

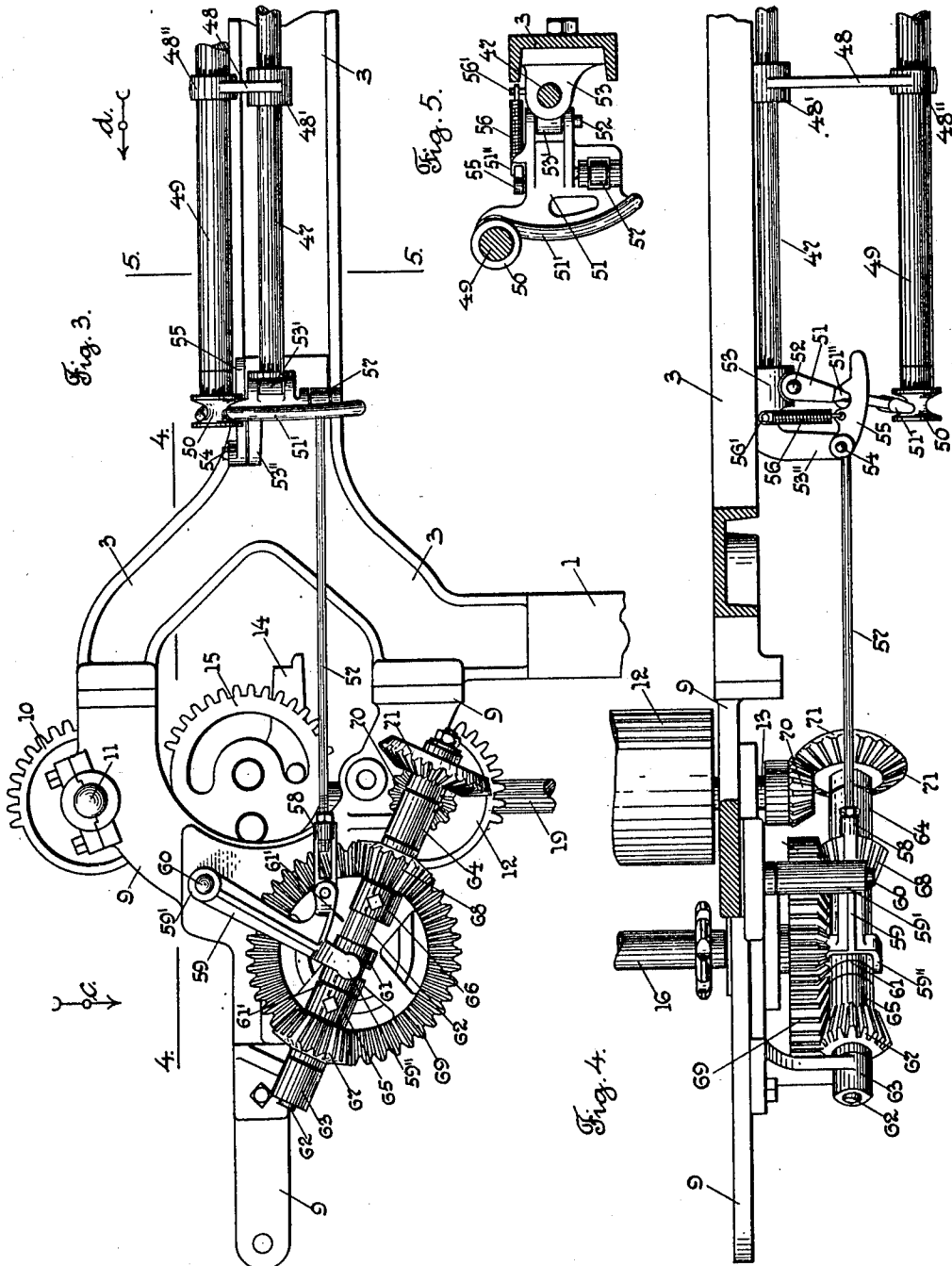
E. H. RYON.
LOOM.

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2 SHEETS—SHEET 2.

1,020,664.



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LOOM.

1,020,664.

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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 Looms, of which the following is a specification.

My invention relates to looms, and more particularly to a supplemental mechanism or attachment for looms, by means of which the harness and shuttle box operating mechanism may be automatically operated for the purpose of picking out, or finding a pick.

My improvements are designed particularly to be used on heavy looms having a Knowles head motion of the type shown and described in Reissue Letters Patent, No. 7,784, and in which considerable power is required to turn the Knowles head, after the loom is stopped for the purpose of changing the shed while picking out, or finding the pick.

The object of my invention is to provide mechanism, adapted to be combined with heavy looms for the purpose above stated, so that the weaver by simply operating a lever will cause the head motion to be automatically operated, and the pattern chains to be operated in a forward or in a reverse direction, while the rest of the loom is at rest.

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 detached parts of a loom of the type referred to, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation of the same.

Referring to the drawings:—Figure 1 is an end view of a detached portion of a loom showing parts of the driving mechanism, with my improvements combined therewith. Fig. 2 is a rear view of the lower part of the loom shown in Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 shows, on an enlarged scale, a front view of the Knowles head motion, looking in the direction of arrow *b*, Fig. 1. The head motion shown in this figure is not shown in Fig. 1. Fig. 4 is a section, on line 4, 4, Fig. 3, looking in the direction of arrow *c*, same figure; some of the parts shown in Fig. 3, are not

shown in this figure, and, Fig. 5 is a section, on line 5, 5, Fig. 3, looking in the direction of arrow *d*, same figure.

In the accompanying drawings, 1 is the right hand loom side, and 2 is the left hand loom side, 3 and 4 are the front and rear loom arches, 5, see Fig. 1, is the driving shaft, supported in suitable bearings, not shown, and having a driving pulley 6 loose thereon, which is provided with a friction face 6', and is driven by a belt 7, in this instance from a driven pulley not shown, located above the pulley 6.

8 is a friction disk fast on the shaft 5 and provided with a friction face, with which the face 6' on the driving pulley 6 is moved into and out of contact, to start and stop the loom by the ordinary shipping mechanism, not shown.

The end of the loom arch 4 has secured thereto the stand 9 for supporting the several parts of the head motion. The head motion is of the well known Knowles type, shown and described in Reissue Letters Patent, No. 7,784, above referred to, and comprises the upper cylinder gear 10 fast on the cylinder gear shaft 11, and the lower cylinder gear 12 fast on the cylinder gear shaft 13. The vibrator levers 14 carry the vibrator gears 15, which are located intermediate the cylinder gears 10 and 12 in the usual way, and are raised and lowered through a pattern chain, not shown, on the pattern chain cylinder 16, see Fig. 4. Each of the cylinder gear shafts 11 and 13 has a bevel gear secured thereon; only the bevel gear 17 on the lower cylinder gear shaft 13 is shown in Fig. 1. The bevel gear 17 meshes with and is driven by a bevel gear 18 fast on an upright shaft 19, which is mounted in suitable bearings. A bevel gear 20 is loosely mounted on the lower end of the upright shaft 19, and meshes with and is driven by a bevel gear 21 fast on the driven shaft 22. A collar 23, secured on the shaft 19 by a set screw has a hole there-through for a pin 24 which extends down from a disk 25, forming one member of a clutch, and which is a part of or fast on the lower end of the sleeve 26, which is preferably splined on the upright shaft 19, to rotate therewith, and have a vertical movement thereon. The pin 24 is adapted to extend through the guide collar 23 fast on the shaft 19 and enter a hole in the hub

20' of the bevel gear 20, to form the second member of the clutch, to attach or clutch the gear 20 to the sleeve 26 and the upright shaft 19, to cause them to rotate therewith.

- 5 The pin 24 may be moved out of engagement with the hole in the hub 20' of the gear 20, to disconnect the disk 25 and sleeve 26 from said gear 20, as shown in Figs. 1 and 2, and allow said disk 25 and sleeve 26, 10 and the upright shaft 19 to be rotated independently of the gears 20 and 21.

All of the above mentioned parts are of the usual and well known construction in the type of looms referred to.

- 15 I will now describe my improvements combined with the parts above referred to, for driving the Knowles head by power, for the purpose of picking out, or finding a pick without running the loom.

- 20 At the rear of the loom side 1, see Figs. 1 and 2, is secured a bracket or stand 27, which has a boss 27' from which extends a stud 28; pivotally mounted on the stud 28 is a boss 29' of a rearwardly extending hanger 29, 25 adapted to carry in suitable bearings 29'' and 29''' a horizontally extending shaft 30. The outer end of the shaft 30 has mounted thereon the pulley 31, which is adapted to engage the external surface of the driving 30 belt 7 and the loose pulley 6, when the hanger 29 is raised. The opposite end of the shaft 30 has fast thereon a bevel pinion 32, which meshes with and drives the bevel pinion 33 loose on the stud 28. The pinion 35 33 has a spur toothed portion adapted to mesh with and drive the spur gear 34, which is mounted on the transverse shaft 35, suitably mounted in bearings 27'' on the stand 27, and 36' on the stand 36 secured to the 40 loom side 2.

- A bevel pinion 37 is fast on the end of the transverse shaft 35, and meshes with and drives a bevel gear 38 secured on the lower end of the vertically extending shaft 39, suitably mounted in boss 36'' on the stand 36, 45 and boss 40' on a stand 40 secured to the loom side 2, see Fig. 2. The upper end of the upright shaft 39 has fast thereon a pinion 41, shown by broken lines in Fig. 1.

- 50 The clutch disk 25 is provided in this instance with a toothed portion 25', which is adapted to mesh with the pinion 41 on the upright shaft 39, see Fig. 1, when the sleeve 26 and disk 25 are raised in order to disconnect the bevel gear 20, as above described.

- 55 The hanger 29 is provided with an arm 29^a, the outer end of which is pivotally connected to the lower end of the connector rod 42, the upper end of said rod 42 is pivotally 30 connected to the end of an intermediate lever 43, which has its hub 43' loosely mounted on a stud 44 on the loom side, see Fig. 1. A rod 45 connects the intermediate lever 43 with a lever 46, which has its hub 46' fast 65 on a rock shaft 47, which is mounted in suit-

able bearings at the front of the loom arch 3, see Fig. 1. Fast on the rock shaft 47 are the hubs 48' of arms 48. The downward movement of the arms 48 will cause the shaft 47 to rock, and through connections to the 70 arm 29^a on the hanger 29, will raise said hanger and cause the pulley 31 to engage the belt 7, to cause the rotation of said pulley 31, and through intermediate connections 75 cause the rotation of the pinion 41 and the disk 25, to rotate the upright shaft 19, and cause the operation of the head motion, to operate the harnesses and drop shuttle boxes without running the loom.

I will now describe the operating mechanism for the pattern cylinder 16, shown in Fig. 4, said operating mechanism is shown in Figs. 3, 4, and 5.

The levers or arms 48 preferably have an enlarged head 48'', adapted to loosely receive in this instance a wooden rod 49. One end of said rod 49 is provided with a grooved head or collar 50, see Fig. 4, which is adapted to engage a curved portion 51' on a horizontally extending lever 51, which has 85 a yoke shaped hub which is pivotally mounted on a stud 52 in a boss 53' on a stand 53, see Fig. 5, which stand also forms a bearing for the rock shaft 47. A projection 53'' on the stand 53 carries a pin 54 on which is 90 pivotally mounted a lock lever 55, which is adapted to engage a lug 51'' on the lever 51, to hold and lock said lever in two positions, through the action of a helically coiled contraction spring 56 attached at one end to said 95 lever 55 and at its other end to a pin 56' on the stand 53. A rod 57 is pivotally connected at one end to the lever 51, and the other end of said rod 57 has a rod head 58, to which is pivotally connected the clutch lever 59, 100 having its hub 59' loosely mounted on a stud 60 on the stand 9, see Figs. 3 and 4. The clutch lever 59 has its downwardly extending end 59'' of yoke shape and adapted to engage an annular groove in the sleeve 110 or collar 61. The collar 61 is loosely mounted on a shaft 62, suitably mounted in bearings 63 and 64 to slide thereon. Two collars 65 and 66 are secured on the shaft 62, and provided in this instance with holes through which loosely extends a pin 61' on each end of the collar 61, see Fig. 1. The pins 61' are adapted to pass through the collars 65 and 66 and enter a hole in either of the bevel 120 pinions 67 or 68, to rotate said pinions 67 and 68 which are loosely mounted on the shaft 62, and adapted to rotate the bevel gear 69 and the pattern cylinder shaft 16 in one or the other direction, according to the 125 position of the clutch lever 59 and its clutch collar 61. The shaft 62 is rotated by a bevel pinion 70 mounted on the lower cylinder gear shaft 13, which pinion 70 meshes with and drives the bevel gear 71 attached to the 130 shaft 62. Through the movement of the rod

49 in one direction or the other, to move the lever 51, and through connections the clutch collar 61, the pinion 71 is driven by the bevel pinion 70 on the lower cylinder shaft 5 13, to rotate the shaft 62, and through the bevel gear 69 to revolve the pattern cylinder shaft 16, all as will be fully understood by those skilled in the art.

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

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

15 1. In a loom of the class described, harness operating mechanism, pattern mechanism, including a chain shaft to control the operation of the same, driving mechanism, including clutch devices for said pattern chain shaft, a constant driving member, a friction device to cooperate with said constant driving member for the normal operation of the loom, a pivotally mounted shaft having a pulley fast thereon, adapted 25 to cooperate with said constant driving member, connections from said shaft to said harness operating mechanism, to drive the same when the loom is stopped, a manually operated shipper, connections from said shipper to said pulley, whereby the movement of said shipper in one direction will cause the rotation of said pulley, connections from said shipper to said clutch device, whereby the movement of said shipper 35 in another direction will operate said clutch device, and cause said chain shaft to run in a forward or backward direction.

2. In a loom of the class described, harness operating mechanism, pattern devices 40 therefor, including a chain shaft, a driving

member, and devices to cooperate with said member to cause the normal operation of the loom, separate mechanism to cooperate with said driving member to automatically operate the harnesses when the loom is stopped, 45 a manually operated shipper rod, and a device movable in a longitudinal direction, and having connections therefrom to the pattern devices, said shipper rod also manually movable transversely of its length, and 50 having connections to said separate mechanism, whereby the harnesses and pattern mechanisms may be automatically operated, and said pattern device caused to move in a forward or reverse direction when the 55 loom is stopped, all under control of said shipper rod.

3. In a loom of the class described, harness operating mechanism, means including a shaft, a clutch device thereon, a bevel 60 gear, connections for operating said harness mechanism, and a constant driving member for driving the loom, a toothed gear on said clutch device, a second shaft having a pinion thereon normally disconnected from said 65 toothed gear, means operated manually to disconnect said gear from its driving means, and to connect the same with said pinion, connections from said pinion to said constant driving member, said connections including a pulley adapted to bear against 70 said driving member, manual means to cause contact of said pulley and a belt, and said belt, to cause the operation of said harnesses, when the loom is stopped.

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