UNITED STATES PATENT OFFICE.

CHARLES ROTHWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WILLIAM H. MARGERISON, A. ERNEST MARGERISON, AND PARKER MEADOWCROFT, OF PHILADELPHIA, PENNSYLVANIA, TRADING AS W. H. & A. E. MARGERISON & COMPANY, A FIRM.

FRINGE-PULLING MECHANISM FOR LOOMS.


To all whom it may concern:

Be it known that I, CHARLES ROTHWELL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Fringe-Pulling Mechanism for Looms, of which the following is a specification.

One object of my invention is to provide a simple and efficient form of automatic fringe-pulling device for looms, and a further object is to prevent stopping of the loom by the weft stop-motion during the time that the fringe is being pulled and no weft-thread is being inserted. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of sufficient of a loom to illustrate my invention, the ordinary mechanism of the loom being illustrated by dotted lines and the attachment to which my invention relates being shown by full lines. Fig. 2 is a view of the opposite side of the loom, illustrating certain features of the attachment not shown in Fig. 1. Fig. 3 is a sectional view of the loom, illustrating certain other features of the attachment; and Fig. 4 is a view similar to a portion of Fig. 3, but illustrating parts of the attachment in different positions from those shown in the latter figure.

1 represents part of the fixed frame of the loom; 2, the cam-shaft of the same; 3, the swinging lay; 4, the box-board lever; 5, the drop-box rod; 6, the ratchet-wheel; and 7 and 8, the spur-gears of the ordinary take-up motion, and 9 the forked rod; 10, the lever; 11, the connecting-cord; 12, the pawl; 13, the pawl-carrying lever; and 14 the operating-cam of the usual weft stop-motion, the pawl 12 acting upon a slide 15, which in turn acts upon a trigger 16 and the latter upon a lever 17, which normally retains the belt-shipping lever 18 of the loom, all of these parts being constructed and operating in the usual manner.

To a transverse shaft 19, which extends beneath the breast-beam of the loom and has hung upon it the trigger 16, are secured three arms 20, 21, and 22. The arm 20 is connected by a cord or strap 23 to the drop-box lever 4 or some other equivalent portion of the drop-box mechanism, and said arm is also acted upon by a spring 24, which tends to retain it in the normal or elevated position shown in Fig. 2; except when the drop-box lever is so elevated as to bring a certain box 25 into line with the shuttle-race, under which circumstances the arm 20 is pulled downwardly to a certain extent, this operation taking place whenever it is desired to impart the excessive amount of draft to the warp-threads necessary for the pulling of the fringe. The arm 21 is connected by a wire 25 or other suitable connection to a pivoted segment 26, which when in the elevated position extends outwardly beyond the toothed periphery of the spur-wheel 8 and serves as a support for a pawl 27, carried by the upper end of a lever 28, which is mounted so as to be free to swing upon the shaft of the take-up roll 30 and is vibrated by means of a crank 29 on the cam-shaft 2 through the medium of a connecting-rod or link 30, as shown in Fig. 1. When the swinging segment 26 occupies the elevated position, therefore, it serves as a shield or guard for the tooth of the spur-wheel 8 and prevents engagement of the pawl 27 therewith; but when the segment is lowered it permits the pawl 27 to drop into engagement with the teeth of said spur-wheel. Hence the same is partially rotated on each vibration of the lever 28 and excessive draft is imparted to the take-up roll 30, so that within the time necessary to effect a few beats of the lay the necessary amount of warp-thread to form the desired fringe will be drawn off, and the weaving operation can then be resumed. During the drawing or pulling of the warp to form a fringe the insertion of weft-thread is usually omitted, the shuttle-box which is then in line with the shuttle-race being empty, or even if a weft-thread is inserted it will not, owing to the excessive draft upon
the warp, be beaten up, and hence in either case the weft-fork 9 will not be operated, and under ordinary circumstances the weft stop-motion would operate to stop the loom. In order to prevent this, the arm 22 is connected by a link 31 to a lever 32, which is connected by a cord 33 or other flexible connection to the lever 13 of the weft stop-motion. The fringe-pulling device acts when said lever 13 is in its forward position with the pawl 12 clear of the slide 15, as shown in Fig. 4, and owing to the connection described said lever is prevented from swinging rearwardly and is held clear of the cam 14, the vibration of the lever being thereby arrested. Hence there will be no operation of the weft stop-motion during the time that the fringe-pulling mechanism is in action.

Having thus described my invention, I claim:

1. A fringe-pulling device for looms having as elements the take-up roll and its operating-gears, a pawl acting upon the spur-wheel on the take-up roll shaft, means for moving said pawl so as to cause it to impart intermittent movement of partial rotation to said spur-wheel, the drop-box mechanism of the loom, and means under control of said drop-box mechanism for throwing said pawl into and out of operative position, substantially as specified.

2. The combination in a fringe-pulling device for looms, of the take-up roll and its operating-gears, a pawl for engaging one of said gears, means for operating said pawl so as to cause it to impart intermittent movements of partial rotation to said gear-wheel, a segment normally shielding the teeth of the gear-wheel and serving as a support for the pawl, the drop-box mechanism of the loom, and means connected therewith for raising and lowering said segment so as to permit the pawl to engage with the teeth of the gear-wheel at intervals, substantially as specified.

3. The combination in a fringe-pulling device for looms, of the take-up roll and its operating-gears, a pawl for engaging with the teeth of one of said gears, a lever carrying said pawl, and hung to said take-up roll shaft, means for vibrating said lever, a segment normally shielding the teeth of the gear-wheel and providing support for the pawl, the drop-box mechanism of the loom, and a rock-shaft having two arms one connected to said segment and the other to one of the moving elements of said drop-box mechanism, substantially as specified.

4. The combination in a fringe-pulling device for looms, of the take-up roll and its operating-gears, a pawl for engaging with the teeth of one of said gears, a lever carrying said pawl, and hung to said take-up roll shaft, means for vibrating said lever, a segment normally shielding the teeth of the gear-wheel and providing support for the pawl, the drop-box mechanism of the loom, a rock-shaft having two arms one connected to said segment and the other to one of the moving elements of said drop-box mechanism, and means for holding the parts normally in position to render the pawl inoperative upon the teeth of the gear-wheel, substantially as specified.

5. The combination of a fringe-pulling device for looms whereby a quick movement is imparted to the take-up roll shaft, a weft stop-motion device, and a connection between the two whereby said weft stop-motion device is rendered inoperative during the time that the fringe is being pulled, substantially as specified.

6. The combination of a fringe-pulling device for looms whereby a quick movement is imparted to the take-up roll shaft, a weft stop-motion device, and a connection between said fringe-pulling device and the lever of the weft stop-motion, whereby said lever is held free from engagement with its operating-cam during the time that the fringe is being pulled, substantially as specified.

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

CHARLES ROTHWELL.

Witnesses:

F. E. BECHTOLD,

JOS. H. KLEIN.