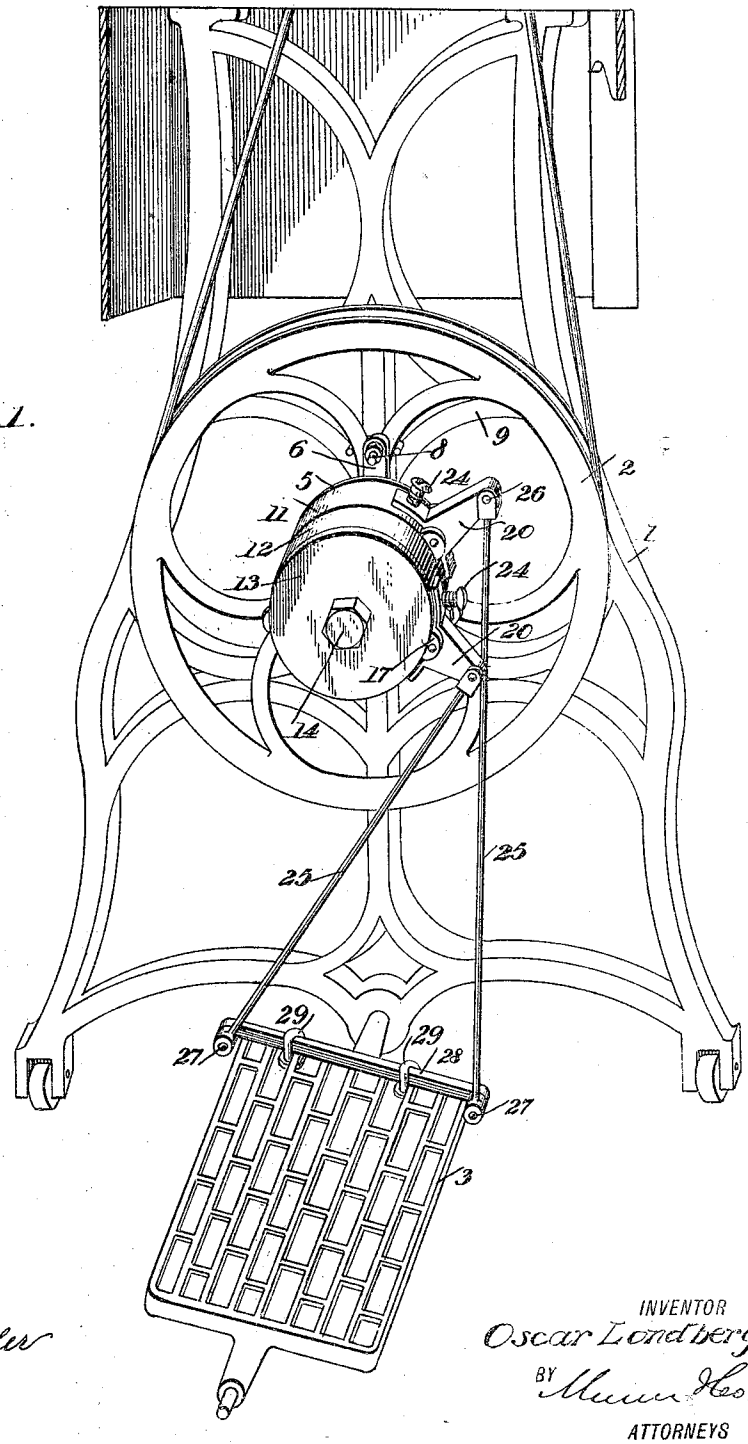
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DRIVE MECHANISM

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Fig. 1.



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Fig. 2.

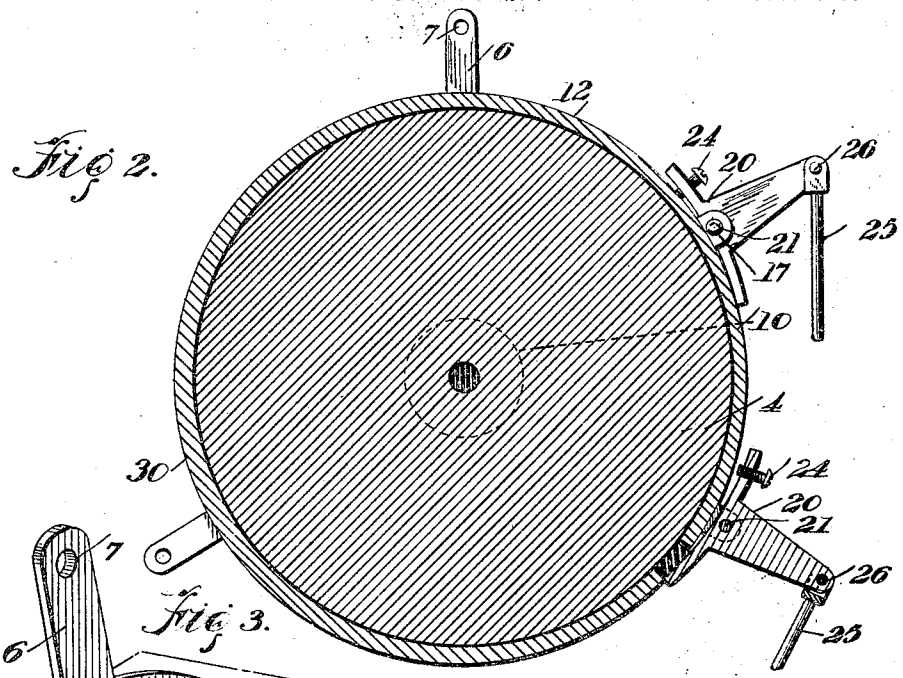
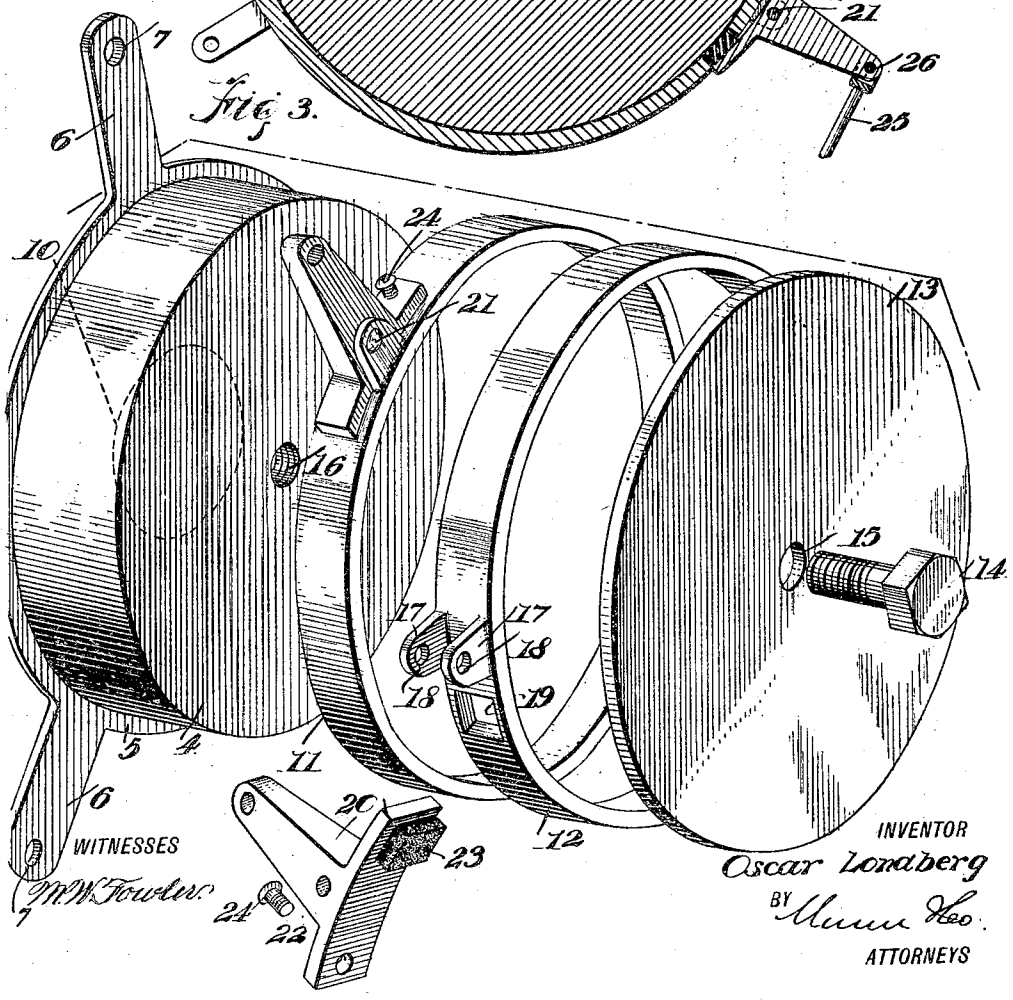


Fig. 3.



WITNESSES

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Patented Nov. 4, 1924. 1,514,550

UNITED STATES PATENT OFFICE.

OSCAR LONDBERG, OF SKANEE, MICHIGAN.

DRIVE MECHANISM.

Application filed February 27, 1923. Serial No. 621,548.

To all whom it may concern:

Be it known that I, OSCAR LONDBERG, a citizen of the United States, and resident of Skanee, in the county of Baraga and State of Michigan, have invented certain new and useful Improvements in Drive Mechanisms, of which the following is a specification.

My invention relates to improvements in drive mechanisms for sewing and other machines which are adapted to be operated by foot power, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is to provide an attachment for sewing machines of the class described which is adapted to replace the usual crank and connecting rod arrangement between the treadle and drive wheel of the machine and which affords facilities for driving the machine in a forward direction at all times when the treadle is rocked, irrespective of the direction of rocking movement of the treadle.

A further object of the invention is to provide an attachment of the character described which embodies means whereby the speed at which the sewing machine will be driven when the treadle is operated at a constant speed may be varied at will.

A still further object of the invention is to provide an attachment of the character described which is adapted to be operatively applied to the drive wheel of a sewing machine of the class described without any changes in the usual construction of the sewing machine other than the removal of the parts for which the attachment is substituted being required, and which affords facilities for driving the drive wheel of the sewing machine without any appreciable noise.

A still further object of the invention is to provide an attachment of the character described which is simple in construction, strong and durable, economical to manufacture and thoroughly practical commercially.

Other objects of the invention will be apparent from the following description, considered in conjunction with the accompanying drawings, in which—

Figure 1 is a perspective view showing a sewing machine drive mechanism embodying the invention,

Figure 2 is a relatively enlarged section through a portion of the structure exhibited in Figure 1, and

Figure 3 is a perspective group view showing certain of the elements exhibited in the preceding views in disassembled relation.

In Figure 1 I show a portion of the frame 1 of a sewing machine of ordinary construction. 2 designates a drive wheel which is supported on the frame 1 for rotation about a horizontal axis in the usual manner, that is by a stub shaft, not shown, which may be a bolt and which ordinarily extends inwardly from the side of a portion of the frame 1 shown in Figure 1 at a determined distance from the lower end of the frame. A treadle 3 is rockingly supported at the lower end of the frame, as is usual. It is usual in sewing machines of the class described and partially illustrated in Figure 1 to provide a single connecting rod and crank arrangement between the drive wheel 2 and the treadle 3. Such an arrangement does not permit of regulation of the speed at which the drive wheel will be rotated when the treadle is operated at a given speed and more over is unsatisfactory in that the drive wheel may rotate in opposite directions, the direction of rotation being determined by the position of the crank at the time power is applied to the treadle, and therefore it has been necessary prior to my invention to turn the fly wheel, of the machine by hand to insure rotation of the drive wheel in the desired direction, to slacken the speed at which the machine will be driven to a desirable rate, or to start the machine when the drive wheel stops "on center".

The objectionable features thus enumerated are avoided when an attachment embodying the invention is substituted for the usual single connecting rod and crank arrangement between the treadle and the drive wheel of a sewing machine of the class described.

An attachment embodying the invention in the form now preferred by me includes a cylindrical block 4 having a peripheral flange 5 at one end thereof, the peripheral flange being shown as having radial extensions 6 perforated at 7 adjacent to their extremities. The perforations 7 are adapted to receive hook bolts 8 whereby the block 4 may be clamped against the inner side of the drive wheel 2 in axial alignment with the latter, the hook portions of the bolts

8 being arranged in engagement with the spokes 9 of the drive wheel.

The inner face of the block 4, that is the face contiguous to the drive wheel is inwardly dished at its center or formed with an axial recess as shown at 10 to accommodate the protruding head of the usual stub shaft or bolt, not shown, which supports the drive wheel. Obviously the radial spaced apart extensions 6 may be omitted and an annular extension to the flange 5 may be provided in lieu of the extensions 6 without departing from the spirit and scope of the invention.

A pair of driving rings 11 and 12 respectively are adapted to be slipped over the outer end of the block 4 and to be rotatably supported in juxtaposed relation in respect to each other upon the block 4, being held against axial displacement relatively to the block by the flange 5 and a retaining plate 13 which is secured in abutting relation to the outer face of the block by a screw 14 extending through a central opening 15 in the retaining plate into threaded engagement with an axial socket 16 in the block. The retaining plate 13 is shown as being circular in form and as being larger diametrically than the adjacent portion of the block 4 so as to project beyond the peripheral edge of such adjacent portion of the block into abutting relation to the adjacent end of one of the rings 11 or 12. While the rings 11 and 12 are thus held against any appreciable axial movement, these rings may rotate freely on the block without creating any appreciable friction between the relatively moving surfaces of the rings and the flange 5 and retaining plate 13.

Each of the rings 11 and 12 is formed with a pair of integral spaced apart outwardly extending radial ears 17, 17 provided with aligned apertures 18, 18 therethrough adjacent to their outer ends, the ears 17, 17 being located adjacent to one end of a relatively large aperture 19 formed in each of the rings. A lever 20 which is substantially triangular or T-shaped in form is provided for each of the rings 11 and 12 and is pivotally supported by a pivot pin 21 extending through the aligned perforations 18, 18 of the ears 17, 17 and through a transverse opening 22 formed through the stem of the interposed lever 20 adjacent to the juncture of the stem of the lever with the head of said lever, whereby the head portion of the lever will be disposed in substantially parallel relation to the adjacent portion of the ring with which the particular lever is associated, the head portion of each lever being curved arcuately to conform to the curvature of the ring. With the arrangement described one of the sides or branches of the head of the lever overlies the aperture 19 in the ring on which the lever is supported and a shoe or friction block 23 is provided on the overlying branch or portion of the head of the lever to depend within the aperture 19, the shoe or friction block being made of rubber or like material and being of a thickness to extend through the aperture into frictional contact with the underlying portion of the block 4 when the lever 20 has been rocked in one direction about the axis of the pivot 21 and to disengage the underlying portion of the block 4 when the lever has been rocked in a direction opposite that first mentioned. The extent of rocking movement of each lever 20 relatively to the ring upon which supported may be regulated by manipulating an adjusting screw 24 which is threaded through the branch or side of the head of the lever opposite that provided with the friction shoe 23 into engagement with the peripheral wall of the supporting ring.

A connecting rod 25 is provided for each of the levers 20 and is pivotally connected, as at 26, with the outer end of the stem of the lever at one of the ends of the connecting rod. Each connecting rod 25 is pivotally connected at its other end, as at 27, to one of the ends of a bar 28 which is clamped by U-bolts or hook bolts 29 to the treadle 3. The bar 28 is positioned at one end of the treadle and extends transversely of the latter, that is, at right angles to the axis about which the treadle is supported for rocking motion. The respective connecting rods 25 of course are pivotally attached to opposite ends of the bar 28 so that the rocking of the treadle will cause an upward movement of one connecting rod and a downward movement of the other.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The levers 20 are arranged on the rings 11 and 12 so that the shoe carrying sides or branches of the heads of the levers are lowermost. Therefore, when the treadle 3 is rocked the upwardly moving connecting rod 25 will rock the lever 20 to which attached upwardly and the ring to which the upwardly rocked lever is attached will rotate on the block 4 independently of the latter, the friction block or shoe of the upwardly rocked lever being out of frictional engagement with the underlying portion of the block 4. The second lever 20 will be rocked downwardly by the downwardly moving connecting rod 25 coincidentally with the rocking of the first mentioned lever upwardly. The friction shoe carried by the downwardly rocked lever will be pressed into frictional engagement with the underlying portion of the block 4 and in consequence the ring to which the downwardly rocked lever is attached and the block 4 will be rotated as a unit, thus occasioning rotation of the drive

wheel 2 and operation of the machine. The speed at which the drive wheel 2 will be rotated when the treadle 3 is rocked at a given speed may be varied at will by manipulating the adjusting screws 24 to vary the ratio of the part of the downward stroke of each connecting rod expended in moving the friction block on the downwardly rocked lever into frictional engagement with the block 4 to the entire downward stroke of the connecting rod. That is to say, if the adjustment of the lever 20 in respect to the ring on which it is supported is such that two-thirds of the distance traveled by a connecting rod during its downward stroke is traversed before the friction block on the downwardly rocked lever is moved into frictional engagement with the block 4, the drive wheel 2 will be rotated more slowly than if the adjustment of the lever in respect to the ring was such that the friction block would be moved into frictional engagement with the block 4 at the beginning of the downward stroke of the connecting rod.

The rings 11 and 12 are arranged on the block 4 so that rocking of the treadle will effect rotation of the drive wheel 2 in a clockwise or forward direction. Each of the rings 12 may be weighted at points diametrically opposite the ears 17, 17 as by being enlarged radially adjacent to said points as indicated at 30 in Figure 2, whereby the return movement of these rings after each operating stroke will be accomplished with but very little if any power from the treadle being required.

To exert a braking action on the drive wheel, the connecting rod for the ring adjacent to the flange 5 may be pressed laterally by the knee of the operator, thus holding the ring in frictional engagement with the flange 5, whereby the speed of rotation of the drive wheel will be decelerated.

When operating a sewing machine having the usual crank-equipped belt wheel, the operator must keep one hand on the material which is being sewed and the other hand on the fly-wheel at the top of the machine to prevent the guiding mechanism of the machine from reversing and breaking the thread. In starting such a machine, the operator must grasp the fly wheel and turn it since the position of the crank arm on the belt wheel at the time of starting is not known and unless the fly-wheel is grasped and turned, the driving mechanism may be moved in a backward direction and the thread broken. In order to accelerate the speed of the driving mechanism, the operator must grasp the fly-wheel since there is no other means for regulating the speed of the crank-equipped belt wheels of ordinary construction.

In other words, with such a machine, the operator has only one hand available for use in manipulating the material which is to be sewed. When a machine is equipped with my improved mechanism, both hands may be used to manipulate or adjust the material to be sewed or for any other purpose and the drive mechanism will always be driven in a forward direction when the treadle is operated and at any desired speed.

Obviously, my invention is susceptible of embodiment in forms other than that illustrated in the accompanying drawing, and I therefore consider as my own all modifications and adaptations of the form of the device herein disclosed which fairly fall within the scope of the appended claims.

Having thus described the invention, what I claim is:—

1. In a drive mechanism for sewing machines, the combination with the treadle and drive wheel, of a cylindrical block secured to the drive wheel in axial alinement with the latter, a pair of juxtaposed driving rings rotatably disposed on the cylindrical block, each ring having an aperture formed through the peripheral walls thereof, a rocker lever for each ring, the respective rocker levers being pivotally supported on the corresponding rings in adjacent relation to the apertures in the latter, a friction shoe carried by each rocker lever in position to swing through one of said apertures into and out of frictional engagement with said block, connecting rods connecting the respective rocker levers with opposite sides of the treadle, and an adjusting screw carried by each rocker lever for engaging the ring with which the lever is associated.

2. In a drive mechanism for sewing machines, the combination with the treadle and drive wheel, of a cylindrical block having an annular flange at one of its ends and being secured to the drive wheel in axial alignment with the latter and with the flanged end proximate to the drive wheel, a pair of juxtaposed driving rings rotatably mounted upon the cylindrical block and each having an aperture formed through the peripheral walls thereof, means carried by the block at the end thereof remote from the drive wheel for cooperating with said flange on the block to prevent axial displacement of the driving rings, a pair of reciprocable rods respectively connected at their lower ends to opposite sides of the treadle and movable in opposite directions upon rocking of the treadle, a rocker lever pivotally attached at one end to the upper end of one of said reciprocable members and pivotally supported on one of said rings in adjacent relation to the aperture in the latter, a friction shoe carried by said lever in position to move through the aperture in the ring into and out of frictional engagement with said block, and an

adjusting screw carried by each lever for engaging the ring with which the lever is associated to control the rocking movement of the lever.

3. In a power transmission, a rotatable member of circular cross sectional contour, a pair of juxtaposed rings rotatably mounted on said first named rotatable member, each of said rings having an aperture formed through the peripheral walls thereof, a rocker lever pivoted on each ring and having a portion adapted to be swung through the aperture of the ring into and out of frictional engagement with the peripheral wall of the first named rotatable member, an adjusting screw carried by each rocker lever for engaging the ring with which the lever is associated, and motion transmitting means for connecting the respective levers with opposite sides of a treadle.

OSCAR LONDBERG.