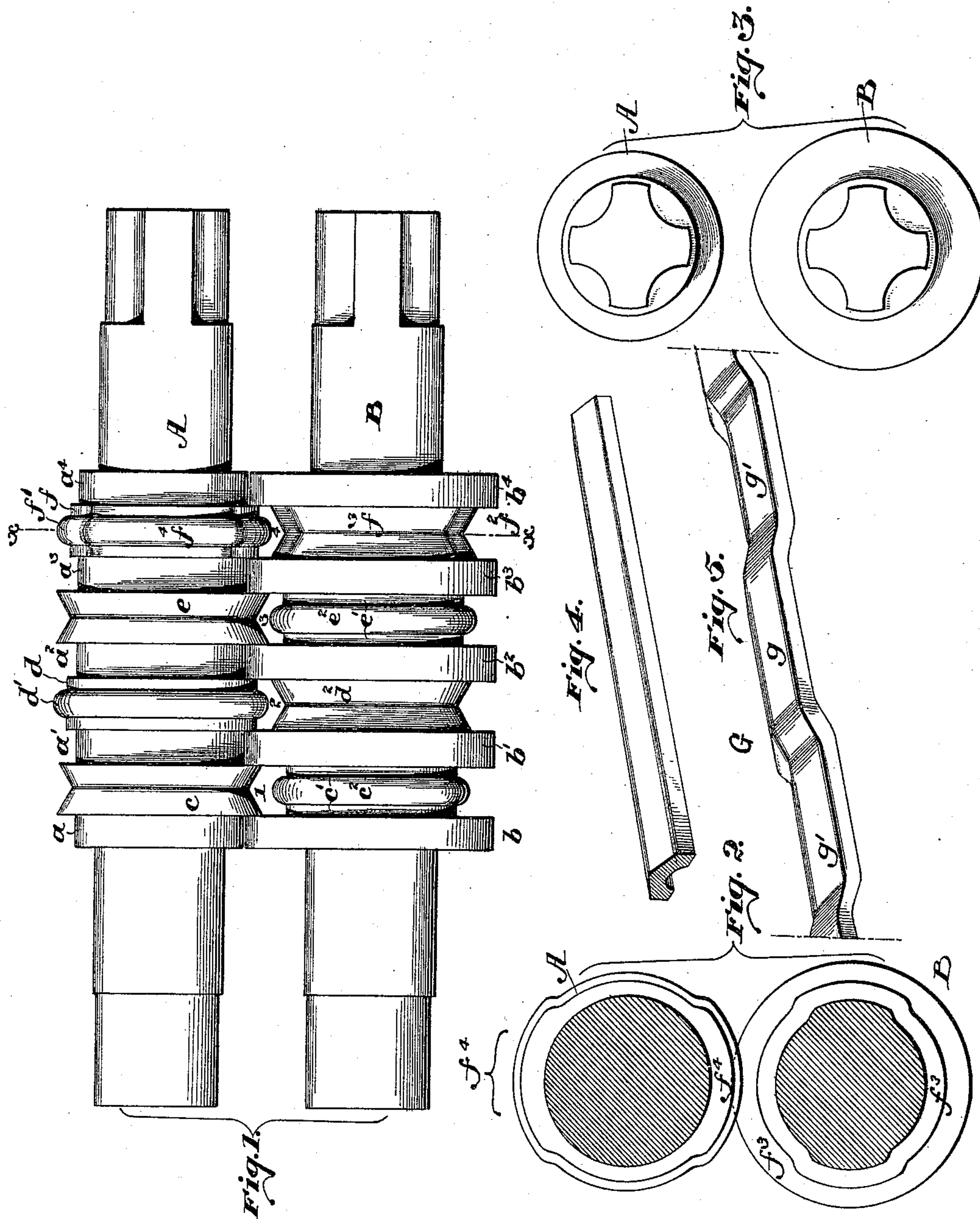


(No Model.)

W. B. MIDDLETON.
ROLLS FOR ROLLING TURN BUCKLE BLANKS.

No. 447,237.

Patented Feb. 24, 1891.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM B. MIDDLETON, OF LEBANON, PENNSYLVANIA.

ROLLS FOR ROLLING TURN-BUCKLE BLANKS.

SPECIFICATION forming part of Letters Patent No. 447,237, dated February 24, 1891.

Application filed August 21, 1890. Serial No. 362,587. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. MIDDLETON, a citizen of the United States, residing at Lebanon, in the county of Lebanon, and State of Pennsylvania, have invented an Improvement in Rolls for Rolling Turn Buckle Blanks, of which the following is a specification.

In an application filed by me in the United States Patent Office upon August 21, 1890, as Serial No. 362,586 I have shown described and claimed a novel turnbuckle and method of constructing the same, which method, generally stated, consists in rolling a blank of metal into such form as that when divided into appropriate lengths each of such lengths will constitute the completely formed lateral half of a turn buckle, which halves will then simply require to be by pairs butt-welded together to form the complete turnbuckle.

As complementary to said invention, and in order to provide means for its economical and convenient practice, I have devised rolls of such novel organization as that, while operating in the ordinary manner as rolls, they will yet be adapted to completely form and shape from the blank said turn buckle halves, in readiness for them, when cut into proper lengths, to be by counterpart pairs welded together.

In the drawings, Figure 1 is a face elevation of a pair of two-high rolls conveniently embodying my invention. Fig. 2 is a transverse section through said rolls in the plane of their final pass, which is a plane projected on line xx of Fig. 1. Fig. 3 is a right hand end elevational view of the rolls shown in Fig. 1. Fig. 4 is a view in perspective of a portion of the blank after it has been acted upon by the rolls in their first pass. Fig. 5 is a view in perspective of a portion of the blank after it has been acted upon by the rolls in their final pass.

Similar letters of reference indicate corresponding parts.

In the drawings A is the upper and B the lower member of the pair of rolls, and $a a' a^2 a^3 a^4$ and $b b' b^2 b^3 b^4$ are the usual flat-crested circumscribing bearing disks which occur at corresponding distances apart on each roll, so as to be, in the rotation of said rolls, by op-

posite pairs in tread upon each other. By being located between adjacent passes of the rolls these disks limit the width, and to such extent constitute a part of the profile, of said passes.

The first pass, No. 1 of the rolls, is formed by a V-shaped or groove-faced pass disk c of the width of said pass, and formed on the upper roll A, and by a straight-sided or flat-bottomed groove c' of the width of said pass, provided with a central convex bead c^2 and formed in the roll B.

The second pass, No. 2, of the rolls, is formed by a straight sided flat bottomed groove d of the width of said pass, provided with a central convex bead d' , and formed in the upper roll, and by a V-shaped or groove faced pass disk d^2 of the width of said pass, and formed on the lower roll.

The third pass, No. 3, of the rolls, is formed by a V-shaped or groove-faced pass disk e of the width of said pass, and formed on the upper roll, and by a straight-sided or flat-bottomed groove e' of the width of said pass, provided with a central convex bead e^2 , and formed in the lower roll.

The fourth pass, No. 4, is formed by a flat-faced groove f of the width of said pass, provided with a central convex bead f' , and formed in the upper roll, and by a V-shaped groove f^2 of the width of said pass, formed in the lower roll.

The faces and grooves of the rolls which form the first three passes, all circumscribe said rolls in lines of equal or unvarying radius. The faces or grooves of the rolls which form the last pass, are, however, varied, that is to say, the groove f^2 embodies, conveniently, two depressions f^3 , at opposite sides of the roll B, while the face f and also its bead f' , respectively embody two elevated or plunger portions f^4 , at opposite sides of the roll A,—the arrangement being such that in the rotation of the rolls the respective plunger portions f^4 register with and take into the corresponding depressions f^3 , with the result that the metal of the blank which is drawn through said pass, is at regular intervals in its length itself depressed or bent out of its normal line for a distance corresponding to the length of said elevated portions and de-

pressions. The depressed portions so formed by this pass appear in the finished blank at uniform intervals.

5 In the rolled blank shown in Fig. 5 of the drawings, and which is designated G, the portions which have been acted upon by the depressions and elevations or plunger pass of the rolls are designated *g*, while the parts of said bar which have been acted upon only
10 by the other passes are lettered *g'*. After the blank has been completed it is divided in the undepressed portions between its depressions, as described in my said pending application.

15 The extremital portions or shanks of the rolls are, in practice, coupled with driving mechanism of any usual and preferred character.

It will be understood that the first three passes of the rolls are of the same contour
20 and differ from one another only in the fact that they are successively smaller. The final pass is in outline similar to the others, but is varied, as explained, by the presence of the elevations and depressions referred to, which
25 in effect alternately elevate and lower the location of the pass, without however materially affecting its size, and impart to the bar G the sinuous form shown.

30 The passes themselves are all preferably of a general semi-annular outline, in order that the ultimate shape of the blank upon which they are to act may, cross-sectionally considered, be semi-cylindrical.

35 The number of passes employed may, of course, be varied, and a greater or a less number be resorted to. It is obvious also that the arrangement of the whole number of grooves which form the passes, in a single pair of rolls, is a matter of convenience merely, and
40 that a construction in which said grooves were formed one two or more in each of a se-

ries of pairs of rolls, would be a construction the equivalent of that herein described and therefore within the scope of the claims.

The number of elevations and depressions 45 in that portion of the rolls which form the final pass may of course be varied to suit varied sizes of turn buckles or variations in the sizes of the rolls themselves.

Having thus described my invention, I 50 claim:

1. Rolls which embody passes, which operate to form a blank passed successively through them into the shape of the lateral half of a turnbuckle of the form shown, substantially 55 as set forth.

2. Rolls which embody passes of semi-annular outline, and also a pass which embodies matched elevations and depressions, substantially 60 as set forth.

3. Rolls which embody faces and grooves which form a series of passes of substantially similar semi-annular outline but of graduated sizes, and also a groove and face constituting a pass and embodying a matched elevation and 65 depression, substantially as set forth.

4. Rolls which embody opposing pairs of grooves and faces which form a series of passes of semi-annular outline, and one pair of which pairs of grooves and faces embodies 70 matched elevations and depressions so respectively set that in the rotation of the rolls the elevations take into the depressions, substantially as set forth.

In testimony that I claim the foregoing as 75 my invention I have hereunto signed my name this 23d day of July, A. D. 1890.

WILLIAM B. MIDDLETON.

In presence of—

J. BONSALE TAYLOR,
F. NORMAN DIXON.