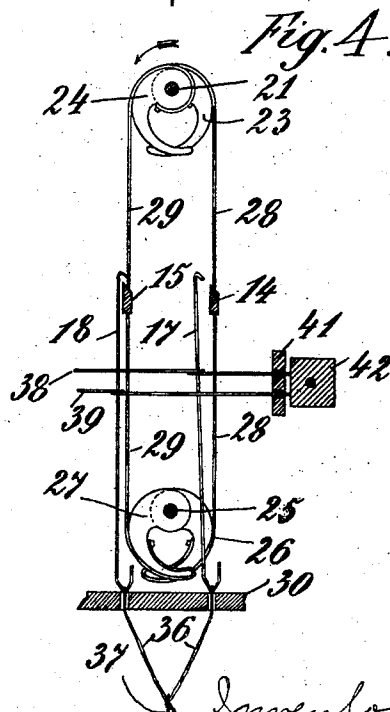
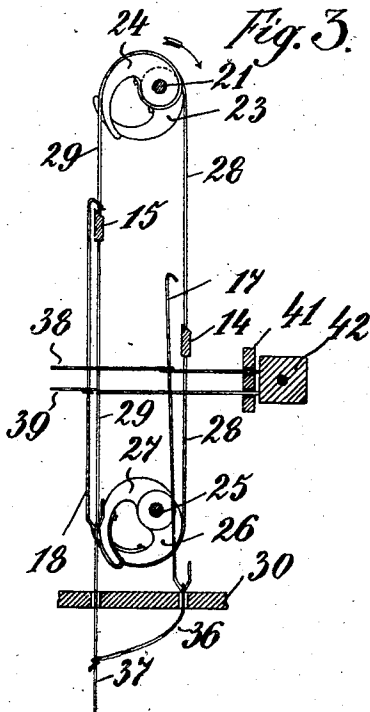
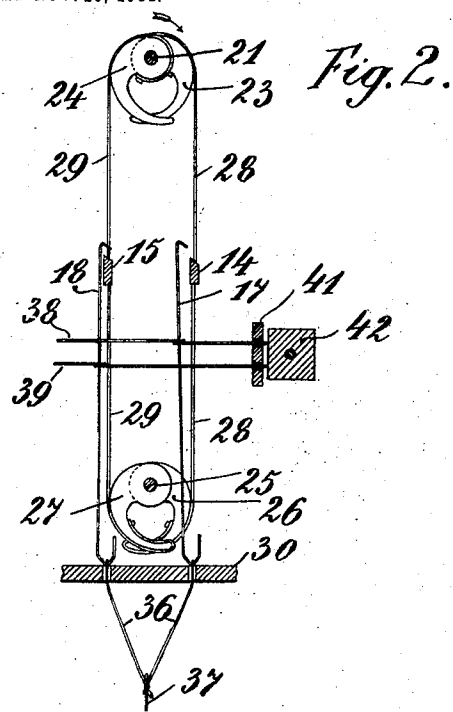
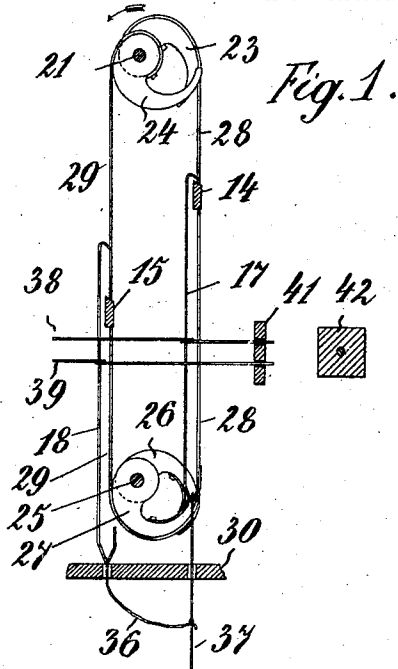


0. SCHREIBER.

DOUBLE LIFT JACQUARD MECHANISM FOR LOOMS.

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UNITED STATES PATENT OFFICE.

OSCAR SCHREIBER, OF ZWICKAU, GERMANY.

DOUBLE-LIFT JACQUARD MECHANISM FOR LOOMS.

No. 845,271.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed November 10, 1904. Serial No. 232,171.

To all whom it may concern:

Be it known that I, OSCAR SCHREIBER, a subject of the German Emperor, residing at 21 Lindenstrasse, Zwickau, Saxony, in the Empire of Germany, have invented certain new and useful Improvements in Double-Lift Jacquard Mechanism for Looms, of which the following is a full and exact specification.

10 This invention relates to a double-lift shedding mechanism for looms in which after each lifting of the shed a closed leash is established.

15 The drawing, wherein similar numerals refer to similar parts throughout the several views, illustrates the invention on a jacquard-machine.

20 Figures 1 to 4 are diagrammatic views of my improved mechanism, showing four different positions of the parts.

In the frame of the machine are arranged the blades or knives 14 and 15, moving up and down in suitable guides. Knife 14 serves to move the lifting-wires 17, while 25 knife 15 works together with the lifting-wires 18. Of course, the same as with common jacquard-machines, a number of knives 14 and 15 may be arranged side by side and united in knife-frames. The knives 14 and 30 15 are actuated by eccentric disks of a peculiar shape. A shaft 21 is journaled in suitable bearings above the machine and carries eccentric disks 23 and 24. In the lower part of the machine are arranged on both 35 sides of the frame pivots 25, on each of which turn a pair of eccentric disks 26 and 27, which are of the same shape as the disks 23 and 24 on the shaft 21. From the knives 14 ropes, chains, or belts 28 lead to the pulley 40 23 as well as to the pulleys 26, and in the same way ropes, chains, or belts 29 lead from the knives 15 to the pulley 24 and to the pulleys 27. If, therefore, an oscillating motion is given to the shaft 21, the knives will 45 rise and sink in opposite direction. It is immaterial whether the pivots 25 are arranged above or below the grid or bottom board 30, on which depends the position of rest of the lifting-wires 17 and 18.

50 The lifting-wires 17 and 18 are the same as in every double-lift machine connected in pairs by cords 36, to which are attached the harness-cords 37. For the lifting-wires 17 is provided a row of needles 38 and for the 55 lifting-wires 18 a row of needles 39, which are journaled on the one side in the usual

spring-casing (not shown) and on the other in the needle-board 41. The card cylinder or prism 42 can in the usual manner be journaled in a lay or batten.

60 At each oscillation of the cylinder-batten the cylinder or card prism upon which is placed a card or pattern chain perforated according to the pattern desired is turned by means of a change mechanism (not shown in 65 the drawings) in order to place another card before the needles.

The working of the machine is as follows: Supposing the start is made from the position shown in Fig. 1, the knife 14 has raised a 70 part of its lifting-wires 17, which therefore lift their harness-cords 37 so that the threads of the warp heddled therein in the usual manner form the upper shed, while another part of the same lifting-wires rests on the grid or 75 bottom board 30 and determines the lower shed position of the respective threads of the warp. The lifting-wires 18 are all in their position of rest—that is to say, on the bottom board or plate 30—because the knife 15 80 is in its lowest position. The pattern-card cylinder or prism 42 has been moved away from the needle-board 41 by its actuating device. If now the pulley-shaft 21 is turned in the direction of the arrow, as shown in Fig. 2, 85 the knife 14 descends rapidly, while the knife 15 commences to rise slowly. The two knives meet on the same level in consequence of the form of the eccentric disks 23 and 24 on the one hand and in consequence of the 90 relative position of the disks to each other on the other hand—that is to say, they cross each other before the knife 15 can seize the hooks of its lifting-wires 18. By this time the card-cylinder 42 has, as shown in Fig. 2, 95 been brought again into the beating position, and the needles 38 and 39 are adjusted simultaneously for the next two liftings of the shed according to the pattern-card; but even when the machine works at the greatest 100 speed the changing of the lifting-wires or the seizing of their hooks by the ascending knife is effected with the greatest safety, as that knife which forms shed in the first place is, as shown in Fig. 2 with regard to the knife 15, 105 slowly ascending. The knife 14, however, which pushes away a part of the previously-raised lifting-wires, continues its descending movement, so that the respective row of lifting-wires 17 has sufficient time to come to 110 rest.

On the device changing from the position

shown in Fig. 2 to that shown in Fig. 3 the knife 15 is moved upward by means of the disk 24 and carries away with it a part of the lifting-wires 18. The second shed is now
 5 formed. The result of the peculiar shape of the eccentric disks is that the upward movement of the knife 15 after seizing the lifting-wires 18 to be raised is accelerated to a certain extent, while, on the other hand, the upward movement of the knife 14 is gradually
 10 retarded. The dead move of the descending knife 14 or 15 after passing the crossing-point can in consequence of the shape of the eccentric driving-disks be done away with either
 15 entirely or nearly, so that in spite of the up-and-down movement in opposite directions no lengthening worth mentioning of the part of the lifting-wires projecting above the needles can take place; but by the dead move
 20 the lifting movement of the knives is facilitated. During the upward movement of the knife 15 (shown in Fig. 2) the card-cylinder 42 remains in the beating position. Also during the first part of the downward movement
 25 of this knife 15—namely, up to the time where the respective lifting-wires 18 return to the position of rest—that is to say, to the bottom of the plate 30—the card-cylinder 42 remains in the beating position. The knife
 30 14 has in the meanwhile been sufficiently raised again that it can seize and carry along with it those lifting-wires 17 which are, according to the pattern-card, to be raised. This position is shown in Fig. 4, and a continuation of the rotation of the pulley-shaft
 35 21 in the direction of the arrow leads back to the position shown in Fig. 1.

What I claim as my invention, and desire to secure by United States Letters Patent,
 40 is—

1. In a double-lift shedding mechanism for looms, the combination with the bottom board, and the two rows of lifting-wires normally resting on the bottom board, of a pair
 45 of knives traveling in opposite directions and adapted to engage the lifting-wires to move them up and down, and means for imparting vertical reciprocation to the knives; said means causing the knives to continue their
 50 downward movement after they have deposited the wires on the bottom board, and said means being constructed to gradually increase the rapidity of the upward movement of the knives and gradually decrease the
 55 downward movement of the knives.

2. In a double-lift shedding mechanism for looms, the combination with the bottom board and the two rows of lifting-wires normally resting on the bottom board, of a pair
 60 of knives traveling in opposite directions, and

adapted to engage the lifting-wires to move them up and down, and means for imparting vertical reciprocation to the knives; said means causing the wires to continue their
 65 downward travel after they have deposited the wire on the bottom board, and said means being constructed to move one knife rapidly downwardly while the other knife is moved slowly upwardly to cause the crossing
 70 of the knives to take place after the descending knife has deposited the wires on the bottom board and prior to the engaging of the wires by the ascending knife.

3. In a double-lift shedding mechanism for looms, the combination with the bottom
 75 board, the two rows of lifting-wires normally resting on the bottom board, and the knives for gripping the lifting-wires to move them up and down, of means for imparting vertical reciprocation to the knives; said means comprising a pair of upper and a pair of lower oscillatory cam-disks and a pair of flexible connections each engaging one of the lower and one of the upper cam-disks and each secured
 85 to one of the knives intermediate of its ends; the cam-disks being constructed to move one knife rapidly downwardly while the other knife is moved slowly upwardly to cause the crossing of the knives to take place near the starting-point of the upwardly-moving knife
 90 and prior to the gripping of the lifting-wires by the upwardly-moving knife.

4. In a double-lift shedding mechanism for looms, the combination with the bottom
 95 board the two rows of lifting-wires normally resting on the bottom board, and the knives for gripping the lifting-wires to move them up and down, of means for imparting vertical reciprocation to the knives; said means comprising a pair of upper and a pair of lower oscillatory cam-disks and a pair of flexible connections each engaging one of the lower and one of the upper cam-disks and each secured
 100 to one of the knives intermediate of its ends; the cam-disks being constructed to move one knife rapidly downwardly while the other knife is moved slowly upwardly to cause the crossing of the knives to take place near the starting-point of the upwardly-moving knife
 105 and prior to the gripping of the lifting-wires by the upwardly-moving knife; and the cam-disks engaging the same flexible connection being arranged in the same position relatively to their turning-axes.

In testimony whereof I affix my signature
 115 in presence of two witnesses.

OSCAR SCHREIBER.

Witnesses:

WOLDEMAR HAUPT,
 HENRY HASPER.