

J. C. RICHARDSON.

Machines for Rolling Carriage Axles.

No. 145,526.

Patented Dec. 16, 1873.

Fig.1

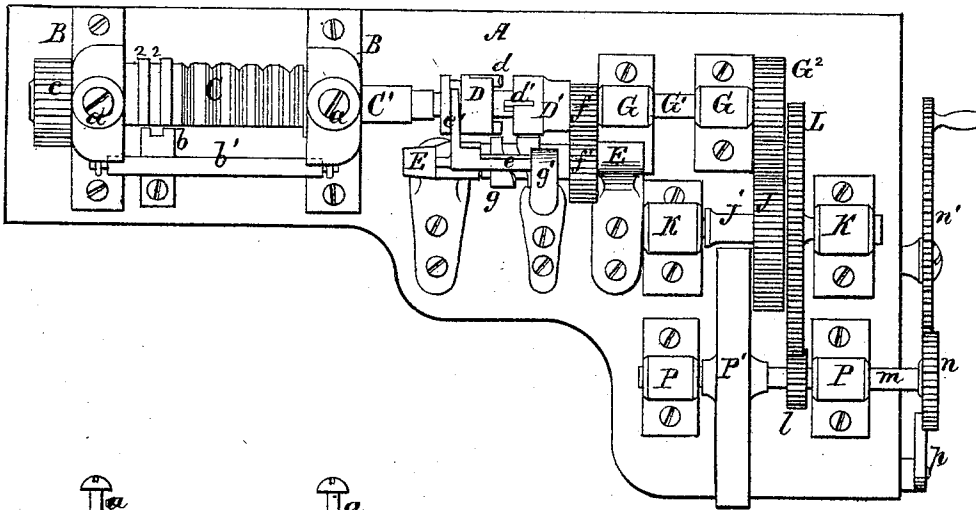


Fig. 2

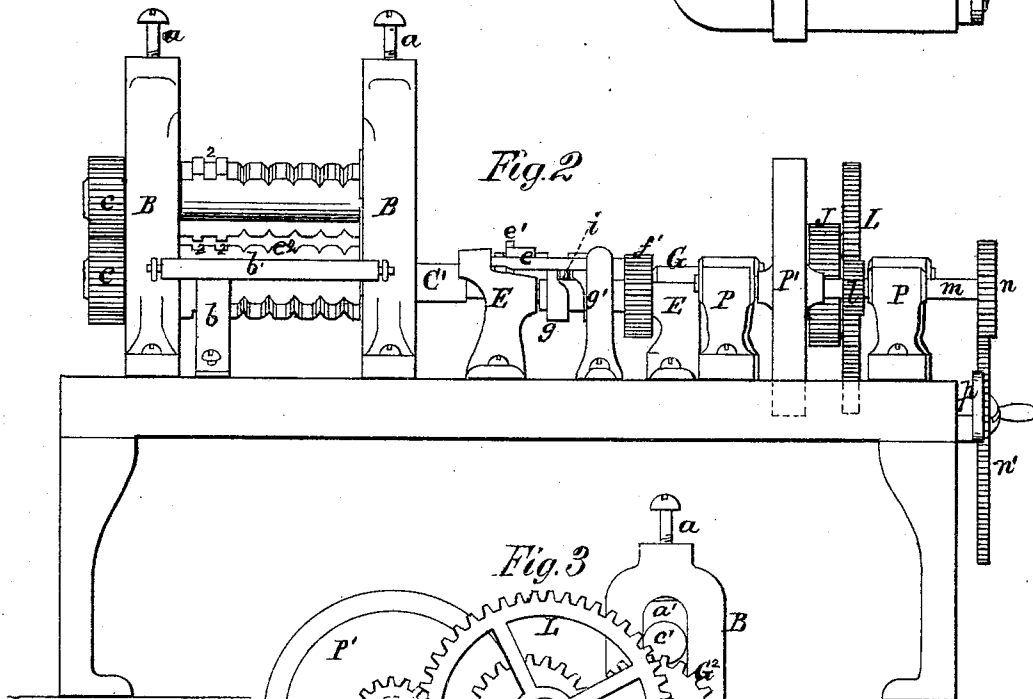
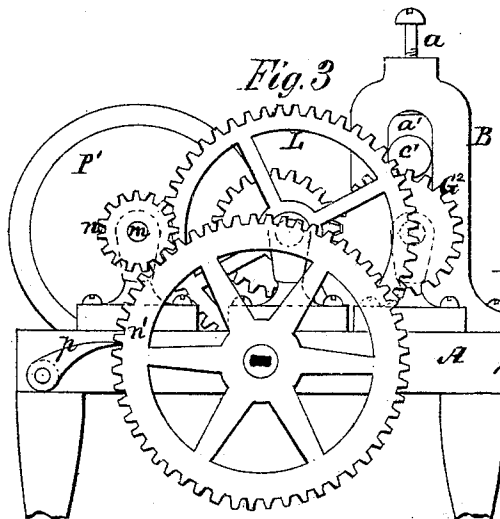


Fig. 3



Witnesses.
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Fig. 4

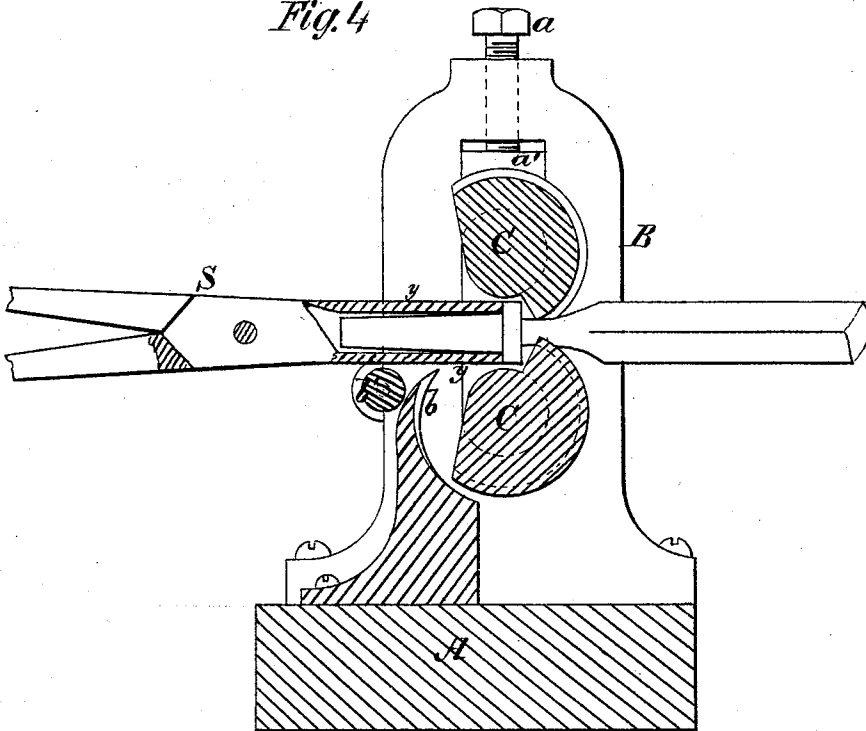
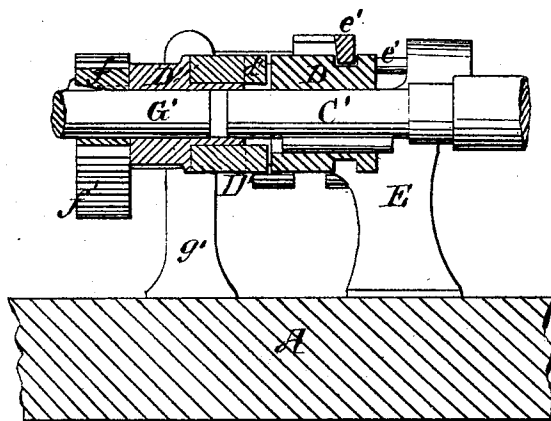


Fig. 5



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UNITED STATES PATENT OFFICE.

JULIUS C. RICHARDSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING CARRIAGE-AXLES.

Specification forming part of Letters Patent No. **145,526**, dated December 16, 1873; application filed May 29, 1873.

To all whom it may concern:

Be it known that I, JULIUS C. RICHARDSON, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improved Rolling-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1, Plate 1, is a top view of my improved rolling-machine. Fig. 2, Plate 1, is an elevation of the front part of the machine. Fig. 3, Plate 1, is an end elevation. Fig. 4, Plate 2, is a section taken vertically and transversely through the rollers, showing an axle-bar between them held by tongs; Fig. 5, Plate 2, a sectional view of the stopping and starting devices.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements for operating rolls for rolling metal into various shapes, whereby the rotation of the rolls will be stopped at a proper point for adjusting the work between them and again started without requiring any attention on the part of the attendant, as will be hereinafter explained. It also relates to means for manipulating the bars in the operation of rolling axles having collars on them; also, to a stripper for clearing the bars from the grooved rollers.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawings, A represents a bench, from the horizontal portion of which rise perpendicularly two standards, B B, in which are journal-boxes *a'* for the journals of two grooved rollers, C C. The upper journal-box is held down by means of adjusting-screws *a* *a*, by means of which the space between the grooved concentric portions of the rolls is increased or diminished, as circumstances require. The rolls C C present, in cross-section, the form of segments of circles, the concentric portions of which have grooves of different shapes formed into them for reducing and giving the proper shapes and sizes to bars of metal which are passed between them. The two grooves 2 2, at the left-hand ends of the rolls C C, are rectangular in shape, as shown in

Figs. 1 and 2, for finishing axle-bars, and the other grooves are of the shape described in my Letters Patent numbered 136,620, and dated on the 11th day of March, 1873, and are for reducing the bars. In front of the rolls is a fixed stripper, *b*, and in front of this is a rolling-rest, *b'*. The stripper *b* has its upper end notched, so as to fit pretty close into the grooves 2 2 and clear the bars as they are drawn between these grooved portions of the rolls, preventing adhesion of the bars thereto. The rest *b'* is for supporting the bars and allowing them to be rolled into and out of the machine with very little expenditure of labor. The roller *b'* has its bearings on the standards, and the stripper *b* is supported upon the bench A. The two rolls are geared together by means of small wheels *c c*, so that the top roll is moved by the rotation given to the bottom roll. The shaft C of the bottom roll C is extended out from the right-hand standard B, and has its outer bearing in a clutch-hub, D', which is keyed on a shaft, G¹, which has its bearings in standards G G, and carries on one end an eccentric spur-wheel, G². The axes of the two shafts C' G¹ coincide with each other, and on the roller-shaft C' a clutch-hub, D, is applied so as to receive endwise play, but it is not allowed to turn on its shaft. The hubs D D' are provided with clutching-teeth *d d* on their adjacent ends, by means of which the two shafts C' G¹ are caused to rotate together. The clutch-hub D is grooved annularly, and in this groove a shifting-fork, *e'*, is received, which fork is rigidly applied to a slide, *e*, working in a standard, E, and guide *g'*. A tooth, *i*, (see Fig. 2,) on the shifting-slide *e*, is received into an annular cam-groove which is made into the surface of a hub, *g*, on a shaft which is below the slide *e*, and which has its bearings in standards E E. This shaft, on which is the cam-hub *g*, carries a spur-wheel, *f'*, which engages with and receives motion from a pinion, *f*, on the shaft G¹. The eccentric wheel G² engages with a wheel, J, which is also applied eccentrically on its shaft J', which latter is supported by standards K K, and carries a large spur-wheel, L. The spur-wheel L engages with a pinion, *l*, on a shaft, *m*, which has its bearings in standards P P, and on which is also keyed a "fly" or balance wheel, P', and a pinion spur-wheel, *n*. This wheel *n* engages with

a large driving-spur, n' , to the teeth of which a pawl, p , may be applied for preventing the machine from being turned backward.

When rolling axle-bars having collars on them, I use a pair of tongs, S , having jaws y , which, when they are closed, form a tube. These jaws embrace and inclose the axle-arm of the bar, and are, externally, of a diameter equal at least to the diameter of the collar on the axle. By thus constructing the jaws of the tongs they form an even surface with an axle-arm collar, and thus leave no obstruction to the introduction or removal of an axle from the machine when working between the rectangular grooves 2 2.

It is very important that the rolls should always be stopped at the exact time and in the exact position required; also, that the motion of the rolls should be slow while passing a bar between them, and comparatively fast while adjusting a bar. The eccentric wheels on shafts $G^1 J'$ give the variable motions required—that is to say, the motion is slowest at the moment of clutching the two shafts $C' G^1$, for the purpose of preventing derangement or breaking of any of the parts; and the motion is also slow while unclutching the said shafts, in order to check momentum of the rolls and stop them in the exact positions required for adjusting the bars in the grooves of the rolls.

When motion is imparted to the driving-wheel it is transmitted to the shaft G^1 through the medium of the spur-wheels above described,

and this shaft is rotated continuously, but with variable or fast and slow movements. The shaft on which is the cam-hub g receives its movements from the shaft G^1 , and, at a proper time during the revolution of the rolls $C C$, the groove in cam-hub g moves the shifting-fork e' , and with it the clutch-hub D , toward the rolls $C C$, thus unclutching the shaft C' from shaft G^1 . The rolls will then cease their movements for a time, and the attendant can adjust his work into the proper grooves in the rolls. The cam-hub and shifter will again come into play and clutch the two shafts together, when the rolling, shaping, and reduction of the bar will proceed.

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

1. The combination, with the rolls $C C$, of the eccentric spur-wheels $G^2 J$, shaft G , and the clutch, substantially as and for the purpose set forth.

2. The clutching-hubs $D D'$, applied on the shafts $C' G^1$, in combination with the shifting-fork e' and its cam-hub g , and with grooved rolls $C C$, for the purpose of stopping and starting said rolls, substantially as described.

3. The notched stripper b , combined with the grooves 2 2 in the rolls $C C$, and with a supporting-roller, b' , substantially as described.

JULIUS C. RICHARDSON.

Witnesses:

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