(No Model.)

D. A. GARVER & C. H. STRAIGHT.

TUBE AND MODE OF MAKING THE SAME.

No. 385,109. Patented June 26, 1888.

Fig. 1

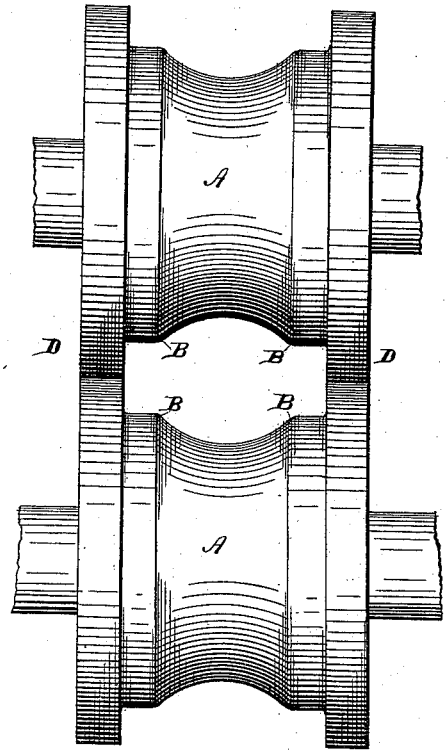


Fig. 2.

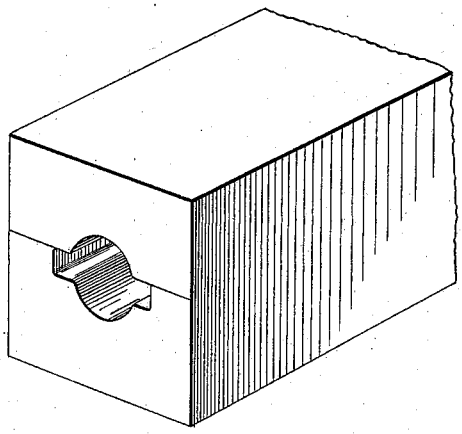


Fig. 3.

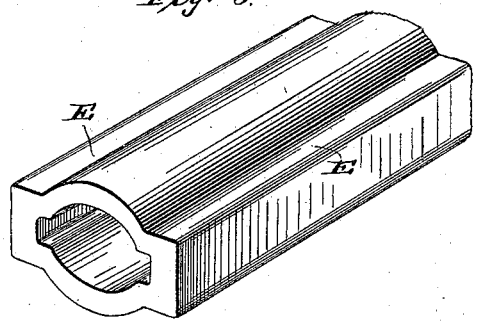
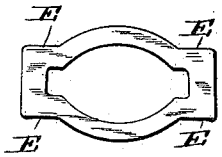


Fig. 4.



Witnesses.
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Thomas Dunant.

Inventor.
David A. Garver and
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by A. F. Stuart
his Attorney.

UNITED STATES PATENT OFFICE.

DAVID A. GARVER AND CLARENCE H. STRAIGHT, OF BRYAN, OHIO.

TUBE AND MODE OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 385,109, dated June 26, 1888.

Application filed March 27, 1888. Serial No. 268,691. (No model.)

To all whom it may concern:

Be it known that we, DAVID A. GARVER and CLARENCE H. STRAIGHT, of Bryan, in the County of Williams and State of Ohio, have invented certain new and useful Improvements in Tubing and Process of Making the Same; and we do hereby declare the following to be a full, clear and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

The object of the present invention is to produce a tube for use in the mechanical arts which shall possess great rigidity and strength as compared with the ordinary cylindrical tube now in use and at a cost slightly, if at all, greater than such cylindrical tubing.

To this end the invention consists in a tube formed with sections of its circumference substantially straight on both surfaces, the portions of the tube between such straight sections being more or less curved.

The invention further consists in an improved method of forming such tube, all as will be hereinafter described, and pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figure 1 represents a front elevation of a pair of rolls for forming our improved tube. Fig. 2 is a perspective view of a pair of dies employed for the same purpose. Fig. 3 is a perspective view of a short section of the tube, and Fig. 4 is an end view of the same.

Similar letters of reference in the several figures indicate the same parts.

In forming this tubing we preferably take the ordinary seamless cylindrical tubing, such as is now found on the market, and pass it between rolls having their faces shaped similar to the rolls A A, by which it is pressed inward at points B on two sides, the intermediate sections of the tube being bulged out until they fill the spaces D in the rolls, and form flanges or wings extending from end to end of the tube. The portion of the tube forced into the spaces D, it will be seen, conforms on the inner as well as on the outer surface to, substantially, the shape of such spaces, and as the ends of the spaces are flat the ends of the wings or flanges will also be flat on both surfaces. In order that these straight or flat sections shall be slightly thicker than the other portions of the tube, to resist lateral strain as well as to present thicker surfaces for wear, the surface areas of the spaces D are made somewhat smaller than the surface areas of the sections of pipe to fill them, the result being that more of the metal is crowded into the ends of the spaces and the desired result accomplished.

The sides E of the flanges or wings may, of course, be of any desired width, and although preferably made at right angles to the end sections they may converge slightly toward their outer edges, as will be readily understood.

In producing the pipe with the dies illustrated in Fig. 2 different sections of the pipe are successively compressed, or dies of this character may be employed where it is desirable to compress only a portion of the pipe, in order to resist lateral strain brought to bear at some particular point.

From the above it will be seen that we have produced a tube which is particularly well adapted to withstand lateral strain, and which may be used in many places where it has been found impracticable or undesirable to employ the cylindrical tube—for instance, in the construction of single or double trees, shafts of carriages and wagons, wheelbarrows, and in any of the many places where it is found desirable to employ a tubing of great lateral strength.

Although we have described our tube as having absolutely straight sections, it is obvious that such will not be the case in actual practice, and we do not wish to be limited to such exact construction. It is also obvious that while the outer surface may be straight the inner surface of the straight sections may be slightly concave, owing to the former curvature of the metal or to the crowding in of the "stock," as before mentioned. Nor do we wish to be limited to a tube having two straight sections, as a greater or less number may be employed to good advantage.

Having thus described our invention, what we claim as new, and desire to secure by letters patent, is—

1. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, both surfaces of the ends of which are substantially straight, as set forth.

2. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, the ends of said flanges or wings being relatively thicker than the other portions of the tube, substantially as described.

3. As an improved article of manufacture, a tube having the laterally-projecting flanges or wings, the ends of said flanges or wings being relatively thicker than the other portions of the tube, both surfaces of said thicker portions being substantially straight, as set forth.

4. The herein-described process of forming flanged metal tubes, consisting in compressing a cylindrical blank between suitable dies and causing the intermediate or unconfined portions of said blank to bulge outward, substantially as described.

5. The herein-described process of forming metal tubes with flanges having thickened ends, consisting in compressing a cylindrical blank between suitable dies, allowing the unconfined portion of the blank to bulge outward, limiting the extent of such outward bulge, and subjecting the sides of said bulged portion to pressure, substantially as described.

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Witnesses:
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