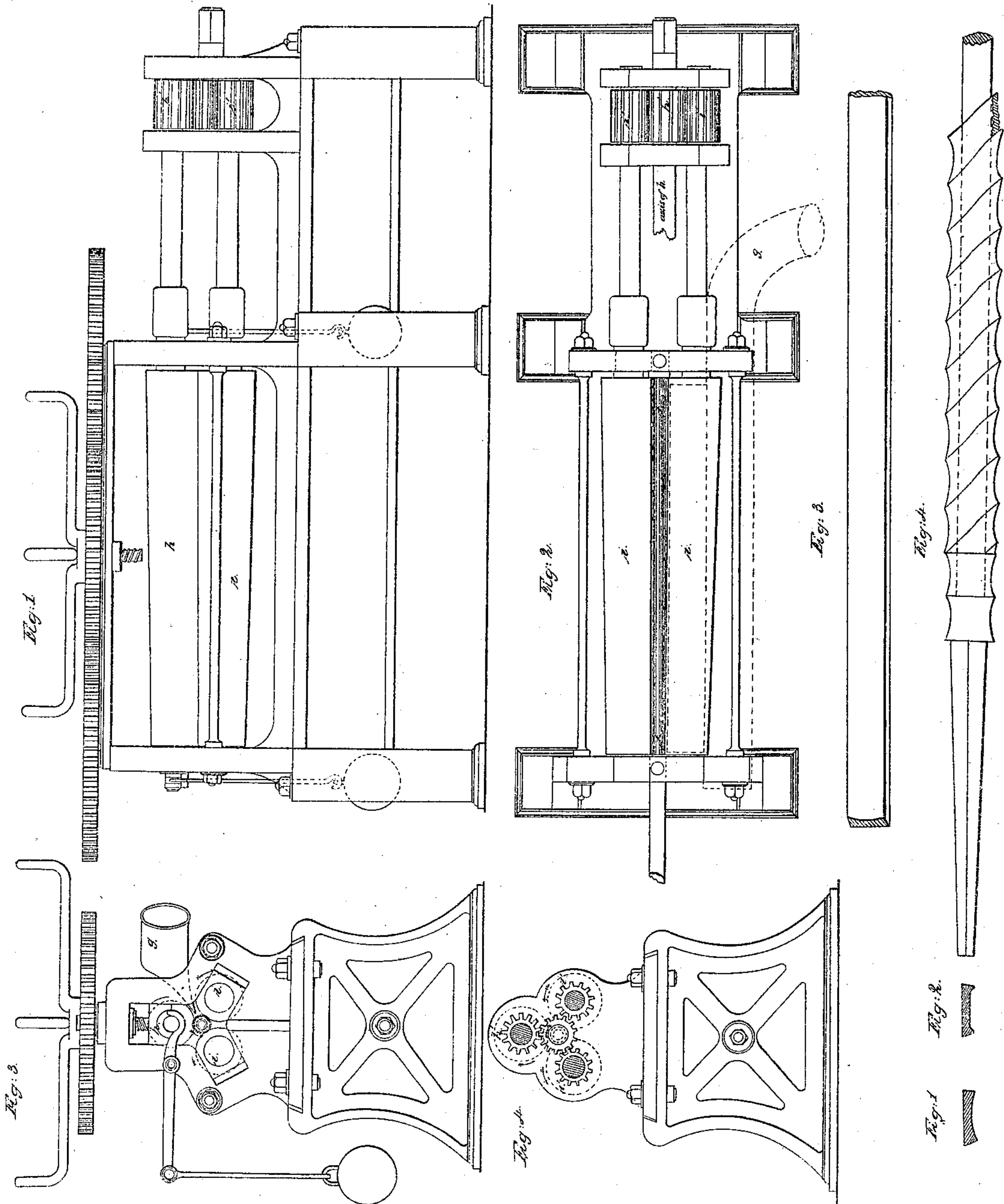


W. BEASLEY.
MANUFACTURING METAL TUBES.

No. 12,228.

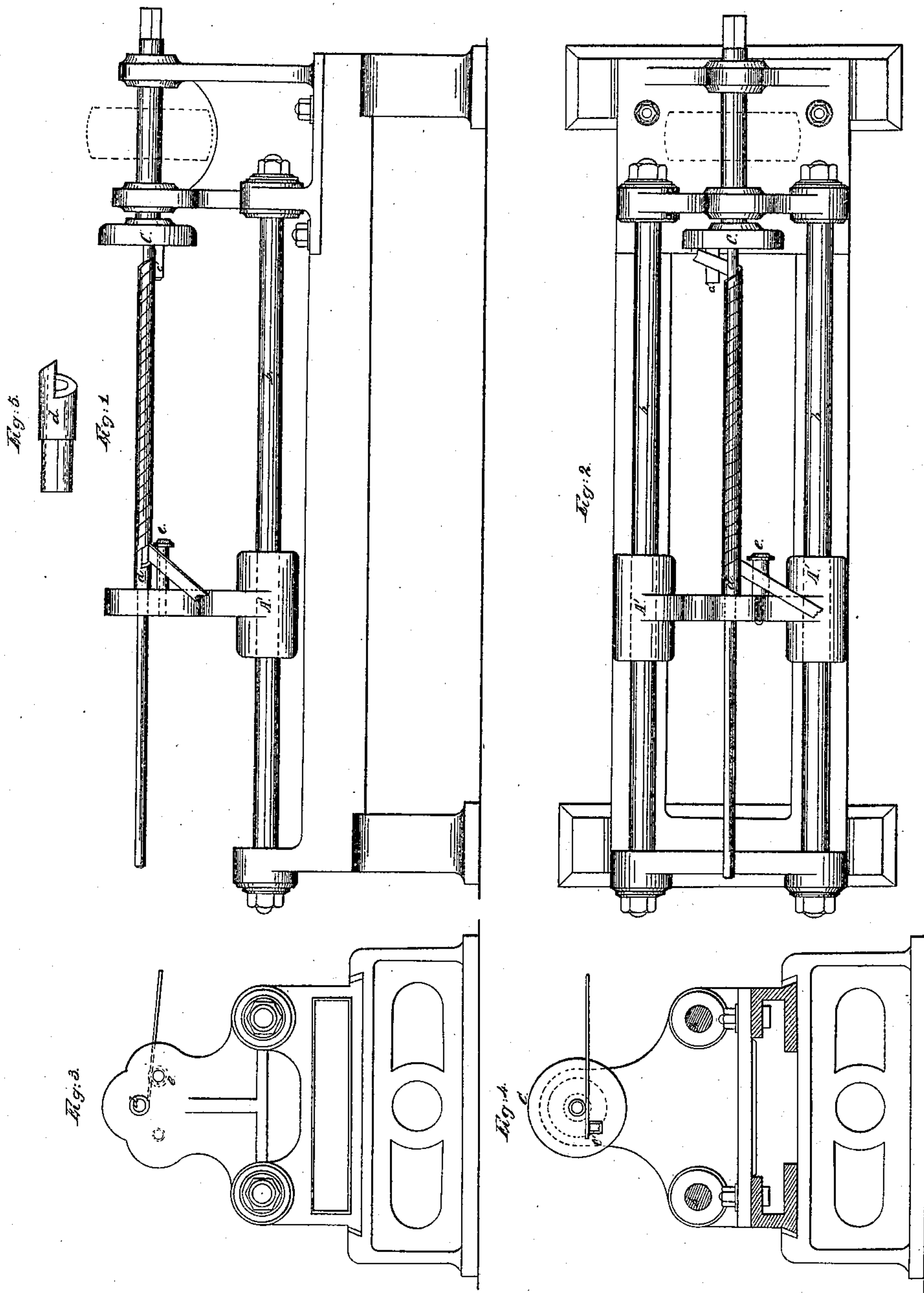
Patented Jan. 9, 1855.



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UNITED STATES PATENT OFFICE.

WILLIAM BEASLEY, OF SMETHWICK, ENGLAND, ASSIGNOR TO J. BRETT AND J. W. BRETT, OF WESTMINSTER, C. W. TUPPER, OF LONDON, AND WM. BEASLEY, OF SMETHWICK, ENGLAND.

MANUFACTURING METAL TUBES.

Specification of Letters Patent No. 12,228, dated January 9, 1855.

To all whom it may concern:

Be it known that I, WILLIAM BEASLEY, of Smethwick, in the county of Stafford, England, a subject of the Queen of Great Britain, have invented, made, and applied to use certain improvements in the manufacture of metallic tubes, applicable to the manufacture of gun and pistol barrels, and of tubes for other purposes, as well as of large pieces of ordnance; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, forms a full and exact description of my said invention and of the manner in which the same is to be performed.

The nature of my invention consists, first, in the use of a rolled tapered strip or band of metal, iron or steel, or a mixture of the two, beveled at the edges and hollow on the underside; by which peculiar form I obtain a much stronger joint than can be obtained with the ordinary strip or band used in making twisted gun-barrels; second, in the application of cross rolling to the coil of iron or other metal, for the purpose of giving a perfect weld to the joints of the tube thus formed.

The three accompanying sheets of drawings are marked severally Sheet A, Sheet B and Sheet C.

In Sheet A, Figures 1 and 2 are cross sections of the band of metal, showing its beveled edges, and the concavity of the under side. Fig. 3 is a longitudinal perspective view of the band. Fig. 4 shows the band coiled in the form of a helix around a mandrel.

In Sheet B, Fig. 1 is an elevation of a twisting or coiling machine, by which the strip or band of metal is coiled around a mandrel. Fig. 2 is a top view of the same. Fig. 3 is an end elevation. Fig. 4 is a transverse section, and Fig. 5 an enlarged view of the socket (*d* Fig. 1) to be attached to the inner face of the slide.

In Sheet C, Fig. 1, is a side elevation of the cross rolling machine. Fig. 2 is a plan of the same. Fig. 3 is an elevation of one end, and Fig. 4 an elevation of the opposite end of the said machine.

In these drawings, where letters of reference are employed, similar letters refer to like parts in all the figures on each sheet.

No detailed description is necessary to

explain Sheet A, it will be readily understood by mere inspection.

In Sheet B, *A'* is a sliding carrier traversing the rods *b, b*. *C* is a face plate having upon it a projecting rod or claw *c'*. *d* is a socket of peculiar form, attached to the inner face of the carrier *A'*. This socket is seen enlarged in Fig. 5, from which its form will be readily understood. *e* is a roller rest to support the band or strip during the process of winding.

In Sheet C, the letters *f, f*, Fig. 2 show the proportion of the coil when placed in the rolls. It will also be seen by an inspection of this sheet that in order to produce a tapered tube I give a taper to the rolls and hang them in converging lines so that the large ends of the rolls shall form the large end of the tube and the small ends of the rolls the small end of the tube or barrel.

The manner in which my process is carried into operation is as follows:—After the strip or band has been prepared of the shape shown in Sheet A, Figs. 1, 2, and 3, it is ready to be coiled around the mandrel. In order to accomplish this, the sliding carrier *A'* (see Sheet B Figs. 1 and 2) is brought up to the face plate *C*, the socket *d*, being on the inner face of the carrier *A'* as shown in the drawing. When the end of the socket is against the face plate *C*, the mandrel is inserted through the carrier *A'* and socket *d* and rests in a recess or hole in the center of the face plate *C*. The strip or band of metal to be coiled is then introduced between the mandrel and the projecting claw *c'* on the face plate *C* and in contact with the spiral end of the socket *d*. The face plate is then revolved by any suitable power when the combined action of the claw, mandrel and socket upon the metallic band causes it to assume a coil or twist around the mandrel. The twisted strip or band acts on the principle of the screw against the spiral end of the socket *d*, and, as the coiling proceeds, forces back the carrier *A'* on its guide rods *b, b*. The free or uncoiled end of the strip or band is supported by the roller rest *e* projecting from the carrier *A'* until the whole of the strip has been wound or coiled.

The strips may be coiled to the right or left, by having the socket made one with the incline to the right and another with the

incline to the left and reversing the motion of the face of the plate, or by having a double machine worked by one driving wheel, in which case both the right and left
5 coil may be made at the same time without reversing the motion of the machine.

When the coiling of the strip is completed, the mandrel is removed, the coil shaken off and the uncoiled ends clipped off obliquely
10 so as to make the end of the tube square.

The coil is then brought to a welding heat in a suitable furnace, and is removed, at that heat, to the cross rolls, by means of a mandrel having a collar upon it, and a
15 stem somewhat shorter than the coil it is intended to support. While the upper of the three rollers is raised to admit the coil, thick at first, the coil is subjected to a jamming or crushing force in the direction of
20 its length, exerted by means of the mandrel and its collar, against the solid head or holster of the rolls. The mandrel is then withdrawn, the upper roll lowered, and the operation of cross rolling completed.

To obviate the friction of the end of the coil or tube against the head or holster a small pivot or puppet is inserted in the holster, at the central point between the
25 three rolls, and revolves with the coil or tube.
30

During the process of "jamming up" and also during the cross rolling, a blast of air may be supplied from suitable apparatus along the entire length of the rolls. The

coil at the same time revolving rapidly receives the blast on every side. The blast keeps the coil at a welding heat during the process of jamming up, and when that has been completed, and the upper roll lowered, it has the effect of keeping the rolls cool.
40

With regard to the twisting or coiling machine shown in Sheet B, I am aware that somewhat similar machines have been employed, and apparently analogous means adapted for supporting the strip and mandrel; but my machine differs from those
45 hitherto made in the arrangement of the slide, roller rest, claw, and socket, by which a self-acting and continuous support is afforded to the mandrel.
50

Having thus fully described the nature of my invention, I should state that I do not claim subjecting metal tubes to cross rolling as that has been done before. But what I do claim as of my invention and
55 desire to secure by Letters Patent is,

The forming of a metallic tube, by winding a strip of metal spirally on a mandrel, and welding it by cross rolling, substantially
60 as described.

In testimony that the foregoing is a correct description of my invention I have hereunto subscribed my name in presence of two witnesses.

WILLIAM BEASLEY.

Witnesses:

G. W. YAPP,
CHAS. F. GRANSBURY.