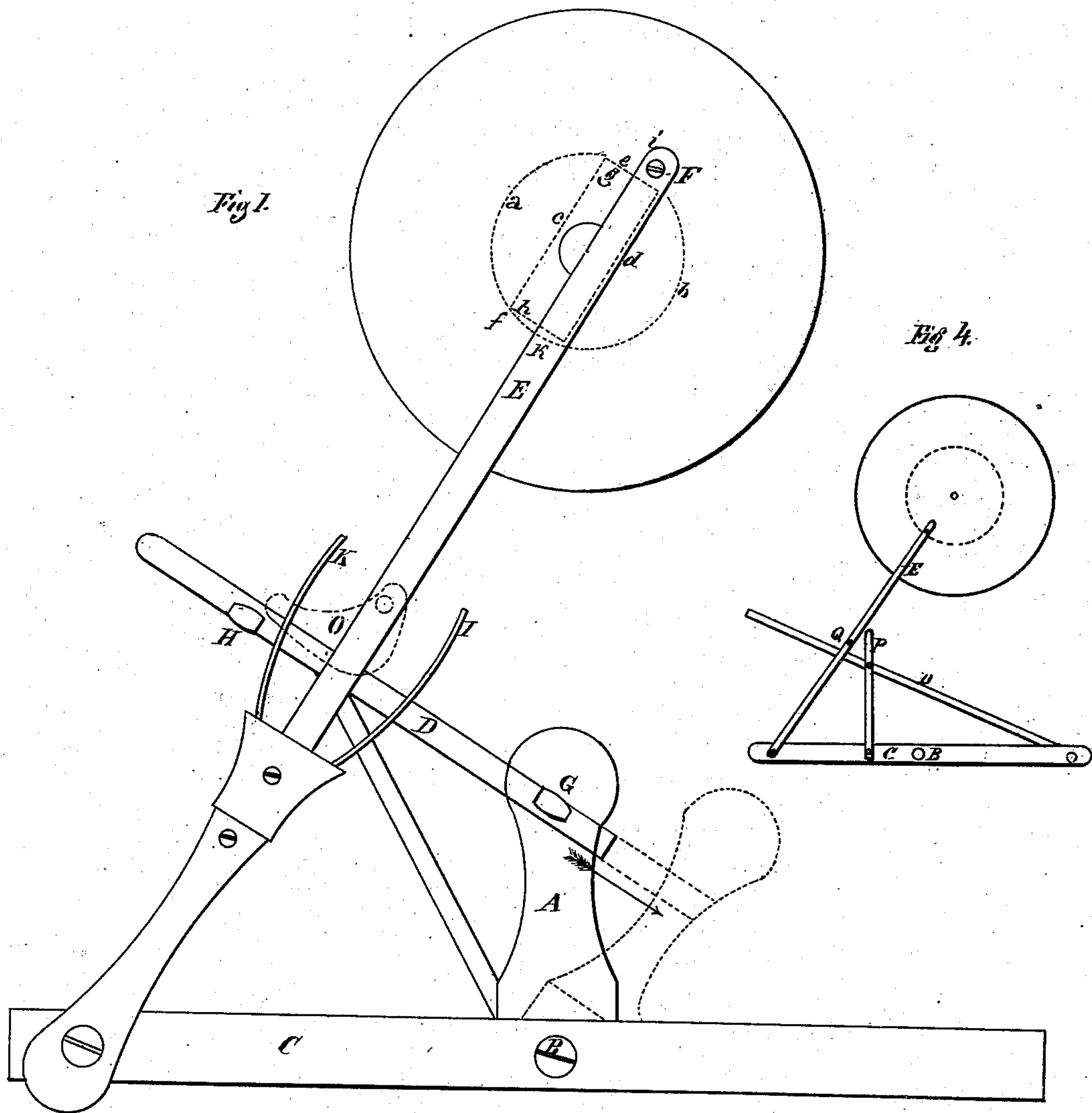


C. L. FLEISCHMANN.
Device for Overcoming the Dead Points of Cranks.
No. 228,185. Patented June 1, 1880.



Witnesses
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G. W. Spraul

Inventor:
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Fig 2.

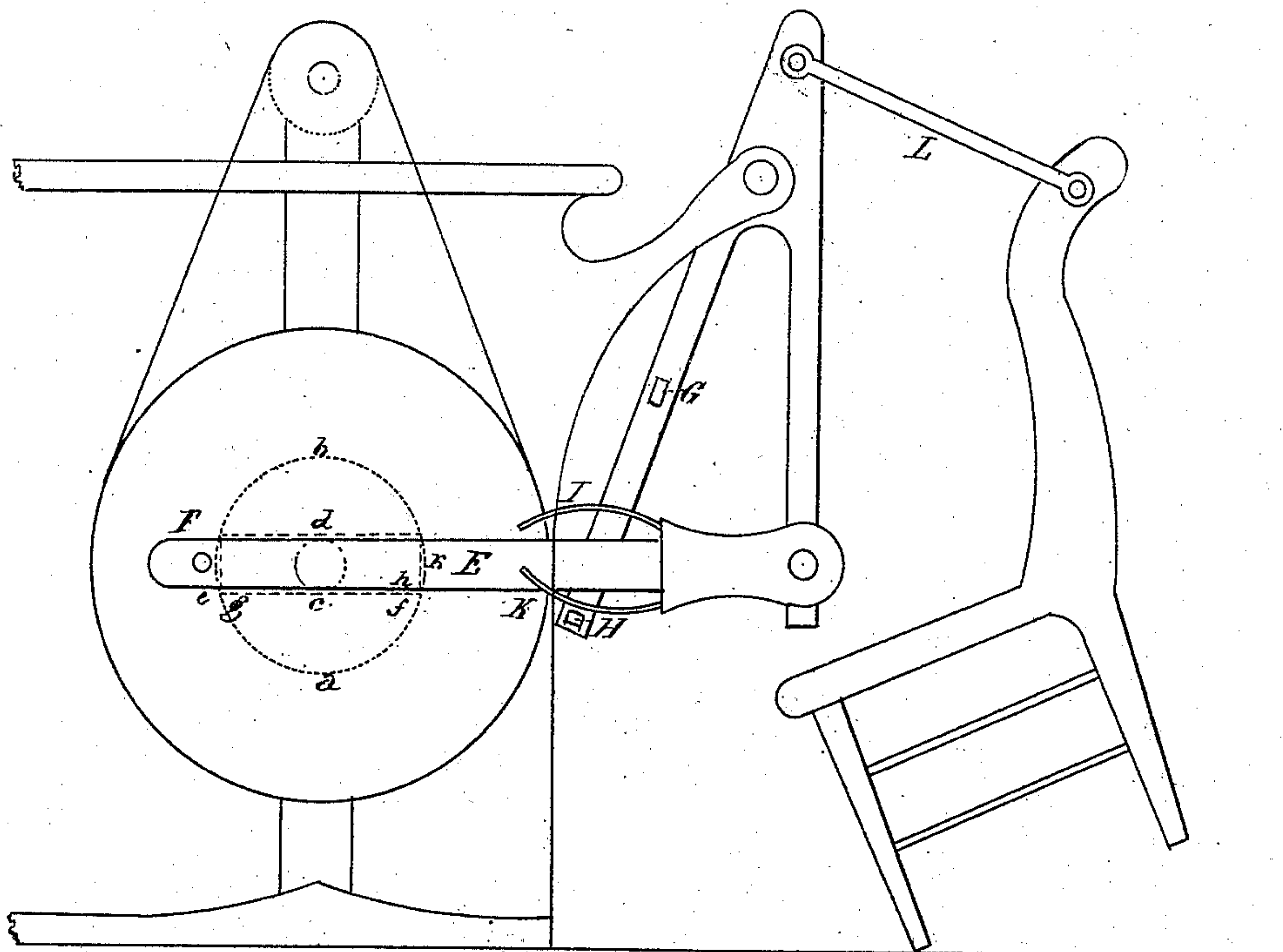
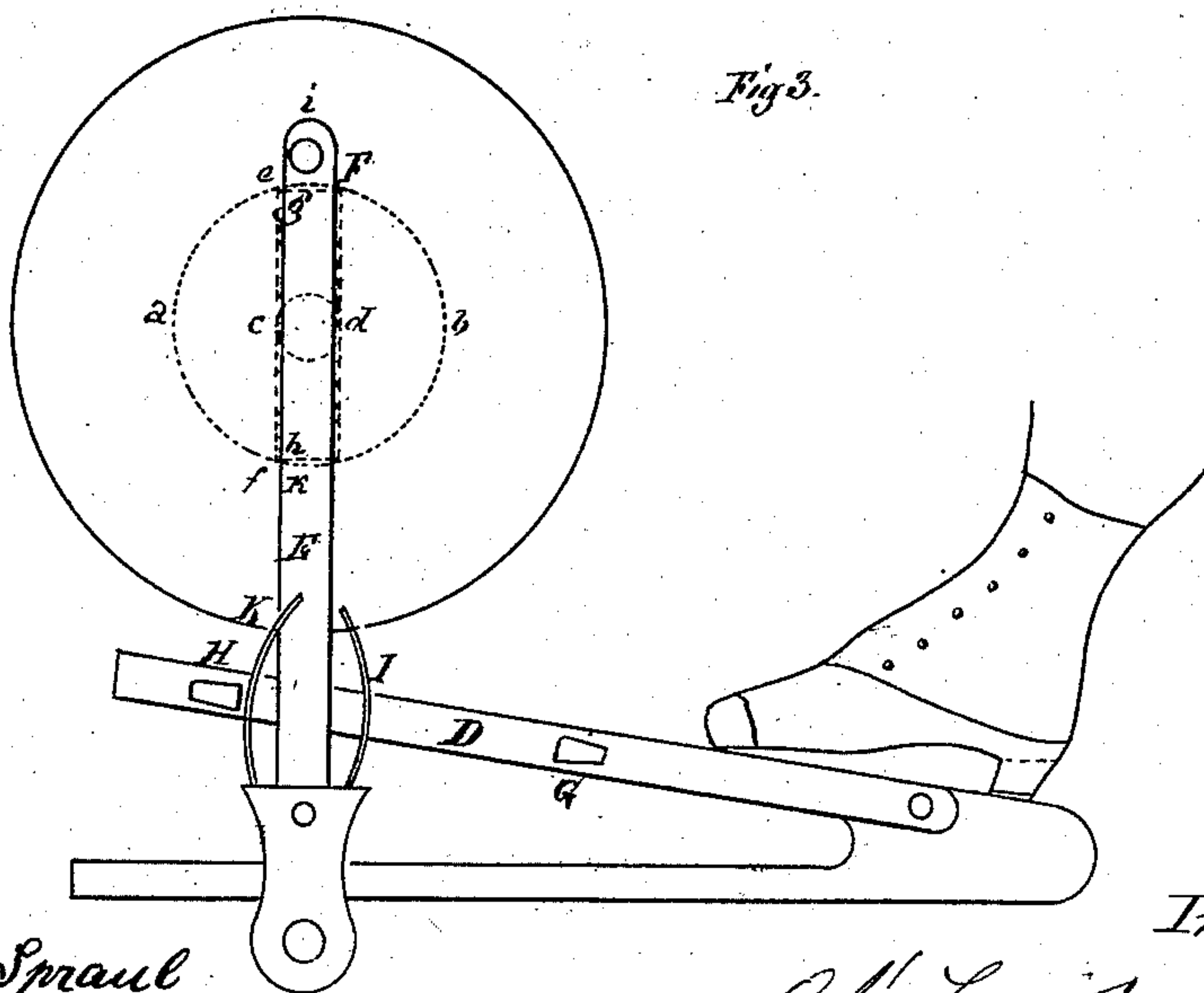


Fig 3.



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CHARLES L. FLEISCHMANN, OF WASHINGTON, DISTRICT OF COLUMBIA.

DEVICE FOR OVERCOMING THE DEAD-POINTS OF CRANKS.

SPECIFICATION forming part of Letters Patent No. 228,185, dated June 1, 1880.

Application filed October 20, 1879.

To all whom it may concern:

Be it known that I, CHARLES LOUIS FLEISCHMANN, of the city of Washington, in the District of Columbia, have invented a new and useful Improvement in Overcoming the Dead-Point of Cranks; which improvement is fully set forth in the following specification, reference being had to accompanying drawings, in which similar letters of reference indicate like parts.

Figure 1 represents a side view of the treadle mechanism. Fig. 2 represents a modification. Fig. 3 represents my invention applied in a horizontal position connected to a chair, and Fig. 4 represents another modification.

The object of my invention is to assist the pitman with the necessary power to push the crank over the dead-point. Before I describe the mechanism which effects that object it is necessary to describe more fully the movement of the crank and that of the pitman. While the crank describes in its sweep a regular circle, the pitman follows that circle over two larger arcs with vertical chords and over two smaller arcs with chords running horizontally. The passage of the larger arcs causes no resistance, having vertical chords; but the greatest resistance is at the middle of the smaller arcs, which is called the "dead-point." In machines where the pitman is not assisted to overcome the dead-points they are liable to come to a full stop, and need continually help to set them again in motion, which causes loss of time and irregularities in the work.

In my improvement the crank receives the necessary assistance at the moment it reaches the junction of chords of the larger arcs with those of the lesser ones. At those points the crank receives a new supply of power, which pushes it with ease over the entire lesser arc. The power which is required to push the crank over the lesser arcs is very small, because the pitman is in the ascending or descending movement on the larger arcs. It needs only a slight pressure to force it over the critical points.

In the drawings, the larger arcs are marked *a b*, their chords with *c d*, the smaller arcs with *e f*, their chords with *g h*, and the dead-points with *i k*.

The improvement illustrated in the accom-

panying drawings represents an application to a treadle of a sewing-machine. C is the treadle or working-beam; A, the upright, which is firmly fixed to the treadle on that side where the pitman F is located. The upright A stands over the rocking shaft B. It may be inclined, as shown in dotted lines, in order to bring a part of the weight on the back part of the treadle. The upright A is only two inches or more in length, and has on the upper part an arm, D, which extends in the direction of the pitman E, forming with the upright an angle of thirty degrees, or thereabout. The arm D has two pins, G H, which work the springs I K, fastened to the sides of the pitman. This constitutes the whole mechanism which produces the important result.

Operation: In the descending movement of the treadle C the upright A and the arm D are drawn toward the pitman F near the junction of the chord *d h*. There the point strikes the spring I, forcing the crank F over the dead-point *k* onto the larger arc *a*, where the crank ascends, and when it reaches the junction of the chords *c* and *g* the upright A is then on its back motion in the direction of the arrow, and it brings the pin H in contact with the spring K, which pushes the pitman E and the crank F over the dead-point *i*. The pitman follows the larger arc *b* and continues its downward movement. When it arrives at the junction of the chords *d h* it is met again by the pin G, which pushes the spring I and the pitman E over the dead-point *k*, and in that way it continues a uniform regular motion, which is less fatiguing to the operator.

When the treadle is stopped the crank has already been carried over the dead-points. Consequently it needs no extra effort to start the machine. A slight pressure on the treadle sets it in motion, and always in the right direction, which is of great importance, as the machine has to be stopped very often, which requires always some time, to get the crank of ordinary machines in the right position to set it again in motion.

In most of the sewing-machines the pitman forms with the treadle an acute angle, which causes considerable resistance. In order to work such machines to greater advantage, (see Fig. 3,) I place the pitman E with the springs

I K in a vertical line with the center of the sweep of the crank F, as represented in Fig. 1.

The working-beam and arm D have the fulcrum next to the pin G.

5 When the treadle is set in motion the pitman moves vertically, and the pins G H push the crank with great ease over the dead-points, producing a regular motion, which is considerably less fatiguing to the operator than
10 treadles with pitmen at acute angles.

To work the machine without treadle, as illustrated in Fig. 2, I place the working-beam with the arc D and pins G H on a fulcrum near the top of the table, so that the pitman
15 E stands in a horizontal line with the center of the sweep of the crank F. The rod L is joined by a pin to the back of a chair. The chair stands inclined on its fore legs, so that by a slight motion of the body of the operator
20 the machine is set in motion. This modification may also be used in connection with the treadle. The operator is thus enabled to work the machine either with the foot or body, as he finds it convenient.

25 For heavy machines I use, instead of the springs I K, a cam, O, (illustrated in dotted lines, Fig. 1.) The cam O is fastened to the pitman E, when, by the oscillation of the arm D, the pin G is brought in contact with the
30 cam O and the crank F pushed over the dead-point k. The oscillating arm now rises again and moves the cam O over the pin H, which lifts the cam O over the dead-point i, and as the pitman descends the pin G comes again

in contact with the cam O and acts as above 35 described.

The dead-point may be overcome without the use of the springs I K and the pins G H—namely, by connecting the arm D with the vertical rod P at or about right angles, which
40 fulfill the office of the pins G H, as shown in Fig. 2, and by providing the pitman E with a pin, Q, which projects over arm D, as shown in Fig. 4. When the arm D rises the pin is carried to the extremity of said arm. It pushes
45 the pitman over the upper dead-point, and when the pitman descends the vertical rod P pushes the pitman E over the lower dead-point.

To prevent the noise which the striking of
50 the vertical rod against the pitman produces, I place a piece of india-rubber or any other elastic substance where the rod comes in contact with the pitman.

I claim—

1. The manner of assisting the pitman over the dead-point by means of two springs, I K, or a cam, O, substantially as described. 55

2. The upright A, or equivalent, in combination with the treadle or working-beam C. 60

3. The oscillating arm D on the upright A, with the pins G H, to actuate the springs I K or cam O, substantially as described.

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