A. WIDMER.

DRIVING MECHANISM FOR LOOMS.

APPLICATION FILED AUG. 13, 1912.

1,052,634.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

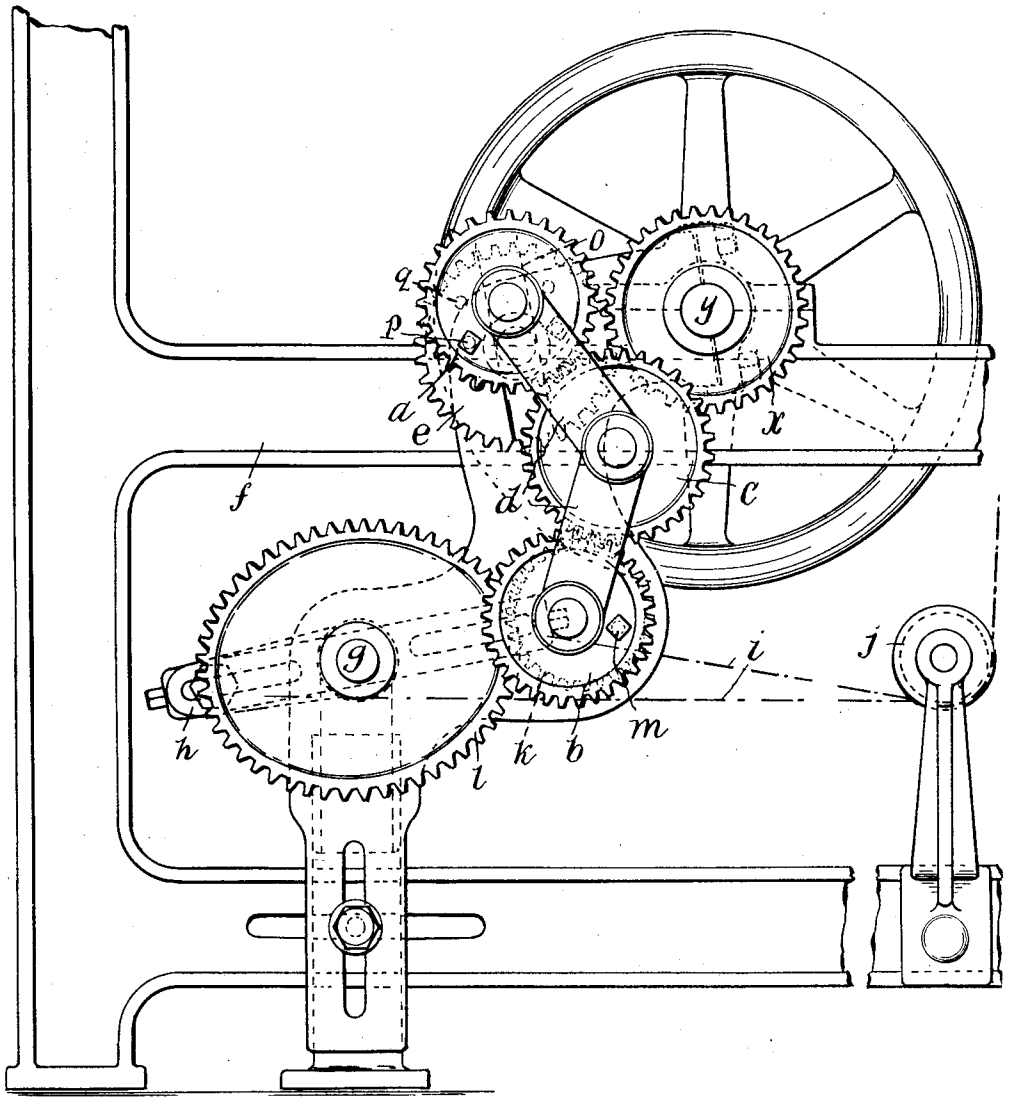

Fig. 1.

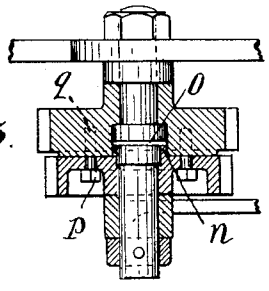

Fig. 3.

WITNESSES

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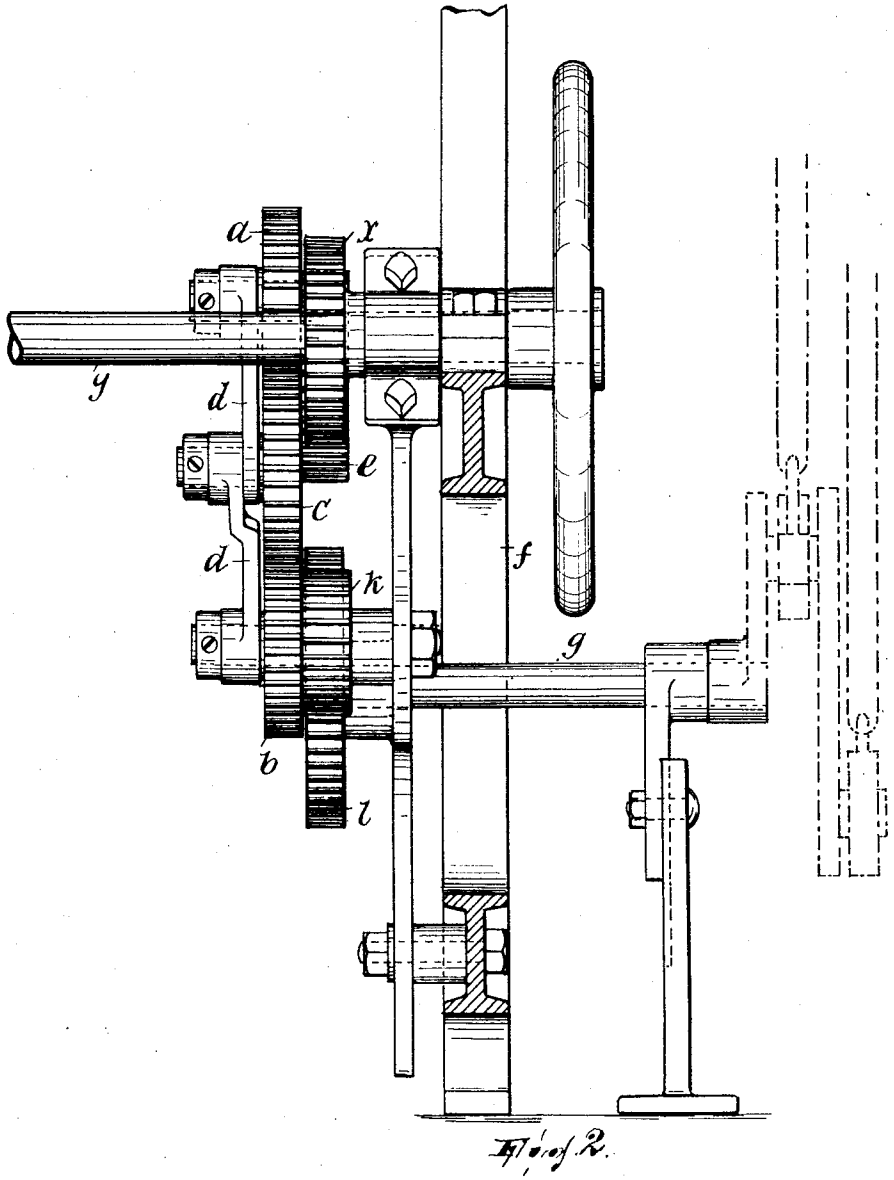

Fig. 2.

WITNESSES

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DRIVING MECHANISM FOR LOOMS.

1,052,634. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed August 13, 1912. Serial No. 714,808.

To all whom it may concern:

Be it known that I, ADOLPH WIDMER, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Driving Mechanism for Looms, of which the following is a specification.

This invention relates to mechanisms for driving the shuttles in a loom of the narrow-ware type and the like purposes and it consists in certain improvements on a mechanism of this character set forth in my application for United States Letters Patent filed February 3, 1912, Serial No. 675,229.

In order to explain my present invention it is necessary to refer to the mechanism of my previous application, above mentioned.

The accompanying drawings afford a full illustration of both the old and the new mechanisms, Figure 1 being a side elevation of the improved mechanism; Fig. 2 a front elevation thereof, partly in section and partly in broken lines; and, Fig. 3 showing a certain detail, partly in section.

In my prior application aforesaid the mechanism disclosed involved as its essential features in accomplishing the alternately accelerated and retarded movement of the shuttle-driving rack of a loom, interrupted by a dwell, a rotary driving member *a*, a rotary driven member *b* and a rotary transmission member *c*, the latter being journaled at the point of pivotal connection between two links *d* which formed a toggle-connection between the axis of member *b* and the center of member *a*, which latter was secured to a rotary carrier member *e* eccentrically thereof; members *b* and *e* were journaled in a suitable frame, as *f*. (These several parts will be found indicated by the reference characters noted above in the accompanying Figs. 1 and 2). It will be apparent that were *a* concentric to *e* the motion transmitted to *b* from *a* would be a constant one; that, further, the more *a* is eccentric to *e* the faster will the motion of *b* be during the accelerated part of the cycle and the slower during the retarded part of the cycle, this condition continuing (in the shifting of *a* to greater eccentricity) until a point is reached from where on a dwell in the motion of *b* will develop, increasing in extent as the adjustment or shifting of *a* to greater eccentricity continues. In the mechanism set forth in my prior application the dwell, therefore, was dependent upon setting *a* in eccentric relation to *e* beyond the point referred to above, and its extent depended on what position, beyond that point, member *a* was made to occupy. But this resulted in a certain disadvantage in that during the dwell periods, since *c* rolled idly around *b*, no resistance was offered to the means (including gear *x* meshing with *e* and mounted on the drive shaft *y* of the loom) whereas during the periods when *b* was rotating said means experienced resistance. In short, this means was alternately subjected to a condition load and of no load, and this produced undue shock on each cycle of the loom, with vibration and wear and tear on the moving parts.

By the present invention, I am able to accomplish the dwell entirely without the disadvantage alluded to, the parts not being dependent upon the idle rolling of *c* around *b* (and hence not offering a condition of load and no load, alternately, to the means for driving *e*) in order to effect an ample dwell. Thus: In the frame *f* is journaled the shaft *g* which carries the usual double crank *h* connected with the shuttle-driving rack (not shown) by the flexible connections, such as straps, *i*, which extend in the usual manner around guiding means, such as rollers *j*. The motion is transmitted from *g* to *b* by the gears *k* and *l*, respectively carried by and fixed to *b* and *g*. The arrangement is such that the crank occupies the dead-center (relatively to the guiding means *j* for the straps) when *a* is rotating *c* (and hence *b*) at the slowest speed thereof, the resultant of this condition being a dwell in the longitudinal or draft movement of the straps and hence in the movement of the rack. This dwell is accentuated in the present instance by mounting the gear *k* eccentrically of gear *b*, to which it may be secured by the screw *m* so as to be changed for another of different size, if desired, and forming gear *l* oval.

In order to secure member *a* to member *e* in a manner permitting its adjustment into more or less eccentric relation to member *e*, whereby changes in the extent of the dwell may be effected, I provide said members with a feather and groove, as shown at *n* and *o* in Fig. 3, using screws *p* penetrating one of the members and adapted to be interchangeably introduced into holes *q* in the other.

In the practical use of the present invention I have found that a great saving of the wear and tear on the parts, and especially the straps *i* and the teeth of the rack and shuttles, results, the motion of the parts referred to, while characterized by the desired dwell, being always one of gradual acceleration and retardation before and after each dwell. Moreover, the dwell accomplished is one of a definite and regular character, the shuttles remaining perfectly motionless for the interval of time for which the dwell is supposed to be adjusted and not merely substantially so at the beginning and end of each dwell-period. The load imposed on the driving means being constantly imposed, and increasing and decreasing in an easy manner, the loom operates with greatly reduced incidental vibration and shock.

Adjustment of *a* radially of *e* changes the extent of the dwell. Thus: With *a* disposed relatively to *e* as it is in the drawing, approximately one half of each full revolution of *e* represents a dwell on the part of the shuttles and the other one half of that revolution their movement in one direction. As *a* is adjusted outwardly of *e*, so the dwell appropriates a constantly increasing, and the motion of the shuttles a constantly decreasing, part of the cycle of *e*, and vice versa as *a* is adjusted inwardly of *e*.

Having thus fully described my invention, what I claim is:

1. In combination, with the frame and with a rotary double crank and motion-transmission connections attached to and extending from said double crank in substantially the same plane therewith, means, operatively connected with said double crank, for rotating the same including a rotary driving member and a rotary driven member journaled in the frame, one of said members being eccentrically journaled, and a shifting rotary transmission member held in peripheral power-transmitting engagememt with both of the first two members, said double crank being in dead-center relation to said connections when the point of lowest eccentricity of the eccentric member adjoins the transmission member, substantially as described.

2. In combination, with the frame and with a rotary double crank and motion-transmission connections attached to and extending from said double crank in substantially the same plane therewith, means for rotating the double crank including a rotary driving member and a rotary driven member journaled in the frame, one of said members being eccentrically journaled, and a shifting rotary transmission member held in peripheral power-transmitting engagement with both of the first two members, said double crank being in dead-center relation to said connections when the point of lowest eccentricity of the eccentric member adjoins the transmission member, and said means also including an oval gear member rotating with said double crank and having its longest diameter extending substantially longitudinally of the double crank and a gear peripherally engaging the oval gear and carried eccentrically of and by the driven member, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLPH WIDMER.

Witnesses:
JOHN W. STEWARD,
WM. D. BELL.