

J. MILLER.
GEAR WHEEL.
APPLICATION FILED JUNE 27, 1911.

1,061,770.

Patented May 13, 1913.

Fig. 1.

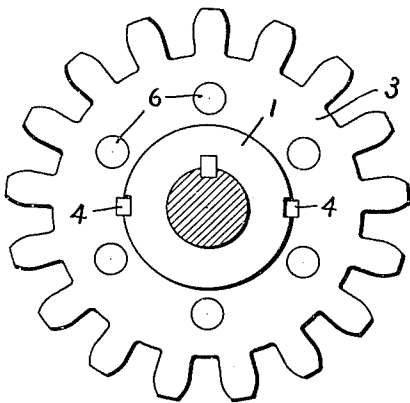
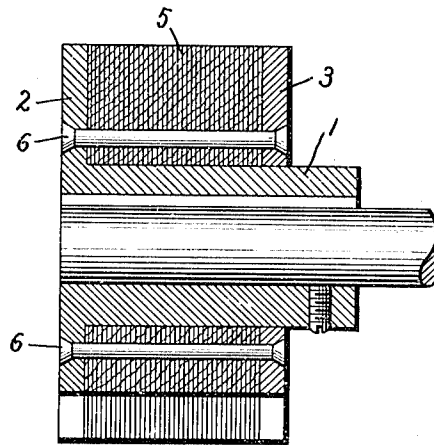


Fig. 2.



Witnesses:
Earl G. Klock.
J. Ellis Glen.

Inventor:
John Miller,
by *Alfred S. Davis*
His Attorney.

UNITED STATES PATENT OFFICE.

JOHN MILLER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

GEAR-WHEEL.

1,061,770.

Specification of Letters Patent.

Patented May 13, 1913.

Continuation of application Serial No. 507,097, filed July 12, 1909. This application filed June 27, 1911.
Serial No. 635,655.

To all whom it may concern:

Be it known that I, JOHN MILLER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Gear-Wheels, (continuation of my prior application, Serial No. 507,097, filed July 12, 1909,) of which the following is a specification.

The object of my invention is to provide a noiseless or non-resonant pinion or gear-wheel which shall be stronger and more durable than devices heretofore on the market designed to accomplish the same function.

Noiseless pinions or gear-wheels have previously been made of layers of leather, rawhide, paper or indurated fiber, but pinions or gear-wheels made of these materials are objectionable for they deteriorate rapidly in use, shrink and swell according to the amount of oil or moisture absorbed and are easily stripped of their teeth. It has been proposed to interpose between layers of these various materials, sheets of metal to sustain the stresses imposed upon the teeth, but such interposed sheets of harder material are highly objectionable in that they cut and destroy the smooth sliding surfaces of the teeth of the gears meshing therewith, and only partially overcome the objections to the ordinary gear.

I have discovered that pinions or gear-wheels made up of spinnable textile fibers highly compressed are stronger, more durable, do not shrink or swell and are altogether superior to any of the other kinds of noiseless pinions or gears produced up to the present time.

In the accompanying drawing, Figure 1 shows in end elevation and Fig. 2 in transverse section a pinion made in accordance with my invention.

As shown in the drawing, the gear consists of a hub 1 in the form of a sleeve adapted to be keyed to a shaft and having at one end an integral plate 2, while at the opposite end I provide a loose plate or disk 3 having keys 4 in engagement with the hub 1. Between the radial plates 2 and 3 is a mass of spinnable textile fibers 5 highly compressed and secured in compressed state

by longitudinal bolts or rivets 6 headed in countersunk holes in the plates 2 and 3. The expression "spinnable textile fibers" is used in this specification to collectively designate the various fibers of the class that have been commonly used in making yarns and in the fabrication of cloth, which are characterized by pliability, strength and long spinnable staple, as, for example, cotton, flax, hemp, ramie, wool and silk. Spinnable textile fibers may be subjected to a high degree of compression without destroying or impairing their characteristic properties and when a mass of such fibers is compressed each fiber is in frictional contact with a multitude of other fibers, which affords great cohesiveness to the mass and great resistance to disturbance of the fibers relative to each other under stresses such as are imposed upon the teeth of a gear.

In order to insure uniform distribution of the textile fibers, I prefer to cut circular disks from a batten or layer of the fibers and stack them one above the other in the press by which they are compressed. I have also used with success textile materials in the form of woven fabrics, cut into circular blanks and stacked, as above set forth.

After the textile body of the gear has been compressed to the proper degree between the metallic end plates and the compression-sustaining means secured, the gear blank thus formed may be removed from the press and turned and milled according to the practice in making metallic gears.

I do not desire to restrict myself to the particular form or arrangement of parts herein shown and described, since it is apparent that they may be changed or modified without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A gear having its body portion composed of highly compressed spinnable textile fibers.

2. A gear having a toothed body part composed of spinnable textile fibers.

3. A gear composed of compressed spinnable textile fibers, and means for holding said material in compressed state.

4. A gear having a toothed body part

composed of spinnable textile fibers, metallic end plates, and means for securing said textile material and said end plates together.

5 5. A gear having its toothed body portion composed of layers of spinnable textile fibers.

6. A gear having its toothed body portion.

composed of layers of textile fabric made of spun yarn.

In witness whereof, I have hereunto set my hand this 23rd day of June, 1911.

JOHN MILLER.

Witnesses:

BENJAMIN B. HULL,
MARGARET E. WOOLLEY.