated, pressed or otherwise worked to bring about their connection such being possible rapidly with the aid of a spike 8, and even so the connection cannot be loosened by heavy oscillation during weaving.

The weight 1 can be removed from the heddle 9 at any time by prying apart the two shanks 4 and 5 with a spike 8 and refitted as often as desired since neither the heddle 9 nor the weight 1 are deformed during the fitting or removing operations.

The weight 1 according to the invention may continue to be used even when the heddles become worn out or damaged, and it is also possible to change the weights on existing heddles if it should prove that these are too light or too heavy, too long or too short, in order to achieve the best operating conditions on the loom.

While I have herein described and illustrated in the accompanying drawings what may be considered typical and particularly useful embodiment of my said invention, I wish it to be understood that I do not limit myself to the particular details and dimensions described and illustrated; for obvious modifications will occur to a person skilled in the art.

What I claim as my invention and desire to secure by Letters Patent is:

A weight adapted to be detachably connected to the loop on the lower end of a Jacquard heddle, comprising an elongated rod having a flattened head portion at one end thereof, said flattened head portion being slotted inwardly from the end thereof to provide a pair of yielding shank portions, the inner walls of said longitudinally extending slot being cut away inwardly from the end of said head a distance substantially equal to one half the length of said longitudinally extending slot to form opposed jaw members arranged in spaced apart relation and to provide a space for accommodating the loop on said heddle, and a transversely extending pin projection on one of said jaw members adapted to extend transversely of said cut-away portion through said loop and engage the opposite wall of said other jaw member to detachably connect said weight with said heddle, said space being formed to accommodate a pointed instrument to permit said jaws to be yieldingly separated when said loop is inserted and removed from said projection.

References Cited by the Examiner

UNITED STATES PATENTS
461,638 10/91 Marco 139—90
1,448,811 3/23 Morrison 24—255
2,022,623 11/35 Kaufmann 139—90
2,481,346 9/49 Rigby 43—44.95 XR

FOREIGN PATENTS
1,218,383 12/59 France.
1,236,257 6/60 France.
195,858 4/23 Great Britain.
916,340 1/63 Great Britain.

DONALD W. PARKER, Primary Examiner.
RUSSELL C. MADER, Examiner.