(No Model.)

C. C. YATES.

FRICTIONAL GEARING.

No. 457,100. Patented Aug. 4, 1891.

Fig. 1.

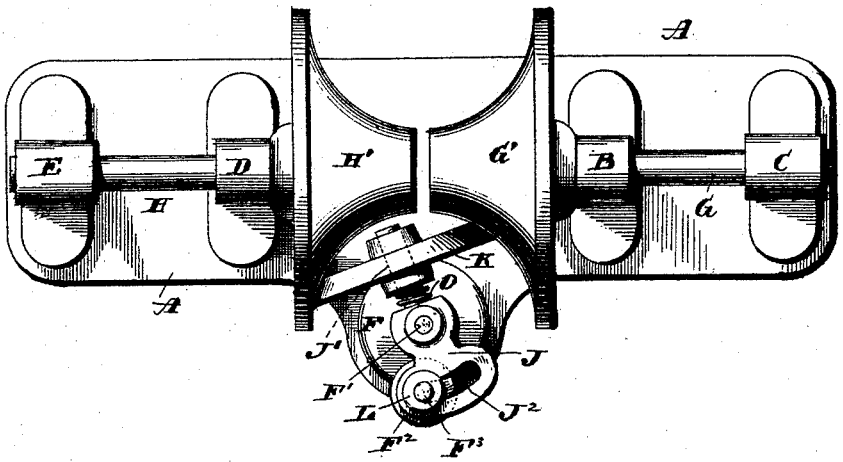
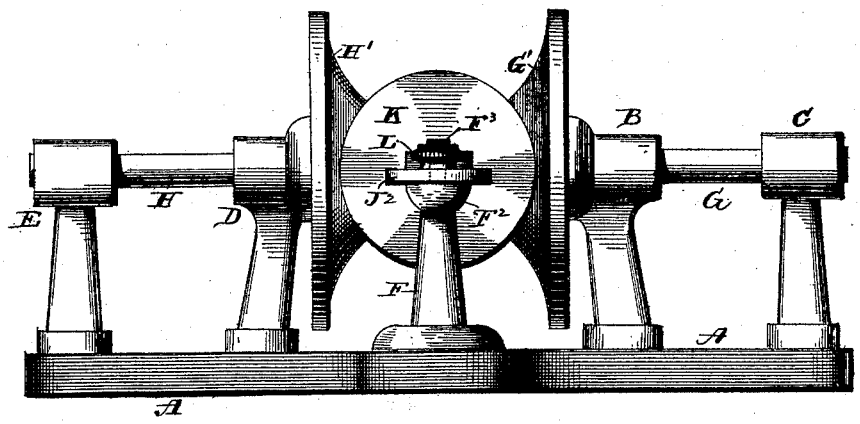


Fig. 2.



Witnesses
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Inventor
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UNITED STATES PATENT OFFICE.

CALVIN C. YATES, OF MECHANIC FALLS, MAINE.

FRICTIONAL GEARING.

SPECIFICATION forming part of Letters Patent No. 457,100, dated August 4, 1891.

Application filed March 23, 1891. Serial No. 386,119. (No model.)

To all whom it may concern:

Be it known that I, CALVIN C. YATES, a citizen of the United States, residing at Mechanic Falls, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Frictional Gearing; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to mechanical contrivances for transmitting motion from one rotary shaft to another at the same or different relative speeds for purposes of speed or power, as required.

The object of the invention is to reduce the number of parts to a minimum and provide a construction which will respond instantly to a change in the relation of the parts to vary the relative speed of the two shafts and which will admit of any degree of variation of speed between the two shafts within certain limits, the latter depending upon the size of the operating parts.

The improvement consists, essentially, of two cones, which are secured to the ends of two shafts, the one receiving and the other transmitting the motion, and an intermediate disk, the working-faces of the cones being of concave circular outline and the working-face of the disk being of corresponding convex circular contour.

The improvement further consists of a spring to press the disk into positive engagement with the working-faces of the cones to prevent lost motion and a consequent slipping of the parts.

The improvement also consists of provisions for adjusting the disk relatively to the cones and fixing it in the located position.

The improvement also consists of the novel construction and combination of the parts, which will be hereinafter more fully described and claimed, and which are shown in the accompanying drawings, in which—

Figure 1 is a top plan view, and Fig. 2 is a front elevation, of the invention.

The bed-plate A is provided with suitable standards B, C, D, and E, which have bearings in their upper ends, in which are journaled the two shafts G and H, the shaft G being journaled on the standards B and C and the shaft H on the standards D and E. The cones H′ and G′ are secured to the opposing ends of the shafts H and G, respectively, and are of concave circular outline on their working-faces.

The plate or casting J is mounted between its ends on the journal F′, which projects vertically from the standard F. The outer end of the plate J terminates in the slotted segment J^2, and the inner end is provided with journal J′, on which is mounted the disk K. The spring O, mounted on the journal J′ between the hub of the disk K and the shoulder at the base of the said journal, presses the said disk against the cones and preserves a proper frictional contact. The arm F^2, projected laterally from the standard F, is provided with the vertical extension F′, which is threaded and extends through the slot in the segment J^2. The thumb-nut L on the threaded end of the vertical extension F′ serves to secure the plate or casting J in the located position.

The circular outline of the working-faces of the cones H′ and G′ and the disk K is determined by a circle struck from the axis of the plate J, thereby preserving perfect contact between the said cones and the disk. The relative speed which is imparted from one of the cones to the other by means of the intermediate disk K is determined by the relative position of the intermediate disk, and this position is attained by loosening the thumb-nut L and moving the plate J upon its journal F′. This action changes the relative position of the disk and the cones, and as a result secures the desired change in the relative speed of the cones. With the disk in the position shown in Fig. 1 cone H′ would be driven at about one-third the speed of the cone G′. If the disk were in the extreme opposite position, the cone H′ would be driven three times as fast as the cone G′, and with the disk in the central position, as shown in Fig. 2, the speed of the cones G′ and H′ is the same.

It will be observed that in this system of frictional gearing slipping is obviated, in that

the working and contact surfaces of the cones and the disk are in all positions very nearly the same as the pitch-lines of gears of the same size working upon shafts placed in the same relative angles.

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

1. The combination, with two cones having their working-faces of smooth circular outline, and a support having a journal and lateral extension, of an intermediate disk of smooth circular outline on its contact surface, and a plate adapted to be rotated and having a portion engaged by said lateral extension, the said intermediate disk being mounted on the journal of said plate, substantially as shown and described.

2. The combination, with the cones having a concave smooth circular outline, and the intermediate spring-pressed disk having a corresponding smooth circular working-face, of the plate pivoted to a support and forming a bearing for the said disk and adapted to be turned about its pivot to change the relative positions of the cones and the disk, substantially as set forth.

3. The combination, with the cones having a concave circular outline and the disk of corresponding circular outline, of a support, a plate journaled to the support between its ends and having the said disk journaled on one end and having a slotted segment at the other end, a threaded projection extended through the slot of the said segment, and a thumb-nut on the said threaded projection to fasten the plate in a located position.

4. The combination, with the cones having circular outline and the disk of corresponding circular outline, of the support F, having a threaded projection, the plate J, mounted on the said support and having a slotted segment which receives the aforesaid threaded projection and having a journal on which the disk is mounted, the thumb-nut for holding the plate in the located position, and the spring on the journal of the plate to press the disk against the cones, substantially as described.

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

CALVIN C. YATES.

Witnesses:
CUSHMAN R. PULSIFER,
FRANK O. PENINGTON.