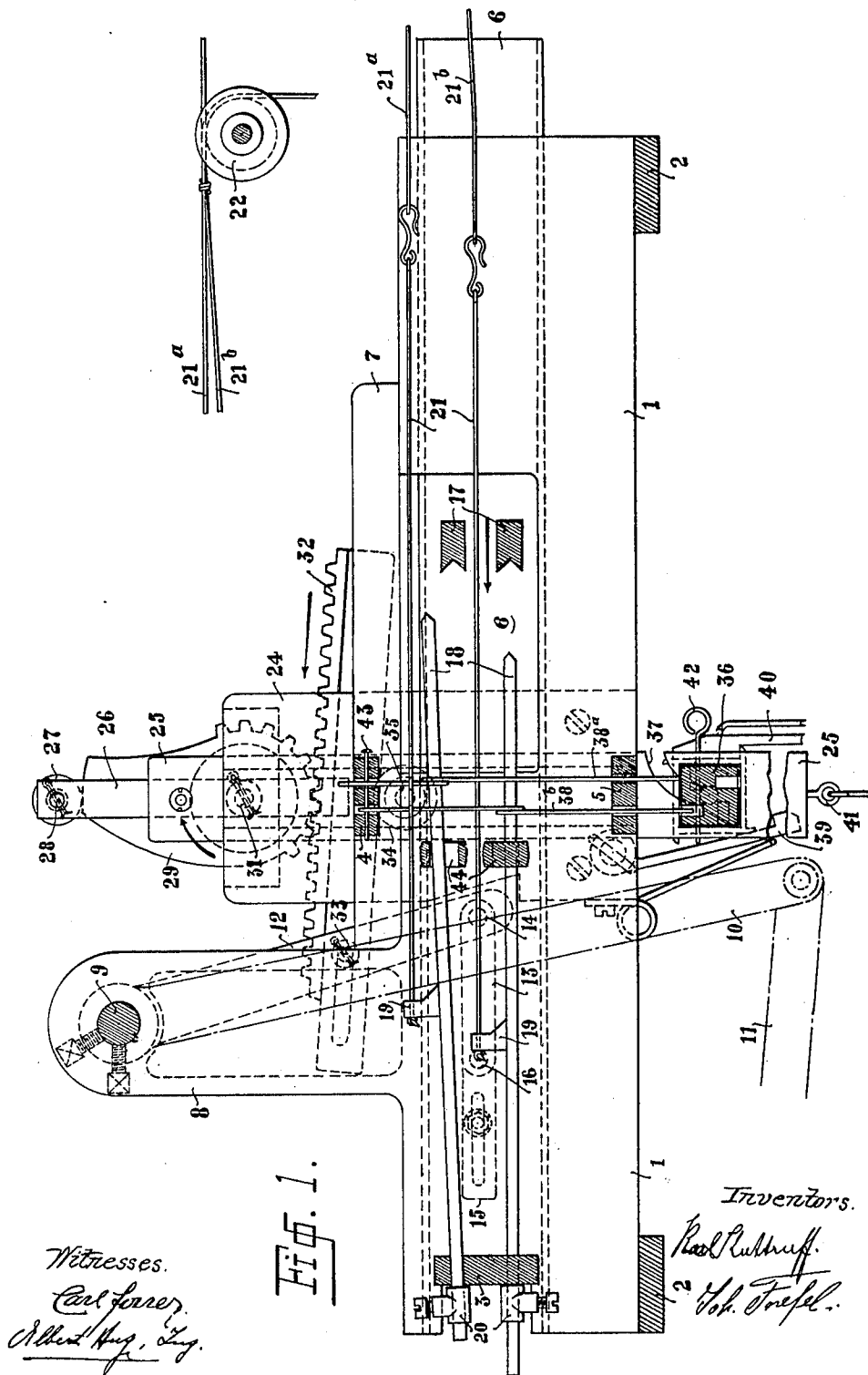


DOBBY FOR LOOMS.

949,238.

Patented Feb. 15, 1910.

2 SHEETS--SHEET 1.



Witnesses.
Carl Lerner.
Albert Hays, Ling.

五五.一.

Inventors.

Karl Kuhnemann.
- Joh. Friesel.

K. KUTTRUFF & J. PREFEL.

DOBBY FOR LOOMS.

APPLICATION FILED SEPT. 16, 1908. RENEWED DEC. 13, 1909.

949,238.

Patented Feb. 15, 1910.

2 SHEETS—SHEET 2.

Fig. 4.

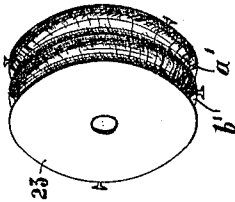
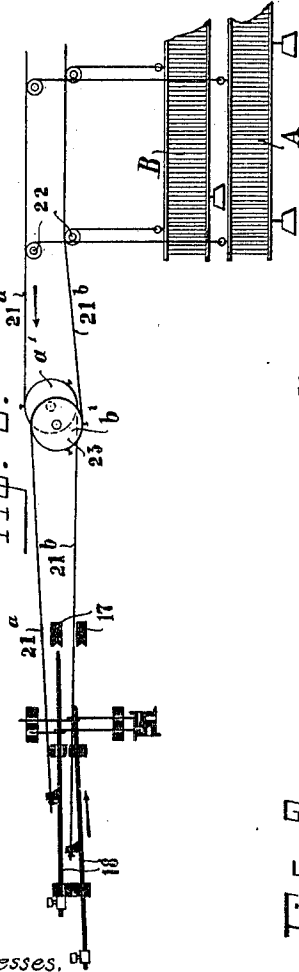


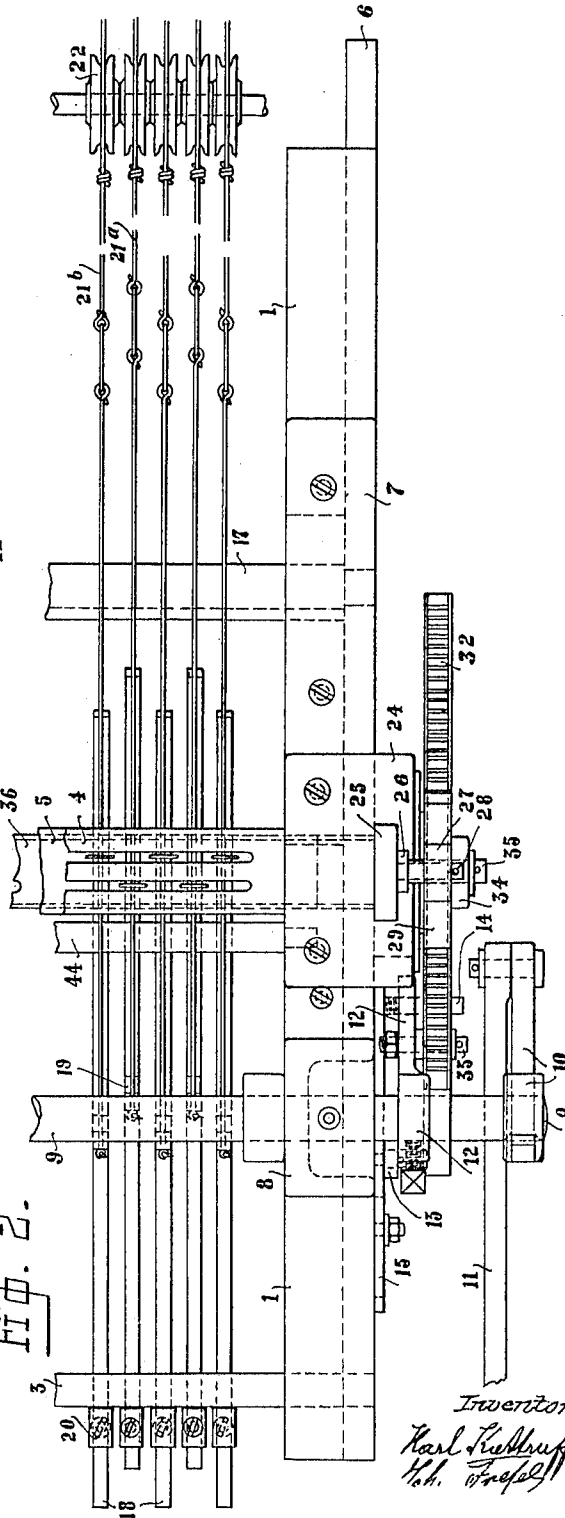
Fig. 3.



Witnesses.

Carl Forner.
Albert Aug. Eng.

Fig. 2.



Inventors.

Karl Kuttruff.
Joh. Prefel.

UNITED STATES PATENT OFFICE.

KARL KUTTRUFF AND JOHANN FREFEL, OF BASEL, SWITZERLAND.

DOBBY FOR LOOMS.

949,238.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed September 16, 1908, Serial No. 453,343. Renewed December 13, 1909. Serial No. 532,909.

To all whom it may concern:

Be it known that we, KARL KUTTRUFF and JOHANN FREFEL, citizens of the Swiss Confederation, residing at Basel, Switzerland, have invented new and useful Improvements in Dobbies for Looms, of which the following is a specification.

The present invention relates to a device for moving the leaves in a double-stroke dobbie, in which the pulling-motion of all leaves is effected from one driving spindle, the length of the stroke of each leaf being adjustable separately.

In the drawings the invention is shown by way of example in Figure 1 in longitudinal section. Fig. 2 is a ground plan showing a part of the machine (seen from the side where the driving gear is arranged). Fig. 3 represents the means for guiding the devices which pull the bottom-leaves, Fig. 4 representing a detail of said arrangement.

A rectangular rail 6 is arranged in each of the two frames 1 which are connected the one with the other by connecting rods 2, 3 4 and 5, said rails 6 being horizontally adjustable and connected by means of lifting-blades 17. The frames 1 are slotted to permit the displacement of lifting-blades 17 and they are strengthened above said slots by means of a cover-plate 7. The driving axle 9, which is mounted in two vertical supports 8 of frames 1, has two cranks 12 which are connected with the rails 6 by means of the levers 13, 15 which are connected by a link-pin 16 and adjustably attached to the rail 6, the other end being linked to the crank 12 by means of pin 14. The connecting-rod 10 of driving axle 9 is actuated by means of the driving rod 11 which receives its motion from the machine.

The lifting-wires 18, which are guided in the connecting-rods 3 and 44 of frames 1, have each an adjusting-ring 20 mounted upon the end outside the connecting-rod 3. The lifting-wires 18 are arranged in two superposed series, the lifting-wires of the upper series being situated at the middle of the distance between two adjacent lifting-wires of the lower series, all rods being uniformly distant the one of the other. Each lifting-wire 18 has a projection 19 to which the string 21 is attached, which is guided over guide-disks 22 and to the other end of which the loaded leaf A, B (Fig. 3) is suspended. The lifting-wires 18 thus are loaded and pulled toward cross-rod 3

against which they bear with their adjusting-rings 20.

For operating the bottom-leaves, which cross each other when they ascend, one double grooved pulley 23 (Fig. 4) is inserted between the guide-pulleys 22 and the lifting-wires 18, said pulley 23 with grooves a^1 and b^1 serving for conducting the string 21 of one upper and of one lower lifting-wire in the manner shown in Fig. 3. The string 21^a of the upper lifting-wire engages with groove b^1 and the string 21^b of the lower lifting-wire engages with groove a^1 of pulley 23, so that string 21^a is guided to leaf A, string 21^b being guided to leaf B. Consequently, if one pair of bottom-leaves be actuated, the corresponding lifting-wires cross and only the upper lifting-wire will be acted upon by the upper lifting-blade 17 when rail 6 is moved forward (Fig. 1 in the direction from right to left) so that leaf A which is connected with string 21^a has to be loaded heavier than leaf B for returning the upper lifting-wire to its position in simultaneously pulling forward the lower lifting-wire or lifting the corresponding leaf B. It is however possible to alternately actuate the upper and the lower lifting-wire, as is the case with ordinary leaves during the forestroke of the driving-crank (Fig. 1 from right to left), so that during the return-stroke of the driving-crank leaf B does not move, provided both leaves A and B are equally loaded.

The axles of pulleys 23 as well as those of pulleys 22 are fixed in the frame of the machine.

The position of the ends of lifting-wires 18 which are acted upon by lifting-blades 17 is determined by the pushing-needles 38^a and 38^b embracing the same which are guided in the cross-bars 4 and 5 and influenced by the pattern cylinder 36. Said pattern-cylinder is revolvably mounted in a rail 25 which is vertically adjustable in vertical supports 24 of the frames 1 and the cylinder is actuated at each descent of the rail in the well known manner by means of a ratchet 39 and pawl 40. To facilitate its exchangement the pattern-cylinder 36 is at both ends mounted in a laterally inclined groove 37 in which it is secured by means of a cotter 42. A rack 32 which is connected with the cranks 12 by means of crank-pins 33 and guided upon the roller or pulley 34 revolvable around axle 35, serves for effecting the downward movement of

rails 25 which is necessary to permit the rotation of the pattern-cylinder, said rack being in gear with the toothed segment 30 of the cams 29 which are adapted to rotate around the pivots 31 fixed in supports 24. The upper end of the two vertical rails 25 is provided each with a support 26 in which the axle 28 of a pulley 27 is fixed. To the lower end of said supports 26, which form eyes 41, weights are suspended. The slide-roller 27 presses in consequence of the load acting upon rails 25 upon the cams 29 so that when the rack 32 be operated or the cam rotated the rail with the pattern-cylinder 36 is quickly lowered. The upper end of the pushing-needles 38^a and 38^b which forms eye, is secured in its position in the slot of cross-rod 4 by means of a cotter 43.

The device operates as follows:—If the driving crank 10 be alternately moved from right to left and vice versa (Fig. 1), the rails 6 which are connected by lifting-blades 17 and guided in the frames 1 will follow the movement of crank 12, the stroke of said crank and of rail 6 being limited by the length of the guide slots for the lifting-blades 17 in frames 1. Corresponding to the position of the pattern cylinder or of the pushing-needles 38^a and 38^b respectively, the upper or the lower lifting-wires 18 are drawn along by the lifting-blades 17, whereby the leaves connected with the same are alternately raised or lowered. By inserting the pulleys 23 having two grooves, a number of bottom leaf pairs can be simultaneously operated with the ordinary leaves. One further can arrange that at each stroke of the driving-crank (fore or back) one pair of bottom-leaves can be raised, lowered or crossed. By adjusting the rings 20 at the ends of the lifting-wires 18 the movement of each leaf can be regulated, said adjusting rings facilitating further to fix the lifting-wires in any required position for repair.

At each fore-stroke of the driving crank (Fig. 1 from right to left), the rack 32 is drawn along by crank 12 whereby the cam 29 is rotated. The roller 27 fixed at the end of rail 25, which is vertically adjustable, slides upon the path of cam 29 so that the rails 25 with the pattern-cylinder descend immediately through gravity and under the load suspended to the same. At the same time

the pattern cylinder is revolved during its descent by the ratchet 39 so that a new card is brought under the pushing-needles 38^a and 38^b. At each return-stroke of the driving-crank rack 32 is also returned as well as cam 29 and the rails 25 with pattern-cylinder 36 and sliding roller 27 while at the same time, owing to the new card the ends of the drawing-rods are again adjusted by means of the pushing-needles.

We claim:—

1. Device for moving the leaves in double-stroke dobbies, comprising in combination the leaves, a lifting-wire for each leaf, a string connecting each leaf with its lifting-wire, an adjusting-ring mounted on the outer end of each lifting-wire, frames in which the lifting-wires are mounted, cross rods connecting said frames having guide slots for the lifting-wires, two lifting-blades for alternately operating the upper or lower series of lifting-wires, rails to which said operating lifting-blades are fixed, and which are securely guided in said frames, pushing-needles for actuating the ends of the lifting-wires, a pattern-cylinder for operating said pushing-needles and means for revolving and simultaneously moving the pattern-cylinder in vertical direction at each stroke of the driving crank, substantially as described and shown.

2. In a device for operating the leaves of double action dobbies the means for operating the pattern-cylinder comprising in combination two vertical rails, the frames having lateral grooves in which said rails are guided, a roller at the upper end of each frame, the pattern-cylinder carried in the lower ends of said rails, a cam partly provided with teeth connected with the driving-crank, a rack with which meshes said cam and which serves for connecting said cam with said crank, rollers for guiding said rack and a hooked arm for revolving the pattern-cylinder when the same is descending in consequence of the oscillating motion of the cam, substantially as described and for the purpose set forth.

KARL KUTTRUFF.
JOHANN FREFEL.

Witnesses:

GEO. GIFFORD,
ARNOLD L. ZUBER.