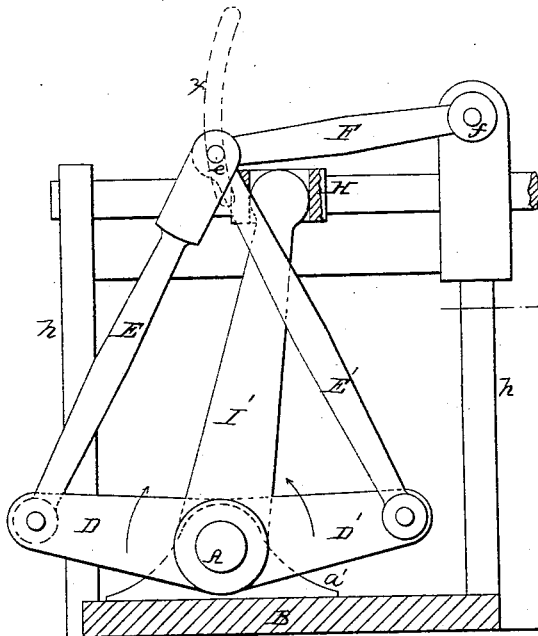
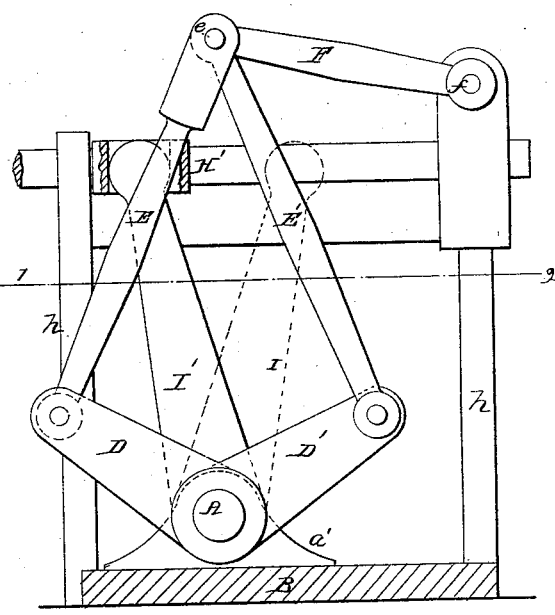


*P. J. Smith,*  
*Mechanical Movement,*  
*No 54,972,* *Patented May 22, 1866.*

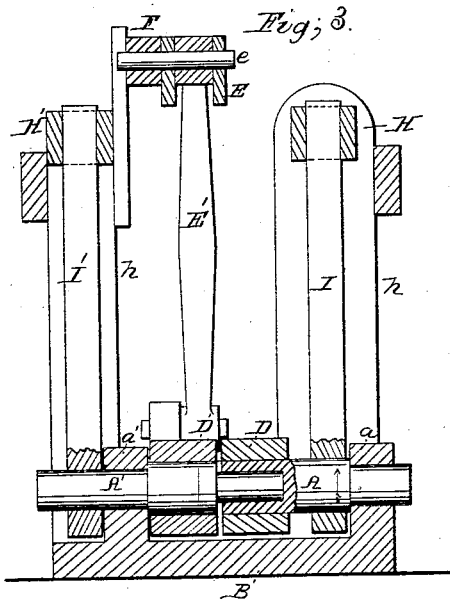
*Fig; 1.*



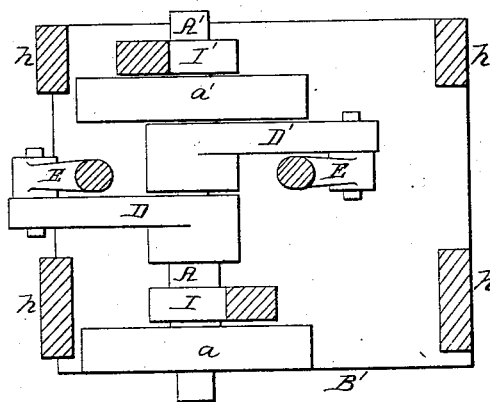
*Fig; 2.*



*Fig; 3.*



*Fig; 4.*



*Witnesses;*  
*Wm. H. Lusk*  
*J. K. Appleton*

*Inventor;*  
*P. J. Smith*  
*By his Atty*  
*J. H. Howson*

# UNITED STATES PATENT OFFICE.

PETER J. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. 54,972, dated May 22, 1866.

*To all whom it may concern:*

Be it known that I, PETER J. SMITH, of Philadelphia, Pennsylvania, have invented a new Mechanical Movement; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of two shafts and certain arms and rods, arranged and operating, substantially as described hereinafter, for the purpose of imparting a simultaneous vibrating motion to the said shaft, one in one direction and the other in the opposite direction, without the aid of the usual complex, costly, and otherwise objectionable cog-gearing heretofore employed for effecting the same purpose.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe the manner in which it may be carried into effect.

On reference to the accompanying drawing, which forms a part of this specification, Figures 1 and 2 are side views of my new mechanical movement; Fig. 3, a transverse vertical section; and Fig. 4 a sectional plan on the line 1 2, Fig. 1.

Similar letters refer to similar parts throughout the several views.

A and A' are two shafts, the former turning in a suitable bearing, *a*, on the base B of a frame, and the latter in a similar bearing, *a'*, on the same base, the end of the shaft A' projecting into and turning in the shaft A, so that the two shafts may steady each other.

To the shaft A is secured an arm, D, and to the shaft A' is secured a similar arm, D'. The arm D is connected by a rod, E, to a pin, *e*, on the outer end of a radius-rod, F, the inner end of which is jointed to a pin, *f*, secured to a permanent part of the frame, the arm D' being connected by a rod, E', to the pin *e* of the same rod.

On moving the arm D in the direction of the arrow, Fig. 1, the outer end of the radius-rod F will be elevated, its pin *e* moving in the arc of a circle of which the fixed pin *f* is the center, and this movement must cause the arm to move in the direction of its arrow. Hence

on vibrating one arm a similar and simultaneous vibration must be imparted to the other, and the two shafts must turn simultaneously in their bearings, but in contrary directions.

The same result will be attained if the radius-rod F be dispensed with and the pin *e* be guided by a curved slot, *x*. (Shown in dotted lines, Fig. 1.)

Heretofore when a motion in contrary directions to each other had to be imparted to two adjacent shafts it has been usual to employ gearing of an objectionable character, owing to its weight, complexity, and cost, and to the lost motion, which is always an objection to the use of cog-wheels in imparting vibrating motion.

The mechanism described may be used in a variety of machines. In the present instance it is illustrated in connection with the two rods or plungers H and H' of a brick-machine, the rods being arranged to slide in the standards *h h* of the frame, and the rod H being operated through the medium of an arm, I, on the shaft A, and the rod H' through the medium of an arm, I', on the shaft A'.

On vibrating one arm a similar vibration, but in a contrary direction, will be imparted to the other. Hence a simultaneous reciprocating motion, in contrary directions to each other, must be imparted to the rods H and H'.

It is not absolutely necessary that the two shafts A and A' should be in line with each other. One may be situated below or alongside the other, providing they are not too far apart.

I claim as my invention and desire to secure by Letters Patent—

The combination of the two shafts A and A', arms D and D', rods E and E', and the radius-rod F, the whole being arranged and operating substantially as and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER J. SMITH.

Witnesses:

CHAS. B. PRICE,  
H. HOWSON.