T. HAWORTH, J. BRIGGS & W. AYREY.

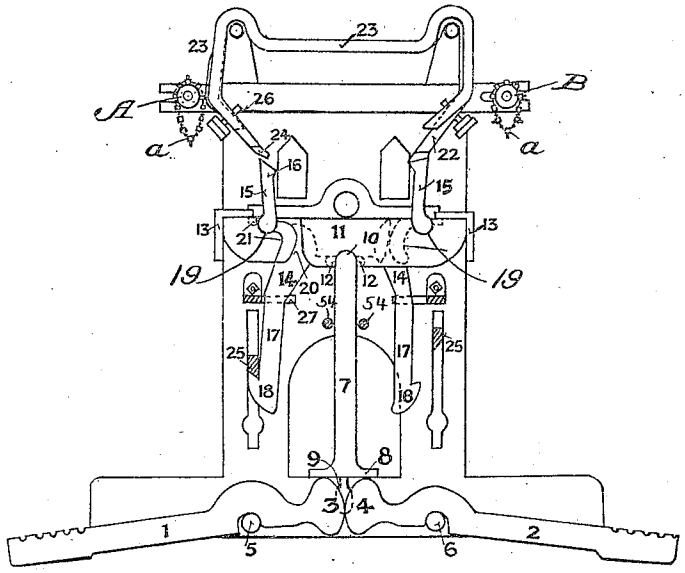
LOOM DOBBY.

APPLICATION FILED SEPT. 3, 1907.

942,826. Patented Dec. 7, 1909.

3 SHEETS—SHEET 1.

FIG. 1.



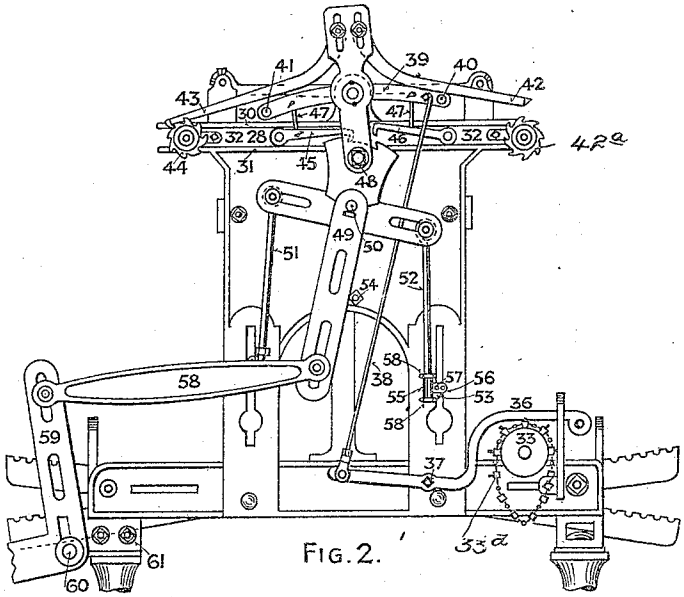


FIG. 2.

Witnesses

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3 SHEETS—SHEET 2.

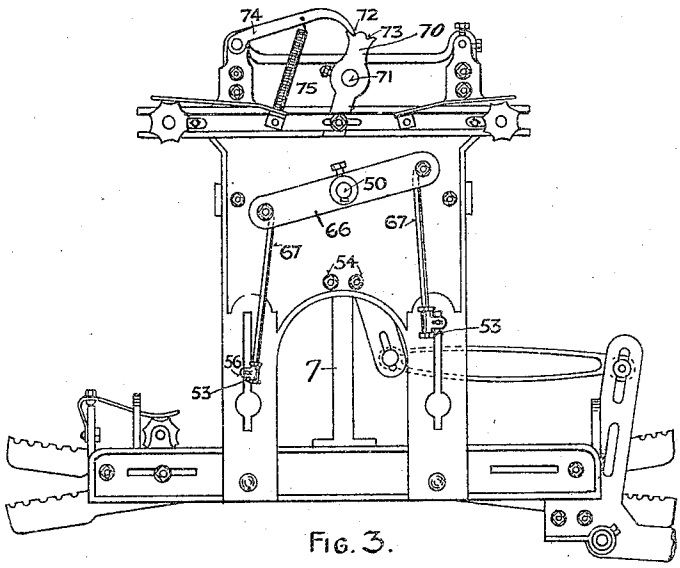

FIG. 3.

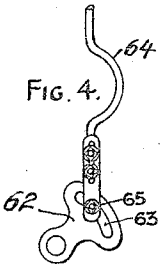

FIG. 4.

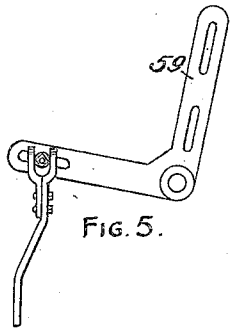

FIG. 5.

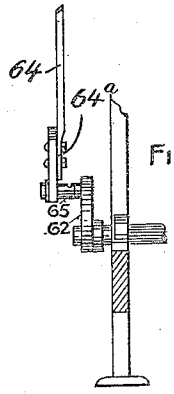

FIG. 6.

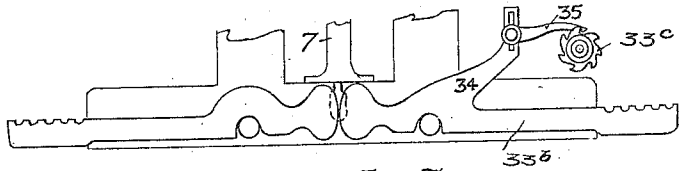

FIG. 7.

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3 SHEETS—SHEET 3.

Fig. 8.

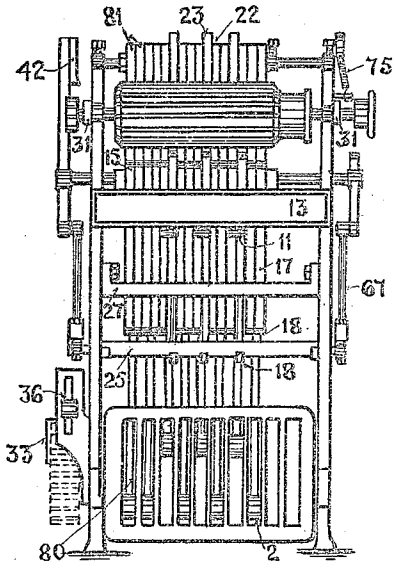
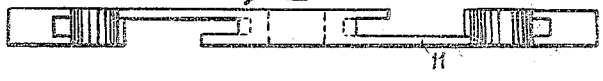


Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE.

THOMAS HAWORTH, JOSEPH BRIGGS, AND WILLIAM AYREY, OF RISHTON, ENGLAND, ASSIGNORS TO RICHARD HENRY PLACE, OF RISHTON, ENGLAND, AND GEORGE CRAWSHAW, OF CLAYTON-LE-MOORS, ENGLAND.

LOOM-DOBBY.

942,826. Specification of Letters Patent. Patented Dec. 7, 1909.

Application filed September 3, 1907. Serial No. 391,110.

To all whom it may concern:

Be it known that we, THOMAS HAWORTH, JOSEPH BRIGGS, and WILLIAM AYREY, subjects of the King of Great Britain, residing at Rishton, Lancashire, England, and trading as the EACHILL DOBBY Co., Eachill Lane, Rishton aforesaid, have invented certain new and useful Improvements in Loom-Dobbies, of which the following is a specification.

This invention relates to loom dobbies and the object thereof is to provide a loom dobby in a manner as hereinafter set forth which shall be efficient in its use, strong, durable, comparatively simple in its construction, and readily set up.

Briefly described, the invention relates to a loom dobby embodying a series of pairs of jack levers, each pair being set end to end in the dobby and fulcrumed at a suitable distance from their inner or adjacent ends and so disposed that when actuated they will be depressed at their inner or adjacent ends and elevated at their outer ends thereby lifting the healds.

In the drawings which form a part of this specification:—Figure 1 is a sectional elevation of a dobby frame showing a dobby in accordance with this invention. Fig. 2 is a rear view of the dobby when fixed to a loom. Fig. 3 is a front view of the dobby. Figs. 4, 5 and 6 are details, and Fig. 7 is a side elevation illustrating the extra jack lever. Fig. 8 is an end elevation of a dobby frame and dobby, in accordance with this invention and showing the parts at right angles to the position thereof illustrated by Fig. 1. Figs. 9 and 10 are detail views respectively in elevation and plan of one of the balk levers.

Referring to the drawings in detail, 1, 2 denote jack levers of a pair, said levers having their ends 3, 4 positioned adjacent each other and are furthermore fulcrumed upon the rods 5, 6 which extend from the front to the back of the dobby and may be formed if desired with a strengthening rib increasing in depth toward the middle of the rod. Centrally disposed of the dobby frame and positioned between and over the ends 3, 4 of the jack levers 1, 2 is a vertical rod 7 having lateral off-sets 8, these latter resting upon the ends 3, 4 of the jack levers. The rod 7 is formed with a depending tail piece 9 which extends between the ends 3, 4 of the jack levers 1, 2 and enters grooves formed in the said ends of the said levers.

The reference character 11 denotes a horizontally extending balk lever provided with a recess 10 which receives the upper end of the rod 7. Side fins 12 are connected to or formed integral with the rod 7 and adapted to enter recesses in the balk levers 11. The rod 7 is shifted vertically through the medium of the jack levers 1, 2 when such levers are actuated and to steady the movement of the rod 7 guide rods 54 are provided between which the rod 7 extends. It will be assumed that there is a vertical rod associating with each pair of jack levers and a balk lever associating with each of the rods 7. Angular brackets 13 are fixed to the sides of the dobby frame and against said bracket 13 abut the balk levers. These latter are enforced by the weight of the healds and the pull of the loom against the said brackets 13.

The dobby comprises a plurality of draw bars. Each of the draw bars is indicated by the reference character 14 and is formed with an upright limb 15 having an inclined head 16 and a lower depending limb 17 which has its lowest extremity formed with a draw hook 18. The draw bar is seated in the recess in the top of the balk lever and upon a curved rounded base 19 whereby the said draw bar 14 is free to move therein. The draw bar is retained in place through the medium of a fin 20 and a lip 21 which are connected to or formed integral with the balk lever.

Disposed over the inclined heads of the draw bars 14 are feelers 22 and 23. The former is acted upon by pattern cylinder A and the latter by pattern cylinder B. Pattern cylinder B is shown in the inoperative position while pattern cylinder A is illustrated as in action. The pattern cylinders are each provided with a series of pegs *a*. The peg on the pattern cylinder A is shown in the act of pushing inwardly the feeler 23 which has the effect of withdrawing the extremity 24 of said feeler 23 away from the inclined head 16 of the draw bar 14 so as to liberate the latter and allow its draw hook 18 to fall into engagement with the draw knife 25, as clearly shown in Fig. 1. The

balk lever is thus drawn down at this end and the vertical rod 7 is lowered so as to shift the jack levers 1, 2 and elevate the healds. The feeler 22 and draw bar 14 are respectively operated in a similar manner. The feelers 22, 23 are separated from each other by comb-like grates 26 and the draw bars 14 are separated through the medium of similar grates 27.

The pattern cylinders A and B are mounted in a frame 28 slidably mounted in the grooves or channels formed by the flanges 30 and 31 on the dobby frame. The ends of the slide frame 28 are slotted to receive the bosses or brackets 32, these latter being also slotted whereby they can be adjustably secured by suitable hold-fast devices to the ends of the slide frame 28. The function of the slide frame 28 is to shift either pattern cylinder into or out of position to act upon the dobby feelers, while at the same time the actuating means for the cylinders are brought into or out of gear with their respective ratchet wheels by suitable mechanism controlled by a third or governing cylinder 33.

At one part of the pattern surface of each of the cylinders A and B is fixed a peg 33^a which according to whichever cylinder A or B may be in motion, throws into action an extra jack lever 33^b. The latter is mounted in the dobby frame alongside the jack levers 1, 2, for convenience not shown in Figs. 2 and 3, but separately shown in Fig. 7. The jack lever 33^b is formed with an arm 34 to which is pivoted a pawl or catch 35 engaging with the ratchet 33^c formed on the shaft of the cylinder 33. A feeler 36 associates with the cylinder 33. The feeler 36 is pivoted as at 37 to the dobby frame. The feeler 36 has connected to one end thereof a vertically extending rod 38 which engages with and is adapted to lift the rocking lever 39. Pegs 33^d associate with the cylinder 33. If a peg 33^d comes up on the cylinder 33, cylinder B revolves again, but if a blank is presented to the feeler 36, it is lowered as will be evident and raises the vertical rod 38 which lifts the rocking lever 39. The latter is fitted with studs 40 and 41 at each end, the former of which raises the pawl or catch 42 clear of the ratchet 42^a on the shaft of cylinder B while at the same time the stud 41 allows the pawl or catch 43 to fall in gear with the ratchet 44 on the shaft of cylinder A.

Movement is imparted to the slide frame 28 when the catch 43 engages with the ratchet 44 so as to bring the cylinder A in position to act upon the dobby feelers and to throw out of operation cylinder B through the medium of the catches 45 and 46 which are connected to the rocking lever 39 by the wire links or chains 47. With the rocking movement of the lever 39 the catch 45 is brought into engagement with the catch plate 48 while the catch 46 is raised clear of the same. The catch plate 48 is adapted to oscillate and for this purpose an oscillatory T-shaped lever 49 is provided, the latter being fixed to a shaft 50. Adjustably connected to the ends of the T-shaped lever 49 are the rods 51, 52. These latter are adapted to actuate the dobby knives 53 which slide in slots in the dobby frame. Small cylindrical carriers 55 provided with lugs 56 are mounted on pins or studs 57 on the dobby knives, and these cylinders are tapped to fit on the ends of the rods 51, 52 and retained in position by the nuts 58. The T-shaped lever 49 is connected by a link 58 to an L-shaped lever 59 mounted on a shaft 60, the latter being carried by brackets 61 fixed to the dobby frame. The L-shaped lever 59 is actuated by the usual dobby rod 64.

As clearly shown in Figs. 4, 5 and 6, motion is communicated to the dobby rod 64 by means of a small quadrant rod 62 provided with a curved slot 63. One end of the dobby rod is adjustable, this end being indicated by the reference character 64^a and is mounted on a stud 65 which travels in the slot 63 formed in the quadrant 62. By varying the position of the lug 64^a, more or less time may be given to the motion of the dobby.

The shaft 50 extends across the dobby as shown in Fig. 2 and has fixed thereto a spring lever 66, to each end of which is suitably connected a rod 67 for operating a dobby knife 53.

Each of the pattern cylinders works both sets of feelers when in motion. The pattern cylinder A is presumed to be in motion in Fig. 1, and when a peg on it acts upon the feeler 23 it liberates the left-hand vertical platen, but when a peg on it acts upon the feeler 22, it liberates the right-hand vertical platen, both platens being mounted upon the balk lever 11. By referring to Fig. 8 the means for putting the governing cylinder 33 into action will be readily understood. When the pattern cylinder A, which is at the back end of the dobby, is in motion, and makes one complete revolution, a special peg on it works one or the other of the additional feelers 81, thus operating the additional jack lever 80, and moving the ratchet wheel of the governing cylinder 33 to the extent of one tooth by means of catch 35. This brings another card upon the cylinder 33, and if said card is a blank the pattern cylinder will continue to move by reason of the fact that the lever 36 will not be raised, but if this card be provided with a peg, the pattern cylinders will be reversed by raising the lever 36, and if ten blank cards come up in succession on cylinder 33, the pattern cylinder will have a continuous revolution as long as such operation ensues, or said pattern cylinder will revolve ten times, and if a peg comes up, the

pattern cylinder B will be put in action. The operation of the pattern cylinder B is precisely similar to the pattern cylinder A.

The slide frame 28 has attached to it one end of a rocking lever 70. The latter is mounted on a shaft 71 and formed at its top with two recesses 72 and 73, into which springs a catch 74 through the action of a spring 75 with each reversal of the slide frame and change of cylinders.

What we claim is:—

1. In a loom dobby, jack levers, vertically movable rods for actuating said levers, said rods provided with side fins, and balk levers adapted to receive the upper ends of said rods and the fins on the rods.

2. In a loom dobby, jack levers, vertically movable rods for actuating said levers, said rods provided with side fins, balk levers adapted to receive the upper ends of said rods and the fins on the rods, and said rods provided with tail pieces adapted to engage in the jack levers.

3. In a loom dobby, jack levers, vertically movable rods for actuating said levers, said rods provided with side fins, horizontally disposed balk levers adapted to receive the upper ends of said rods and the fins on the rods, and draw-bars seated upon the balk levers and each provided with an upwardly projected extension having an inclined head and a depending extension having a hooked terminal adapted to engage with the dobby knife.

4. A loom dobby comprising horizontally disposed balk levers, draw bars seated upon the balk levers and each provided with an upwardly projected extension having an inclined head and a depending extension having a hooked terminal adapted to engage with the dobby knife, dobby feelers adapted to act upon the inclined heads of the draw bars, jack levers, and vertically movable rods for actuating said levers and provided with projecting means, the balk levers receiving the upper ends of said rods and projecting means.

5. A loom dobby comprising horizontally disposed balk levers, draw bars seated upon the balk levers and each provided with an upwardly projected extension having an inclined head and a depending extension having a hooked terminal adapted to engage with the dobby knife, dobby feelers to act upon the inclined heads of the draw bars, pattern cylinders, a shiftable frame carrying the dobby cylinders and adapted to bring said cylinders in position to act upon the feelers, jack levers, vertically movable rods for actuating said levers having projecting means, the balk levers receiving the upper ends of said rods and the projecting means thereof, and means for operating the said frame.

6. A loom dobby comprising horizontally disposed balk levers, draw bars seated upon the balk levers and each provided with an upwardly projecting extension having an inclined head and a depending extension having a hooked terminus adapted to engage with the dobby knife, combined with dobby feelers adapted to act upon the inclined heads of the draw bars, pattern cylinders, a slide frame carrying the dobby cylinders and adapted to bring said cylinders in position to act upon the feelers, and means for shifting the slide frame.

7. A loom dobby comprising horizontally disposed balk levers, draw bars seated upon the balk levers and each provided with an upwardly projecting extension having an inclined head and a depending extension having a hooked terminus adapted to engage with the dobby knife, combined with dobby feelers adapted to act upon the inclined heads of the draw bars, pattern cylinders, a slide frame carrying the dobby cylinders and adapted to bring said cylinders in position to act upon the feelers, means for shifting the slide frame, and means for controlling the movement of the pattern cylinders.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

THOMAS HAWORTH.
JOSEPH BRIGGS.
WILLIAM AYREY.

Witnesses:
ELLIS D. LITTLE,
HERBERT WILSON.