Nov. 28, 1933. B. W. BROUWER ET AL 1,937,401

REVERSIBLE TAKE-UP FOR LOOMS

Filed Dec. 30, 1930 2 Sheets-Sheet 1

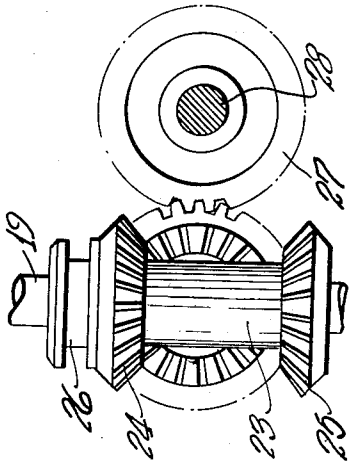


Fig. 6.

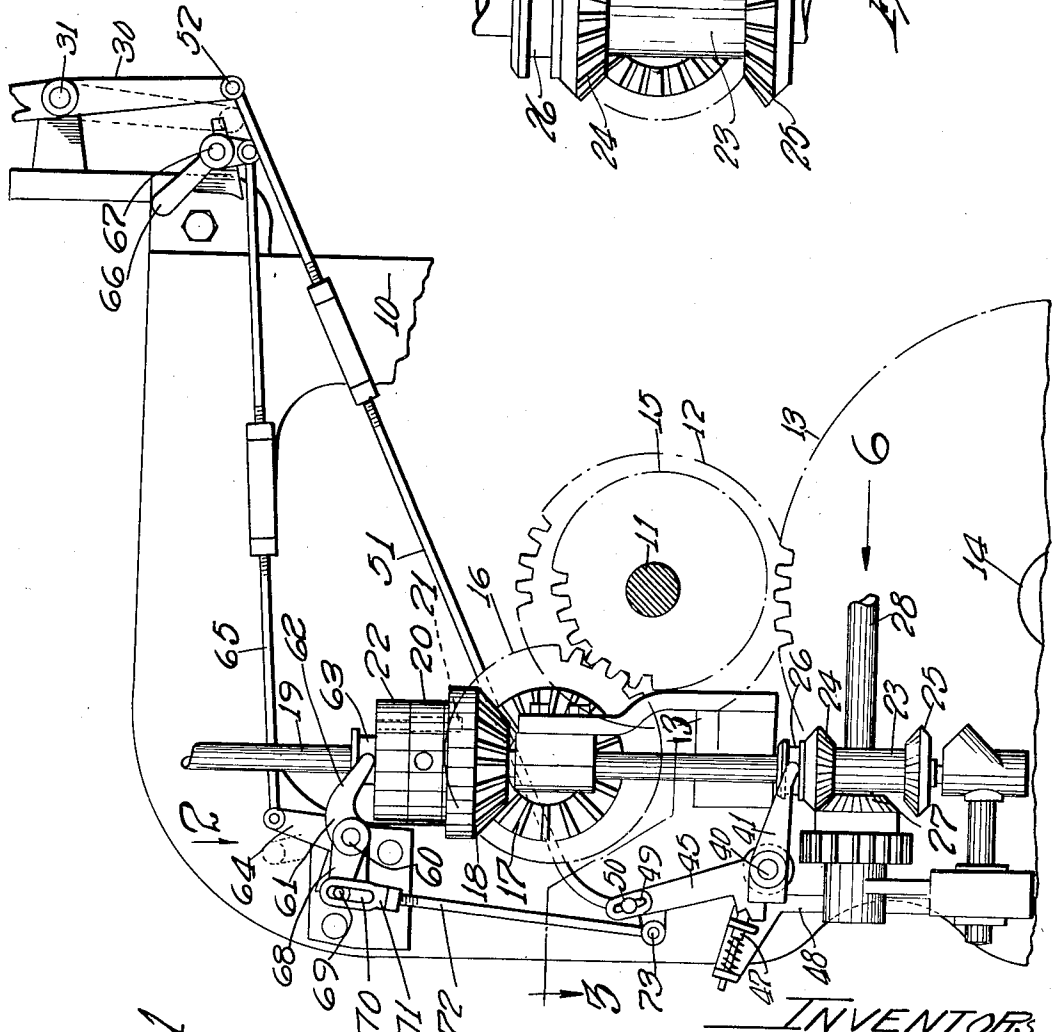


Fig. 1

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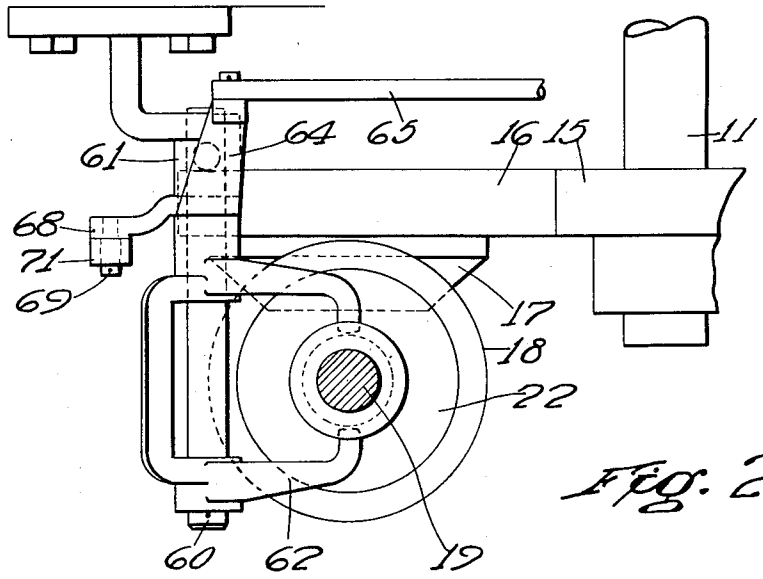


Fig. 2.

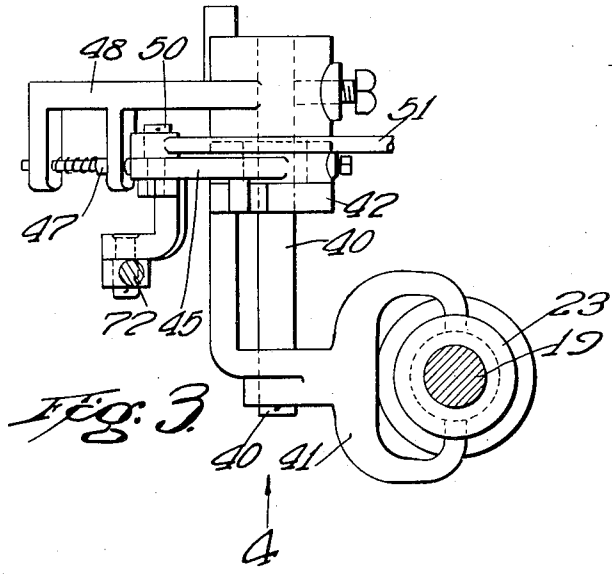


Fig. 3.

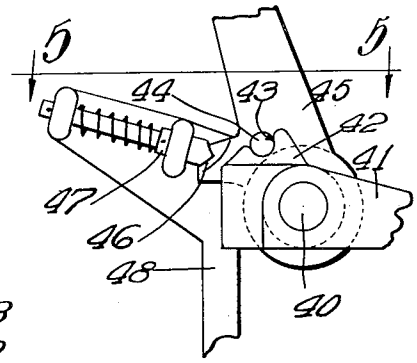


Fig. 4.

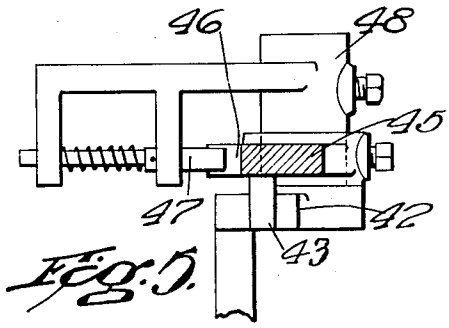


Fig. 5.

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REVERSIBLE TAKE-UP FOR LOOMS

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Serial No. 505,566

7 Claims. (Cl. 139—304)

This invention relates to improvements in a control for combined take-up and pattern mechanism and it is the general object of the invention to provide means for simultaneously unclutching the pattern mechanism and reversing the take-up drive.

In the so-called Knowles loom the head motion which is mounted on the arches is driven by an upright shaft deriving its motion either from the bottom or top of the loom. The upright shaft is ordinarily geared directly to the loom and in order to permit the weaver to turn the pattern chain back without being obliged to operate the loom by hand there is employed a clutch having a part which slides along the upright shaft to disconnect the head. Certain looms of this type are provided with a positive reverse take-up so connected that when the pattern mechanism is reversed the take-up will also be reversed. This is done to require the fell of the cloth to move back an amount proportional to the removed picks.

Heretofore it has been customary to supply the clutch with means for manual control and the reverse for the take-up has had a separate control, each of these controls being movable independently of each other and being so related that the weaver was obliged to operate both handles. It is an important object of the present invention to place the clutch under control of the lever which reverses the take-up, but at the same time permit the clutch to be operated independently of the reverse. In other words, by the employment of the invention set forth herein operation of the reverse lever will perform two functions, namely, the clutch will be moved to non-driving position and the take-up will be reversed, and in addition it is possible to move the clutch to non-driving position without reversing the pattern or take-up.

In previous devices of the general type set forth herein it has been customary to employ two rods and a bell crank lever to establish connection between the reverse lever and the sliding reverse sleeve for the take-up. It is an important object of the present invention to eliminate the bell crank lever and one of the links and in their place substitute a single link. This result is accomplished by altering the form of the reverse sleeve operating lever.

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

In the accompanying drawings, wherein a convenient embodiment of our invention is set forth,

Fig. 1 is a side elevation of the rear part of a so-called Knowles loom having our invention applied thereto,

Fig. 2 is a plan view taken in the direction of arrow 2, Fig. 1, on an enlarged scale,

Fig. 3 is a horizontal section on line 3—3 of Fig. 1,

Fig. 4 is an enlarged detail view of the lever construction for the reverse sleeve,

Fig. 5 is a detailed horizontal section on line 5—5 of Fig. 4, and

Fig. 6 is a detail front elevation on an enlarged scale looking in the direction of Fig. 1, the take-up shaft being shown in section.

Referring to Fig. 1, we have shown a loom frame 10 having a top crank shaft 11 provided with a gear 12 which meshes with a larger gear 13 mounted on the bottom shaft 14. An eccentric gear 15 is fixed to the top shaft and meshes with another eccentric gear 16 movable about a fixed pivot. The gear 16 may be cast as a part of a bevel gear 17, and the latter may mesh with a second bevel gear 18 mounted for free rotation with respect to an upright shaft 19. This shaft has secured thereto a collar 20 through which projects an operating pin 21 shown in dotted lines in Fig. 1, said pin being secured to a slide 22 which can be moved upwardly along the shaft 19 from the position shown in Fig. 1.

Slidably mounted on the lower portion of the shaft 19 is a sleeve 23 having rigid therewith upper and lower beveled gears 24 and 25, respectively. A grooved extension 26 projects upwardly from the sleeve and permits the latter to be raised from the position shown in Fig. 1. A driven bevel gear 27 has driving connection with the take-up connection 28 which projects forwardly to the take-up mechanism not shown of the loom. The take-up is of the positively driven type and receives continuous motion. Ordinarily the sleeve is in the position shown in Fig. 1 and the gearing is such that the take-up will move forwardly as the loom operates.

The shaft 19 extends upwardly to cooperate with harness mechanism of the type generally known as the Knowles head. This mechanism should be under the control of the weaver so that it can be operated independently of the loom for the purpose of reversing the sequence of sheds to correct a mispick. It is for this reason that the slide 22 is provided for breaking the connection between the collar 20 and the driving gear 18.

A reversing lever 30 may be pivoted about a stud 31 secured to fixed structure and has the upper end thereof connected to mechanism not shown herein but effective to reverse the drive for the pattern chain when the weaver desires to correct a mispick. Ordinarily, the lower end of the lever will be forward in the position shown in Fig. 1, which means that the key not shown which is operatively connected to the upper end of the lever will be pushed to its normal rear position.

It is the purpose of our invention to permit the weaver to reverse the take-up and also unclutch the head from the rest of the loom by a single movement of lever 30, while at the same time providing an independent control for the clutch so that the latter may be thrown out without reversing the take-up. In accomplishing these results we provide a fixed stud 40 on which is pivotally mounted a yoke 41 having a hub 42 provided with a notch 43. A lug 44 formed as part of a lever 45 also pivoted on the stud 40 fits into the notch 43, and holding detents 46 on the lever receive a yielding lock spring plunger 47 mounted on a fixed casting 48.

The upper end of the lever 45 has a slot 49 in which is adjustably mounted in normally fixed position a stud 50 having pivotal connection with the lower end of a diagonally extending rod 51. The upper end of the latter is pivotally connected at 52 to the reverse lever 30. The yoke 41 has connection with the grooved extension 26 and is the means by which the sleeve 23 is raised from the position shown in Fig. 1. The relation of the centers 31, 40, 50 and 52 are such that movement of the reverse lever 30 from the full line position shown in Fig. 1 to the dotted line or reverse position will cause a shifting of the sleeve 23 so that the lower bevel gear 25 will mesh with the take-up bevel 27.

For controlling the clutch we provide a second mechanism including a fixed stud 60 on which is pivoted a three-arm lever 61 having a yoke 62 with fingers to receive a grooved extension 63 of the slide 22. The lever 61 has an upwardly extending arm 64 having pivotal connection with the rear end of an adjustable connector 65 the forward end of which is attached to a manually operated lever 66 pivoted as at 67 to fixed structure.

Under normal conditions the lever 66 will be in the position shown in Fig. 1 and the clutch will be connected to drive the upright shaft 19 while the loom is in motion. When the lever 66 is moved to the right in a clockwise direction around stud or axis 67, however, the arm 64 will be moved to the dotted line position shown in Fig. 1, the effect of which is to disconnect the clutch so that the shaft 19 may be rotated without moving the lay and other parts of the loom.

The lever 61 has a third arm 68 extending rearwardly from the stud 60 and having a pin 69 which extends through slot 70 formed in a rod head 71 carried by the upper end of a rod 72. The lower end of the latter is pivotally connected as at 73 to the lever 45.

As shown in full lines in Fig. 1 the parts are placed for normal operation, but if the weaver is obliged to correct a mispick by reversing the pattern chain the lever 30 will be moved to the dotted position the effect of which will be to lift the sleeve 23 as previously described and also to cause a downward movement on the part of rod 72. This latter member is so related to the three-arm lever 61 that downward movement will cause rocking of arm 68 in a counter-clockwise direction as viewed in Fig. 1 around stud 60. This movement causes an upward motion of the slide 22 to disconnect the clutch and permit free rotation of shaft 19 by mechanism not shown. In this way a single operation of lever 30 will reverse the take-up and also disconnect the clutch.

On the other hand, if it should be desired to disconnect the clutch without necessarily altering the take-up this result can be achieved merely by throwing the lever 66 forwardly. The slot 70 is so proportioned that release of the clutch by lever 66 can be accomplished without causing downward movement of the rod 72 and the take-up can therefore remain unchanged.

From the foregoing it will be seen that the invention set forth herein provides means for simultaneously reversing the take-up and also unclutching the shaft 19 by a single operation of the weaver, while at the same time if it be desired to disconnect the clutch without changing the take-up this latter result can be accomplished merely by throwing lever 66 forwardly. It will also be seen that the adjustable connnector 51 establishes a direct connection between the reverse lever 30 and the sleeve operating lever 45. In order to permit this arrangement it is desirable to dispose the upwardly extending arm of lever 45, and the centers 40 and 52 in the relation shown.

Having thus described our invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of our invention and we do not wish to be limited to the details herein disclosed, but what we claim is:

1. In a loom having an upright harness driving shaft, a driving element for the shaft, a clutch to connect the shaft and element, a take-up member, means rotating with the shaft to drive the take-up member either forwardly or backwardly, a controller for the means, a second controller for the clutch movable independently of the means controller, and means to cause the clutch to move when the take-up member is driven backwardly.

2. In a loom, a take-up, a reversible drive therefor, an upright shaft, a drive therefor, a clutch to connect and disconnect the shaft and drive, a manual control to move the take-up reversible drive and clutch in unison when moving the clutch to disconnect the shaft and drive therefor, and a second manual control to give the clutch a disconnecting movement independently of the first named control.

3. In a loom, a take-up member normally driven forwardly but reversible, a harness driving member normally driven forwardly but movable to non-driving position, a controller to move the harness driving member independently of the other member, and a second controller to move the harness driving member to non-driving position and also reverse the take-up member.

4. In a loom, a normally operative harness driving member movable to non-operative position, a take-up member movable to forward or reverse take-up driving position, means to move the first member independently of the second, and means to require the first member to move to non-operative position whenever the second member moves to take-up reversing position.

5. In a loom, an upright shaft to drive harnesses, a take-up driving member slidable along the shaft from forward to reverse position, a clutch member slidable along the shaft to shaft driving and non-driving positions, means to slide

one member independently of the other, and a single controller to move both members together.

6. In a loom, an upright shaft to drive harnesses, a take-up driving member slidable along the shaft from forward to reverse position, a clutch member slidable along the shaft to shaft driving and non-driving positions, a controller to slide the take-up member and clutch member together, and a second controller to move the clutch alone.

7. In a loom, an upright shaft to drive harnesses, a take-up driving member slidable along the shaft from forward to reverse position, a clutch member slidable along the shaft to shaft driving and non-driving positions, a controller to require both members to move together when the take-up member is reversed, and a second controller to move the clutch member independently of the take-up member.

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