

J. C. BUTTERWORTH & B. ARNOLD.
CONVERTING MOTION.

No. 32,749.

Patented July 9, 1861.

Fig: 3.

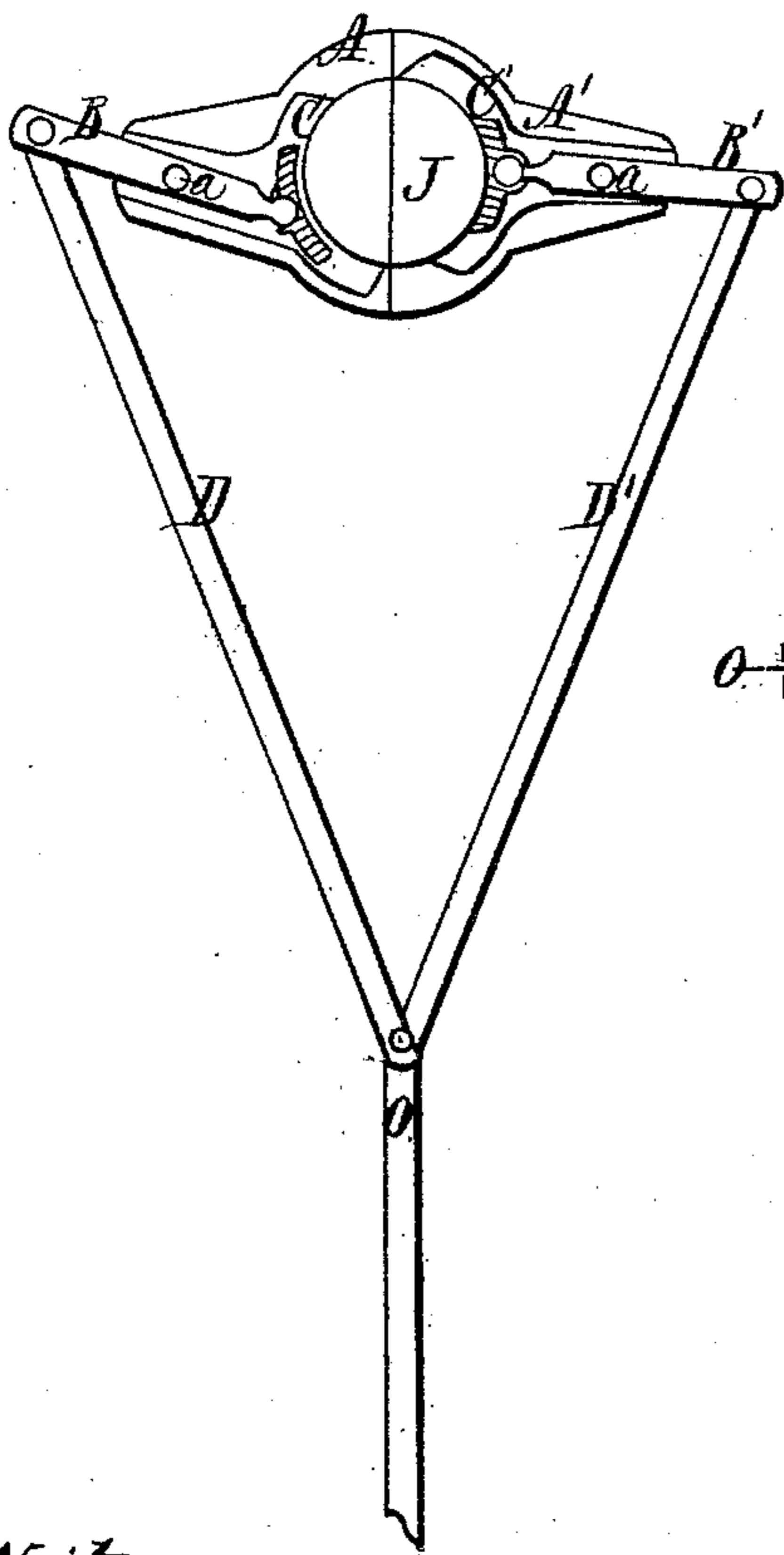


Fig: 1.

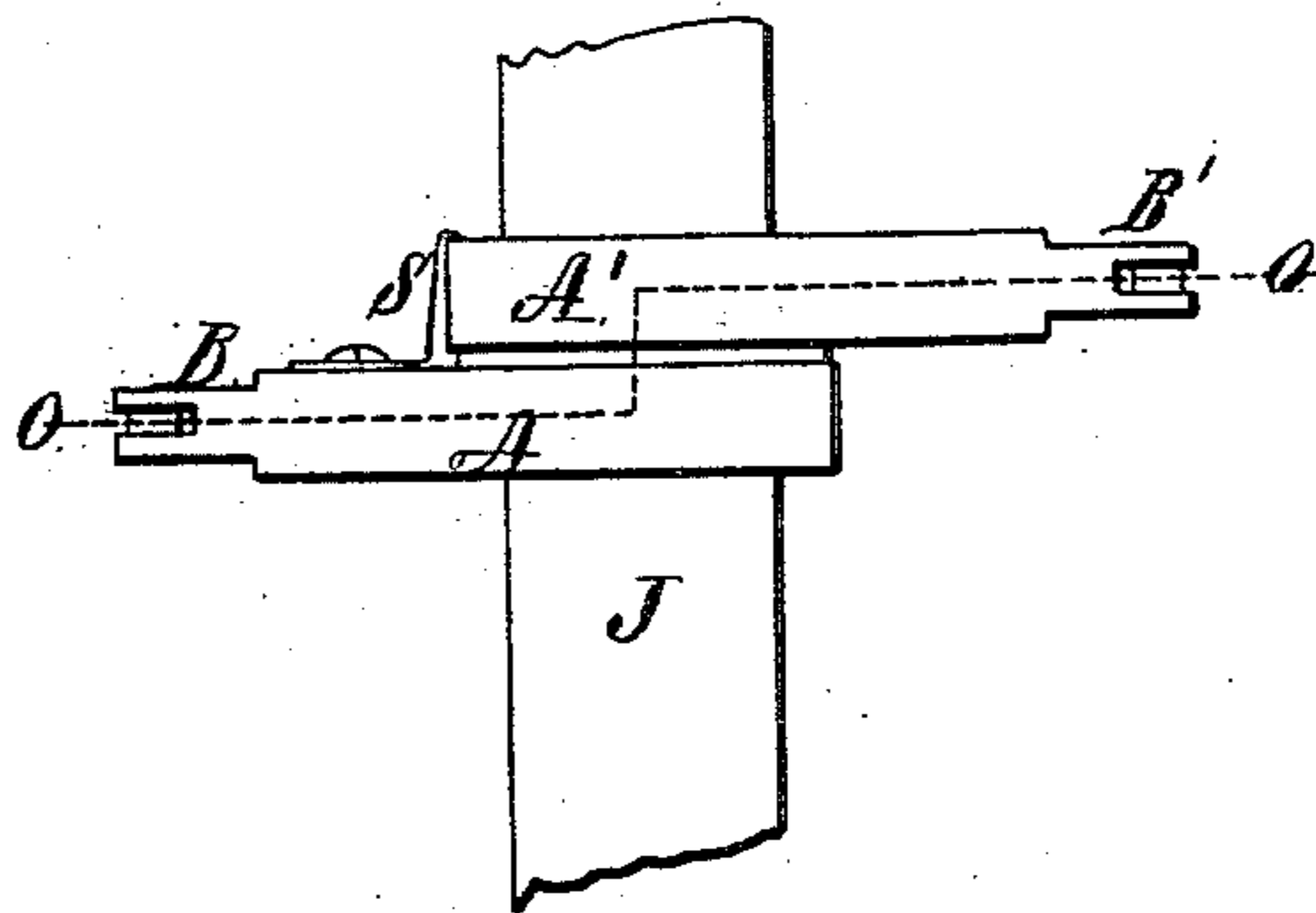
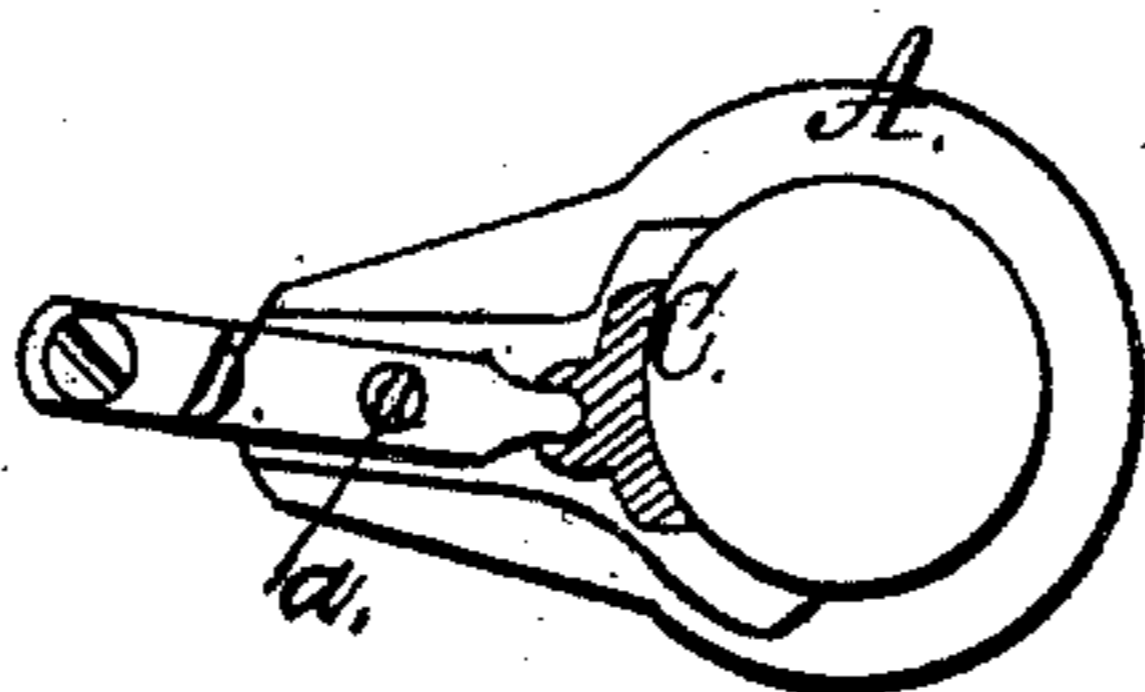


Fig: 2.



Witnesses
Silas Weaver
Simcon Weaver

Inventors:

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UNITED STATES PATENT OFFICE.

J. C. BUTTERWORTH AND B. ARNOLD, OF PROVIDENCE, RHODE ISLAND.

CONVERTING RECIPROCATING INTO ROTARY MOTION.

Specification of Letters Patent No. 32,749, dated July 9, 1861.

To all whom it may concern:

Be it known that we, JAMES C. BUTTERWORTH, of the city and county of Providence, in the State of Rhode Island, and BENJAMIN ARNOLD, of East Greenwich, in the county of Kent, in the State aforesaid, have invented a new and Improved Device for Converting Motion or Substitute for the Crank; and we do hereby declare that the following is a full and correct description thereof, reference being had to accompanying drawings and to the letters of reference marked thereon.

In these drawings Figure 1 represents a top view of whole device. Fig. 2 is a view of one of the parts or cases, open to show the inside. Fig. 3 is vertical section through both parts, taken in the direction of the red line O O in Fig. 1.

As the machine is composed of two parts entirely alike in their structure, the description of one of these parts will answer for both.

The case A, Fig. 2, is made with a hole in the center of large circular part for the shaft J, which is to be driven by the motion, and at a proper distance from this hole, in the cavity of that part of the case that projects from the circle, is pivoted the lever B, by the pin *a*. Between the inner end of this lever, and the shaft, is placed a foot-piece C, having a concave surface next to the shaft; this foot-piece may be entirely separate from the lever, or it may be secured to it by a riveted joint, or by a head and socket, as shown in the drawings. This foot-piece C, is not absolutely necessary for the working of the machine, but it greatly improves it by increasing the hold upon the shaft, and enlarging the surface that is likely to wear; for if the end of the lever bore directly upon the shaft, it would have to be hardened to prevent it from soon wearing off too short; and if made hard, it would be likely to indent the shaft and spoil it. The advantage of fastening the foot-piece to the lever is, that it will be drawn away from the shaft when the lever is thrown back, and thereby prevent unnecessary friction. Two of these cases A, A', provided with similar levers &c., as above described, are placed upon the shaft J, Fig. 1, one of them A', being in a

reversed position, and having its lever B', projecting from the other side of the shaft. The outer ends of the levers, are connected by means of the two short rods D, D', to the treadle rod O, from which the motion is received. In order to make the levers press the footpieces against the shaft, it is necessary that there should be a slight resistance at the pivots *a*, so that the cases, shall not move until the foot-pieces have brought up against the shaft; to accomplish this, a friction is created between the two cases, (which always move in opposite directions) by the spring *s*, or in some other suitable way.

The operation is as follows: When the rod O, is pushed up, the first part of the motion, owing to the friction between the two cases, is taken up by the levers, until lever B, has moved back its foot-piece from the shaft J, and lever B', has pressed its foot-piece against the shaft, so as to turn it as the cases move, in the direction shown by the arrow (Fig. 3). When the rod O, is pulled down, the action of the levers is reversed and lever B, moves the shaft in the same direction as before. Thus by the alternate action of the two cases &c., a continuous rotary motion is given to the shaft J, by a reciprocating motion of the rod O; if it should be found necessary to increase the friction of the foot-pieces upon the shaft, they can be recessed on their faces, and the recess filled with emery and rubber or other suitable material.

Having thus described our machine, what we claim as our invention and desire to secure by Letters Patent is:

1. The use and employment of the combination of the lever, footpiece, and case, substantially as described and for the purpose herein set forth.

2. Combining the cases substantially as described, so that the levers and footpieces, shall be made to act, by the friction created between the cases for the purpose set forth.

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BENJAMIN ARNOLD.

Witnesses:

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SIMEON WEAVER.