

Browne & Goodwin,
Mechanical Movement.
N^o 81,248. Patented Aug. 18, 1868.

Fig. 2

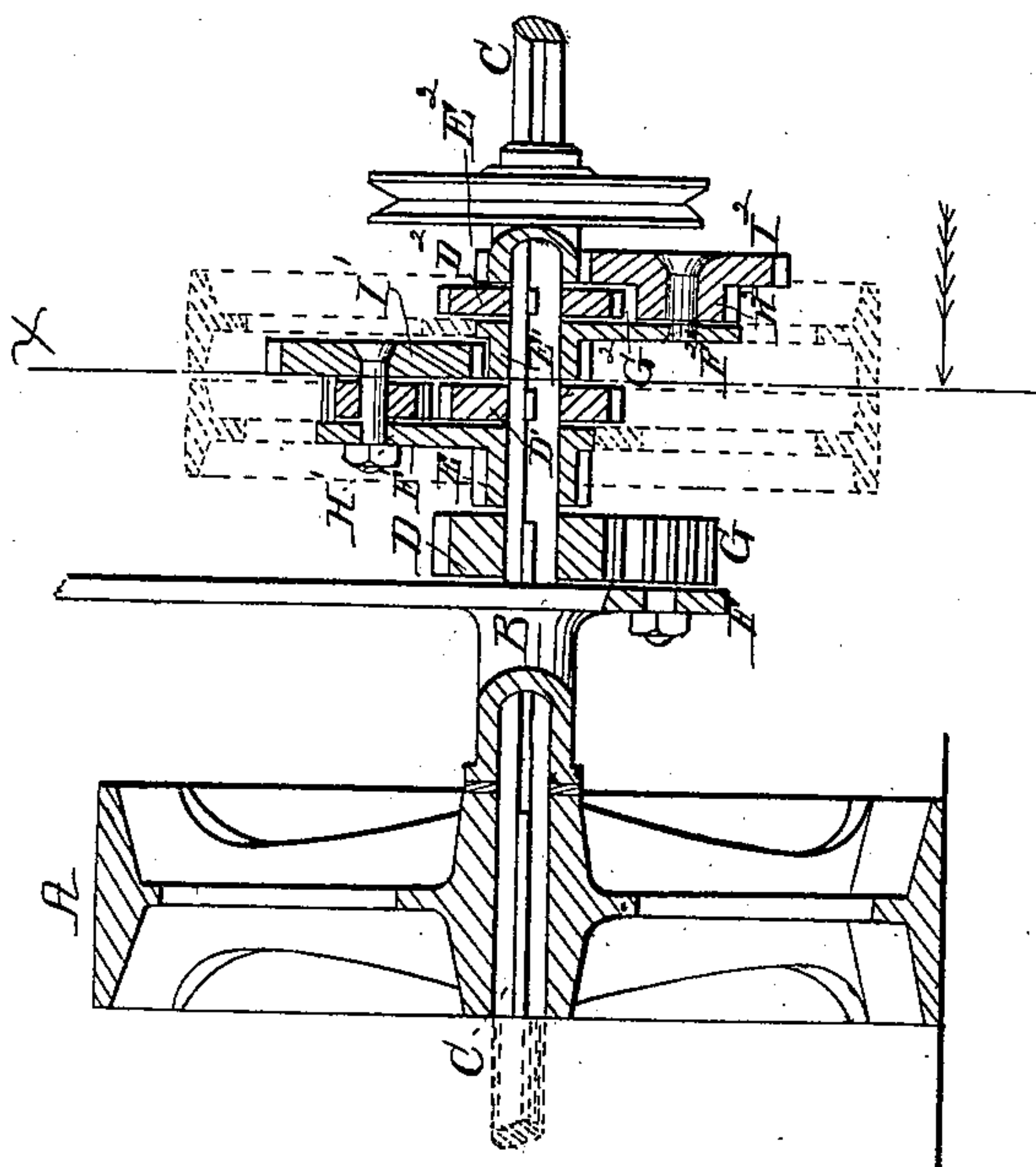
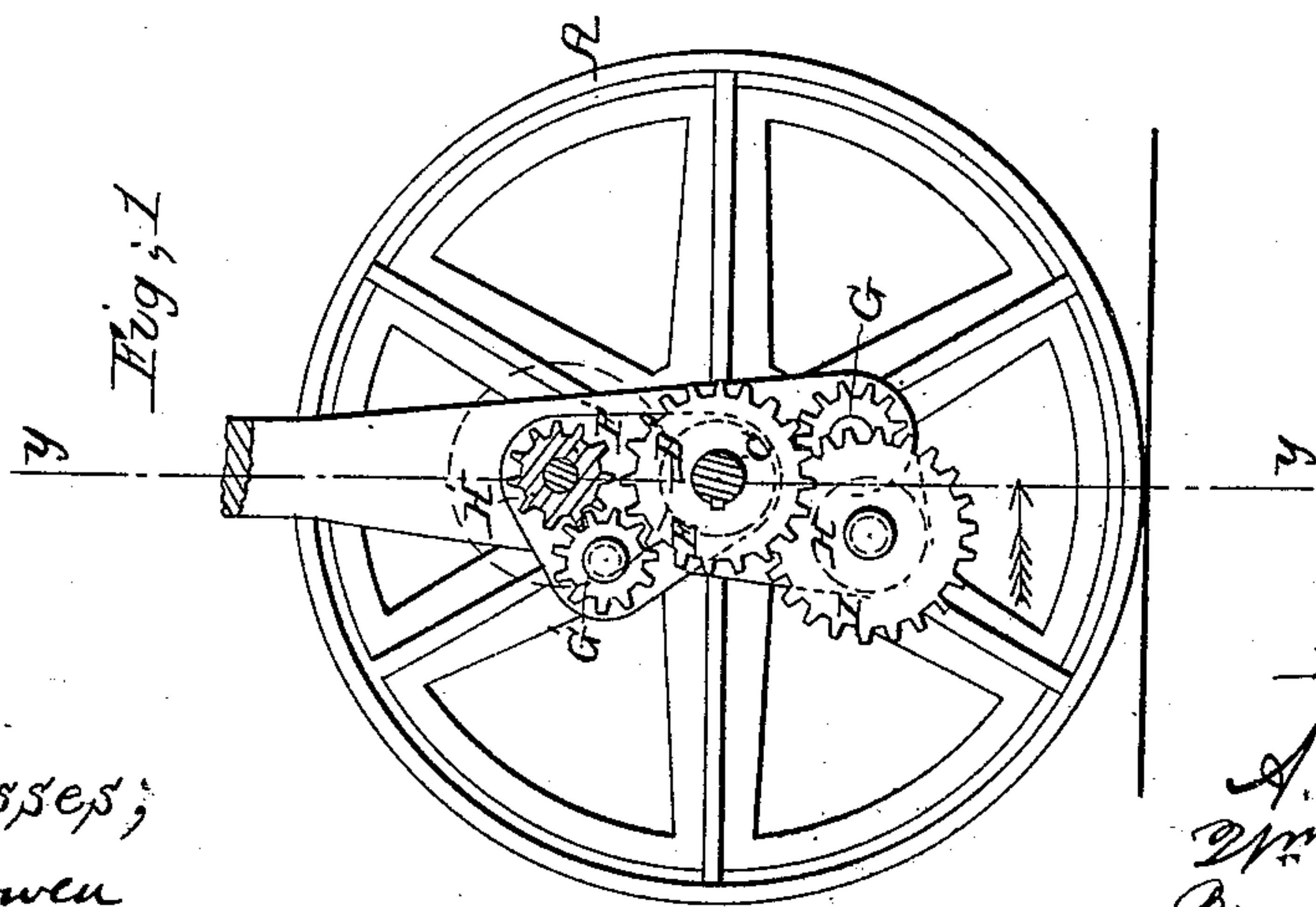


Fig. 1



Witnesses;
J. M. Bowen
A. Goodwin

Inventor;
A. M. Brown
Wm. J. Goodwin
By Knight Bros
Attorneys

United States Patent Office.

ARTHUR W. BROWNE, OF BROOKLYN, AND WILLIAM F. GOODWIN, OF EAST.
NEW YORK, N. Y.

Letters Patent No. 81,248, dated August 18, 1868.

IMPROVEMENT IN MECHANICAL MOVEMENT.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ARTHUR W. BROWNE, of Brooklyn, and WILLIAM F. GOODWIN, of East New York, both in the county of Kings, and State of New York, have invented a new and useful Improvement in Mechanical Movements, for multiplying and transmitting motion or power; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

Figure 1 represents a transverse section at $x x$, fig. 2, of a movement illustrating our invention.

Figure 2 is a sectional elevation of the same, at $y y$, fig. 1.

We employ a shaft, which may or may not be a driving-shaft, having keyed to it a series of cog-wheels, and running loosely upon it, between the said cog-wheels, a series of pinions, carrying arms, on the extremities of which are a pair of geared pinions, one of which meshes with the driving-cog wheel, around which they are carried by the arm, while the other is cast, or rigidly and concentrically attached to a cog-wheel of larger diameter than itself, which gears with the next loose pinion on the shaft, as will be hereinafter explained.

In the drawings—

A may represent a driving-wheel or pulley, of any suitable construction, which may be rotated by any power. C may represent a driving-shaft, mounted in bearings, of which one, B, is shown, and rotated by wheel or pulley A. $D D^1 D^2$ represent cog-wheels, keyed to the shaft C, so as to be rotated therewith. $E E^1 E^2$ are pinions, running loosely on the shaft C, between the cog-wheels $D D^1 D^2$. The pinions $E E^1$ each carry an arm, $F^1 F^2$. Mounted on stud-shafts are a pair of geared pinions, G H, one of which, G, meshes with the cog-wheel D, and communicates to the pinion H rotation in the same direction as that of the wheel D. Attached rigidly and concentrically to the pinion H is a cog-wheel, I, which gears with the loose pinion E^1 , on the main shaft, rotates it around the shaft in an opposite direction. Mounted upon the outer end of the arm F^1 are a second pair of geared pinions $G^1 H^1$, similar to the pinions G H, the pinion G^1 gearing with the cog-wheel D^1 , and the pinion H^1 carrying a concentric gear-wheel, I^1 , of larger size, which is thus rotated in the same direction as the shaft C, and meshes with the second loose pinion E^2 , while all the wheels, $G^1 H^1 I^1$, are, by the arm F^1 , carried in an orbit around the shaft C, in a direction opposite to the rotation of the latter.

It will thus appear that the orbital revolution of the wheel I^1 around the shaft, communicates rotation to it through the wheels D^1 , G^1 , and H^1 , at a high speed, which is further increased by the rotation of the wheel D^1 , in the opposite direction, and the axial rotation and orbital revolution of the wheel I^1 combine to impart a very rapid rotation to the loose pinion E^2 , which, carrying the arm F^2 , on the extremity of which is mounted a third train of wheels, $G^2 H^2 I^2$, drives the third loose pinion E^2 at a still multiplied speed, and this multiplication may be continued in the same way to any extent desired, by adding other revolving arms, with their accessory trains of gearing, and the motion of the last pinion in the series being communicated to a pulley, to drive a belt, a crank-wrist to work a pitman, or to any instrument to which it is desired to impart a rapid motion, whether reciprocating or rotary.

If, on the other hand, it is desired to multiply power, the power may be applied through a crank or pulley, or otherwise, to the last pinion of the series, (represented by E^2 in the present illustration,) and the effect will be to communicate rotation to the wheel or drum A at a low speed with very great power.

By making each of the revolving arms $F^1 F^2$, &c., a part of a drum, which may enclose the respective trains of gearing, as illustrated by red outline in fig. 2, we propose to provide a set or succession of pulleys or wheels, which may rotate at different speeds upon the same shaft. Belts or gearing may convey this motion, at whatever speed desired, to the place where it is to be used, or a single belt, by being shifted from one such pulley to another, may be employed to drive machinery at variable speeds.

We have thus far described our invention with the shaft C as a driving-shaft. It will be manifest that if the said shaft, with its wheels $D D^1 D^2$, be stationary, and the sleeve B be driven around it, which may be effected

by mounting the wheel A on the said sleeve, instead of keeping it on to the shaft itself, the arm F, on which the wheels G H I are mounted, will carry them around the shaft in the same way as the arms F¹ F², with their trains of wheels, and the effect will be the same.

The arrangement last named is good for hoisting purposes, and by applying the power to either of the different pulleys, indicated by red lines, the hoisting-drum may be rotated with greater speed or power, as circumstances require.

A key-seat may be cut throughout the length of the shaft C, so that any number of sections of gearing can be secured thereon, or any of them removed at will.

We do not herein claim anything described in William F. Goodwin's patent of December 31, 1867. Our present invention consists in a different means for accomplishing the same result, the difference being in the use of the fixed wheels instead of the internal gear.

Having thus described our invention, the following is what we claim as new therein, and desire to secure by Letters Patent:

1. We claim any number of revolving arms F F¹ F², each carrying a train of wheels, rotated by the wheels D D¹ D², in the manner herein described, to communicate motion with multiplied speed or power.
2. We claim the intermediate pinions G G¹ G², employed in combination with the wheels D H I, substantially as and for the purposes explained.

A. W. BROWNE,
WM. F. GOODWIN.

Witnesses:

J. E. M. BOWEN,
OCTAVIUS KNIGHT.