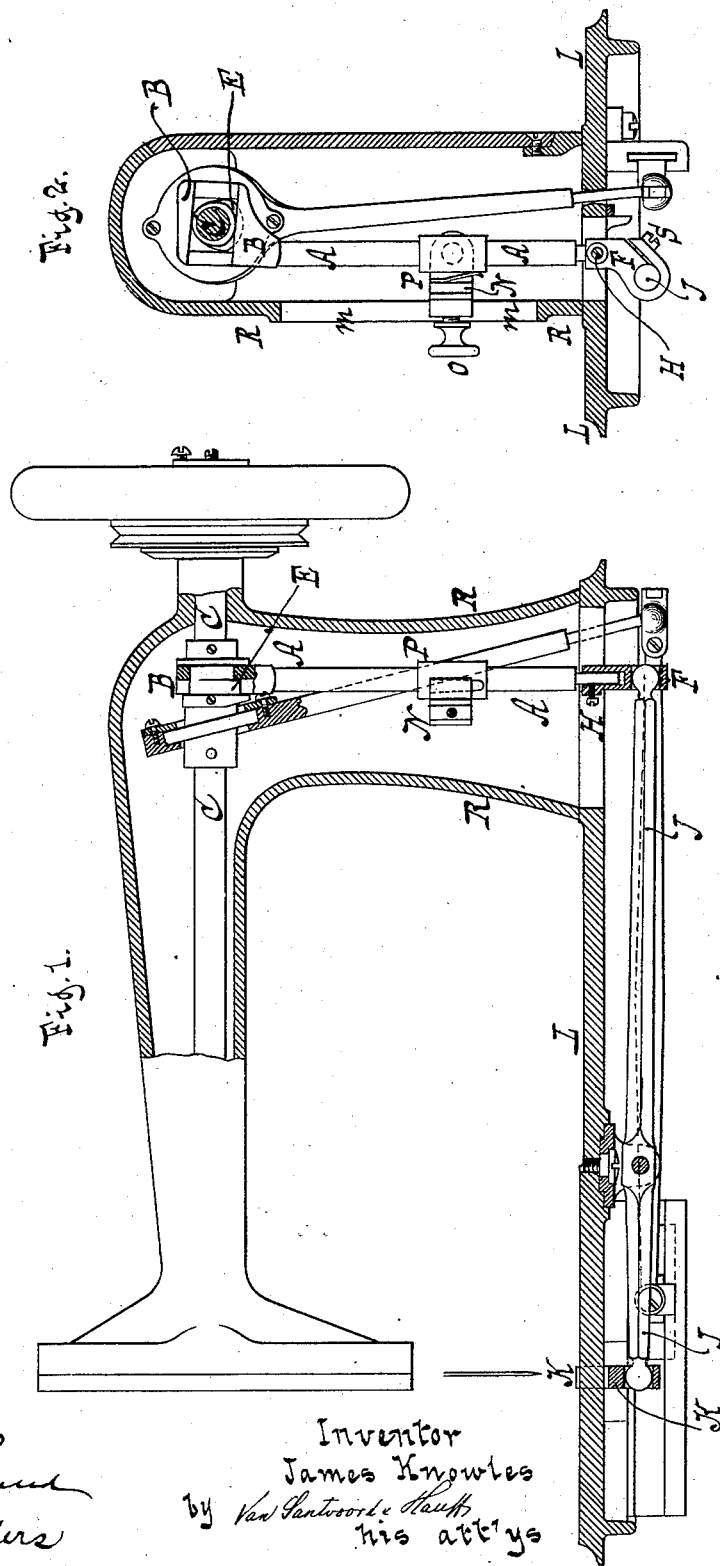


(No Model.)

J. KNOWLES.  
MECHANICAL MOVEMENT.

No. 302,499.

Patented July 22, 1884.



Witnesses  
*Otto Neufeld*  
*Char Wablers*

Inventor  
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# UNITED STATES PATENT OFFICE.

JAMES KNOWLES, OF NEW YORK, ASSIGNOR TO IRVING M. AVERY, OF  
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## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 302,499, dated July 22, 1884.

Application filed June 5, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES KNOWLES, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Mechanical Movements, of which the following is a specification.

This invention relates to mechanical movements, and has for its object to provide novel means whereby the motions of an actuating or feed lever can be regulated and controlled. This I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawings, illustrating my invention, in which—

Figure 1 shows a side view of my invention, partly in section. Fig. 2 is an end view, partly in section.

Similar letters indicate corresponding parts.

My invention is here shown as applied to a sewing-machine, though of course I do not confine myself to such application, as said improvement may be applied wherever it is serviceable.

The letter A represents the feed-lever or actuating-lever, having a head, B, which is perforated for the passage of the main shaft C, to which shaft C a revolving or rocking or other suitable motion may be communicated. The head B is shown as adapted for the reception of an eccentric, E, by which, on the movement of the shaft C, motion is communicated to the feed-lever A. The feed-lever A is shown in the drawings as connected to a connecting lever or link, J, pivoted both horizontally as well as vertically to the bed-plate L, and which link J, in the example shown, communicates motion to a feed-dog, K, of a sewing-machine. In order to regulate the motion of the feed-lever A, the fulcrum P of said lever is mounted on a block, N, which is adjustable in the slot *m* of the standard R, and can be held at any point by a set-screw, O. By moving the block N nearer to the head B, the horizontal throw of that end of the lever A farthest from the shaft C will be increased, while by moving said block N farther from the head B said horizontal throw is decreased, producing in the example in the drawings a

corresponding increase or decrease in the horizontal motion or feed of the feed-dog K. The cam E also imparts a rising and falling or a vertical motion to the head B and lever A, thus causing in the example in the drawings the feed-dog K to rise above the base-plate L while said feed-dog is moving forward or feeding, and causing said feed-dog to sink below the feed-plate L when moving back or recovering its original position. To make the feed-dog K rise higher or lower above the base-plate L, it is only necessary to place the adjustable link F on the lever A lower or higher on the feed-lever A and secure it in such position by a set-screw, H, when the desired result will be attained. The link F, in addition to being vertically adjustable on the lever A, can also be turned or swiveled on said lever, so as to carry the end of the link J, connected thereto, farther to one side or the other.

When several movements are placed close together—as, for example, in a sewing-machine, where the standard R contains both the feed-lever A as also the shuttle-driving mechanism—the lever A, as seen in the drawings, must be placed to one side, to make room for the remaining movement or movements. From this it results that the link, and with it the feed-dog K, is carried too far to one side, or into such a position that the feed-dog is likely to drop below the base-plate L before the full forward or horizontal motion of said feed-dog is completed, thus causing an imperfect feed. To compensate for any such errors, I provide the adjustable link F, which, as already explained, can be placed or adjusted upon the feed or actuating lever A in such a position as will be necessary to secure the result desired, which result in the example in the drawings is a proper motion of the feed-dog. I may also split or cut the adjustable link F, as seen in Fig. 2, so that when the hollow or receptacle in said link F for receiving the head of the link J is increased by the walls or sides of said hollow being worn away, I need only tighten the screw S, and by drawing together the sections of said adjustable link F restore said hollow or socket to its original size.

Of course the device may be modified without departing from my invention, since, for example, instead of attaching the adjustable link F to the actuating-lever A and joining said adjustable link F to the connecting-link J, I may attach said adjustable link F to the connecting-link J and join said adjustable link F with the actuating-lever A; or the adjustable link F may be connected with that end of the connecting-link J which lies next to the feed-dog. Such transposition is obvious, and is within the scope of my invention.

It will be observed from the foregoing that the adjustment of the link F enables the throw of the outer end of the link J to be changed or varied as occasion may demand, and this can be effected without disturbing or manipulating the movable fulcrum P, for the reason that the adjustable link is below the fulcrum. I do not claim the diagonal cam on the main shaft combined with the pitman having a ball-and-socket hinge-connection with a lever, as shown in the drawings, as such features are not my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with an actuating-lever, A, and a pivoted link, J, of an adjustable link, F, connecting the lever with the pivoted link, and by its adjustment changing the extent of throw of the outer end of said pivoted link, substantially as described.

2. The combination of an actuating-lever, A, a movable fulcrum, P, a pivoted link, J, and an adjustable link, F, arranged below the movable fulcrum, and by the adjustment of which the throw of the outer end of the pivoted link may be changed without manipulating the movable fulcrum, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

JAMES KNOWLES. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.