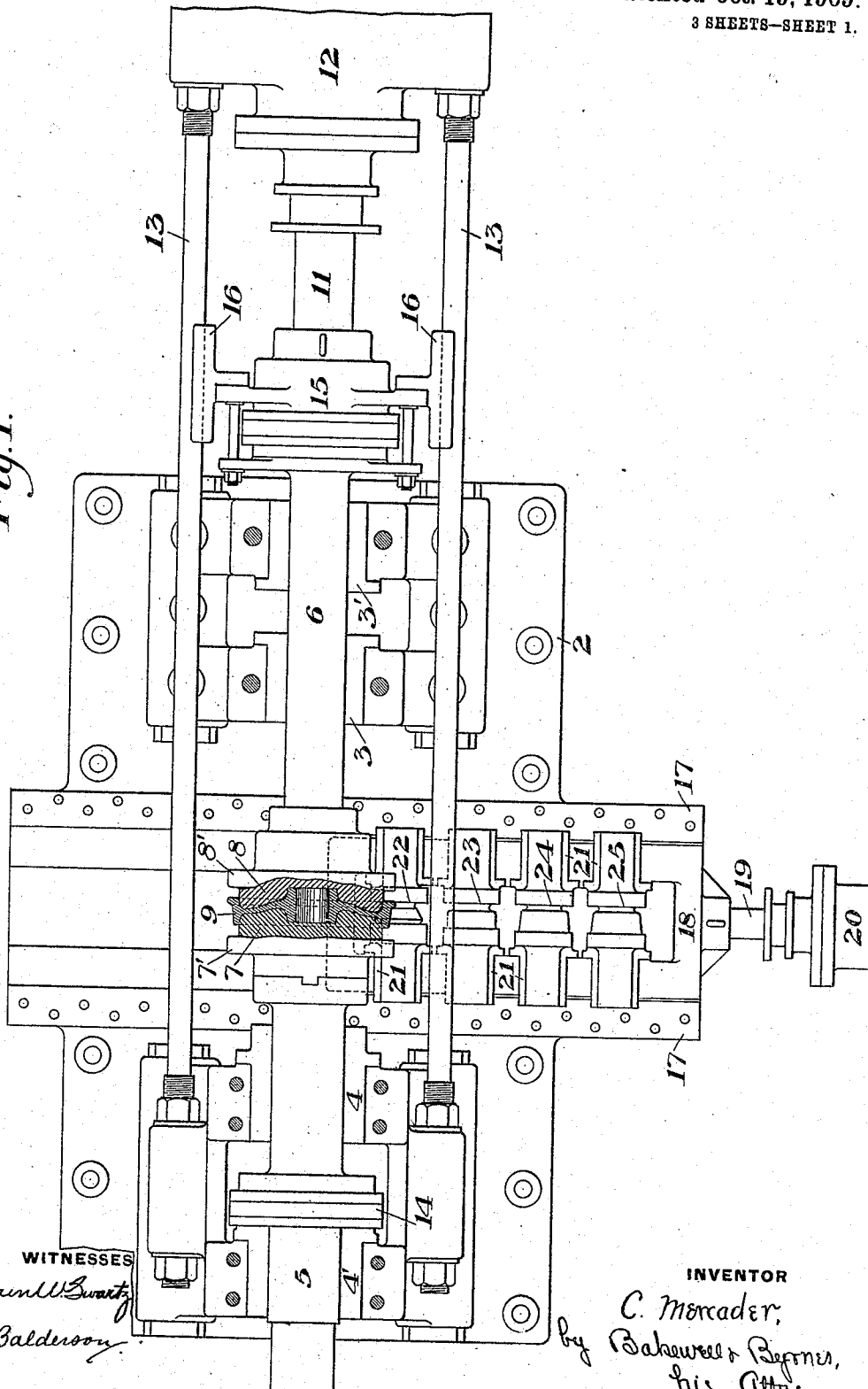


C. MERCADER, DEC'D.
E. MERCADER, ADMINISTRATOR.
APPARATUS FOR ROLLING CAR WHEELS.
APPLICATION FILED MAY 28, 1906.

937,539.

Patented Oct. 19, 1909.
3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES
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R. A. Balderson

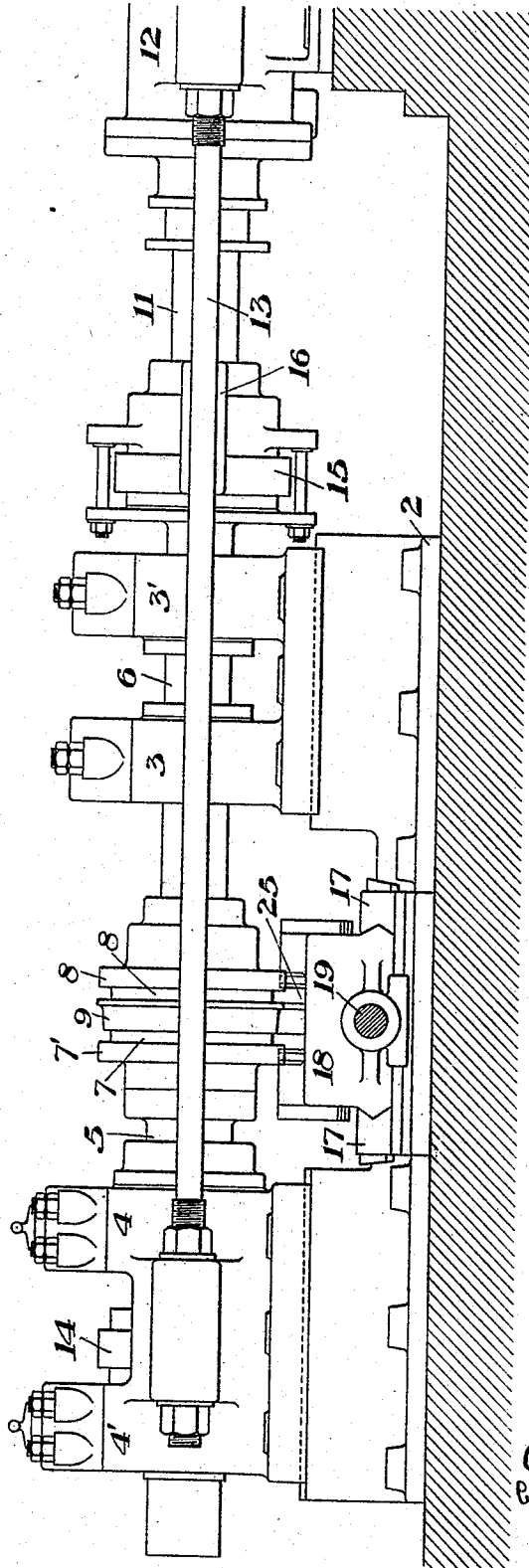
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Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

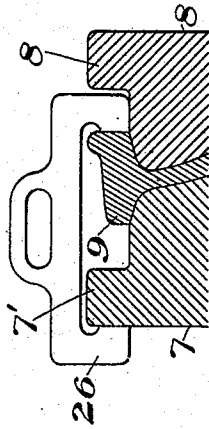
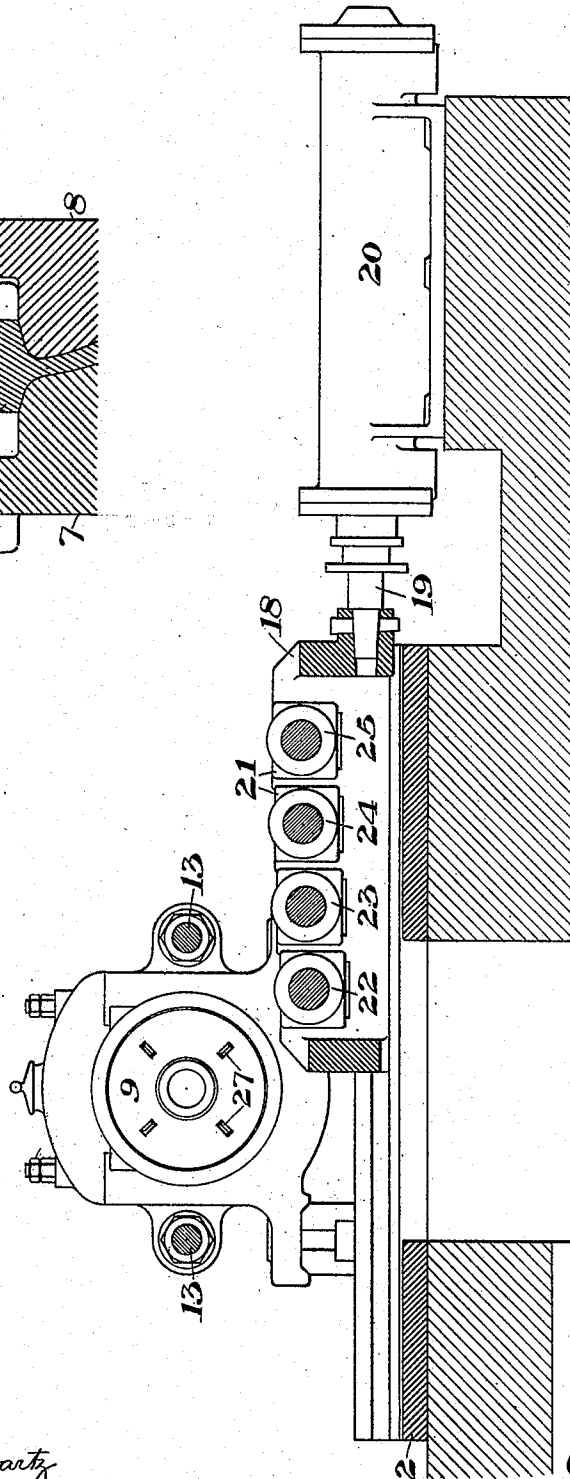


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

CAMILLE MERCADER, OF PITTSBURG, PENNSYLVANIA; EUGENE MERCADER, ADMINISTRATOR OF SAID CAMILLE MERCADER, DECEASED, ASSIGNOR TO HERMAN LAUB, TRUSTEE, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR ROLLING CAR-WHEELS.

937,539.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed May 28, 1906. Serial No. 319,005.

To all whom it may concern:

Be it known that I, CAMILLE MERCADER, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Apparatus for Rolling Car-Wheels, 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 plan view, partly in section, of my improved apparatus; Fig. 2 is a side elevation of the same and Fig. 3 is a transverse sectional view taken on a vertical plane parallel to and passing between the clamping dies; Fig. 4 is a detail view, on a larger scale, showing a modification of the forming dies.

My invention relates to apparatus used in forming the peripheries of metal wheels and similar articles and it is particularly designed to provide improved mechanism by which the flange and tread portions of metal car wheels are formed and the wheels are rolled to a true circle of the desired diameter and width.

Another object of my invention is to provide apparatus by the use of which the time required in forming the wheels is lessened and the cost of making such wheels is greatly reduced.

In the drawings 2 is the base-plate of my improved apparatus provided with bearings 3—3' and 4—4' mounted on its opposite ends. Mounted in these bearings are rotary shafts 5 and 6 having on their inner ends the clamping dies 7 and 8. The clamping dies engage with and hold the hub and web portions of the wheel blank 9 between their opposing faces, the hub and web portions of the blank being formed prior to being placed between the dies. The rim portions of the dies are formed so as to contact with and support the inner faces of the tread portion of the wheel as the tread is spread and formed by the action of the successive forming rolls, the width of the tread portion of the wheels being determined by the collars on the forming rolls.

The outer end of the shaft 5 is connected to a suitable source of power, (not shown), which is preferably a reversing engine, although any desired type of motor may be employed.

The outer end of the shaft 6 is secured to

the piston rod 11 of the hydraulic cylinder 12 by means of which the clamping dies 7—8 are advanced and retracted toward and from each other to hold and to release the wheel blanks 9 between their opposing faces.

The bearings 4—4' are secured to the hydraulic cylinder 12 by means of the tie rods 13—13 which tie rods secure the parts together and take the strain caused by the pressure required to clamp the blanks in place during the rolling operation. Each of the shafts 5—6 is provided with a thrust bearing 14—15. These thrust bearings are employed on account of the end pressure put upon the shafts 5—6 by the hydraulic cylinder 12 used in clamping the holding dies together, to reduce the power required in driving the apparatus and to reduce the wear caused by such end thrust to a minimum.

It will be noted that while the shaft 6 rotates, the piston rod 11 does not, and that both the shaft 6 and piston rod 11 are longitudinally movable, being operated by means of the hydraulic cylinder 12. To provide a movable support for the thrust bearing 15, sliding bearings 16—16 are employed which slide upon the tie rods 13—13 and keep the piston rod and thrust bearing 16 in alignment with the shaft 6. Located on the bed plate 2 between the bearings 3—3' and bearings 4—4' are slides or shoes 17—17 and mounted on these shoes is a forming roll carrier 18 which is adapted to be moved transversely of the shafts 5 and 6 beneath the holding dies and wheel blank held between the dies. The carrier 18 is moved back and forth on the shoes by means of the piston rod 19 and hydraulic cylinder 20.

Mounted in bearings 21 which are adjustably secured in place on the carrier 18, is a plurality of forming rolls 22, 23, 24 and 25 which are successively brought into engagement with the periphery of the wheel blank, to form the flange and tread of the wheel into the required shape and to reduce the wheel to the desired diameter.

In the operation of my improved apparatus, the clamping dies 7 and 8 are first separated by means of the cylinder 12 through its piston rod 11 and the shaft 6. The blank to be rolled, having been heated, is inserted in position between the dies 7 and 8 and the dies are closed so as to clamp the blank in place. To prevent the dies from

slipping on the blank and insure the dies and blank rotating in unison, suitable projections 27 are provided on the faces of the dies, or instead of the projections, the name of the manufacturer may be placed on the faces of the dies, which will be imprinted on the wheel blanks by the clamping action. The dies may be rotating or may be started to rotate after the blank is placed in position as is preferred. The carrier 18 is then advanced, by means of the hydraulic cylinder 20 and its piston rod 19, until the forming roll 22 comes into engagement with the periphery or rim of the blank 9.

The line of travel of the successive forming rolls is tangent to the diameter of the blank formed by each roll. In this way the power necessary to move the rolls while in engagement with the blank is much less than when the direction of movement of the forming rolls toward the blank is radial. By engaging with the wheel blank, the diameter of the blank is lessened, as the forming roll is advanced, each succeeding forming roll decreasing the diameter and increasing the width of the flange and tread portion of the blank and bringing its periphery closer to the finished contour. It will be noted that the perpendicular distance between the face of the blank and the faces of the forming rolls is decreased in each succeeding roll. In this way each roll performs its part of the work in forming the wheel.

In case the formed wheel should become fast to one or the other of the clamping dies by reason of its loss of heat, due to delays or for any other reason, difficulty in releasing the wheel is avoided by providing the dies with the peripheral flange or rib 7' and 8' when by means of the clamp 26, (shown in Fig. 4), the wheel may be detachably secured to either of the dies 7, 8 and the wheel is released from either die by means of the hydraulic cylinder 12.

The advantages of my apparatus will be apparent to those skilled in the art. The time required in performing the successive operations will be greatly reduced. The apparatus is simple and can be easily kept in good condition. The blanks are easily and quickly secured and removed from the holding dies and the rolling operation is rapidly performed with a minimum amount of power.

Many changes in the construction and arrangement of the parts may be made. The number and location of the forming rolls may be changed, and the means for adjusting them relatively to the blank may be varied. The hydraulic cylinders used in

clamping the blanks and for operating the roll carrier may be omitted and equivalent constructions substituted, without departing from my invention.

I claim:—

1. Apparatus for rolling wheels comprising a main frame, rotary holding dies supported on said frame, means for opening and closing said dies, a movable carrier supporting a forming roll and adapted to permit the forming roll being brought into contact with the metal being formed in a path substantially at right angles to a line through the center line of rotation of the holding dies and the center of the forming roll when in their nearest position to each other, and means for moving said movable carrier on said frame; substantially as described.

2. Apparatus for rolling wheels comprising a main frame, rotary holding dies supported on said frame, means for opening and closing said dies, a movable carrier supporting a series of forming rolls and adapted to permit of the forming rolls being brought successively into contact with the metal being formed in a path substantially at right angles to a line through the center line of rotation of the holding dies and the centers of the successive forming rolls when in their nearest position to the dies, and means for moving said movable carrier on said frame; substantially as described.

3. Apparatus for rolling wheels, comprising a main frame, rotary holding dies supported on said frame, means for opening and closing said dies, a carrier movable in a straight line parallel to a tangent to the periphery of the dies, mechanism for moving said carrier, and a forming roll mounted on said carrier and adapted to be moved into contact with the blank in a line substantially tangential to the periphery of said blank.

4. Apparatus for rolling wheels, comprising a main frame, rotary holding dies supported on said frame, means for opening and closing said dies, a carrier movable in a straight line parallel to a tangent to the periphery of the dies, mechanism for moving said carrier, and a plurality of forming rolls mounted on said carrier and each in succession having its working face slightly in advance of that of the preceding one.

In testimony whereof, I have hereunto set my hand.

CAMILLE MERCADER.

Witnesses:

R. D. LITTLE,

H. M. CORWIN.