

No. 744,321.

PATENTED NOV. 17, 1903.

R. S. FLEMING.
TREADLE MECHANISM.

APPLICATION FILED SEPT. 16, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

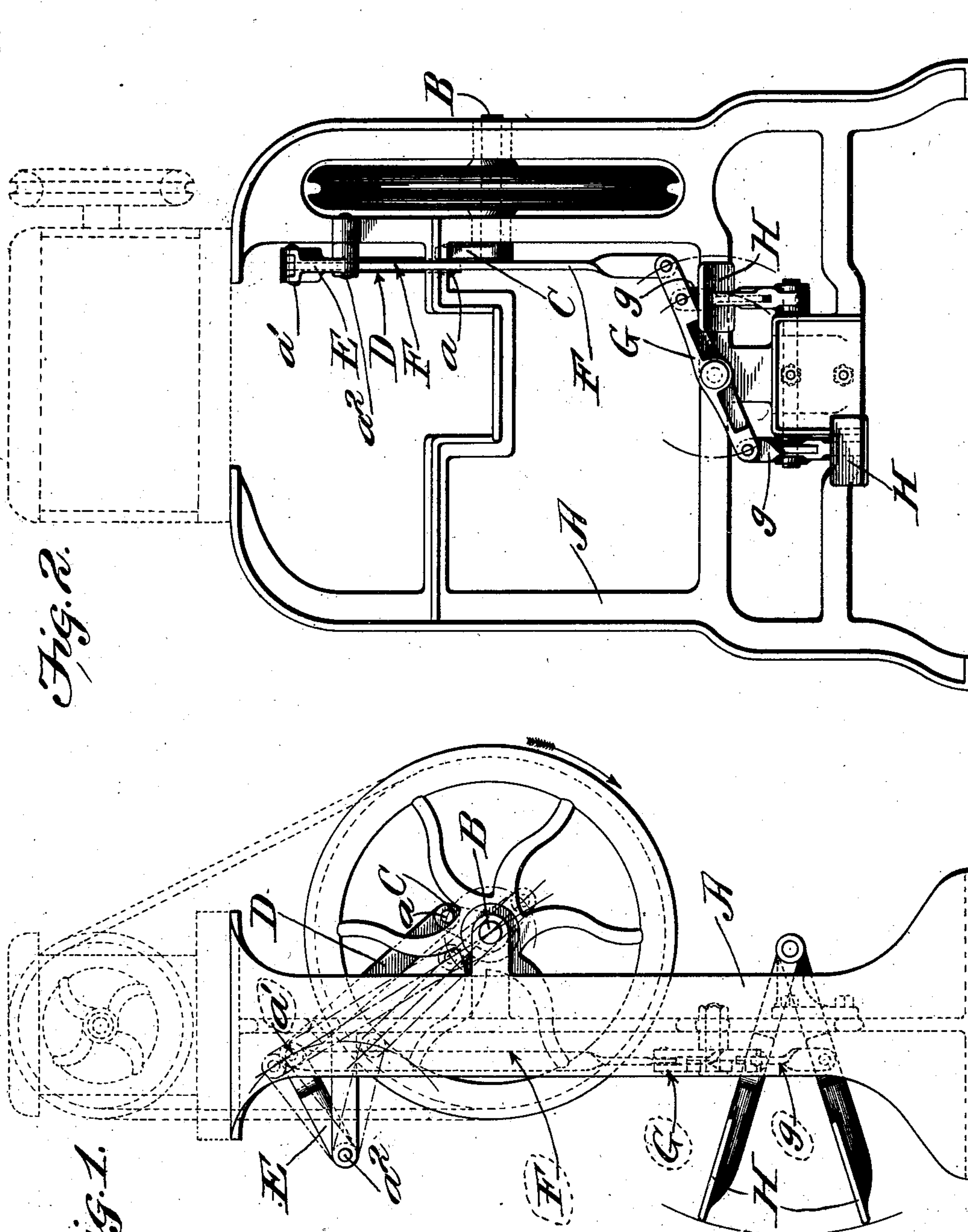


Fig. 2.

Fig. 1.

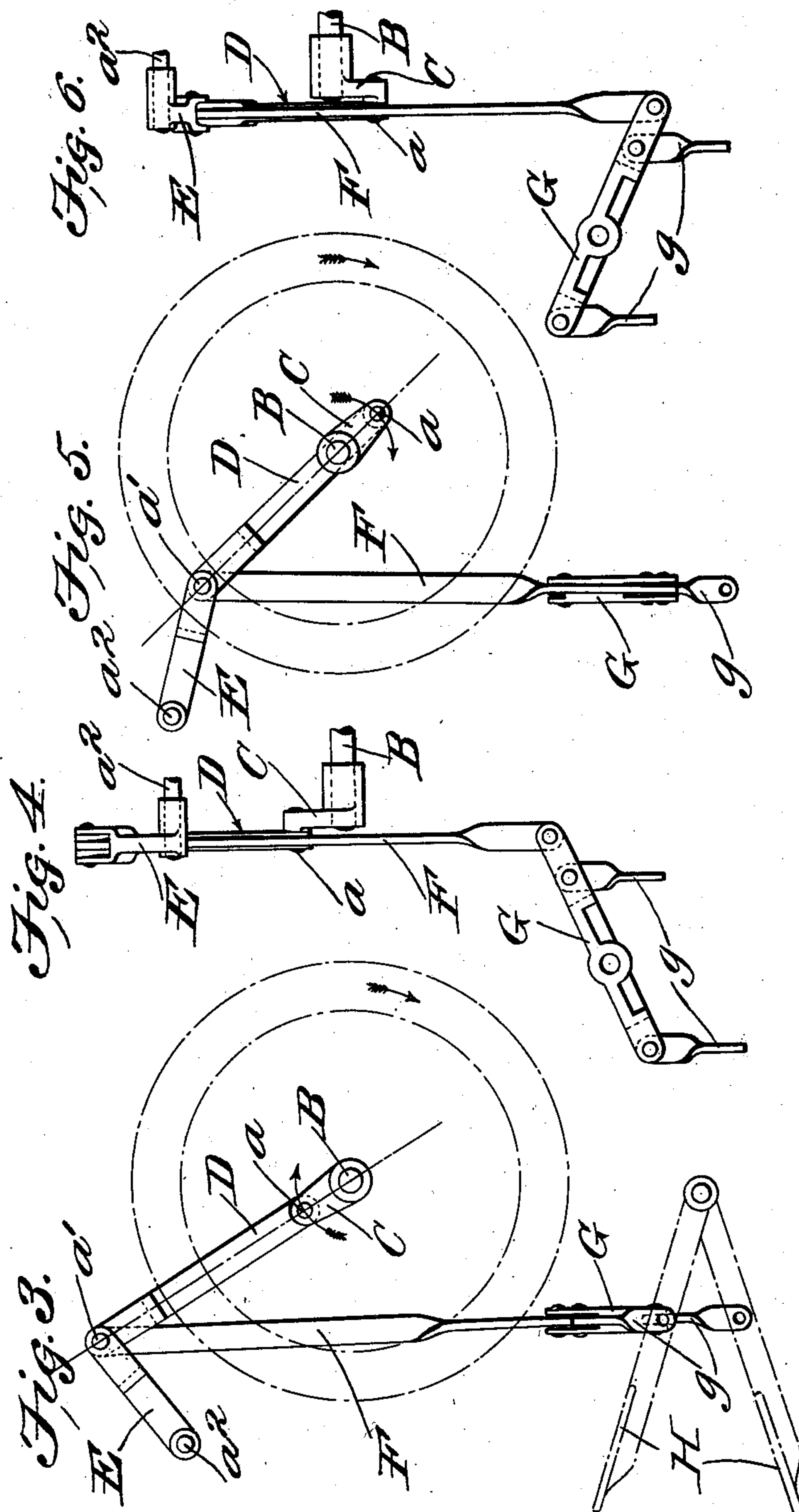
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ROBERT S. FLEMING, OF ST. LOUIS, MISSOURI, ASSIGNOR TO LANDIS MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

TREADLE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 744,321, dated November 17, 1903.

Application filed September 16, 1903. Serial No. 173,411. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. FLEMING, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Treadle Mechanism, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a front elevation at right angles to Fig. 1. Fig. 3 is a diagrammatic side elevation showing the positions of the parts when the treadles are at one extreme of movement. Fig. 4 is a diagrammatic front elevation of the parts as shown in Fig. 3. Fig. 5 is a view of the character of Fig. 3 with the treadles in the other extreme of movement, and Fig. 6 is a view of the character of Fig. 4 and showing the parts in the positions illustrated in Fig. 5.

This invention relates to improvements in treadle mechanisms, and is more particularly an improvement upon the structure forming the subject-matter of Patent No. 564,572, granted to Samuel A. Gould, July 21, 1896.

The primary object of the present mechanism is to provide a structure of the general character of that illustrated by the said former patent, whereby the principle of a toggle system is utilized, as in said former structure, but greater power is afforded, although the number of parts is not increased.

To this end and also to improve generally upon mechanisms of the character indicated the invention consists in the various matters hereinafter described and claimed.

Referring now more particularly to the drawings, A represents a supporting-standard of any suitable construction. B indicates a crank-shaft suitably journaled upon said supporting structure, and C is the crank-arm upon said shaft.

G indicates the rocking lever suitably pivoted upon the standard, and H indicates the treadles, which are respectively connected, by means of links *g*, to the opposite ends of said rocking lever. The said rocking lever and the treadles are below the crank-shaft B.

Suitably pivoted to the standard, above said crank-shaft, is a lever E, and a link D has one end pivotally connected to the crank-arm, as at *a*, while the opposite end of said link is pivotally connected to the free end of the lever E, as at *a'*. This point of connection *a'* is also above the shaft B, and the combined length of the lever E and the link D is greater than the distance between the crank-pin *a* and the stud *a*², which forms a relatively fixed pivot for said lever E, so that the point of connection *a'* between said link and lever is at all times above the crank-shaft. A substantially vertical link F has one end pivotally connected to the lever E and the link D, as at said point of pivotal connection *a'*, and has its other end pivotally connected to one end of the rocking lever G, said lower end of the link F being loosely mounted upon the pivot-pin by which it is connected to said rocking lever, so that said link F can rock in two lines which are at substantially right angles to each other. As the rocking lever G and its treadles are below the crank-shaft B and the point of connection *a'* between said link F and the lever E and the link D is above said crank-shaft, it is possible to employ a relatively long link F. Therefore this link F is at all times in a vertical or nearly vertical position, for the distance between the point *a'* and the point of connection between the link F and the rocking lever G is so great that the parts can rock through their proper arch without causing material deflection of the link F. Furthermore, in order to obtain the desired toggle action the link D and the lever E are of different lengths, as in said before-mentioned patent; but the shorter member in the present structure is the lever E, which has one end mounted upon the fixed pivot *a*². Thus the upper end of the link F is given less displacement from the vertical when the lever E is rocked than would occur were the lever E the longer member of the toggle. As the link F is substantially vertical in both extreme positions of the treadles, as clearly shown in Figs. 3 and 5, a substantially direct push or pull is exerted at the point *a*² between the toggle members at the downward movement of each treadle, where-

by the power exerted upon a treadle is applied in the most advantageous line and the power applied to the treadle is utilized in actuating the toggle and not wasted in overcoming tendencies toward dead-centers, which result when the link F is forced to exert its pressure at an angle, as shown by said prior patent.

The present mechanism is particularly applicable to sewing-machines, in which, because of the necessarily limited distance of the work-table from the floor, a relatively small space is presented in which to arrange the driving-shaft, the treadle, and the connections between said treadle and said shaft. When both the treadle and the connections between the shaft and the treadle are placed below the shaft, the link F is so short and the point of connection a' reaches such a low point that said link F is thrown into almost alinement with the said point of connection a' and the pivotal point a^2 , thus producing almost dead-centers when the treadles are in one position. This difficulty is avoided, however, by placing the lever E and the link D above the shaft and the treadle below the shaft, as in the present instance. Furthermore, the lever E and the link D being above the shaft, their combined weight operates upon the crank-pin a and serves to force the crank downwardly.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In a treadle mechanism, a shaft provided with a crank, a lever having a relatively fixed pivotal point, a link having its opposite ends pivotally connected respectively to said crank and the free end of said lever, the point of connection between said link and said lever being upon one side of said shaft, a treadle upon the other side of said shaft, and a substantially vertical link having its opposite ends connected respectively to said treadle and to the point of connection between said lever and said first-mentioned link, said lever and said first-mentioned link respectively extending oppositely from said vertical link; substantially as described.

2. In a treadle mechanism, a shaft provided with a crank, a lever having a relatively fixed pivotal point above said shaft, a link having one end pivotally connected to said crank and its opposite end pivotally connected to the free end of said lever at a point above said shaft, a rocking lever below said shaft, treadles in connection with opposite ends of said rocking lever, and a substantially vertical link having one end connected to one arm of said rocking lever and its opposite end connected to said point of pivotal connection between said first-mentioned lever and said first-mentioned link, said first-mentioned lever and said first-mentioned link respectively extending oppositely from said vertical link; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 31st day of August, 1903.

ROBERT S. FLEMING.

Witnesses:

GALES P. MOORE,
GEORGE BAKEWELL.