

(No Model.)

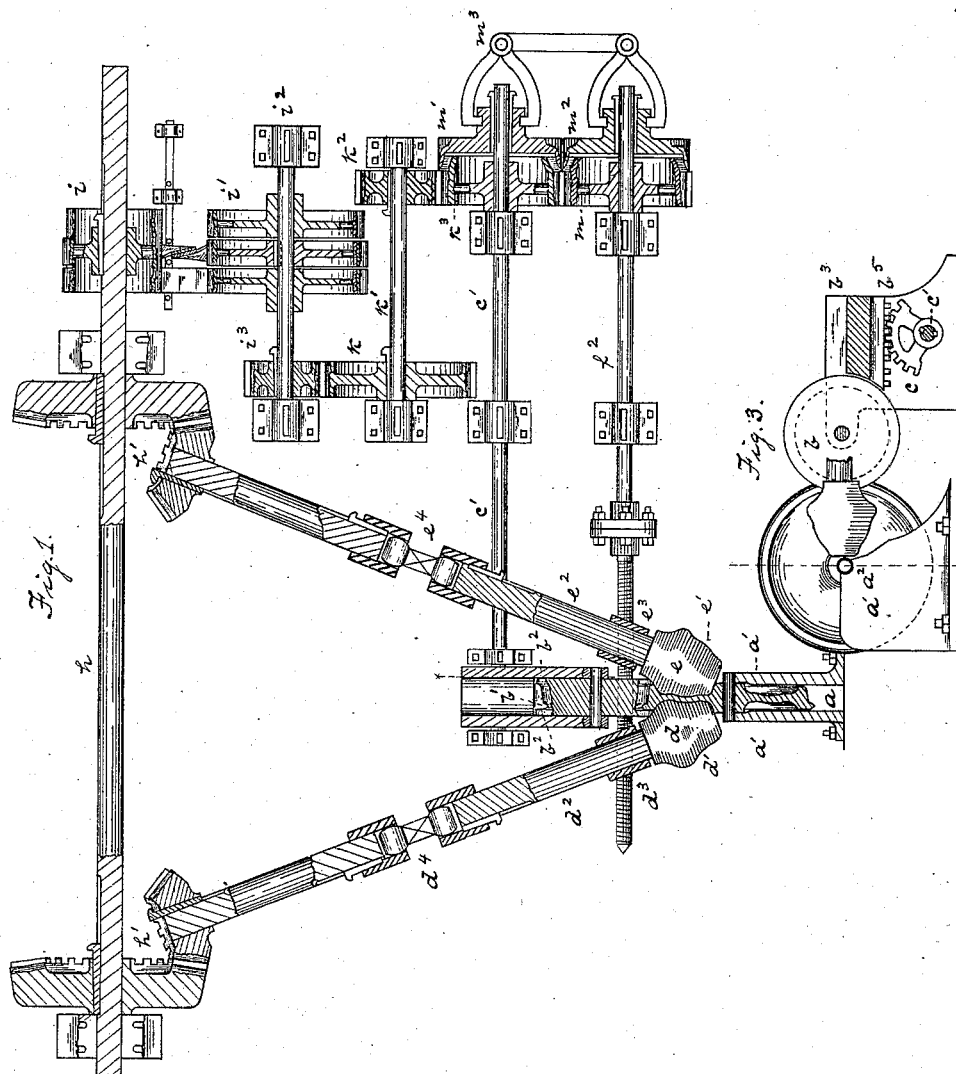
2 Sheets—Sheet 1.

O. NIÖGGE MEIER.

MACHINE FOR ROLLING CAR WHEELS.

No. 305,706.

Patented Sept. 23, 1884.



WITNESSES\_

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Inventor \_\_\_\_\_

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by his attorneys  
Bakewell & Herr

(No Model.)

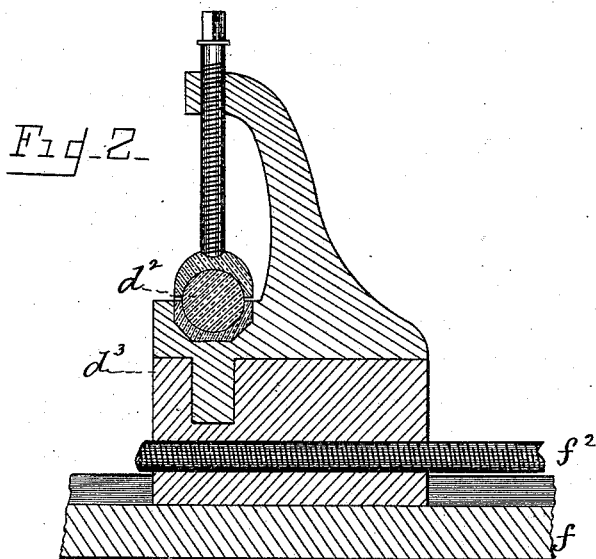
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O. NIOGGEMEIER.

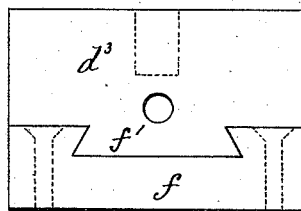
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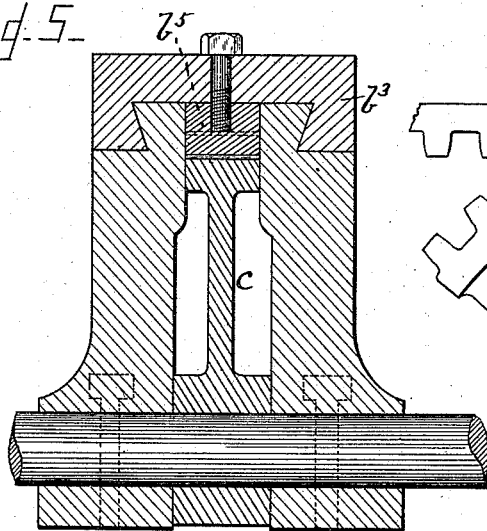
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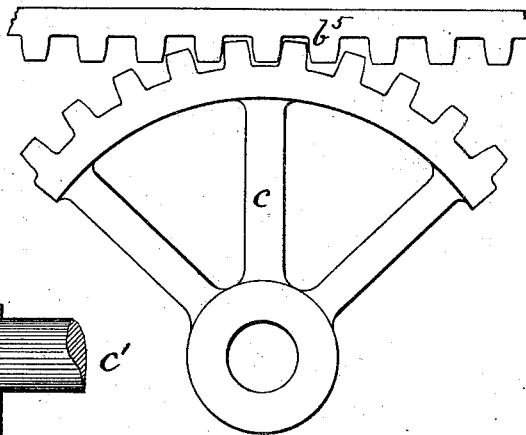
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



Witnesses.

*J. M. Ritter*  
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Inventor.

*Otto Nioggemeier*  
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# UNITED STATES PATENT OFFICE.

OTTO NIOGGEMEIER, OF SHARPSBURG, ASSIGNOR OF ONE-HALF TO GEORGE A. CHALFANT, OF ETNA, PENNSYLVANIA.

## MACHINE FOR ROLLING CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 305,706, dated September 23, 1884.

Application filed December 29, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO NIOGGEMEIER, of Sharpsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolling Car Wheels; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of rolling-mills for rolling car-wheels; and it consists in mechanism for operating the sliding housings of the face and side rolls, and in specific combinations of such devices, all as will hereinafter be more definitely set forth.

I will now describe my invention so that others skilled in the art may employ the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view, partly in section, of the apparatus employed by me. Fig. 2 is a vertical sectional view of one of the housings for the side rolls. Fig. 3 is a side elevation of the sector and rack for adjusting the end roll, one of the side rolls, the end roll, and the mandrel being partly broken away, showing the wheel. Fig. 4 is an elevation of the sliding block and way *f* of the side rolls. Fig. 5 is a vertical transverse section of the sliding way, rack, and sector of the end roll. Fig. 6 is an enlarged view of the sector *c* and rack *b* of the end roll.

Like letters indicate like parts wherever they occur.

In the drawings, *a* represents the mandrel for supporting the wheel while it is being subjected to the action of the rolls; and it consists of two upright side plates, *a' a'*, joined at the bottom, and supported by braces at the forward end. In the middle of each of these side pieces is a groove, *a*<sup>2</sup>, or other device, which acts as a bearing for the hub or center of the wheel. In rear of these grooves the side pieces, *a'*, are cut away to allow the rolls to act on the wheel.

In rear of the mandrel *a* is the end roll, *b*, which acts on the face of the wheel. This is in the form of a disk somewhat greater in width than the face of the car-wheel. On the face of this roll is a groove, *b'*, which forms the flange of the wheel, and two projecting flanges, *b*<sup>2</sup> *b*<sup>2</sup>, which extend beyond the edges

of the faces of the wheel during the rolling-operation. The remaining face of the roll is beveled, in order to form the bevel on the face of the wheel. The housings *b*<sup>3</sup> of this roll rest on a sliding way, and on the lower face of the housings is a rack, *b*<sup>5</sup>, the teeth of which engage with the teeth of a sector, *c*, which is keyed to the shaft *c'*, so that the housings and roll are moved toward or away from the face of the wheel when the shaft *c'* is set in motion.

In front of the roll *b*, on each side of the blank in the mandrel, are the side rolls, *d e*, which have beveled faces *d'* *e'*, and from which extend the horizontal shafts *d*<sup>2</sup> *e*<sup>2</sup>, which are journaled in the movable housings *d*<sup>3</sup> *e*<sup>3</sup>, which housings slide on the bed-plates *f*, to which they are secured by the dovetail *f'*, and are operated or moved so as to bring the rolls against the wheel or remove them therefrom by the shaft *f*<sup>2</sup>, which passes through the housing, and on which is formed a right and left screw-thread, one of which engages with a corresponding thread in the housings *d*<sup>3</sup> and the other in the housings *e*<sup>3</sup>. The shafts *d*<sup>2</sup> *e*<sup>2</sup> are inclined to each other and extend from the rolls, at an angle of about thirty degrees with the sides of the car-wheel, to the main shaft *h*, with which they are connected by the bevel gear-wheels *h'*. About the middle of each of these shafts is a ball-and-socket joint, *d*<sup>4</sup> *e*<sup>4</sup>, the ball and socket of which are flattened, so that the rotary movement of the rear portion of the shaft shall be communicated to the forward portion, which, owing to the pivotal joint, is permitted to move with the sliding housings.

In order to move the sliding housings, power is transmitted thereto from the main shaft as follows: On the main shaft *h* is a band-wheel, *i*, from which a straight belt and a twisted belt pass to the clutch band-wheel *i'*, which is mounted on the shaft *i*<sup>2</sup>, and the diameter of which is twice the diameter of the wheel *i*. On the shaft *i*<sup>2</sup> is keyed a gear-wheel, *i*<sup>3</sup>, having twelve cogs or teeth, which gear into the teeth of a gear-wheel, *k*, keyed to the shaft *k'*, the diameter of which wheel is five times the diameter of the wheel *i*<sup>3</sup>. Keyed on the shaft *k'* is a gear-wheel, *k*<sup>2</sup>, having a diameter equal to that of the wheel *i*<sup>3</sup>, and the cogs of which gear into the cogs of a gear-

wheel,  $k^3$ , which is mounted loosely on the shaft  $c'$ , and the diameter of which is equal to that of the wheel  $k$ . The cogs of this wheel  $k^3$  mesh into the cogs of gear-wheel  $m$ , which is loosely mounted on the shaft  $f^2$ . On the shafts  $c'$  and  $f^2$  are the friction-clutches  $m'$  and  $m^2$ , which are keyed to the shaft by a feather and spline, and are operated by the levers  $m^3$ , so as to bring them against the wheels  $k^3$  and  $m$  or remove them therefrom.

The operation is as follows: The blank from which the car-wheel is to be formed is cast, preferably, of Bessemer steel, into the form of a disk, having a central opening for the axle.

This blank, having been so formed, is placed in a heating-furnace and raised to a high degree of temperature, after which it is removed from the furnace and placed in the mandrel. When the blank has been so placed in the mandrel, the side rolls being set in motion, the belt on the wheel  $i$  is thrown so as to set the wheel in motion, which motion is imparted, by means of the gear-wheels  $i^3$ ,  $k$ , and  $k^2$ , to the wheels  $k^3$  and  $m$ , and by means of the clutch  $m^2$  this motion is imparted to the shaft  $f^2$  and screws thereon, which moves the housings  $d^3$  and  $e^3$  on the slides, and brings the side rolls,  $d$  and  $e$ , against the sides of the blank, as shown in Fig. 1. The revolution of these rolls on their axes as they bear on the face of the blank causes it to revolve on its bearings in the mandrel, so that the entire surface of the sides of the blank is subjected to the action of the rolls. The clutch  $m'$  is then thrown in contact with the wheel  $k^3$ , which imparts power to shaft  $c'$ , and by the sector  $c$  and rack  $b^3$  the housings are moved forward until the idle-roll  $b$  comes in contact with the face of the revolving car-wheel in the mandrel. When the wheel has been formed or brought to the required shape by the rolls, they are withdrawn by throwing the cross-belt to the

clutch band-wheel  $i$ , and the car-wheel is then removed from the mandrel.

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

1. In a mill for rolling car-wheels, the combination, with the side rolls having jointed shafts, of the sliding housings, the right-and-left-hand threaded screw, and the intermediate band-wheel, pulleys, gear-wheels, and clutches for actuating the threaded screw from the power-shaft which drives the rolls, substantially as and for the purposes specified.

2. In a mill for rolling car-wheels, the combination, with the side rolls, of a face roll having a sliding housing provided with a rack, the toothed sector having the shaft  $c'$ , and the intermediate gearing for actuating the toothed sector-shaft from the power-shaft which drives the side rolls, substantially as and for the purposes specified.

3. In a mill for rolling car-wheels, the combination of the side-rolls, having jointed shafts, the sliding housings, the right-and-left-hand threaded screw for moving the sliding housings, of the side rolls the face roll having a sliding housing provided with a rack, a shaft provided with a toothed sector for operating the sliding housing of the face roll, and the intermediate gearing for operating the sector-shaft and the right-and-left-hand threaded screw from the power-shaft which drives the side rolls, substantially as and for the purposes specified.

In testimony whereof I have hereunto set my hand this 5th day of December, A. D. 1883.

OTTO NIOGGEMEIER.

Witnesses:

W. B. CORWIN,  
L. C. FITLER.