

(No Model.)

2 Sheets—Sheet 1.

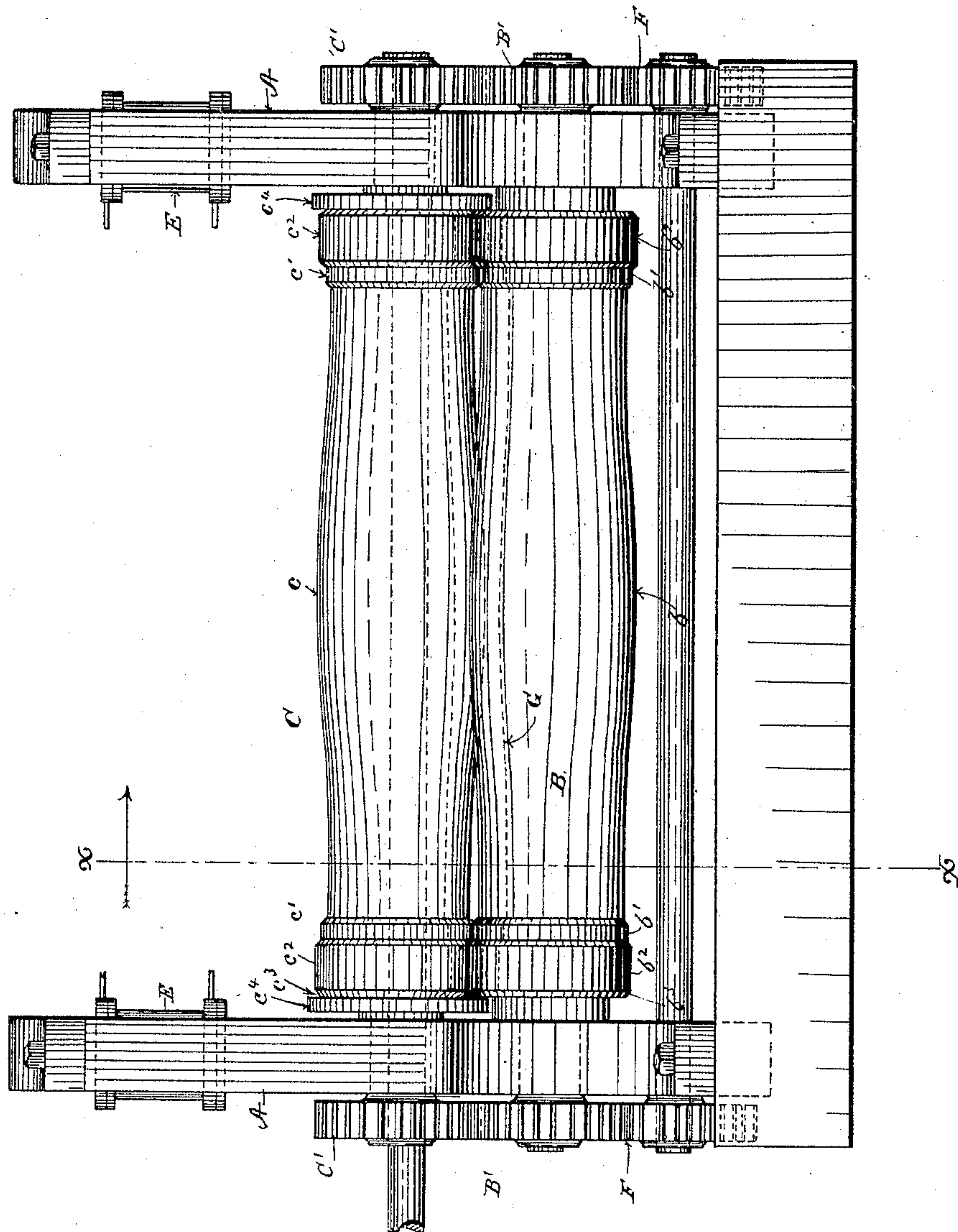
D. L. EVANS.

ROLLS FOR MANUFACTURING CAR AXLES.

No. 444,746.

Patented Jan. 13, 1891.

Fig. 1.



Witnesses.
W. R. Erlen
[Signature]

Inventor.
David L. Evans.
By Leggett and Leggett.
Attys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

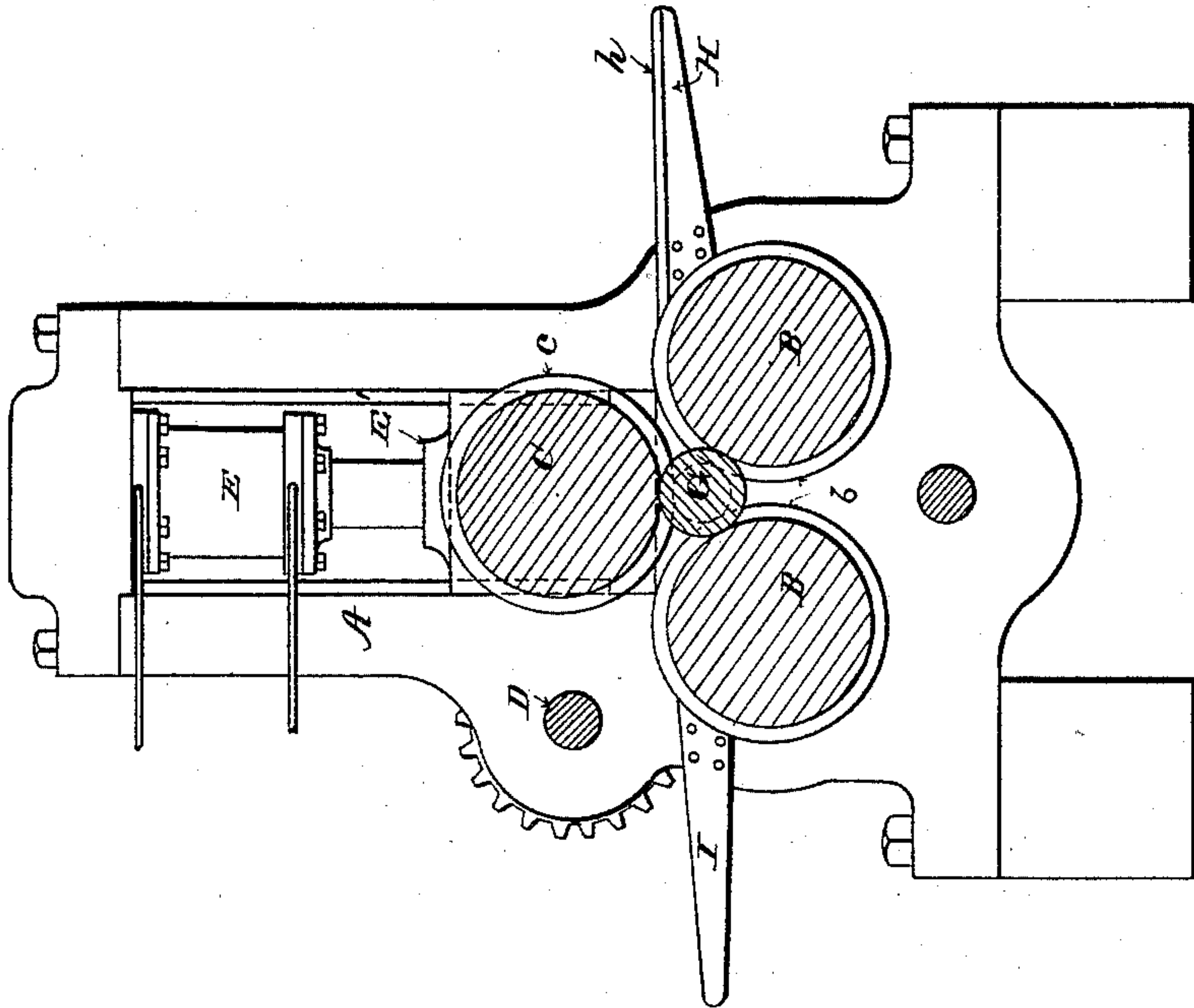


Fig. 2.

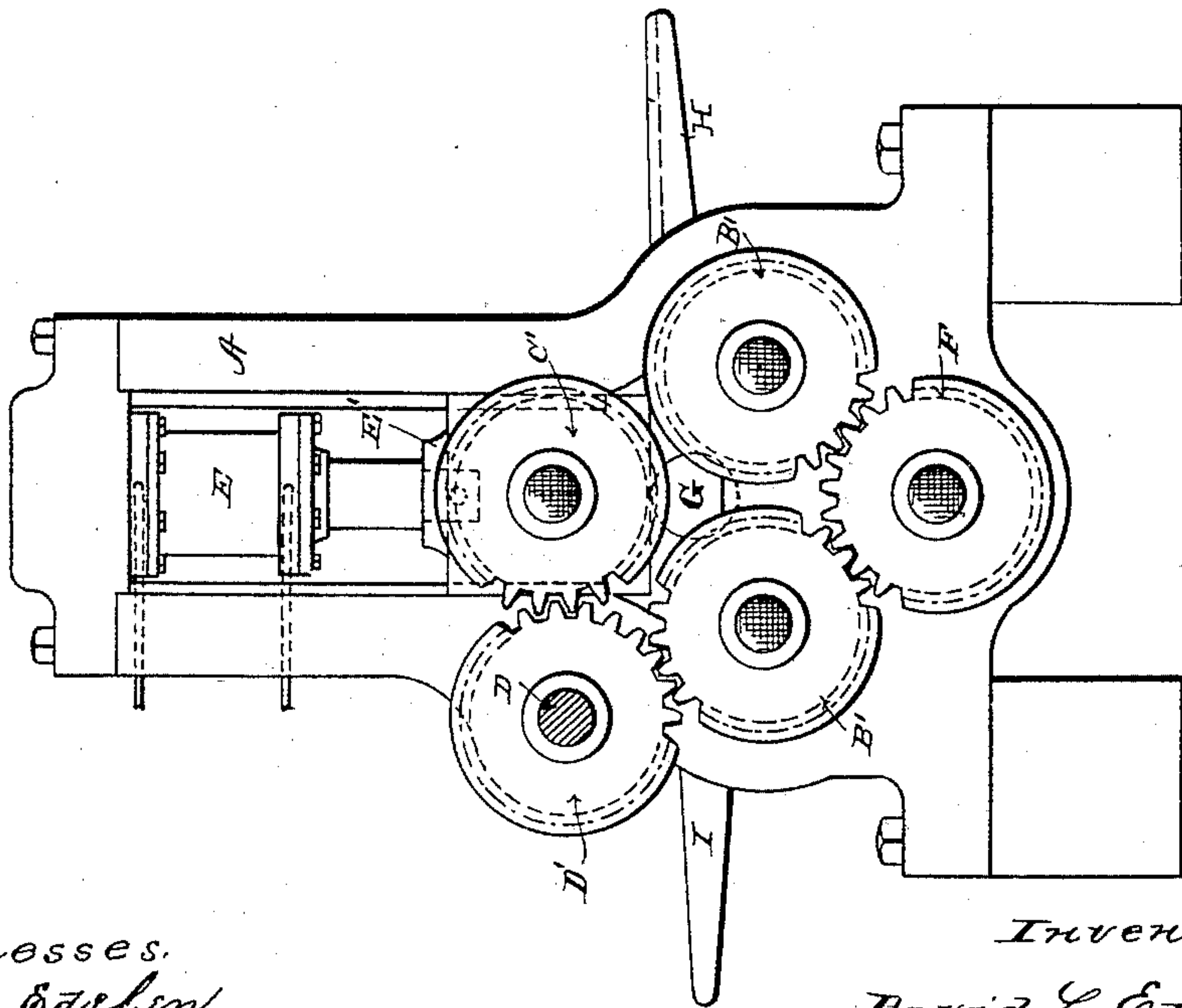
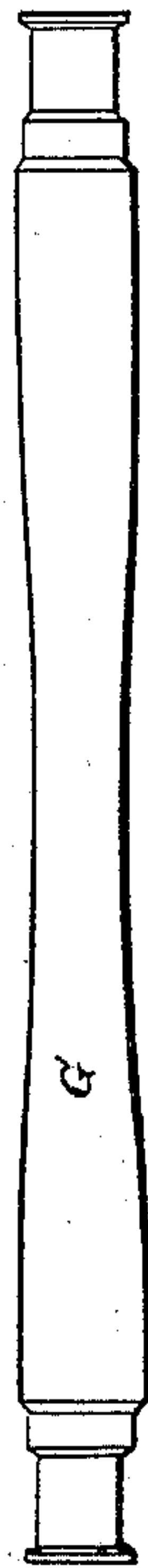


Fig. 4.



Witnesses.
W. R. Eaden
[Signature]

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UNITED STATES PATENT OFFICE.

DAVID LEWIS EVANS, OF CLEVELAND, OHIO.

ROLLS FOR MANUFACTURING CAR-AXLES.

SPECIFICATION forming part of Letters Patent No. 444,746, dated January 13, 1891.

Application filed May 23, 1890. Serial No. 352,898. (No model.)

To all whom it may concern:

Be it known that I, DAVID LEWIS EVANS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Rolls for Manufacturing 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 the same.

My invention relates to improvements in rolls for manufacturing car-axles, the rolls being adapted to shape the axle from a cylindrical blank and to shear off the surplus metal at the ends of the axle.

In the accompanying drawings, Figure 1 is a front side elevation. Fig. 2 is an end elevation. Fig. 3 is an elevation in transverse section on line $x x$, Fig. 1. Fig. 4 is an elevation of a finished axle.

A A represent the housings; B B, the lower rolls; C, the top roll, and D the driving-shaft. The trunnions of rolls B B are journaled in stationary boxes of the housings, while the trunnions of the top roll are journaled in vertically-movable boxes E', adapted to reciprocate in vertical ways of the housings, all of which is well known in the art. The rolls are preferably geared at both ends, the trunnions of rolls B B being provided with gears B' B', that engage in common with idle or intermediate gears F, so that the two rolls B turn in the same direction. The gears B' of the one lower roll B also engage gears D' of the driving-shaft. The trunnions of roll C are provided with gears C', that also engage gears D' of the driving-shaft, these gears having long teeth, whereby roll C may be moved up and down a limited distance without affecting the operation of these gears. The driving-shaft is of course provided with a driving pulley or gear. (Not shown.)

E E are double-acting hydraulic rams, the piston-rods of which are connected with the journal-boxes E' of the upper roll for moving the latter up and down. These rams connect with the same water-supply, so that they move in unison. Screws could be employed for the purpose; but the hydraulic rams are

preferable, and both screws and rams are well known for such purpose.

What are considered the novel features of these rolls are their peculiar form, whereby they are adapted to reduce a cylindrical blank to the required form of a car-axle, and the flanges on the upper roll for shearing off the surplus metal at the ends of the axle. The blanks comprise cylindrical bars of metal and are supposed to be approximately of the size of the finished axle at the largest portions of the latter, the blanks being of such length as will provide the necessary metal for the axle, and perhaps a trifle extra metal at the ends to insure the end sections of the axle being full. The central portion of these rolls is bellied, respectively, as shown at $b c$ in Fig. 1, to reduce the central portion of the axle as desired, and next outside are cylindrical sections of the rolls $b' c'$ of such reduced size as to leave the engaging portions of the blank approximately of their initial size. Next outside the rolls are provided with larger cylindrical sections $b^2 c^2$ to reduce the blanks to the proper size for the journal-bearings of the axle. Next outside the rolls are provided with grooves $b^3 c^3$ for forming the end collars of the axle, and next outside of these grooves the top roll is provided with flanges c^4 , these flanges extending to approximately or a trifle beyond the axis of the axle for shearing off the ends thereof. The finished axle G is shown at dotted lines, Fig. 1, and full lines, Fig. 4, the size of the end sections being such as to admit of turning off these sections in finishing the journal-bearing in fitting the car-wheel. The blanks are of course heated before they are fed to the rolls, and an apron or table H is provided for feeding the blanks sidewise to the rolls, this table being provided with suitable guides h , by means of which the blank, when delivered to the rolls, is centrally located between the housings; also a table or skid (shown at I) for receiving the axles as they are removed from the rolls is provided.

What I claim is—

In rolls for rolling car-axles, the combination of housings and rolls, each roll having at

each end two narrow cylindrical sections of
different diameters, and a groove located to
the outside and adjacent to each larger cy-
lindrical section, one of said rolls having a
5 flange at each end for cutting off surplus
metal at the ends of the axle, substantially as
set forth.

In testimony whereof I sign this specifica-
tion, in the presence of two witnesses, this 5th
day of May, 1890.

DAVID LEWIS EVANS.

Witnesses:

CHAS. H. DORER,
JNO. L. EVANS.