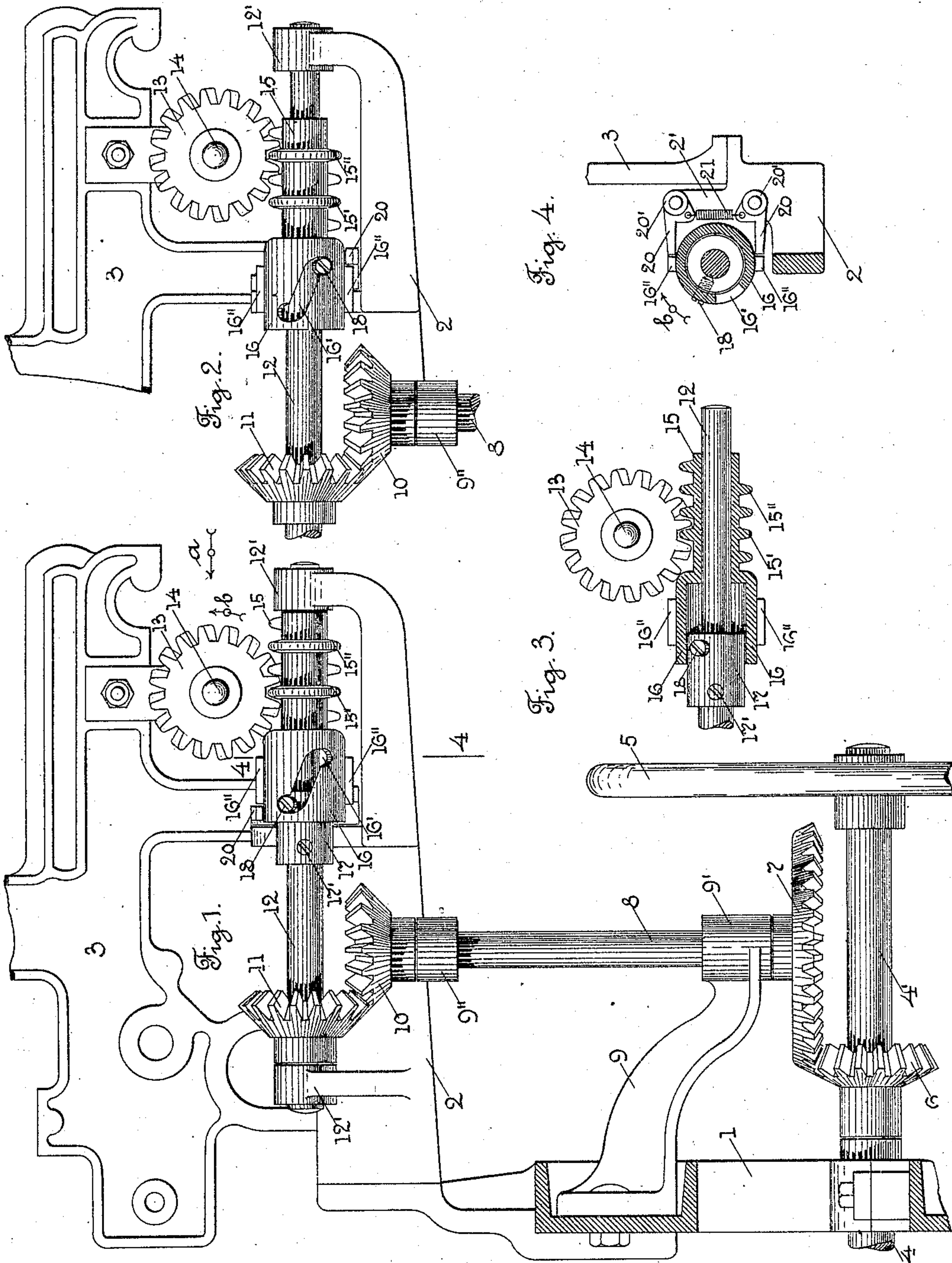


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E. H. RYON.
PICK FINDER MECHANISM.
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PICK-FINDER MECHANISM.

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To all whom it may concern:

Be it known that I, EPPA H. RYON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Pick-Finder Mechanism, of which the following is a specification.

My invention relates to looms, and particularly to a pattern-chain mechanism of a loom and a pick-finder mechanism combined therewith.

The object of my invention is to provide a pick-finder mechanism of simple construction and comprising a supplemental mechanism, preferably combined with the driving mechanism of the pattern-chain cylinder carrying the pattern-chain, and by means of which, as the loom is turned back by hand to pick out, the pattern-chain cylinder and the pattern-chain thereon are automatically given an additional rotary movement in a backward direction in order to have the pattern indications in proper time with the operating mechanisms, and when the loom is started the cylinder and pattern-chain are automatically given an additional rotary movement in a forward direction for the same purpose.

My invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

I have only shown in the drawings a detached portion of the driving mechanism of a dobby pattern-chain cylinder of well-known construction and operation with my improvements combined therewith.

Referring to the drawings, Figure 1 is a detached front view of the driving mechanism of a dobby-pattern-chain-cylinder shaft and my improvements applied thereto. Fig. 2 corresponds with the upper part of Fig. 1, but shows the opposite position of my improvements. Fig. 3 is a central longitudinal section through the worm-shaft and the worm embodying a part of my improvements and shows the worm-gear on the pattern-chain-cylinder shaft. Fig. 4 is a section on line 4 4, Fig. 1, looking in the direction of arrow *a*, same figure.

In the accompanying drawings, 1 is the up-

per part of a loom side or frame. 2 is a stand secured thereto, and 3 a portion of one side or end of a dobby-frame.

4 is a driven shaft, as the crank-shaft of a loom, having the end 4' extending beyond the loom-frame 1 and having fast on its extreme end a hand-wheel 5 to turn the shaft 4 by hand and turn back the loom to pick out in the ordinary way.

Fast on the end 4' of the shaft 4 is a bevel-gear 6, which meshes with and turns a bevel-gear 7, fast on the lower end of a vertically-extending shaft 8, mounted in a bearing 9' on a bracket or arm 9 and a bearing 9'' on the stand 2. On the upper end of shaft 8 is fast a bevel-gear 10, which meshes with a bevel-gear 11, fast on the worm-shaft 12. The worm-shaft 12 has bearings 12' on the stand 2.

13 is a worm-gear fast on the shaft 14 of the dobby pattern-chain cylinder. (Not shown.) The worm-gear 13 is operated by the worm-shaft 12.

All of the above-mentioned parts may be of the ordinary and well-known construction in the driving mechanism of the pattern-chain cylinder of a dobby.

I will now describe my improvements, combined in this instance with the dobby-pattern-chain-cylinder driving mechanism above described, and shown in the drawings.

On the worm-shaft 12 is loosely mounted to slide thereon and to revolve therewith a worm 15, having in this instance two dwell worm-threads 15' and 15'' thereon to engage and turn the worm-gear 13 on the shaft 14 of the dobby pattern-chain cylinder forward or backward. The worm 15 has on one end, in this instance integral therewith, a sleeve or hub 16, which has a cam-slot 16' therein and also two oppositely-extending projections 16'' thereon. The hub 16 extends loosely over a collar 17, secured by a screw 17' on the worm-shaft 12. A screw 18, secured to the collar 17, extends out therefrom and into the cam-groove 16' in the sleeve 16.

On an upright extension 2' on the stand 2 (see Fig. 4) are pivotally mounted on studs 19 the hubs 20' on the inner ends of two fingers or pawls 20. The outer free ends of the two

pawls 20 extend one above and the other below the hub 16 (see Fig. 4) and are held in yielding engagement therewith by a spring 21, attached at each end to the pawls 20.

5 The free ends of the pawls 20 are adapted to extend into the path of and engage the projections 16'' on the sleeve 16 to prevent the rotation of said sleeve according to the position thereof on the collar 17 and the direction
10 of rotation of said collar 17.

When the loom is running properly, the rotation of the shaft 4 will, through bevel-gears 6 and 7, shaft 8, bevel-gears 9 and 11, shaft 12, and pin 18 on the collar 17, fast on
15 the shaft 12, extending into the cam-groove 16' in the sleeve 16, turn said sleeve and the worm 15, connected therewith, to turn the worm-gear 13 and shaft 14 in the direction indicated by arrow b, Figs. 1 and 4, to move
20 forward the dobby pattern-chain cylinder and pattern-chain. When the pattern-chain is turned forward, the upper pawl 20 (see Figs. 1 and 4) is out of alinement with or out of the path of the projection 16'' on the sleeve 16,
25 so that it does not interfere with the turning of the sleeve in the direction stated, while the lower pawl 20 passes over the projections 16'', the spring 28 expanding or yielding. When
30 the loom is stopped and is turned back by the hand-wheel 5 to pick out, the reverse movement of the worm-shaft 12, through the reverse movement of its driving mechanism, causes the pin 18 on the collar 17 to move in the cam-slot 16' in the sleeve 16 from the
35 position shown in Fig. 1 to the position shown in Fig. 2. The free end of the lower pawl 20 extending in the path of and engaging the lower projection 16'' on the sleeve 16 prevents the rotation of the sleeve 16 and the worm 15,
40 and consequently the movement of the pin 18 in the cam-groove 16' from the position shown in Fig. 1 to the position shown in Fig. 2 moves the sleeve 16 and the worm 15 toward the left, and this movement causes a partial rotation
45 of the worm 15 and causes the worm-gear 13 and shaft 14 and dobby pattern-chain cylinder thereon to be given an additional backward rotary movement. When the sleeve 16 is in the position shown in Fig. 2 and the
50 dobby pattern-chain cylinder has been turned back, the free end of the lower pawl 20 is out of the path of the projection 16'' (see Fig. 2) on the sleeve 16, and the sleeve 16 and worm 15 are free to be turned to reverse the pat-
55 tern-chain as many picks as desired. On the starting up of the loom the revolution of the collar 17 on the shaft 12 will cause the pin 18 to move in the slot 16' in the sleeve 16 from the position shown in Fig. 2 to the position
60 shown in Fig. 1. The free end of the upper pawl 20 extending back of and engaging the upper projection 16'' will prevent the rotation of the sleeve 16, and said sleeve 16 and worm 15 connected therewith will, through the
65 movement of the pin 18, be moved from the

position shown in Fig. 2 to the position shown in Fig. 1. This movement will cause a partial rotation of the worm 15 and cause the worm-gear 13 and shaft 14 and the pattern-chain cylinder thereon to be given an additional forward rotary movement, and then a continued forward rotation will be communi-
70 cated to the shaft 14 and dobby pattern-chain cylinder in the usual way.

The advantages of my improvements will
75 be readily appreciated by those skilled in the art.

My improvements are of simple construction and may be adapted to be combined with parts of a dobby mechanism of ordinary and
80 well-known construction. By means of my improvements the dobby pattern-chain cylinder and pattern-chain thereon have an additional backward rotary movement communicated to them on the reversing of the loom,
85 and on the starting up of the loom the dobby pattern-chain cylinder and pattern-chain thereon have an additional forward rotary movement communicated to them without interfering with the ordinary operation of the
90 pattern mechanism or of the loom.

It will be understood that the details of construction of my improvements may be varied, if desired.

I have shown in the drawings and described
95 herein my improvements combined with a pattern mechanism of the dobby type; but it will be understood that they may be combined with pattern mechanisms of other types, as an ordinary shuttle-box-motion pattern mechanism, and, further, it will be understood that I do not limit my improvements to pattern mechanisms, as they may be used in connection with other mechanisms where it is desired to automatically communicate an additional rotary movement to a driven part in
100 addition to the ordinary rotary movement of said part on the reversing of the direction of the rotary movement.

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

1. The combination with a shaft, and a worm-gear mounted thereon, of a worm having threads adapted to mesh with said worm-gear
115 to rotate the same, and said worm mounted on a driven shaft, and said driven shaft, and means to cause said worm to slide longitudinally, to communicate an additional rotary movement to said worm-gear, when the direction of rotary movement of the shaft carrying said worm is reversed, substantially as shown and described.

2. The combination with a shaft, and a worm-gear mounted thereon, of a worm having
125 threads adapted to mesh with said worm-gear to rotate the same, and said worm mounted on a driven shaft, and having a sleeve or hub thereon, and two oppositely-extending projections on said sleeve, and a cam-slot in said
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sleeve, and said driven shaft having a collar secured thereon, and a stud or screw on said collar extending into said cam-slot, and means to cause said worm and sleeve to slide longitudinally on the driven shaft, said means comprising two fingers or pawls, located upon opposite sides of said sleeve, and held in yielding engagement therewith, with their free ends extending in the path of and adapted to engage the projections on said sleeve, for the purpose stated, substantially as shown and described.

3. The combination with the driving mechanism of a pattern-chain-cylinder shaft, of mechanism automatically operated on the reversing of the movement of the pattern-chain-cylinder shaft, to give to the pattern-chain cylinder an additional rotary movement, in addition to the ordinary rotary movement of the pattern-chain cylinder, substantially as shown and described.

4. In a pattern mechanism of a loom, the combination with the mechanism for operating the pattern-chain-cylinder shaft, of supplemental mechanism combined therewith to automatically communicate to the pattern-chain cylinder an additional rotary motion, on the reversing, or the starting up of the pattern-chain mechanism, substantially as shown and described.

5. In a pattern mechanism, the combination

with the driving mechanism of a pattern-chain-cylinder shaft, comprising therein a shaft having a worm thereon, to engage and operate a worm-gear on the pattern-chain-cylinder shaft, of mechanism for communicating a movement to said worm, in addition to the movement thereof by the revolution of the shaft on which it is mounted, said additional movement acting to give to the pattern-chain cylinder, an additional rotary movement, substantially as shown and described.

6. In a pattern mechanism, the combination with the driving mechanism of a pattern-chain-cylinder shaft, comprising a shaft, a worm loosely mounted thereon to operate the pattern-chain-cylinder shaft, of mechanism for communicating a movement to said worm, in addition to the movement communicated by the rotation of the shaft on which it is mounted, said mechanism comprising a sleeve connected with said worm, means for holding said sleeve to prevent the rotation thereof, and means, intermediate said shaft and said sleeve, to communicate a sliding and a rotary motion to said sleeve, substantially as shown and described.

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