No. 763,596. PATENTED JUNE 28, 1904.

J. T. CYR.

FRICTION CLUTCH PULLEY.

APPLICATION FILED JAN. 9, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

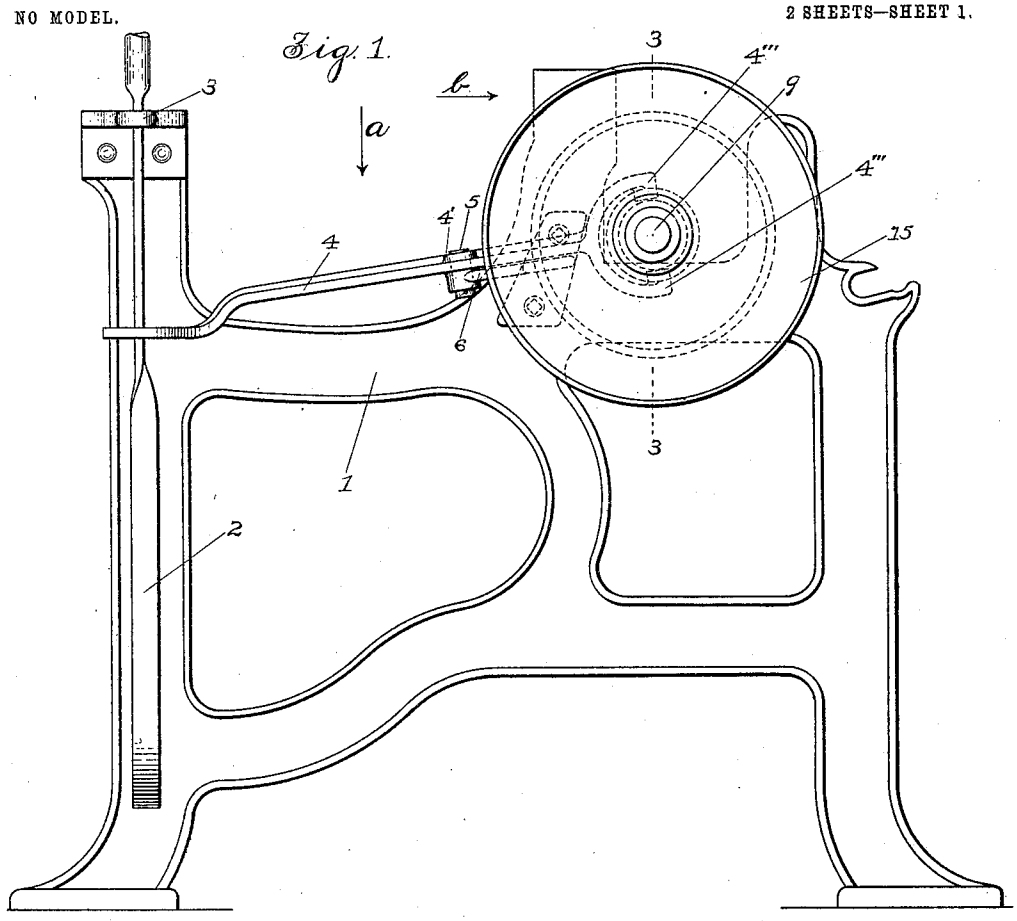
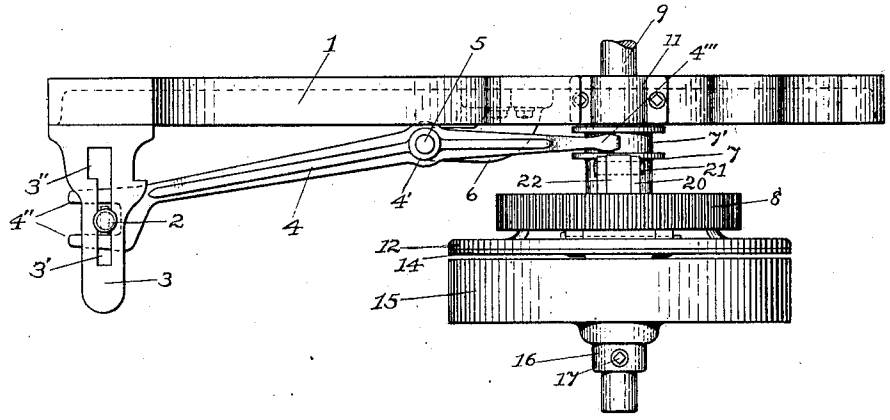


Fig. 2.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

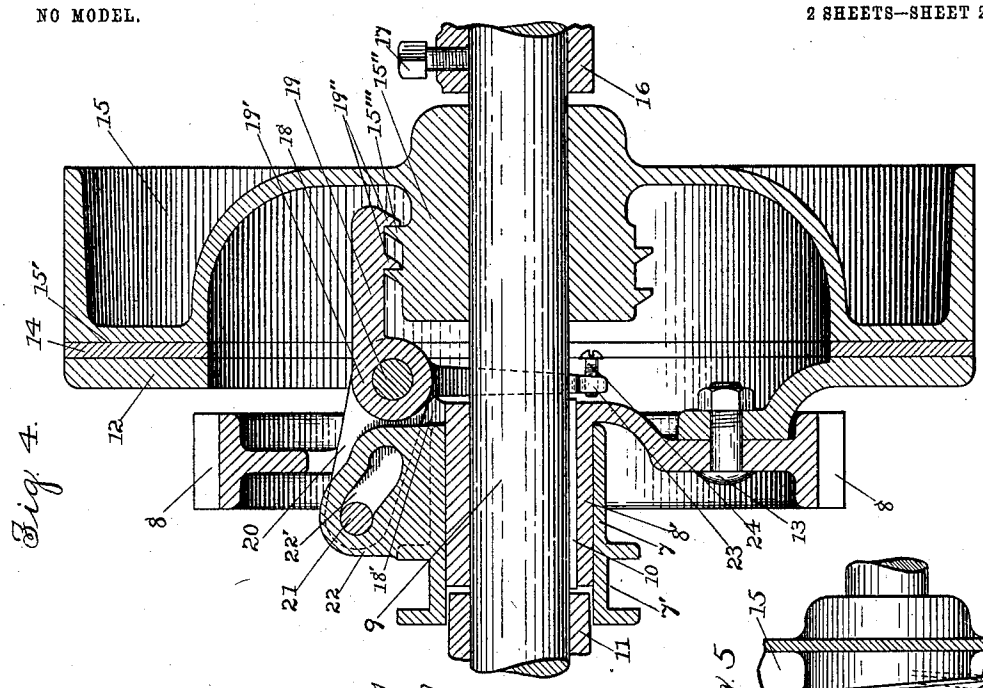


Fig. 5

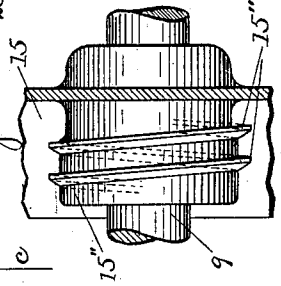
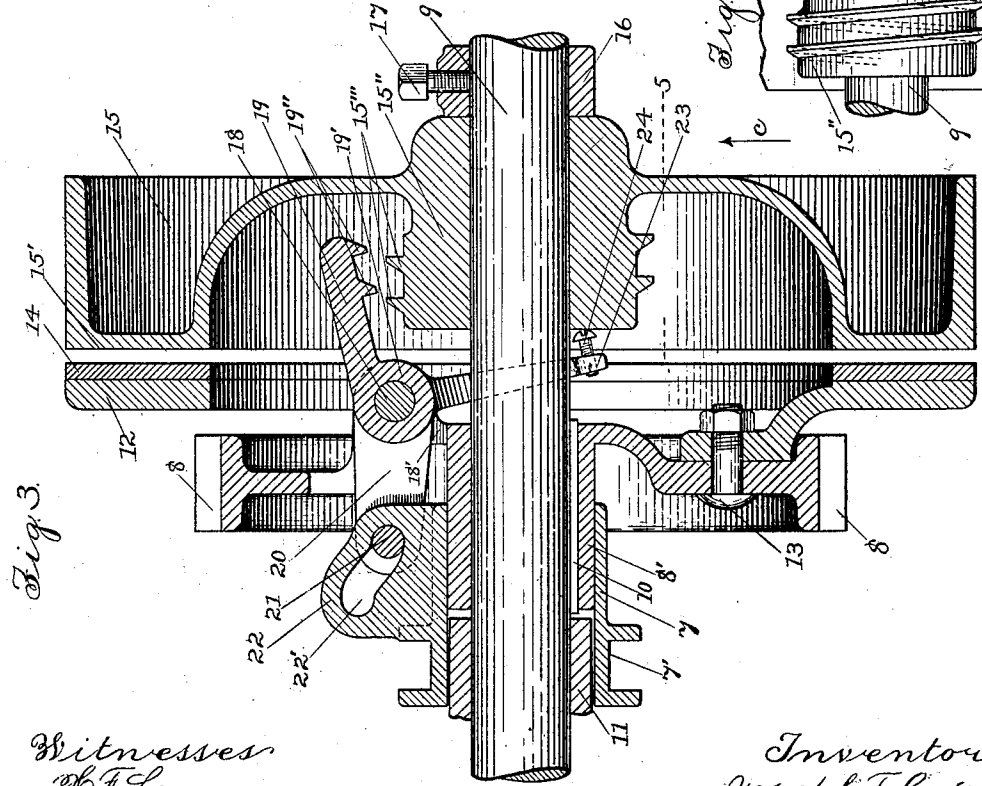


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FRICTION CLUTCH-PULLEY.

SPECIFICATION forming part of Letters Patent No. 763,596, dated June 28, 1904.

Application filed January 9, 1904. Serial No. 188,273. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH T. CYR, 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 Friction Clutch-Pulleys, of which the following is a specification.

My invention relates to friction clutch-pulleys, and to that class of pulleys in which the belt-pulley is loose on a shaft and adapted to be moved into frictional engagement with a disk or face plate fast on the shaft to drive the shaft or the gear connected with the friction-disk.

The object of my invention is to provide a friction clutch-pulley mechanism of improved construction and one that is simple and positive in its operation.

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

I have shown in the drawings my friction clutch-pulley mechanism applied to a driving-shaft of a loom; but it will be understood that my improvements are adapted to be used in connection with any machine.

Referring to the drawings, Figure 1 is a side view of a loom-frame, a shipper-lever, and a friction-pulley mechanism embodying my improvements operated by said lever. Fig. 2 is a plan view of the parts shown in Fig. 1 looking in the direction of arrow *a*, same figure. Fig. 3 is, on an enlarged scale, a central vertical section through the friction clutch mechanism, taken at a point indicated by line 3 3, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 4 corresponds to Fig. 3, but shows the pulley in frictional engagement with the friction-disk; and Fig. 5 is a section on line 5, Fig. 3, looking in the direction of arrow *c*, same figure, showing the pulley-hub with the spiral or cam surfaces thereon.

In the accompanying drawings, 1 is the loom-frame, having secured thereto the lower end of the shipper-lever 2, which at its upper end extends through an elongated slot 3′ in a plate 3, secured to the loom-frame 1. The slot 3′ has a notch or offset 3″ therein to receive and hold the shipper-lever when the friction-pulley is moved into engagement with the friction-disk to operate the loom in the usual way.

4 is a lever having a hub 4′ pivotally supported on a stud 5 on a bracket 6, secured to the loom-frame. One end of the lever 4 is forked, as shown at 4″ in Fig. 2, to receive the shipper-lever 2. The other end of the lever 4 is yoke-shaped, as shown at 4‴ in Fig. 1, and is provided with pins or rolls which extend into the annular groove or recess 7′ in the collar or shell 7. The collar 7 is in this instance splined on the hub 8′ of the gear 8. The hub 8′ is fast on the shaft 9, in this instance splined thereon by a spline 10. The shaft 9 has a bearing 11.

The friction plate or disk 12 is in this instance bolted to the arms or web of the gear 8. One bolt, 13, is shown in Fig. 3. The friction-disk 12 has on its engaging side or face in this instance a ring or surface 14, of flexible material, (preferably leather,) adapted to engage the contiguous side or face 15′ of the belt-pulley 15, the hub of which, 15″, is loosely mounted on the shaft 9 and held in proper position thereon by the collar 16, having a set-screw 17. The hub 15″ has in this instance two annular projections or cam-surfaces 15‴ thereon, which extend spirally around the hub, as shown in Fig. 5.

On a stud 18, secured in a lug 18′ on the gear 8, is pivotally mounted a hub 19′ of a clutch-lever 19. An arm 20 projects from the opposite side of the hub 19′ and carries a pin 21, which extends into a cam-groove 22′ in a projection 22 on the collar 7. An arm 23 projects out from the hub 19′ and carries in its end an adjustable screw 24, the head of which is adapted to engage the inner end of the hub 15″ of the pulley 15 to positively move said pulley away from the friction-disk 12 when the clutch-lever 19 is operated, as shown in Fig. 3.

The clutch lever 19 has in this instance two projections 19″ thereon, which are adapted to engage the annular projections 15‴ on the hub 15″ of the pulley 15.

The operation of my friction clutch-pulley mechanism will be readily understood by those skilled in the art from the above description in connection with the drawings, and briefly is as follows: When the shipper-lever 2 is out of the notch 3′ and in the position shown in Fig. 2, the collar or shell 7, through lever 4, is moved toward the loom-frame, as shown in Fig. 2. The movement of the collar or shell 7 causes the pin 21 of the arm 20 to travel in the cam-groove 22′ in the projection 22 and to move the hub 19′ of the clutch-lever 19 on its supporting-stud 18, freeing it from engagement with the projections 15‴ on the hub 15″ of the pulley 15, as shown in Fig. 3, and leaving said pulley free to revolve loosely on the shaft 9, said pulley having been moved away from the disk 12 by the engagement of the head of the screw 24 with the inner end of the hub 15″ of said pulley, as above described. When the shipper-lever 2 is moved toward the loom-frame and held in the notch 3″, the shell or collar 7, through lever 4, is moved away from the loom-frame from the position shown in Fig. 3 to the position shown in Fig. 4, and the movement of the shell 7 causes the pin 21 to travel in the cam-slot 22′ in the projection 22 and to move down the cluch-lever 19, so that the projections thereon will engage or extend over the projections 15‴ on the pulley-hub 15″. The revolution of the belt-pulley 15 by reason of the spiral shape of the projections 15‴ on the hub 15″ of the pulley (said projections being in engagement with the projections 19″ on the clutch-lever 19) will cause the pulley to be moved toward and into engagement with the friction-disk 12 and held in engagement therewith to cause the shaft 9, gear 8, and other parts to revolve with the friction-pulley.

It will be understood that the details of construction of my improvements may be varied, if desired, and they may be adapted to be used with any mechanism in which it is desirable to use a friction clutch-pulley mechanism.

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

1. In a friction clutch mechanism, the combination with a pulley having spirally-arranged annular surfaces on its hub, and a friction-disk to be engaged by said pulley, of a clutch-lever adapted to engage with and be disengaged from said annular surfaces, and having an arm to engage said pulley and positively move it away from said friction-disk, and means for operating said clutch-lever, substantially as shown and described.

2. In a friction clutch mechanism, the combination with a pulley having spirally-arranged annular surfaces on its hub, and a friction-disk to be engaged by said pulley, of a clutch-lever adapted to engage with, and be disengaged from said annular surfaces, and having an arm with an adjustable screw thereon to engage said pulley and positively move it away from said friction-disk, and means for operating said clutch-lever, substantially as shown and described.

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