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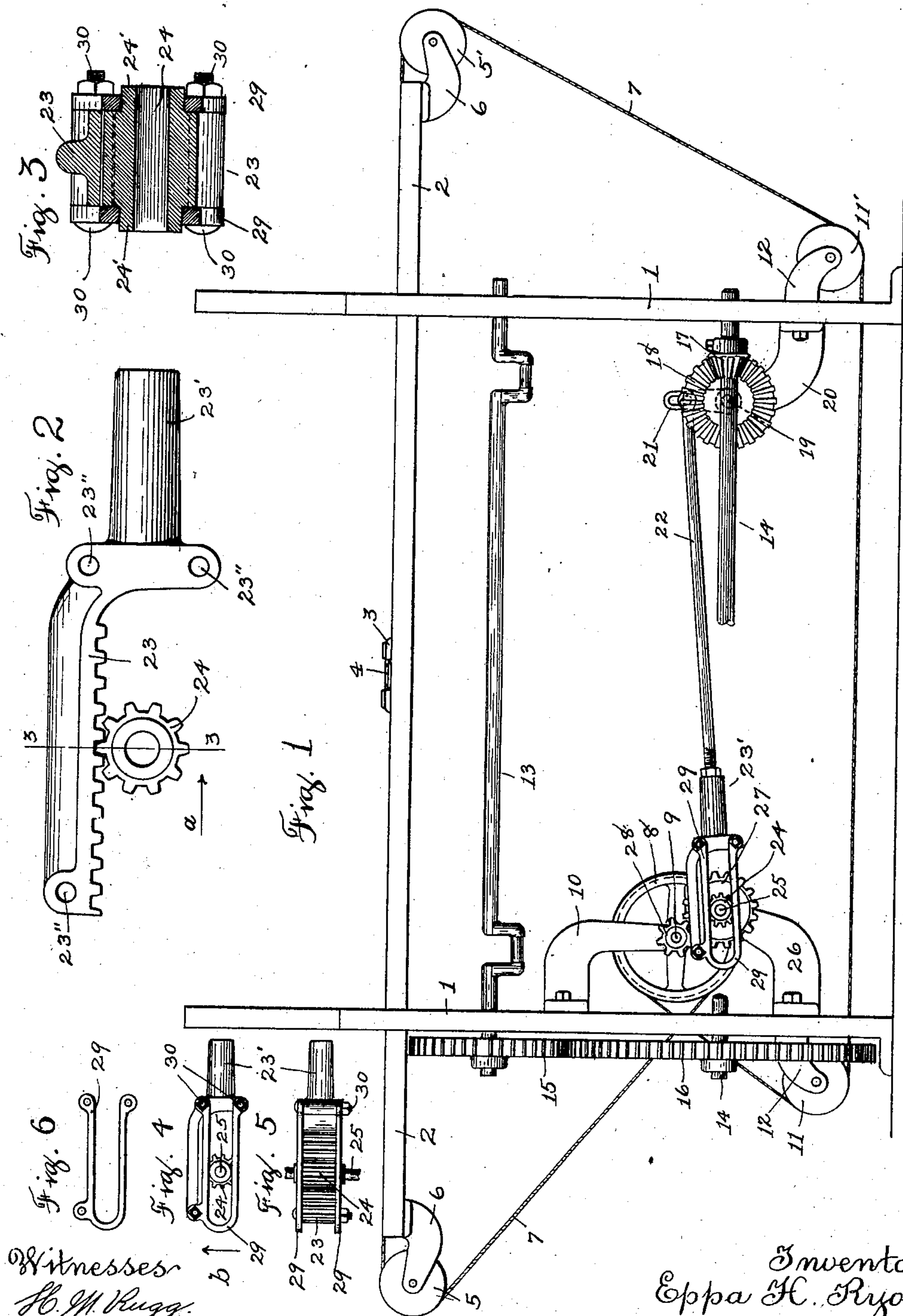
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E. H. RYON.

KNIFE SLED MOTION FOR PILE FABRIC LOOMS.

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NO MODEL.



Witnesses  
H. M. Rugg  
J. A. Kinsley

Inventor  
Eppa H. Ryan

334 John C. Dewey

Att'y



# UNITED STATES PATENT OFFICE.

EPPA H. RYON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## KNIFE-SLED MOTION FOR PILE-FABRIC LOOMS.

SPECIFICATION forming part of Letters Patent No. 720,285, dated February 10, 1903.

Application filed February 11, 1902. Serial No. 93,537. (No model.)

*To all whom it may concern:*

Be it known that I, EPPA H. RYON, 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 Knife-Sled Motions for Pile-Fabric Looms, of which the following is a specification.

My invention relates to knife-sled motions for pile-fabric looms.

The object of my invention is to make an improved knife-sled motion or mechanism for operating the knife sled or carrier and knife which shall be of simple construction and shall communicate to the knife-sled and knife a positive and steady motion.

My invention consists in certain novel features of construction of my knife-sled motion, as will be hereinafter fully described.

I have shown in the drawings only sufficient portions of a loom, with my knife-sled motion applied thereto, to enable those skilled in the art to which my invention belongs to understand the construction and operation thereof.

Referring to the drawings, Figure 1 shows a portion of a loom-frame, the crank, and bottom shaft and my knife-sled motion applied thereto. Fig. 2 shows, on an enlarged scale, a side view of the rack-and-pinion mechanism with the side guide-plates removed. Fig. 3 is a cross-section on line 3-3, Fig. 2, looking in the direction of arrow *a*, same figure. Both side guide-plates are shown in this figure. Fig. 4 shows the rack-and-pinion mechanism shown in Fig. 1 detached. Fig. 5 shows a bottom view of the parts shown in Fig. 4 looking in the direction of arrow *b*, same figure; and Fig. 6 shows one of the side guide-plates detached.

In the accompanying drawings, 1 represents the loom sides or frame; 2, the guideway for the knife sled or carrier 3, having the knife 4 attached thereto. At one end of the guideway 2 is a guide-pulley 5 and at the other end a corresponding guide-pulley 5'. Each pulley 5 and 5' is mounted in a bracket 6, secured in this instance to the under side of the guideway 2. A cord 7 is attached at one end to the knife sled or carrier 3 in the

usual way and passes over the guide-pulley 5 and is wound several times around a drum 8, fast on a short shaft 9, mounted in a bracket or hanger 10, secured to the loom side. From the drum 8 the cord 7 passes over the guide-pulleys 11 and 11', each mounted in a bracket 12, secured to the loom side or frame, and over the pulley 5' to the knife sled or carrier 3, to which it is attached. The crank-shaft 13 is geared to the bottom shaft 14 through gears 15 and 16 in the usual way.

All of the above parts may be of the ordinary construction and operation.

I will now describe my improvements in knife-sled motion or mechanism for communicating a reciprocating motion to the knife sled or carrier 3 and knife 4, attached thereto, through the cord 7.

On the bottom shaft 14 is fast a bevel-pinion 17, which meshes with a bevel-gear 18, fast on a short shaft 19, (shown by broken lines in Fig. 1,) mounted in bearings on the stand 20, secured to the loom side or frame. On the shaft 19 is fast a crank-arm 21, (shown by broken lines, Fig. 1,) to which is pivotally connected one end of a connector or rod 22. The other end of said connector 22 is secured to the end 23' of a rack 23, the teeth of which mesh with a pinion 24 on a short shaft 25, mounted in bearings in a stand 26, secured to the loom side or frame. The pinion 24 has an extended hub 24' on each side. (See Fig. 3.) On the shaft 25 is also fast a gear 27, which meshes with a pinion 28, fast on the shaft 9 of the drum 8. In connection with the rack 23 and the pinion 24 I use two detachable slotted guide-plates 29, one on each side of the rack 23, which are preferably secured thereto by bolts 30, extending through holes 23'' in the rack 23. The extended hub 24' on the pinion 24 extends through and fits in the slotted portion of the guide-plates 29, (see Fig. 3,) and said plates 29 hold the rack 23 in its proper position relative to the pinion 24 as said rack is moved back and forth by the movement of the crank-arm 21 to rotate the pinion 24 first in one direction and then in the other and communicate through gear 27 and pinion 28 a rotary



motion to the drum 8 and through cord 7 a sliding motion to the knife sled or carrier 3 and knife 4 first in one direction and then in the other on the guideway 2 in the usual and well-known way.

The operation of my improvements will be readily understood by those skilled in the art from the above description in connection with the drawings.

10 The revolution of the bottom shaft 14, which has one revolution to two revolutions of the crank-shaft 13, as is customary, will, through the bevel-pinion 17, gear 18, and shaft 19, communicate a regular rotary motion to the crank-  
15 arm 21 and through intermediate connections above described a rotary motion to the drum 8 first in one direction and then in the other and cause the knife sled or carrier 3 and knife 4 through cord 7 to have a reciprocating movement on the guideway 2.

20 It will be understood that the details of construction of my improvements may be varied, if desired. For example, the gear 27 and pinion 28, intermediate the rack-and-pinion mechanism and the drum 8, may be dispensed with  
25 and the pinion 24 mounted directly on the shaft 9 of the drum 8, if preferred.

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

1. In a knife-sled motion for pile-fabric looms, the combination of a knife-sled, a cord attached thereto, guide-pulleys and a drum around which said cord passes, a pinion operatively connected to said drum and having side extended hubs, a rack engaging said pinion, slotted guide-plates attached to the rack on each side of said pinion and engaging the side extended hubs for guiding and properly positioning the rack with respect to the pinion, and means for reciprocating said rack.

2. In a knife-sled motion for pile-fabric looms, the combination of a knife-sled, a cord attached thereto, guide-pulleys around which said cord passes, a drum to which said cord is operatively connected, a pinion carried by said drum, a second pinion engaging connections between the same and the first-named pinion and having a hub extended beyond the pinion at each face thereof, a stud or shaft carrying said pinion and extended through said hub, a rack engaging said second pinion, guides secured to the rack above and below the said pinion on each side thereof and resting on the extended hub, and means for reciprocating said rack.

EPPA H. RYON.

Witnesses:

J. C. DEWEY,  
M. HAAS.