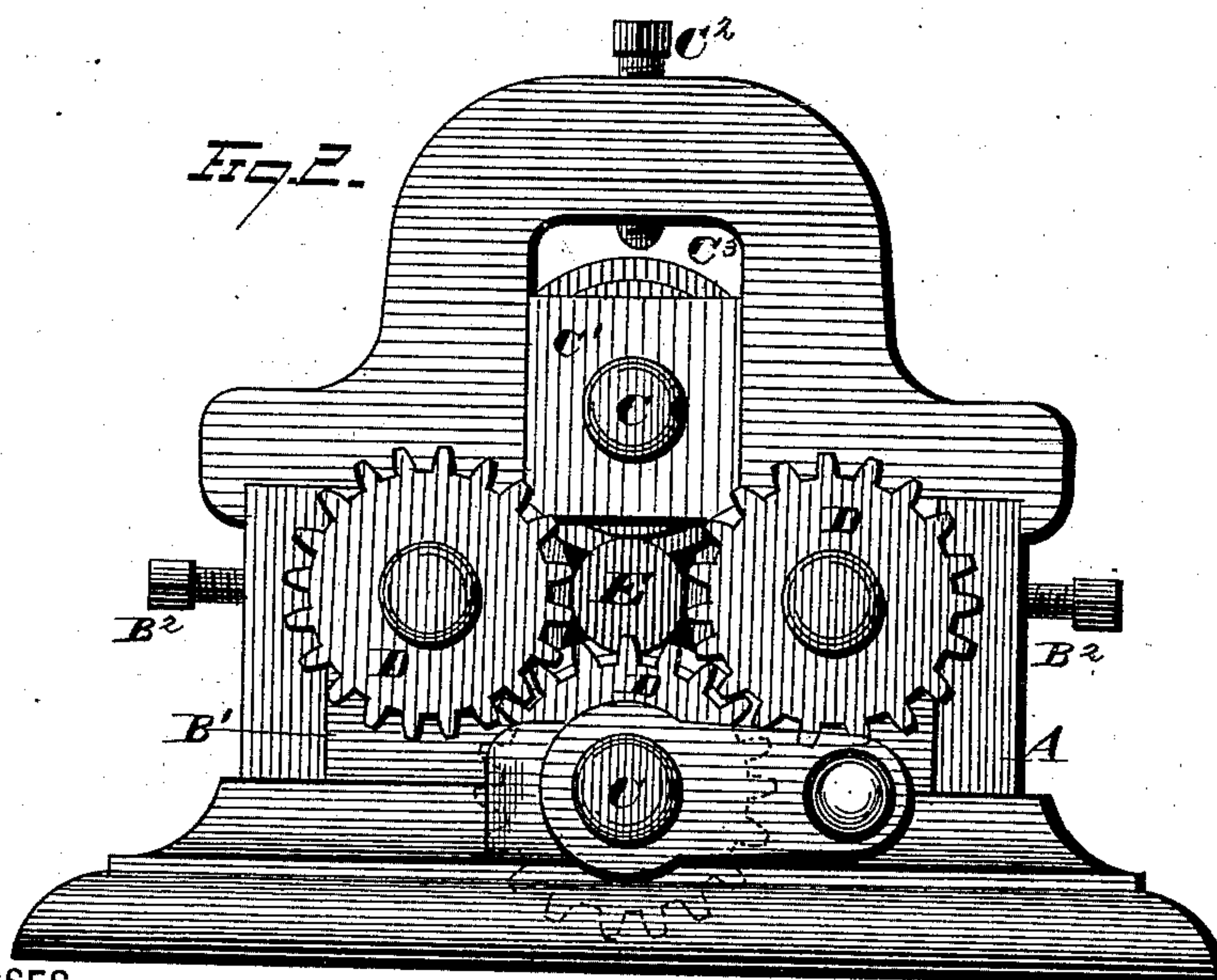
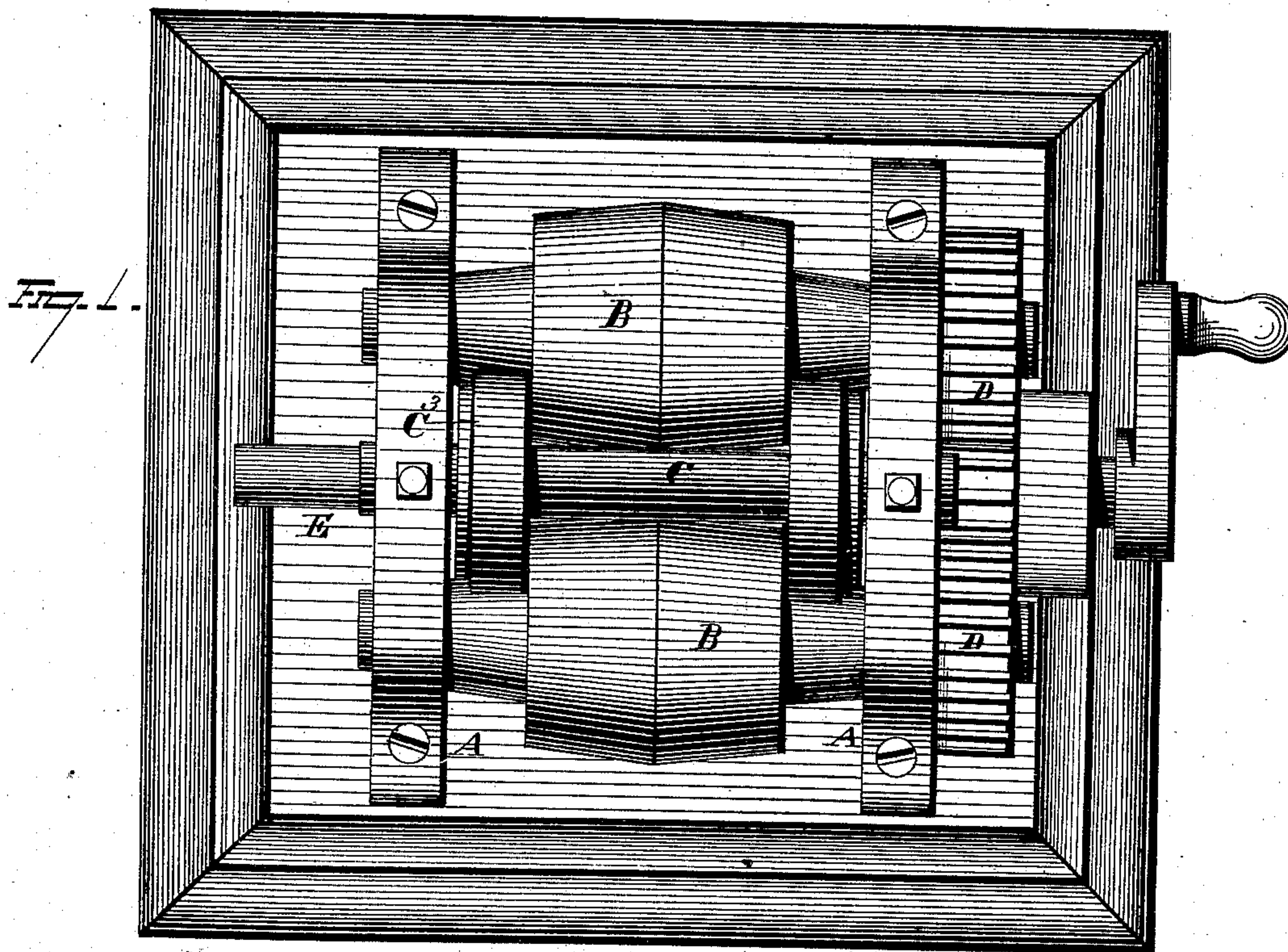


T. S. COOK.
Rolls for Rolling Car Axles.

No. 238,857.

Patented March 15, 1881.



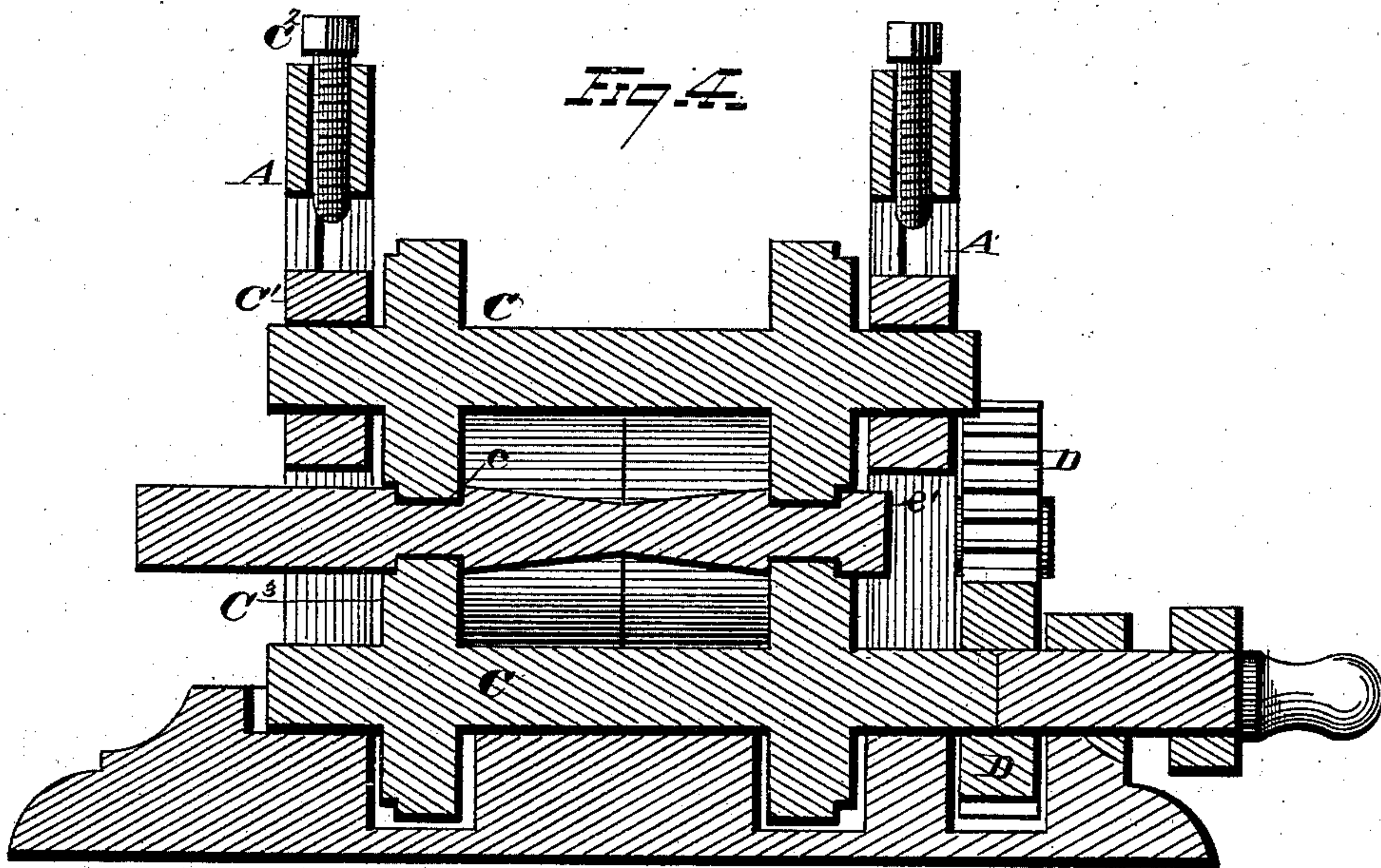
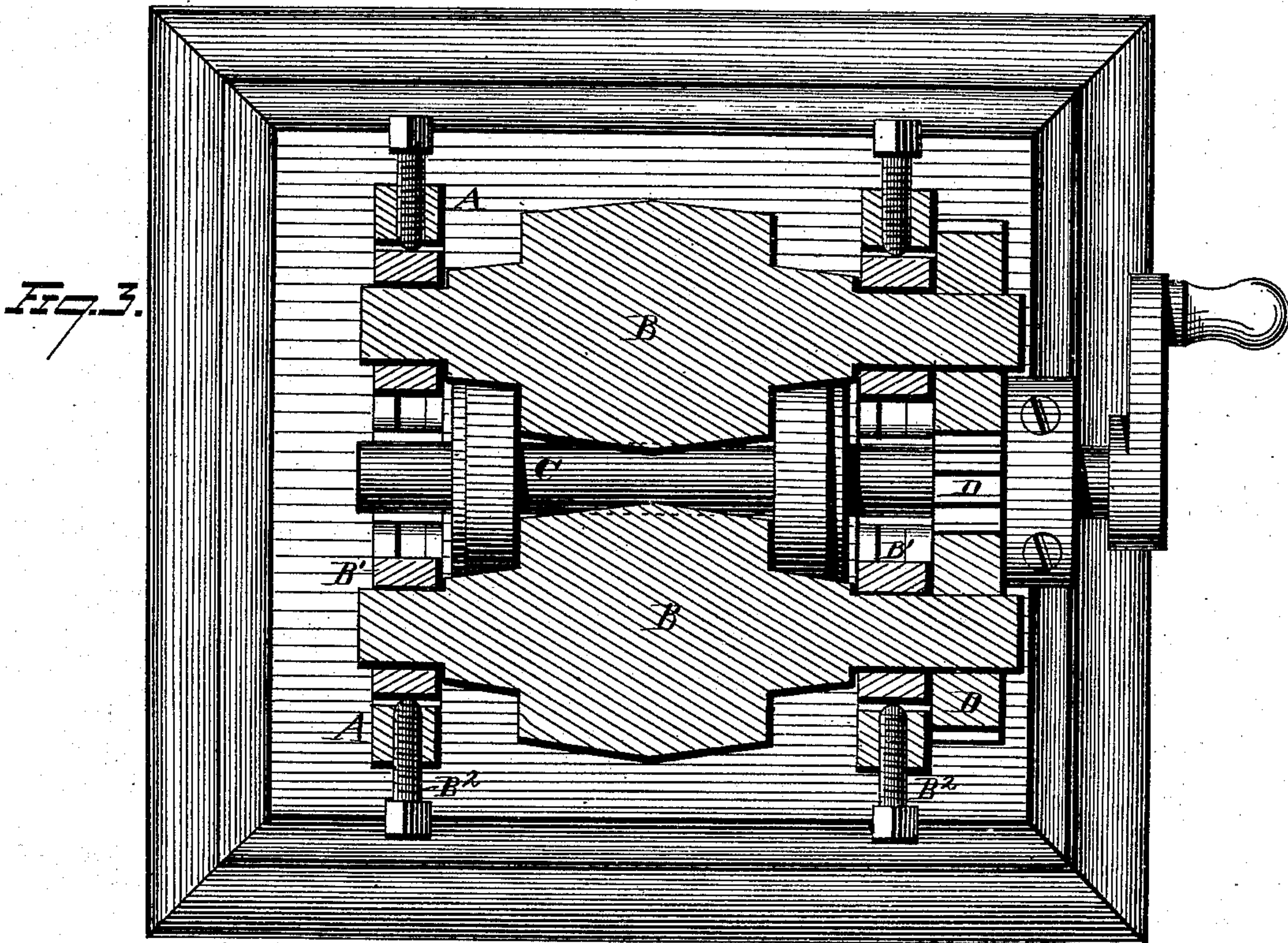
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UNITED STATES PATENT OFFICE.

THOMAS S. COOK, OF CLEVELAND, OHIO.

ROLL FOR ROLLING CAR-AXLES.

SPECIFICATION forming part of Letters Patent No. 238,857, dated March 15, 1881.

Application filed May 31, 1879.

To all whom it may concern:

Be it known that I, THOMAS S. COOK, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Rolls for Rolling Car-Axles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to rolls for rolling car-axles; and it consists in two rolls placed opposite each other, preferably in a horizontal direction, for forming the body of the axle, and two rolls placed opposite each other, preferably in a vertical direction, collars from which extend to and bear upon the ends of the axle in such manner as to roll the journals, as will be hereinafter more fully described.

In the drawings, Figure 1 represents a plan view of a machine embodying my invention; Fig. 2, an end view of the same; Fig. 3, a horizontal section by a plane containing the axes of the main rolls B; Fig. 4, a section by a vertical plane containing the axes of the two smaller rolls.

A represents a frame-work of any suitable construction; B, the two rolls which shape the body of the axle. They are bulged along their central portion, as shown, in order to roll the central portion of the axle thin and taper the same from the central portion outward toward the two ends.

C are the rolls for forming the journals, and which serve at the same time to hold the bar that is being rolled firmly to the position between the main rolls B. One or both of the rolls B are housed in adjustable boxes B', and may be given a motion to and from each other by means of suitable mechanism—as, for instance, by set-screws, B², which may be connected with any suitable gears for feeding them forward and backward at the desired time and speed. So, also, one of the rollers C may be housed in like manner in adjustable boxes C', and be capable of adjustment in or out by any suitable mechanism, C².

D represents suitable gearing, whereby the

power is applied to turn the rolls B both in the same direction.

E is the axle in its position between the rolls, as it would appear at the end of the operation.

The operation of this device is substantially as follows: A bar of suitable length and diameter is taken; preferably the diameter should be somewhat less than the diameter of the collars at the end of the axle upon either side of the journal, and somewhat greater than the diameter of the axle at its middle point, so that in the operation of the rolls the metal displaced from the center of the axle may supply sufficient metal for the enlargement of the bar adjacent to the journal-boxes. The rolls B being separated sufficiently, and the upper roll C sufficiently raised to admit the bar, it is introduced endwise in a direction parallel with the axes of the rolls until it is in its proper place resting upon the collars C³ of the lower roller. The upper roll C is then brought down until it rests upon the bar, so as to hold it snugly against any up or down movement between the rolls B. The rolls B are then fed toward each other until they begin to act upon the bar, and the rapidity of their action upon the bar will be dependent upon the rapidity with which they are fed toward each other. When the central portion of the bar shall have been properly shaped the upper roll C may be fed downward until it shall have rolled to proper size the journals and the small collars at the extremities of the axle, the journals being shown at *e* and the collars at *e'*.

Instead of simply permitting the upper roll C to rest upon the bar while the rolls B are operating, the said rolls C may be fed toward each other, in which event the collars C³ on the rollers C act as stops, which would limit the longitudinal displacement of metal and require the bar to swell between the journals, and adjacent thereto until it conforms to the surface of the rolls B. It will be observed that in each of these rolls its surface is concentric with its axis; also, that the collars C³ shear across the ends of the rolls B, so that they make a perfect shoulder between the journals and the adjacent central portion of the axle.

By providing the rolls C with collars and

providing the rolls B with corresponding recesses, it is apparent that the collars C³ may be brought in beyond the outer surfaces of the rolls B, so as to bear against the axle that is being rolled. So, also, it is apparent that the invention is not limited solely to the rolling of car-axles, but the device is equally well adapted for the rolling of any bar into a bar of another form having a concentric surface of varying diameter. For instance, a shaft might be rolled with several journals intermediate of its length, for which purpose it would require simply that there should be a collar, C³, and a corresponding recess in the roll B for each said journal, in order that the collars might extend in beyond the outer surface of the rolls B and bear upon the axle, shaft, or other article that is being rolled.

I have already, in an incidental manner, mentioned the frame A and gearing D. It will be observed that this gearing consists of three cog-wheels, two of which are located well above the upper surface of the base A' of the frame A, while the central gear-wheel, D', has the axis of its shaft about on a level, or substantially on a level, with the upper surface of the base A' of the frame A, and that the said base A' is slotted or cut away in such a manner as to admit the lower half of said gear-wheel D'. It will further be observed that the base A' of the frame A is made sufficiently thick to lift the gear-wheel D' up from any foundation upon which the rolls rest. This construction enables me to make the vertical frame-work A shorter than it could be made were the gear-wheel D' journaled well above the base A'. This shortening of the vertical frame manifestly increases the strength and rigidity of the general structure, and the rolls will have a more steady and even motion than would be obtained if the standards or upright

portion of the frame A were longer than shown in the drawings.

What I claim is—

1. The mechanism for rolling railway-car axles, consisting of two rolls, B, geared to run in the same direction, their surfaces conforming to the central portion of the car-axle, and in connection therewith two rolls, C, located opposite the space between the first rolls and adapted to roll the journals, the said rolls B and C provided with adjusting mechanism for feeding them toward the bar that is being rolled, substantially as and for the purposes described.

2. The combination, with the rolls B B, of the rolls C C, the said rolls C being provided with collars C³, made to extend across the ends of the rollers C, and bearing upon the axle to hold the same in position, substantially as and for the purposes described.

3. Apparatus for changing the surface of a bar of metal into another form, in which its external surface shall be concentric with the axis of the bar, but shall vary in diameter, said apparatus consisting of two parallel rolls adapted to be brought against the bar, between which rolls the bar may be inserted longitudinally of the axes, and a second set of rolls located opposite the space between the first, and adapted likewise to be brought against the bar by being collared in beyond the outer surface of the first set, substantially as and for the purposes described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS S. COOK.

Witnesses:

JNO. CROWELL, Jr.,
WILLARD FRACKER.

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