

No. 636,263.

Patented Nov. 7, 1899.

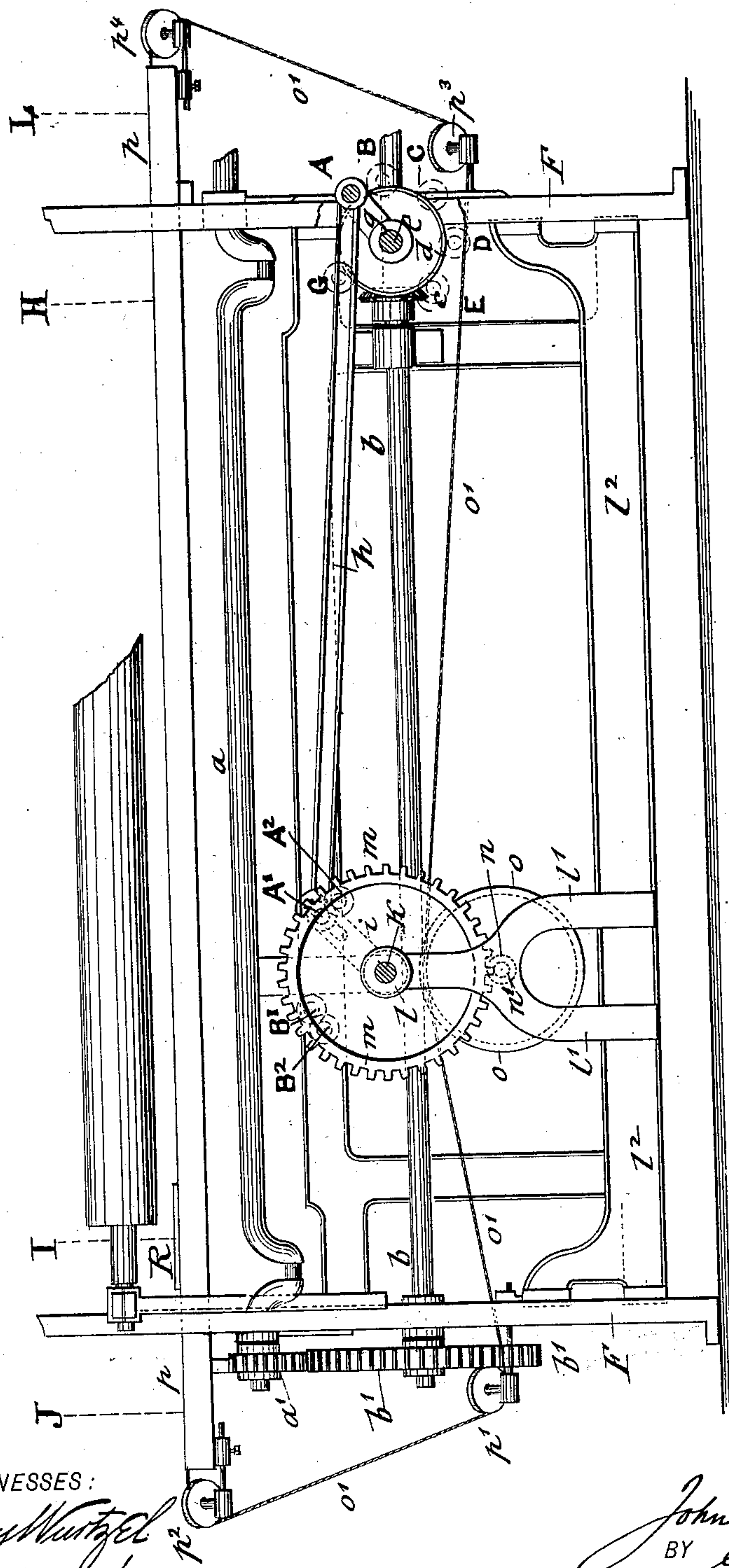
J. KILLARS.  
KNIFE SLED MOTION FOR LOOMS.

(Application filed Jan. 3, 1899.)

3 Sheets—Sheet 1.

(No Model.)

Fig. 1.



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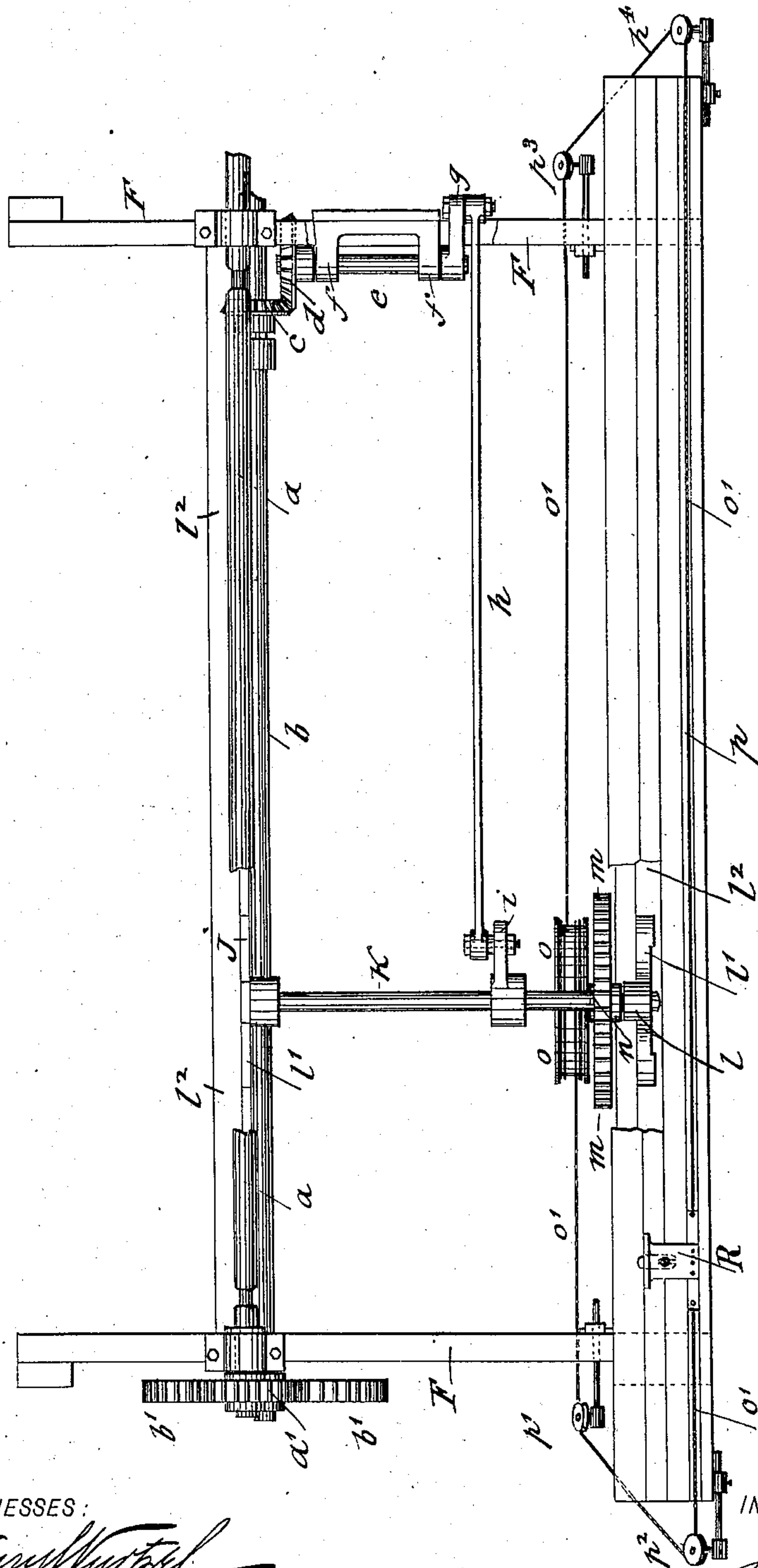
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Fig. 2.



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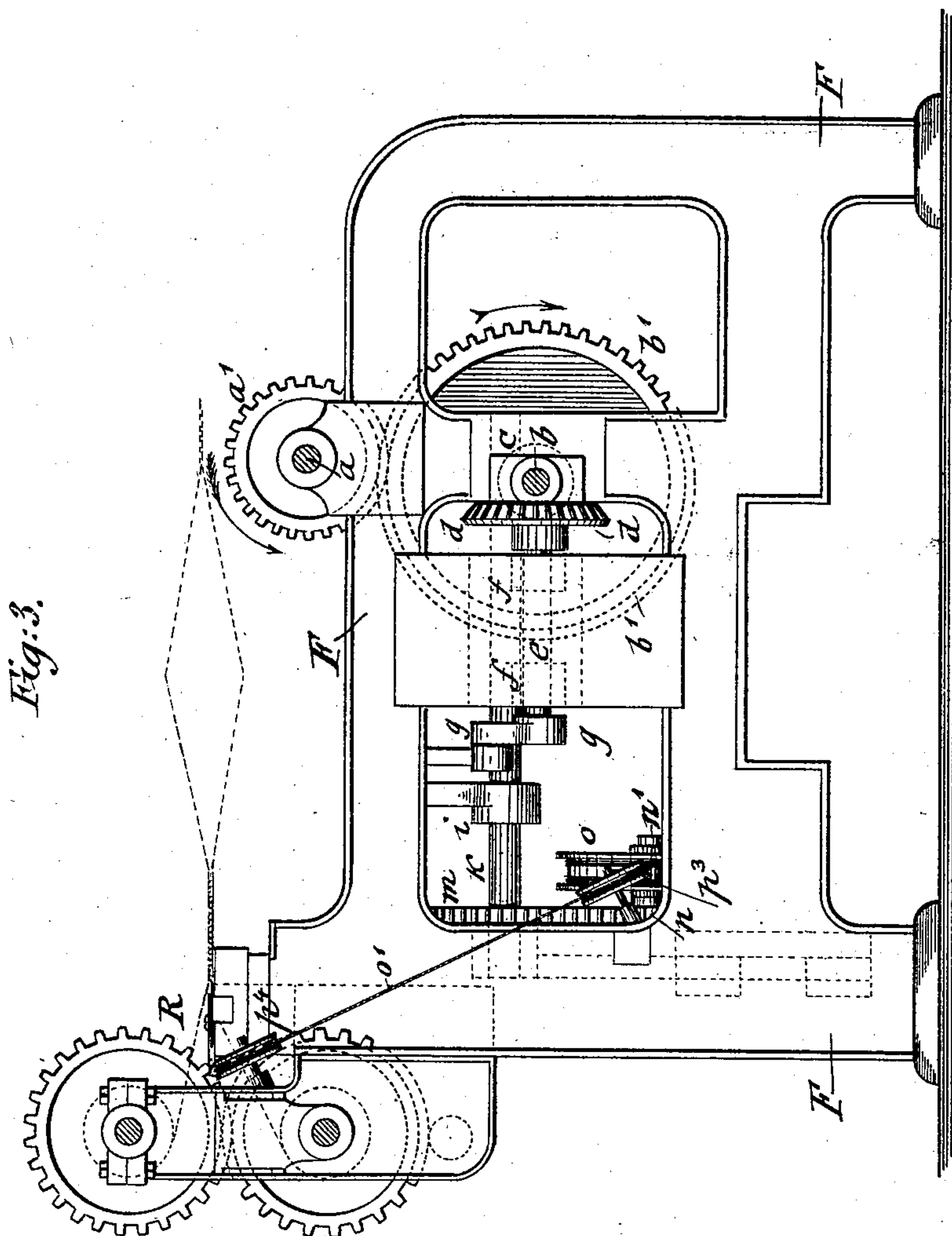
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# UNITED STATES PATENT OFFICE.

JOHN KILLARS, OF STONINGTON, CONNECTICUT.

## KNIFE-SLED MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 636,263, dated November 7, 1899.

Application filed January 3, 1899. Serial No. 700,875. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN KILLARS, a citizen of the United States, residing at Stonington, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Knife-Sled Motions for Plush and Velvet Looms, of which the following is a specification.

This invention relates to certain improvements in the knife-sled motion for plush and velvet looms, for which Letters Patent of the United States were granted to me heretofore, No. 610,711, dated September 13, 1898, and which improvements are designed with the view of imparting to the knife-sled an easier and steadier motion, so that the even and uniform cutting of the pile is obtained.

The invention consists in certain improvements in the knife-sled motion for plush and velvet looms referred to, which will be fully described hereinafter and finally pointed out in the claim.

In the accompanying drawings, Figure 1 represents a sectional front elevation of a portion of a plush or velvet loom, showing my improved knife-sled motion. Fig. 2 is a plan view of Fig. 1, and Fig. 3 is a side elevation of my improved knife-sled motion.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, *a* represents a crank-shaft which receives motion, in the direction indicated by the arrow in Fig. 3, from the driving-shaft of the plush or velvet loom. The crank-shaft *a* transmits rotary motion by a gear-wheel *a'* at its end to a gear-wheel *b'* on a shaft *b*, which is located below the crank-shaft *a* and supported like the same in bearings of the supporting-frame *F* of the loom. The gear-wheel *b'* has twice as many teeth as the gear-wheel *a'*, so that the crank-shaft *a* makes two rotations to one rotation of the shaft *b*. To the opposite end of the shaft *b* is keyed a bevel-wheel *c*, which meshes with a bevel-wheel *d*, that is keyed to a short shaft *e*, which is arranged at right angles with the shaft *b* in suitable bracket-bearings *f* at the inside of the frame *F*. The bevel-wheel *d* has twice the number of teeth of the bevel-wheel *c*. To the opposite end of the shaft *e* is keyed a crank *g*, and to the end of the crank *g* is pivoted a connecting-rod *h*, the op-

posite end of which is provided with a round hole and pivoted to the wrist-pin of a slotted crank *i*, which is keyed to a rock-shaft *k*. The rock-shaft *k* is supported parallel with the second crank-shaft *e* in bearings *l*, located on the front part of the loom, and in bearings *j*, located below the crank-shaft *a*, as shown in Fig. 2. Both bearings *l* and *j* of the shaft *k* are supported on upright standards *l'*, attached to transverse braces *l''* of the main frame *F*. On the front end of the rock-shaft *k* is located a larger gear-wheel *m*, which meshes with a pinion *n*, that is provided with a comparatively long hub, to which the cord-pulley *o* is applied. The pinion *n* and the cord-pulley *o* turn on a short stationary shaft *n'*, which is supported by the standard *l'* of the journal-bearings *l*. To the cord-pulley *o* are attached and wound in opposite directions two cords *o'*, by which the knife-sled *R* is operated in its guideways *p* from one side of the loom to the other, according to the reciprocating motion imparted to the same by the motion-transmitting mechanism described. One of the cords *o'* is guided from the cord-pulley *o* over pulleys *p'* and *p''* and attached to one end of the knife-sled *R*, while the other cord *o'* is guided over the pulleys *p'''* and *p''''* and attached to the opposite end of the knife-sled *R*, as shown clearly in Figs. 1 and 2.

During one rotation of the crank-shaft *a*, which takes place with the first pick of the loom, the shaft *e* makes a quarter of a rotation, or for every four rotations of the crank-shaft *a* the second crank-shaft *b* makes two and the shaft *e* one full rotation, which corresponds to four picks of the shuttle. At the first pick the crank *g* will therefore be turned from the point *A* of its rotation through an angle of ninety degrees over the point *B* to the point *C*, so that the gear-wheel *m*, which is turned by the crank *i*, is oscillated first for a short distance from the left toward the right—i. e., from the point *A'* to *A''*—as indicated in dotted lines in Fig. 1, and then back again from *A''* to *A'*, by which motion the cord-pulley *o* is turned first from the right toward the left and back again, so that the cords *o'*, which are attached to the cord-pulley *o*, are moved by the same over the guide-pulleys *p'*, *p''*, *p'''*, and *p''''*, moving thereby the knife-sled during the first rotation of the crank-shaft *a*



from point H to the point L and back from L to H. For the second rotation of the crank-shaft *a* the crank *g* is moved from point C over point D to point E. During this motion  
 5 the gear-wheel *m* is moved from A' to B' and the knife-sled from H to I, or across the entire width of the loom, so as to cut the pile. During the third rotation of the crank-axle *a* the crank *g* is moved from the point E to the  
 10 point G and the gear-wheel *m* from B' to B<sup>2</sup> and back again to B', so that the knife-sled is moved from I to J and back from J to I, while during the fourth rotation of the crank-shaft the crank *g* moves from the point G to  
 15 the point A and the gear-wheel *m* from B' to A', while the knife-sled is moved from the point I to H again along the whole width of the woven fabric, cutting the pile again.

My present construction differs from the  
 20 construction shown in my prior patent referred to in that the cord-pulley and the mechanism for oscillating the same and reciprocating the knife-sled are not located at one side of the loom, but between the side stand-  
 25 ards of the same, so that the driving parts of the knife-sled are better balanced and the momentum of the cord-pulley diminished, whereby the parts receive a comparatively slow motion, while the reciprocating motion  
 30 of the knife-sled is rendered even, steady, and reliable, so that a uniform cutting action is exerted on the pile and an easier and steadier motion of the loom obtained. Furthermore, by the direct meshing of the main gear-wheel  
 35 *m* with the pinion on the shaft of the cord-pulley the intermediate gear-wheel and pinion used in my former construction are dispensed with and the entire mechanism rendered less complicated. By locating the cord-  
 40 pulley and actuating-gearing at some distance across the machine and at the opposite side of the same from the actuating-crank *g* and its gearing a connecting-rod of greater length than in my former patent is obtained. Also  
 45 by supporting the cord-pulley and its actuat-

ing-gearing on standards supported by transverse braces of the frame and within the frame, instead of at the side and outside of the same, as in my former patent referred to, the shock or jar on the reversal of the move- 50  
 ment of the parts is distributed evenly through the entire loom, instead of unevenly at one side of the same.

Having thus described my invention, I claim as new and desire to secure by Letters 55  
 Patent—

The combination, with a knife-sled, its guideways and actuating-cord, of a knife-sled motion, consisting of a crank-shaft, an intermediate shaft below the crank-shaft, 60  
 means for rotating the intermediate shaft at one-half the speed of the crank-shaft, a second crank-shaft arranged at right angles to the intermediate shaft, a bevel-gear transmis- 65  
 sion between said intermediate shaft and said second crank-shaft, at one side of and within the frame, a crank on said second crank-shaft, standards supported on transverse braces of the frame within and at the side of the same  
 70 opposite to said bevel-gear transmission, a rock-shaft parallel with the second crank-shaft and supported in bearings in said standards, a crank on said rock-shaft, a connecting-rod between the cranks of the second crank-  
 75 shaft and rock-shaft, a gear-wheel on the rock-shaft, a cord-pulley supported in bearings of one of said standards, a pinion on the hub of the cord-pulley, and meshing with said gear-wheel, and guide-pulleys for the knife-sled-  
 80 actuating cord located at opposite ends of the knife-sled guideways, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN KILLARS.

Witnesses:

HENRY G. PALMER,  
 JOHN H. RYAN.