No. 770,167. PATENTED SEPT. 13, 1904.

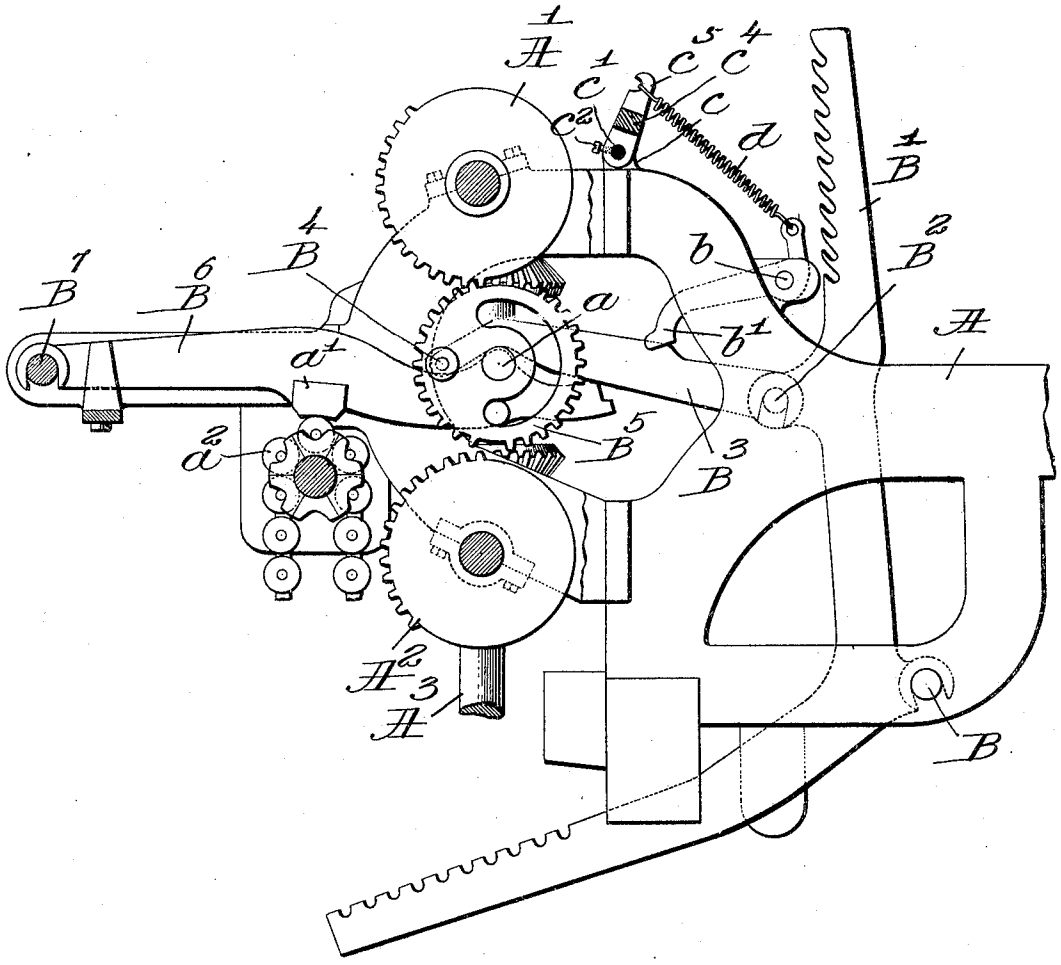
R. CROMPTON.

HEAD MOTION FOR LOOMS.

APPLICATION FILED JAN. 18, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Fred. S. Grumbach.
J. Wm. Lutton.

Inventor.
Randolph Crompton,
by Crosby & Gregory
Attys.

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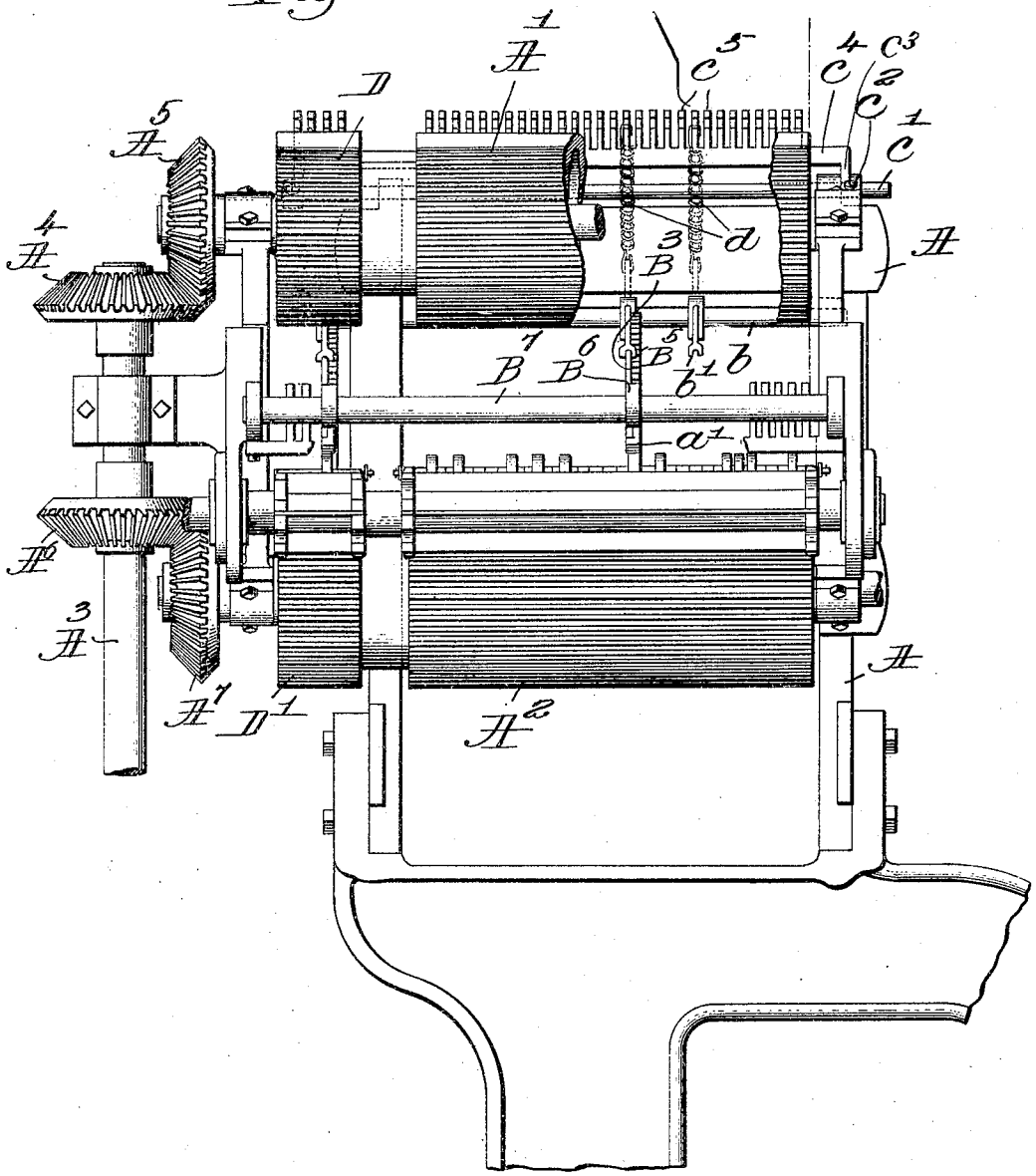
R. CROMPTON.

HEAD MOTION FOR LOOMS.

APPLICATION FILED JAN. 18, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Fred. S. Grundorf.
S. Wm. Sutton.

Inventor.
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by Crosby Gregory Attys.

No. 770,167. Patented September 13, 1904.

UNITED STATES PATENT OFFICE.

RANDOLPH CROMPTON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO RANDOLPH CROMPTON, GEORGE CROMPTON, EDWARD D. THAYER, AND WILLIAM B. SCOFIELD, OF WORCESTER, MASSACHUSETTS.

HEAD-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 770,167, dated September 13, 1904.

Application filed January 18, 1904. Serial No. 189,456. (No model.)

To all whom it may concern:

Be it known that I, RANDOLPH CROMPTON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented an Improvement in Head-Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to head-motions of looms, and is illustrated as applied to the class of loom wherein the harnesses and shuttle-boxes derive their movement by the semi-rotation of vibrator-gears actuated by partial cylinder-gears, said vibrator-gears being carried by vibrator-levers moved by projections of a pattern surface or chain to place the vibrator-gear in position to be turned in one or the opposite direction by one or the other of said partial cylinder-gears. The vibrator-gears have crank-pins that receive connectors that engage either the harness-levers or a lever forming part of a shuttle-box-moving mechanism. My improvements added to this well-known class of loom have been devised to insure the prompt descent of the vibrator-gear that it may be put quickly into engagement with the undermost partial cylinder-gear whenever a projection of the pattern surface or chain is moved from under a vibrator-lever and also to cause the crank-pin with which the connector is joined to assume substantially instantly its extreme position, so that the teeth of the partial cylinder-gear will engage the leading tooth of the series of teeth of the vibrator-gear. This pressure insures accuracy in weaving.

In accordance with my invention I provide a series of shoes made as elbow-levers and pivot said shoes on a cross-rod, and to each short arm of each shoe I connect a draw-spring, the opposite end of the series of draw-springs being joined each with a finger connected with a spring-holder, said holder having a series of fingers corresponding in number with the shoes. The spring-holder may be turned more or less to adjust the tension of the draw-springs, and consequently the degree of pressure exerted by the shoes on each connector.

Figure 1 is a sectional detail showing parts of a head-motion of well-known construction with my improvements added; and Fig. 2 is a left-hand elevation of the parts, Fig. 1, many of the parts just alike being omitted, the dotted line x showing the line of section for Fig. 1.

The framework A, the upper partial cylinder-gear A′, and the lower partial cylinder-gear A^2 derive their motion of rotation from the upright shaft A^3 through the bevel-gears A^4 A^5 A^6 A^7. The framework has a stud B, on which is mounted the series of notched harness-levers B′, each having a stud B^2, which is engaged by the slotted inner end of a connector B^3, the opposite end of which embraces a crank-pin B^4 of a vibrator-gear B^5, mounted to be turned about a stud a of a vibrator-lever B^6, having its fulcrum on a cross-rod B^7. Each vibrator-lever has an attached plate a', against which contacts one after the other suitable projections a^2 of any usual pattern surface or chain moved in any usual manner. Each vibrator-lever has a stop that enters a curved slot in the vibrator-gear and acts as a stop for each of said gears in their extreme positions. The parts so far referred to are in common use, and their operation need not be herein further described.

In accordance with my invention I provide the frame with a cross-rod b, on which I string a series of shoes b', shown as elbow-levers, the short arms of which are upturned, while down-turned projections at the ends of the longer arms are grooved to embrace and retain their positions on the upper edges of the connectors, a shoe on each connector.

In the upper part of the frame between suitable ears c and in bearings in said ears I mount a shaft c'. This shaft, as shown, has connected with it adjustably by screws c^2 (see Fig. 2) the legs c^3 of a spring-holder comprising a bar c^4 having a series of hooks or arms c^5. Each of these hooks receives and holds one end of a draw-spring d, the opposite end of which is

engaged with the short upright arm of the shoe, as shown in Fig. 1. By turning the series of hooks or arms about their pivotal point the springs may be stretched more or less, and so adjust their effective tension on the shoes and the force with which said shoes bear on the connectors.

In operation it will be understood that the shoes bear constantly on each connector, and whenever a projection of the pattern-surface retires from under the vibrator-lever the shoe by its contact with the connector acting through the crank-pin of the gear not only causes the gear to be held with one end of its slot against the stop, but also depresses quickly the vibrator-gear, so that its teeth are put instantly in the path of movement of the under partial cylinder-gear, so that the latter gear engages the first tooth of each vibrator-gear as the latter is placed in operative relation to said under partial cylinder-gear.

It will be understood that the short partial cylinder-gears D D′ on the shafts carrying the gears A^5 and A^7 are employed in the shuttle-box mechanism and each gear engages at the proper times a vibrator-gear carried by a vibrator-lever such as described and that the crank-pin of such vibrator-gear is joined by a connector with a lever, (not shown,) forming part of a shuttle-box-moving mechanism, such as commonly used in the so-called "Knowles" or "Crompton" looms in common use and represented in numerous Letters Patent of the United States.

The notched ends of the vibrator-levers will have coacting with them the usual locking device common to the so-called "Knowles" loom.

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

1. In a loom having partial cylinder-gears, vibrator-levers, vibrator-gears pivoted thereon, connectors engaging the crank-pins of said gears, and a pattern-surface, a series of shoes riding on the upper edge of said connectors and having each a short arm, a series of hooks or arms, and a series of draw-springs connecting said hooks or arms with the short arms of said shoes.

2. In a loom having partial cylinder-gears, vibrator-levers, vibrator-gears pivoted thereon, connectors engaging the crank-pins of said gears, and a pattern-surface, a series of shoes riding on the upper edge of said connectors and having each a short arm, a series of hooks or arms, and a series of draw-springs connecting said hooks or arms with the short arms of said shoes, and means to adjust said hooks or arms to control the tension of said draw-springs.

3. In a loom having partial cylinder-gears, vibrator-levers, vibrator-gears pivoted thereon, connectors engaging the crank-pins of said gears, and a pattern-surface, a series of elbow-levers having the extremities of their horizontal arms riding on the upper edges of said connectors, a series of hooks or arms and a series of draw-springs connecting said hooks or arms with the short arms of said elbow-levers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RANDOLPH CROMPTON.

Witnesses:
GEO. W. GREGORY,
MARGARET A. DUNN.