Dec. 5, 1950 H. COOPER 2,533,094

SELVAGE MOTION

Filed Nov. 24, 1948 2 Sheets-Sheet 1

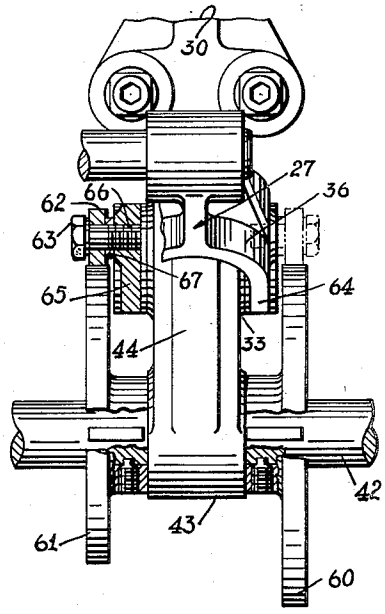


Fig. 2

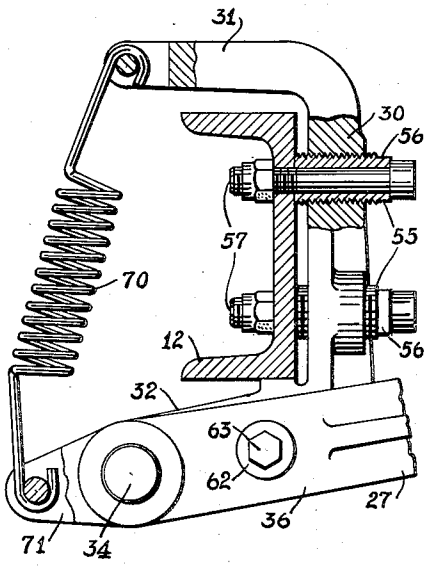


Fig. 3

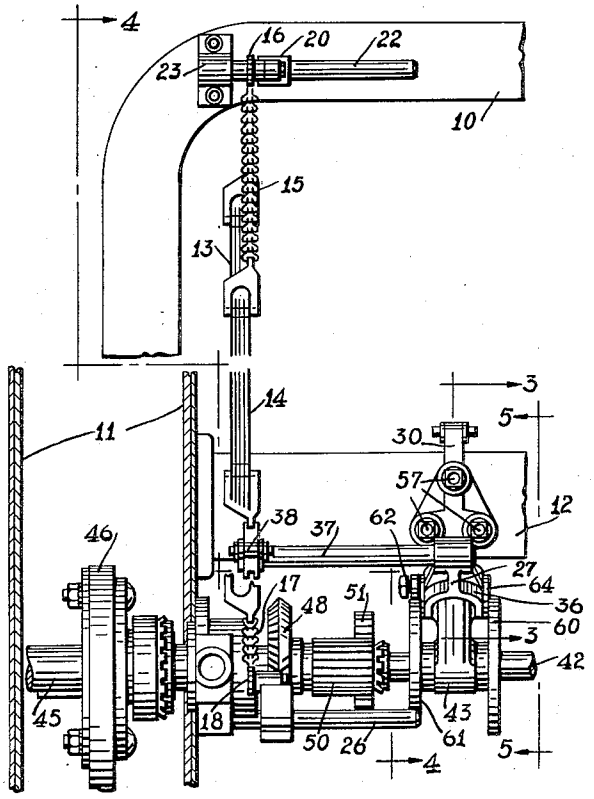


Fig. 1

INVENTOR.
HENRY COOPER

BY Virgil J. Davies
ATTORNEY

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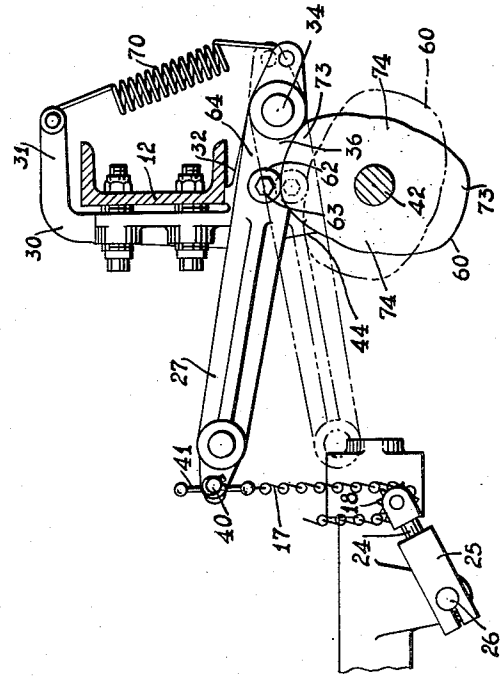


Fig. 5

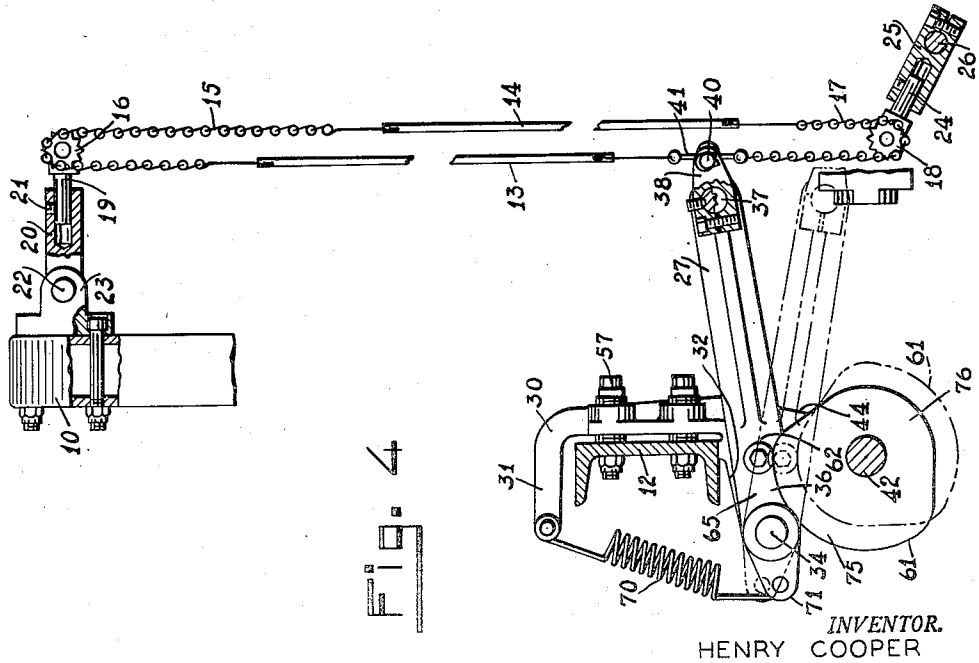


Fig. 4

INVENTOR.
HENRY COOPER

BY Virgil F. Davies
ATTORNEY

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SELVAGE MOTION

Henry Cooper, Hackensack, N. J., assignor, by mesne assignments, to Steel and Alloy Tank Company, Newark, N. J., a corporation of New Jersey

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13 Claims. (Cl. 139—55)

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The present invention relates to improvements in selvage motions for looms.

In order to produce a selvage, it is necessary for the warp ends that form the selvage at one end, to change shed position every time the filling is thrown across at said end. When weaving cloth, in which some warp ends change their shed position only once in three or more picks, some arrangement in addition to the regular harnesses must be used in order to form a satisfactory selvage. For that purpose, the loom is provided with harnesses at the selvages operatable independently of the regular harnesses. When it is desired to interlace the filling with the selvage ends every pick, a plain selvage motion is employed. For that purpose, the selvage motion comprises appropriate selvage cams operating treadles which change the selvage harnesses.

When cloth is being woven in which the filling does not interlace with the selvage ends more than once in three or more picks, as in the case with a five-harness sateen weave, some other arrangements must be used. If the warp ends in the cloth are interlacing with the filling only once in five picks, sateen weave, and the selvage ends are interlacing at every pick, contraction will be much greater at the selvage ends by reason of their more frequent interlacings with the fillings. As a result, the selvage ends will become much tighter than the warp ends for the body of the cloth and it will be difficult to weave said cloth. To overcome this difficulty, a tape-selvage motion is used. With this motion, two picks of filling are placed in one shed of the selvage. Consequently, the selvage ends interlace only once every two picks. To effect this selvage forming operation, the selvage ends must change shed position each time the shuttle is on the side of said selvage. For that purpose, the two sets of selvage ends must change alternately, the selvage ends on one side changing after one pick and the selvage ends on the other side changing after the next pick. To accomplish this operation, a so called tape-selvage motion must be employed comprising appropriate selvage cams different from the plain selvage cams.

One object of the present invention is to provide a new and improved selvage motion which is comparatively simple and reliable in operation and which can be converted quickly and easily to produce either a plain selvage or a tape-selvage, without disturbing the plain selvage cam or the tape-selvage cam.

Another object of the present invention is to provide a new and improved selvage motion

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having means by which the bearings for the selvage cam shaft may be adjusted into proper alignment.

A further object of the present invention is to provide a selvage motion having new and improved means by which the position of the selvage harnesses may be adjusted with respect to the cloth harnesses.

Various other objects are apparent from the following description and from an inspection of the accompanying drawings in which:

Fig. 1 is a front elevation of a portion of a loom and shows the selvage motion embodying the present invention and setup for the production of a tape-selvage;

Fig. 2 is an enlargement of a detail portion of the selvage motion shown in Fig. 1;

Fig. 3 is a section of the selvage motion taken on lines 3—3 of Fig. 1 but on a larger scale;

Fig. 4 is a section of the selvage motion taken on lines 4—4 of Fig. 1 but on a larger scale; and

Fig. 5 is a section of the selvage motion taken on the lines 5—5 of Fig. 1 but on a larger scale and shown converted for plain selvage operation.

Referring to the drawings, the invention is shown applied to a loom having an arch 10 between loomsides 11, only the left-hand loomside being shown (Fig. 1). The loomsides may be of the double frame web type shown and are interconnected by girts, a middle girt 12 in the form of a channel being shown.

Besides the ordinary cloth harness (not shown), the loom is provided at each side with a selvage motion. Since the selvage motions are alike a description of the selvage motion at the left side of the loom will suffice. As shown in Fig. 1 the selvage motion includes selvage harnesses 13 and 14 through which the selvage ends are drawn, these selvage harnesses being operated independently of said ordinary harnesses, as will be described. The selvage harnesses 13 and 14 are interconnected at their upper region by a flexible member 15 indicated in the form of a chain trained over a sprocket wheel 16 and are interconnected at their lower region by a similar flexible member 17 trained over a sprocket wheel 18. The upper sprocket wheel 16 is supported for free rotation on a pin 19 extending from a clamp 20 and secured thereto, as for example by a set screw 21. The clamp 20 is mounted on a rod 22 which extends inwardly along the arch 10, for a sufficient distance to provide for necessary positional adjustments of clamp 20, to support the selvage harnesses, and which is rigidly supported in bracket 23 secured to said arch. The clamp

20 is of split construction to permit its adjustment along the rod 22 and to vary thereby the position of the selvage harnesses 13 and 14 according to the width of the cloth.

The sprocket wheel 18 in the lower region of the loom is similarly supported for free rotation on a pin 24 extending from a split clamp 25 adjustably mounted on a rod 26, as in the upper region. The rod may be supported in any suitable manner (not shown).

The clamps 20 and 25 are not only adjustable along their supporting rods 22 and 26 but are also angularly adjustable about said rods to adjust the vertical position of the selvage harnesses 13 and 14 and the tension on the chains 15 and 17.

For reciprocating the selvage harnesses 13 and 14 in opposite directions on each side of the loom, there is provided a treadle 27 operated from a selvage cam, and having a connection to the nearest flight of the lower chain 17, as will be described. The selvage treadle 27 is pivotally supported on a bracket 30 adjustably fastened to the girt 12 in a manner to be described and having a U-shaped section with upper and lower arms 31 and 32 straddling said girt. The lower bracket arm 32 carries a bearing 33 for a pivot pin 34 to which the treadle 27 is rigidly fastened.

The treadle 27 has at its inner end a yoke 36 straddling the bracket 30 and rigidly carrying at its end the pivot pin 34, as for example by keying, to cause said treadle to be angularly actuated about the axis of said pivot pin through operation of appropriate selvage cams to be described. If desired, instead of the arrangement described, the pivot pin 34 may be rigidly secured to the bracket arm 32 and the treadle 27 journalled on the projecting ends of said pin for pivotal rotation thereabout.

At its outer end, the treadle 27 has a connection with the nearest flight of the lower chain 17 comprising a rod 37 press-fitted into or otherwise rigidly secured at one end to said treadle end and secured at its other end to one end of an arm 38. At this end, the arm 38 is in the form of a split clamp releasably embracing the rod 37 to permit it to be adjusted along said rod and at its other outer end, it is forked to flank opposite sides of the chain 17 and carries at said latter end a pin 40 secured to a link 41 at one end of said chain.

To operate the treadle 27, there is provided a selvage cam shaft 42 which is supported at one end near one side of the loom in a bearing 43 carried at the lower end of an arm 44 forming a depending extension of the adjustable bracket 30 and which is similarly supported at its other end near the other side of the loom. The selvage cam shaft 42 is driven from a pick cam shaft 45 which is located on one side of the loom and which carries a pick cam 46 by which the shuttle is hurled through its picking course from said side. A similar arrangement is provided for hurling the shuttle from the other side of the loom.

The pick cam shaft 45 on the left side of the loom may also carry a miter-gear 48 forming part of the take-up motion and carries a gear 50 meshing with a gear 51 on the selvage cam shaft 42 to drive said selvage cam shaft.

Instead of two separate pick cam shafts on opposite sides of the loom, a single pick cam shaft may be provided for both sides of the loom.

To adjust the position of the bearings 43 towards alignment, each of the brackets 30 is adjustably secured to the girt 12. To that end, the bracket 30 has threaded therein in triangular relationship three hollow screws 55, each provided at one end with a square head 56 for receiving a wrench. The screws 55 are fastened to the girt 12 by bolts 57 passing through respective screws. By loosening the bolts 57, the screws 55 may be turned to cause or permit the bracket 30 to be moved towards and away from the girt 12 and to cause thereby the bearing 43 carried by said bracket to be adjusted transversely of the axis of said bearing.

For operating the treadle 27 for production of a plain selvage or a tape-selvage, there is mounted a pair of selvage plate cams 60 and 61 near each end of the selvage cam shaft 42 on opposite sides of the corresponding bracket 30. The cam 60 is for plain selvage operation, while the cam 61 is for tape-selvage operation. A follower roller 62 is supported for rotation on a stud 63 threaded into an arm of the bracket yoke 36 and bearing downwardly against the upper edge of the corresponding selvage cam 60 or 61. Both yoke arms 64 and 65 of the bracket 30 are provided with tapped holes 66 to receive in either one of said arms the stud 63. A washer 67 on said stud spaces the roller 62 from the arm in which stud 63 is mounted to enable the roller 62 to engage selectively either one of the selvage cams 60 and 61, according to the type of selvage to be produced.

The roller 62 is maintained in follower engagement with the periphery of either cam 60 or 61 by a coil spring 70, one end of which is anchored to the upper bracket arm 31, while the other end is secured to the end of an arm 71 rigidly fastened to the pivot pin 34.

The pick cam shaft 45 on one side is operated to effect one pick per revolution and the pick cam shaft on the other side is also operated to effect one pick per revolution in alternate phase with the pick cam shaft on said one side, so that two picks are produced in the loom for one revolution of each pick cam shaft. The speed ratio between the gears 50 and 51 is two to one, so that the selvage cam shaft 42 rotates through one revolution for every two revolutions of the pick cam shaft 45, or for every four picks of the loom. The plain selvage cam 60 must, therefore, be designed, as shown in Fig. 5, to reverse the selvage harnesses 13 and 14 four times for every revolution of the selvage cam shaft 42, to produce a plain selvage. To that end, the plain selvage cam 60 is symmetrically constructed with two similar diametrically opposed radially long sections 73 and two similar diametrically opposed radially short sections 74 serving to raise or lower the selvage treadle 27 about its pivot supports directly after each pick and to change thereby the selvage harnesses 13 and 14 at every pick.

The tape-selvage cam 61 is designed to place two picks of filling in each shed of the selvage. For that purpose, the tape-selvage cam 61, as shown in Fig. 4, has one radially long section 75 and one radially short section 76, these being diametrically opposed and serving to raise or lower the treadle 27 about its pivot supports directly after each alternate pick and to change thereby the selvage harnesses 13 and 14 at each alternate pick. By setting the tape-selvage cams 61 on each end of the selvage cam shaft 42, so that one will operate after one pick and the other after the next pick and by having the shuttle picking from the side on which the selvage is changing, it is possible to place two picks of filling in each shed of the selvage and yet tie the ends at each pick.

In Figs. 1 and 4, the loom is shown set up for the production of a tape-selvage. For that purpose, the roller 62 is mounted on the treadle yoke arm 65 for follower engagement with the tape-selvage cam 61 at each side of the loom. When it is desired to switch over to the production of a plain selvage, all that is necessary is to remove the cam follower roller 62 from the treadle yoke arm 65 and mount it on to the treadle yoke arm 64 into engagement with the periphery of the plain selvage cam 60. The switch-over is easily and quickly effected without disturbing the position of the selvage cams 60 and 61 at each side.

While the invention has been described with particular reference to a specific embodiment, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. A selvage motion for a loom operatable to control the shedding movement of a plurality of selvage harnesses, comprising a plain selvage cam, a separate tape-selvage cam coaxial therewith, a treadle between said cams for operating said selvage harnesses in their shedding movements, a cam follower, and means for removably supporting said cam follower on either side of said treadle in follower engagement with either of said cams, to produce selectively either a plain selvage or a tape-selvage.

2. A selvage motion for a loom operatable to control the shedding movement of a plurality of selvage harnesses, comprising a selvage cam shaft, a plain selvage plate cam secured to said shaft, a separate tape-selvage plate cam also secured to said shaft, a pivoted treadle between said cams for operating said selvage harnesses in their shedding movements, a cam follower roller, and means for removably supporting said roller on either side of said treadle in follower engagement with the periphery of either of said cams, to produce selectively either a plain selvage or a tape-selvage.

3. A selvage motion for a loom operatable to control the shedding movement of a plurality of selvage harnesses, comprising a plain selvage cam, a separate tape-selvage cam coaxial therewith, a pivoted treadle between said cams for operating said selvage harnesses in their shedding movements, said treadle being in the form of a yoke having its arms located adjacent to said cams respectively, a cam follower, and means for removably supporting said cam follower on either yoke arm in follower engagement with either of said cams, to produce selectively either a plain selvage or a tape-selvage.

4. A selvage motion for a loom operatable to control the shedding movement of a plurality of selvage harnesses, comprising a plain selvage cam, a separate tape-selvage cam coaxial therewith, a bracket mounted on the frame structure of said loom, a treadle having a yoke section with its arms flanking said bracket and pivotally supported thereon, said arms being located adjacent to said cams respectively, a cam follower, means for removably supporting said cam follower on either yoke arm in follower engagement with either of said cams, to produce a plain selvage or a tape-selvage, and connecting means between said treadle and said selvage harnesses to operate said selvage harnesses in their shedding movement.

5. A selvage motion for a loom operatable to control the shedding movement of a plurality of selvage harnesses, comprising a bracket mounted

on the frame structure of said loom, a selvage cam shaft having a bearing support in said bracket, a plain selvage cam secured to said shaft, a separate tape-selvage cam also secured to said shaft, a treadle pivotally supported on said bracket and located between said cams, a cam follower, means for removably supporting said cam follower on either side of said treadle in follower engagement with either of said cams to produce a plain selvage or tape-selvage, and connecting means between said treadle and said selvage harnesses to operate said selvage harnesses in their shedding movement.

6. In a loom selvage motion, a frame structure, a bracket, a selvage cam shaft, a bearing for said shaft supported on said bracket, a selvage harness operating treadle, a pivot bearing for said treadle supported on said bracket and extending with its axis substantially parallel to the axis of said shaft bearing, and means adjustably supporting said bracket on said frame structure for movement of said bearings in unison transversely of their axes.

7. In a loom selvage motion, a selvage cam shaft, a frame structure, a bracket, a bearing on said bracket for said shaft, a plain selvage cam and a tape-selvage cam fastened to said shaft on opposite sides of said bearing, and means adjustably supporting said bracket on said frame structure for movement of said bearing transversely of its axis.

8. In a loom selvage motion, a frame structure, a bracket, a selvage cam shaft, a bearing on said bracket for said shaft, and means adjustably supporting said bracket on said frame structure for movement of said bearing transversely of its axis, and comprising three screws arranged in triangular relationship.

9. In a loom selvage motion, a frame structure, a bracket, a selvage cam shaft, a bearing on said bracket for said shaft, and means adjustably supporting said bracket on said frame structure for movement of said bearing transversely of its axis, and comprising a plurality of hollow screws, each threaded into said bracket and each provided at one end with a head shaped to receive a turning tool, and bolts passing through said screws respectively and fastening said screws to said frame.

10. In a loom selvage motion, a girt, a bracket having upper and lower arms straddling said girt, and having a third arm extension, means fastening said bracket to said girt, a selvage harness operating treadle, pivot bearing means for said treadle supported on said lower bracket arm, a selvage cam shaft, a selvage cam on said shaft, a bearing for said shaft on said arm extension, and spring means between said upper arm and said treadle urging said treadle into follower engagement with said selvage cam.

11. In a loom selvage motion, the combination as described in claim 10, said fastening means being adjustable to adjust the position of said bracket with respect to said girt and to adjust thereby the position of said pivot bearing and said shaft bearing transversely of their axes.

12. In a loom selvage motion, a pair of selvage harnesses on one side of the loom, a pair of upper and lower sprockets, an upper chain connected to the upper ends of said harnesses and trained over the upper sprocket, a lower chain connected to the lower ends of said harnesses and trained over the lower sprocket, means supporting said sprockets for adjustment axially across the loom to accommodate for adjustments in the positions of said harnesses, a cam operated selvage treadle,

a rod connected at one end to said treadle, and an arm releasably secured to said rod for adjustment therealong and having a connection to a flight of the lower chain.

13. In a loom selvage motion, an upper rod and a lower rod extending cross-wise of the loom and supported against rotation, an arm secured to each of said rods and adjustable angularly thereabout, a rotatable wheel carried at the outer end of each arm, a pair of selvage harnesses, and a pair of flexible drive elements each secured to the corresponding ends of said harnesses and passing over the corresponding wheel.

HENRY COOPER.

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