April 4, 1961 V. M. J. ANCET ET AL 2,977,996

WEFT CONTROL MECHANISM

Filed April 24, 1956

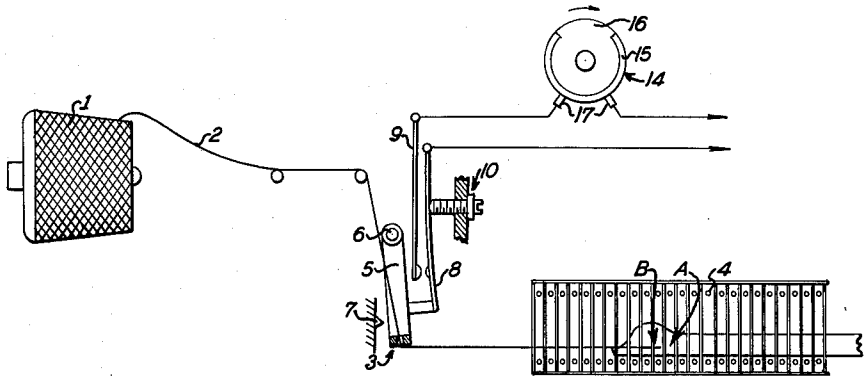


Fig. 1

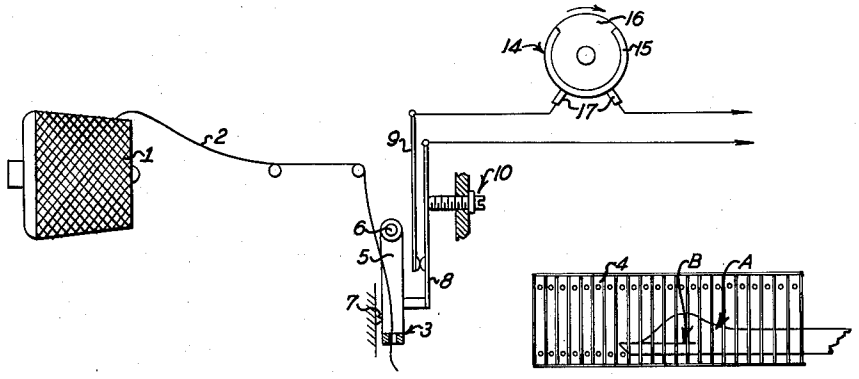


Fig. 2

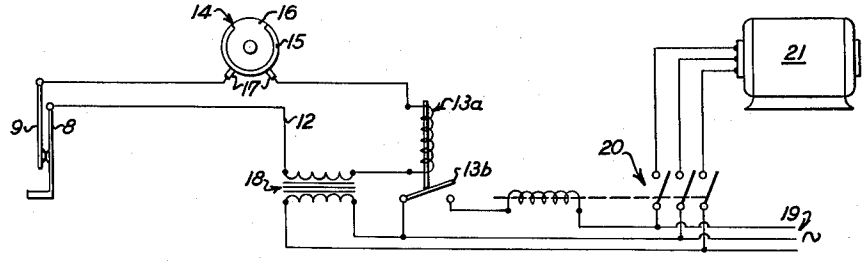


Fig. 3

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WEFT CONTROL MECHANISM

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2 Claims. (Cl. 139—370)

This invention relates to the control of weft thread. In shuttleless weaving looms, i.e. in looms fed with weft from a stationary supply out of which the thread is drawn through the shed, it is not easy, by reason of the narrowness of the opening in the shed to provide a weft feeler of a conventional type acting at the center of the shed or on the sides thereof.

As regards the control of the stoppage of a loom through entirely electric means, it may be desired to actuate a single contact system. However, this makes it necessary to overcome certain difficulties.

As a matter of fact, it is necessary on the one hand for the weft feeler to be failure proof while a thread may sometimes break without entirely losing its tension at the point at which it is controlled, if, for example, it is wedged beyond said point inside a weft inserting member.

To prevent this and in order to control the thread, one may be led to give it when inoperative a tension which is inconsistent with the requirements of a good weaving, taking into account the fact that, in this type of loom, the thread assumes, at the moment at which it is translationally drawn through the shed, a tension which is much higher than that assumed by it when inoperative. It is therefore necessary for this tension of the inoperative thread to be greatly reduced and even substantially cut out, which makes it a difficult matter to provide efficiently for detection.

Our invention has for an object the overcoming of these drawbacks and a detecting reliably, through electrical action, of the breaking of the thread by controlling it at a point of the path followed by it before entering the shed.

This method consists in controlling the extra tension of the thread when shifted translationally through the shed, in a manner such that the absence of this extra tension which is a reliable proof of a failure in the introduction of the pick, stops operation of the loom.

This method relying on said extra tension shows furthermore the advantage of detecting not only the breaking of the weft thread but also any faulty insertion of the pick other than a failure through breaking since such a faulty insertion leads also to a cutting out of the extra tension of the thread.

Our invention will be readily understood from the following description given by way of exemplification, reference being made to accompanying diagrammatic drawings, wherein:

Fig. 1 illustrates the mechanism at the moment of the insertion of a pick;

Fig. 2 shows the same mechanism in the position assumed by it upon a breaking of the thread;

Fig. 3 is a general wiring diagram.

In the drawing, 1 designates a large stationary spool or supply feeding the weft thread 2.

3 designates the eye or a like member through which the thread is drawn.

4 designates the shed through which the thread is to be inserted when drawn in the direction of the arrow by inserting means illustrated diagrammatically at A with their thread-clamping means B.

This eye 3 is carried at the end of the arm 5 generally perpendicular to the plane of the fabric being woven and freely rockable round a pivot 6; when inoperative, said arm is urged into contact with a stop 7 by a spring which, in the case illustrated is constituted by one of the yielding blades 8 of a switch, which blade carries a contact-piece registering with another contact-piece carried by another blade 9, these two blades forming together said switch.

The blade 8 is engaged on the other hand by an adjustable stop 10.

This switch is inserted in series in the circuit 12 of a relay 13. In said circuit 12 is also inserted in series a further switch 14, which is of the rotary type and includes two sectors of which one 15 is conductive and the other 16 is insulating. Said further switch is driven into rotation by one of the parts of the loom in synchronism with the operation of the latter, in a manner such that it closes the circuit across its terminals 17 during the insertion of a weft thread and leaves said circuit open when the thread is at a standstill.

This circuit 12 is fed through the agency of a transformer 18 by the supply lines 19 and it controls a stop and start or control switch 20 controlling in its turn the motor 21 driving the loom.

The operation of this weft fork acting also as means for detecting a faulty insertion of a pick is as follows:

At the moment of the insertion of a thread, the switch 14 is closed, but the circuit 12 remains however open and the relay 13 is deenergized so that the control switch remains in its operative circuit closing position whenever the weft thread is correctly introduced into the shed.

As a matter of fact, the traction exerted at such a moment on the thread 2 produces through the eye 3 a shifting of the arm 5 carrying said eye and thereby of the blade 8 so that the contact-piece on the latter moves away from the cooperating contact-piece on the blade 9.

In contradistinction, if by reason either of a breaking of said thread or of a faulty engagement of the said thread by the weft-inserting means, said thread is not subjected to any extra tension, it does not produce the opening of the switch 8—9 (Fig. 2). The circuit is then closed and the relay 13 is supplied with power; the relay coil will attract the movable section of the control switch 20 so as to open the latter and thereby stop the motor.

Lastly and in a more general manner, our invention is by no means limited to the sole embodiments disclosed hereinabove by way of examples and in a highly diagrammatic manner. Our invention covers in fact all the modifications of such embodiments which may fall within the scope of the accompanying claims.

What we claim is:

1. In a weaving loom having a stationary weft supply positioned laterally of the shed for insertion of a weft thread drawn into the shed from the supply to form a fabric, a weft stop motion comprising: a pivoted arm positioned intermediate the weft supply and the shed, said arm extending substantially perpendicularly to the plane of the fabric and having a first end remote from said plane and a second end adjacent said plane, pivot means supporting said arm at said first end for swinging movement toward and away from the shed, a stop limiting movement of said arm away from the shed at a position perpendicular to said plane, an eye mounted on said arm at said second end for receiving a weft thread from the weft supply and guiding it directly into the shed, spring means resiliently opposing movement of said arm toward the shed in response to traction exerted on the weft thread drawn into the shed, the force of said spring means being

of a value to permit movement of said arm toward the shed in the presence of normal traction and to cause return of said arm into contact with the stop in the absence of traction, and electrical circuit means including a switch actuated by the said arm, a relay in series with the first said switch to be energized thereby, and a loom control actuated by the relay to stop the loom upon actuation of the first said switch with said arm contacting said stop.

2. A weft stop motion as in claim 1 wherein the circuit means further includes a second switch in series with the first said switch and the relay, and means periodically opening and closing the second switch for controlling the energization of the relay for predetermined conditions.

References Cited in the file of this patent

UNITED STATES PATENTS

2,169,756	Buell et al.	Aug. 15, 1939
2,202,323	Sullivan	May 28, 1940
2,407,773	Fletcher	Sept. 17, 1946
2,470,527	Siciliano	May 17, 1949
2,600,365	Siciliano	June 10, 1952
2,638,942	Hindle	May 19, 1953
2,646,827	Cederlund	July 28, 1953
2,675,029	Butler et al.	Apr. 13, 1954

FOREIGN PATENTS

1,040,684	France	Oct. 16, 1953