May 31, 1960 R. DEWAS 2,938,547

WEFT HOLDING MEANS FOR WEAVING LOOMS WITH CONTINUOUS WEFT FEED

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Fig. 1

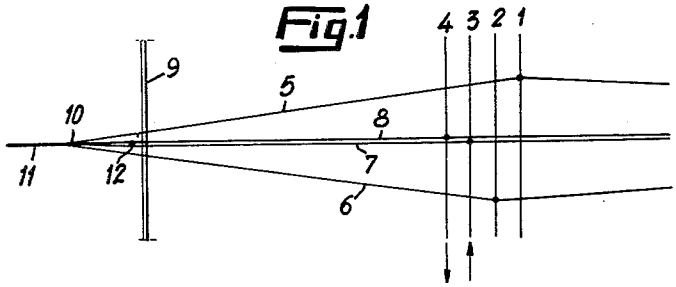


Fig. 2

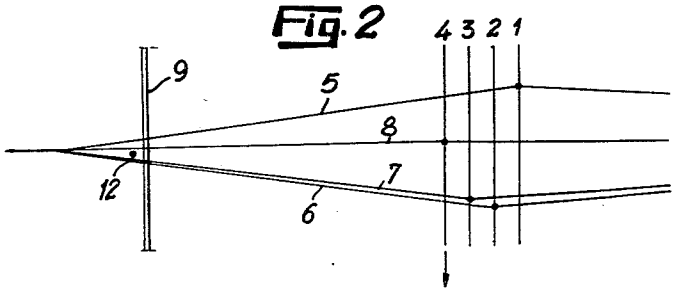


Fig. 3

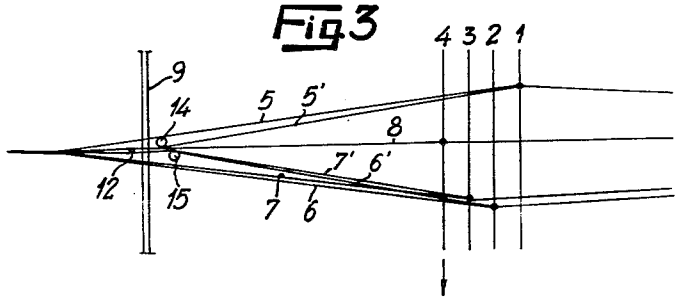
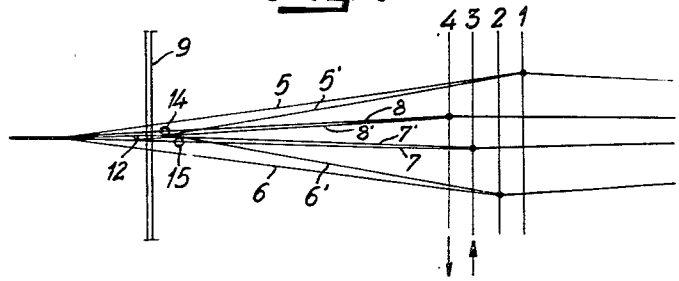


Fig. 4



INVENTOR:
Raymond Dewas
By
Richards & Geier
ATTORNEYS

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Fig. 5

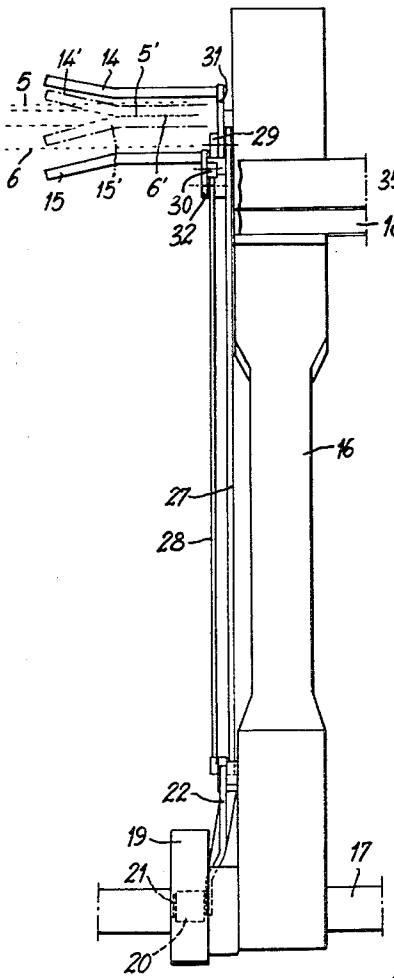


Fig. 6

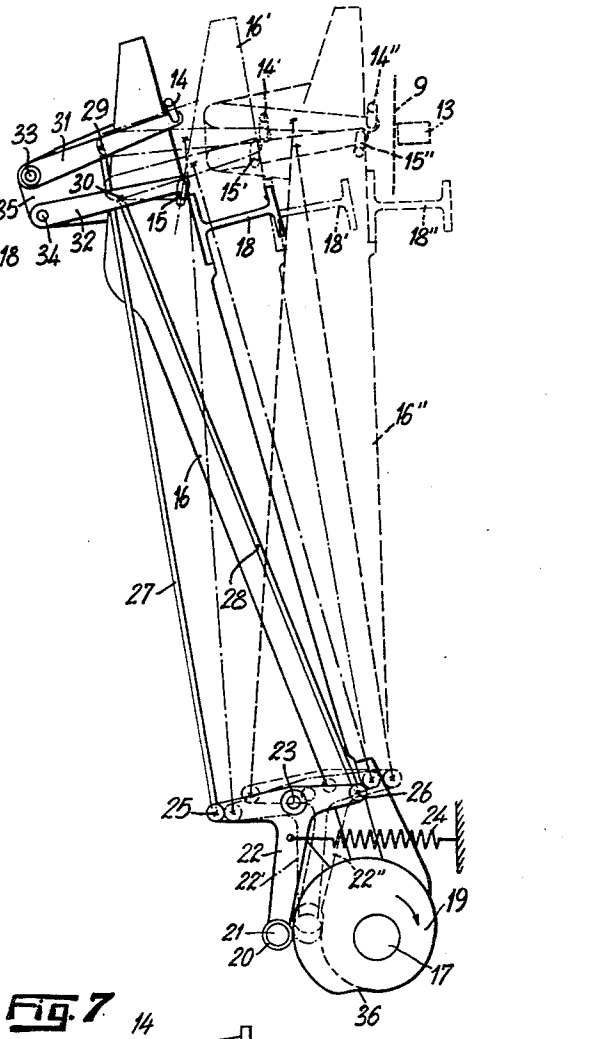


Fig. 7

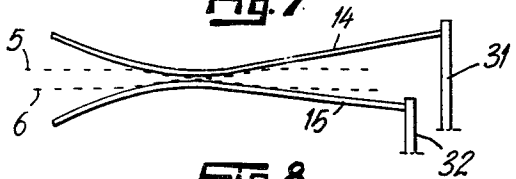
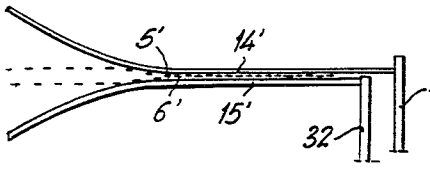


Fig. 8



INVENTOR:
Raymond Dewas
BY
Richards & Geier
ATTORNEYS

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WEFT HOLDING MEANS FOR WEAVING LOOMS WITH CONTINUOUS WEFT FEED

Raymond Dewas, 120 Blvd. de Saint Quentin, Amiens, France

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Claims priority, application France Mar. 20, 1956

6 Claims. (Cl. 139—35)

This invention relates to weaving looms with continuous weft feed from large bobbins located outside the shed.

In certain of these looms it is necessary that the harness frames which form the successive sheds pass one another at the moment when the weft feeder releases the end of the shot in order that the shot may be inserted with the required precision.

In certain weaving operations it is desirable for the harness frames to pass one another with a certain lag and there are other cases in which it is difficult to regulate the harness frames in such a way that they always pass one another at the same moment in the cycle. There are also weaves which do not allow, for each shed formation, of at least two harness frames operating in opposite directions so that with certain shed formations there is no crossing properly speaking, because the movement of one or more harness frames is only in one and the same direction. It is easily understood that, in these cases, the shot may be inserted in a defective manner due to the fact that it is not held between the moment when it is released from the weft feeder and that when it is gripped between the threads of the warp sheets of the shed.

The invention has for its object to effect the holding of the shot by having its end squeezed or gripped at the very moment when said end is released from the weft feeder whatever may be the weave or the fabric.

This result is achieved by this invention which is characterised in that the selvage warp threads in the sheets of the shed are, in the parts comprised between the fell and the reed, at the moment when the weft feeder releases the end of the shot, brought together to squeeze or grip said end.

The invention also consists in the provision of movable parts, arranged respectively above and below the sheets of selvage warp threads, preferably behind the reed and which at the proper moment, bring the said sheets towards one another.

These movable parts can be constituted, for example, by rods or plates, which can be controlled by cams or otherwise.

These features, as well as others not yet mentioned, will be explained more clearly in the following description of one embodiment of this invention, applied to a needle weaving loom, given as a simple non limitative example and schematically shown on the drawing accompanying this specification in which:

Figures 1 to 4 show the movements of the warp sheets with two different weaves; Figures 1 and 2 having reference to the case where the loom is not provided with the improvements according to the invention, whilst Figures 3 and 4 which correspond respectively to Figures 2 and 1 deal with the case of a loom improved according to the invention.

Figures 5 and 6 show an arrangement of movable parts,

located respectively above and below the selvage threads of the warp sheets, operated by cams.

Figures 7 and 8 are views showing, in two different positions, a modification in the arrangement of movable parts.

In Figures 1 to 4 the harness frames which operate the warp threads are designated by the numerals **1**, **2**, **3** and **4**, the warp threads constituting the corresponding sheets by the numerals **5**, **6**, **7** and **8**, the reed by the numeral **9**, the fell of the cloth by the numeral **10**, and the fabric by the numeral **11**; **12** being the shot which has just been passed into the shed.

When the slay moves backward after having beaten the weft, the weft inserting needle penetrates into the shed and brings the shot along with it through the shed. The harness frames **3** and **4**, being displaced respectively upwardly and downwardly, are going to pass one another at the moment when the needle **13** (Figure 6) releases the end of the shot **12**. This shot which is then gripped or squeezed between the sheets of threads **7** and **8**, will therefore be inserted, or put in place relatively to the fell of the fabric with the required precision.

In Figure 2, the harness frame **4** is falling but no frame is raised so that the shot **12**, left to itself between the moment when it is released and the moment when it will be beaten up by the reed, may become retracted or untwisted and will not be inserted with the required precision.

In Figure 3 where the warp threads are assumed to move as in Figure 2, two rods **14** and **15**, arranged and operated according to the invention bring the selvedge threads towards one another at **5'**, **6'**, and **7'** which effects the maintaining of the shot **12** by gripping its end while said end is being released from the weft feeder needle.

In Figure 4, the warp threads, are assumed to be moved as in Figure 1, but the harness frames have been retarded, because the weave or, may be, the fabric does not accommodate itself to the method of weaving called "with closed shed," or because the fragility of the warp and/or of the weft accommodates itself better to a retarded closing of the harness frames. The warp threads **7** and **8** moving to form the shed are therefore retarded relatively to the release of the shot; but owing to the rods **14** and **15**, the end of the shot **12** is, at the very moment when it is released by the needle, maintained by the selvage threads which move to the positions **5'**, **6'**, **7'** and **8'**, respectively.

Generally, the rods **14** and **15** remain close the one to the other until about the moment when the beating up of the shot takes place, after which they take up a new position. Indeed it is possible, at least, in the case of weaves when at least two harness frames operate in opposite directions for each shed formation (as shown in Figure 1 or in Figure 4), to separate the rods **14** and **15** a little so that the harness frames pass one another and terminate the separation at about the moment when the reed presses the shot against the fell.

Figure 5 shows in front elevation, the right hand sword of the loom and a part of the batten when the assembly is in backward position.

Figure 6 is a side elevation of Figure 5 with, in addition, shown in dot and dash lines, the sword and batten at about the moment when the needle leaves the shed and in broken lines the sword and batten in forward position at the moment of the pressing of the shot against the fell.

In Figures 5 and 6, **16** is the sword the axis of oscillation of which is constituted by the driving shaft **17**; **18** is the batten, **9** is the reed and **13** is the needle, the reed and needle, being, for clarity of drawing, only shown in that part of Figure 6 drawn in broken lines.

19 is the cam, keyed on the driving shaft **17**, and which, by means of a roller **20** and spindle **21**, oscillates

the lever 22 about a pin 23 mounted in the sword 16. The roller 20 is pressed against the cam 19 by the action of a spring 24.

The lever 22 by means of two pins 25 and 26 operates two rods 27 and 28 which in turn by means of the pins 29 and 30 move two levers 31 and 32 oscillating respectively about the pins 33 and 34 supported by a bracket 35 attached to the sword 16.

These two levers 31 and 32 carry the rods 14 and 15 respectively, adapted to act on the selvage warp threads, designated in Figure 5 by the numerals 5 and 6.

The operation is as follows:

In the backward position of the sword 16 and its batten 18 as shown in full lines in Figures 5 and 6 the parts 14 and 15 are separated one from the other and do not influence the selvage threads of the warp sheets.

At about the moment when the sword and its batten, advancing towards the fell 10, whilst the needle 13 leaves the shed, are passing by the positions 16' and 18' respectively, as shown in dot and dash lines, the depression 36 of the cam 19 operates the lever 22 moving it to the position 22' and moves the rods 14 and 15 to the positions 14' and 15', the said rods thus maintaining the selvage threads in the positions 5' and 6' represented by the flattened dots in Figure 5 (so as to prevent overcrowding of the drawing, the shot gripped or squeezed between the threads 5' and 6' has not been shown in this figure).

The sword and its batten continuing their movement towards the fell at the moment of beating up of the shot arrive at the position shown in broken lines at 16" and 18". At this moment the lever 22 reaches the position 22" and the rods 14 and 15 the positions 14" and 15".

At about the moment when the shot is pressed against the fell 10, the cam 19 opens the rods 14 and 15 progressively.

The rods 14 and 15, instead of being parallel in the zone where they act on the selvage warp threads, can be inclined relatively to each other so that they act initially on the threads, most distance to the first thread of the selvedge in the active zone. This result can be obtained, either by mounting the rods 14 and 15 elastically on their respective levers 31 and 32, or further in providing these rods with springs that rest on the threads, or again in making use of elastic rods, bent as shown in Figure 7 and which, during the closing operation, are flexed so as finally to occupy the position shown in Figure 8. This arrangement adapts itself better to variations in the heights of the sheets and allows the shot to be gripped or squeezed progressively during the withdrawal of the needle. These elastic rods can, either be slightly displaced relatively to each other as shown in Figures 3 and 4 or be arranged one above the other.

It will be obvious that the principle of these improvements is applicable to one or other of the selvedges.

The described arrangement, and all others due to the application of the principle of the invention, can also be employed in the carrying out of the principle described in my U.S. Patent No. 2,772,697, granted December 4, 1956.

It is to be understood that modifications, improvements in detail and the use of mechanical equivalents can be conceived, without departing from the scope of the invention.

I claim:

1. In a weaving loom having shed-forming frames, a reed, a batten and a weft inserting device for repeatedly inserting a weft through the shed and then releasing it; selvedge warp threads controlling means comprising two elements relatively movable toward and away from each other, one of said elements being located above and extending across the selvedge warp threads of the upper sheet of the divided shed, while the other element is located under and extends across the selvedge warp threads of the lower sheet of the divided shed, and power means connected with said elements for operating same in such timed relation to the movements of said frames, said reed, said batten and said weft inserting device, that, upon the weft inserting device releasing a shot, said two movable elements move toward each other and bring together the selvedge warp threads which squeeze and grip the released end of the shot which has just been inserted through the shed.

2. Selvage warp thread controlling means for a weaving loom having shed forming means, a reed, a batten, swords for supporting and operating the batten, a driving shaft for the swords and a weft feeder, supplied with a continuous weft from an externally located large bobbin, for inserting a shot of weft thread into the shed of warp threads; said selvage warp thread controlling means comprising a first movable element located above and extending across the selvage warp threads of the upper sheet of the divided shed, said first element being mounted on a first lever pivoted in proximity to the batten; a second movable element located below and extending across the selvage warp threads of the lower sheet of the divided shed, said second element being mounted on a second lever pivoted in proximity to the batten; a three armed lever pivoted on a sword in proximity to the driving shaft; a connecting rod coupling the first arm to the first lever; a connecting rod coupling the second arm to the second lever; a cam mounted on the driving shaft and cooperating with the third arm; and a spring for maintaining the third arm in contact with the cam.

3. Selvage warp thread controlling means according to claim 1 in which the elements consist of elastic rods.

4. Selvage warp threads controlling means according to claim 2 in which the elements are elastic rods so shaped that during operation they initially approach the selvage threads most distant from the first warp thread of the selvage and progressively approach the remainder of the selvage warp threads so that ultimately all the selvage warp threads are displaced by one or other of the elements.

5. Selvage warp thread controlling means according to claim 2 in which the first movable element is arranged in staggered relation to the second movable element.

6. In a weaving loom having shed-forming frames, a reed, a batten and a weft inserting device for repeatedly inserting a weft through the shed and then releasing it; selvedge warp threads controlling means comprising two elements carried by the batten and relatively movable toward and away from each other, one of said elements being located above and extending across the selvedge warp threads of the upper sheet of the divided shed, while the other element is located under and extends across the selvedge warp threads of the lower sheet of the divided shed, and power means connected with said elements for operating same in such timed relation to the movements of said frames, said reed, said batten and said weft inserting device that, upon the weft inserting device releasing a shot, said two movable elements move toward each other and bring together the selvedge warp threads which squeeze and grip the released end of the shot which has just been inserted through the shed.

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