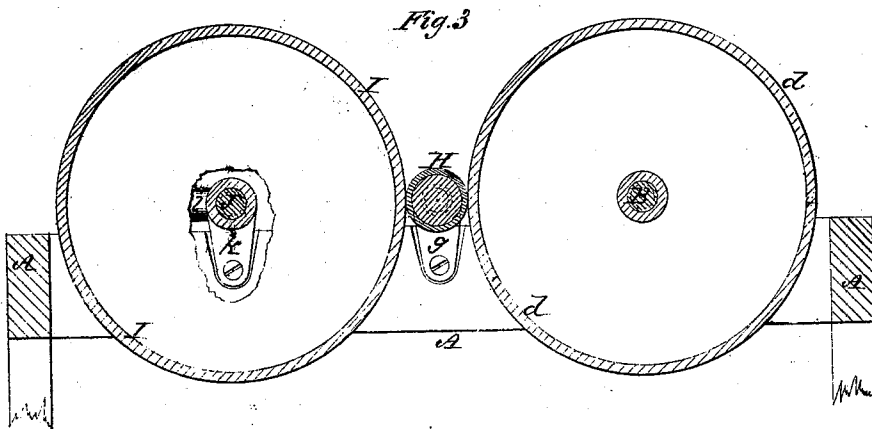
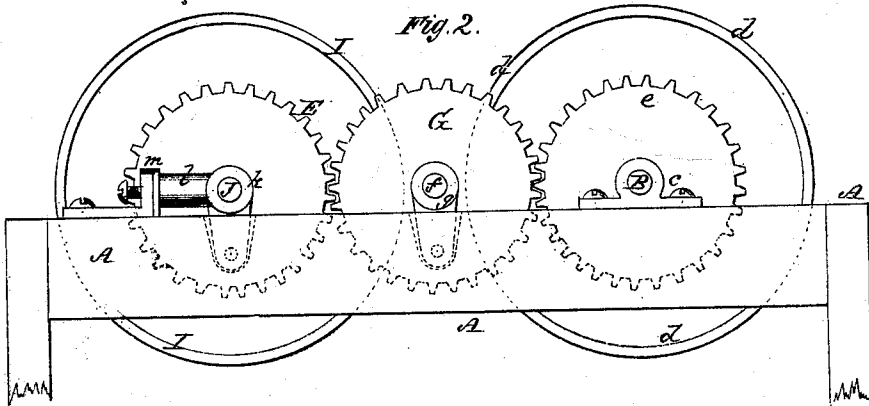
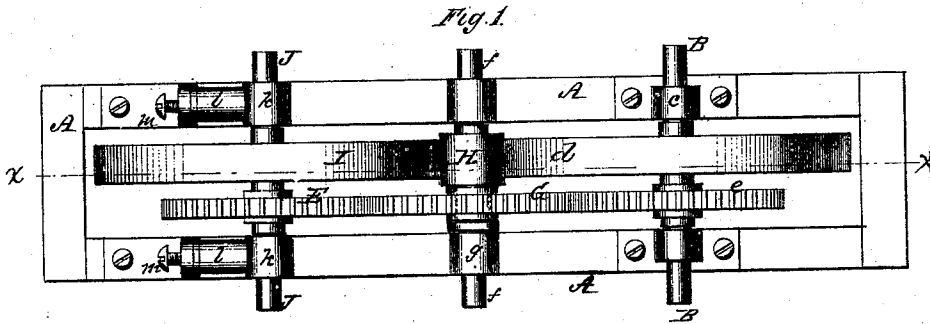


G. B. Hamlin,

Mill Gearing.

No. 106,360.

Patented Aug. 16, 1870.



Witnesses:  
G. B. Decker  
E. M. Kelly

Inventor:  
Geo. B. Hamlin  
By atty. J. M. Curtis

# United States Patent Office.

GEORGE B. HAMLIN, OF WILLIMANTIC, CONNECTICUT.

Letters Patent No. 106,360, dated August 16, 1870.

## IMPROVEMENT IN GEARING AND SELF-ADJUSTING SHAFTS.

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, GEORGE B. HAMLIN, of Willimantic, in the county of Windham and State of Connecticut have invented certain new and useful Improvements in Driving-Gearing or Mechanism for Transmitting Power; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this application.

My invention relates to a novel system of gearing or combination of mechanical devices designed for the economic transmission of power and motion.

Previous to my invention various contrivances have been devised, having for their object a convenient and economic transmission of the main driving or motive-power at a suitable velocity (of motion) to the machine to be driven, and numerous patents have been granted on such driving-gearings, or "mechanical movements," among which are some to myself.

In all such appliances it has been understood to be very important to both avoid, as nearly as possible, all friction (which is a waste of power) and provide for a positive motion at any desired velocity; and to embody in a system of driving mechanism all these requirements has been found very difficult.

I believe that the system which forms the subject of this application comes nearer to a complete embodiment of all these desirable characteristics than any heretofore devised.

My invention consists in the combination with the shaft designed to receive the motive-power (or be "driven") of two or more friction driving-wheels, the shafts or axes of which are geared together, and, also, in so arranging the shafting and the gearing that the parts will always adapt themselves to each other and compensate for any inequalities, as will be hereinafter more fully explained.

To enable those skilled in the art to make and use my invention I will proceed to describe it more fully, referring by letters to the accompanying drawing forming part of this specification, in which—

Figure 1 is a top view of a system of driving-gearing embracing my invention;

Figure 2 is a side elevation of the same; and

Figure 3 is a vertical section at the line *x x*, fig. 1.

In the several figures the same part is designated by the same letter of reference.

A represents any suitable frame, on which are hung and supported the working parts.

B is the main driving-shaft to which the motive-power is applied.

It is mounted in suitable boxes, *c c*, bolted to the frame A, and is provided with a friction driving-pulley, *d*, and a spur-gear, *e*, (keyed or otherwise fastened on.)

*f* is the shaft to which power and motion are to be communicated, or, in other words, it is the "driven" shaft.

It is mounted in movable or swinging boxes, *g*, and has secured to it the friction-roll H, which runs in contact with and receives motion from the driving-pulley *d*, and another similar pulley, I, which latter is of the same size as pulley *d*, and the shaft J of which is hung in movable or yielding boxes, *k*, pivoted to the frame A, as clearly shown.

These boxes *k* are acted upon, by suitable springs, *l*, projecting from stationary stands, *m*, the offices of which are to hold or press the said boxes in one direction to keep the pulley I up to its bearing against the roll H.

Of course, this spring pressure device (which I have shown composed of a rubber spring mounted, as shown and described,) may be otherwise devised in any manner to answer the purpose.

On the shaft J is keyed a spur-gear, E, which meshes into a gear, G, which is mounted to turn freely on the shaft *f*, and which also meshes into gear *e*.

The gears E, G, and *e*, are all the same diameter, as shown.

The operation of the mechanism, shown and described, will be understood to be as follows; viz :

The motive power being applied to the shaft B, the trains of friction-wheels and gears are set in motion, and the motive power is transmitted from the friction-wheel *d* to the roll H of the shaft to be driven, (the spindle, for instance, of a circular saw,) while, at the same time, the said roll H is also driven by the wheel I, which receives its motion from the main shaft through the system of gears *e* G E.

Thus, while the roll H is confined between the peripheries of wheels *d* and I, and receives motion and power from each, the said wheels *d* and I are at the same time positively connected by the gears, so that they must necessarily move with the same and a positive motion, and must exercise the same amount of leverage upon directly opposite points of the roll H.

It will be seen that by hanging the shaft *f* so that it is free to vibrate from a point, and applying the power (through the wheels *d* and I,) at diametrically opposite points, said shaft is practically relieved of all friction, although the traction between the driving-pulleys and driven roll may be ever so great.

It will be seen that since the boxes of shaft *f*, and also those of shaft J, are free to move, they will adjust themselves automatically to suit any inequalities of roundness of the wheels, and to compensate for wear of the parts.

Of course, as the shaft *f* serves merely as an axis for the gear G to turn upon, and as said gear has a like resistance offered on opposite sides and in oppo-

site directions, it runs with little or no friction, and yet constitutes a connecting link between the main and auxiliary driving-wheels *d* and *I*, such as renders the operations of the said wheel perfectly positive.

In lieu of the arrangement shown, the motive-power might be applied directly to the gear *G*, (not to the shaft on which it turns,) and transmitted through gears *E* and *e* to the shafts of the two wheels *d* and *I*. In this case the shaft *f* would require to be hung in stationary boxes, and both of the shafts *B* and *J* in self-adjusting or yielding bearings.

The effect and mode of operation of such an arrangement, it will be seen, would be substantially the same as of that shown in the drawing.

It will be understood that numerous modifications in the arrangement and proportions of the devices may be adopted without departing from the spirit of my invention, and that, in lieu of two, a greater number of driving-wheels may be employed, though the arrangement shown and described I have, so far, deemed the simplest and best for carrying out my invention, the main feature of which, it will be perceived, rests in the idea of having the power so applied (at opposite points) to the driven shaft, as to relieve its bearings of all frictions, while at the same time the fric-

tion-wheels, through which the power and motion are transmitted, are positively connected and act with equal leverage and uniformity of motion upon the said driven shaft.

Having explained the construction and operation of my improved system of driving-gearing or mechanism for the economic application of power and motion, so that those skilled in the art can make and use my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The employment, in combination with the shaft to which power and motion is to be applied, of a series of driving-wheels connected by gearing or other positive working mechanism, and operating substantially and for the purposes set forth.

Also, the arrangement, with a series of friction-pulleys and gears, of yielding or self-adjusting shafts, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand and seal this 22d day of April, 1870.

GEORGE B. HAMLIN. [L. s.]

Witnesses:

WILLIAM R. PATTEN,  
P. W. HASELTIN.