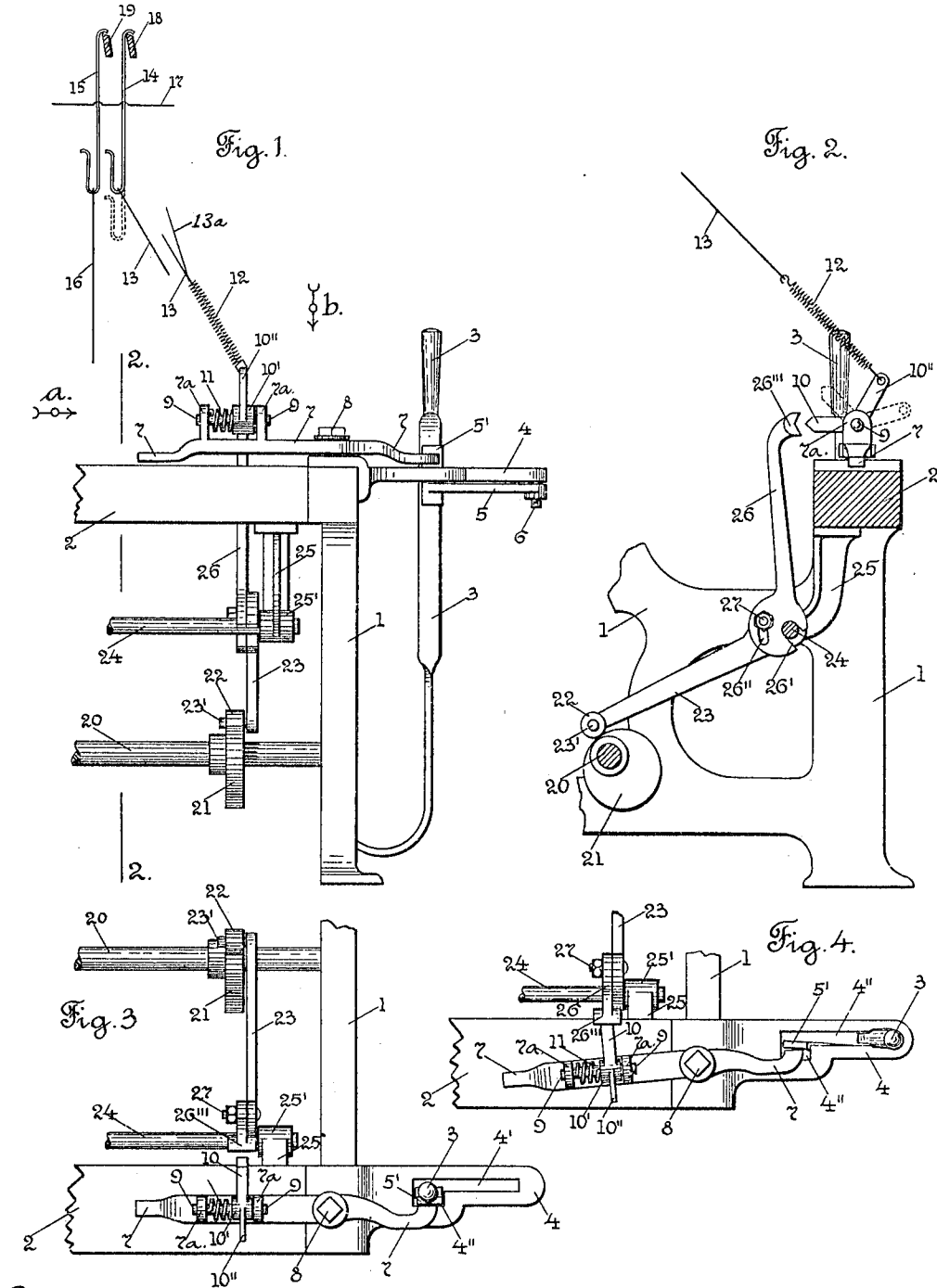


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STOP MOTION FOR LOOMS.
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STOP-MOTION FOR LOOMS.

949,365.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PETER E. PROVOST, a citizen of the United States, residing at Fisherville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Stop-Motions for Looms, of which the following is a specification.

My invention relates to a stop motion for a loom, having pattern mechanism for controlling the movement of the harnesses, which mechanism may be a jacquard, or any other well known type of pattern mechanism.

The object of my invention is to provide a supplemental stop motion which may be combined with the ordinary filling stop motion on a loom, or may be used separately, to automatically stop the loom when the pattern surface, or pattern chain does not operate properly, for instance in case of a jacquard pattern surface, if the pattern cards are misplaced, or do not travel properly over the cylinder.

I have only shown in the drawing a detached part of a loom, with my improvements in a stop motion combined with the ordinary shipper lever, and in this instance connected with and operated by one of the upright wires of a jacquard.

Referring to the drawing:—Figure 1 is a view of the right hand end of a loom frame, showing the ordinary shipper lever, and a detached part of a jacquard, and my improvements combined therewith. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *a*, same figure. The jacquard wires are not shown in this figure. Fig. 3 is a plan view of the parts shown in Fig. 1, looking in the direction of arrow *b*, same figure. The jacquard wires and connections thereto are not shown in this figure. Fig. 4 shows some of the parts shown in Fig. 3, in a different position.

In the accompanying drawing, 1 is a portion of the end or side frame of a loom, 2 is the breast-beam, 3 is the shipper lever fast at its lower end to the loom frame 1, and extending at its upper end through an elongated slot 4' in a plate 4 secured to the end of the breast-beam. The slot 4' has an offset 4'' therein into which extends the upper end of the shipper lever 3, which is held therein, when the loom is operating normally. An arm 5 is pivotally mounted at its outer end

on a stud 6 on the underside of the plate 4, see Fig. 1, and has on its inner end a vertically extending plate 5', which extends up through the offset recessed part 4'' in the recess 4' in the plate 4, and directly back of the upright part of the shipper lever 3.

7 is a lever pivotally mounted on the upper side of the breast-beam on a stud 8, and having its outer end bent to be in alinement with and adapted to engage, in this instance the upright plate 5' on the lever 5. The inner end of the lever 7 may be connected with the slide of the ordinary filling stop motion, not shown. The lever 7 may be the regular knock-off lever of the filling stop motion, to engage and operate the shipper lever, or it may be a separate lever.

All of the above mentioned parts, with the exception of the lever 7, may be of the usual and well known construction and operation.

I will now describe my improvements.

On the lever 7 are in this instance two upward extensions or stands 7^a, which form bearings for the short shaft 9, on which shaft is loosely mounted the hub 10' of an arm 10. A helically coiled torsion spring 11 is secured at one end to one of the stands 7^a, and at its other end to the hub 10' of the arm 10, and acts to raise said arm 10, as shown by broken lines in Fig. 2, and yieldingly holds it in its raised position. Extending out from the hub 10' of the arm 10 is a projection 10'', the end of which in this instance is attached to one end of a light helically coiled contraction spring 12; the other end of said spring 12 being attached to one end of a cord 13, which cord passes over suitable guide pulleys, not shown, and is connected to the lower end of an upright wire 14 of a jacquard. Said wire is not connected with the warp, but is a dummy wire. 15 is a second upright wire of the jacquard, having a cord 16 attached thereto in this instance for the selvage warp.

17 is one of the horizontally extending wires of the jacquard, which has a longitudinal movement communicated thereto by the imperforated portion of the jacquard pattern chain, in the ordinary way, to move the wires 14 and 15 to the left in Fig. 1. In case the perforated part of the card comes opposite the wire 17, then the wires 14 and 15 remain stationary.

18 and 19 are two lift bars or knives for the wires 14 and 15. The lift bars 18 and

19 are raised and lowered by mechanism, not shown, every pick, as is customary in a double lift jacquard.

20 is the bottom shaft of the loom, on which is fast, in this instance a cam 21. The periphery of the cam 21 is in this instance engaged by a roll 22 on a pin 23' on an arm 23, which forms one member of a cam lever, and is pivotally mounted on a transverse shaft 24, one end of said shaft 24 being mounted in a suitable bearing 25' in a hanger 25, see Fig. 1. A second arm 26 forming the other member of the cam lever has an open end slot 26' in its lower end, to receive the shaft 24, and has a pivotal motion thereon, and is adjustably connected by a bolt 27 to the arm 23; said bolt 27 extends through an elongated slot 26'' in the end of the arm 26, and through an opening in the arm 23, to secure said arms together. The upper end of the arm 26 is in this instance curved outwardly and has a widened engaging end 26''', which is in alinement with and adapted to engage the inner end of the arm 10.

From the above description in connection with the drawing, the operation of my improvements in loom stop motion will be readily understood by those skilled in the art.

The operation of a jacquard is well understood by those skilled in the art. The pattern surface, made up of a series of cards, which are laced together at their ends, passes over a cylinder, on the ends of which are pegs or pins adapted to fit into holes in the ends of the cards, to retain the cards on the cylinder and cause them to revolve with the cylinder. A rotary motion is communicated to the cylinder, and also a swinging motion out and in. The cards are provided with holes or openings therethrough, according to the pattern of the fabric to be woven. A series of horizontally extending wires or needles are employed, to be engaged by the pattern cards, and a series of vertically extending wires, connected with the horizontally extending wires, to be moved by said horizontally extending wires. The lower ends of the vertically extending wires are attached to cords having wire eyes therein, through which the warp threads pass. In case of a double lift jacquard, there are two lift bars or knives, which are raised or lowered every other pick.

In the mechanism shown in the drawing, the wire 15 is for the selvage warp, and the wire 14 is a dummy wire for operating my supplemental stop motion.

In the normal operation of the loom and the pattern mechanism, a blank in the pattern cards, as the cards are moved through the rotation of the pattern cylinder, will cause the horizontally extending wire 17 to be moved to the left in Fig. 1, and the

dummy wire 14 will be moved to the left, and held out of the path of the reciprocating knife 18, so that said wire 14 will drop to its lowest position, as shown by broken lines in Fig. 1, and allow the torsional spring 11 to act to raise the arm 10 out of the path of the engaging end 26' on the cam lever 26—23, as shown by broken lines in Fig. 2. The cam lever 26—23 is moved, through the rotation of the cam 21, every second pick of the loom.

If the pattern cards go wrong for any reason, and an opening in a card comes opposite the wire 17, when an imperforated part of the card should have come opposite said wire, then said wire 17 will remain stationary, and will not move the dummy wire 14 to the left and out of the path of the lift knife 18, and the raising of said knife 18 will raise the dummy wire 14, and through connections to the arm 10, will move down said arm, against the action of the spring 11, so that the arm 10, as shown by full lines in Fig. 2, will be in the path of the engaging end 26''' of the cam lever 26—23, and the forward movement of said cam lever 26—23, through the rotation of the cam 21 on the shaft 20, will move backwardly the knock-off lever 7, and through the lever 5 release the shipper lever 3, and allow it to move to automatically stop the loom.

It will be understood that the movement of the cam lever 26—23, relatively to the arm 10, is so timed that in the normal operation of the loom, the arm 10 will not be moved into the path of the cam lever 26—23, when said cam lever is on its forward movement, so that the dummy wire 14 may be raised with the selvage wire 15, on the upward movement of the knives 18 and 19, without stopping the loom, because the arm 10 is moved into the path of movement of the cam lever 26—23, when said cam lever is on its backward movement, as will be readily understood by those skilled in the art.

In connection with the dummy wire 14, and the connections to the stop motion mechanism, I may use a second dummy wire, not shown, at the other end of the jacquard head, and have said wire connected with the cord 13^a, passing over suitable guide pulleys, not shown. The second dummy wire, corresponding to the wire 14, is arranged to operate the stop motion mechanism, in case the cards run up on the cylinder, or do not remain in their proper normal position.

The operation of the two vertically extending dummy wires connected with the cord 13, are independent of each other, and the operation of each will actuate the stop motion mechanism to stop the loom.

It will be understood that the details of construction of my improvements may be varied if desired.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent is:—

1. In a loom having pattern mechanism for controlling the movement of the warps,
5 connections intermediate the pattern mechanism and a pivotally mounted arm, and said arm mounted on a lever, and said lever, and a cam lever for engaging and moving said arm to move said lever and operate the
13 shipper lever, to automatically stop the loom in case the pattern surface of the pattern mechanism does not operate properly.

2. In a loom having a jacquard for controlling the movement of the warps, the com-

bination with one of the vertically extending 15 wires of the jacquard, of connections to a pivotally mounted arm, and said arm mounted on a lever, and said lever, and a cam lever for engaging and moving said arm, to move said lever and operate the shipper lever, to 20 automatically stop the loom in case the pattern surface of the jacquard does not operate properly.

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Witnesses:

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