

S. P. M. TASKER.

MANDRELS FOR ROLLING METAL-TUBES.

No. 173,192.

Patented Feb. 8, 1876.

FIG. 1

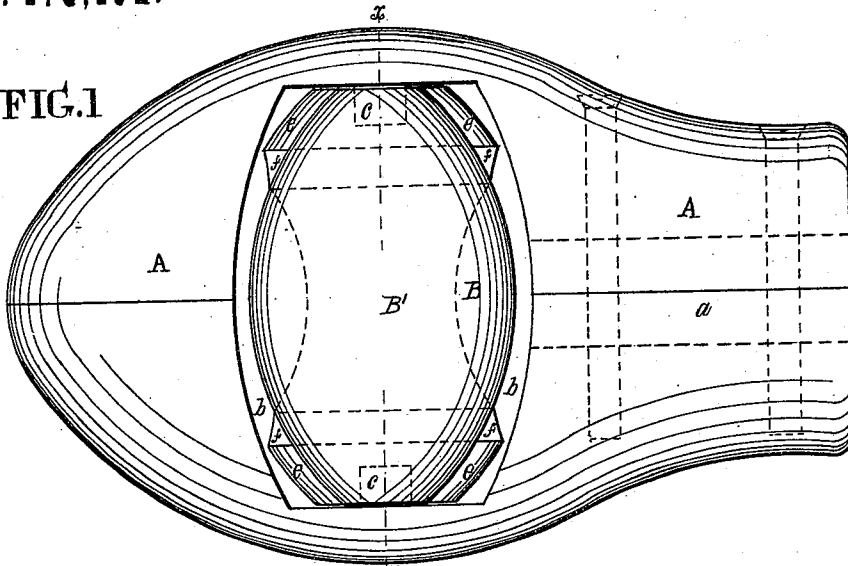


FIG. 2

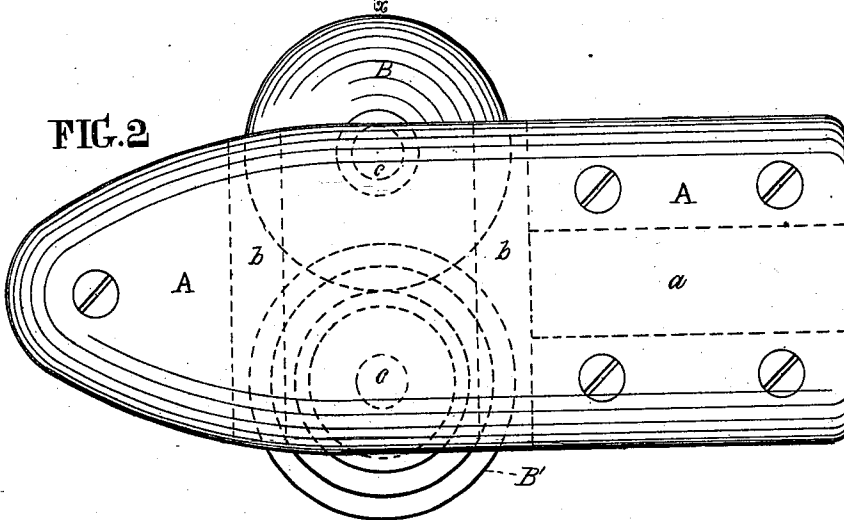
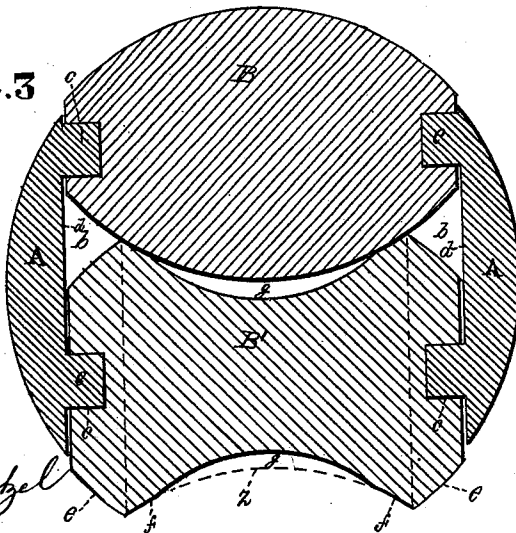


FIG. 3



Witnesses.

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IMPROVEMENT IN MANDRELS FOR ROLLING METAL TUBES.

Specification forming part of Letters Patent No. **173,192**, dated February 8, 1876; application filed January 20, 1876.

To all whom it may concern:

Be it known that I, STEPHEN P. M. TASKER, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Mandrels for Rolling Metal Tubes, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

This is an improvement on the invention for which Letters Patent were granted to me on the 26th day of May, 1874, in which two rolls, which were both swelled in their longitudinal direction, were arranged in a stock or case, with their axes parallel with each other, and the circumference of the rolls touching each other tangentially.

My present invention consists in having one of the rolls concave longitudinally in the greater portion of its length, in such a manner as to have a bearing near each end of a counter circular form to the swelled circle of the other roll, and thus to form a firm resistance thereto, and not liable to the objection of the surfaces of the two rolls being impaired by their rapidly wearing away at their places of contact as when they only touch tangentially, and the portion of the swelled roll which is in contact with the seam of the tube during the welding process is not liable to injury by the pressure of the other roll against it; and the recess formed between the concaved roll and the tube gives the slag and other impurities that collect during the heating of the tube a chance to pass away without the liability of obstructing the action of the rolls.

If desired, the concave roll may be so formed as to conform to the periphery of the other roll, to form a full bearing from end to end of the rolls.

The invention is not only adapted to round tubes, but may be used for square or other form by having the rolls to correspond thereto in their longitudinal direction.

In the accompanying drawings, Figure 1 is a side view of my improved mandrel. Fig. 2 is a like view at right angles to Fig. 1. Fig. 3 is a cross-section at the line *xx* of Fig. 1.

Like letters of reference in all the figures indicate the same parts.

A is a stock or case, the exterior of which

is somewhat similar to that of an ordinary mandrel for forming metal tubes. It has a longitudinal opening, *a*, for its connection with the mandrel-rod. B and B' are two rolls, which are arranged in the cross-opening *b* of the case A, the rolls having bearings *c*, which project inward from the cheeks *d d* of the case A, as represented in Figs. 1 and 3. For the convenience of taking out and replacing the rolls the case A is made in halves, which are confined together by means of screws or bolts, as seen in Figs. 1 and 2, or by any other suitable device. The longitudinal form of the roll B corresponds to the internal size of the tubes to be manufactured, so that the circle which circumscribes the side of the roll outside of the case A is the exact curvative as the inside of the tube. The roll B', at its ends, is so shaped on the end surfaces *e e* as to correspond to the same circle which takes in the roll B. The middle portion of the roll is concave, and inside of the surfaces *e e* has concave surfaces *f f*, which fit the periphery of the roll B, and support it in its revolutions, whereby the two rolls are supported one by the other, and the strain taken off their center pins or pivots.

Between the surfaces *f f* the roll B' has a quicker curve than on those surfaces, whereby a space, *g*, is formed between the rolls; or, if desired, this middle portion may also be of the same curvature as the roll B, so as to form a full bearing between the surfaces *e e*, as shown by the dotted line *z*.

As the rolls are intended to take the whole pressure of the internal surface of the tube the cheeks *d d* of the case come within the circle which circumscribes the rolls.

If desired, instead of having bearings for the rolls, as represented, they may have pivots on their ends, which fit internal bearings in the cheeks of the case A, in which case the said case may be made in a single piece.

The mandrel is intended to be used in the manufacture of all kinds of metal tubes made from either hot or cold metal by the use of rolls or dies.

As the tube has been passed over the mandrel, or the mandrel through the tube, either the former or latter should be turned one-fourth around, and the operation continued,

so that all parts of the tube may be acted upon alike.

I claim as my invention—

The roll B', having surfaces *ee* at its end circumscribed by the same circle that takes in the periphery of the roll B, and curved inward in the direction of its length between

said end surfaces, as described, in combination with the roll B and stock or case A, substantially as set forth.

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Witnesses:

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