

No. 748,021.

PATENTED DEC. 29, 1903.

L. SANDERS.  
VARIABLE FRICTION GEARING.

APPLICATION FILED MAY 11, 1903.

NO MODEL.

FIG. 1.

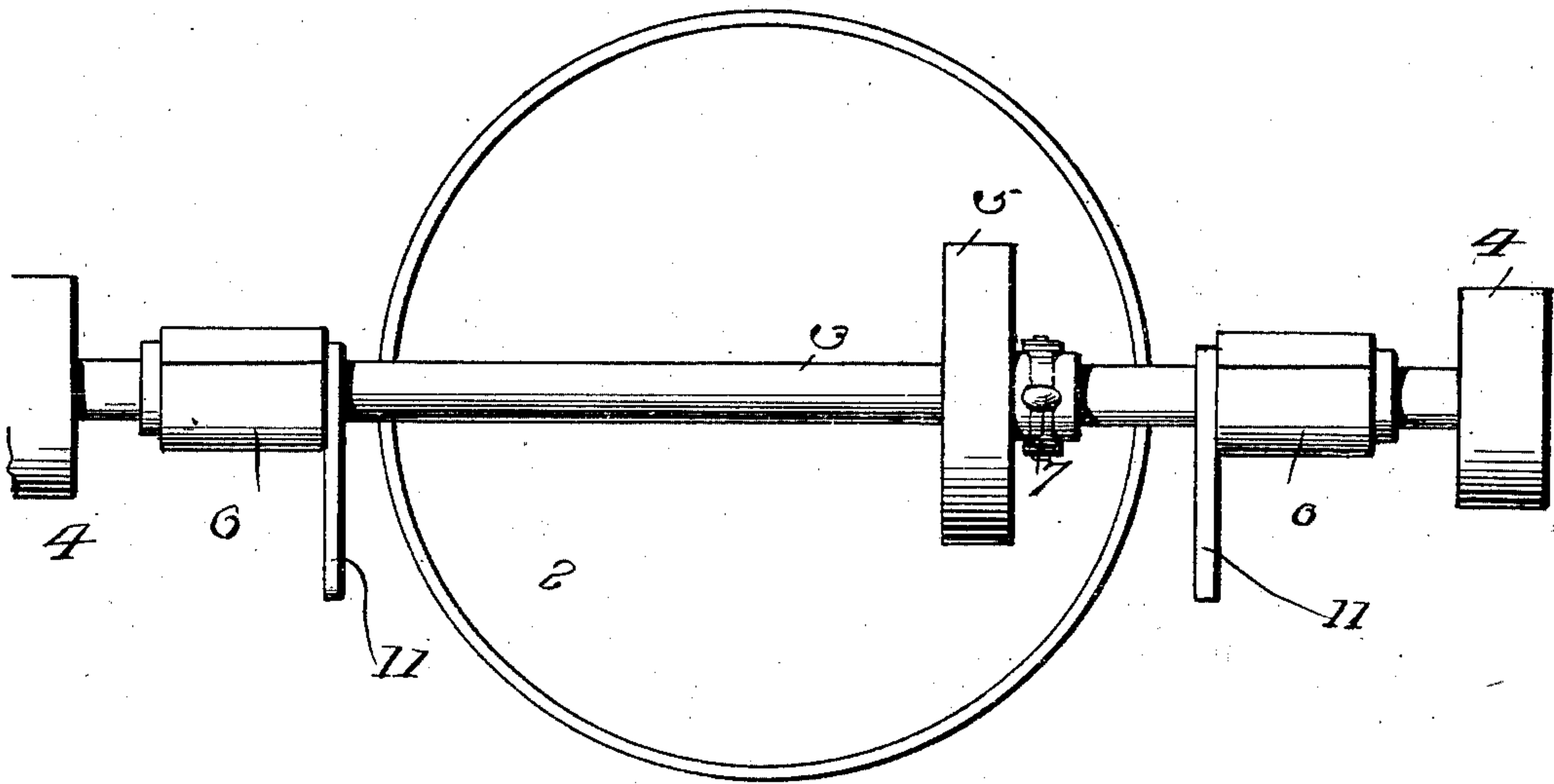


FIG. 2.

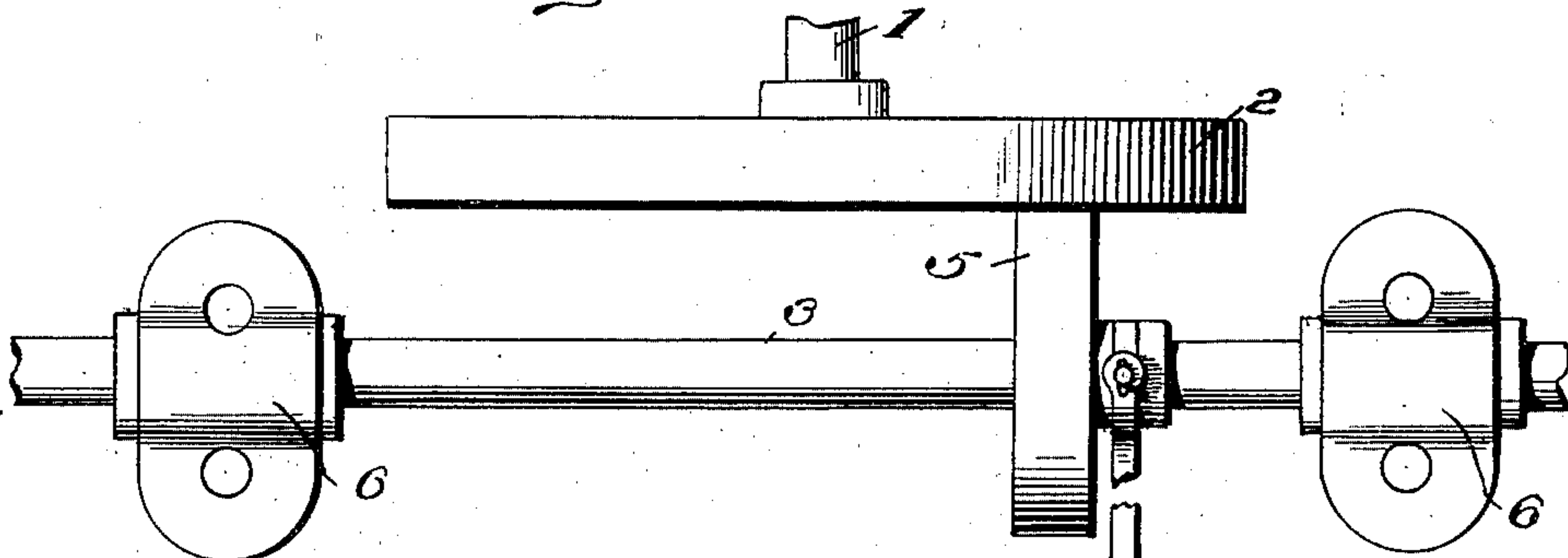
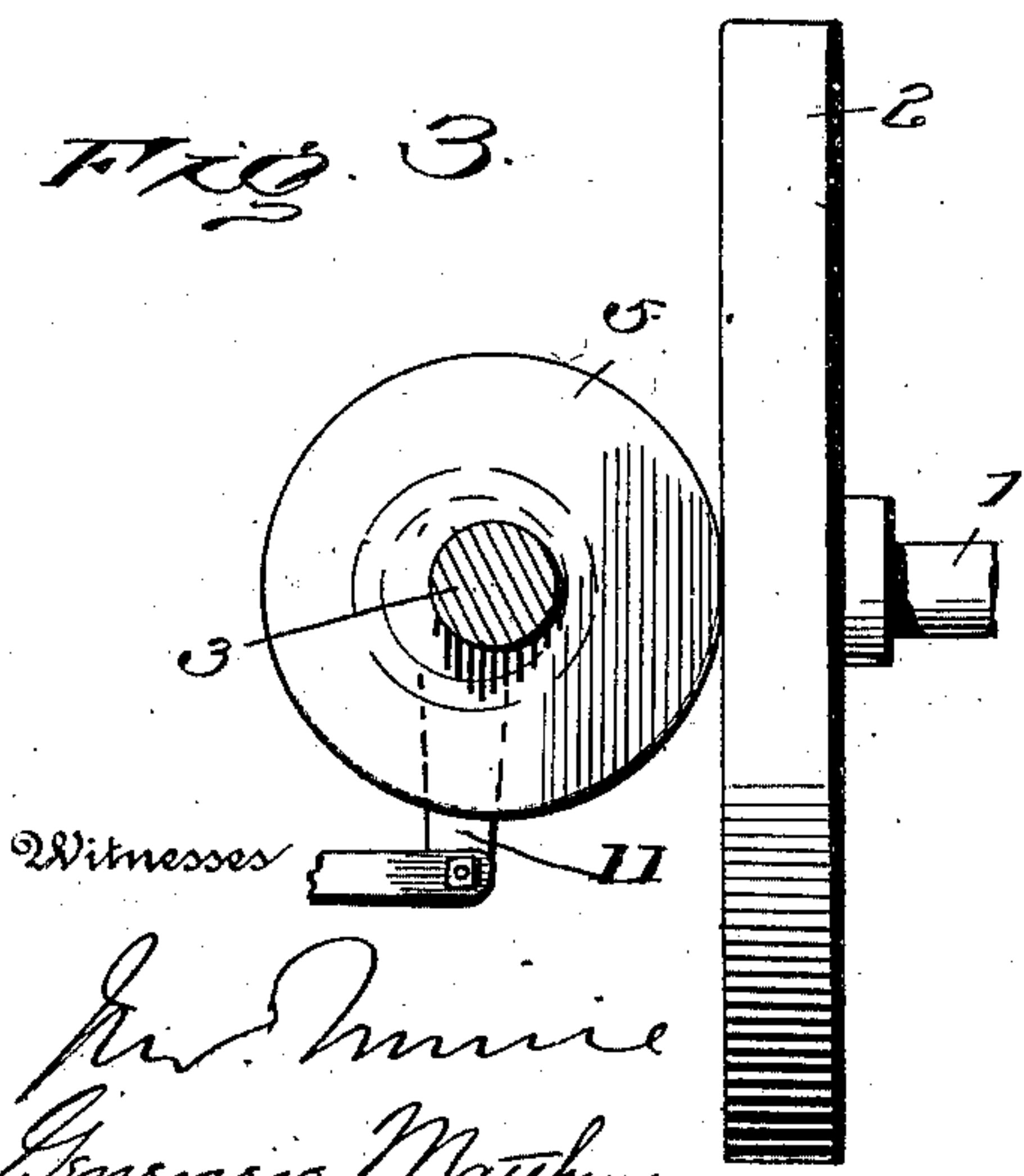
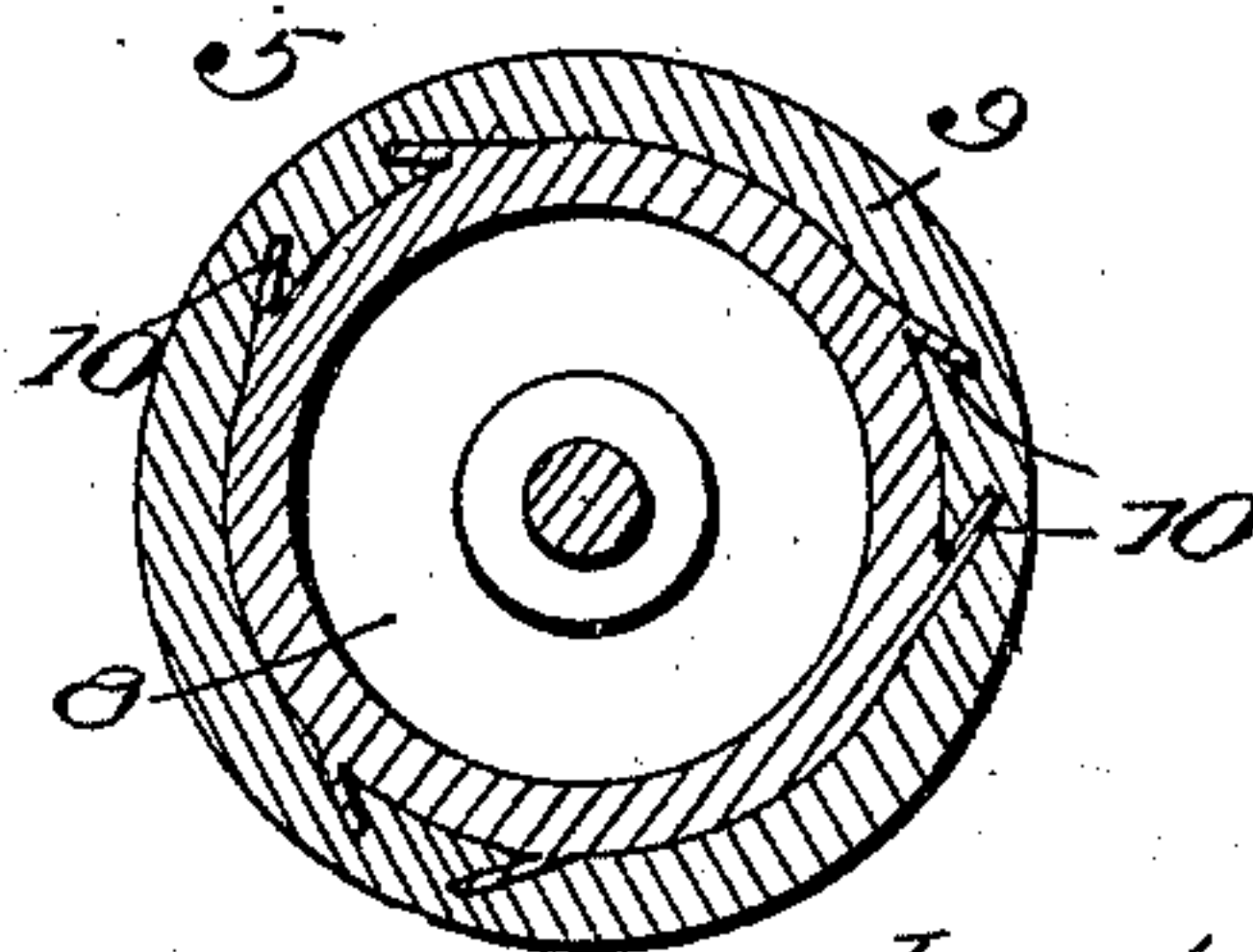


FIG. 3.



*Witnesses*  
*For Invention*  
*James M. Matthews*

FIG. 4.



*Inventor*

*Lewis Sanders*

*By*

*A. B. Lacey*

*Attorneys*



## UNITED STATES PATENT OFFICE.

LEWIS SANDERS, OF MELROSE, IDAHO.

## VARIABLE FRICTION-GEARING.

SPECIFICATION forming part of Letters Patent No. 748,021, dated December 29, 1903.

Application filed May 11, 1903. Serial No. 156,628. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS SANDERS, a citizen of the United States, residing at Melrose, in the county of Nez Perces and State of Idaho, have invented certain new and useful Improvements in Variable Friction-Gearing, of which the following is a specification.

The purpose of this invention is to provide a variable gear for use on vehicles and machinery of any kind having need for such mechanism and involves a minimum number of parts and consequent cheapness of construction not heretofore attained to in this art.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation showing the relative disposal of the parts. Fig. 2 is a top plan view. Fig. 3 is a side elevation showing the friction-disk in contact with the power-disk. Fig. 4 is a detail sectional view of the friction-disk, showing the particular means which may be utilized for securing the friction-strip to the friction-disk.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the drawings, 1 designates the power-shaft, which may be connected to the engine or whatever means are utilized for giving the power. The power-shaft 1 carries the power-disk 2 at one end thereof, and is disposed at approximately right angles to the axis of the power-shaft 1 is a drive-shaft 3, which is designed to transmit motion from the power-shaft in any manner desired. The drive-shaft 3 is preferably provided at its ends with pulleys 4, which may be connected to the mechanism to which the motion is to be communicated. These pulleys 4 are keyed to the drive-shaft 3, as is a friction-disk 5. The friction-disk 5 is preferably of paper or provided with a paper friction-surface upon its

periphery to more readily cause transmission of motion from the power-disk 2. The friction-disk 5 is shiftable upon the drive-shaft 3 across the face of the power-disk 2, and in accordance with the well-known mechanical principle the nearer the center of axis said friction-disk 5 moves the slower will be the rotation of said disk, and, vice versa, the farther away from the center of axis the disk moves the greater will be the motion transmitted thereto. The drive-shaft 3 is supported by brackets 6 or other means of analogous character, being mounted eccentrically therein in a manner which will be readily seen.

To manipulate the friction-disk 5 across the face of the power-disk 2, an operating-lever 7 is provided, which is connected in the ordinary manner to the said friction-disk and may be moved so as to throw the disk laterally, moving it upon the shaft 3 and shifting it across the face of the said power-disk 2. The friction-disk 5 is movable intermediate the pulleys 4, the parts being so arranged that the power-disk 2 is located also at a point intermediate in relative position of the said pulleys 4. This disposal of parts is deemed essentially advantageous in view of the fact that the transmission of power is after a manner equalized with reference to the said pulleys 4, so that neither of said pulleys is subject to undue strain because of the disposal of the friction-disk therebetween. As before mentioned, it is desirable that the friction-disk be constructed of paper or material of this character, since this form of disk is better adapted to transmit motion than are others.

In Fig. 4 is shown a special form of friction-disk which may be employed. The body of the disk (designated 8) is of metal, and upon the outer periphery thereof is disposed the friction contact material 9, this material being preferably paper. It is common to form the friction-disks by pressure, and this operation may be utilized in securing the material 9 to the periphery of the disk. To more firmly secure the material 9 to the periphery of the friction-disk, a plurality of spurs 10 are provided upon the same, which are disposed in sets, each set being oppositely inclined, so that upon subjecting the mate-



rial 9 to pressure to hold it upon the disk the spurs may be embedded therein and more firmly hold the material in place.

5 The mechanism embodies a maximum degree of simplicity, and the operation is readily apparent.

I do not necessarily restrict myself to the exact form of parts illustrated in the drawings, but contemplate changes within the  
10 spirit of the invention.

Any suitable means may be used in connection with the arms 11 for locking the drive-shaft, which is eccentrically mounted to hold the friction-disk into or out of engagement  
15 with the power-disk.

Having thus described the invention, what is claimed as new is—

In friction-gear mechanism, the combina-

tion, with a constantly-driven power-disk, of a drive-shaft disposed with the axis thereof 20 at right angles to that of the power-disk, pulleys carried by the said drive-shaft, a friction-disk shiftable intermediate the said pulleys across the face of the power-disk, said friction-disk being composed of a metal body 25 having oppositely-inclined sets of spurs projected therefrom and paper friction material pressed upon the periphery of the said body, and means for shifting the friction-disk across the face of the power-disk. 30

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS SANDERS. [L. S.]

Witnesses:

W. O. BURTON,  
JAMES M. BURTON.