(No Model.)

J. TRIPP.

MECHANICAL MOVEMENT.

No. 304,048. Patented Aug. 26, 1884.

Fig. 1.

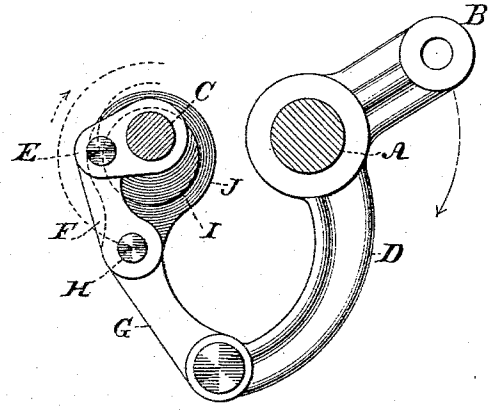


Fig. 2.

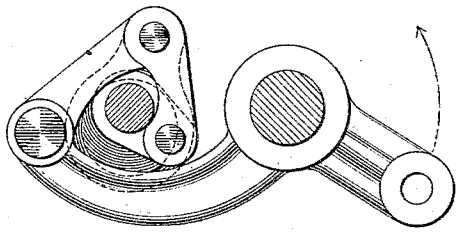


Fig. 4.

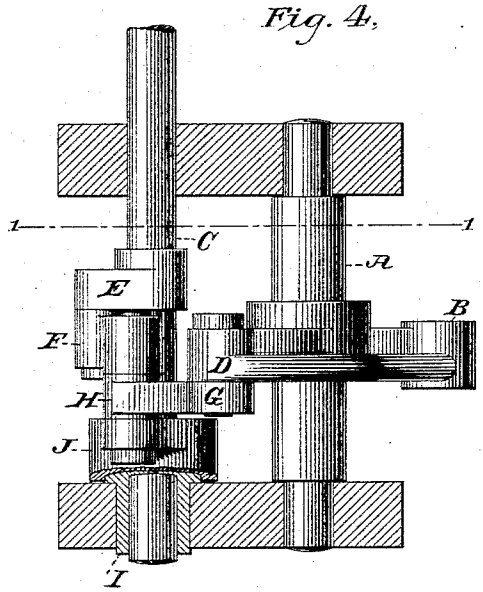
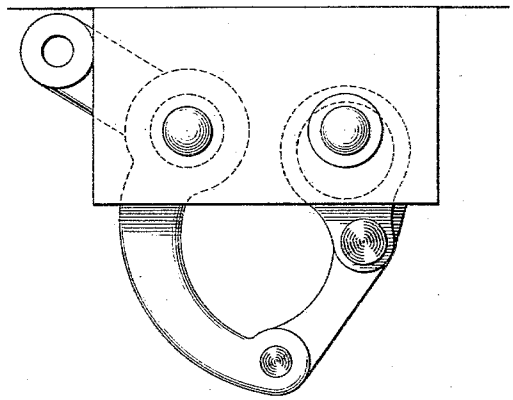


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES TRIPP, OF NEW YORK, N. Y.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 304,048, dated August 26, 1884.

Application filed June 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES TRIPP, of the city, county, and State of New York, have invented certain new and useful Improvements in Mechanical Movements; and I do hereby declare the same by the following full, clear, and exact description thereof, reference being had to the accompanying drawings.

This motion is applicable to any machine where an angular, reciprocating, or oscillating motion is required. It is, however, particularly adapted to oscillate the circularly-moving shuttles of sewing-machines, and I illustrate it in the accompanying drawings as constructed and proportioned for that purpose. With such shuttles it is requisite that they shall oscillate through more than one hundred and eighty degrees, and it is desirable, in order to best accomplish their work, that they shall move through even a considerably larger angle of oscillation than one hundred and eighty degrees—that is, at least two hundred and fifty-five degress, or a maximum of about two hundred and eighty. This invention, therefore, consists of an improved mechanical movement, whereby a circular or angular oscillatory motion extending through three-quarters of a circle, and more, can be given to a shaft.

Referring to the drawings, Figures 1 and 2 are side views of mechanism embodying the invention, and respectively illustrate the parts in the positions that they occupy near the beginning and near the end of the range of movement; and Fig. 3 is a similar view from the opposite side, Fig. 4 being a plan view of the same, looking upward, and the plane 17 indicating the sections of Figs. 1 and 2.

In these drawings, A represents what I shall term the "main" or "driving" rock-shaft, to which the power is directly transmitted, as through the medium of arm B, or otherwise; and C is the driven rock-shaft that is to be oscillated by the main shaft but through a much greater arc than that of the main shaft.

D is a vibrating arm, fast to the driving-shaft. E is a crank-arm fast to the driven rock-shaft, and F and G are links, one end of each of which are jointed together at H, and the other ends of which are jointed, one to the arm D, and the other to the crank-arm E.

I is a fixed block, set eccentrically to the rock-shaft C, as seen in Fig. 3. In the present case this block is preferably arranged to constitute one of the bearings of the rock-shaft C, so as to give rigidity to the parts; but this is not essential to the construction, as this rock-shaft may end with its crank-arm. This eccentric block carries the guide-arm J, which at its outer end is jointed to the links by the pivot-pin H, that connects them. The relative positions of the eccentric block and driven rock-shaft C, or of the pivotal center of the guide-arm and the center of this rock-shaft are such that the outer end of the guide-arm will be at the farthest practicable distance from the rock-shaft at the beginning of the oscillation—that is, just in advance of the lower dead-center point of such arm or the line through its pivotal center and the center of the rock-shaft.

The action of the parts is this: As the vibrating arm of the main shaft rises, the guide-arm causes the joined ends of the links to move in a circle about its pivotal center, and as that circle constantly approaches the circle through which the outer end of the driven rock-shaft crank moves, as seen in Fig. 1, it is obvious that the said crank must move constantly faster, and also through a greater angle than the guide-arm; and hence that, when the guide-arm has moved one hundred and eighty degrees and reached the point where its outer end is nearest the center of the driven rock-shaft, the crank-arm of such shaft will have moved through a much greater angle than one hundred and eighty degrees. The extent of this angular motion of the driven rock-shaft is so much dependent upon the relative size and arrangement of the parts composing the motion that its limits cannot be expressed for any but single constructions. However, with the mechanism from which the present drawings are made I have produced a very free and even oscillatory motion of the driven rock-shaft through two hundred and seventy degrees and more.

I am aware that other means than the guide-arms—such, for instance, as a fixed cam-groove—may be used to control the motion of the joint between the links; but I prefer the guide-arm shown, as with such construction all the parts move about centers, and hence with great freedom and evenness of motion,

which permits of the parts being run at a very high rate of speed.

The application of this motion to drive a circularly oscillating shuttle in a sewing-machine is shown and described in an application filed May 9, 1884, of which this is a division, and in which application due disclaimer of the herein-described matter is made by me.

What is claimed as new is—

1. As a means for transmitting angular motion, the combination of a vibrating arm, a rock-shaft crank, two links jointed together, one of which is pivoted to said arm and the other to said crank, and a guide arranged to cause the joint between the links to move along a curve other than that of the rock-shaft crank-pin, for the purpose set forth.

2. As a means for transmitting angular motion, the combination of a vibrating arm, a rock-shaft crank, two links jointed together, one of which is pivoted to said arm and the other to said crank, and a guide-arm pivoted at one end to the joint between the links and at its other end to an axis arranged eccentrically to the rock-shaft, substantially as and for the purpose set forth.

JAMES TRIPP.

Witnesses:
JOHN BRICE,
R. F. GAYLORD.