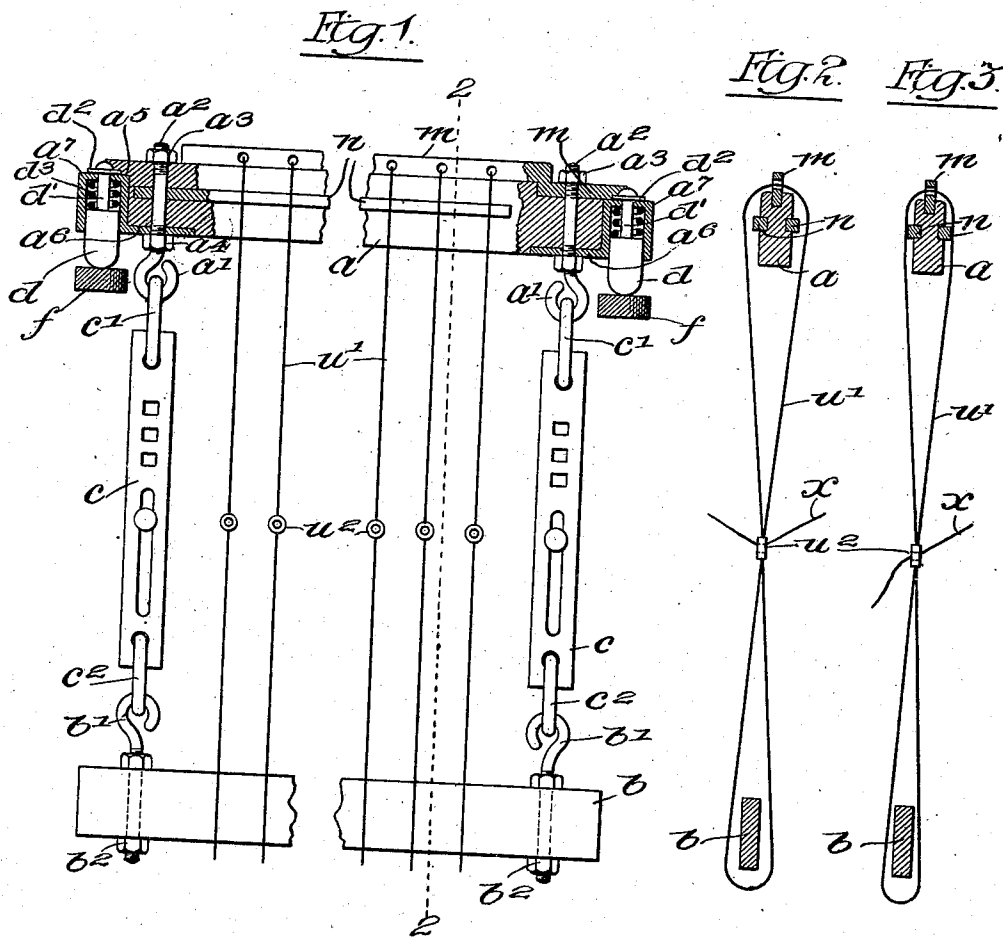


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F. PICK.
 WARP STOP MOTION FOR LOOMS FOR WEAVING.
 APPLICATION FILED JULY 20, 1905.



Witnesses:-

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UNITED STATES PATENT OFFICE.

FRIEDRICH PICK, OF VIENNA, AUSTRIA-HUNGARY.

WARP STOP-MOTION FOR LOOMS FOR WEAVING.

No. 867,596.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed July 20, 1905. Serial No. 270,491.

To all whom it may concern:

Be it known that I, FRIEDRICH PICK, manufacturer, a citizen of the Empire of Austria-Hungary, residing at Vienna, Austria, have invented certain new and useful

Improvements in Stop-Motions for Looms, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in stop motions for looms and has to do more particularly with that character of devices of this class wherein the function of stopping the loom is performed by an electrically operating device.

The invention comprises generally in addition to the usual heddle bars the provision of heddle cords a part of which is formed of conducting material and adapted to coöperate with contact members associated with one of the heddle bars to close circuit and stop the looms upon breakage of a warp thread.

The invention will be more fully described in connection with the accompanying drawing and will be more particularly pointed out and ascertained in and by the appended claims.

In the drawing:—Figure 1 is a side elevation of a device illustrating the main features of my invention applied thereto. Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, showing the parts in the same relative position. Fig. 3 is a view similar to Fig. 2 showing the parts in the position they would assume upon breakage of a warp thread.

Like characters of reference designate similar parts throughout the different figures of the drawing.

As shown in the drawing:—The heddle bars are designated respectively by *a* and *b* and means are provided for adjustably connecting said bars which means as shown consist of perforated bars *c* provided at their opposite ends with links *c'* and *c''*. The lower heddle bar *b* is provided with hooks *b'* connected with said links the shanks of said hooks passing through the heddle bar *b* and being fixed thereto by nuts *b''*. The upper bar *a* is provided with hooks *a'* the shanks *a''* of which extend through the heddle bar *a* and are secured thereto by nuts *a'''*. At its opposite ends the heddle bar *a* is provided with contact pieces which are preferably yieldingly mounted and which are designed to engage stationary contacts at the end of the shedding stroke or movement of the heddle bars and the parts are so disposed, in the embodiment shown as to effect contact on the downwardly shedding stroke.

Referring to the specific construction shown the heddle bar *a* is provided with holders *a''* preferably cylindrical in form and adapted to be located in recessed portions *a'''* at the ends of the bar *a*. Said holders are provided with tail pieces *a''''* adapted to seat in recessed portions in the lower side of the heddle bar *a* said tail pieces being apertured for passage of the shanks *a''* and

being held rigidly in place by the nuts *a'''* and *a''''*. This structural arrangement also serves to electrically connect certain parts of the apparatus as will hereinafter more fully appear. The contacts which are mounted in said holders *a''* are designated by *d* and are provided with reduced shanks *d'* adapted to pass through apertures formed in the upper ends of the holders *a''*. Washers *d''* on the upper ends of shanks *d'* prevent downward movement of the contacts beyond a predetermined point. Springs *d'''* are interposed between the holders and the upper ends of the contacts and serve to hold the latter in an extreme downward position and also serve to cushion the heddle bar *a* at the limit of its movement. Stationary contacts *f*, supported in any desirable manner not shown are located in the path of the contacts *d* and serve to limit downward movement of the heddle bars. It will be noted that the contacts *d* form the dual functions of limiting the downstroke of the heddle bars and also of effecting an electrical connection.

The heddle cords *u'* are connected at their adjacent ends with heddle eyes *u''* adapted to accommodate the warp threads *x*. The cords *u'* may be made of any desirable conducting material and as shown may be connected with the lower heddle bar *b* in any suitable manner such for instance as by looping the cords about said heddle bar as shown. The heddle cords *u'* are practically composed of conducting material and as shown are connected with the upper heddle bar in such a manner as to permit them to operatively associate with certain contact members hereinafter more fully described.

As shown in the accompanying drawing *m* designates a contact member located on top of the heddle bar *a* and provided with an extension *m'* apertured for passage of one of the shanks *a''* and adapted to be secured in place by the nuts *a'''* and *a''''*. Said member *m* is preferably in the form of a strip and is desirably perforated as shown and forms in effect a guide or spacing means for the heddle cords which are threaded through said apertures. The heddle cords *u'* are therefore looped about the heddle bar *a* in the same manner shown in connection with the lower bar *b*. Said bar *a* is also provided with other contact members which as shown are in the form of strips *n* and which are located laterally on the bar *a* in a manner to be engaged by the heddle cords *u'*. Said strips *n* are united at one end and are apertured to receive shank *a''* and are anchored thereby in place. I preferably show the strips embedded slightly in the lateral sides of the bar *a* to effect a more rigid anchorage of said strips. Assuming that two leads from a source of current are connected with the stationary contacts *f* it will be obvious that the lead connected to the left hand contact will send its current through left hand contact *d* and shank *a''* to

the strips n whereas the lead connected to the right hand contact f will be electrically connected through contact d and shank a^2 with strip m the strips m and n being of course insulated from each other.

5 When the bottom shed is formed and one of the warp threads x breaks the heddle cord will sag as shown in Fig. 3 and the limbs thereof, while normally engaging contact strip m will also engage strips n thereby closing circuit. On the other hand while the warp threads remain intact the heddle cords u' as shown in Fig. 2 will be held out of contact with strips.

1. An electric stop motion for looms comprising in combination, coöperating heddle bars, means for adjustably connecting said bars, an apertured conducting strip for the upper of said bars, said upper bar also having laterally disposed conducting strips, a heddle cord of conducting material connected with said lower bar and looped about said upper bar and passing through said apertured strip, yieldingly mounted contacts electrically connected with said apertured and laterally disposed strips, and stationary contacts connected with a source of current and adapted to be engaged by said yielding contacts whereby circuit may be closed, upon breakage of a warp thread, through said heddle cord and said apertured and lateral strips.

2. An electric stop motion for looms comprising in combination, coöperating heddle bars, an apertured conducting strip for the upper of said bars, said upper bar also having laterally disposed conducting strips, a heddle cord of conducting material connected with said lower bar and looped about said upper bar and passing through said apertured strip, yieldingly mounted contacts electrically connected with said apertured and laterally disposed strips, and stationary contacts connected with a source of current and adapted to be engaged by said yielding contacts whereby circuit may be closed, upon breakage of a warp thread, through said heddle cord and said apertured and lateral strips.

3. An electric stop motion for looms comprising in combination, coöperating heddle bars, a supporting conducting strip for the upper of said bars, laterally disposed conducting strips for said upper bar, a heddle cord of conducting material connected with said lower bar and looped about said upper bar, yieldingly mounted contacts electrically connected with said supporting and lateral strips, and stationary contacts connected with a source of current and adapted to be engaged by said yielding contacts whereby circuit may be closed, upon breakage of a warp thread, through said heddle cord and said supporting and lateral strips.

4. An electric stop motion for looms, comprising in combination, coöperating heddle bars, conducting strips for the upper of said bars, a heddle cord of conducting material connected with said lower bar and looped about said upper bar in a manner to engage said strips, yielding mounted contacts for said upper bar electrically connected with said strips, and stationary contacts connected with a source of current and adapted to be engaged by said

yielding contacts whereby circuit may be closed upon breakage of a warp thread, through the resulting engagement of said heddle cord with said strips.

5. An electric stop motion for looms comprising in combination, coöperating heddle bars, conducting members for the upper most bar, a heddle cord of conducting material operatively associated with said heddle bars, contacts for said upper bars electrically connected with said members, and stationary contacts connected with a source of current and adapted to be engaged by said bar contacts whereby circuit may be closed, upon breakage of a warp thread, through the resulting engagement of said heddle cord with said members.

6. An electrical stop motion for looms comprising in combination, coöperating heddle bars, electrical conducting members for one of said bars, means for connecting said members with a source of current, and a flexible heddle cord of conducting material looped about said heddle bars and adapted, upon breakage of a warp thread, to close circuit through said members.

7. An electric stop motion for looms comprising in combination, a heddle bar provided with laterally disposed contact strips, a contact strip mounted on top of said bar, said contact strips being connected with a source of current, and a flexible heddle cord of conducting material looped about said bar and adapted to close circuit through said strips upon breakage of a warp.

8. An electric stop motion for looms comprising in combination, a heddle bar provided with a combined guiding and contact member, a second contact member for said bar, said contact members being connected with a source of current and insulated from each other, and a heddle cord of conducting material guided by said first mentioned member and adapted upon breakage of a warp to close circuit through said contact members.

9. An electric stop motion for looms comprising in combination, a heddle bar provided with a perforated contact member, a second contact member for said bar, said contact members being connected with a source of current and insulated from each other, and a heddle cord of conducting material threaded through said perforated member and adapted upon breakage of a warp to close circuit through said members.

10. An electric stop motion for looms comprising in combination, a heddle bar provided with two contact members connected with a source of current and insulated from each other, and a flexible heddle cord of conducting material looped about said bar and adapted to close circuit through said members upon breakage of a warp.

11. An electric stop motion for looms comprising in combination, a heddle bar provided with two contact members connected with a source of current and insulated from each other, and a flexible heddle member of conducting material adapted upon breakage of a warp thread to close circuit through said contact members.

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

FRIEDRICH PICK.

Witnesses:

FRIEDRICH BINDERE,
ALVISTO S. HOGUE.