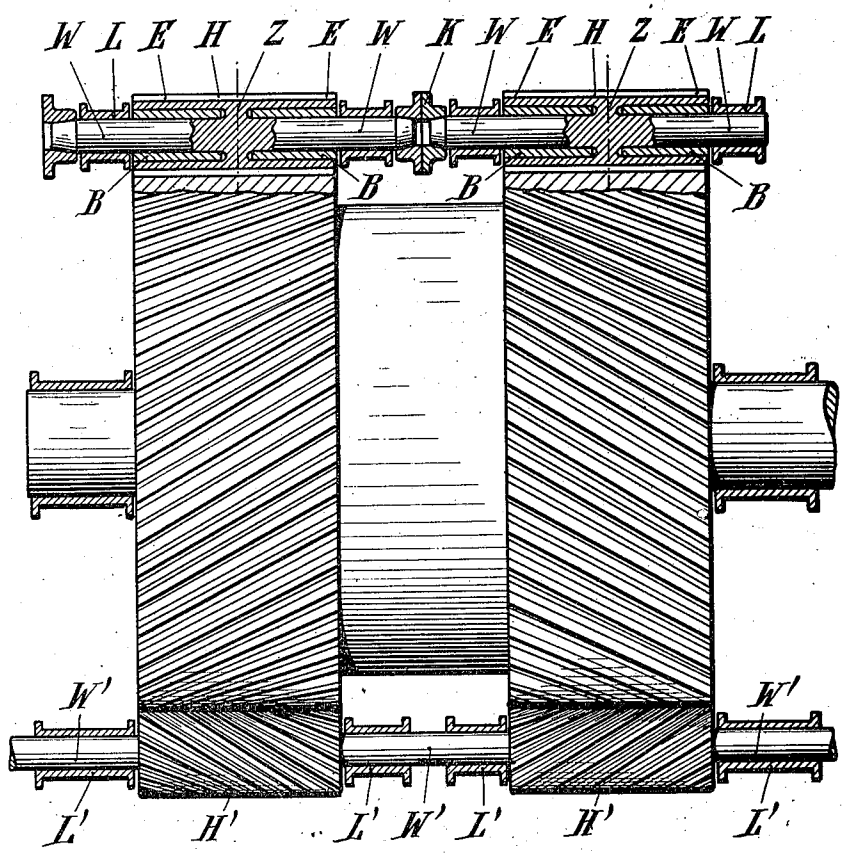
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OSKAR v. BOHUSZEWICZ.

GEARING.

APPLICATION FILED MAR. 1, 1915.

1,209,108. Patented Dec. 19, 1916.



Witnesses:
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C. F. Niles.

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UNITED STATES PATENT OFFICE.

OSKAR v. BOHUSZEWICZ, OF KIEL, GERMANY.

GEARING.

1,209,108. Specification of Letters Patent. Patented Dec. 19, 1916.

Application filed March 1, 1915. Serial No. 11,402.

To all whom it may concern:

Be it known that I, OSKAR VON BOHUSZEWICZ, citizen of Lübeck, Germany, residing at Lornsenstrasse 26, Kiel, Germany, have invented certain new and useful Improvements in Gearing, of which the following is a specification.

This invention relates to a novel and improved type of gearing, and has particular reference to gearing in which the torsion in the driving or driven pinions is reduced as much as possible by the peculiar manner in which the power is supplied to, or taken from, them.

It has been previously known in the art to cause a rotating power to act between the sections of a divided pinion, so that the torsion is distributed over the two halves.

It is the object of the present invention to reduce the torsional strain in proportion to the power which is supplied to or taken from such a type of gearing, the invention consisting substantially in applying the power to, or taking it from the middle, or approximately the middle, of each pinion half or section.

One form of the invention is shown in the accompanying drawings, in which the figure is an elevation of the gearing, shown partly in section.

In said drawings, in which two sets of pinions are shown, one of which may be used to supply power, and the other to distribute power from a large intermediate gear member, W represents a pinion shaft journaled in bearings L, and carrying the identical pinion sections or halves H. Said pinion halves or sections H are provided with oblique or diagonal teeth of comparatively large width, the teeth on the pinions being disposed in opposite directions and meshing with corresponding teeth upon the large divided gear elements. In the upper set, the pinion sections or halves H are shown formed as integral elements of the pinion shaft W, and said shaft W is formed in sections which are coupled, by means of the coupling K. As indicated in the lower half of the drawings, the pinion shaft W′ may be a one-piece element, and the pinion sections H′ may be suitably mounted thereon.

The pinion sections or halves H are connected to the shaft W only at the middle portion Z, this middle portion consisting of a comparatively thin web, so that the free ends of the pinion halves or sections have no connection whatever with the shaft W. The spaces between the shaft W and the overlying or free ends of the pinions H may be supported by suitably formed cylindrical sleeves or packings B. The power is supplied to the shaft W in any suitable manner.

During the transfer of power between the shaft W and the pinion sections H, the power acts only at the parts Z. Consequently, only parts Z are distorted relatively to the two ends E of each of the pinion halves or sections H. There is, therefore, no torsion of the ends E relative to one another. Since each of the ends E of the pinion sections H only has to carry the burden of a half of the torque or rotating moment, which is supplied to the respective pinions H, then the specific torsion, that is the torsional arc referred to the unit length of the axis and the radius, is one half of that which would appear if the torque were to be applied at one end of the pinion section or half. Furthermore, the specific torsion only acts on one half of the width of the pinion section H. The actual torsion at the point Z at which the power acts is, relative to the ends E of the particular pinion section or half, only one quarter of that of the above mentioned arrangement, where the power is applied at one end.

For special purposes, the place on the sections at which the power acts may be removed to any desirable distance from the middle of each pinion half or section, and the pinion half may be made of different length. The torsion then varies *pro rata* with the respective lengths.

It is true of every type of pinion that the maximum tooth pressure occurs at the place where the torque acts, and in the present invention the power is applied at the middle of each pinion section. For this reason, that the tooth section bends and yields to the tooth pressure, which is greater at the point Z than at the ends E, the contact of the teeth is improved. Pinions, in which the torque acts at one end of the pinion only cannot yield to the greater tooth pressure at that point, because they are held at the ends by bearings.

The uniform distributions of the torque on both pinion sections or halves is secured by the opposite disposition of the angles of the teeth, and by the axial displaceability

of the pinions. The torsion in the shaft connecting the pinion halves therefore has no effect on the engagement of the teeth.

If, by the fact of the shaft of the pinion being obliquely disposed to the shaft of the large gear wheel, the tooth pressure is larger at one end of the pinion half than at the other, this difference may be compensated with the present invention, since the ends are not rigidly secured to the pinion shaft which is held in the bearings.

What I claim is—

1. In a gearing, the combination of a pinion shaft, and pinion sections of comparatively small diameter and wide teeth carried by said pinion shaft, said pinion sections being connected to said pinion shaft by a comparatively narrow web, and having comparatively wide overhanging toothed portions.

2. In a gearing, the combination of a pinion shaft, and pinion halves of comparatively small diameter, and having comparatively wide teeth, carried by said pinion shaft, said pinion halves being connected to said pinion shaft by comparatively narrow webs at the middles of the pinion halves.

3. In a gearing, the combination of a pinion shaft, pinion halves of comparatively small diameter carried by said shaft, comparatively large teeth formed on said pinion halves and disposed to extend at opposite angles and comparatively narrow webs connecting said pinion halves to said pinion shaft, the toothed portions of the pinion halves extending in wide flanges from each side of said web.

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

OSKAR v. BOHUSZEWICS.

Witnesses:
JULIUS RÖJIKE,
HERRMANN SCHÜTT.