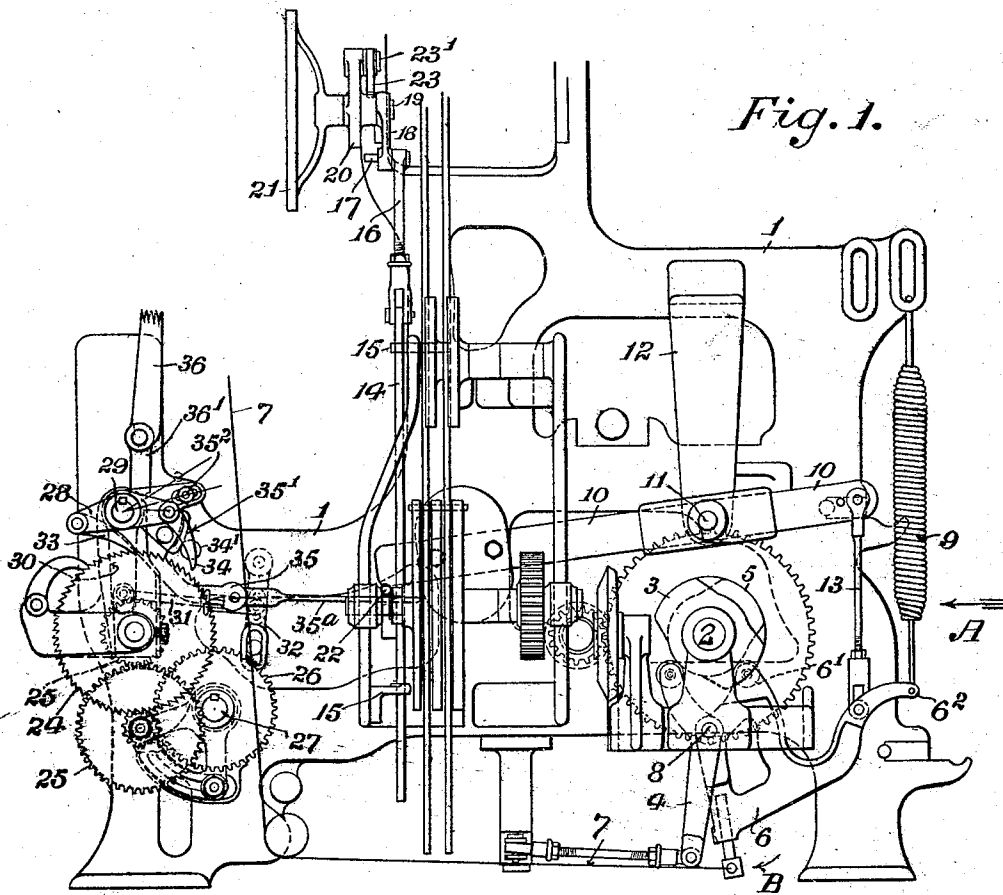


June 7, 1927.

1,631,531

E. HOLLINGWORTH
LOOM FOR WEAVING CHENILLE AXMINSTER AND LIKE CARPETS,
BLANKETS, AND OTHER FABRICS
Filed Aug. 14, 1925

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

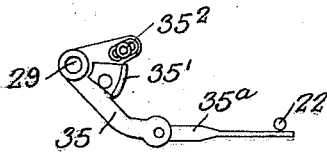


Fig. 5.

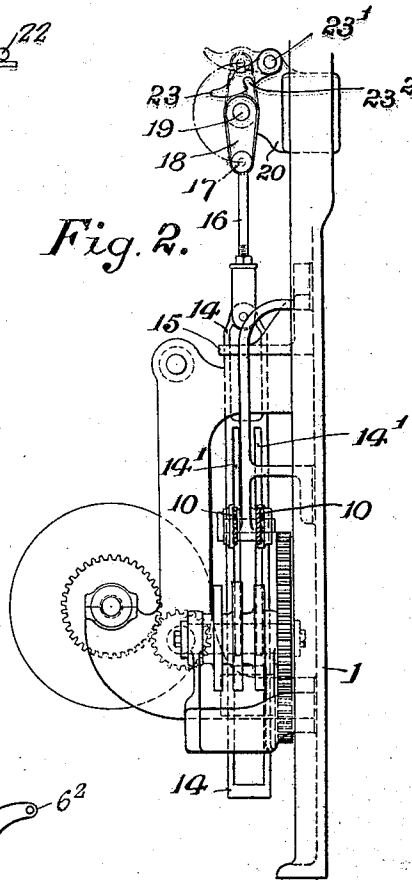


Fig. 2.

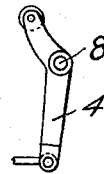


Fig. 3.

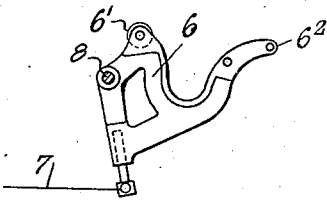


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD HOLLINGWORTH, OF DOBCROSS, ENGLAND, ASSIGNOR TO THE CROMPTON
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LOOM FOR WEAVING CHENILLE AXMINSTER AND LIKE CARPETS, BLANKETS, AND
OTHER FABRICS.

Application filed August 14, 1925, Serial No. 50,324, and in Great Britain August 15, 1924.

My invention relates to looms for weaving chenille Axminster and like carpets, blankets and other fabrics.

The characteristic feature of these fabrics, as is well known, is the insertion of picks of "fur" or chenille weft. These "fur" picks may be inserted alternately with picks of plain weft or after the insertion of each determined number of plain picks or, in certain fabrics, a plain body portion of predetermined length may be woven and then a predetermined length of chenille weave may be inserted, and it is sometimes desirable, when weaving the plain or body portion of the fabric, that a plurality of shuttles containing wefts of different colours or characters be employed.

If the fur or chenille weft is arranged to form a design, it is necessary after the insertion of each pick of fur to provide a dwell to enable the weaver to "set" the fur or align the pattern with that of the already woven portion.

Where portions of body weave alternate with portions of chenille weave it is desirable that means be provided whereby the rate of take-up can be varied as a change is made from one weave to the other, for the reason that the fur or chenille weft, being thicker than the weft employed in weaving the body portion, calls for a relatively quicker take-up than does the body weft.

According to my invention I provide, in a loom of the type referred to, means whereby a plurality of rising and falling boxes, say two at each end of the loom, may be employed, enabling say three shuttles to be used containing if desired different colours or characters of weft. These boxes are operated in the ordinary manner by the action of tappets on levers connected to vertically movable rods supporting the respective sets of boxes, and for the purposes of the invention I arrange that actuation of a box lever by its tappet causes the corresponding box rod to be lowered to present its upper box in line with the raceway. When weaving a body portion of fabric with a plurality of shuttles the box operating levers are actuated in the usual way, and means are provided whereby, when it is desired to insert a

portion of chenille weave, the box levers may be thrown out of action and the upper box at each side of the loom presented opposite the raceway. Simultaneously with the actuation of the box disengaging means to throw the boxes out of action means connected with the take-up mechanism are caused to effect an acceleration in the rate of take-up, and an interrupting member is moved into the path of the starting handle of the loom, so that such handle cannot "lock" in the starting position and consequently can only be operated to give one pick at a time. This operation may be effected by hand or by foot operation by suitable connections from a foot treadle at the front of the loom.

Such being briefly the nature of the invention, it will now be described more fully with the aid of the accompanying drawings. In these drawings:—

Fig. 1 illustrates, in side elevation, such parts of a loom having the present invention applied thereto as are necessary to enable the improvement to be understood.

Fig. 2 is a rear view of part of the mechanism, that is to say looking in the direction of the arrow A, Fig. 1, and

Figs. 3, 4 and 5 are detail views to be described.

In the drawings, 1 represents a side frame of the loom having journalled in appropriate bearings thereon and on the opposite side frame the usual driven shaft 2 carrying the tappet 3 for actuating the picking lever 4, and tappets such as 5 for actuating box levers such as 6, these latter being connected in the usual way, by flexible connectors or chains such as 7, to the lifting rods for the shifting shuttle boxes. In the form of the invention to be described, it is assumed that there are two rising and falling shuttle boxes at each end of the loom. Consequently two box levers 6 are provided, one for each set of shuttle boxes, and each actuated by its own tappet on the shaft 2.

For the purpose of my invention, I arrange that actuation of a box lever 6 by its tappet causes the corresponding box rod to be lowered to present its upper box in line with the raceway. Accordingly, the position of the pivot stud 8, on which the box

levers work, is such in relation to the position of the engaging bowl 6' of a box lever that, on depression of the bowl by its tappet, the box lever will be rocked in the direction of the arrow B and will slacken the connector or box chain 7 to permit the corresponding shuttle boxes to fall.

Each box lever 6 has a rearward extension 6² engaged by a spring 9 which acts to maintain the bowl 6' in engagement with the surface of its tappet and, when the box lever is permitted to rise acts through the connector 7 to raise the box rod, and thus present the lower shuttle box opposite the raceway.

In connection with each box lever 6 I provide a forwardly extending lever 10, pivoted at 11 between its ends on a bracket 12, attached to the loom side. The rear end of each lever 10 is connected, by a link 13, with the rearward extension 6' of the corresponding box lever.

The front ends of the two levers 10, or disengaging levers as they may be termed, extend through slots 14', 14' in a member or grate 14, which is movable vertically in guides 15, 15 and is connected at its upper end by a link 16 with a crank pin 17 on a crank arm 18. The arm 18 is fast upon a spindle 19, which is journaled in a bracket 20 fast to the loom side, and has secured upon it also a hand wheel 21.

Adjustably secured to the grate 14 is a part 22 which extends under the front ends of the disengaging levers and forms a lifting member for said levers.

Rotation of the hand wheel 21 in one direction lowers the grate 14 as shewn, into a position in which the bowls of the box levers are permitted to be engaged by their tappets, the front ends of the disengaging levers moving idly to and fro in the slots 14' as the box levers are actuated.

Rotation of the hand wheel 21 in the opposite direction causes the grate 14, through the crank arm 18 and link 16, to be raised. This raising of the grate 14, through the lifting member 22, raises also the front ends of the disengaging levers 10. The consequent depression of the rear ends of the disengaging levers operates, through the links 13, to rock the box levers against the action of the springs 9 into positions in which their bowls will no longer be engaged by their actuating tappets. This rocking of the box levers, through the connectors 7, permits the drop shuttle boxes to fall so that the upper box at each side of the loom is presented opposite the raceway, and so long as the disengaging levers remain elevated by the grate 14, the box levers are inoperative to change the positions of the drop shuttle boxes. A pivoted latch 23, mounted on a stud 23' on the bracket 20, has a slot 23² which, when the crank arm 18 is rotated to raise the grate 14, can be engaged over

the pin 17 for the purpose of holding the grate in raised position for such period as may be desired.

The take-up mechanism employed comprises a ratchet wheel 24 connected by a suitable train of gearing 25 with a gear 26 fast on the shaft 27 of the usual take up roll, not shewn, and to operate such ratchet wheel a two-armed lever 28 is provided, mounted pivotally on a spindle 29 which is adapted to receive, by means of an arm 30 fast thereon an oscillating motion, through link 31 and pivoted arm 32, from an appropriately moving part, say the adjacent lay sword.

Each arm of the lever 28 carries a pawl, 33 or 34, adapted to engage the teeth of the ratchet 24, and when both pawls are permitted to operate the ratchet wheel is stepped forward at twice the rate at which it is stepped when only one pawl is operative, as will be understood.

Mounted loosely on the spindle 29 is the hub of a lever 35, a rearwardly extending portion 35^a attached to which extends through an opening in the lifting member 22 on the grate 14. The lever 35 is provided with a cam surface 35' which is adapted, when the grate 14 is in lowered position, as shewn in the drawings, to engage a bowl 34' on the pawl 34, and to elevate said pawl out of operative position with respect to the ratchet wheel 24. When the grate 14 is raised, to effect disengagement of the box levers, the rocking of lever 35 causes the cam surface 35' to be removed from engagement with the bowl 34' of pawl 34. The pawl 34 is thus permitted to drop into operative position and the rate at which the ratchet wheel 24 is stepped forward, by the oscillations of lever 29, is doubled.

The lever 35 is also provided with an interrupting member in the form of a pin 35² which, when the lever is rocked to drop the pawl 34 into action is moved into the path of the lower end 36' of the usual starting handle 36 and limits the movement of same in such a manner that the handle cannot "lock", as it is termed, in the starting position.

This interrupting member is of service for the reason that when chenille weaving to a design is proceeding, as is normally the case when the pawl 34 is in operation, it is necessary for the operative to "set" each pick of fur weft after insertion and consequently the loom must be run pick by pick with a dwell of arbitrary length between picks. The interrupting member 35² facilitates this by preventing as it does the starting handle from locking in running position. The pick by pick operation of the starting handle may be effected by hand or conveniently, as before mentioned, by means of a foot treadle at the front of the loom where the operative

stands during chenille weaving to "set" the fur.

When it is desired to weave a plain or body portion of fabric, the grate 14 is lowered to permit the box levers to return to operative position, and by its downward movement rocks the lever 35 downwardly to raise, by the cam surface 35', the pawl 34 to inoperative position, thus reducing the rate of take-up to that required for the body portion of the fabric. Simultaneously with movement of the pawl 34 to inoperative position the interrupting member 35² is removed from the path of the starting handle so that the said handle can now lock in running position to enable weaving of the desired length of body fabric to proceed.

The mechanism provided by the invention, and described above, thus enables a body portion of fabric to be woven with a plurality of shuttles; it provides for throwing the box shifting motion out of action when chenille weaving is desired; it provides for the dwell required after the insertion of each pick of chenille weft if a chenille design is being woven; it regulates the rate of take-up according to the class of weaving being performed; it enables, by removal of the interrupting member, the loom to be run continuously with the box shifting motion out of action if a chenille portion without design is called for; and it enables the loom, if the second take-up pawl 34 and interrupting member 35² be removed, and the grate 14 raised to put out of action the box levers, to be run as a plain loom with a single shuttle when a plain body fabric is desired.

It will thus be seen that the invention adds considerably to the efficiency and range of the loom.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a loom having two or more shifting shuttle boxes at each end of the lay, in combination, box shifting mechanism, means for rendering the box shifting mechanism inoperative, take-up mechanism and simultaneously operative means for varying the rate of speed of the take-up mechanism according as the box shifting mechanism is operative or inoperative.

2. A loom as set forth in claim 1, in which box levers are provided in said box

shifting mechanism, and tappets effective to operate said levers and thereby effect lowering of the associated shuttle boxes.

3. A loom as set forth in claim 1, in which box levers are provided in said box shifting mechanism, and tappets effective to operate said levers and thereby effect lowering of the associated shuttle boxes, and in which the means for rendering the box shifting mechanism inoperative comprises members effective to block the return movement of said box levers after box shifting movement by said tappets, whereby said boxes are held in lowered position.

4. A loom as set forth in claim 1, in which the take-up mechanism comprises a ratchet wheel, means effective to actuate said ratchet wheel at a definite speed when said box shifting mechanism is operative and a definite speed when said box shifting mechanism is inoperative.

5. In a loom having two or more shifting shuttle boxes at each end of the lay, in combination, box shifting mechanism, means for rendering the box shifting mechanism inoperative, take-up mechanism including a ratchet wheel, an oscillating two-armed lever carrying two pawls each adapted to step forward said ratchet wheel, a pivoted lever adapted to be rocked in accordance with the movements of the means for controlling the box shifting mechanism, said pivoted lever having a cam surface adapted when the box shifting mechanism is operative to remove one of the pawls mentioned from operative position and when the box shifting mechanism is inoperative to drop said pawl into action, and a member carried by the pivoted lever and arranged to move into the path of and obstruct full locking movement of the starting handle of the loom when both take-up pawls are in action.

6. In a loom having two or more shifting shuttle boxes at each end of the lay, in combination, box shifting mechanism, means for rendering the box shifting mechanism inoperative, take-up mechanism and means to simultaneously increase the rate of speed of said take-up mechanism when said box shifting mechanism is rendered inoperative.

In testimony whereof I hereunto affix my signature.

EDWARD HOLLINGWORTH.