

No. 731,486.

PATENTED JUNE 23, 1903.

C. MERCADER.

APPARATUS FOR MAKING AXLES, SHAFTS, &c.

APPLICATION FILED OCT. 28, 1901. RENEWED OCT. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

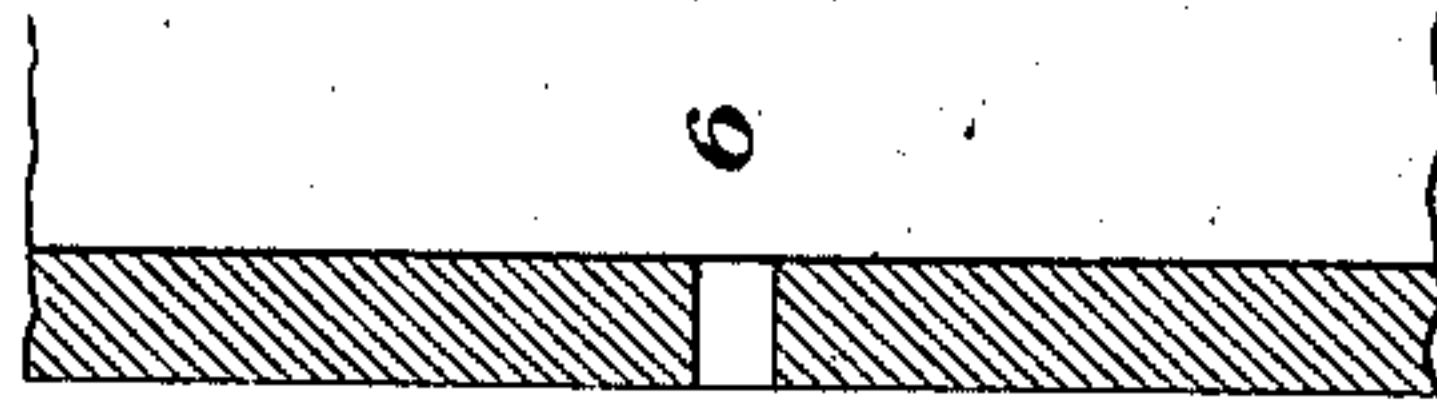
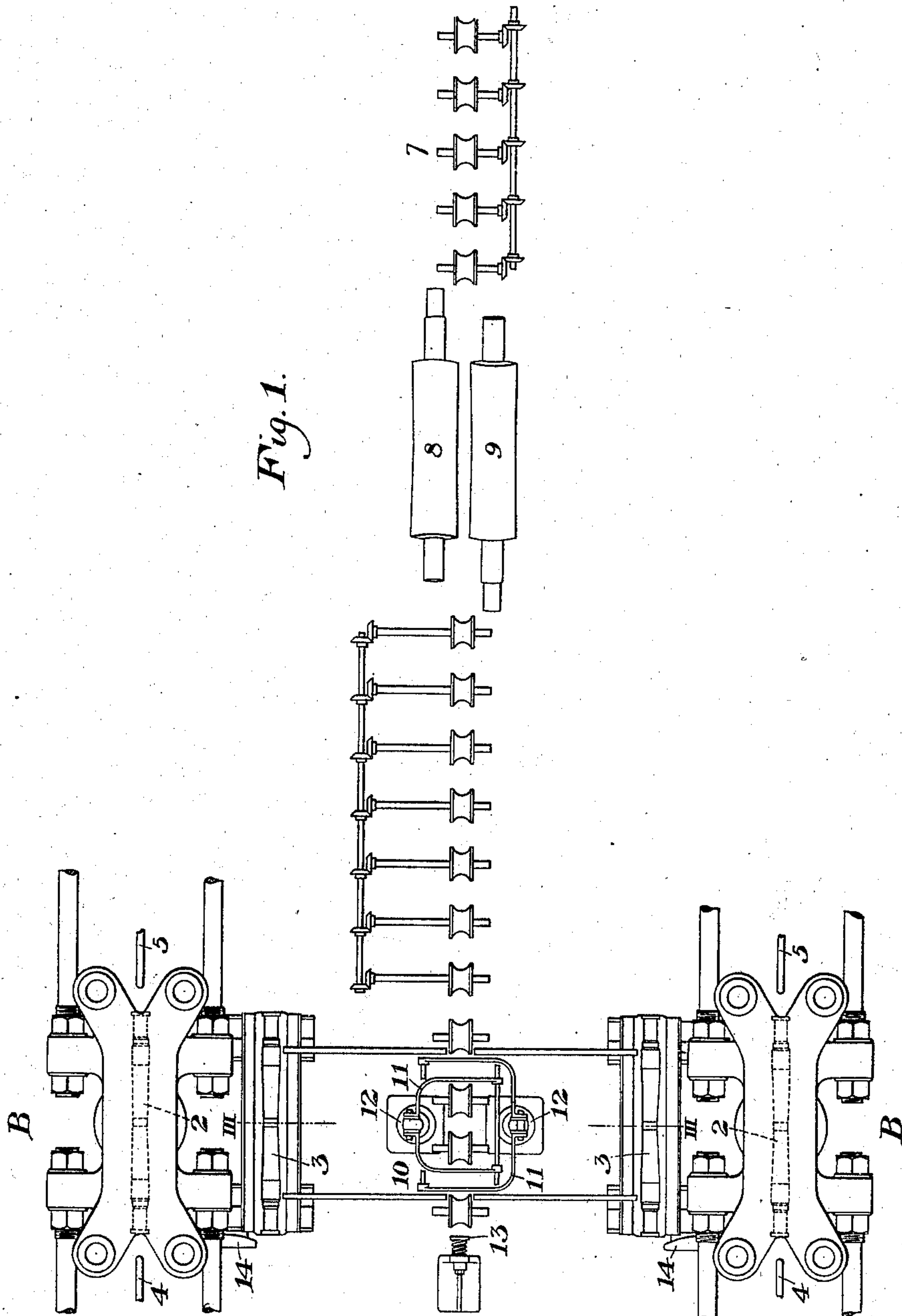


Fig. 1.



WITNESSES

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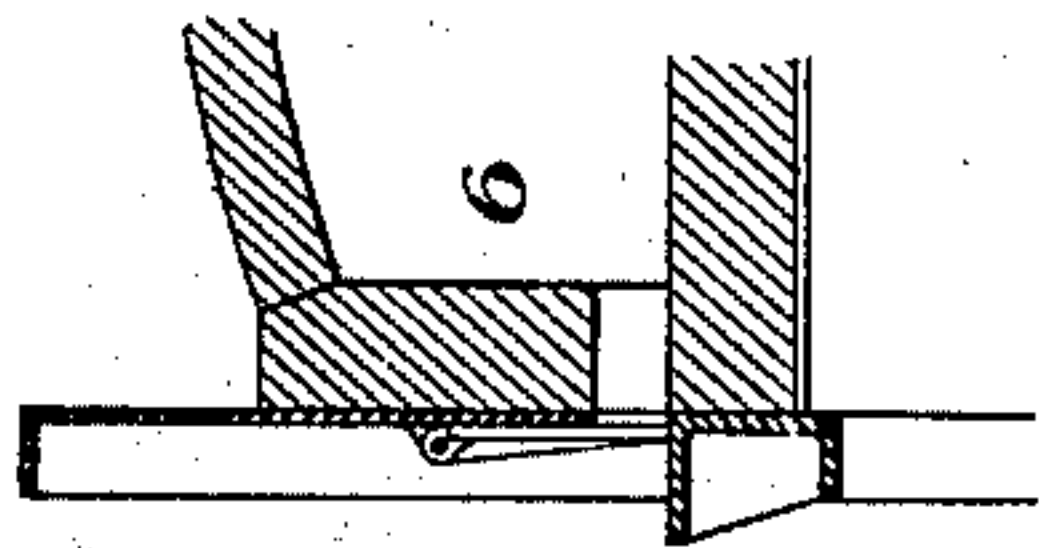


Fig. 2.

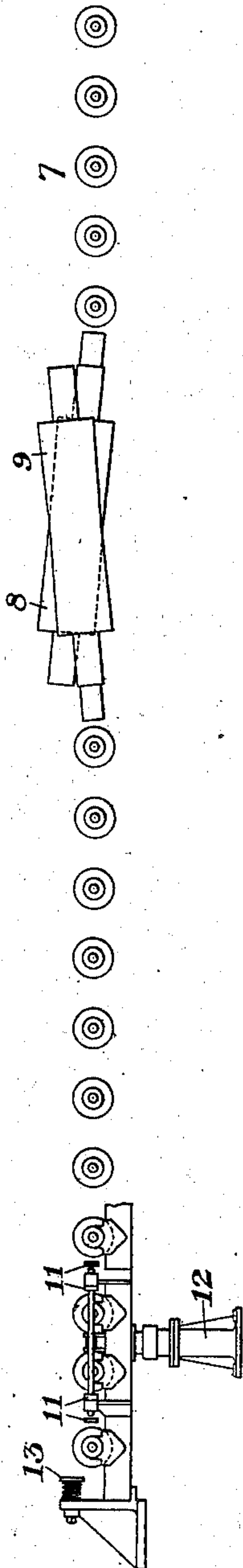
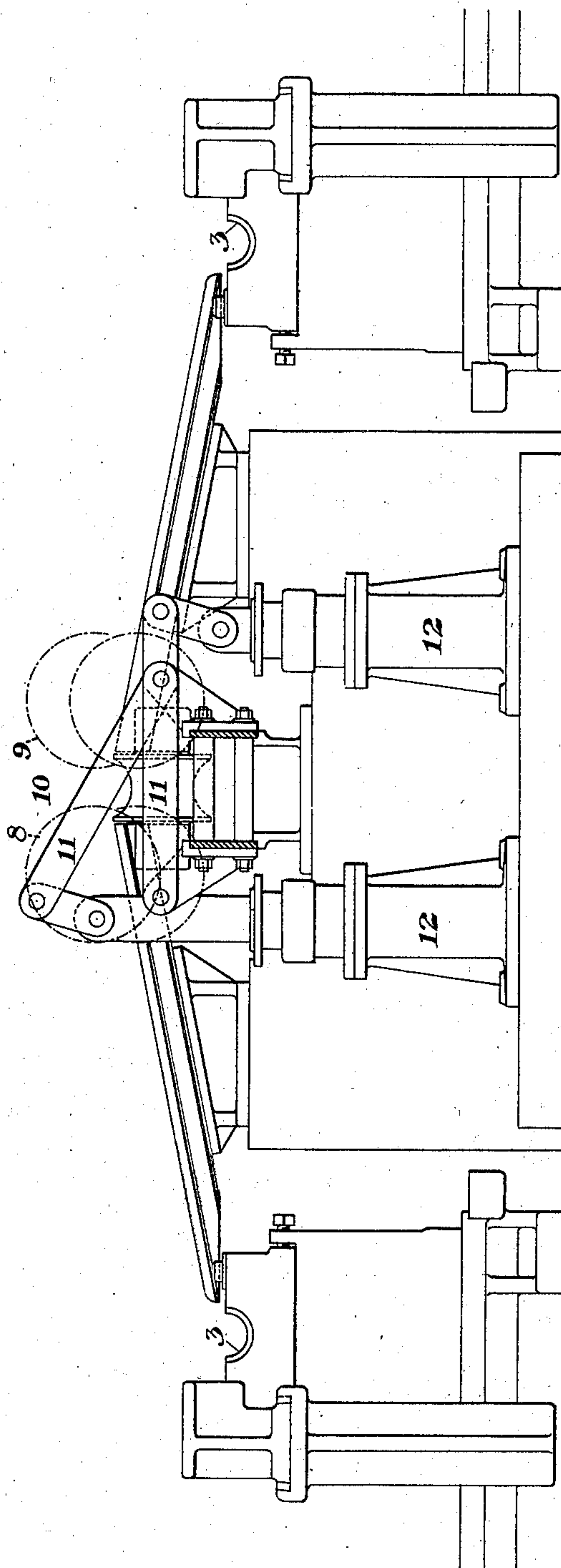


Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CAMILLE MERCADER, OF PITTSBURG, PENNSYLVANIA.

## APPARATUS FOR MAKING AXLES, SHAFTS, &c.

SPECIFICATION forming part of Letters Patent No. 731,486, dated June 23, 1903.

Application filed October 28, 1901. Renewed October 22, 1902. Serial No. 128,350. (No model.)

*To all whom it may concern:*

Be it known that I, CAMILLE MERCADER, of Pittsburgh, Allegheny county, Pennsylvania, have invented a new and useful Apparatus for Making Axles, Shafts, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of apparatus constructed in accordance with my invention. Fig. 2 is a side elevation of the same, partly in section; and Fig. 3 is a cross-section, on a larger scale, on the line III III of Fig. 1.

My invention is designed to improve the apparatus for making shafts, axles, and like articles wherein the axle-blank or other blank being held between dies is shaped by the action of a punching plunger or plungers which engage the end of the blank and penetrate and upset it, forcing the metal of the blank to be formed to the shape of the matrix-cavity.

I have found that greatly-improved results are obtained and the rapid wearing of the dies is prevented if after heating the blank and before upsetting it in the dies it is subjected to the action of straightening apparatus instead of using the dies themselves to correct the irregularities produced during the heating of the blank.

In the accompanying drawings, which show a preferred form of my apparatus, B represents the punching and upsetting press, which is or may be constructed substantially as described in my Patent No. 641,559, granted to me on January 16, 1900, having two dies 2 and 3, between which the metal blank is clamped, and two upsetting and punching dies 4 5, adapted to engage the ends of the blank when confined in said dies to punch and upset and cause it to conform in shape to the matrix-cavity. 6 is a furnace in which the axle-blanks are heated before being placed in the dies, and 7 is a feed-table which may be employed for conveying the blank after it is removed from the furnace.

Between the furnace and the press is a straightening-machine composed, preferably, of a pair of cross-rolls 8 9, driven by suitable gearing and adapted to receive the blank, cause it to traverse longitudinally and to ro-

tate, and by such travel and rotation to straighten it, to round it, and to smooth its surface.

The blank when delivered from the straightening apparatus is conveyed by a feed-table to a position opposite to a lateral transfer device 10, having, preferably, a pair of tilting frames 11, each operated by a hydraulic motor 12, and inclined skids leading to either of the presses shown. When in this position, the axle is stopped by coming into contact with a buffer 13, whereupon the frame 11 is raised and the straightened blank is caused to roll down upon the bottom die 3, which, as explained in my said patent, is preferably movable laterally, so as to carry the blank under the upper die. During its passage to the die the blank engages at the end a guide or guides 14, which are located at one side to contact with the end of the blank and center it in proper position to suit the die-cavity. The blank being then carried between the dies is engaged and punched therein and is brought to the form desired.

The advantages resulting from the use of the straightening apparatus before using the dies are of great practical importance.

The form and arrangement of both the straightening apparatus, the dies, &c., may be varied without departing from my invention.

I claim—

1. Apparatus for the manufacture of shafts and axles, comprising in combination a heating-furnace, a press having side dies and an end punch, an intermediate straightening device and means for transferring the articles from the furnace to the straightening device, and from the straightening device to the press; substantially as described.

2. Apparatus for the manufacture of shafts and axles, comprising in combination a heating-furnace, a press having side dies and an end punch, an intermediate set of straightening-rolls and means for transferring the articles from the furnace to the straightening device, and from the straightening device to the press; substantially as described.

3. Apparatus for the manufacture of shafts and axles, comprising in combination a heating-furnace, a press having side dies and an

end punch, an intermediate straightening device, feed-table, and transfer mechanism; substantially as described.

4. Apparatus for the manufacture of shafts  
5 and axles, comprising in combination a heating-furnace, a press having side dies and an end punch, an intermediate straightening device, transfer mechanism, and a guide adapted

to engage the end of the blank; substantially as described. 10

In testimony whereof I have hereunto set my hand.

CAMILLE MERCÂDER.

Witnesses:

H. M. CORWIN,  
C. P. BYRNES.