

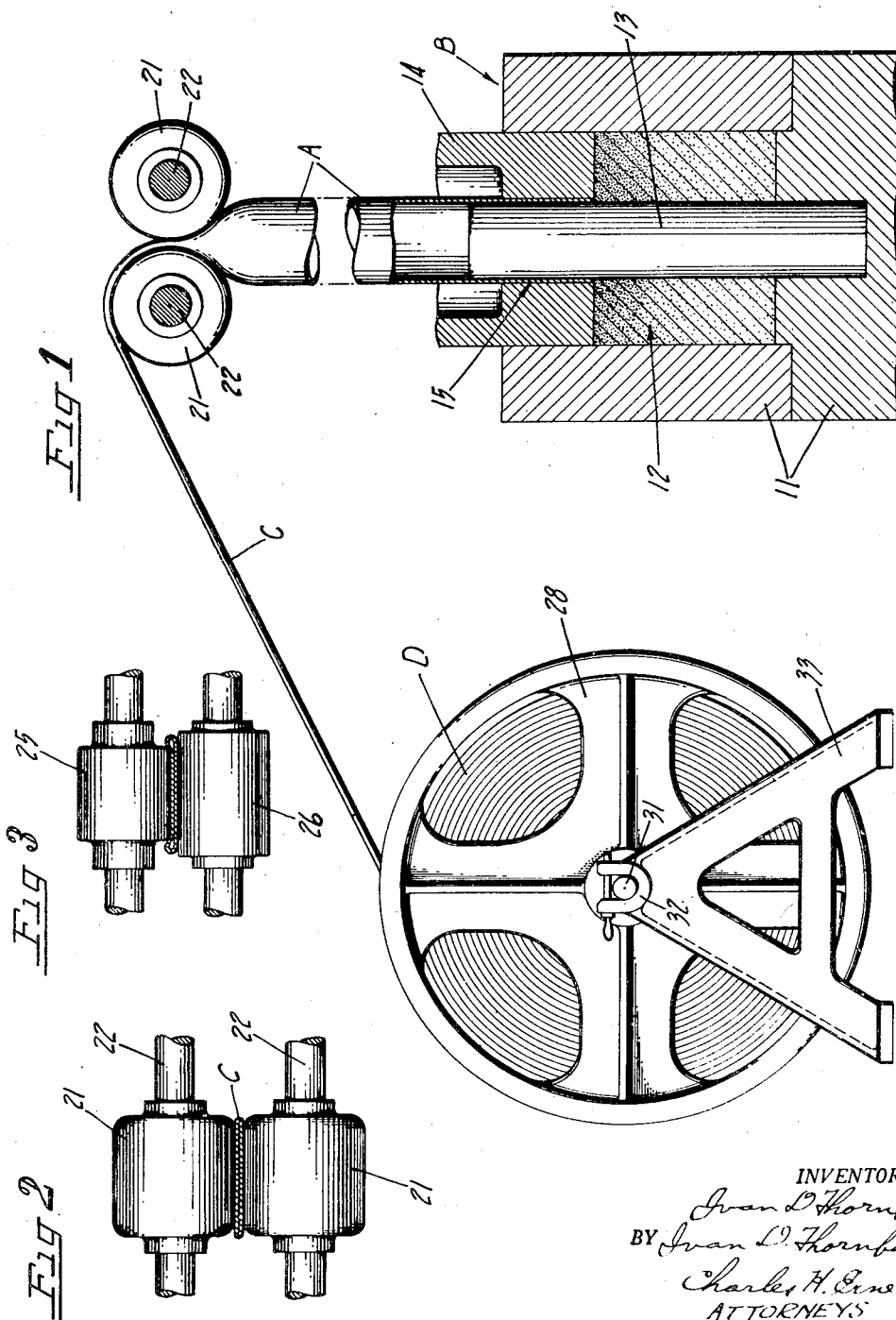
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METHOD OF PREPARING TUBING FOR TRANSPORTATION

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METHOD OF PREPARING TUBING FOR
TRANSPORTATION

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1 Claim. (Cl. 29—156)

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The present invention relates to the manufacture of containers or cans from seamless or seamed tubing and has particular reference to flattening relatively thin walled tubing and winding it onto a spool for shipment and storage as an incident to the manufacture of such cans.

Some attention has been given to the manufacture of metal cans from flat webs or strips by first providing endless tubes of the desired diameter and with the necessary longitudinal seam and afterwards cutting into container lengths. This has not been a success. The operation of forming the required extended seam and the operation of cutting off the proper lengths as at present practiced appear to be operations somewhat foreign to can manufacture. The forming of seamless or prefabricated seam tubing primarily is better adapted to the tube manufacture.

Cans have not been manufactured commercially from seamless or prefabricated seamed tubing made in the tube manufacturer's plant because of the difficulty of handling and transporting tubes of sufficient length to make it worth while for a can manufacturer to use such tubing. Tubes of short length, for example, will not suffice to keep automatic can making machinery operating at efficiency. Again it often is desirable to have relatively thin walled containers and here particularly the shipping of short length tubing stock is not practical since such thin walls do not offer sufficient resistance to the wear and tear of handling.

The instant invention contemplates a novel method of manufacturing thin walled cans made from seamless or seamed tubing such as metal tubing fabricated at a tube manufacturer's plant, for example, wherein the actual manufacture of the can from the tube may be made at another place such as in a can manufacturing establishment, provision being made for safely and efficiently transporting the thin walled tube stock over considerable distances, if necessary.

An object of the invention is the provision of a method of preparing seamless or seamed tubing for transportation and handling as an incident to the manufacture of cans wherein the tubing is pressed out flat into ribbon form and is loosely reeled onto spools so that a tube of greater length may be had in a compact coil for safe and efficient transportation, even of thin walled tube stock, over considerable distances.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken

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in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a part elevational and part sectional view somewhat schematic of an apparatus for carrying out the method steps of the instant invention, the view showing how a tube is formed, flattened and reeled into a coil, with parts broken away;

Fig. 2 is a fragmentary view of one form of rollers for flattening the tube in accordance with the method steps of the invention, and showing a flattened tube in cross section; and

Fig. 3 is a view similar to Fig. 2 and showing a modified form of flattened tube, the tube being shown in section.

As a preferred embodiment of the instant invention the drawing discloses a method of preparing long lengths of seamless tubing such as metal tubing for shipment and storage. In such a method the seamless tubing is first formed, by extrusion or other suitable processes and is then flattened by exterior pressure into an oblong or double wall ribbon.

In some cases the ribbon may be formed with the middle portions of the opposite walls contiguous, leaving hollow curved side edges so that these edges will be free from sharp creases. In either case the ribbon of flattened tubing is loosely reeled into a compact coil so that long lengths may be embodied in a relatively small package.

Where the tubing is made with a relatively thin wall and is manufactured from soft, easily deformed material, such as aluminum, this method of preparing the tubing insures its protection during transportation and handling.

One form of apparatus for carrying out the method steps of the invention is illustrated in the drawing. In this apparatus a substantially continuous seamless tube A (Fig. 1) is formed in an extruding device B of the character disclosed in United States Patent 278,695, issued June 5, 1883, to John Farrell, on Coiling lead pipe. As an example of the present embodiment the extruding of aluminum pipe is contemplated.

The extruding device B includes a two piece housing 11 which encloses a reservoir 12 in which molten or other prepared aluminum is contained. The base of the housing carries a vertically disposed forming mandrel 13 which extends up through the reservoir. This mandrel, in cross section, is the size and shape of the interior dimension of the tube A to be formed. The mandrel is surrounded by an extruding plunger 14 dis-

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posed above the reservoir and having a sliding fit inside the housing for vertical movement therein under the actuation of any suitable means. The plunger is formed with a die opening 15 through which the mandrel extends with a predetermined clearance which clearance determines the thickness of the side wall of the extruded tube.

In operation the plunger 14 moves down against the fluid mass of aluminum in the reservoir 12 and compresses it so that it flows upwardly through the clearance or die opening 15 surrounding the mandrel 13. It is this extrusion of the fluid metal that forms the seamless tube A, the tube extending up out of the reservoir into open space above the plunger where it is cooled and hardened by the surrounding atmosphere.

The finished seamless tube A, as it moves upwardly from the extruding device B, passes between a pair of flattening rollers 21 (Figs. 1 and 2) mounted on drive shafts 22. These rollers are rotated in unison in time with the extrusion of the tube A and may be actuated in any suitable manner. The tube, in passing between these rollers, is flattened out to form a double wall ribbon C of the tubing as hereinbefore mentioned.

In order to produce the modified form of tube ribbon hereinbefore mentioned, a pair of flattening rollers 25, 26 (Fig. 3) may be substituted for the rollers 21. In this type both rollers may be narrower than the width of the resulting flattened tube as embodied in the upper roller 25 or one narrow roller 25 and a wider roller 26 may be used. In either case when the tube passes between the rollers, they merely flatten the middle portion of the tube, bringing these portions into contiguous relation. This leaves the side edges hollow and curved and keeps them free from sharp creases. When one narrow and one wide roller is used these curved side edges project up from one side leaving the other or lower side flat.

As the flattened tube C leaves the flattening rollers 21 or 25 and 26 as the case may be, it is reeled into a loose compact coil D. This is brought about preferably by winding the flattened tube onto a spool 28 (Fig. 1). During the winding operation the spool preferably is mounted on a shaft 31 the ends of which are carried in T-shaped bearings 32 formed in a stand 33. The spool or the shaft may be rotated in any suitable manner to effect this winding or reeling operation.

When a sufficient length of the flattened seamless tubing A has been wound onto the spool the tubing may be cut off and the spool removed from the stand. The reeled length of tube is thus in a compact form, fully protected by the spool, and in this condition is prepared for safe and efficient transportation and handling. Such a tube spool unit may be shipped over long distances from the tube manufacturing plant to a can making factory, or other establishment as an incident in the manufacture of cans or other articles to which seamless tubing is particularly adapted.

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The reeling of the flattened tube into the coil D purposely is made loose so that the side edges of the tube will not be squeezed too tightly. Where aluminum tubing is so reeled any creases at the sides can be ironed out sufficiently to avoid any difficulty in can manufacture and the form of flattening shown in Fig. 2 will be used. However, where the flattened tube is of a material more readily creased, the more open construction of the modified form of Fig. 3 will be preferred.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the steps of the process described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the process hereinbefore described being merely a preferred embodiment thereof.

I claim:

A method of preparing metallic tubing to facilitate transportation and handling prior to the manufacture of tubular metal containers therefrom, comprising first forming by extrusion of metal a continuous cylindrical tube of relatively thin gauge metal and of uniform thickness throughout, compressing the tube into a substantially flat double wall ribbon by the application of exterior pressure on opposite sides of the moving tube immediately subsequent to the forming operation while maintaining the original uniform thickness of the tube metal and while leaving hollow loop portions at the opposite side edges of the ribbon so that such edges will be free from sharp creases, and thereafter reeling the flattened ribbon into a substantially loose coil of uniform thickness throughout with adjacent loop portions of the flattened ribbon disposed in engagement with one another to provide a loosely compacted unitary coil for shipment and storage capable of being subsequently manufactured into individual tubular sheet metal container bodies.

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