No. 661,264. Patented Nov. 6, 1900.

A. A. GORDON.

DRIVING MECHANISM FOR LOOMS.

(Application filed June 16, 1900.)

(No Model.) 2 Sheets—Sheet 1.

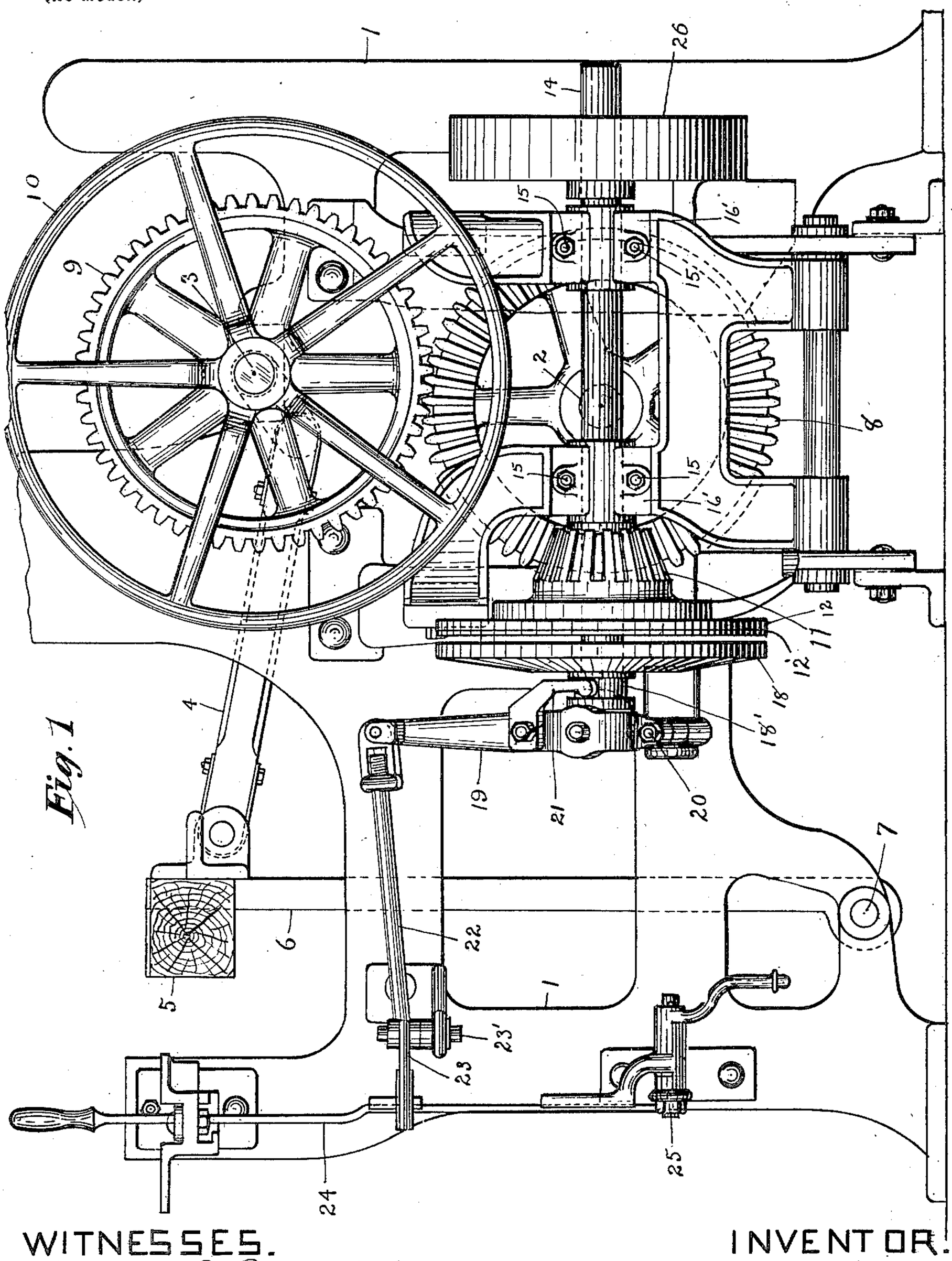

Fig. 1

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Fig. 3

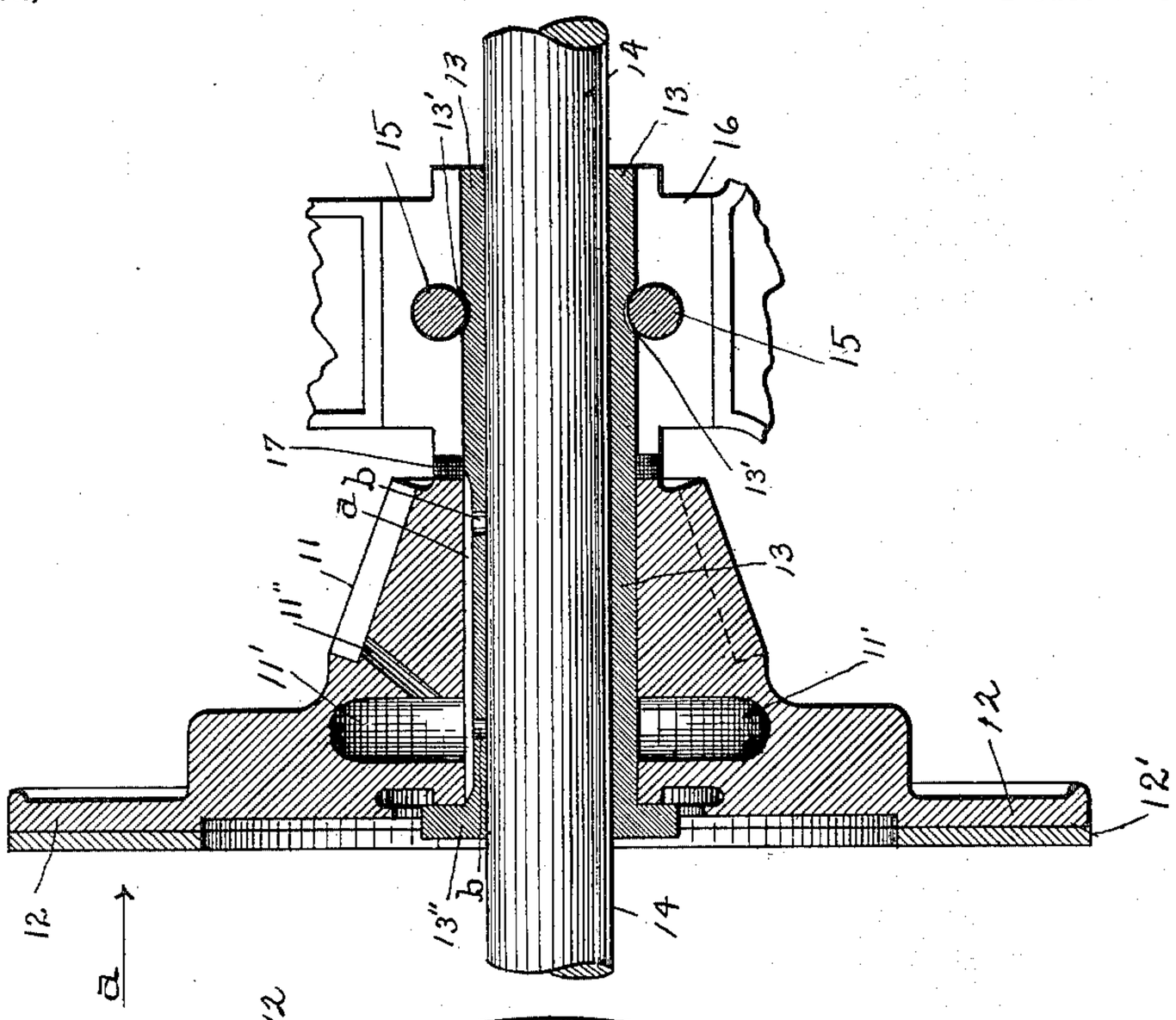
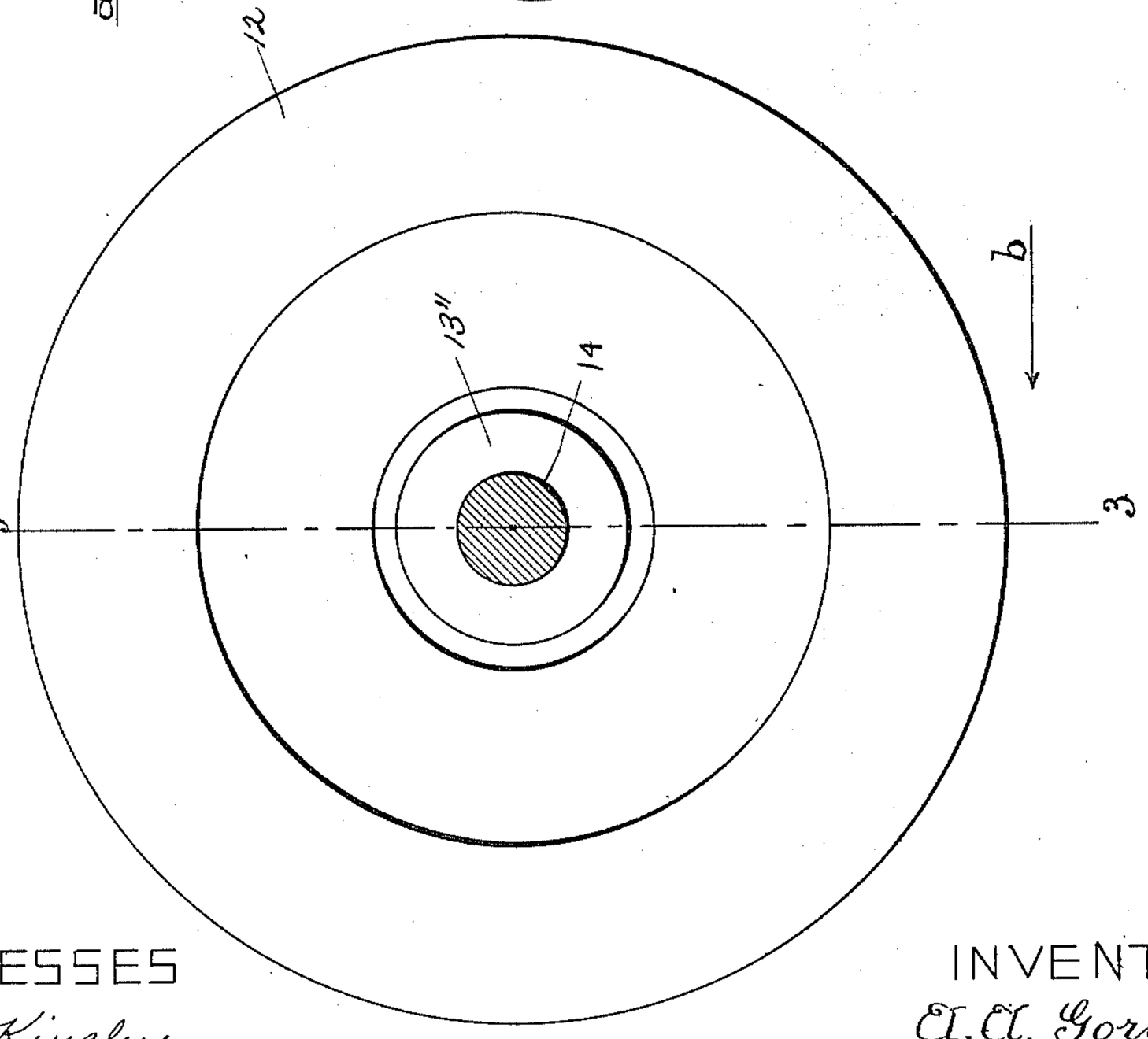


Fig. 2



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UNITED STATES PATENT OFFICE.

ALBERT A. GORDON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE CROMPTON & KNOWLES LOOM WORKS, OF SAME PLACE.

DRIVING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 661,264, dated November 6, 1900.

Application filed June 16, 1900. Serial No. 20,543. (No model.)

To all whom it may concern:

Be it known that I, ALBERT A. GORDON, 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 Driving Mechanism of Looms, of which the following is a specification.

My invention relates to the driving mechanism of looms for weaving textile fabrics, &c., and more particularly to heavy looms, which require considerable strength on the part of the attendant to push back the lay after the loom is stopped to insert new filling, &c. In this class of looms there is ordinarily a belt-pulley loose on the cross driving-shaft which is moved into and out of engagement with a friction-disk fast on said shaft and operated by the shipper-lever mechanism to start and stop the loom, as is shown in United States Patent No. 627,084, of June 13, 1899. In this construction the belt-pulley is on the same end of the cross driving-shaft as the friction-disk, and when the pulley is moved out of engagement with the friction-disk to stop the loom the shaft is stopped. On the stopping of the loom the lay will ordinarily remain near its front position, and the attendant in order to remove the shuttle and insert a shuttle with fresh filling has to push the lay to its backward position, and in pushing back the lay the driving mechanism has to revolve in a reverse direction and also the cross driving-shaft. This requires considerable strength by reason of the heavy gearing and the reverse motion of the cross driving-shaft.

The object of my invention is to enable the operator to move back the lay and reverse the driving mechanism more easily and with the exercise of less strength, and I accomplish this by having the cross driving-shaft revolving all the time in one direction, so that there is no stopping of said shaft and no reverse motion thereof, it only being necessary to reverse the gearing driven by said shaft.

I have shown in the drawings only sufficient portions of the driving mechanism of a loom and parts connected therewith to illustrate my improvements.

Referring to the drawings, Figure 1 is a right-hand end view of a loom, showing the driving mechanism embodying my improvements and also the shipping mechanism. Fig. 2 is, on an enlarged scale, an end view of the friction-disk on the small bevel-gear of the driving mechanism looking in the direction of arrow *a*, Fig. 3; and Fig. 3 is a section on line 3 3, Fig. 2, looking in the direction of arrow *b*, same figure.

In the drawings, 1 is the loom side or frame; 2, the bottom shaft; 3, the crank-shaft; 4, the crank-connector; 5, the lay, and 6 the lay-sword, hinged at its lower end at 7 in the ordinary way. Fast on the lower shaft 2 is a bevel-gear 8, which meshes with and drives the gear 9, fast on the crank-shaft 3. The hand-wheel 10 is also fast on the crank-shaft 3.

The bevel-gear 11, which meshes with and drives the bevel-gear 8, has attached thereto, or in this instance integral therewith, as shown in Fig. 3, the friction-disk 12, having the friction face or surface 12′. The bevel-gear 11 preferably has an internal annular oil-reservoir 11′, and there is a passage 11″ leading to said reservoir, through which the oil passes into said reservoir. The oil in the reservoir 11′ acts to lubricate the sleeve 13, on which the gear 11 is loosely mounted. Said sleeve is preferably grooved externally, as shown at *a*. The sleeve 13 is on the cross-shaft 14, which turns loosely within said sleeve, which is held on the cross-shaft 14 and prevented from turning or from having any longitudinal motion thereon by bolts 15, which secure the cap 16′ on the box 16, forming a bearing for the cross-shaft 14, and extend in grooves 13′ in the sleeve 13, as shown in Fig. 3. One end of the sleeve 13 has a projecting rim or flange 13″ thereon, between which and a collar 17 on the sleeve 13 at the end of the box 16 the bevel-gear 11 and friction-disk 12 are held and prevented from having any motion in the direction of the length of the sleeve 13. Holes *b* through the sleeve 13 give a passage for the oil from the reservoir 11′ to lubricate the shaft 14. A second friction-disk 18 is splined on the shaft 14 to rotate therewith and have a sliding motion thereon into and out of engagement with the friction-disk 12 through the lever 19, pivoted at 20 and carrying a forked arm 21, engag-

ing the grooved hub 18′ on the disk 18 in the ordinary way. The lever 19 is operated by the shipper-lever 24 through connector 22 and angle-lever 23, pivoted at 23′ and connected with the shipper-lever 24, pivoted at 25, all in the ordinary way. On the outer end of the cross-shaft 14 is fast a belt-pulley 26, driven by a belt. (Not shown.)

The operation of my improvements in driving mechanism of looms is briefly as follows: Power is communicated to the cross-shaft 14 through belt-pulley 26, and the friction-disk 18, splined on the shaft 14, revolves with said shaft, and when the shipping-lever is on and the loom is in operation the friction-disk 18 will be in engagement with the friction-disk 12, causing said disk and bevel-gear 11 to rotate with the disk 18 and the shaft 14 and communicate motion to the gears 8 and 9. When the shipper-lever is moved to stop the loom, the friction-disk 18 is moved out of engagement with the friction-disk 12, leaving the friction-disk 12 and bevel-gear 11 stationary, while the shaft 14 and the friction-disk 18 continue to revolve. The attendant in pushing back the lay from the position shown in Fig. 1 to its rear position will only have to reverse the gears 8 and 9 and the bevel-gear 11 and friction-disk 12 without moving the shaft 14.

In starting up the loom by moving the shipper-lever and causing the friction-disk 18 to move into engagement with the friction-disk 12 the momentum of the revolving shaft 14 will cause the loom to start more quickly than if the shaft 14 were stationary at the time the loom is started, and the bevel-gear 8, meshing with the bevel-gear 11, will tend to crowd or push the gear 11 outwardly.

The advantages of my improvements will be readily appreciated by those skilled in the art.

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

1. In the driving mechanism of a loom, the combination with the cross driving-shaft, mounted and turning in boxes or bearings on the frame, a belt-pulley fast on one end of said shaft, and a friction-disk splined on the other end of said shaft to revolve therewith and have a sliding motion thereon in the direction of the length of the shaft, and means for moving said friction-disk, of a sleeve mounted on said shaft, and means for holding the sleeve to prevent motion in the direction of the length of the shaft, and a bevel-gear, and second friction-disk loosely mounted on the sleeve, and means for preventing said gear and friction-disk from moving in the direction of the length of the sleeve, substantially as shown and described.

2. In the driving mechanism of a loom, the combination with the cross driving-shaft, mounted and turning in boxes or bearings on the frame, a belt-pulley fast on one end of said shaft, and a friction-disk splined on the other end of said shaft to revolve therewith and have a sliding motion thereon in the direction of the length of the shaft, and means for moving said friction-disk, of a sleeve mounted on said shaft, and having a flange on one end thereof, and a collar on said sleeve, and a bevel-gear, and friction-disk loosely mounted on said sleeve, between said flange and collar, substantially as shown and described.

3. In the driving mechanism of a loom, the combination with the cross driving-shaft, mounted and turning in boxes or bearings on the frame, a belt-pulley fast on one end of said shaft, and a friction-disk splined on the other end of said shaft to revolve therewith and have a sliding motion thereon in the direction of the length of the shaft, and means for moving said friction-disk, and a sleeve mounted on said shaft having a flange on one end thereof, and a collar on said sleeve, and a bevel-gear and friction-disk loosely mounted on said sleeve between said flange and collar, said friction-disk and bevel-gear having an internal annular oil-reservoir, substantially as shown and described.

4. In the driving mechanism of a loom, the combination with the cross driving-shaft, mounted and turning in boxes or bearings on the frame, a belt-pulley fast on one end of said shaft, and a friction-disk splined on the other end of said shaft to revolve therewith and have a sliding motion thereon in the direction of the length of the shaft, and means for moving said friction-disk, of a sleeve mounted on said shaft, and having a flange on one end thereof, and held on said shaft by bolts extending in recesses in said sleeve, which bolts secure the cap-piece to the shaft box or bearing, and a bevel-gear and friction-disk loosely mounted on said sleeve between the flange on said sleeve and said shaft box or bearing, substantially as shown and described.

5. In the driving mechanism of a loom, the combination with the cross driving-shaft, mounted and turning in boxes or bearings on the frame, a belt-pulley fast on one end of said shaft, and a friction-disk splined on the other end of said shaft to revolve therewith and have a sliding motion thereon in the direction of the length of the shaft, and means for moving said friction-disk, of a sleeve mounted on said shaft, and a bevel-gear and friction-disk loosely mounted on said sleeve, said bevel-gear and friction-disk having an internal annular oil-reservoir for oil to lubricate the sleeve and shaft, substantially as shown and described.

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