2 Sheets—Sheet 1.

M. BLAKEY.

MACHINE FOR MAKING RECTANGULAR BANDS.

No. 192,615. Patented July 3, 1877.

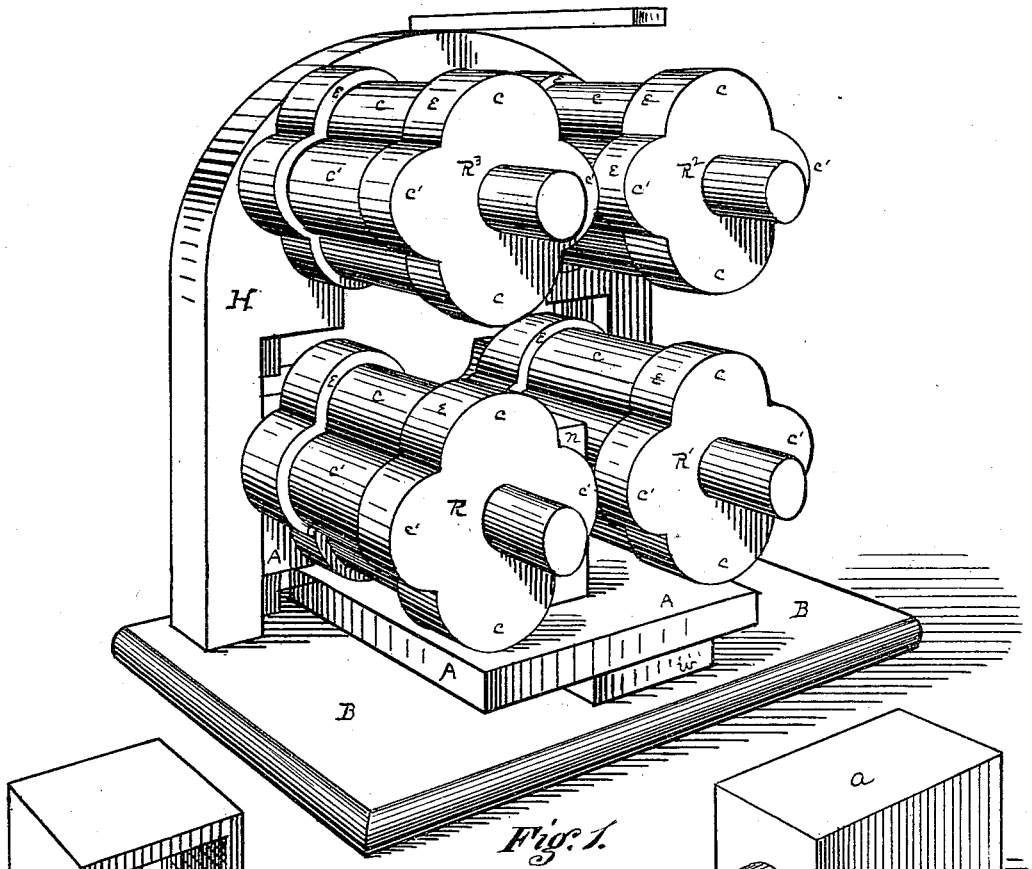

Fig. 1.

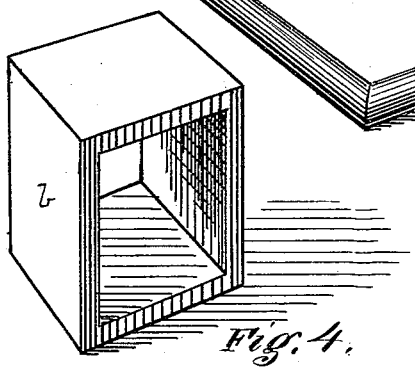

Fig. 4.

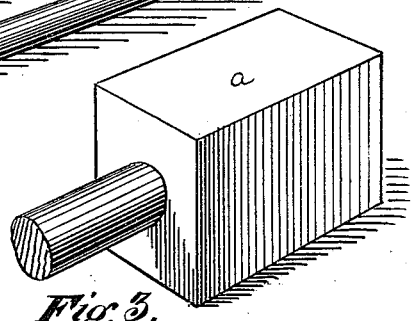

Fig. 3.

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Claudius L. Parker

Inventor
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by George H. Christy
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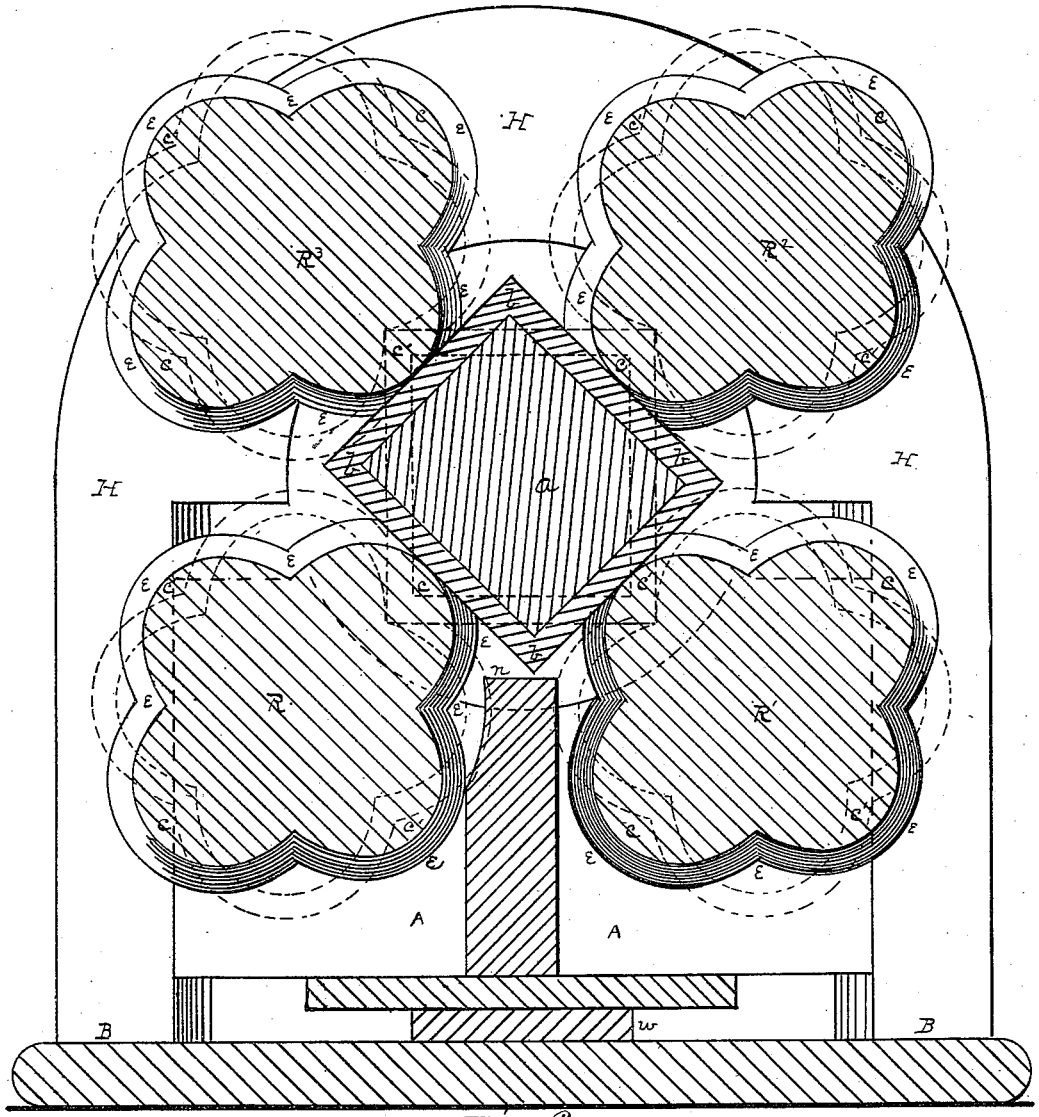

Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

MILDRED BLAKEY, OF ETNA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, JOHN L. ROBERTSON, AND GEORGE A. CHALFANT, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING RECTANGULAR BANDS.

Specification forming part of Letters Patent No. **192,615**, dated July 3, 1877; application filed May 18, 1877.

To all whom it may concern:

Be it known that I, MILDRED BLAKEY, of Etna borough, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Machines for Making Rectangular Bands; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of the rolls employed in my improved machine, one of the housings being broken away. Fig. 2 is a vertical section across the rolls, showing the mandrel and band in place. Fig. 3 is a perspective view of the mandrel employed, and Fig. 4 is a like view of the manufactured band.

My present improvement relates to the manufacture of rectangular and other non-cylindrical bands or blanks by means of a series of rolls acting against an interposed mandrel. A patent for a machine for making cylindrical pipe-sockets operating upon the same general principles was granted to me March 21, 1876.

My present improvement differs from said patented invention principally in its adaptation to the forming of rectangular or non-cylindrical bands or blanks as distinguished from cylindrical sockets. To this end I employ a base, B, carrying suitable housings H, in which are mounted four rolls, R R^1 R^2 R^3. The two lower rolls R R^1 are made adjustable to and from the two upper ones by mounting them in movable bearings A working in suitable grooves in the housings. Any suitable means of adjustment may be used, however, such devices being in common use in the art. This adjustment may be regulated by means of the wedge *w* acting between the bearings A and base B, or by means of equivalent pressure-screws.

The mandrel *a*, Figs. 2 and 3, is made rectangular in cross-section corresponding in form to the band *b* to be made thereon.

In order to secure a uniform distance or space between the working-faces of the rolls and the face of the mandrel as they revolve in operation, I make each roll with four lobes, *c c' c'*, on its periphery. These lobes are of such size and are drawn to such form that each will have an arc or working-face equal in extent to the side of the band *b* upon which it operates, and as the distance from the center of the mandrel to any point or points on the surface of the band increases or diminishes a corresponding reverse change occurs in the distance from the center of the adjacent roll to a corresponding point on the periphery or working-face of its lobe, so that these two distances shall supplement each other, and, together, be equal the distance from the center of such roll to the center of the mandrel.

As shown in Fig. 2, the rolls are arranged in such relation to each other that the distances between their centers, in their working order, shall be equal, and lines so drawn through their centers shall describe a square. The mandrel and rolls, being geared together by suitable gearing, will, when constructed as described and placed in proper relation to each other, as shown in Fig. 2, turn freely in their several bearings, and, in so turning, the larger lobes *c* will traverse the longer sides of the band in turn, and the smaller lobes *c'* the shorter sides of the band.

Fig. 2 shows two positions of the rolls and mandrel—one in full lines, showing the lobes as having traversed one-half their respective sides, and the other in dotted lines, showing the angles of the band meshing into or coinciding with the depressed angles on the rolls between the lobes.

The collars *e* on the rolls, Figs. 1 and 2, are intended for guiding the blank as it is bent on the mandrel, and also for giving shape and finish to the edges of the band. They should be made of such thickness and form as not to interfere with the turning of the mandrel within the rolls, and at no place should they be deeper than the corresponding thickness of the band at that point. Such collars may even be dispensed with and still obtain fair results. A bending block or guide, *n*, is also provided between the lower feed-roll and its next adjacent roll, leaving sufficient space between its upper face and the mandrel *a* for the passage of the angle of the band, as shown in Fig. 2. This guide-block is so placed with relation to the feeding-roll that the outer extremities of

the large lobes *c* will pass near to the adjacent face-angle of the guide, so that as a blank is fed in between the feeding-roll and the mandrel, its forward end will strike the top face of the block *n* and be guided thereby into such position as to be carried up between the mandrel and the next succeeding roll. The rolls and mandrel may be geared together with correspondingly-shaped pinions—that is, the shaft of the mandrel *a* carrying a rectangular pinion, and each of the rolls carrying a pinion formed like such roll, all being made of proper size and adjustment to gear together and drive the several parts in unison. Any known form of gearing may be used, however, which will keep the parts in their proper relation to each other.

The operation of my machine is as follows:

A blank of suitable length and size, and properly heated, is fed in between the mandrel and one of the lower rolls. The angle at which the blank is fed to the rolls is immaterial, provided it be such that the feeding-roll and mandrel may take a bite upon it.

The feeding position of the rolls and mandrel is, by preference, a little before or just as the center of a large lobe, *c*, approaches the middle of the long side of the mandrel, so that, as the blank is carried along, its forward end will engage the top face of the guide *n* and be deflected thereby (should it be inclined to follow the roll) into such position that it will be carried up by the next succeeding roll and bent by it to the side of the mandrel.

As the operation proceeds the blank will be bent by the feeding-roll upon the balance of the mandrel, and, if desired, the ends of the blank may be lapped.

By continuing the operation a sufficient time, these ends will pass in succession under the rolls, and be welded thereby, making a solid band. The rolls in the meantime compress the band upon the mandrel, shaping the edges by means of the collars, and giving the band well-defined outer or face angles by the action of the depressed angles between the lobes.

When the band is thus finished the mandrel is released by removing the wedge *w*. It may then be removed and the finished band taken off, when the mandrel may be replaced and the operation repeated.

I have described my invention in connection with the manufacture of rectangular bands; but, by slight modifications in the form and arrangement of the devices described, polygonal or non-cylindrical bands or blanks may be made having any desired number of sides and any desired form of interior, such modifications consisting, essentially, in the use of a properly-shaped mandrel as circular or otherwise, and rolls having the requisite number of lobes, or their equivalent, for giving the desired form to the exterior of the article.

I claim herein as my invention—

1. In a machine for making non-cylindrical bands or blanks, the combination of a series of lobed rolls and a mandrel, substantially as described.

2. The combination of a series of lobed rolls, a mandrel, and guide-block, substantially as described.

In testimony whereof I have hereunto set my hand.

MILDRED BLAKEY.

Witnesses:

J. J. McCORMICK,

CLAUDIUS L. PARKER.