No. 753,380. PATENTED MAR. 1, 1904.

J. C. EDWARDS.

CLAMPING DEVICE FOR HEDDLE BARS OR SUPPORTS.

APPLICATION FILED NOV. 4, 1903.

NO MODEL.

Fig: 1.

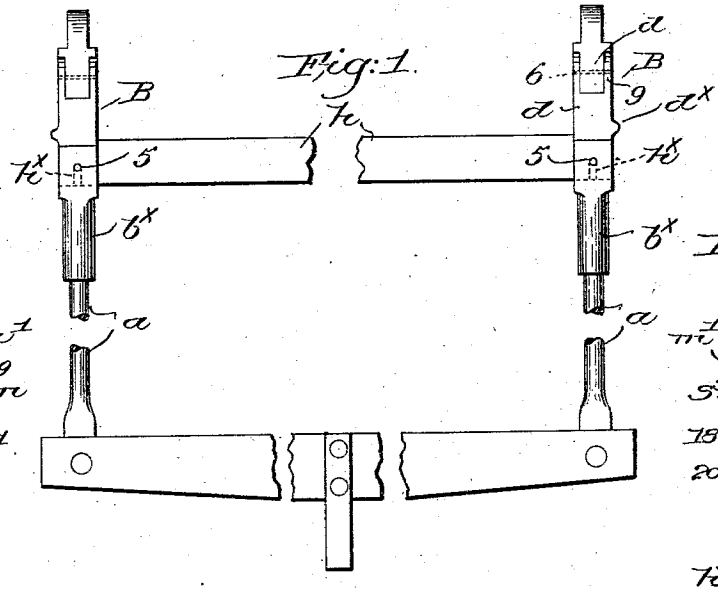


Fig: 5.

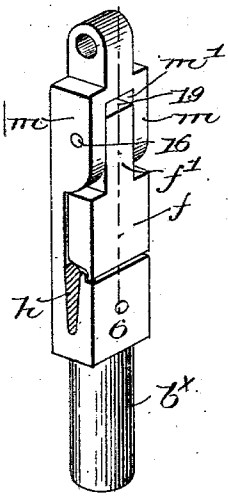


Fig: 6.

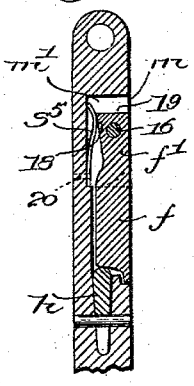


Fig: 2.

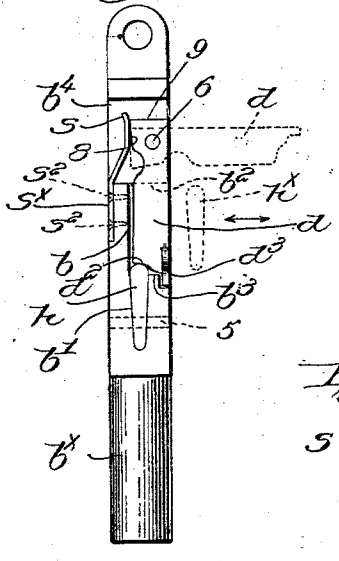


Fig: 3.

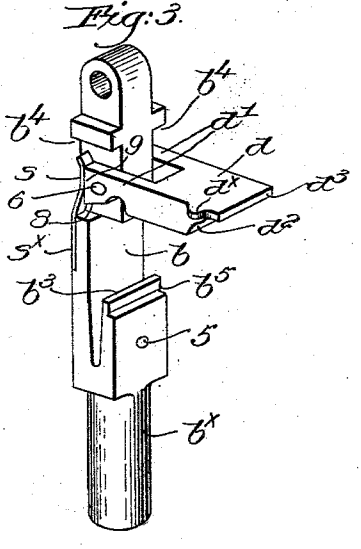
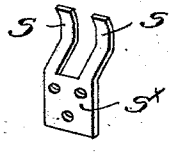


Fig: 4.



Witnesses.
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No. 753,380. Patented March 1, 1904.

UNITED STATES PATENT OFFICE.

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CLAMPING DEVICE FOR HEDDLE BARS OR SUPPORTS.

SPECIFICATION forming part of Letters Patent No. 753,380, dated March 1, 1904.

Application filed November 4, 1903. Serial No. 179,762. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. EDWARDS, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Clamping Devices for Heddle Bars or Supports, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of a novel and effective device for clamping the detachable heddle-support in operative position on a loom harness-frame, the construction and arrangement being such that the positioning of the heddle-support or its detachment from the harness-frame is readily and quickly effected. Heretofore in some devices of this character the ends of the heddle-support have been inserted by an endwise movement in longitudinal slots in the heads of the side bars of the harness-frame and then seated at the lower ends of the slots and held therein by various devices. In my present invention the seats are formed within the heads and have open entrances which admit the heddle-support by a movement directly toward the seat, obviating moving the support endwise, and means are provided to securely and positively retain the heddle-support in proper position when so seated.

The various novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a front elevation centrally broken out of a loom harness-frame with one form of my invention embodied therein, the heddle-support being shown in its operative position. Fig. 2 is an enlarged side elevation of one of the heads illustrated in Fig. 1, the means for retaining the heddle-support seated being shown in dotted lines in position to permit the entrance or removal of the heddle-support. Fig. 3 is an enlarged perspective view of the head shown in Fig. 2 with the heddle-support omitted and the retaining means therefor in its inoperative position. Fig. 4 is a perspective view of the controlling-spring for the retaining means. Fig. 5 is a perspective view of a modified form of head for use with a different form of spring, to be described; and Fig. 6 is a partial section on the line 6 6, Fig. 5.

Referring to Fig. 1, the harness-frame comprises a bottom cross-bar $a^{\times}$ and rigidly-attached upright side bars a, which are in practice threaded at their upper ends to screw into threaded bosses $b^{\times}$ of heads B, usually made as castings, and with the exception of said heads the harness-frame is of well-known construction. The heddle-support h is a flat bar notched at $h^{\times}$ near each end (see dotted lines Fig. 1) for a purpose to be described, the heddle-support being generally made somewhat thicker near its upper edge, as shown in Fig. 2. In the present embodiment of my invention each head B is cut away or recessed at b in one of its faces, preferably the front face, when the frame is in place in the loom, and at the lower end of the recess a transverse seat b' is formed, the walls of which are slightly convergent toward the bottom of the seat to correspond with the cross-section of the heddle-support h. The seat is shown as extended from one to the other side of the head and is adapted to receive one end of the heddle-support, the notch $h^{\times}$ therein being entered by a cross-pin 5, preventing any relative lateral movement of the side bars a and the heddle-support when the latter is seated, as in Fig. 1. By reference to Fig. 3 it will be seen that the recess b, which forms an entrance to the seat, is open throughout the length of the latter, and the depth of said entrance from its overhanging upper end b^2 to the top b^3 of the front wall of the seat is greater than the depth of the heddle-support. The latter can thus be inserted in the seat by moving it directly into the entrance and then depressing it into the seat without any endwise movement of the heddle-support, as has been necessary heretofore.

In Fig. 2 the position of the heddle-support just before its seating or just after its removal from the head is shown in dotted lines.

I have provided a simple and effective device to positively retain the heddle-support in operative position, and, as shown best in Figs. 2 and 3, the sides of the head B are cut away at b^4 to receive the extensions or ears d' of a retaining device or downhold d, preferably made as a casting. A fin 6, extended through the ears and the head, pivotally connects the downhold with the head, the fin being located in front of a vertical line drawn through the center of the seat b' for a purpose to be described. The lower or free end of the downhold is preferably slightly concaved at d^2 to engage the top of the heddle-support when in position shown in Fig. 2, and a lip d^3 is extended beyond the part d^2 to enter a notch b^5 in the face of the head. When the downhold is in operative position, (see full lines, Fig. 2,) its outer face is flush with the face of the head and the concave portion d^2 engages the top of the heddle-support back of a vertical line through the fulcrum 6. Consequently when the harness-frame descends any tendency of the heddle-support to lift in its seat only acts to tighten the downhold in its operative or locking position, maintaining the heddle-support in place and effectually closing the entrance b to the seat. I employ a strong spring, however, to additionally act upon and maintain the downhold in proper position, and in Fig. 4 the spring is shown separately, it having two branches s s, springing from a body $s^\times$, which is let into the rear face of the head and secured thereto in any suitable manner, as by screws s^2. (See dotted lines, Fig. 2.) The branches s enter the cut-away portions b^4 of the head and bear against the rear cam-faces 8 of the ears d' above the fulcrum 6, thereby resisting any tendency of the downhold to swing outward. When it is desired to remove the heddle-support from the harness-frame or to apply it thereto, the operative takes hold of each downhold and swings it outward and upward into dotted-line position, Fig. 2, and full-line position, Fig. 3, whereupon the springs engage the top edges 9 of the ears and retain the device in such position. The operative thus has both hands free to manipulate the heddle-support, and he lifts it in or out, as the case may be. To assist in opening the head, the downhold may be provided with a lateral lug or finger-piece $d^\times$, if desired. When closing the head, the downhold is pushed down, and as soon as the upper rear corners of the ears rise above the fulcrum 6 the springs act to complete the closing movement and snap the downhold into place. By making the outer face of the downhold when closed flush with the face of the head no obstruction is presented, and there is no obstacle to the freedom of reciprocatory movement of the heads during shedding.

In the modification shown in Figs. 5 and 6 the lower portion of the head, having the transverse seat and the open or front entrance thereto for the manipulation of the heddle-support, is constructed substantially as hereinbefore described. The upper part of the head is different, however, it being shaped to present two parallel cheeks m m at the sides of the head, leaving an opening m' between them to receive the reduced upper end f' of the downhold f, pivotally mounted on a pin 16, passed through the cheeks and the end f'. The said end has a rear cam-face 18 and a flat upper face 19, Fig. 6, which coöperate with a bow-spring s^5, inserted in the opening m' between the cheeks m and its ends bearing against the back of the head. One end of the spring is attached to the back by a screw or other fastening 20, Fig. 6, while the other end of the spring is free to slide when the spring is more or less flattened by the turning of the downhold into inoperative position. From an inspection of Fig. 6 it will be seen that the spring acts against the cam-face 18 to retain the downhold in operative or locking position, acting on said face above the fulcrum 16, and when the downhold is swung up the spring will engage the end 19 and retain said downhold up and out of the way. In the modified construction a broad spring can be used, and it is completely housed by the cheeks and the back of the head. The lower ends of the cheeks are shown as rounded to prevent interference with the movement of the downhold on its fulcrum 16.

My invention is not restricted to the construction and arrangement herein shown and described, for, so far as I am aware, it is broadly new to provide a front entrance for the heddle-support seat when formed within the head of a harness-frame, and accordingly various changes or modifications may be made by those skilled in the art without departing from the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom harness-frame, side bars having heads each provided with a transverse depression forming a seat and an open entrance thereto in the face of the head, a detachable heddle-support the ends of which are adapted to enter and rest in the seats, and means on each head to close the entrance and maintain the heddle-support seated.

2. In a loom harness-frame, side bars having heads each provided in its interior with a transverse seat, and an entrance thereto in the front face of the head, the entrance being open throughout the length of the seat, a detachable heddle-support the ends of which are adapted to be passed through the entrances and inserted in said seats, and means on each head to positively engage and maintain the heddle-support seated.

3. In a loom harness-frame, side bars having heads each provided in its interior with a tranverse seat, and a front entrance thereto immediately above and open throughout the

length of the seat, a detachable heddle-support the ends of which are adapted to be seated in the seats, and means on each head to close the entrance and engage the top of the heddle-support to maintain it seated.

4. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a seat at the lower end of the recess, the latter forming a front entrance to the seat, a detachable heddle-support adapted to be sustained at its ends in the seats, and a spring-controlled device on each head to close the entrance and retain the heddle-support seated.

5. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a seat at the lower end of the recess, the latter forming a front entrance to the seat, a detachable heddle-support adapted to be sustained at its ends in the seats, and a pivotally-mounted device on each head to engage and retain the heddle-support in operative position.

6. In a loom harness-frame, side bars provided with heads each having a transverse seat in its interior and an open recess above and extending the length of the seat to form an entrance thereto, a detachable heddle-support the ends of which are adapted to enter the seats, and a device movably mounted on and positively connected with each head to engage and positively retain the heddle-bar seated.

7. In a loom harness-frame, side bars having heads each provided with a transverse seat and cut away above the seat from one to the other end thereof to form an entrance thereto, a downhold fulcrumed on each head above and out of alinement with the seat, a detachable heddle-support the ends of which are adapted to be sustained in the seats, and a spring cooperating with the downhold above its fulcrum, to retain said downhold in operative or inoperative position, said downhold when operative closing the opening or engaging the heddle-support to retain it seated.

8. In a loom harness-frame, side bars having heads each provided with a transverse seat and cut away above the seat from one to the other end thereof to form an entrance thereto, a detachable heddle-support adapted to be seated at its ends in the seats, a downhold fulcrumed on each head above and out of alinement with the seat, the lower end of each downhold when in operative position engaging the upper edge of and retaining the heddle-support seated, and a spring to coöperate with the downhold and retain it in operative position, upward pressure of the heddle-support on the downhold acting in conjunction with the spring.

9. In a loom harness-frame, side bars having heads each provided in its interior with a transverse seat, and a front entrance thereto immediately above and open throughout the length of the seat, a detachable heddle-support the ends of which are adapted to be seated in the seats, means to prevent lateral movement of the heads when said support is in place, and a swinging downhold on each head to engage the upper edge of and retain the heddle-support seated.

10. In a loom harness-frame, side bars provided with heads each having a transverse recess in its front face and a groove-like seat at the lower end of the recess extending from one to the other side of the head, the recess forming a front entrance to and above the seat, a detachable heddle-support adapted to be sustained at its ends in the seats and positioned by the walls thereof, and means on each head to engage the top of the heddle-support and maintain it seated.

11. In a loom harness-frame, side bars provided with heads each having an internal, transverse seat, and an open entrance thereto in the face of the head, a detachable heddle-support the ends of which are adapted to be passed through the entrances and seated in the seats, and means positively fulcrumed on each head to positively engage the top of the heddle-support and maintain it seated,

12. In a loom harness-frame, side bars provided with heads each having an internal, transverse seat extended from side to side of the head and having upwardly-convergent walls, and an open entrance thereto in the face of the head above the seat, a detachable heddle-support the ends of which are adapted to be passed through the entrances and depressed into the seats, the walls of the latter supporting the front and rear faces of said heddle-support, and means on each head to engage the top of and prevent lifting of the heddle-support when seated in said seats.

13. In a loom harness-frame, side bars provided with heads each having one of its faces recessed transversely, a transverse seat at the lower end of each recess, and in the interior of the head, a detachable heddle-support the ends of which are adapted to be passed through the recesses and be sustained by the seats, and means positively connected with each head to engage the seated heddle-support and prevent lifting thereof from the seats.

14. A harness-frame for looms, comprising side bars having heads each provided with an internal transverse seat for the ends of a heddle-support, and an open entrance for each seat formed in the face of the head above the seat, and means positively fulcrumed on each head to engage and maintain a heddle-support in position when seated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. EDWARDS.

Witnesses:
ELIZABETH R. MORRISON,
EMILY C. HODGES.