July 12, 1932. R. K. ROBERTSON 1,866,908

HEDDLE FRAME

Filed April 12, 1930

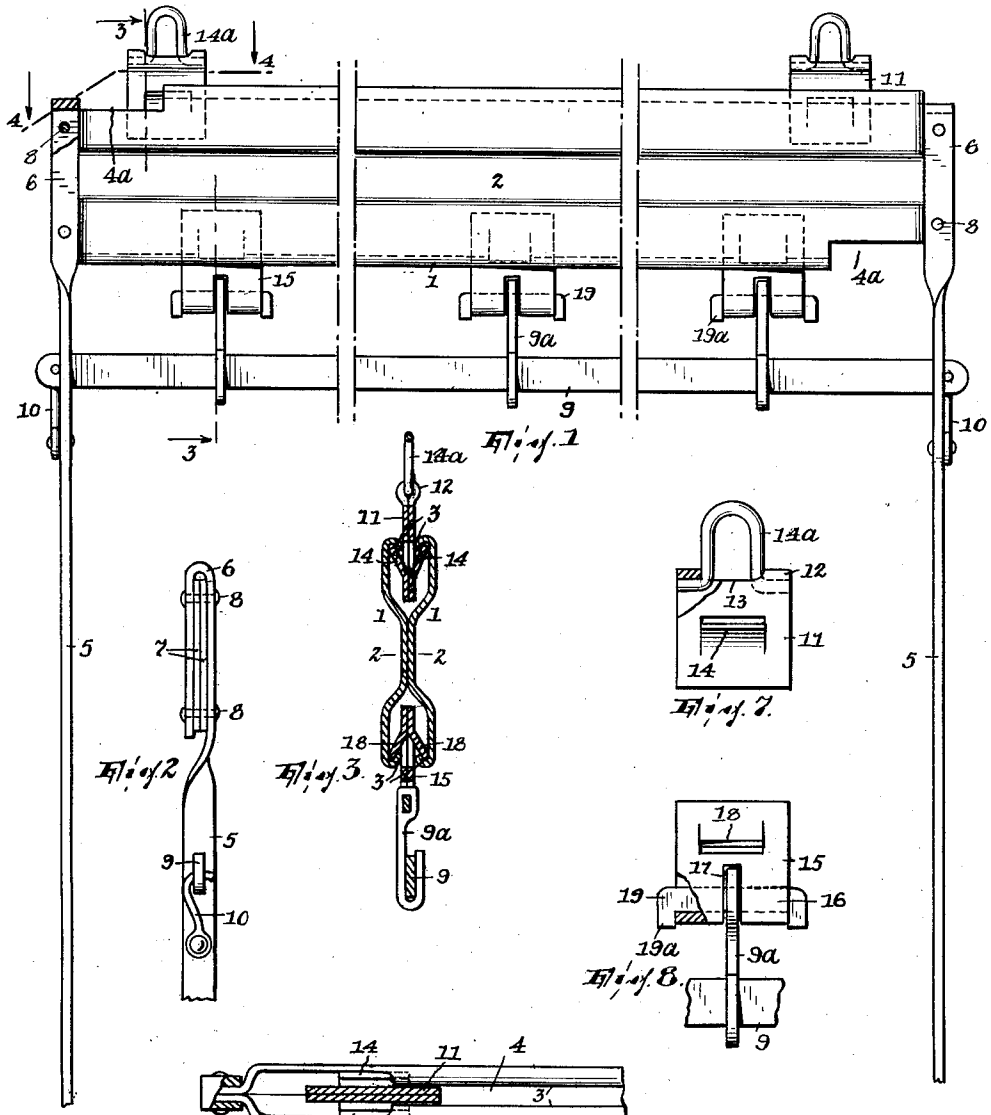


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 7.

Fig. 8.

Fig. 4.

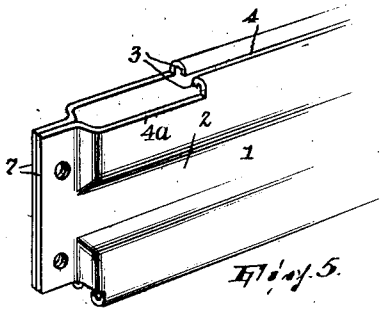


Fig. 5.

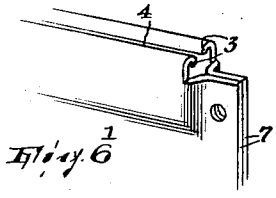


Fig. 6.

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Patented July 12, 1932 1,866,908

UNITED STATES PATENT OFFICE

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HEDDLE FRAME

Application filed April 12, 1930. Serial No. 443,734.

This invention relates to heddle frames for looms and particularly heddle frames in which the heddles are strung on horizontal heddle bars supported at their ends in side-bars of the frame proper and also supported between their ends by links, as hooks, which in turn are supported so as to be free to shift lengthwise of the heddle bars. One object is to construct a heddle frame which shall be mainly if not entirely of metal, and therefor more durable than the ordinary frame in which usually the top bars of the frame proper are formed of wood, and which shall not be of undue weight and not cause interference with adjoining heddle frames in their up and down motion when in use. Another object is to provide for easy attachment and detachment of means whereby both to connect the heddle frame to its actuating means and said links to the heddle frame proper.

In the drawing:

Fig. 1 shows the upper part of a heddle frame embodying the invention, it being understood that the lower part may be a reverse counterpart thereof;

Fig. 2 is an end elevation;

Fig. 3 a section on line 3—3, Fig. 1;

Fig. 4 a section on line 4—4, Fig. 1;

Figs. 5 and 6 are perspective views of the upper corners of the frame proper;

Fig. 7 is an elevation, partly broken away, of one of the connectors by which the heddle-frame is attached to its actuating means; and,

Fig. 8 is a similar view of a connector by which a heddle-bar-supporting link is connected to the heddle-frame proper.

The horizontal bar (as illustrated, the top bar) of the frame proper is composed of two sheet metal strips 1 1 channeled or longitudinally recessed at 2 and having the (flat) faces of the ribs formed as a consequence of this channeling secured face to face (Fig. 3), as by spot-welding, and each also having its longitudinal edges bent inward as returned flanges 3, those on one strip spaced from those on the other so that a contracted mouth or slit 4 exists between each two flanges lengthwise of the completed bar. The pairs of flanges are preferably cut away at 4*a*, one at one end and the other at the other, to eliminate the flanges or stops for a purpose to appear.

The side-bars 5 are flat strips, each having its end twisted through 90 degrees from the normal and also rebent (Fig. 2). These rebends or crotches 6 receive the ends 7 of the horizontal bar, which ends are flattened (Figs. 4 to 6) and secured therein by rivets 8, the opposite exterior faces of the rebends being moreover flush with the edges of the remaining or main portions of the side bars (Fig. 2), this construction imparting strength and avoiding presence of any projection beyond either vertical face of the horizontal bar; further the rebends impart a rounded finish to the corners of the frame.

9 designates the heddle-bar supported at its ends in the side-bars 5 and removably secured therein by hooks 10, all as usual. 9*a* designates the links, as hooks, by which the heddle bar is supported between its ends.

Each of the mentioned connectors consists of a generally flat member having a catch or catches so that upon forcing it into one of the slits 4 of the mentioned horizontal bar its catch will engage and form with the flanges 3 of the bar an interlock opposing return movement of the member. In the illustrated construction of each connector for use in attaching the heddle-frame to its actuating means a plate 11 is rebent upon itself so as to provide an eye or loop 12 at the bend (which is also centrally apertured at 13), and each leaf of the plate has a cut-out portion 14 which is bent outward to form the mentioned catch, its free end forming a locking shoulder and being directed toward the bend. A staple 14*a* having its ends bent from each other protrudes from the aperture 13, its ends being received in the loop 12 (forming an attaching portion therefor), and it forms the means to

which to attach the connector to one of the cords or equivalent means whereby the frame is actuated. The illustrated construction of each connector for use in attaching the links 9*a* to the heddle-frame proper is similar to that of the connectors already described, to wit, a rebent plate 15 whose bend forms an eye or loop 16 (centrally apertured at 17) has on each leaf thereof a cut-out portion 18 bent outward to form a catch, its free end forming a locking shoulder and being directed toward the bend. A flat pin 19 penetrates the loop (forming an attaching portion therefor) and has ears 19*a* holding it from endwise displacement and it also penetrates the link 9*a* which is received in aperture 17. It being understood that the catches on the connectors or the mouth portions of the horizontal bar or both, have sufficient resilience to return them when distorted from their normal positions, any of the connectors may be attached to the bar by wedging it into the mouth 4 (top or bottom, as the case may be), and when once forced in until its catches have passed the flanges 3 it is secure against return; in other words, one of the two parts involved has a recess (as the channel of the bar) formed with a contracted mouth and the other is formed wedge-like and has a locking shoulder (as the free end of catch 14 or 18) engaging said mouth inwardly thereof and opposing withdrawal of the latter part. To remove the connectors they may be slid along the bar until they reach the point at 4*a* where the contracted mouth 3 terminates.

Each connector is of greater extent lengthwise of the channel than its mouth 4 is wide so that it cannot skew appreciably out of a given plane; in fact its thickness about equals the width of said mouth in the illustrated construction (Fig. 3).

Having thus fully described my invention what I claim is:

1. In a heddle-frame, a heddle-frame proper including a flat metal side-bar having its end portion twisted 90 degrees from the normal and rebent and a horizontal bar having its end held in the rebend of the side-bar, opposite exterior faces of the rebend being substantially flush with the edges of the remaining portion of the side-bar.

2. In a heddle-frame, a heddle-frame proper including, with a horizontal bar consisting of a pair of longitudinally channeled sheet-metal strips having their ends flattened and bearing against each other, a side-bar having its end formed with a crotch substantially equal in width to the combined thicknesses of and receiving said flattened ends of the strips.

3. In combination, a heddle-frame proper having a horizontally extending attaching portion and a connector attached to said portion, one of the parts formed by said portion and the connector having a recess receiving the other and such recess formed with a contracted mouth and the other part being a wedging member and having a locking shoulder engaging said mouth inwardly thereof and thereby opposing withdrawal of said other part from the first part, said other part being entered into the first part wedge-fashion.

4. In combination, a heddle-frame proper having a horizontally extending attaching portion and a connector attached to said portion, one of the parts formed by said portion and the connector having a channel receiving the other and such channel formed with a contracted mouth and the other part being a wedging member and having locking shoulder engaging said mouth inwardly thereof and thereby opposing withdrawal of said other part from the first part, said other part being entered into the first part wedge-fashion.

5. In combination, a heddle-frame proper having a horizontally extending attaching portion and a connector attached to said portion, one of the parts formed by said portion and the connector having a channel receiving the other and such channel formed with a contracted mouth and the other part being a wedging member and having locking shoulder engaging said mouth inwardly thereof and thereby opposing withdrawal of said other part from the first part, said other part being entered into the first part wedge-fashion and having greater longitudinal extent within the channel than the corresponding portion of the channel is wide.

6. In a heddle-frame, a connector for the purpose described consisting of a piece of resilient sheet-metal having a portion for attaching the connector to one of the elements to be connected and a catch cut out of and diverted from the normal plane of the piece for attaching the connector to the other such element.

7. In a heddle-frame, a connector for the purpose described consisting of a piece of sheet-metal rebent on itself to form opposed leaves, the bend affording the portion of the connector for attaching the same to one of the elements to be connected and one leaf having a catch projecting from the plane thereof, for attaching the connector to the other such element.

8. In a heddle-frame, a connector for the purpose described consisting of a piece of sheet-metal rebent on itself to form opposed leaves, the bend affording the portion of the connector for attaching the same to one of the elements to be connected and each leaf having a catch projecting from the plane thereof for attaching the connector to the other such element.

9. In a heddle-frame, a connector for the purpose described consisting of a piece of

sheet-metal rebent on itself to form opposed leaves, the bend having an aperture between its ends, and one leaf having a catch projecting from the plane thereof, in combination with an attaching member arranged in the bend and thereby attached to the connector and having its own attaching portion at the aperture.

In testimony whereof I affix my signature.

ROBT. K. ROBERTSON.