July 28, 1925. 1,547,466

H. SUNDQUIST

REVERSE KEY FOR KNOWLES HEAD MOTION

Filed Oct. 4, 1923

Fig. 1

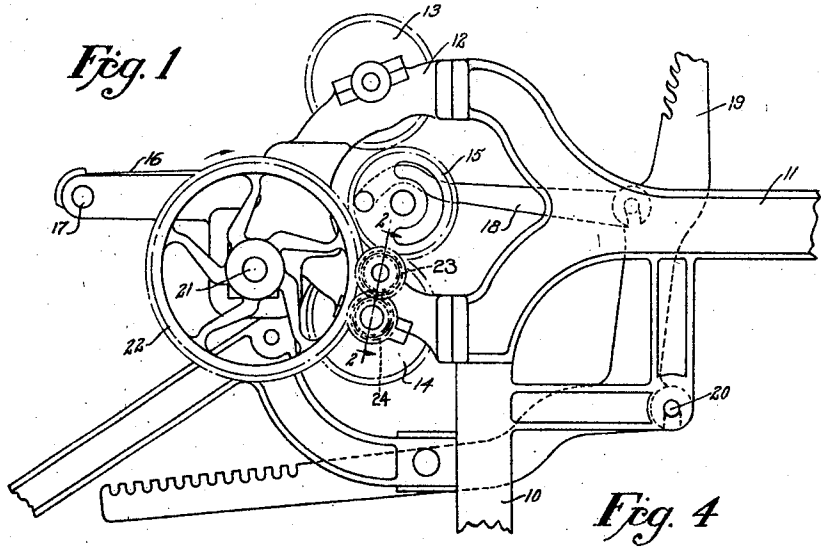


Fig. 4

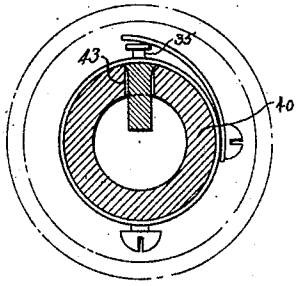
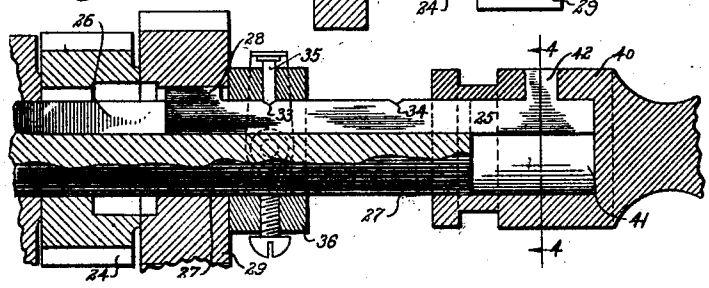


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

HERMAN SUNDQUIST, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

REVERSE KEY FOR KNOWLES HEAD MOTION.

Application filed October 4, 1923. Serial No. 666,596.

To all whom it may concern:

Be it known that I, HERMAN SUNDQUIST, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Reverse Key for Knowles Head Motion, of which the following is a specification.

This invention relates to improvements in the reverse key of the well known Knowles head for looms and more particularly to means for mounting the key whereby improper engagement with the associated gearing is prevented.

As ordinarily constructed, the Knowles head includes a pattern chain shaft and a lower cylinder connected therewith by means of reversible gearing. The shaft of the lower cylinder is extended forwardly of its front bearing and has loosely mounted thereon a pair of pinions, the rear one of which is operatively connected to the driving gear of the chain shaft by means of the key when the loom is running normally, the key being in rear position. When it is desired to reverse the head for any reason, such as to correct a mispick, the key is pulled forwardly, the result of which is to disengage the rear pinion and connect the forward pinion, by means of intermediate gearing, with the driving gear of the chain shaft to drive the latter in the opposite direction.

As ordinarily constructed the key is riveted to a knob by which it is manipulated, but the knob is so placed that it is supported directly by the key. It has been found in practice that the weight of the knob is sufficient to move the inner end of the key when the latter becomes worn, the objectionable effect of which is to connect both the pinions with the lower cylinder or driving shaft.

It is the general object of my invention to prevent this undesirable motion of the key by providing a more substantial mounting for the knob.

A more particular object of the invention is to provide a key with a knob so constructed that the latter will always be supported by the driving shaft.

With these and other objects which will appear as the description proceeds, the invention resides in the combination and arrangement of parts hereinafter set forth and specifically pointed out in the claims.

In the drawings, wherein one convenient form of my invention is shown,

Fig. 1 is a front elevation of the well known Knowles head, having my invention applied thereto,

Fig. 2 is an enlarged section taken on line 2—2 of Fig. 1 looking in the direction of the arrows,

Fig. 3 is a fragmentary view showing portions of the mechanism illustrated in Fig. 2 but in a different position, and

Fig. 4 is a section taken on line 4—4 of Fig. 3 looking in the direction of the arrows.

Referring more particularly to the drawings, the loom side 10 is shown as supporting the arches 11, to which is bolted the head frame 12 in which are journaled the upper and lower cylinders 13 and 14, respectively. Vibrator gears 15 are mounted on vibrator levers 16, pivoted at 17 on frame 12 and actuate the vibrator connectors 18 by means of which the harness jacks 19 are rocked on their pivot 20. A chain shaft 21 is suitably mounted in the frame 12 and has secured to the outer end thereof a relatively large gear 22 by means of which the chain shaft is rotated. Gear 22 meshes with the driving pinions 23 and 24 (see Figs. 1 and 2).

In the normal operation of the loom a key 25, slidably mounted in a slot 26 cut in shaft 27, has its driving portion 28 in engagement with pinion 24, so that as cylinder 14 is rotated by the usual mechanism, not shown, the chain shaft will be driven in the direction of the arrow shown in Fig. 1. Cylinder 14 is mounted on shaft 27 and moves therewith.

For the purpose of reversing the direction of the chain, there are provided two meshing gears 29 and 30, the gear 29 being loosely mounted about shaft 27 and the gear 30 being secured as by means of pin 31 to an extension 32 of the driving pinion 23. Pinions 23 and 30 both rotate freely on a stud fixed to the frame of the head. When it is desired to reverse the direction of the head, the key 25 is drawn forwardly, or to the

right as viewed in Fig. 2, and the driving portion 28 thereof is moved out of contact with pinion 24 and into driving relationship with gear 29. By means of the intermediate gear 30 the direction of rotation of the chain cylinder is thus reversed through the action of driving gear 22 and pin 23.

Key 25 has formed thereon a pair of notches 33 and 34, one or the other of which cooperates with spring actuated pin 35 to hold the driving portion 28 of the key in proper driving position with respect to pinion 24 or gear 29. A collar 36 is set on the shaft 27 to retain pinions 24 and 29 and also to afford a mounting for pin 35. The matter thus far described is old and forms no part of the present invention.

As ordinarily constructed, the key is of the type shown in Patent No. 490,890, and is provided with a knob by means of which said key may be moved longitudinally of the shaft 27. The shaft 27 used with the key shown in said patent does not project beyond collar 36 and inasmuch as the notch 34 and pin 35 are very near the end of the shaft, the weight of the knob is sufficient in some instances, after the key has become worn, to raise the inner end of the key. The result of this is to have pinions 24 and 29 operatively engaged by different portions of the key, which of course is an undesirable condition.

My improvement resides in extending the shaft 27 and in providing a knob 40 having a recess 41 of sufficient depth so that the knob is always supported by the shaft when the key is in forward or withdrawn position. The key is provided with an arm 42 which passes through an opening 43 in the knob 40 and by means of which the key and knob are secured together, as by heading the end of arm 42 over to rivet the same to the knob. The key is shown in Fig. 3 as in reversing position and it will be noted that the rear end of the knob is still in engagement with the supporting shaft 27.

Thus it will be seen that by the use of my present invention the weight of the knob is supported by some part of the head and not the key. I have shown my invention applied to the well known Knowles head, but I do not wish to be limited to this form of pattern mechanism.

Having thus described one form of my invention, it will be apparent that changes and modifications may be made by those skilled in the art and I do not wish to be limited to the specific form shown, but what I do claim is:

1. In a loom having a pattern mechanism comprising a driving shaft, a pattern chain shaft and gearing intermediate the said shafts, a key slidable on said driving shaft to engage the gearing in different positions, and a sleeve connected to and moving with the key, said sleeve being supported by the shaft independently of the key.

2. In a loom having pattern mechanism comprising a driving shaft, a pattern chain shaft and gearing intermediate the said shafts, a key slidable on said driving shaft to engage said gearing in different positions, and a sleeve secured to said key and slidable on said shaft, the sleeve being in engagement with and supported by the driving shaft in all positions of the key.

3. In a loom having a pattern mechanism comprising a driving shaft, a pattern chain shaft and intermediate gearing between said shafts, a key slidable on said driven shaft and movable to operative relation with different parts of said gearing, and a hand hold for said key supported directly on the driven shaft in all positions of the key.

4. A reverse key for a pattern mechanism having a pattern shaft, a pair of driving gears, a slotted driving shaft on which said gears are loosely mounted and beyond which said driving shaft extends, and intermediate connections between said gears and said pattern shaft, said key lying in the slot of the driving gear and having a portion to engage one or the other of said gears and said key having a hand hold slidable on and supportable by the extended end of said driving shaft, said hand hold to engage the driving shaft when the key is operatively engaging either gear.

In testimony whereof I have hereunto affixed my signature.

HERMAN SUNDQUIST.