

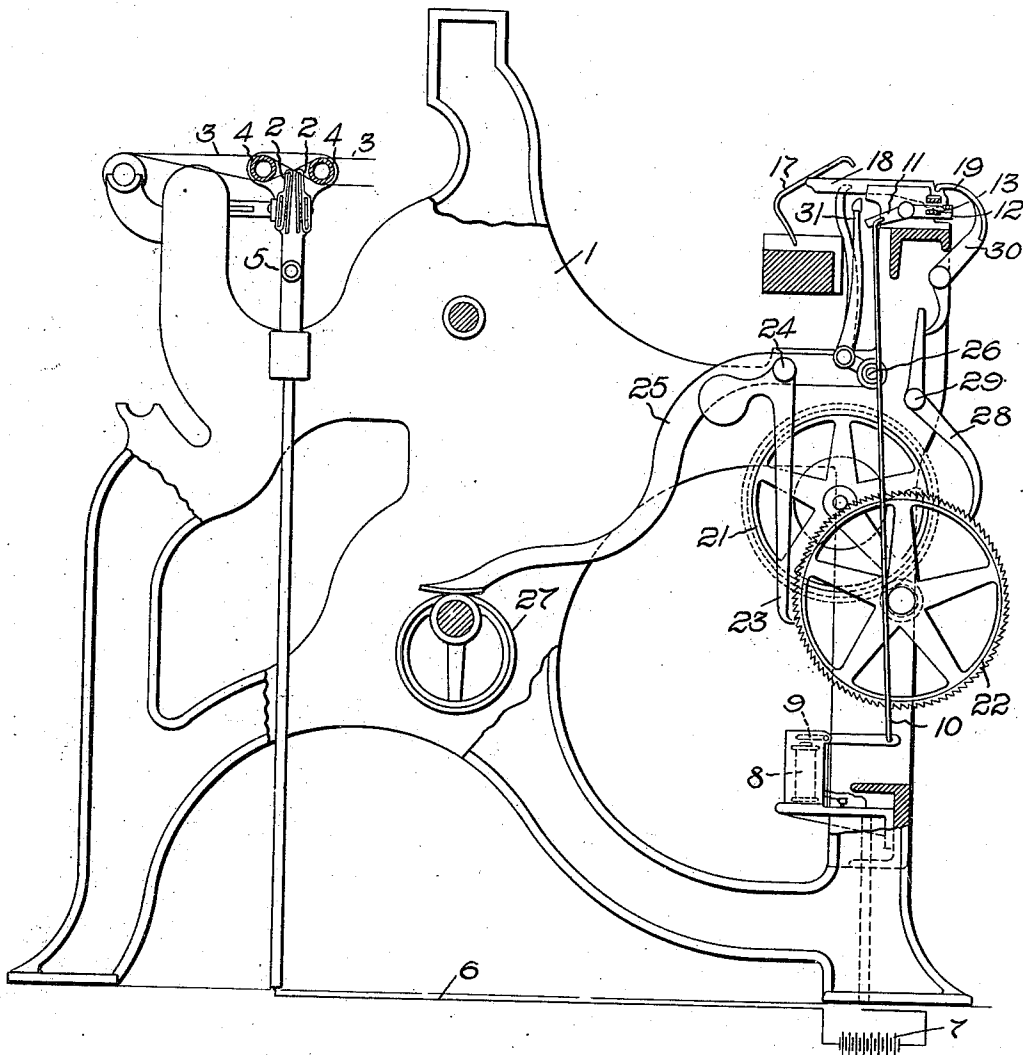
C. D. LANNING.
STOP MOTION FOR LOOMS.
APPLICATION FILED AUG. 17, 1908.

976,378.

Patented Nov. 22, 1910.

3 SHEETS—SHEET 1.

Fig. 1



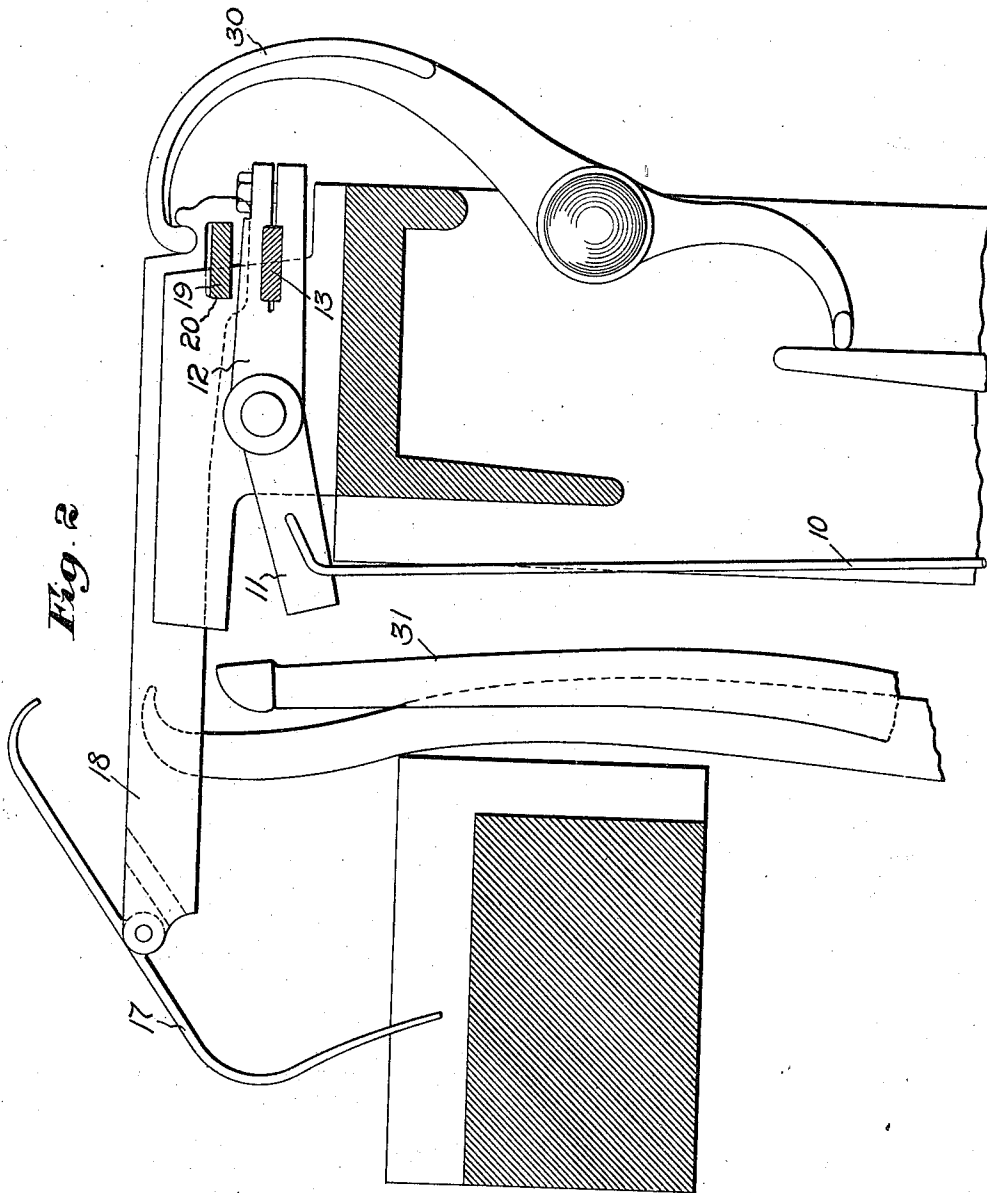
Witnesses
Horace A. Crossman
Robert H. Kammler.

Inventor:
Charles D. Lanning.
by Emily and Booth. Attys

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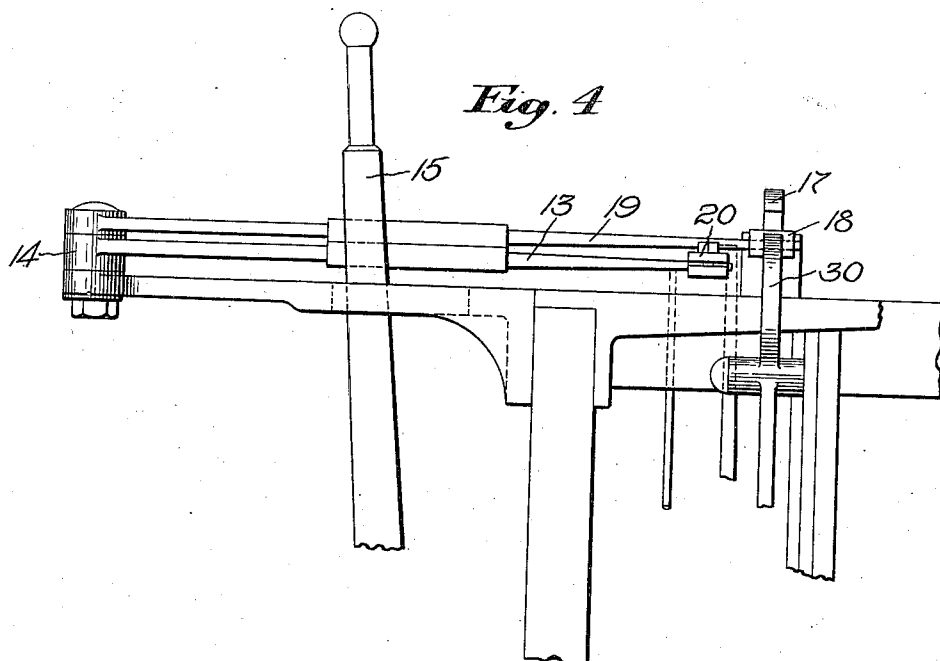
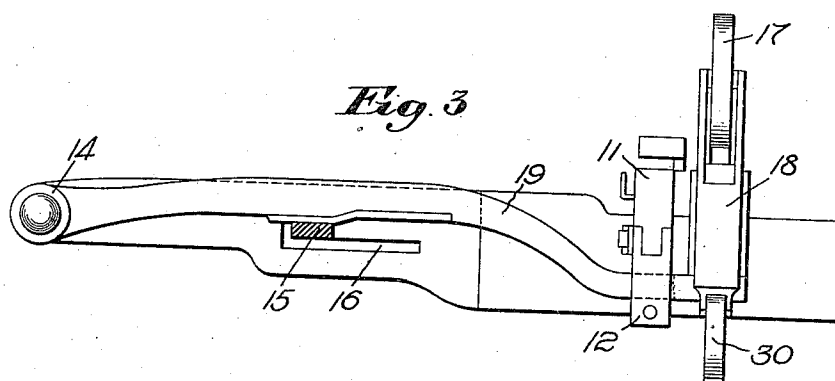
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES D. LANNING, OF BOSTON, MASSACHUSETTS.

STOP-MOTION FOR LOOMS.

976,378.

Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed August 17, 1908. Serial No. 448,830.

To all whom it may concern:

Be it known that I, CHARLES D. LANNING, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Stop-Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to stop motions which while they may be of general application are particularly intended for use in connection with looms for weaving.

In order that the principles of the invention may be fully understood, I have in the accompanying drawings typified one embodiment thereof wherein—

Figure 1 is a vertical transverse section of a loom whereto my invention may be applied; Fig. 2 is a similar section upon an enlarged scale of the knock-off levers and parts immediately associated therewith; Fig. 3 is a plan view of a portion of the mechanism shown in Fig. 2, the shipper rod being in section; and Fig. 4 is a side elevation of the parts shown in Fig. 3.

In my Patent No. 871,875, Nov. 26, 1907, I have disclosed loom stopping mechanism wherein the weft hammer is provided with means adapted to act either upon the weft fork and weft fork carrier in the event of weft fault, or upon a bunter adapted to be operatively positioned in the event of warp fault and thereupon to operate the knock-off lever to stop the loom. It is important in most types of looms that the take-up be interrupted in the event of weft fault, but that it remain uninterrupted in the event of warp fault.

In the practice of my invention heretofore referred to and in the application thereof to certain types of looms, it has been found that the knock-off lever has been so related to the other parts of the loom that movement of the knock-off lever has necessarily resulted in interrupting the take-up; or in other words, that it has been difficult or impossible to apply my said invention thereto without interrupting the take-up upon the occurrence of either warp or weft failure. I therefore in accordance with the present invention contemplate the provision of a pair of knock-off levers, one of which is operatively and if desired positively connected

with the weft fork slide or carrier and so connected with the take-up mechanism as to interrupt the operation thereof upon weft failure, and the other of which is operatively connected to the warp stop mechanism, but is independent of the weft stop mechanism and of the take-up mechanism.

Referring more particularly to the drawings, the frame of the loom is indicated at 1, it being of any suitable construction. Herein, my invention is shown as applied to a loom of the type disclosed in the U. S. Patent to Coldwell & Gildard, No. 690,696, Jan. 7, 1902, although it will of course be apparent that the invention may be applied to any desired type of loom. While a warp stop motion of any suitable type may be employed, herein I have represented warp drops 2 (Fig. 1) of any suitable construction and preferably having elongated slots wherein are received the guiding rods. The said drops are mounted upon the warp threads 3 suitably supported upon leasing members 4, whereby upon the occurrence of a warp fault contact is made at the lower end of the drop bars with a contact bar 5 included in an electric circuit 6 having therein a battery 7 and a magnet 8 preferably mounted upon a stationary part of the loom and adapted when energized to attract a pivoted armature 9 whereto is operatively connected a link 10, the upper end of which, as shown more clearly in Fig. 2, is secured to a bunter 11, herein represented as an arm pivoted upon a casting 12 bolted or otherwise secured to a knock-off lever 13 pivoted at 14 upon the loom frame and adapted when operated to release the shipper lever 15 positioned in the usual notch 16 (see Fig. 3).

While any suitable weft stop mechanism may be employed, preferably I employ a weft hammer 17 mounted in the usual manner upon a weft fork slide 18 having any suitable operative connection with an independent knock-off lever 19 suitably mounted upon the frame of the loom, and herein shown as fulcrumed upon the same support as the knock-off lever 13. While the weft fork slide 18 may be connected with the knock-off lever 19 in any suitable manner, preferably they are positively connected so that any movement of the weft fork carrier is communicated to the knock-off lever. In this type of the invention, I have repre-

mented the weft fork slide as having a hole passing transversely therethrough in which is inserted the end of the knock-off lever 20.

A cloth roll of any suitable type is indicated at 21, it being operated in any suitable manner to take up the cloth as woven, and herein by means of a ratchet gear 22 with the teeth whereof engages an actuating pawl 23 pivotally mounted at 24 upon the weft hammer 25 pivoted upon the loom frame at 26 and operated in usual manner by the weft cam 27.

In order to suspend the operation of the take-up mechanism upon the occurrence of weft failure, I have herein provided a holding pawl 28 pivoted at 29 upon the loom frame, the lower arm thereof engaging the teeth of the ratchet gear 22 to prevent retrograde movement thereof, and the upper arm being positioned in the path of movement of a lever 30, whose upper end is connected in any suitable manner with the weft fork carrier 18, whereby upon movement of the weft fork carrier to the right viewing Figs. 1 and 2, occasioned by weft failure, the lever 30 is shifted, thereby to disengage the holding pawl 28 from the ratchet gear 22, thus interrupting the operation of the take-up mechanism.

Regarding the knock-off lever 19 as the usual knock-off lever of the loom and which is customarily so related to the take-up mechanism that weft failure caused movement of the weft fork carrier interrupts the take-up, it will be apparent that the supplemental knock-off lever 13 may be readily applied to looms of usual type and if desired be positioned directly beneath the main knock-off lever, and that its warp fault caused movement occasions no interruption of the take-up mechanism.

Preferably I employ a moving member other than the lay to operate the knock-off levers upon the occurrence of warp and weft failure. When the weft hammer 25 is utilized for that purpose, I provide the same not only with means to engage the weft fork when non-tilted but with a supplemental arm 31 which is adapted to engage the bunter 11 when the same is elevated by the completion of the circuit through the contact of an indicating drop bar 2 with the bar 5.

Important features of my invention are the provision of means including a reciprocatory or vibratory member other than the lay and independent knock-off levers, whereby in a loom having the common weft stop mechanism comprising a weft fork, weft fork carrier, weft hammer lever and other suitable connections, the same vibratory or reciprocatory member other than the lay, which in this embodiment of the invention is the weft hammer lever, is made part of warp stop mechanism coöperating independ-

ently of the weft stop mechanism and operatively independent of the weft fork and weft fork carrier.

Having thus described one type or embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic and descriptive sense, and not for purposes of limitation, the scope of the invention being set forth in the following claims.

Claims:

1. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, two independent knock-off levers engaging said shipper lever to operate the same, a weft fork slide engaging one of said knock-off levers and carrying a weft fork, a movable member carried by the other knock-off lever, means for operatively positioning said member upon warp fault, and means independent of the lay for operating said weft fork slide and said movable member upon the occurrence of weft and warp fault respectively.
2. A loom comprising a shaft, a rotary cam thereon, a member independent of the lay adapted to be operated by said cam, independent knock-off levers, and independent, weft fault detecting and warp fault indicating means adapted respectively to operate said independent knock-off levers, and to be operated by said member independent of the lay, and a shipper lever adapted to be operated by either of said knock-off levers to stop the loom.
3. A loom comprising a shaft, a rotary cam thereon, weft fault detecting means, warp fault indicating means, operating means intermediate said rotary cam and said weft fault detecting and said warp fault indicating means respectively, independent knock-off levers adapted to be operated by said weft fault detecting and warp fault indicating means respectively, and loom stopping means adapted to be operated by either of said knock-off levers.
4. A loom comprising a lay, a reciprocatory member mounted independently of the lay, a shipper device, means to retain the same in loom operating position, a pair of independent knock-off levers adapted to release the shipper device from said retaining means, operative connections between said reciprocatory member and one of said knock-off levers whereby the loom may be stopped upon the occurrence of weft failure, operative connections between said reciprocatory member and the other knock-off lever distinct from said previously mentioned operative connections, whereby the loom may be stopped upon the occurrence of a warp fault, and take-up mechanism adapted to be suspended upon weft failure.
5. A loom comprising a lay, a reciprocatory member mounted independently of the

lay, a shipper device, means to retain the same in loom operating position, a pair of independent knock-off devices adapted to release the shipper device from said retaining means, a weft failure detecting device, a carrier therefor, said carrier being operatively connected to one of the said knock-off devices and adapted to be actuated by said reciprocatory member upon the occurrence of weft failure, whereby the loom may be stopped, a device independent of said carrier adapted to be actuated by said reciprocatory member upon the occurrence of warp fault, operative connections from said last mentioned device to the other knock-off device, whereby the loom may be stopped upon the occurrence of a warp fault, take-up mechanism, and means to operate the same upon the occurrence of weft failure, the connections being such that the take-up mechanism is not interrupted upon the occurrence of warp fault.

6. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, two independent knock-off levers engaging said shipper lever to operate the same, a weft fork slide engaging one of said knock-off levers and carrying a weft fork, a movable member carried by the other knock-off lever, means mounted upon the loom frame and connected to said member for operatively positioning said member upon warp fault, and means independent of the lay for operating said weft fork slide and said movable member upon the occurrence of weft and warp fault respectively.

7. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, two independent knock-off levers engaging said shipper lever to operate the same, a weft fork slide engaging one of said knock-off levers and carrying a weft fork, a bunter carried by the other knock-off lever, a magnet mounted upon the loom frame and connected to said bunter for operatively positioning the latter upon warp fault, and means independent of the lay for operating said weft fork slide and said bunter upon the occurrence of weft and warp fault respectively.

8. A loom comprising a lay, a shipper lever, means to retain the same in loom operating position, a knock-off lever adapted to release the shipper lever from said retaining means, means engaging said knock-off lever to stop the loom upon the occurrence of weft failure, take up mechanism, means connected with said knock-off lever to interrupt the take up mechanism upon weft failure, a supplemental knock-off lever positioned beneath the main knock-off lever, a movable member carried by said supplemental knock-off lever, and means for operatively positioning said member upon warp fault, said sup-

plemental knock-off lever being so positioned that the take-up mechanism is not interrupted upon the occurrence of warp fault.

9. A loom having a lay, a shipper lever, means to retain the same in loom operating position, two independent knock-off levers engaging said shipper lever to operate the same, a weft fork slide engaging one of said knock-off levers and carrying a weft fork, a weft hammer engaging said weft fork in substantially the plane of said knock-off lever, a movable member carried by the other knock-off lever, means mounted upon the loom frame and connected to said member for operatively positioning said member upon warp fault, and means independent of the lay for engaging said movable member in substantially the plane of its knock-off lever upon the occurrence of warp fault.

10. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, a knock-off lever engaging said shipper lever to operate the same, a weft fork slide engaging said knock-off lever and carrying a weft fork, a weft hammer engaging said weft fork in substantially the plane of said knock-off lever, an independent knock-off lever positioned below said first mentioned knock-off lever, a movable member carried thereby, means mounted upon the loom frame and connected to said member for operatively positioning said member upon warp fault, and means independent of the lay for engaging said movable member in substantially the plane of its knock-off lever upon the occurrence of warp fault.

11. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, two independent knock-off levers spaced from each other substantially throughout their extent and engaging said shipper lever to operate the same, a weft fork slide engaging one of said knock-off levers and carrying a weft fork, a movable member carried by the other knock-off lever, means mounted upon the loom frame and connected to said member for operatively positioning said member upon warp fault, and means independent of the lay for operating said weft fork slide and said movable member upon the occurrence of weft and warp fault respectively.

12. A loom having a lay, a shipper lever, means to retain the shipper lever in loom operating position, a knock-off lever engaging said shipper lever to operate the same, a weft fork slide engaging said knock-off lever and carrying a weft fork, a weft hammer engaging said weft fork, a second knock-off lever positioned below the first knock-off lever, a bunter carried by said second knock-off lever and adapted to be

operatively positioned in substantially the
plane of said lever, a magnet carried by the
loom frame and connected to said bunter
for operatively positioning the same, a cam
5 upon the weft cam shaft and connections
therefrom independent of the lay to operate
said bunter when positioned in substantially
the plane of its knock-off lever.

In testimony whereof, I have signed my
name to this specification, in the presence of 10
two subscribing witnesses.

CHARLES D. LANNING.

Witnesses:

IRVING U. TOWNSEND,
M. H. LOWRY.