

July 2, 1929.

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JACQUARD LOOM HARNESS

1,719,476

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2 Sheets-Sheet 1

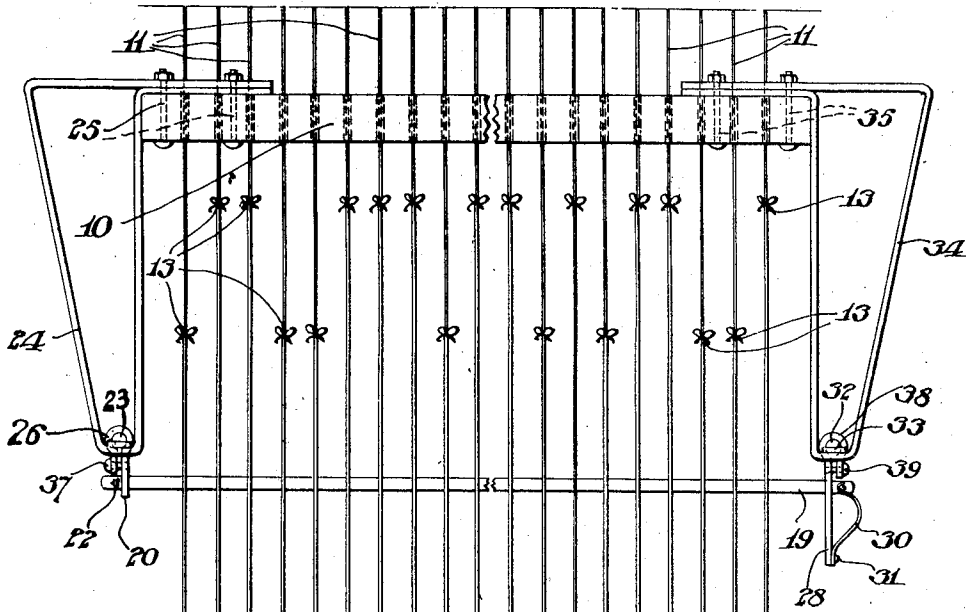
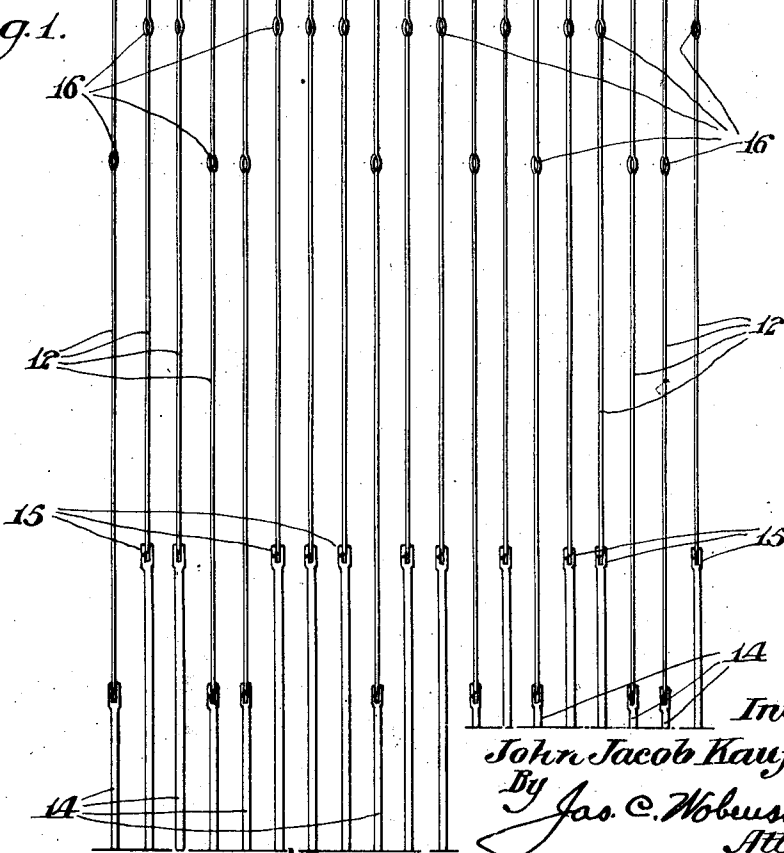


Fig. 1.



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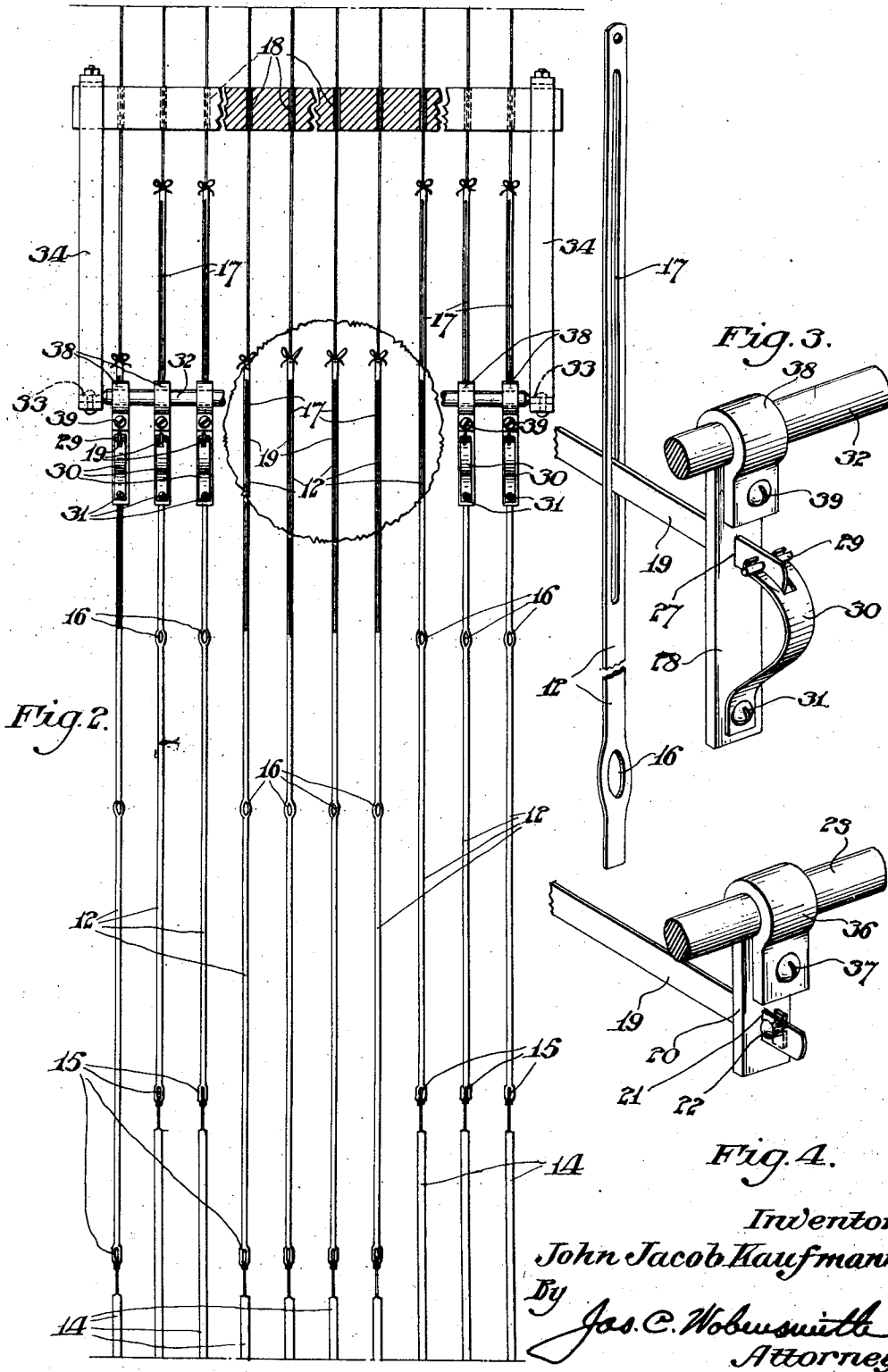
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# UNITED STATES PATENT OFFICE.

JOHN JACOB KAUFMANN, OF ELKINS PARK, PENNSYLVANIA, ASSIGNOR TO STEEL HEDDLE MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## JACQUARD-LOOM HARNESS.

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My invention relates to Jacquard loom harness, and it has particular relation to such harness employing heddles made of thin, flat strips of metal or wire.

5 The principal object of my invention is to provide in a Jacquard loom harness means for preventing twisting of the heddles, to the end that the warp ends will run more freely through the eyes of the heddles, thereby insuring greater freedom of movement in the shedding, as well as reducing breakage of the warp ends.

10 Heretofore, in the employment of heddles made of thin, flat strips of metal or wire in Jacquard loom harness, one of the principal difficulties encountered has been that when twisting of the heddles occurred and the warp ends would be wound around the heddles at the eye portion, the warp ends would not readily untwist the heddles, due to the shape of the same, but would bind at the eye portion, and the shedding and the feed would not be free. On account of the increased tension on the warp ends caused as aforesaid breakages would frequently occur.

15 It is well known that no matter how carefully the harness is originally mounted, a certain amount of twisting of the heddles constantly occurs, principally by reason of atmospheric changes, causing the cords which extend from the heddles to the jacquard mechanism to twist in one direction or the other from time to time. In the use of heddles of round cross-section, the tension of the warp ends will ordinarily be sufficient to untwist the heddles and permit the warp ends to pass freely through the eyes thereof.

20 However, in the use of jacquard heddles made of thin, flat strips of metal or wire, the untwisting will not take place as readily as where the common types of round heddles are used, and consequently, notwithstanding the other advantages of the heddles made of thin flat metal or wire, the same have not heretofore been generally used, as might have been the case had the same not been open to the objection above referred to.

25 My present invention contemplates the provision of means for preventing the twisting of jacquard heddles made of thin, flat metal or wire, whereby the same may be advantageously used in Jacquard loom harness.

The nature and characteristic features of my invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which:

55 Figure 1 is a front elevation of a Jacquard loom harness embodying the main features of my present invention;

60 Fig. 2 is a side elevation thereof, certain parts being shown in section;

65 Fig. 3 is a perspective view of a portion of means for supporting one end of a rod constituting one of the principal parts of the present invention and for imparting tension thereto; and

70 Fig. 4 is a similar view of means for supporting the other end of said rod.

Referring to the drawings, in the particular embodiment of my invention therein shown, 10 is the comberboard commonly used in Jacquard looms, through which comberboard the control cords 11 extend from the jacquard mechanism to the upper ends of heddles 12, the cords 11 being tied to the eyes 13 provided at the upper ends of the individual heddles in the customary manner. The usual lingoes 14 are mounted at the respective lower ends of the heddles 12 in the customary manner, by being hooked in the eyes 15 thereof. The heddles are provided intermediate their ends with the usual warp eyes 16 for the passage of the warp ends therethrough and each of the heddles is provided, between the warp eye 16 and the eye 13 for attaching the cord to the upper end of the heddle, with a longitudinal slot 17.

75 As is well known, the comberboard 10 is provided with a series of apertures 18, through which the control cords 11 pass, these apertures 18 being arranged in parallel groups, so that the heddles supported from the cords 11 will be correspondingly arranged in parallel groups below the comberboard.

80 For each of the parallel groups of heddles there is provided a flat bar 19, which passes through the slots 17 of the heddles arranged in the corresponding parallel group.

85 The bars 19 are supported in the loom in any preferred manner, so as to be properly positioned. The preferred means for supporting bars 19 comprises the provision of a plurality of brackets 20, each having a slot

21 through which one end of a bar 19 extends, a button 22 being carried on the end of the bar 19 to prevent the end of the bar 19 from being withdrawn from the slot 21. The brackets 20 are adjustably mounted on rods 23, supported below one end of the comberboard 10 by means of brackets 24, which are preferably attached to the comberboard by means of bolts 25. In order to prevent the rods 23 from turning with respect to the brackets 24, the ends of the rods 23 are flattened as at 26, at the points of attachment to the brackets 24.

The other ends of the bars 19 extend through slots 27 of brackets 28. The end of the bar 19 is provided with a pin 29, which is engaged by the forked end of a spring 30, which spring has its other end attached by means of a bolt 31 to the lower end of the bracket 28. In this manner, the tension of the spring 30 is imparted to the rod 19. The brackets 28 are adjustably mounted on a rod 32, the ends of which are flattened as at 33, and secured to the end of the comberboard 10 by means of bolts 35.

The brackets 20 are adjustably secured to the rods 23 by means of encircling portions 36 and bolts 37, which serve to clamp the brackets 20 at desired locations on the rods 23, and likewise the brackets 28 are secured to the rods 32 by encircling portions 38 and bolts 39, which serve to clamp the brackets 28 at desired locations on the rods 32.

It will be noted that the slot 17 in each of the heddles 12 is of sufficient longitudinal extent to permit the shedding of the heddles, and that the bars 19 passing through said slots 17 will effectively serve to prevent twisting of the heddles, so that the warp eye will at all times be properly disposed for the free movement of the warp therethrough.

It will also be noted that, by the provision of the shiftable brackets 20 and 28, which support the bars 19, provision is made for the mounting of the same at the proper locations to meet the varying arrangements of the apertures 18 in the comberboard which are found in practice.

It will be seen that there is thus provided a simple and efficient means of preventing twisting of jacquard heddles which are made of thin, flat strips of metal or wire, whereby one of the principal difficulties encountered in the use of the same is effectively overcome.

Having thus described the nature and characteristic features of my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and

one end of the heddle, a bar extending through the heddle slots, and means for imparting tension to said bar.

2. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and one end of the heddle, a plurality of bars passing through the slots in the heddles, and means for imparting tension to said bars individually.

3. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and one end of the heddle, bars suspended below the comberboard and passing through the slots in the heddles, and means for supporting said bars comprising brackets mounted at each end of the comberboard, rods supported by said brackets, and brackets mounted on said rods for individually supporting the ends of the bars.

4. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and one end of the heddle, bars suspended below the comberboard and passing through the slots in the heddles, and means for supporting said bars comprising brackets mounted at each end of the comberboard, rods supported by said brackets, and brackets adjustably mounted on said rods having slots through which the ends of the bars extend.

5. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and one end of the heddle, bars suspended below the comberboard and passing through the slots in the heddles, and means for supporting said bars comprising brackets mounted at each end of the comberboard, rods supported by said brackets, brackets adjustably mounted on said rods having slots through which the ends of the bars extend, and the brackets at one end of the bars having means for imparting tension thereto.

6. In a Jacquard loom harness, the combination with a comberboard and the cords passing therethrough, of heddles made of thin flat metal or wire each having a warp

eye intermediate its ends for the passage of the warp therethrough and each having a longitudinal slot between the warp eye and one end of the heddle, bars suspended below the comberboard and passing through the slots in the heddles, and means for supporting said bars comprising brackets mounted at each end of the comberboard, rods supported by said brackets, brackets adjustably mounted on said rods having slots through which the ends of the bars extend, and the brackets at one end of the bars having means for imparting tension thereto comprising springs carried by the brackets and engaging the bars.

In testimony whereof, I have hereunto signed my name.

JOHN JACOB KAUFMANN.