

(No Model.)

2 Sheets—Sheet 1.

J. RING.
STEEL HOOP MANUFACTURING PLANT.

No. 555,972.

Patented Mar. 10, 1896.

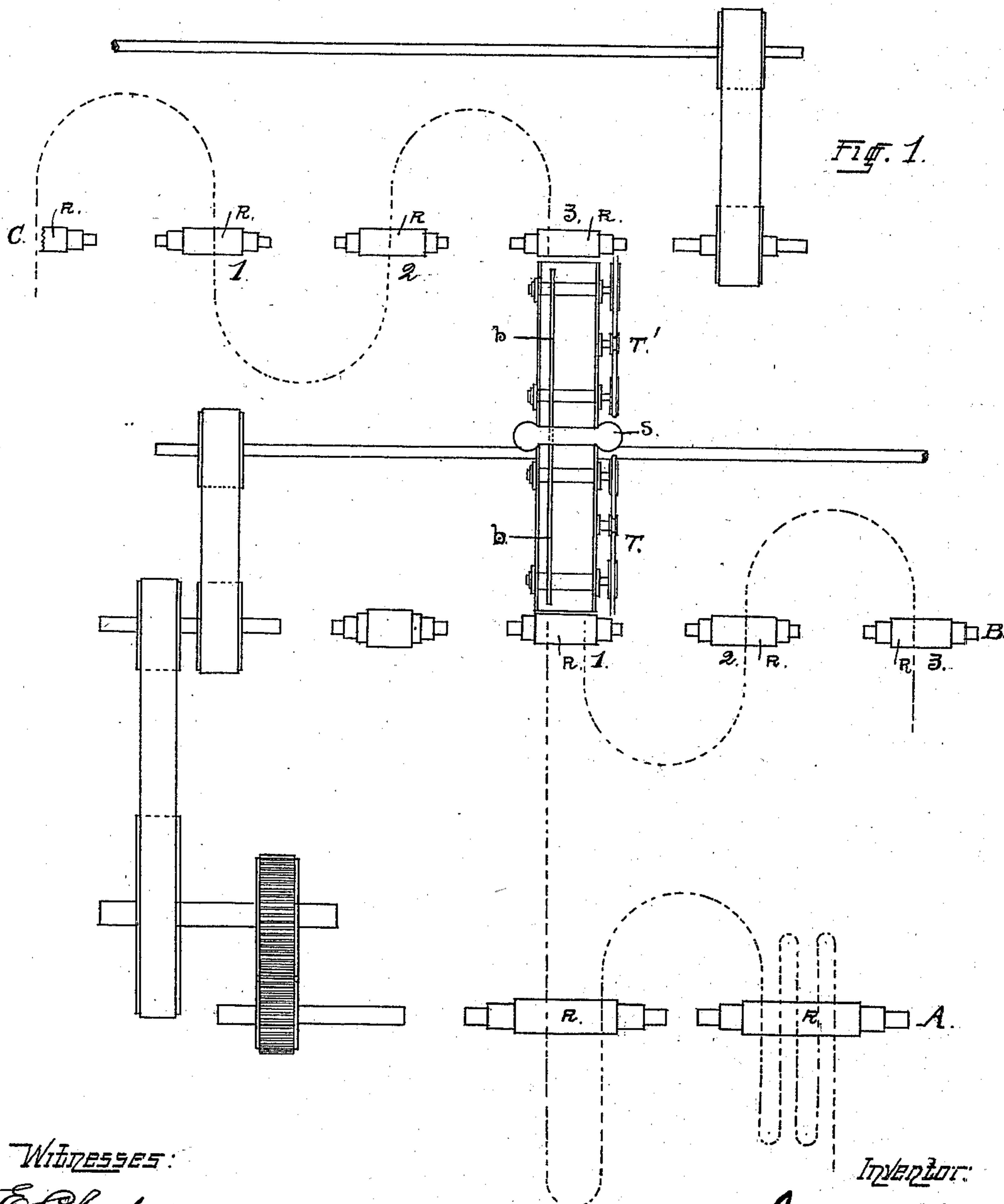


Fig. 1.

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Inventor:
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Per S. D. Woodward
Attorney

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Fig. 2.

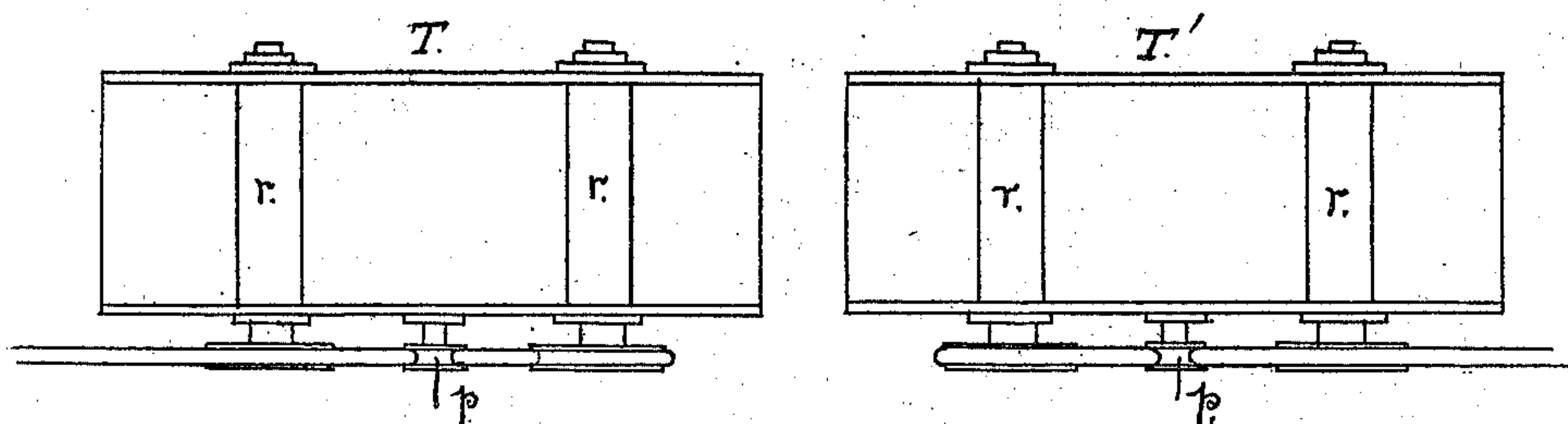
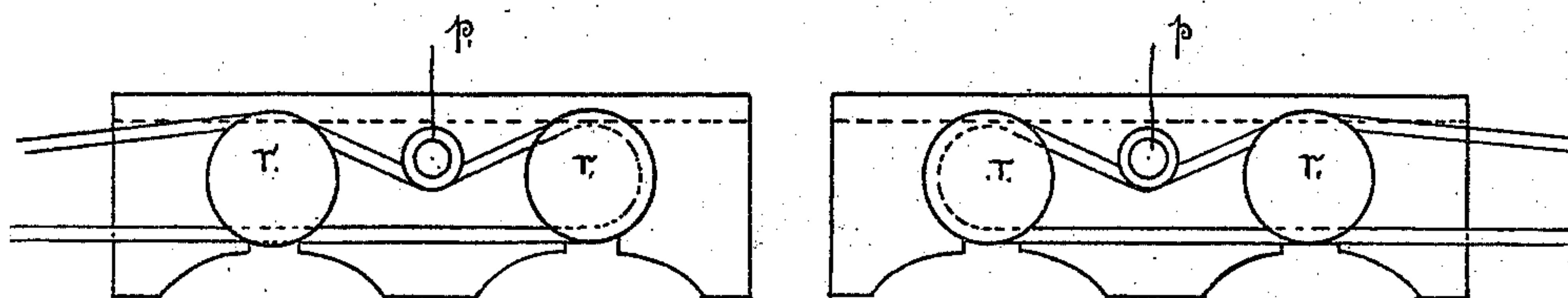


Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES RING, OF CLEVELAND, OHIO.

STEEL-HOOP-MANUFACTURING PLANT.

SPECIFICATION forming part of Letters Patent No. 555,972, dated March 10, 1896.

Application filed October 22, 1894. Serial No. 526,592. (No model.)

To all whom it may concern:

Be it known that I, JAMES RING, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Steel-Hoop-Manufacturing Plants; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to hoop-iron-manufacturing plants, and its object is a new arrangement of plant and new revolving tables therein, whereby steel bucket-hoop may be made in connection with steel barrel-hoop or other large-sized hoop simultaneously and from the same billet, so that one heating and rolling of the billet to reduce it to the smaller size required before it becomes a bucket-hoop billet is saved, thus providing a means whereby the cost of manufacturing steel hoop of the various sizes is largely reduced. This object I accomplish by the means hereinafter described and illustrated in the drawings, in which—

Figure 1 is a plan view of my steel-hoop-mill plant, showing the relative positions of the rolls R and portions of their propelling mechanism, the revolving tables T T', the billets b and b' at the point of the shearing, and by dotted lines representing the courses of separate parts through the rolls. Fig. 2 is a side view of my similar revolving tables T T', and Fig. 3 is a top view of the same.

The trains of rolls are indicated by the letters A B C, and "sets," as the rolls having bearings in the same housings are termed, are designated by numbers.

Inasmuch as my invention lies, as already indicated, in combining in one "mill" (as a train or trains of rolls for making one kind or form of product in the same plant is generally called) a steel bucket-hoop mill and a steel barrel-hoop mill, so that the rolls in making these two extremes in hoop sizes co-operate in the manufacture of both simultaneously from the same original billet, the relative positions of the trains and sets of rolls is a leading

feature and will be understood by an inspection of the drawings at Fig. 1.

The trains are on portions of parallel lines, A having two, B four and C six sets of rolls, all the latter not being shown in the drawings, because unnecessary, each being similar. However, the number of sets in each train is variable, as may be deemed best, the numbers above given being preferred. The trains are suitably separated, A upon one side, C upon the extreme opposite side, and B intermediately. Sets 1 and 2 of trains B and C are in alignment with each other and located at opposite ends of the tables T and T', and the final rolls of the reducing-train A are parallel with the first rolls of the barrel-hoop train B. The distance between the two last-named sets of rolls is bridged by the two similar but oppositely-acting tables T T', to be presently described.

The rolls of train A are of size and have suitable passes to reduce the billets (which usually are four inches thick) to the proper size to enter the first pass between the rolls of set 1 of train B, which is the barrel-hoop train. The first pass between the three-high rolls of set 1, train B, reduces the billet to the thickness of the usual billet for hoop-mills, which from this pass is carried over the tables T T' by the force of the rolls and against the motion of the rollers of table T until its forward end is nearly in contact with the rolls in set 3 of train C when its rear end has emerged from the rolls of train B and the whole billet is upon the tables, in which position it is severed in twain by the shears located between the two tables T T', the forward portion going forward to be made into bucket-hoop in the rolls of train C and the rear portion going backward to be made into barrel-hoop in the rolls of train B, each carried in the directions which they take by the rollers r in the respective tables T T', next to be described.

My roller-tables T T' are the same, although the rollers therein rotate oppositely. Each is a suitable iron frame formed of two parallel sides with transverse cross-bars at the ends and intermediately, if necessary, to hold the sides in place, the sides being made so as to give bearings at equal intervals to the journals or necks of the rollers r that appear

therein. The drawings exhibit but two rollers r in each table; but a larger number may be used, if desired. The rollers r are small rollers having bearings at each end in the sides of the table-frame, one end carrying a grooved pulley, so as to be rotated by a cable. Between the rollers r , as they appear in the tables, is placed the small pulleys p , their tops on a line something lower than the top of the roller-pulleys and having fixed axles extending outward from the sides of the table-frame. The object of the pulleys p is to bring the cable c onto a larger contact-surface on the roller-pulleys than it would otherwise have. The cables are so arranged that the rollers of the tables $T T'$ rotate in directions away from the shears which are located between the ends of the tables in the space s . (Seen in Fig. 1.) The shears so placed are the usual shears for cutting iron of the size that will appear upon the tables.

The shears preferred and employed by me are of the guillotine type, operated by foot-power.

I intend my plant above described for making steel hoop; but it will be advantageous also in the manufacture of iron hoop. It will be found equally profitable in the manufacture of all forms of bar merchant iron and steel.

My plant operates as follows: A billet of the size from which the largest-sized barrel-hoop is made is reduced in the rolls of train A to a size to enter the first pass in the rolls of set 1 of train B. The force of the rolls, aided by the rollers r of table T' , carries it to the point where its forward end is near to contact with the rolls of set 3, train C, when

the whole billet is upon the tables $T T'$. It is now of proper size for a bucket-hoop billet. It is now severed by the shears, the forward portion to go forward and be made into bucket-hoop in the rolls of train C and the rear portion to reverse movement to be finished into barrel-hoop, each impelled in such opposite directions by the opposite rotation of the rollers r of the tables $T T'$.

It will be understood that after the billet is severed its respective halves are guided by the workmen, using tongs, into the passes of trains B and C.

The means of motion for the rolls R and the rollers r are the usual means and will be understood without explanation.

What I claim is—

The combination with reducing-train A, barrel-hoop train B, and bucket-hoop train C, of two tables $T T'$ arranged between the first set of rolls of said barrel and bucket hoop trains, said tables having rollers of which those of table T rotate rearward and are of less power than the feeding power of the first rolls of the barrel-hoop train, and those of table T' rotate forward, the combined length of said tables being equal to the length of the billet when acted upon by the first pass of the first set of the hoop-train, means for rotating said rolls, and shears between the adjacent ends of said tables, substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JAMES RING.

Witnesses:

JOHN B. CLAYPOOL,
C. N. YOUNG.