

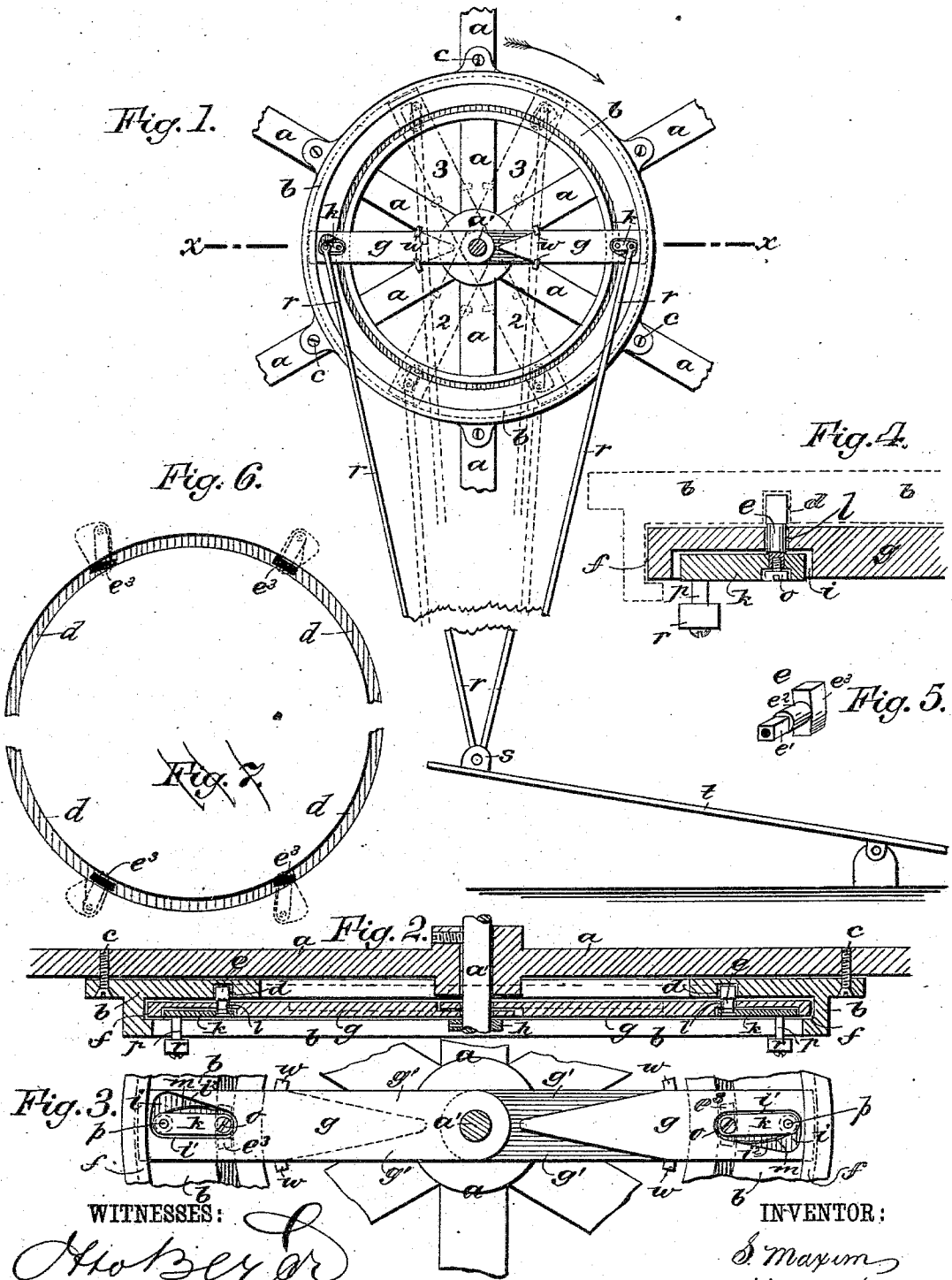
(No Model.)

S. MAXIM.

DRIVING MECHANISM FOR SEWING AND OTHER MACHINES.

No. 296,425.

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DRIVING MECHANISM FOR SEWING AND OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 296,425, dated April 8, 1884.

Application filed February 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MAXIM, of Wayne, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Driving Mechanism for Sewing and other Machines, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple, inexpensive, and efficient mechanism or motor for driving sewing or other machines by the aid of a treadle or hand-lever.

The invention consists of a driving-ring having a face-groove, in which the heads of studs held in pivoted plates fitted in recesses of pivoted drive-links bite alternately at opposite sides of the drive-ring groove on reverse movements of the treadle or lever, for imparting continuous rotary motion to a drive-wheel in one direction.

The invention includes, also, special arrangements of parts of the device, whereby the links are guided at their outer ends and the stud-plates are stopped when the movements of the links are reversed.

The invention comprises, also, other details of construction and combinations of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improvement as applied to the drive-wheel of a sewing or other machine, and with the treadle connecting-rods and drive-wheel partly broken away. Fig. 2 is a cross-sectional elevation of the drive-ring on the line *x x*, Fig. 1, and through opposite arms of the drive-wheel. Fig. 3 is a face view of the drive-ring and drive-wheel in part. Fig. 4 is a sectional view through the outer end of the left-hand drive-link, and to an enlarged scale. Fig. 5 is a perspective view of one of the drive-ring studs; and Fig. 6 is a diagram showing the action of the drive-studs in the drive-ring grooves in different positions of the links.

The letters *a* indicate the spokes or body of the drive-wheel of a sewing or other machine, which wheel is mounted on a shaft, *a'*,

in any approved way, and may have peripheral teeth or straight or grooved peripheral face to receive a belt for transmitting its driving-power.

To the drive-wheel *a*, I fix concentrically, by screws *c* or otherwise, the drive-ring *b*, which has a face-groove, *d*, in which the drive-studs *e* act, and an inside or undercut groove or way, *f*, to receive the outer ends of the drive-links *g*, for guiding the ends of the links and holding the studs *e* in the groove *d*. The inner ends of the links *g* are halved together loosely, and their opposing faces are cut away, as at *g'*, to permit the links freely to swing up and down toward and from each other at their outer ends upon the shaft *a'* as a central pivot, on which shaft the links may be loosely held against outward movement by any suitable pin or collar, *h*, as in Fig. 2.

In the face of each link *g*, near its outer end, I form a recess, *i*, one side, *i'*, of which is about radial to the drive-ring *b*, or parallel with the edge of the link, and the other side, *i''*, is inclined, making the recess *i* wider at one end—in this case the outer end. At the smaller end of the recess *i* of each link *g* is fixed, on the square portion *e'* of stud *e*, the small link or plate *k*, so that this plate and the stud shall turn together on the round portion *e''* of the stud *e*, which is journaled in a bearing, *l*, of link *g*, to cause the angular oblong or elliptical head *e''* of stud *e* to bite or catch against the side walls of the groove *d*, to carry the drive-ring *b* and drive-wheel *a* forward in their revolution. The recesses *i* of opposite links are reversely arranged, so that their radial sides *i'*, which form stops to the movements of the plates *k*, are on opposite sides of the longitudinal centers of the links, (see Fig. 3,) and springs *m* may be provided to force the plates *k* against the sides of the recesses, in which position of the plates *k* the heads *e'* of the studs *e* may move freely in the slot *d*. The plates *k* are held in the recesses *i*, and the studs *e* are held to the plates *k* by cap-screws *o*, threaded into the end of the square part *e'* of the studs. (See Fig. 4.) At the ends opposite the studs *e* the plates *k* of opposite links, *g*, are pivoted on pins *p* to rods *r*, which converge and connect

by a pivot-pin, *s*, to a treadle, *t*, or it may be a hand-lever, so that the motor may be worked by hand or foot, as desired.

The operation is as follows: In the drawings 5 the links *g g* are in the middle position, and if the treadle is lowered the plate *k* at the right hand will be rotated slightly to cause its stud-head *e*³ to bite the walls of slot *d* and carry the wheel forward in the direction of the arrow, 10 while the opposite plate, *k*, being held by the edge *i*' of recess, cannot cause its stud-head *e*³ to engage the slot. The links *g* having been carried to the downward limit of their stroke to the dotted positions 2 2, Fig. 1, the treadle 15 will be raised, which action carries the right-hand plate *k* to the stop-edge *i*' of its slot *i*, and releases its stud-head *e*³ from the walls of slot *d*, while the left-hand plate *k* will be moved upward to cause its stud-head *e*³ to engage the 20 walls of slot *d* at the opposite side of the drive-ring, and also drive the wheel and ring in the direction of the arrow until the links reach the extreme upward positions 3 3, whereupon on again lowering the treadle the left-hand stud-head *e*³ will be free and the right-hand stud *e*³ 25 will engage the slot to continue the rotation of the wheel. Suitable rubber or spring buffers, *w*, are fitted in opposite edges of the links *g*, to avoid noisy contact of the links at the limit of 30 their movements in either direction. By my devices the drive-wheel can be revolved only in the one direction for which it is arranged, however, the treadle may be moved, which is a desirable feature when my improvement is 35 applied to sewing or other machines intended to be started in one direction only.

The diagram, Fig. 6, illustrates the positions of the heads *e*³ of the studs *e* in slot *d* just prior to a reversal of the strokes of the treadle 40 at the extremes of movement.

The power may be taken directly from the periphery of the drive-ring *b*, if desired, and the motion of the drive-wheel may be caused in the reverse direction to that shown by applying the drive-ring and links to the reverse 45 side of the drive-wheel.

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

1. A driving mechanism for sewing or other 50 machines, constructed with a ring, *b*, forming or fixed to a drive-wheel, and having a slot, *d*, links *g*, reversely-set plates *k*, carrying studs *e*, for engaging the walls of slot *d* at opposite side of the drive-ring alternately, to rotate the 55 ring or wheel continuously in one direction by connecting-rods *r* and a treadle or lever, substantially as shown and described.

2. The combination, with the drive-ring *b*, of the pivoted links *g*, carrying the reversely- 60 set plates *k*, having the studs *e*, for engaging the slot *d* of the ring *b*, and said ring having the groove *f*, in which the outer ends of the links *g* are guided, substantially as shown and 65 described.

3. The links *g g*, halved together at their centers, recessed at *g*' at their opposite faces, and carrying buffers *w*, in combination with the ring *b* and means for moving the links, 70 substantially as shown and described.

4. The combination, with the ring *b*, studs *e*, links *g*, and plates *k*, of the recesses *i*, shaped at *i*' for reversely-set stops to the plates *k*, sub- 75 stantially as shown and described.

5. The combination, with the ring *b*, studs *e*, links *g*, and plates *k*, of the springs *m*, sub- 80 stantially as shown and described.

6. The combination, with the ring *b*, link *g*, and plates *k*, of the stud *e*, having a head, *e*³, for engaging the slot *d* of ring *b*, a round portion, *e*², journaled in a bearing, *l*, of the link 85 *g*, and a square or angular end, *e*¹, on which the plate *k* is rigidly fitted, substantially as shown and described.

7. The combination, with the ring *b*, link *g*, 85 plate *k*, and stud *e*, of the screw *o*, substantially as shown and described.

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Witnesses:

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