

(No Model.)

J. S. WORTH.
Gearing.

No. 232,586.

Patented Sept. 21, 1880.

Fig. 2.

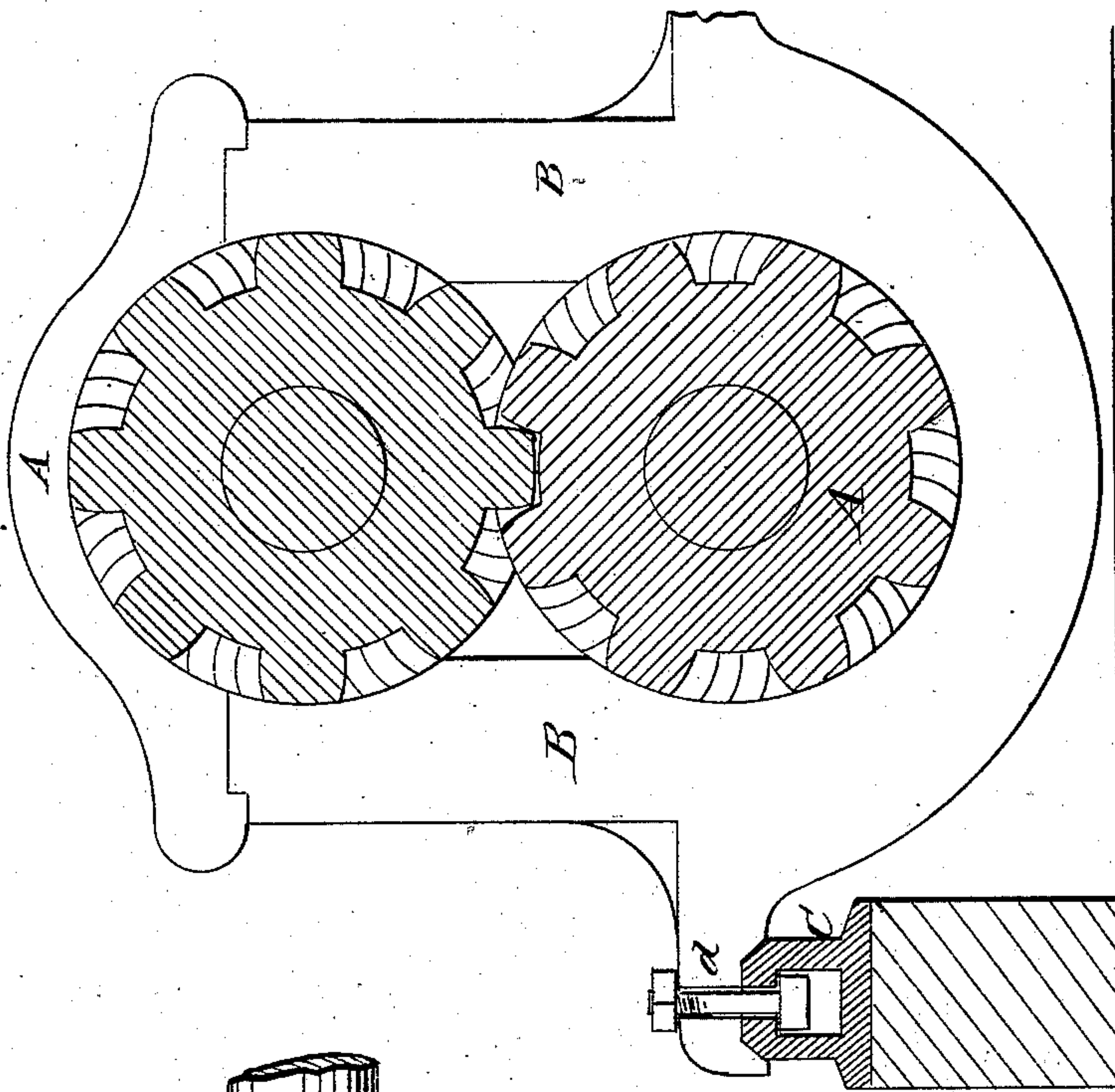
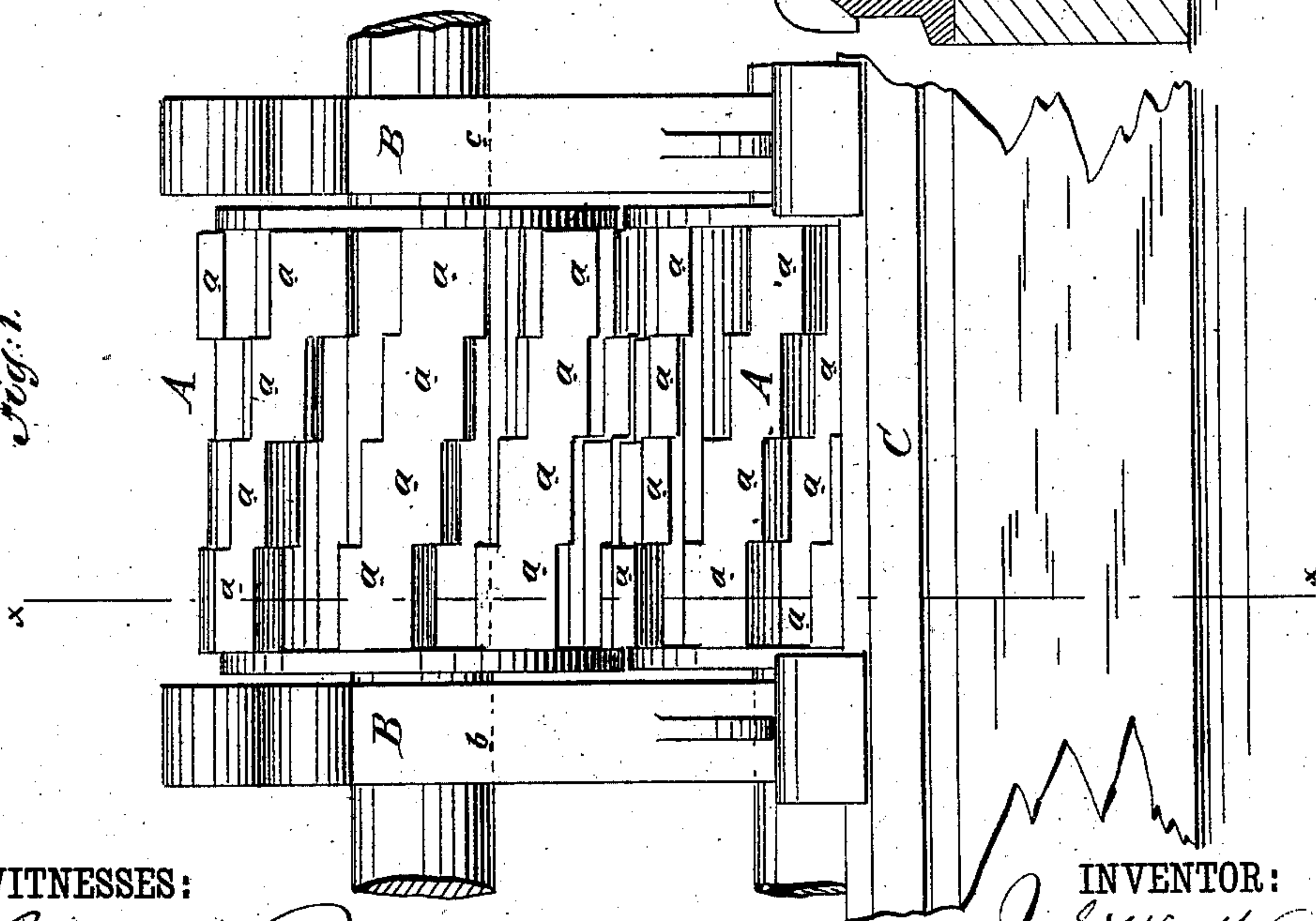


Fig. 1.



WITNESSES:

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GEARING.

SPECIFICATION forming part of Letters Patent No. 232,586, dated September 21, 1880.

Application filed August 2, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN SHARPLESS WORTH, of Coatesville, in the county of Chester and State of Pennsylvania, have invented a new and Improved Gearing, of which the following is a specification.

The object of this invention is to provide stronger, more durable, and more smoothly-running pinions or wheels for gears of rolling-mill rolls and other machinery.

The invention consists of gear-wheels, each of which is provided with several longitudinal rows of epicycloidal or any other properly-shaped teeth set in echelon, the teeth of each row being in end contact or union with each other, and set so that the first tooth in any one row enters in gear with the opposite wheel while one or more teeth of the preceding row are yet in gear, whereby a majority of the sectional rows of teeth will always be engaged in the opposite wheel at one time, the precise number thus engaged depending on the number of sectional rows of teeth in the wheel, whether two, three, four, or more, also upon the height of the teeth and coarseness of the pitch.

Figure 1 is a front elevation of the gearing set in rolling-mill pinion-housings. Fig. 2 is a vertical sectional elevation of the same on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

In the drawings, A A represent the two gear-wheels journaled in the housings B, that are secured by bolts *d* on the ways C. Each wheel A is provided with seven rows of four teeth each, which teeth *a* are set in echelon, as shown in Fig. 1, so that the front face of the first tooth on a given row of teeth is in advance of the rear face of the last tooth of the preceding row, as is shown by drawing the horizontal line *b c* across the face of a wheel, A, as shown in Fig. 1, whereby it will be seen that when the wheels A are in gear three teeth, *a*, of a row, or two teeth of one row and one of another, must always be engaged, so that the gearing contact of the wheels A A is continuous, whereby smooth and even running is assured.

A wheel of this construction has a great advantage in strength and durability over ordinary toothed wheels of the same dimensions and of the same number of teeth, for in this construction each tooth *a* is about four times thicker than would be any one of the twenty-eight longitudinal teeth of the ordinary wheel of like dimensions, and hence the far superior durability and strength of the improved gearing herein shown.

The teeth *a* of the wheels A should be formed with epicycloidal curved or otherwise mathematically-constructed faces, in order that they may maintain a full bearing with the opposite wheel from the point of entrance into the point of release from gear.

A wheel, A, may be cast solid with the raised teeth *a*, or may be made in vertical sections bolted together, and such wheel may be made of any dimensions and with any number of teeth, provided the number of teeth in each longitudinal row is equal.

By forming the teeth *a a* in union with each other at their ends, as shown, their strength and durability is greatly increased. The strength may still be augmented by inserting a fillet at the corner formed by the end contact of the teeth when the same are cast solid together.

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

1. An improved gearing, constructed substantially as herein shown and described, consisting of gear-wheels, each of which is provided with several longitudinal rows of teeth set in echelon, so that the first tooth in any one row enters in gear with the opposite wheel before the last tooth of the preceding row is out of gear, as set forth.

2. In a gear-wheel, A, the teeth *a a*, constructed in echelon in longitudinal rows, the teeth in each row being joined to each other at their ends, substantially as and for the purpose described.

JOHN SHARPLESS WORTH.

Witnesses:

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JAS. L. HUGHES.