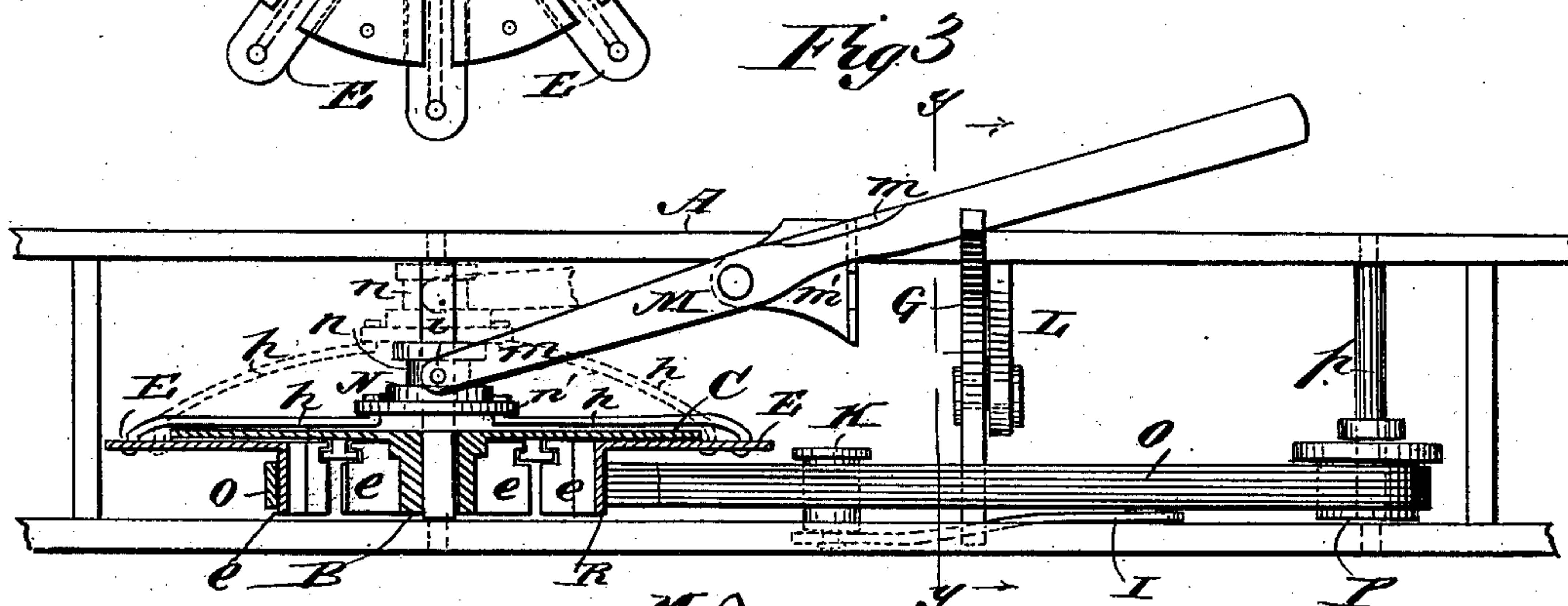
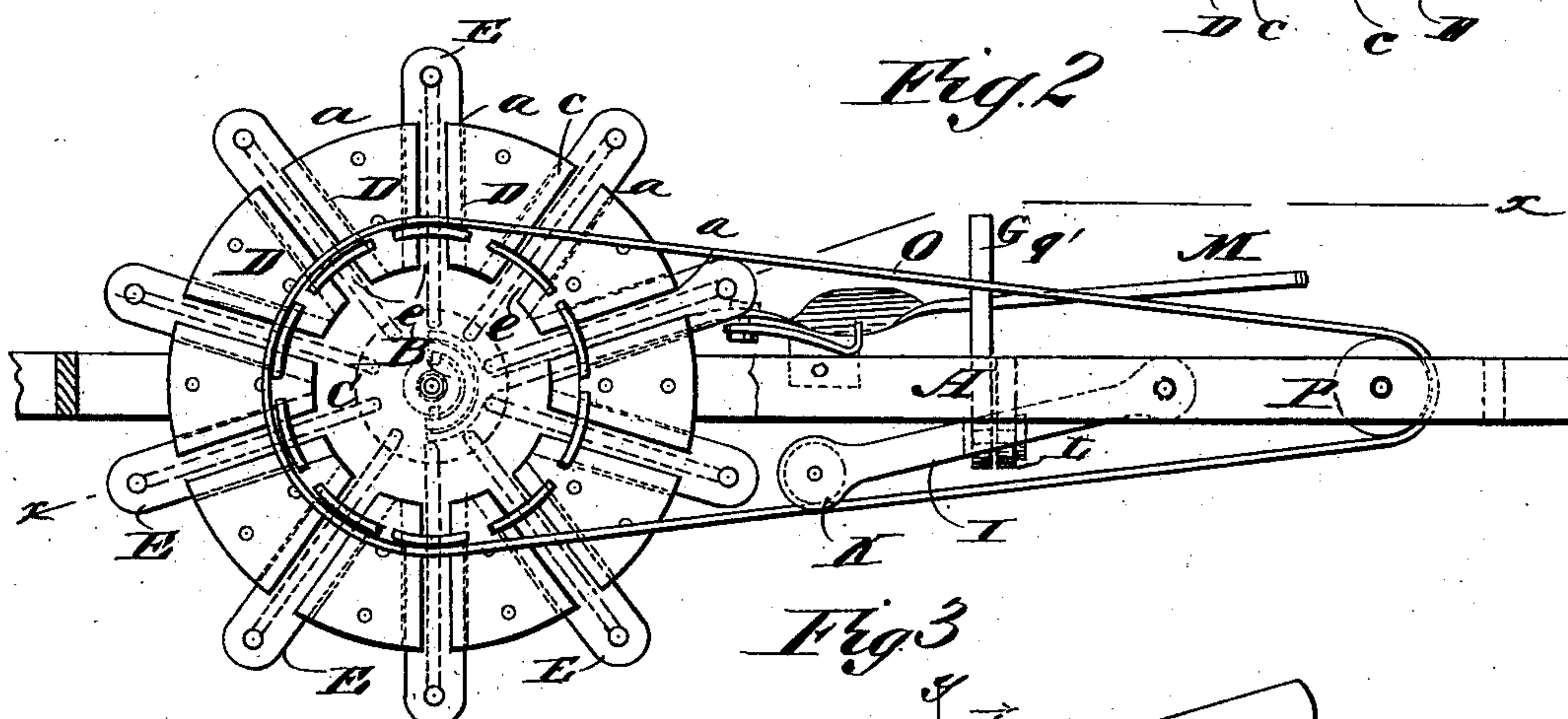
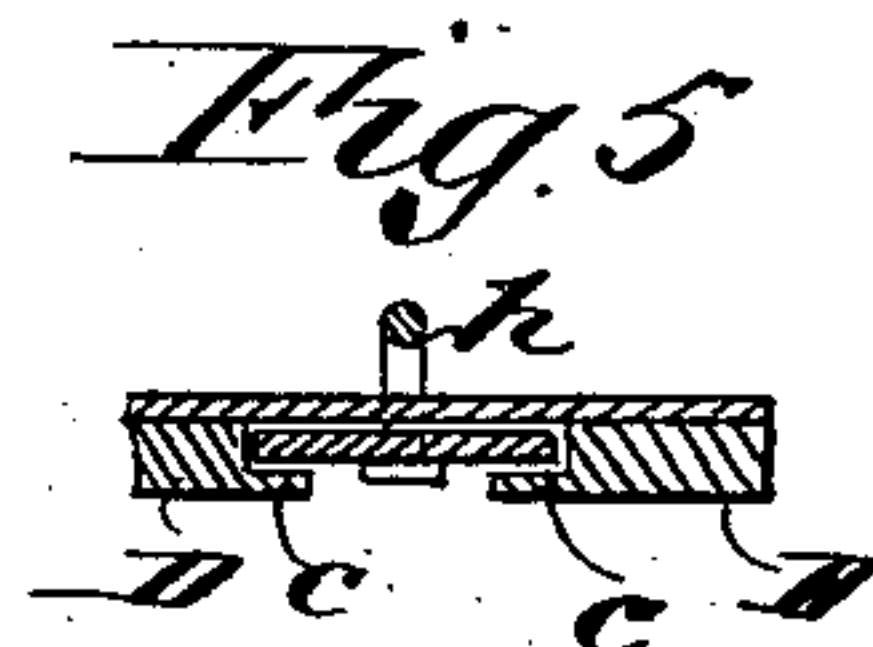
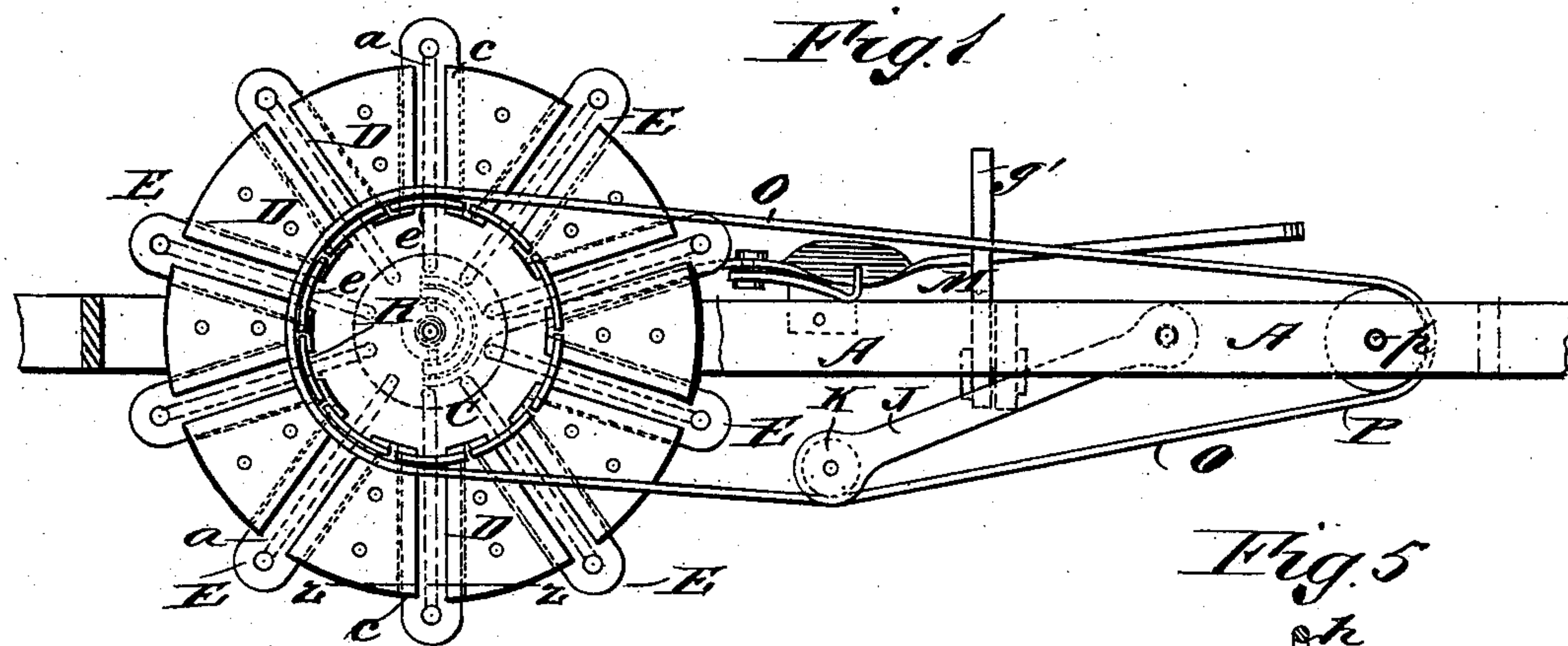


(No Model.)

J. M. HERMAN.  
EXPANDING PULLEY.

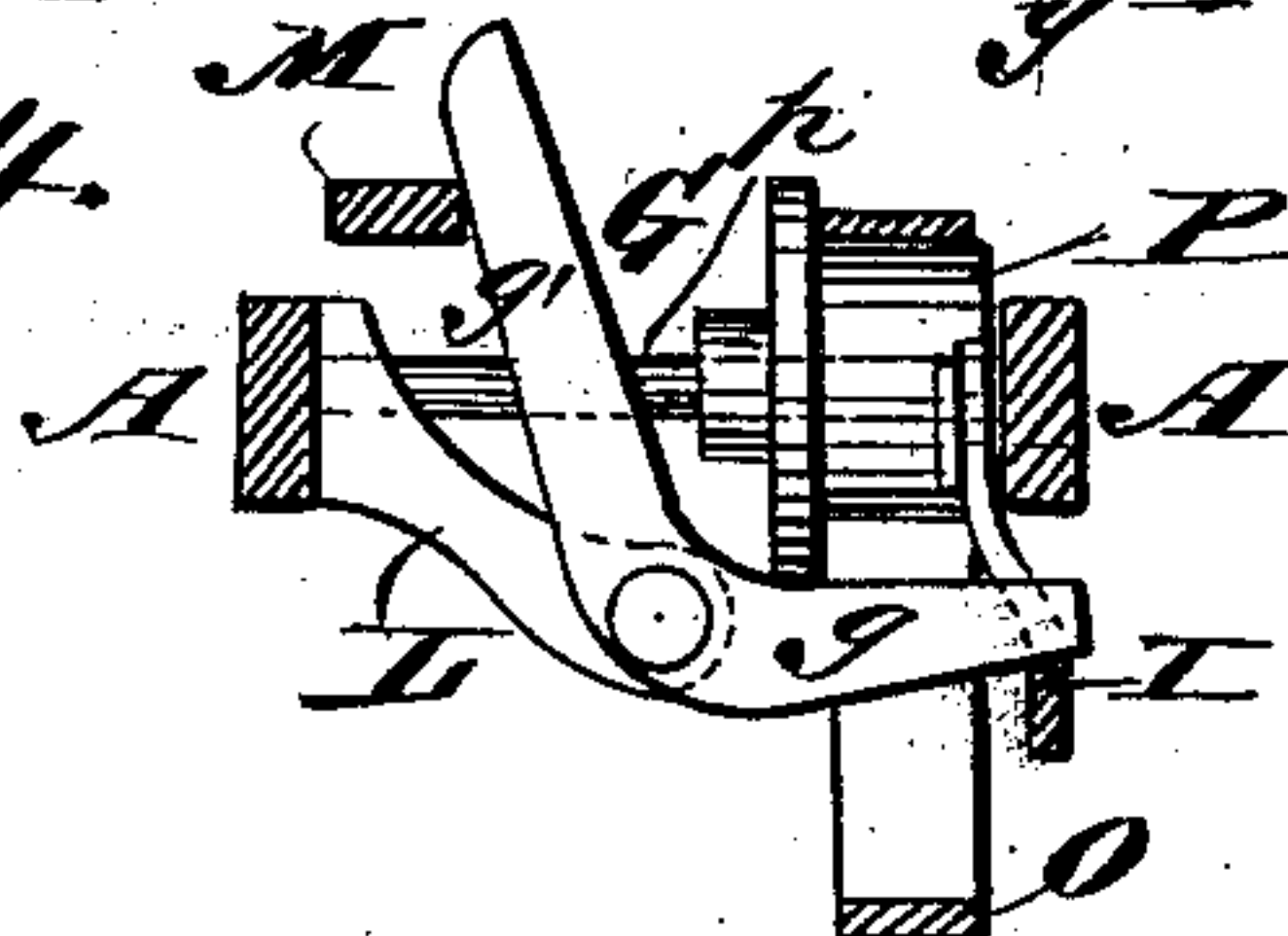
No. 334,377.

Patented Jan. 12, 1886.



**WITNESSES :**

F. M. Arndt.  
 C. Sedgwick



**INVENTOR:**

J. M. Herman  
BY *Herrn & Co*

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOHN M. HERMAN, OF MALLARD, IOWA.

## EXPANDING PULLEY.

SPECIFICATION forming part of Letters Patent No. 334,377, dated January 12, 1886.

Application filed October 31, 1885. Serial No. 181,470. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. HERMAN, of Mallard, in the county of Palo Alto and State of Iowa, have invented a new and Improved Expanding Pulley, of which the following is a full, clear, and exact description.

The object of my invention is to provide a mechanism whereby the speed of a belt-driven pulley may be increased or diminished without shifting the belt or stopping the machine; and to this end my invention consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved mechanism, a portion of the frame being cut away and the pulley being shown in its contracted position. Fig. 2 is a similar view, the pulley, however, being represented in an expanded position. Fig. 3 is a sectional view on line *x x* of Fig. 2. Fig. 4 is a sectional view on line *y y* of Fig. 3. Fig. 5 is an enlarged detailed view in section on line *z z* of Fig. 1.

The supporting-frame of the machine illustrated in the drawings is shown at A, and in this frame there is mounted a driving-shaft, B, secured to which there is a disk, C. A number of plates, D, formed with flange-like projections *c*, are riveted to the disk C, with their edges approaching, but not in contact, thereby leaving radial ways *a* between the plates. The peripheral face of the driving-pulley R is made up of a number of circular sections, *e e*, which project at right angles from arms E, which ride in the grooves *a*, their edges projecting beneath the flanges *c* of the plates D. A collar, N, formed with an annular groove, *n*, is loosely mounted on the shaft B. Connecting-rods *h h* are fitted to the extending ends of the arms E, there being one rod for each arm, the approaching ends of the connecting-rods *h* being fitted in apertures formed in a flange, *n'*, which projects from the collar N. A lever, M, which is pivotally connected to the frame A and formed with a yoke, *m*, carries pins *i i*, which project from

its yoke-arms and enter the annular groove *n* in the sliding collar N, by which arrangement it will be seen that by moving the lever M to carry the collar N up close to the disk C the rods *h* will act to extend the arms E, thereby carrying the sections *e* away from the shaft B, and consequently increasing the diameter of the driving-pulley. The belt O passes over the sections *e*, and reaches to the driven pulley P upon the operating-shaft *p*, so that as the movement just described is imparted to the sections *e* the speed at which the belt O is driven will be increased, it being understood that the shaft B is driven at a uniform rate of speed.

In order that a proper tension may always be maintained upon the belt O irrespective of the size of the sectional driving-pulley, I provide the apparatus with a tightening-pulley, K, which is carried by a swinging arm, I. A bell-crank lever, G, is pivoted to a bracket, L, and so arranged that its arm *g* bears upon the swinging arm I of the roller K, while its upper arm is forced inward by the lever M, when such lever is moved to diminish the diameter of the sectional driving-pulley R, so that as the diameter of the said pulley R is diminished the roller K will be depressed and the belt forced downward, so that an equal amount of tension is always maintained upon the belt, the proportion of the parts to bring about this result being of course easily obtained.

Such in general is the construction of my improved mechanical movement; but it will readily be understood that the driven pulley P might also be formed with an expanding peripheral face, which might be made to be adjusted simultaneously with the pulley R, but in an inversed direction. It will of course be understood that as the pulley R is expanded the speed at which the belt O is driven will be increased, and that by increasing the speed of the belt O, I increase the number of revolutions of the shaft *p*.

For holding the arms E in the required position as set, the lever M is provided with a lip, *m*, engaging a catch-plate, *m'*.

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

1. The combination, with a driving-shaft, of a disk provided with sections, as D D, connected to one of its faces, arms E, having sections or plates *e*, rods *h h*, a collar, N, and a  
5 lever, M, substantially as described.

2. The combination, in an apparatus for accelerating motion, of the following elements, viz: a driving-shaft, B, disk C, arms E, sections *e*, collar N, lever M, belt O, pulley  
10 P, and a belt-tightening mechanism, substantially as described.

3. The combination, with a driving-shaft, of a disk carrying radial arms provided with sections, which unite and form a driving-pulley, and a collar connected to the radial arms 15 by rods and operated by a lever, substantially as set forth.

JOHN M. HERMAN.

Witnesses:

J. C. STOWELL,  
I. T. MORAN.