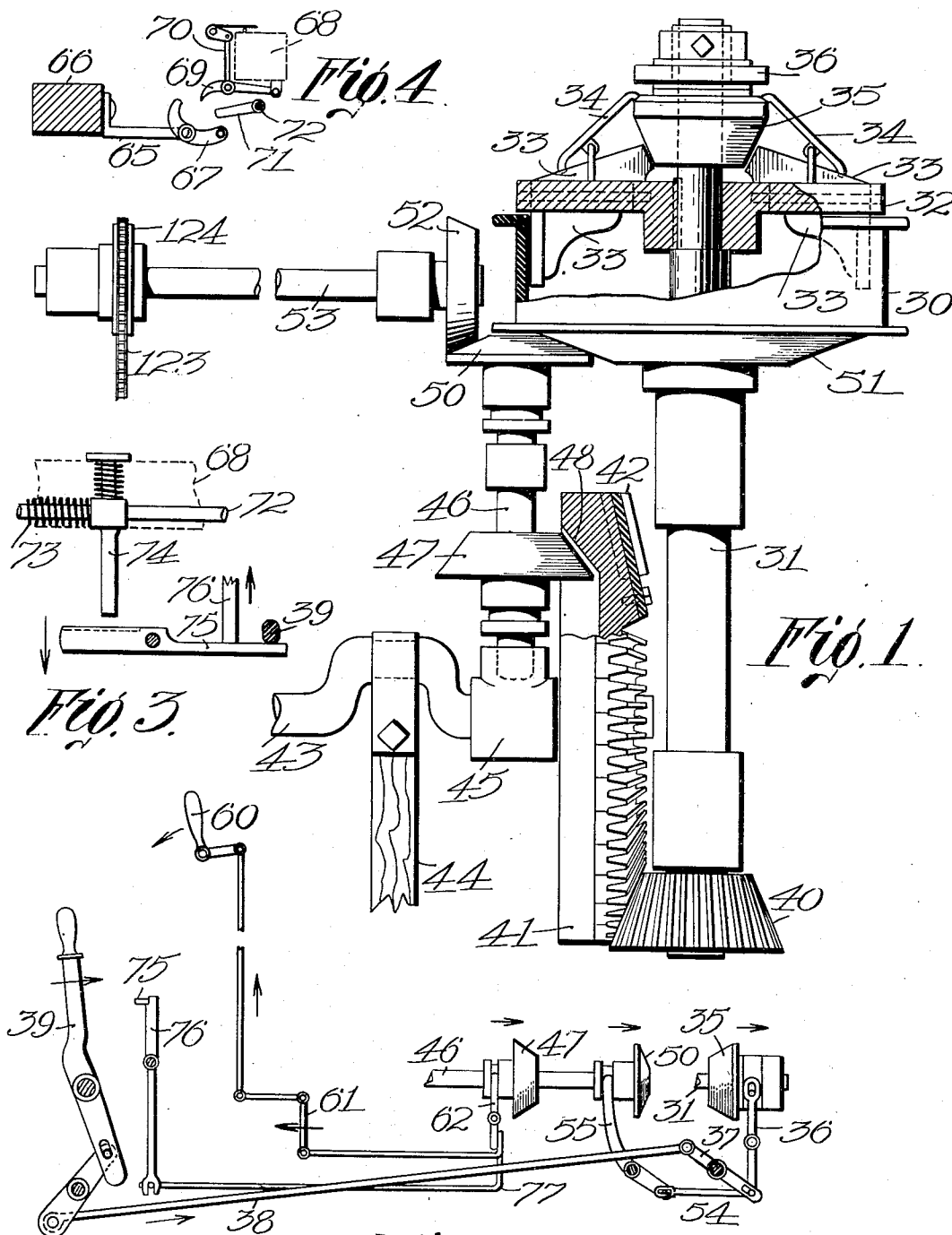


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DRIVING MECHANISM FOR LOOMS.
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1,206,003.

Patented Nov. 28, 1916.



Witnesses:

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Fig. 2.

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UNITED STATES PATENT OFFICE.

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DRIVING MECHANISM FOR LOOMS.

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Specification of Letters Patent.

Patented Nov. 28, 1916.

Original application filed July 24, 1908, Serial No. 445,155. Divided and this application filed June 14, 1909. Serial No. 501,890.

To all whom it may concern:

Be it known that I, LOUIS H. LANDRY, a citizen of the United States, residing at Uxbridge, in the county of Worcester and State of Massachusetts, have invented a new and useful Driving Mechanism for Looms, of which the following is a specification.

This invention relates to a driving mechanism capable of general application but particularly applicable to looms.

One of the principal objects of the invention is to provide such a driving mechanism with means whereby a clutch can be thrown in to start the machine in such a way as to avoid sudden jars and shocks, the driving motion being connected up with the rest of the machine in such a way that when the starting lever is pushed to stop the loom it connects a friction shaft with the loose pulley so that the operator can use this shaft to help reverse the head motion in picking out. These parts are so arranged that when the starting lever is operated to start the machine, the above mentioned friction shaft is disconnected from the driving mechanism.

Means is provided whereby if the filling in the shuttle should break when the loom is running, the loom will bunt or stop on that pick, and when it stops it connects the friction shaft above mentioned in such a way as to pull the lay back to its dead center, so that all the weaver has to do is to pull out the broken pick, throw a shuttle back through the shed, and the machine is then ready to start up without losing time, no manipulation of the head motion being required. On the other hand if the operator stops the loom with the lay up to the cloth and wishes to reverse to dead center, he does not have to push the lay back against the resistance as is ordinarily the case, but he can operate a finger or lever above the harness which will connect the lay with the friction shaft so as to reverse it to the dead center. The driving motion is so designed that all parts of the loom usually driven by the ordinary horizontal shaft near the bottom of the rear of the loom can be driven by means of one crank-shaft across the loom thus doing away with said horizontal shaft

so that the warp beam may be farther in under the loom: This permits a larger number of looms to be set up on a given space and a larger warp beam to be employed. In addition to these features, the loose pulley that starts the loom in motion is so designed that it will not beat up or readily wear out the belt. The drive is also provided with a main bevel gear which has teeth adapted to be removed, preferably in pairs, so that any worn or broken teeth can very easily be removed and replaced, and the pinion or gear meshing with it is put on the shaft in such a way that its connection with the shaft can never wear out or work loose.

Another feature of this part of the invention is the reduction in the cost of manufacture and generally in the cost of repairs and the construction thereof in such a manner that it will run at higher speed than heretofore without slipping of the harnesses or breakage in the head motion.

Reference is to be had to the accompanying drawings which show one form of this invention as applied to a loom and in which,

Figure 1 is a plan of the driving mechanism partly in section. Fig. 2 is an elevation thereof partially diagrammatic showing the connection of the shipper, stop motion and the like with the driving mechanism. Fig. 3 is a plan showing a portion of the stop motion. Fig. 4 is an end elevation showing the rest of the stop motion.

In the form shown the loom is designed to operate without a so-called tight pulley, the power being applied through a loose pulley 30 which receives the driving belt and which is mounted to freely rotate on the driving shaft 31. The power is transmitted directly to this driving shaft from this loose pulley by means of a clutch which consists of a slotted disk 32 keyed to the shaft and having radially sliding dogs 33 extending through the loose pulley and adapted to be forced against the walls thereof by means of a double wedge block 35 which acts directly on the dogs to clutch inwardly when the wedge block 35 moves back. The wedge block is operated by a lever 36 or the like. This lever is shown

in Fig. 2 as designed to be operated by a swinging lever 37, link rods 38, and shipper handle 39 or in any other convenient manner. On the driving shaft is mounted a bevel pinion 40 which preferably is driven on to a tapered square end on the shaft so that it will not work loose in operation. This pinion meshes with the driving gear 41 which preferably has removable teeth 42. These teeth are preferably made in pairs and are bolted or otherwise secured removably to the base of the gear so that if one or more of them break they can readily be replaced by new ones without dismounting or replacing the whole gear. This driving gear is mounted on the crank shaft 43 which operates the machine and which has links 44 connected with the lathe for moving it in the usual way. A bearing 45 for the crank shaft is provided with an end bearing for a friction shaft 46. This friction shaft is provided with a bevel friction disk 47 slidably keyed thereon and adapted when pushed backward on the shaft 46 to engage a corresponding friction surface 48 on the rear of the main driving gear. The shaft is provided also with a second bevel friction wheel 50 fixed thereon and meshing with a friction surface 51 on the loose pulley and with a friction wheel 52 on a shaft 53. When the lever 39 is thrown to force out the wedge 35 to stop the machine it also acts through a link 54 and lever 55, to throw the friction wheel 50 into engagement with the friction surface 51 and wheel 52 which will cause the shafts 46 and 53 to rotate while the driving shaft is at rest. If while the machine is stopped it is desired, to turn the crank shaft, it is necessary only to turn a small lever or finger 60 which operates through link connections 61 to turn a lever 62 and push the friction wheel 47 into engagement with the friction surface 48 so that although the loose pulley is not operating the driving shaft, this shaft can be turned by the loose pulley through the shaft 46. If upon stopping the machine, the lathe is found to be forward, the lever 60 is pushed down long enough to cause the lathe to be swung back. This occupies only an instant of time and is of great assistance to the operator as in the heavier types of looms it requires considerable force to push the lathe back. This invention is shown in connection with an improved stop motion which acts in such a way that the loom will stop with the lathe back. This stop motion is shown as comprising a bracket 65 on the breast-beam 66 and a stop motion rocker 67 on the bracket. On the lathe 68 is pivoted a tongue 69 normally held up by the filling thread through connections 70. When the filling thread breaks these connections and tongue are permitted to drop so that the tongue engages the upper

end of the rocker 67 during the next forward motion of the lathe which operates the lower end to engage an arm 71 on a rock shaft 72. This rock shaft is provided with a spring 73 for holding it in proper position and a dagger 74 which is turned by the above mentioned operation in position to engage a lever 75 which operates the shipper handle 39 and also operates a lever 76 which has connections 77 for operating the lever 62 in a manner which has been described above so as to cause the friction to work and the lathe to beat back. When the lathe starts back there is no longer any force acting to hold the wheel 47 against the friction surface 48. Consequently the lathe will stop at the end of the back stroke. On the auxiliary shaft 53 is shown a sprocket wheel 124 for operating the head motion, pickout motion and box motion through a sprocket chain 123 which constitutes a part of said head, pickout, and box motion.

During the operation of the machine from the main crank-shaft 43, the shed will be opened and closed periodically in a very simple manner without employing the usual vibrator gears and when the power is shut off from the main crank shaft 43 the auxiliary shaft 53 will still be turning so that the head, pickout, and box motions can be operated independently of the crank shaft.

This patent constitutes a division of my prior patent on a loom No. 943,028 granted on the 14th day of December, 1909, on an application filed July 24, 1908, Serial No. 445,155.

While I have illustrated and described a preferred embodiment of the invention and shown it as applied to a particular type of loom, I am aware that it can be carried out in many other ways without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction shown, but

What I do claim is:—

1. In a loom, the combination of a driving shaft, a loose pulley thereon having a friction surface rotatable therewith, means for positively connecting said loose pulley with the driving shaft, a crank shaft, a power transmitting member connected with the crank shaft for driving it, means constantly connected with the driving shaft for operating the power transmitting member, and means whereby power may be transmitted from said friction surface to the power transmitting member when the loose pulley is not connected to the driving shaft by said positive means.

2. In a loom, the combination of a driving shaft, a loose pulley thereon, a crank shaft, means connected with the driving shaft for operating the crank shaft, means for connecting the loose pulley with the driving

shaft and means independent of the last named means for connecting the loose pulley with the crank shaft operating means.

3. In a loom, the combination of a driving shaft, a loose pulley thereon having a friction surface, means for connecting the loose pulley with the driving shaft to operate it, a crank shaft, a gear on the crank shaft, means for driving said gear from the driving shaft, said gear having a friction surface, and means for transmitting power from the first named friction surface to the second when the driving shaft is not driven directly from the loose pulley.

4. In a loom, the combination of a driving shaft, a loose pulley thereon having a friction surface, means for connecting the loose pulley with the driving shaft to operate it, a crank shaft, a gear on the crank shaft having a friction surface, means for driving the gear from the driving shaft, and means for transmitting power from the first named friction surface to the second, said means comprising a shaft parallel with the driving shaft and perpendicular to the crank shaft and having a pair of friction disks thereon engaging said friction surfaces.

5. In a loom, the combination with a driving shaft, a loose pulley thereon, and means for connecting the loose pulley with the driving shaft, of a crank shaft, means for operating the crank shaft from the driving shaft, means independent of said driving shaft and connection means and cooperating with a part of the latter for operating the crank shaft from the loose pulley, and manually operated means for controlling said independent means.

6. In a loom, the combination with a driving shaft, a loose pulley thereon, and means for connecting the loose pulley with the driving shaft, of a crank shaft, means for operating the crank shaft from the driving shaft, means independent of said connecting means for operating the crank shaft from the loose pulley, manually operated means for controlling said independent means, and mechanically operated means for controlling said independent means.

7. In a loom, the combination with a driving shaft, a loose pulley thereon, and means for connecting the loose pulley with the driving shaft, of a crank shaft, means for operating the crank shaft from the driving shaft, means for operating the crank shaft from the loose pulley, and means for controlling said operating means.

8. In a loom, the combination with a driving shaft, a loose pulley thereon having a surface for receiving a driving belt, and means for connecting the loose pulley with the driving shaft, of a crank shaft, and means independent of said connecting means for operating the crank shaft from the loose pulley.

9. In a loom, the combination of a driving shaft, a loose driving member thereon, means for positively connecting it with the driving shaft, a crank shaft connected with the driving shaft, frictional means independent of the driving shaft for connecting the loose driving member with the crank shaft comprising a friction wheel, and means for moving said friction wheel and causing the crank shaft to stop on its back stroke.

10. In a loom, the combination with a driving shaft and a crank shaft having a crank, of means for stopping the shaft on the forward motion of the crank, and means for causing the crank to beat back after the driving shaft is stopped.

11. In a loom, the combination with the driving shaft and a driving pulley, of a shipper handle, means connected with the shipper handle for stopping the driving shaft, a crank shaft, and means independent of the means connected with the shipper handle for turning the crank shaft from the driving pulley.

12. In a loom, the combination with the driving shaft, a driving pulley therefor, a crank shaft, and means for driving the crank shaft from the driving shaft, of a shipper, means operated by the shipper for controlling the driving shaft, a lever, means for operating the shipper and the lever, and means controlled by said lever for causing the crank shaft to turn back when the driving shaft is not directly connected with the driving pulley.

13. In a loom, the combination with a driving shaft, of a loose pulley thereon having a friction surface, a crank shaft, means connected with the driving shaft for operating the crank shaft, a shaft located adjacent to the crank shaft and having a friction disk thereon engaging said friction surface, means connected with the last named shaft for driving the crank shaft, a shipper handle, and means connected with the shipper handle for positively connecting the loose pulley with the driving shaft and simultaneously drawing the friction disk away from the friction surface.

14. In a loom, the combination with a driving shaft, a loose pulley having a friction surface, a crank shaft, a shaft adjacent to the crank shaft, a friction wheel on the last named shaft, a shipper handle, means connected with the shipper handle for simultaneously disconnecting the loose pulley from the driving shaft and forcing the friction disk into engagement with said friction surface, and means connected with the last named shaft for operating the crank shaft.

15. In a loom, the combination of a loose pulley, a crank shaft, an auxiliary shaft, an intermediate shaft, means on the intermediate shaft for connecting the loose pulley with the auxiliary shaft and for causing

the intermediate shaft to be rotated by the loose pulley, and independently operated means on the intermediate shaft for connecting said shaft with the crank shaft, whereby either the auxiliary shaft or the crank shaft or both may be operated from the loose pulley.

16. In a loom, the combination with a driving shaft; a loose pulley having a friction surface, a crank shaft, a shaft adjacent to the crank shaft, a friction wheel on the last named shaft, a shipper handle, means connected with the shipper handle for simultaneously disconnecting the loose pulley from the driving shaft and forcing the friction disk into engagement with said friction surface, means connected with the last named shaft for operating the crank shaft, an auxiliary shaft, and a friction wheel on said auxiliary shaft in position to engage

the first named friction wheel when it is in engagement with said friction surface, whereby the auxiliary shaft may be operated independently of the driving shaft.

17. In a loom, the combination of a driving shaft, a loose pulley thereon, means for fixing the loose pulley to the driving shaft, a crank shaft, an auxiliary shaft, means for connecting the loose pulley with the auxiliary shaft and for causing the auxiliary shaft to be rotated by the loose pulley, and means for connecting the auxiliary shaft and the driving shaft with the crank shaft.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

LOUIS H. LANDRY.

Witnesses:

A. E. FAY,

C. F. WESSON.