

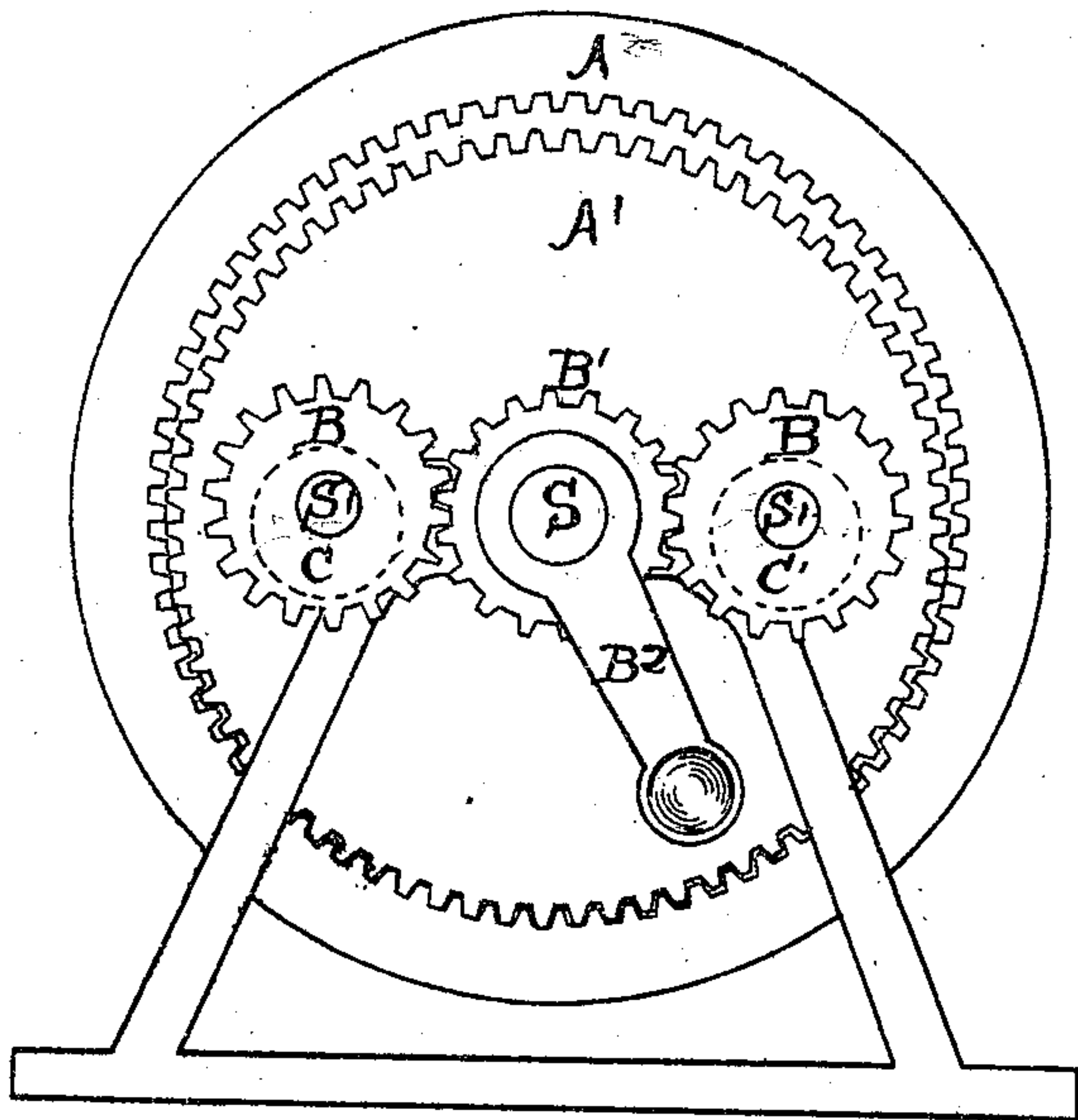
*A. W. Browne.*

*Mechanical Movement.*

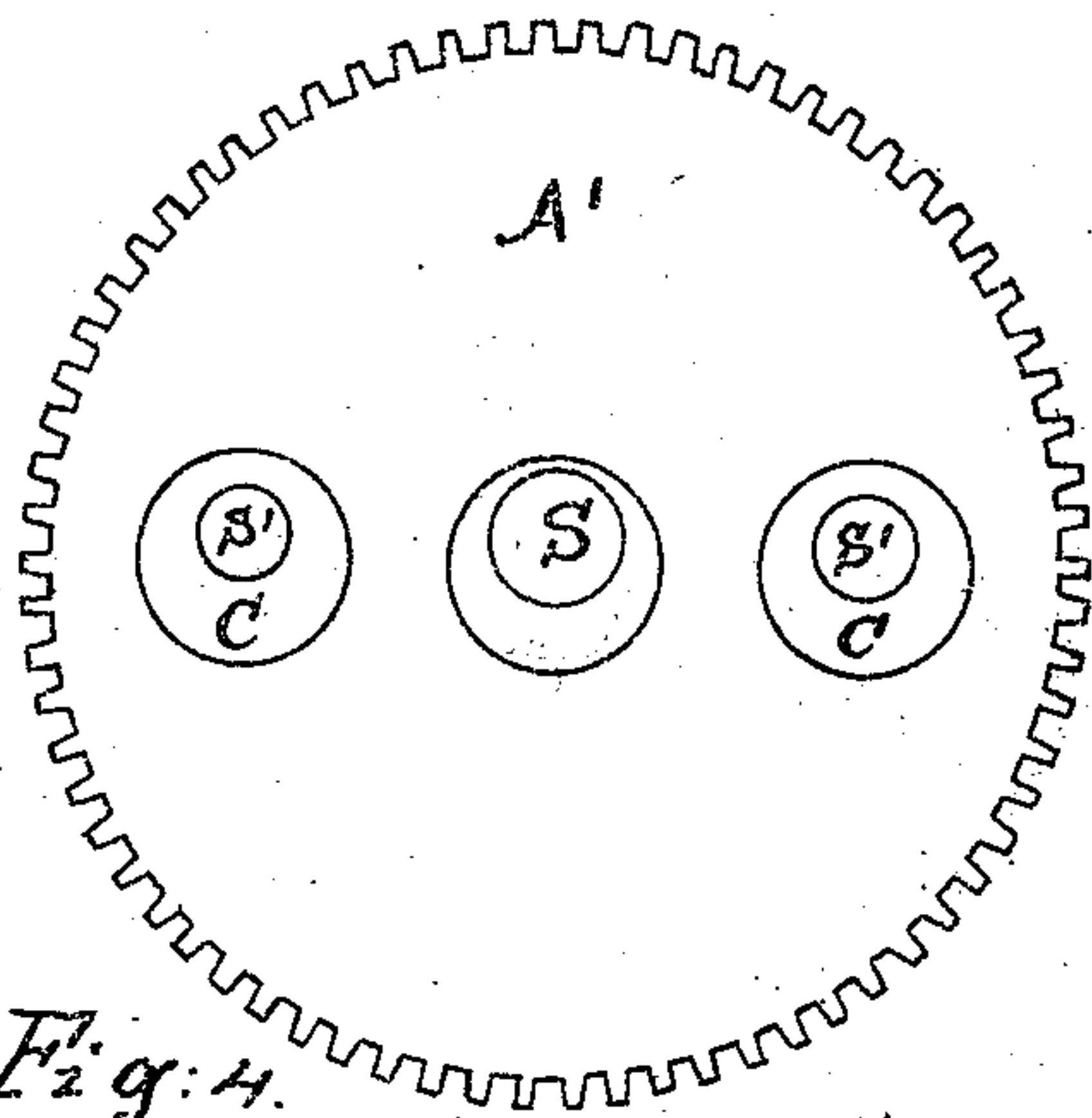
*Nº 72792*

*Patented Dec. 31, 1867.*

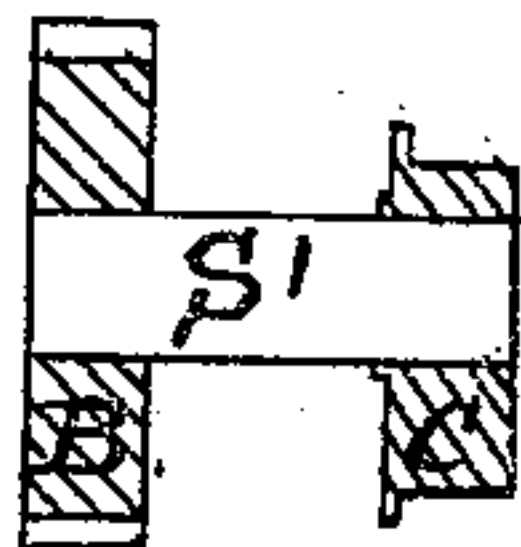
*Fig: 1.*



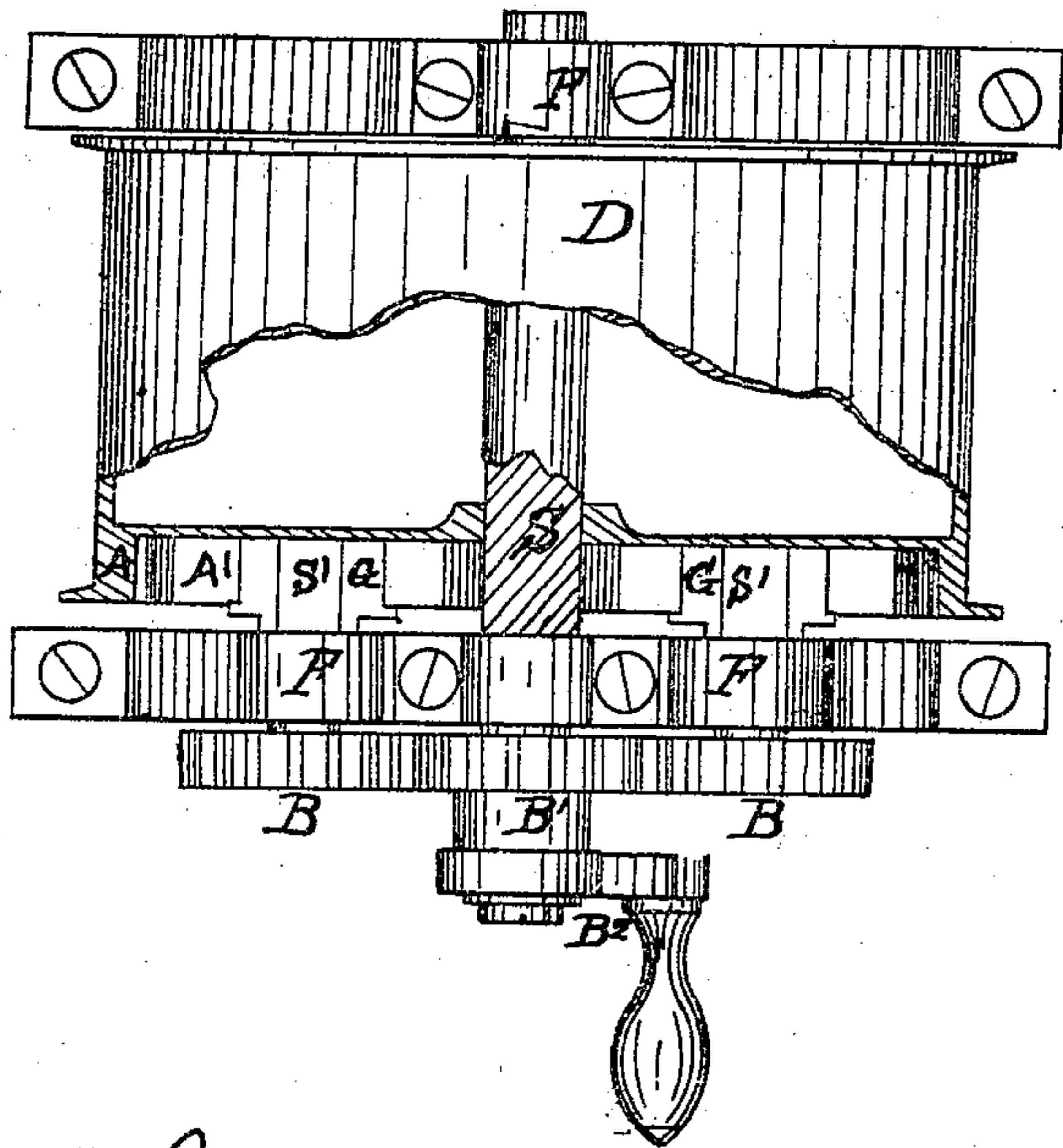
*Fig: 3.*



*Fig: 4.*

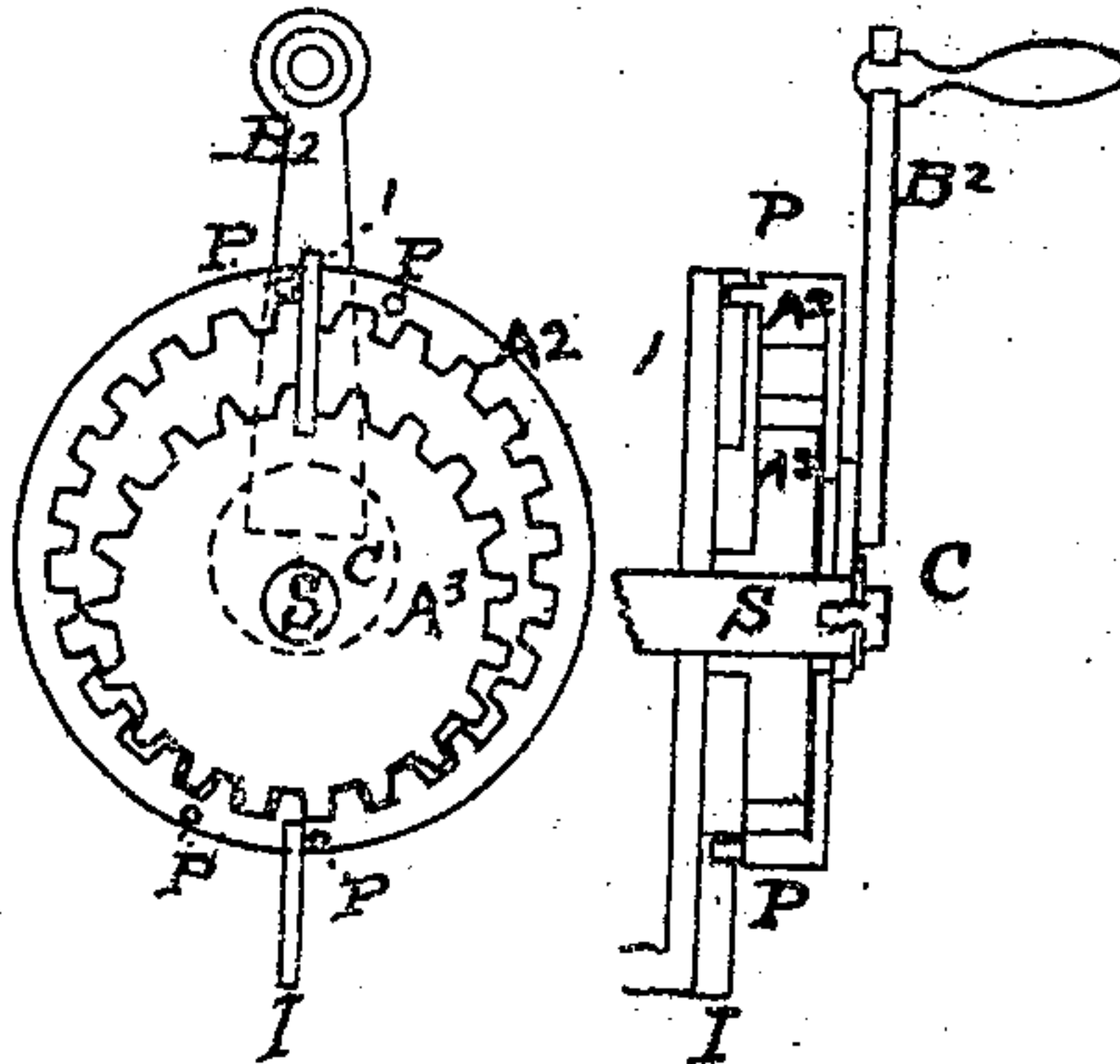


*Fig: 2.*



*Fig: 5.*

*Fig: 6.*



*Witness*

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Wm. G. Goodwin.*

*Inventor*

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# United States Patent Office.

ARTHUR W. BROWNE, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF  
AND CHARLES R. SQUIRE, OF NEW YORK CITY.

*Letters Patent No. 72,792, dated December 31, 1867.*

## IMPROVEMENT IN MECHANICAL MOVEMENTS.

*The Schedule referred to in these Letters Patent and making part of the same.*

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ARTHUR W. BROWNE, of the city of Brooklyn, in the county of Kings, and State of New York, have invented a new and useful Mechanical Movement for Converting Speed into Power, to be employed for hoisting, drawing, and driving purposes, and for all purposes when such movement, apparatus, and power are required and can be applied; and I declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a side view of a hoisting-machine embodying my invention, showing the relative positions of several parts of the apparatus when put together and ready for use, the positions of the cams C being indicated by dotted lines.

Figure 2 is a sectional view of parts of the same apparatus, the section being cut through the centres of the plate A<sup>1</sup>, cams C C, and shafts S and S<sup>1</sup> S<sup>1</sup>, showing the manner in which the several parts are attached to each other.

Figure 3 is a detached view of the toothed plate or disk A<sup>1</sup> and sections through the cams C C and shafts S<sup>1</sup> S<sup>1</sup> and S, also showing the enlarged hole in the centre of the plate through which passes the shaft S.

Figure 4 is a detached sectional view of the shaft S<sup>1</sup>, cam C, and gear-wheel B. The section being through the centre of the pieces shows the manner in which the same are put together.

Figure 5 represents a side view of a machine embodying the same principles of my invention, in which the external flanged plate A<sup>2</sup> is the driving-plate in which the internal wheel A<sup>3</sup> is made to revolve. The positions of the crank B<sup>2</sup> and cam C<sup>1</sup> are indicated by dotted lines.

Figure 6 is a section through the same machine shown in fig. 5, showing the manner of its construction.

Similar letters indicate corresponding parts in the several figures.

My invention consists in a new mechanical movement, the mechanical arrangement of the apparatus of which makes a simple and powerful machine for converting speed into power, which machine can be applied for hoisting, drawing, and driving purposes, and for all other purposes where such movement and machine can be applied and used.

I will now proceed to describe the construction and operation of my invention, referring to the accompanying drawings.

Letter A represents a flanged wheel, the flange of which projects on one side, and forms a recess, in which the plate A<sup>1</sup> is secured and operated. The inner surface of the flange on the wheel A is provided with teeth or cogs, which mesh or gear with the corresponding teeth or cogs on the outer surface or periphery of the plate A<sup>1</sup>, making an internal gear.

Letter A<sup>1</sup> is a disk or plate having teeth or cogs on the outer surface or periphery made to correspond and mesh with the internal cogs of the wheel A, and having holes arranged on a line drawn through the centre of plate, one on each side of the centre, into which the cams C C are fitted, and one in the centre, through which the main shaft S passes.

Letters B B are gear-wheels on the outer ends of the short shafts S<sup>1</sup> S<sup>1</sup>, which, being driven by the gear-wheel B<sup>1</sup> on the shaft S, serves to impart motion through the shafts S<sup>1</sup> S<sup>1</sup> and cams C C to the plate A<sup>1</sup>.

Letter F is journal-boxes on the frame which serve as bearings for the shafts.

Letter D is a drum attached to the revolving wheel A, on which a rope or chain may be used.

Letters P and I are pins and ribs shown in figs. 5 and 6, which serve to hold the external flanged gear-plate from turning.

Letter A<sup>2</sup> is the driving-plate and A<sup>3</sup> the revolving wheel. The same principle may be applied by placing the cams or cam C in the external plate A<sup>2</sup>, and thus changing it to the driving-power and attaching the drum or shaft to the wheel A<sup>3</sup>, which arrangement causes the internal instead of the external wheel to revolve, as seen in figs. 5 and 6.

Having thus described and shown by drawings the manner of constructing my machine, I will proceed to describe its operation, referring to the drawings.

The shaft S, having its journal-bearings in the boxes F on the frame, forms the pivot and means of support



for the revolving wheel and drum, and having one end projecting out through the box F on the outside of the frame, forms a receptacle and means of support for the wheel B<sup>1</sup>, to which the crank or driving-pulley is attached. The wheel B<sup>1</sup> being mounted on and having its journal-bearings on the projecting end of the shaft S, rotates around and to the reverse of the shaft. The wheels B B being in gear with the wheel B<sup>1</sup>, are rotated by the same, and being mounted on the outer ends of the short shafts S<sup>1</sup> S<sup>1</sup>, on the inner ends of which are mounted the cams C C, serve to rotate the cams, revolving them in the same direction with the wheels B B. The cams C C being fitted into corresponding holes in the plate A<sup>1</sup>, as seen in figs. 1, 2, and 3, serve to operate the plate A<sup>1</sup>, the revolving of the cams giving to the driving-plate an eccentric movement, causing it to move about in the circle of and in gear with the wheel A, and by means of the two cams, arranged one on each side of the centre, the plate is held from turning, and a uniform movement to both the driving-plate and revolving wheel is obtained.

The external revolving wheel A, as arranged in figs. 1 and 2, has seventy-two teeth or cogs, and the plate A<sup>1</sup> has seventy corresponding teeth or cogs, which mesh with the cogs in the wheel A, the difference in the number of teeth being two, and the difference in the diameters of the wheel A and plate A<sup>1</sup> being precisely the same as the throw of the cams C, which cams are so arranged on the shafts S<sup>1</sup> S<sup>1</sup>, and in the plate A<sup>1</sup>, and in relation to the circle of the wheel A, that the plate A<sup>1</sup> is always held in gear with the wheel A on the side towards which the cams project, and at the same time drawn out of gear on the opposite side from which the cams are thrown. The plate A<sup>1</sup> is supported and operated by the cams C C. The rotating of the cams causes the plate A<sup>1</sup> to move about in the wheel A. The plate A<sup>1</sup> having a less number of teeth, and being smaller in diameter than the wheel A, draws out of and enters into gear with the wheel A, causing it to move around. One revolution of the cams C C moves the plate A<sup>1</sup> about in the wheel A one time, gaining the difference in the number of teeth, which in this case is two, as shown in figs. 1 and 2, moving the wheel A and drum D the distance or space of two teeth for every revolution of the cams. Thus when the number of teeth is seventy-two in the wheel A and seventy on the plate A<sup>1</sup>, thirty-five revolutions of the cams are required to produce one revolution of the wheel A; or, if one tooth should be added to the plate A<sup>1</sup>, making the difference of but one tooth, then the number of revolutions of the cams would be doubled, requiring seventy revolutions of the cams to produce one revolution of the wheel A; or if the difference in the number of teeth were three, then twenty-three revolutions of the cams would be required to produce one revolution of the wheel A. If the difference in the number of teeth contained in the wheel and plate is but one, the cams have but little throw, only sufficient to hold the plate in gear on one side and disengage it from the other, which movement causes the plate to gain the one tooth, by which means great power is obtained.

The driving-plate being mounted on and operated by the cams, does not revolve or roll into gear like a common gear-wheel, but, having an eccentric movement imparted to it by the rotating of the cams, which causes its teeth to slide into gear with the teeth of the revolving wheel on one side, while the same movement disengages them from the other, this movement continues all around the revolving wheel, heaving or pushing it around, thus revolving the wheel and drum or shaft or other appliances attached to it.

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

1. The wheel A, plate A<sup>1</sup>, shafts S<sup>1</sup> S<sup>1</sup>, and cams C C, or their equivalent, arranged to operate together in the manner and for the purpose substantially as described.
2. The plate A<sup>2</sup>, wheel A<sup>3</sup>, pins P P P P, and ribs I I, arranged to operate together in the manner and for the purpose substantially as described.

Witnesses:

GEO. W. F. RANDOLPH,  
WM. F. GOODWIN.

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