March 10, 1936. P. L. SPENCER 2,033,359

HEDDLE FRAME

Filed March 11, 1935

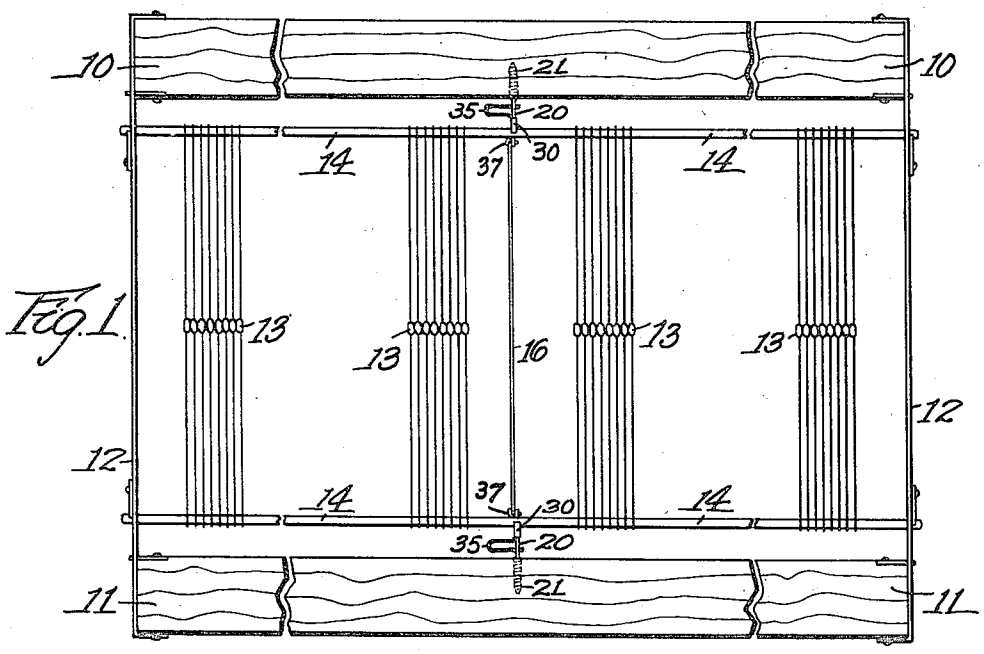

Fig. 1.

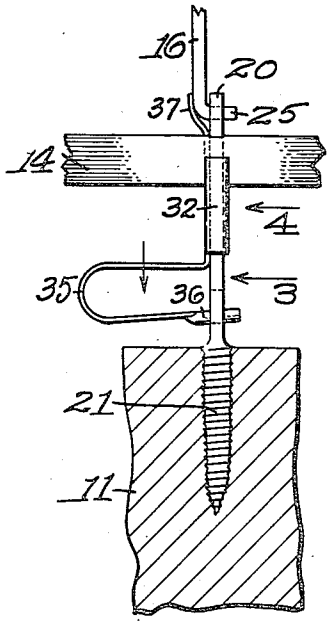

Fig. 2.

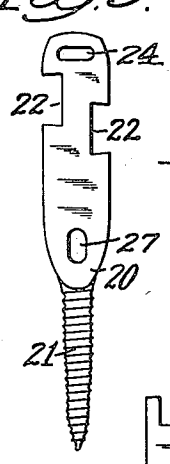

Fig. 3.

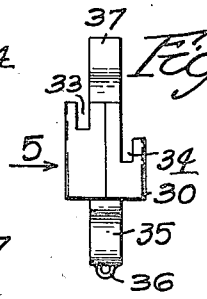

Fig. 4.

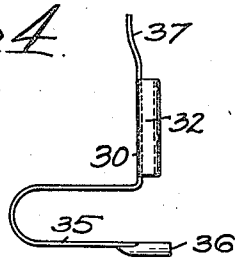

Fig. 5.

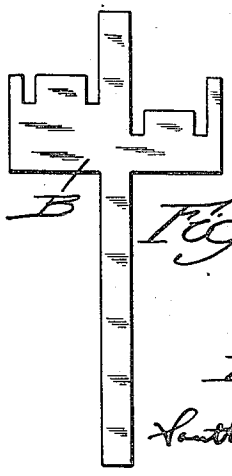

Fig. 6.

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Patented Mar. 10, 1936

2,033,359

UNITED STATES PATENT OFFICE

2,033,359

HEDDLE FRAME

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Application March 11, 1935, Serial No. 10,433

9 Claims. (Cl. 139—92)

This invention relates to looms and particularly to the frames in which the heddles which control the warp threads are mounted. It is customary in such frames to provide one or more upper and lower heddle bars on which the heddles are strung, and it is also customary in broad frames to provide heddle bar supports by which the heddle bars are held in definite spaced relation with respect to the top or the bottom member of the heddle frame. For very heavy work a stay rod is sometimes provided between the top and bottom members of the frame at one or more points intermediate its length. It is desirable that these stay bars be detachably secured, so that they may be readily removed to permit lateral rearrangement of the warp threads.

It is the object of my present invention to provide a single device by which one or more heddle bars and also an associated stay rod may be detachably secured to a top or bottom heddle frame member.

In the preferred form, a single spring-actuated sliding member or keeper accomplishes both results and secures the heddle bars and also the stay rod in predetermined positions. I preferably form the actuating spring as an integral part of the sliding member.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a front elevation of a heddle frame embodying my improvements;

Fig. 2 is an enlarged front elevation of one of the locking devices;

Fig. 3 is a side elevation of the post which forms a part of said device, looking in the direction of the arrow 3 in Fig. 2;

Fig. 4 is a side elevation of the sliding keeper, looking in the direction of the arrow 4 in Fig. 2;

Fig. 5 is a front elevation, looking in the direction of the arrow 5 in Fig. 4, and

Fig. 6 is a plan view of a blank from which the sliding keeper is formed.

Referring to the drawing, I have shown in Fig. 1 a heddle frame which is in general of the usual type and comprises a top frame member 10 and bottom frame member 11, end frame members 12, and a plurality of heddles 13 mounted on upper and lower heddle bars 14. I have also shown a stay rod 16 extending vertically across the center of the frame.

Each of my improved locking devices comprises a post 20 having a threaded portion 21 by which it may be secured in one of the frame members 10 or 11. Each post 20 is provided with recesses 22 to receive the heddle bars 14, and these recesses may be at different elevations on the opposite sides of the post, as clearly shown in Fig. 3. Where single heddle bars are used, only one recess 22 need be provided in each post 20.

An elongated slot or opening 24 is provided near the outer end of each post 20 to receive the laterally projecting end 25 (Fig. 2) of the stay rod 16. Each post 20 is also provided with an opening 27 (Fig. 3) for a purpose to be described.

A sliding keeper 30 is mounted on each post 20, said keeper being preferably formed from the blank B of resilient sheet metal shown in Fig. 6. The blank B is transformed by bending and press operations to the keeper shown in Figs. 4 and 5, and in final form comprises a tubular portion 32 of rectangular cross section, fitting the flattened upper portion of its post 20 and provided with notches 33 and 34 to engage an edge of each heddle bar 14 and lock said bar in its recess 22.

The sliding keeper also comprises a U-shaped spring portion 35 having its end 36 bent to the substantially semi-circular form shown in Fig. 4, in which form it is adapted to extend into the opening 27 in the post 20.

The upper end of the keeper 30 is extended to form a projection 37 adapted to engage the lower end of the stay rod 16 and to hold the end portion 25 thereof in the slot or opening 24.

When it is desired to release the stay rod 16 or the heddle bars 14, the keeper 30 is pushed downward on the post 20 by compressing the spring 35 until the projection 37 clears the lower end of the stay rod 16 and until the heddle bars 14 are free from the notches 33 and 34.

My improved locking device is exceedingly simple, comprising two parts only, but at the same time it securely holds not only the heddle bars but the stay rod in predetermined fixed positions, while permitting convenient removal thereof.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a

stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device being secured to one of said frame members and having a single movable keeper effective to detachably engage and lock a heddle bar and a stay rod to an associated frame member by a single sliding movement.

2. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device being secured to one of said frame members and having a single movable keeper effective to detachably engage and lock a pair of said heddle bars and a stay rod to an associated frame member by a single sliding movement.

3. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device comprising a post secured in a heddle frame member and a keeper slidable on said post and effective to detachably secure one of said heddle bars and a stay rod to said post.

4. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device comprising a post secured in a heddle frame member and a keeper slidable on said post and effective to detachably secure a pair of said heddle bars and a stay rod to said post.

5. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device comprising a post to be secured in a heddle frame member and having a side recess, a sliding keeper to hold one of said heddle bars in said recess, and yieldable means to move said keeper to locking position, said stay bar having laterally projecting end portions extending into openings in the ends of said locking device posts, and each sliding keeper having a projection engaging and locking an end of said stay bar in its associated opening.

6. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device comprising a post to be secured in a heddle frame member and having two side recesses, a sliding keeper to hold said heddle bars in said recesses and yieldable means to move said keeper to locking position, said stay bar having laterally projecting end portions extending into openings in the ends of said locking device posts, and each sliding keeper having a projection engaging and locking an end of said stay bar in its associated opening.

7. In a heddle frame having top and bottom frame members, a plurality of heddle bars and a stay rod, in combination, locking devices for said heddle bars and stay rod, each locking device comprising a post to be secured in a heddle frame member and having two side recesses at different elevations, a sliding keeper to hold said heddle bars in said recesses, and yieldable means to move said keeper to locking position, said stay bar having laterally projecting end portions extending into openings in the ends of said locking device posts, and each sliding keeper having a projection engaging and locking an end of said stay bar in its associated opening.

8. In a heddle frame having heddle bars and top and bottom frame members, in combination, a stay rod having offset end portions, recessed posts secured in said frame members and each having a slot therein to receive one of said offset end portions and to thereby hold said frame members in fixed spaced relation, and a single movable element mounted on each post and effective to detachably position and lock a heddle bar in a recess in said post and to prevent removal of the end of said stay rod from said slot.

9. In a heddle frame having heddle bars and top and bottom frame members, in combination, a stay rod having offset end portions, recessed posts secured in said frame members and each having a slot therein to receive one of said offset end portions and to thereby hold said frame members in fixed spaced relation, and a single movable element mounted on each post and effective to detachably position and lock a pair of heddle bars in recesses on each side of said post and to prevent removal of the end of said stay rod from said slot.

PHILIP L. SPENCER.