

*J. Richards,
Machine Gearing.*

N^o 85,131.

Patented Dec. 22, 1868.

Fig: 1.

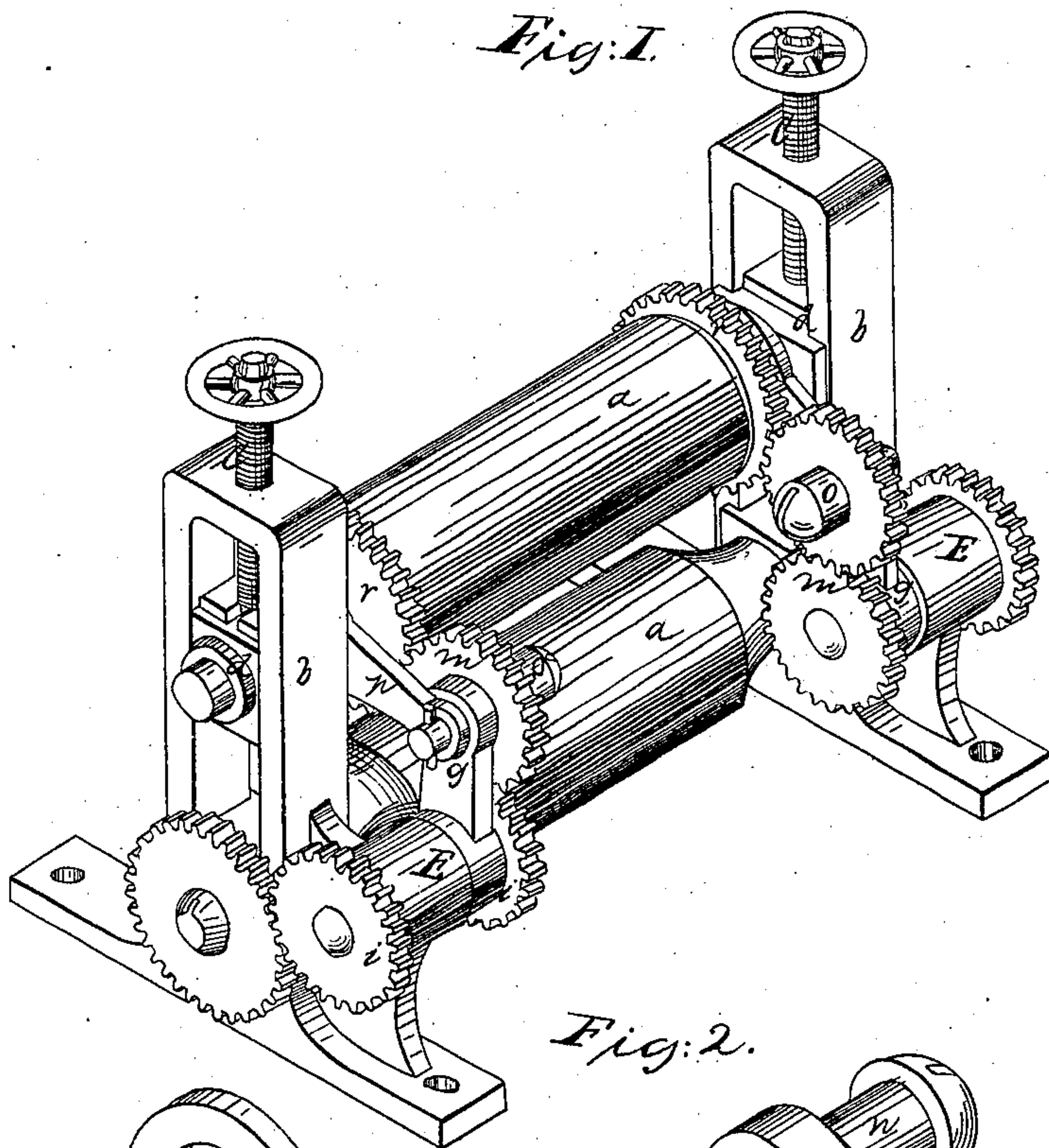
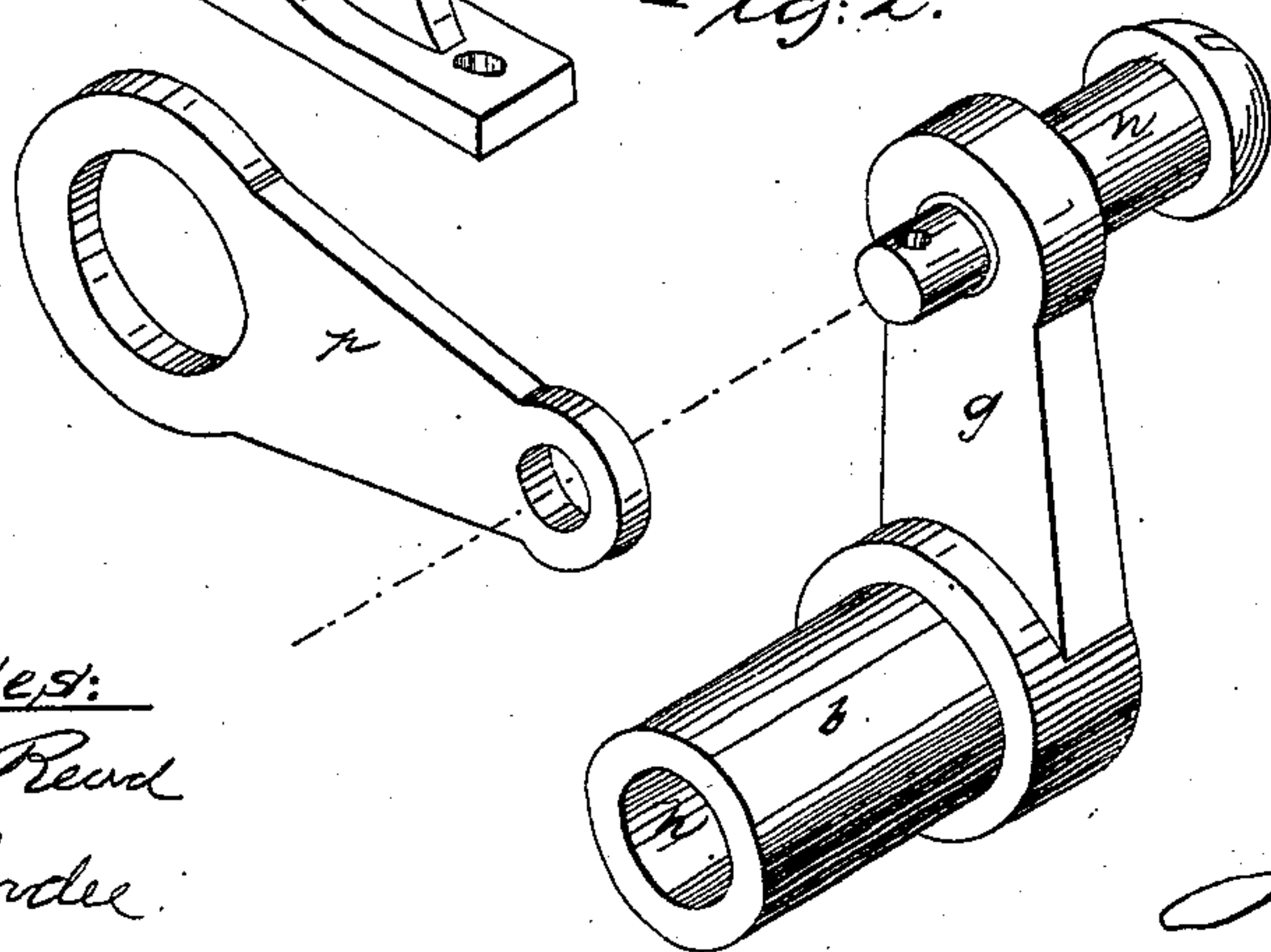


Fig: 2.



Witnesses:

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Inventor:

John Richards

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JOHN RICHARDS, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 85,131, dated December 22, 1868.

EXPANSIVE GEARING FOR FEEDING-ROLLS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom these letters come:

Be it known that I, JOHN RICHARDS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Expansive Gearing for Calender and Feeding-Rolls; and I hereby declare the following to be a full and exact description of the same, together with the mode of constructing and manner of its operation, reference being had to the drawings accompanying and forming part of this specification, in which—

Figure 1 is a perspective elevation of a pair of rolls connected by my improved system of gearing, and

Figure 2 are details of fig. 1, to aid in a more complete description.

Similar letters of reference on the different figures indicate corresponding parts.

The nature of this invention consists in a system of expansive gearing for adjustable rolls, wherein the wheels fixed to the rolls rotate in different planes, thereby allowing them to be made of greater diameter than the rolls; also, in mounting the wheels known as intermediates, on a pivoted radial arm, having a cylindrical extension surrounding the axis of the second wheels, thereby holding the train of wheels rigidly in the plane of their rotation, dispensing with the usual number of links, and also with cross-shafts extending across the machine; and in mounting two of the wheels on a stud of sufficient length to give them a good and substantial bearing; and finally, in so arranging the gearing, when applied at each end of the rolls, that they will act, to some degree, independent, allowing the top roll to act in different planes with reference to the lower roll, so as to admit of material being passed through, that is not parallel as to thickness; all as hereinafter fully explained.

In constructing expanding gearing for calender or feeding-rolls, when the train of four wheels is used and working in the same plane, the wheels have to be so constructed that their periphery is within the diameter of the rolls to which they are applied; and as a coarse pitch is desirable in such gearing, the true diameter to the pitch-line is much smaller than the rolls themselves. The strain upon the teeth being directly as the diameter of the wheels, they are very liable to break when great or irregular strain is needed, and in cases where large wheels have been applied to the rolls, correspondingly small pinions have been used in the train, to which the objections first cited apply.

There has also existed a difficulty in obtaining a sufficient bearing for the axis of the intermediate wheels, unless by connecting double trains with shafts extending across from side to side, which shafts are often in the way of the material being fed to the rolls, and in all cases inconvenient to the operation of the rolls.

As a general rule, the bearings of all intermediate gears have been in length but little more than the face of the wheels.

To obviate these objections, and to produce a system of expansive gearing that will comprehend all necessary functions for calender-rolls, and for feeding-rolls for lumber and other machines, is the object of the invention illustrated and hereinafter described.

Having thus set forth the nature and the objects of this invention, I will now proceed to describe the manner of constructing the same, so as to enable those skilled in the art to make and use it with the aid of the drawings.

a a is a pair of rolls mounted in vertical supports *b b*. The top roll is adjusted to and from the bottom roll by means of the screws *c c* and movable bearings *d d*, in the usual manner.

There is cast upon the framing *b b* the shells *e e*, for receiving the cylindrical extension *f* on the radial supports *g g*. Through this extension, at *h*, is fitted a short shaft, carrying on either end the gears *i i*, which are screwed on by means of a thread cut reverse to the course of their rotation; that is to say, the threads on one shaft are right, and on the other, left-hand.

The gears *m m* are mounted on a stud, *n*, and have hubs *o o*, of sufficient length to give good and substantial bearings.

The gears *m m* are kept in position by the link *p*, only one being necessary in each train of wheels. In adjusting the top roll, this link being pivoted concentric with the two gears *m'* and *r*, and the arm *g* being free to swing on its axis *f*, it will be readily understood that the top roll may be adjusted to any point within the range of the train, or wide enough for practical purposes. There being no connection between the two trains of gearing where two are used, and the gears formed to fit loosely together, the top roll has quite a range of adjustment from a parallel plane, which is often necessary for uneven material, as hereinbefore cited.

Having thus explained the nature of my invention, I do not claim the application of gearing to both ends of the rolls, such arrangement being old and well known to the art; but

What I do claim, and desire to secure by Letters Patent, is—

The combination of wheels, in the manner described, with a pair of adjustable rolls, substantially as specified.

JOHN RICHARDS.

Witnesses:

OTTO ALBRECHT,
WM. H. THORNE.