Aug. 17, 1937. H. C. CRAMER 2,090,110

STAY BAR

Filed Nov. 2, 1936

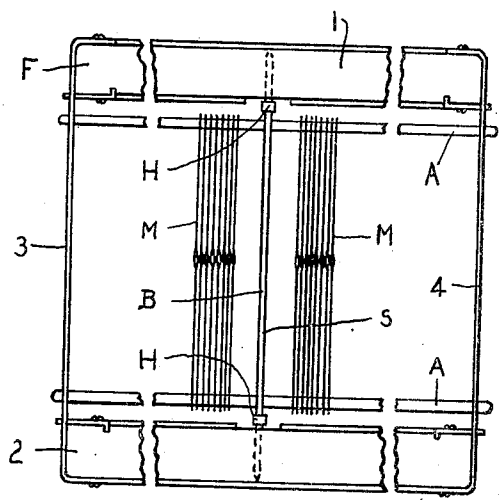


Fig. 1.

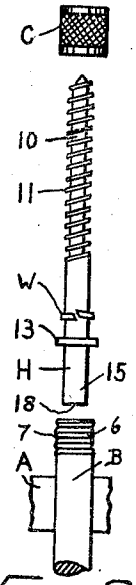


Fig. 2.

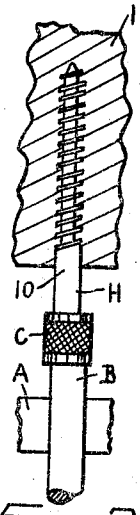


Fig. 3.

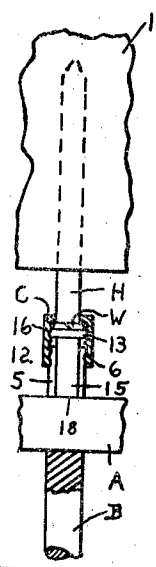


Fig. 4.

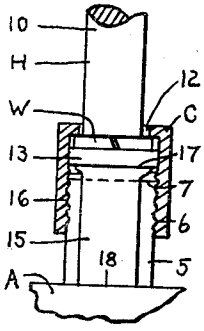


Fig. 5.

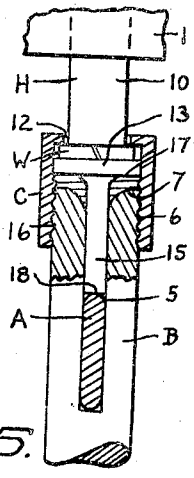


Fig. 6.

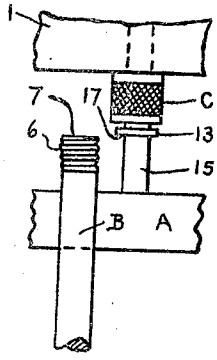


Fig. 7.

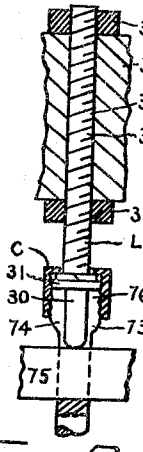


Fig. 8.

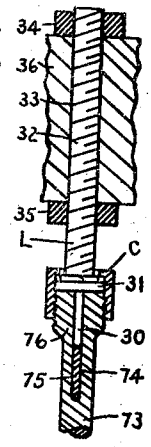


Fig. 9.

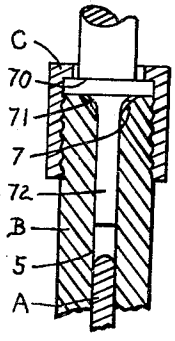


Fig. 10.

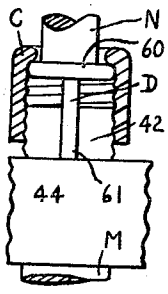


Fig. 11.

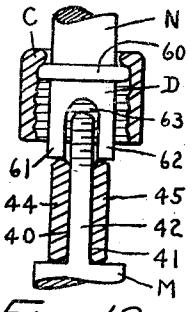


Fig. 12.

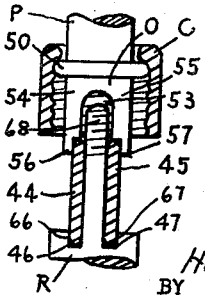


Fig. 13.

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STAY BAR

Howard C. Cramer, Andover, Mass., assignor to Emmons Loom Harness Company, Lawrence, Mass., a corporation of Massachusetts

Application November 2, 1936, Serial No. 108,783

6 Claims. (Cl. 139—92)

This invention relates to harnesses for looms of the metal or steel heddle type wherein there is a heddle frame which usually has parallel wooden frame bars rigidly connected together at the ends.

Between such frame bars, there are usually what are known as heddle bars which run parallel with the frame bars and are supported a short distance away therefrom.

On these heddle bars are strung the metal heddles, the heddles having oblong slots so that they can fit loosely on the heddle bars which are usually also oblong.

On certain types of frames, the length of the heddle bars is so great that they must be supported at intermediate points either by what are known as lock hooks or by what are known as stay bars. These stay bars also hold the heddle frame bars and heddle bars the right distance apart, parallel and rigid.

This invention relates to heddle frames having stay bars.

Such stay bars are to support the heddle bars and also to stiffen the frame itself, and it is necessary that they should be so arranged that while the heddle bars are held firmly when all parts are in position, when a heddle breaks or when heddles are to be removed, it must be possible to quickly release the stay bars from the heddle bars or the heddle bars from the stay bars.

In the drawing, Fig. 1 is an elevation of a loom harness showing the top and bottom and end bars and a stay bar between them, the parts being broken to reduce the length.

Fig. 2 is an elevation showing one end of a stay bar body with part of the stay bar in place, the holder, including cap nut, being separated.

Fig. 3 is an elevation of one end of a stay bar with all parts locked in position and parts in section.

Fig. 4 is a view similar to Fig. 3 with other parts shown in section.

Fig. 5 is an enlarged detail sectional view of the parts shown in Fig. 4.

Fig. 6 is an enlarged sectional view of the parts shown in Fig. 5 from the left side instead of from the front.

Fig. 7 is a view similar to Fig. 3 showing a cap nut unscrewed and a stay bar body released.

Fig. 8 is a view similar to Fig. 4 of a modification, and Fig. 9 is a sectional view similar to Fig. 6 as from the left side of Fig. 8.

Fig. 10 is a view similar to Fig. 6 of another modification.

Fig. 11 is a view similar to Fig. 5 and Fig. 12 is a view similar to Fig. 6 of another modification.

Fig. 13 is a view similar to Fig. 12 of still another modification.

The drawing shows a loom harness comprising the heddle frame F for supporting metal heddles M, M, such frame being made up of the top and bottom parallel frame bars 1 and 2 which, as shown, are made of wood held together and connected by metal end strips 3 and 4, all of a usual construction.

S represents a stay bar as a whole made up of a body B which is shown as cylindrical and having cap nut screw threads 6 on the outside at each end 7, and having at each end a heddle bar slot 5 which extends out to an end, being therefore an open slot.

H, H represent two holders, each having at one end a shank 10 with wood screw threads 11 by which it is fastened to a frame bar such as 1. Each holder also has at the other end a flat, spade-shaped direction guide 15 which is of a size to fit snugly in a slot 5 in the body B and of a length to reach down so that its straight end 18 will rest squarely on and hold a metal heddle bar, such as A, in position in slot 5. There is also a stop 13 between this direction guide and the holding means, the stop being shown as an annular bead.

C is a cap nut which has a hole 12 through which shank 10 passes so that it rests on a spring or split washer W, resting on stop 13. Cap C has internal threads 16 which engage threads 6 on body B, the parts being of such size and so arranged that when nut C is screwed down against washer W on stop 13, it holds the straight, squared bottom end 18 of guide 15 against the top of bar A which locks bar A in place in slot 5, thus preventing any movement whatever.

The end 7 of bar B does not touch the bottom edge 17 of stop 13 although in some cases, as shown in Figs. 8, 9 and 10, it may so touch.

As shown in Fig. 10, there may be two of these stops indicated at 70 and 71, one 70 for the cap screw and the other 71 for the end 7 of the body B, but as stated above, the second stop is not necessary if the end of the direction guide 72 rests snugly on a heddle bar A at the bottom of the slot 5.

Preferably I use a split washer W to prevent the cap nut C from unthreading.

To remove the heddle bars and heddles from the frame, the ends of the heddle bars are released in any usual manner and each cap screw on each stay bar is unscrewed so as to permit each stay bar body B to be moved sideways, as

shown in Fig. 7. The heddle bars, heddles, and stay bar bodies can, therefore, be taken out of the machine as a unit, or if for any reason it is desirable to remove a stay bar body, it can be tipped to the right and left until it is clear of the heddle bars, when it can be removed. The parts can be reassembled by the reverse process.

As shown in Figs. 8 and 9, the stay bar body 73 can have a slot 74 at each end for a heddle bar 75, but its threaded end 76 can be larger than the body.

As shown in Fig. 8, a holder L can be used with a cap nut C and with a direction guide 30, annular stop 31 and a shank 32 which is provided with a machine screw thread 33 which passes through nuts 34 and 35 positioned respectively at the top and bottom of a heddle frame bar, such as 36. With this construction, by loosening and tightening the two nuts, the distance between the stops and direction guides at the top and bottom can be changed or adjusted.

The end 76 can engage stop 31 and the end of guide 30 can engage bar 75, which may be rounded, thus double locking the parts.

In some cases, a harness is provided with a double row of heddles and, therefore, with a double row of heddle bars. In such cases, I can use the construction shown in Figs. 11 and 12, or as modified in Fig. 13.

In Figs. 11 and 12, M represents the body of a stay bar at each end of which on the outside are open slots 40 and 41 which extend out to the end, the part 42 between them, although relatively narrow, being threaded on the opposite narrow sides, as shown in Fig. 12, the opposite wide sides which are the insides of slots 40 and 41 being unthreaded.

A holder N is provided with an annular stop 60 beyond which extends a direction guide or spade D which is bifurcated so as to form two legs 61 and 62 with a space 63 between them. The ends of these legs 61 and 62, which are the ends of the direction guide D, rest on top of the heddle bars 44 and 45 which rest on the bottom of the slots 40 and 41, and when a cap nut such as C is screwed down until it engages the annular stop 60, the parts are all locked in place, the heddle bars being held in place by friction and pressure.

With this construction, preferably there should also be positioned between the stay bars some sort of lock hooks of any well-known type which will prevent the heddle bars from springing out horizontally from the slots 40 and 41.

However, if desired, as shown in Fig. 13, a stay bar body R can be provided with the oppositely disposed slots 66 and 67 at the bottom outside of which are the lips 46 and 47, and if a still more positive locking is desired, the holder P having an annular stop 50 beyond which is a direction guide O formed with two legs 54 and 55 with an open space 53 between them, can have the bottom ends 56 and 57 of these legs provided with recesses leaving lips outside so that, as shown in Fig. 13, when a cap nut C is screwed down against stop 50, the heddle bars 44 and 45 are definitely locked in place in the slots 66 and 67 and inside the lips 46, 47 and 56, 57.

It will be observed that the threaded end 42 of body M and the threaded end 68 of body R does not reach the end of the recess 63 or 53, the pressure being transmitted from the stay bar bodies through the heddle bars and holders to the heddle frame bars at the top and bottom.

The function of the direction guides is to hold the heddle bars in correct alignment and also to rest on the heddle bars and to hold them in the slot or slots as the case may be, and the functions of the cap screw are to cooperate with the direction guides in holding the parts rigidly in place, but to permit the body of a stay bar to be pushed out sideways or to be twisted sideways when a heddle is to be removed or replaced, or when heddles are to be removed or replaced.

I claim:

1. The combination in a heddle frame for supporting metal heddles which comprises parallel top and bottom frame bars; of a stay bar including a body having near each end a heddle bar slot in alignment with the frame bars, each slot extending out to an end, each of said ends being threaded; with two holders each with a threaded attaching shank at the end and which attaches the holder to a frame bar, and a direction guide at the other end which enters the slot in the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attaching shank; a screw cap nut with internal threads which engage the cap nut threads on the stay bar body, and a spring washer to keep the cap from unscrewing; together with a heddle bar which passes through each heddle bar slot.

2. The combination in a heddle frame for supporting metal heddles which comprises top and bottom parallel frame bars; of a stay bar including a body having near each end a heddle bar slot in alignment with the frame bars, each slot extending out to an end, each of said ends being threaded; with two holders each attached at one end to a frame bar, and a direction guide at the other end which enters the slot in the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attaching means; a screw cap nut with internal threads which engage the cap nut threads on the stay bar body and means to keep the cap from unscrewing; together with a heddle bar which passes through each heddle bar slot.

3. The combination in a heddle frame for supporting metal heddles which comprises parallel top and bottom frame bars; of a stay bar including a body having near each end a heddle bar slot in alignment with the frame bars, each slot extending out to an end, each of said ends being threaded; and a heddle bar which passes through each heddle bar slot; with two holders each with means at one end to attach it to a frame bar and each having a direction guide at the other end, which guide enters the slot at the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attaching shank, the end of the direction guide being straight and at right angles to the shank and resting on a heddle bar; and a screw cap nut with internal threads which engage the cap nut threads on the stay bar body to lock the parts together.

4. The combination in a heddle frame for supporting metal heddles which comprises parallel top and bottom frame bars; of a stay bar including a body having near each end a heddle bar slot in alignment with the frame bars, each slot extending out to an end, each of said ends being threaded; and a heddle bar which passes through each heddle bar slot; with two holders each with means at one end to attach it to a frame bar and each having a direction guide at the other end, which guide enters the slot at the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attach-

ing shank, the end of the direction guide resting on a heddle bar; and a screw cap nut which engages the stop and which has internal threads which engage the cap nut threads on the stay bar body to lock the parts together.

5. The combination in a heddle frame for supporting metal heddles which comprises parallel frame bars; of a stay bar including a body having near each end a heddle bar slot in alignment with the frame bars, each slot extending out to an end, each of said ends being threaded; with two holders each attached at one end to a frame bar, and a direction guide at the other end which enters the slot in the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attaching means; and a screw cap nut with internal threads which engage the cap nut threads on the stay bar body.

6. A stay bar for heddle frames which includes a body having near each end a heddle bar slot which extends out to an end which is threaded, two holders each with means at one end to attach it to a heddle frame bar, and a direction guide at the other end which enters the slot in the end of the stay bar body, there being a stop for a cap nut between the direction guide and the attaching means; and a screw cap nut with internal threads which engage the cap nut threads on the stay bar body.

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