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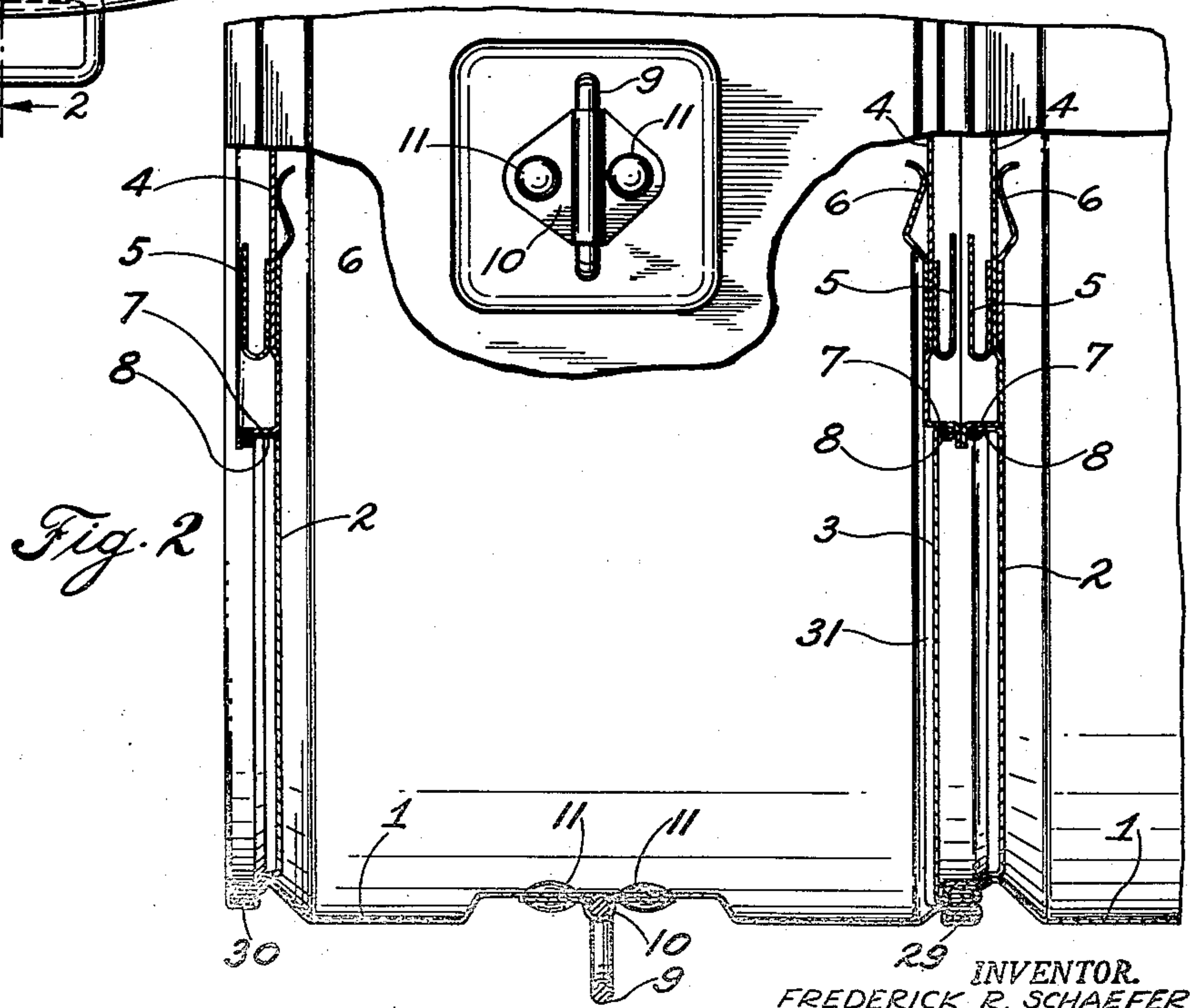
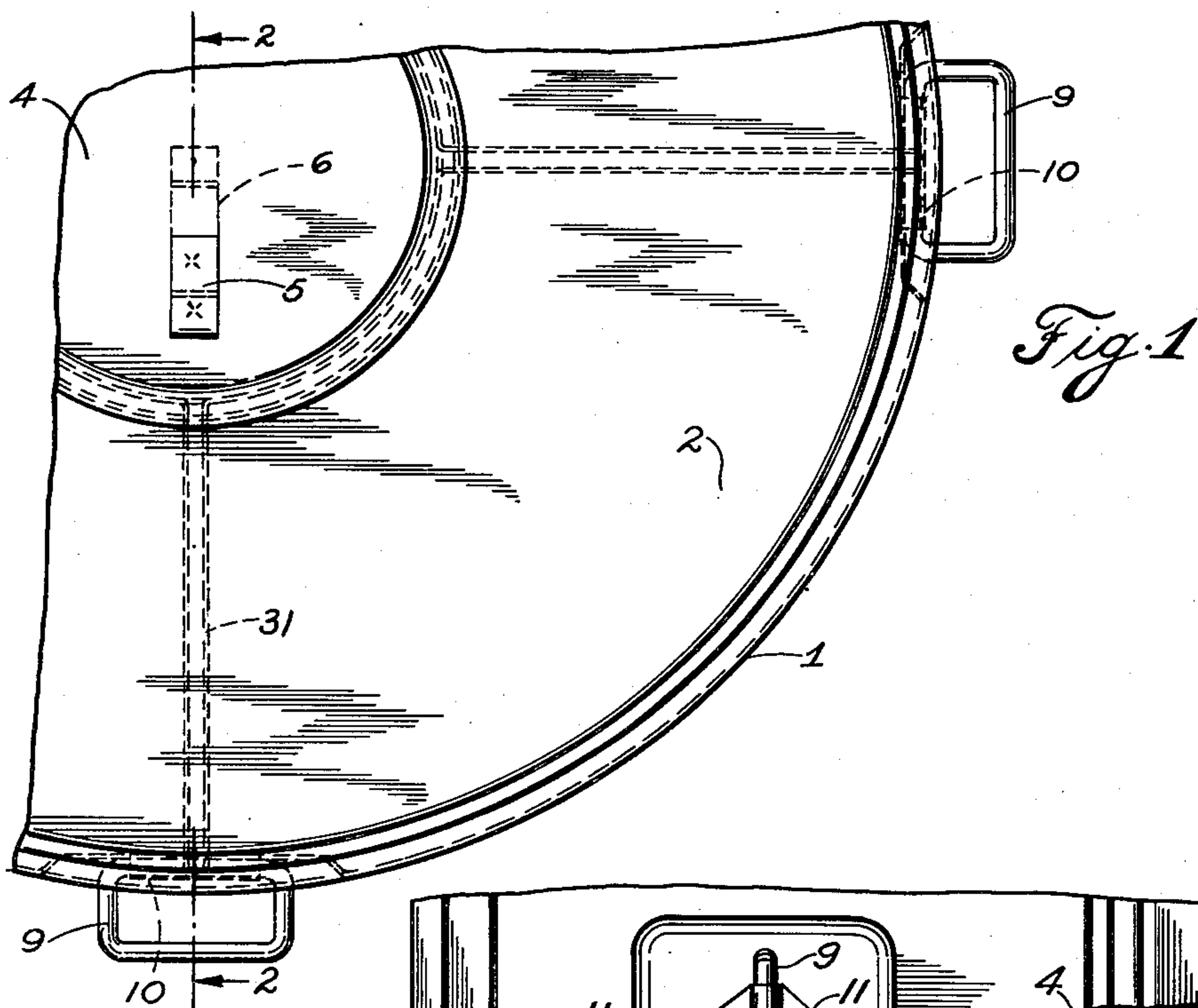
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## METHOD OF MAKING COIL CONTAINERS

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2 SHEETS—SHEET 1



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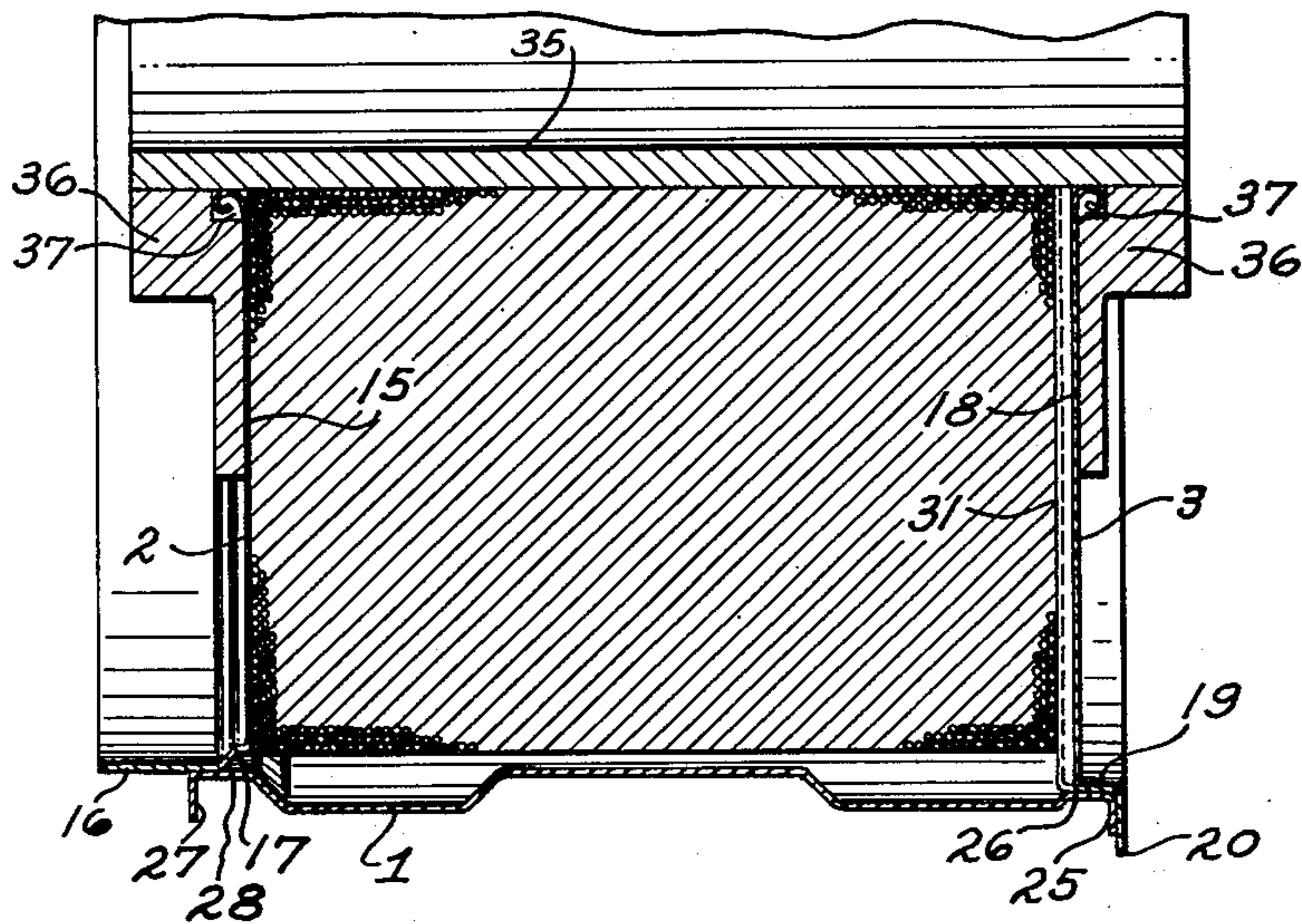
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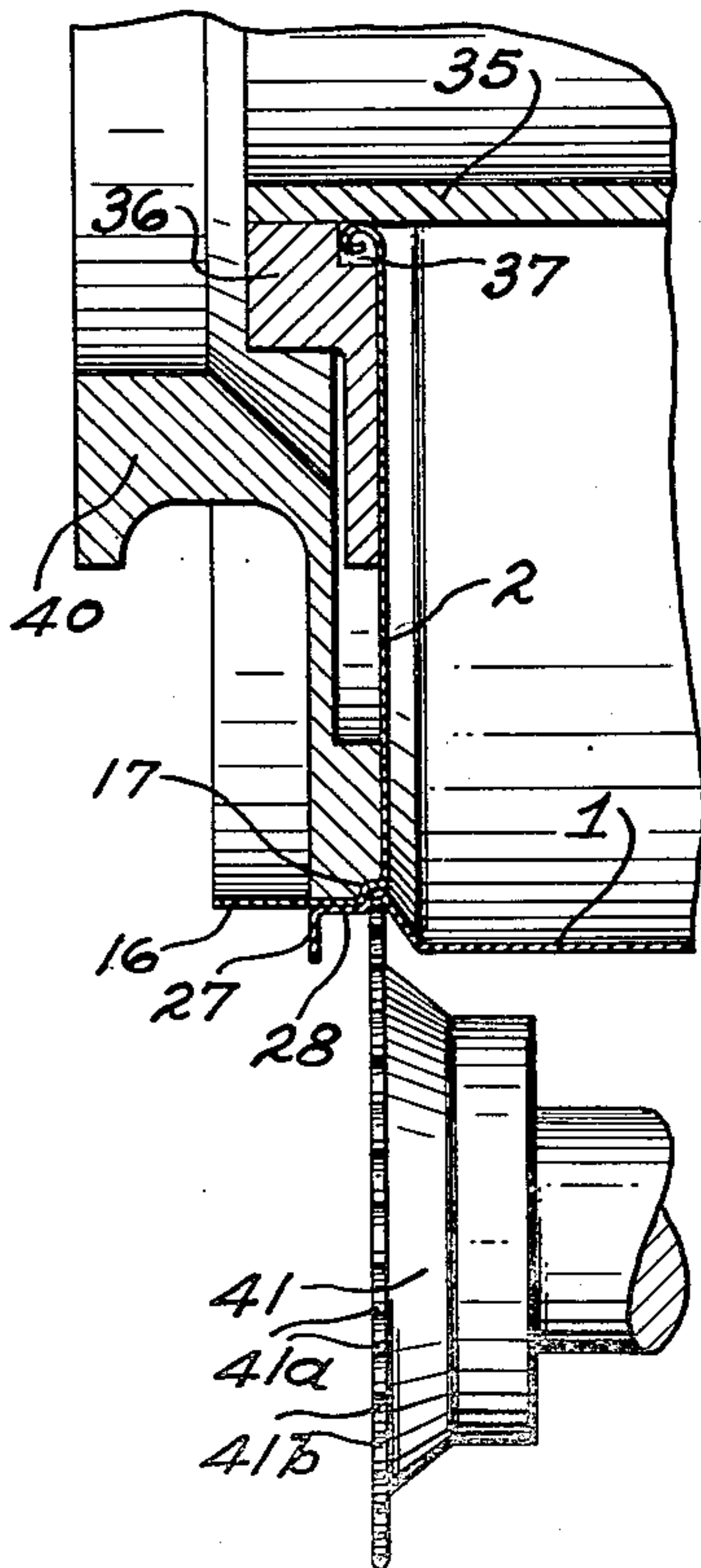
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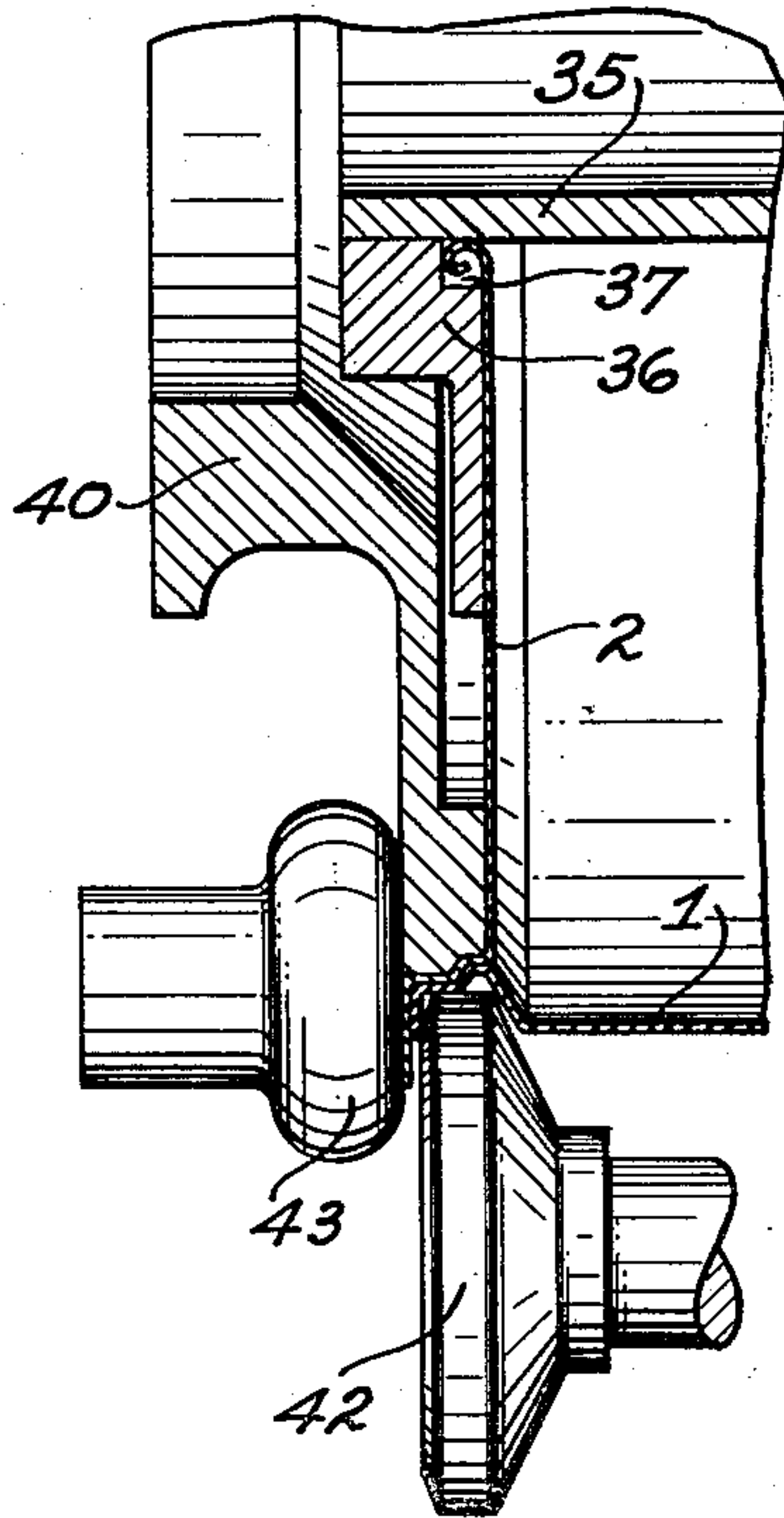
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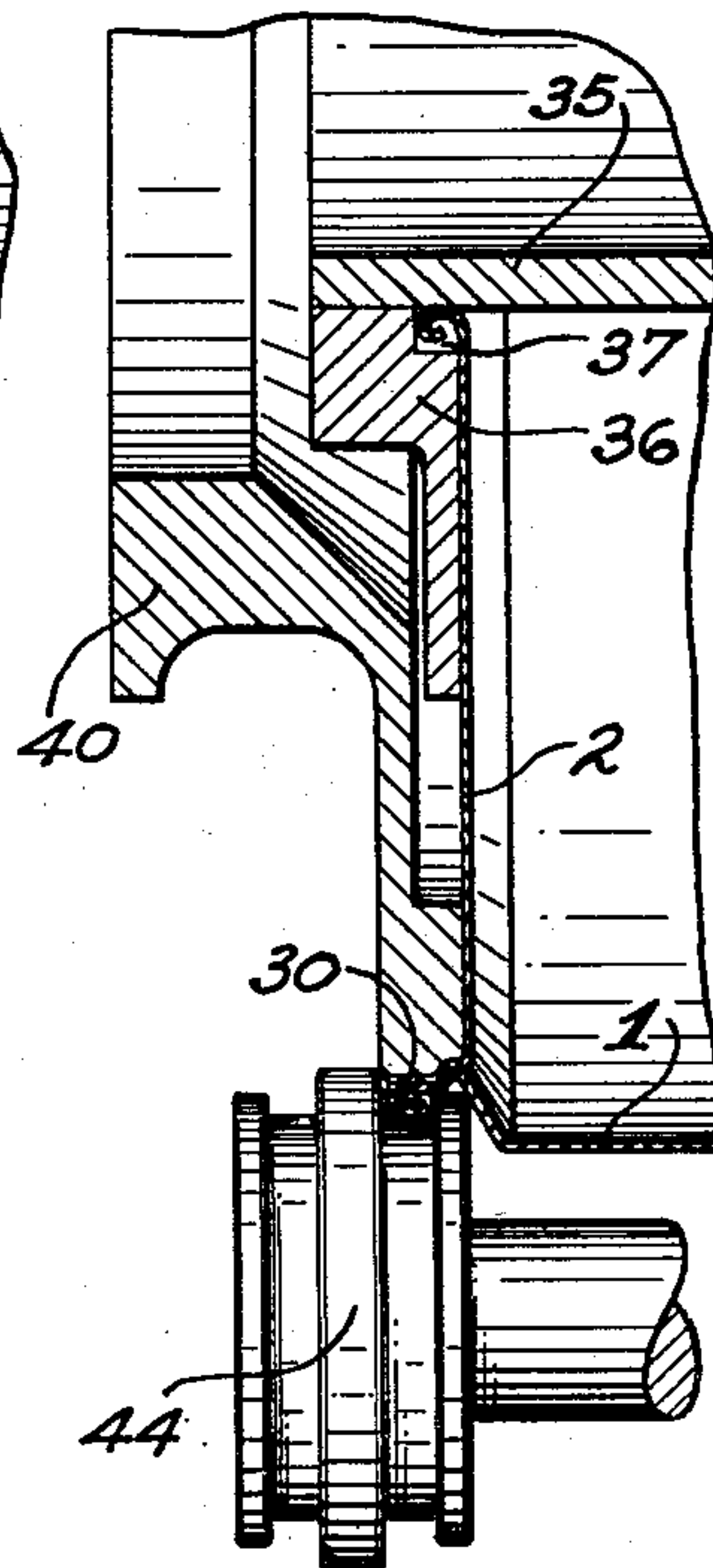
*Fig. 3*



*Fig. 4*



*Fig. 5*



*Fig. 6*

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# UNITED STATES PATENT OFFICE

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## METHOD OF MAKING COIL CONTAINERS

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4 Claims. (Cl. 53—11)

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The present invention relates generally to the container art, and more particularly, to a new method of making new containers.

There are certain uses for containers which heretofore could not be satisfied by conventional containers or containers made by conventional methods. One such use is the packaging of elongated articles such as wire, cable and the like. These articles have been packed for shipment heretofore by being coiled or tied and sometimes wrapped in fabric. At other times they have been wound on reels and handled with or without a covering, commonly known as lagging, spanning the space between the reel and thereby protecting the article. There are numerous disadvantages to both of these handling methods. The coils which were shipped with or without fabric covering were liable to injury during handling and were hazards to people who handled them. The reels which were used were items of considerable expense whether or not made substantial enough for repeated use and required stands on which they could be rotated during removal of the articles therefrom.

It has also been proposed to package such elongated articles in a container having an opening in either or both of its ends so that the article could be withdrawn from the container through such an opening without rotating the container. While such containers would not possess the disadvantages of prior packaging methods, and would possess new advantages, no conventional or commercially used container was suitable for this use, so far as we know, and no method of making such container was known.

The present invention provides new containers which are suitable for various uses, including the packaging of coiled, elongated articles which are to be withdrawn through the end of the container, and provides a new method of manufacturing containers, particularly these new ones.

The present invention will be better understood by those skilled in the art from the following description and the accompanying drawings in which:

Fig. 1 is a fragmentary end view of a container embodying the present invention;

Fig. 2 is a fragmentary, central, sectional view, partly in elevation, taken on line 2—2 of Fig. 1; and

Figs. 3, 4, 5 and 6 are fragmentary, central, sectional views showing progressive steps in the manufacture of the container of Figs. 1 and 2.

The container shown in Figs. 1 and 2 com-

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prises a cylindrical shell or body 1 and end members or ends 2 and 3 in the form of rings which are double-seam connected to body 1, have open centers and are provided with disk-shaped covers 4 to fit into and close the central openings in the rings 2 and 3. If desired, covers 4 may be fitted with tabs 5 on their outer surfaces to serve as pries or grips by which the covers 4 may be removed and also, if desired, the covers 4 may be provided with tabs 6 on their inner surfaces to act as securing means for the ends of coiled articles within the container. Covers 4 may be provided with flanges 7 on their outer peripheries to engage frictionally with parallel flanges 8 about the central openings in rings 2 and 3. Frictional engagement of flanges 7 and 8 serves to secure the covers 4 in rings 3.

If and when desired, the body 1 may be provided with lifting and carrying handles. As shown, these handles consist of rings 9 which are attached to body 1 by clips 10 and rivets 11. The body 1 may be depressed so that the rings 9 may lie flush with or within the outer surface of the body when not in use.

Body 1 and container ends 2 and 3 are shown in Fig. 1 in assembled position preliminary to being connected together. The end 2 has a flat body portion 15 and a circumferential, axially extending flange 16. At the junction of body portion 15 and flange 16 the end 2 may be deformed to provide an annular recess 17 for a purpose presently to appear. However, the formation of such recess is not essential.

End 3 has a flat body portion 18, a circumferential flange 19 extending axially on the outer side thereof and an abutment flange 20 projecting outwardly beyond flange 19. End 2 and flange 16 are smaller in diameter, respectively, than end 3 and its flange 19.

Container body 1 is an open-ended cylinder. Near one end it has an outwardly extending flange 25 to abut against abutment flange 20 of end 3 and an annular portion 26 to seat on axial flange 19 of end 3. Its opposite end portion has an outwardly extending flange 27 and an axial portion 28 to seat on flange 16 of end 2. The end portions of the body or shell 1 adjacent to its flanges have annular surfaces of such diameters as to seat on the larger and smaller diameter flanges 19 and 16 of ends 3 and 2, respectively.

In its completed form, the container of Figs. 1 and 2 has an outer double-seam connection 29 between the larger end 3 and body 1, and



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an outer double-seam connection 30 between the smaller end 2 and body 1.

It will be noted by reference to Fig. 2 that body 1 projects inwardly toward the center of the container and within flange 16 of end 2, and there engages the inner surface of end 2 in such a manner as to prevent movement of end 2 toward end 3.

The inside diameter of double-seam 29 is slightly greater than the outside diameter of double-seam 30 and thus these containers may be stacked with the larger end of one container seating on and surrounding the smaller end of a container therebelow. The large end 3 of each container may be ribbed as is indicated at 31 in Figs. 1, 2 and 3 for added stiffness when the containers are stacked. Preferably, flanges 7 and 8 are of such length measured axially of the containers that the flanges 7 of two adjacent covers on stacked containers will engage each other as shown in Fig. 2 for added support to the containers and their contents.

It will thus be seen that the present invention provides a container in which a cylindrical body is outer double-seam connected to both ends of the container and that the body is of such dimensions as to permit it to be telescoped over the ends preliminary to formation of the double seams, and that both ends are prevented from moving toward each other during the double-seaming operation.

The method of the present invention is depicted in Figs. 3 to 6, inclusive. Ends 2 and 3 are first formed into shapes substantially as shown in Fig. 3. Then they may be mounted on a common axis with their body portions in parallelism and a predetermined axial distance apart and with flanges 16 and 19 extending away from each other. A mandrel 35, which is preferably collapsible, may be used as a mount for the ends 2 and 3 and rings 36 suitably attached to mandrel 35 and provided with recesses 37 to receive the flanges 8 of ends 2 and 3 which bear against the outer surfaces of these ends and prevent them from moving farther apart. An elongated article may then be wound about mandrel 35 and between ends 2 and 3, but the outer turns of this article should not extend out flush with the outer surface of flange 16. Upon the completion of such winding body 1 may be slid axially over end 2 and onto end 3 where it rests on flange 19 and abuts against abutment flange 20 of end 3, and its other end rests on axial flange 16 of end 2.

The double-seaming connection of body 1 and end 2 may be accomplished in the three steps shown in Figs. 4, 5 and 6. A chuck 40 is brought against the outer side of end 2 where it bears against the body portion 15 and flange 16. This member 40 has an annular recess which conforms to recess 17 of end 2. Roll 41 which has peripheral teeth 41a and shallow notches 41b therebetween is then brought into engagement with body 1 opposite the annular recess in chuck 40 and deforms body 1 during relative rotation of body 1 and roll 41, thereby producing a plurality of indentations in body 1 which project inwardly and engage the inner axial side of end 2 in the recess 17 of body 1, in the event that such a recess was previously formed therein, and similarly deforming both body 1 and end 2 into the annular recess of chuck 40 in the event that end 2 was not previously provided with recess 17. This deformation of body 1 against the inner

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surface of end 2 serves to prevent axial movement of end 2 toward end 3 during the subsequent steps of the double-seaming operation. The roll 41 may have a circumferentially continuous un-notched periphery when the shell 1 is composed of material which will not flow circumferentially and thereby increase in circumferential length while being provided with an annular projection. When the shell is composed of low carbon steel, however, the toothed roll is preferred for it does not increase the circumferential length of the shell while indenting it. If desired, the use of roll 41 may be dispensed with and in lieu thereof a crimping tool may be used to form circumferentially spaced indentations in body 1 which will engage the inner axial surface of end 2 to prevent axial movement of that end toward end 3 during the subsequent double-seaming operations.

When body 1 has been deformed so as to prevent such axial movement of end 2, the portion of flange 16 which projects axially beyond flanges 27 of body 1 may be deformed into parallelism with flange 27. As shown in Fig. 5, this deforming operation may be carried out by bringing a supporting roll 42 against one side of flange 27 and bringing a flange roll 43 against the inner side of flange 16 and moving it outward radially and thereby working flange 16 into parallelism with and against flange 27. If desired, roll 43 may be dispensed with and a die may be pressed against flange 16 to deform it against flange 27.

Then flanges 16 and 27 may be double-seamed in the conventional manner, as by employing grooved roll 44 which wraps the end of flange 16 around flange 27 so that it engages the opposite side of flange 27 and crimps these flanges together in folded form to constitute the double seam 30.

Abutment flange 20 of end 3 may be similarly wrapped around flange 25 of body 1 and the two flanges crimped together in a double seam by positioning a chuck similar to chuck 40 against the outside of end 2 and employing a double-seaming roll such as 44 in the manner just described.

It will be understood that in the operations depicted in Figs. 5 and 6 the rolls 42, 43 and 44 on the one hand, and the container on the other hand, are rotated relatively around the axis of the container during the operations of these two figures.

After double seams 29 and 30 have been completed, chucks 40 and backing up plates 36 may be removed and, after removal of mandrel 35, covers 4 may be fitted into the central openings of ends 2 and 3. If and when an end of a coiled article in a container is to be secured to a cover 4, the end is placed under spring clip 6 just before the cover is pressed into place in the container end.

It will be understood from the foregoing description of the method of manufacture that containers embodying the present invention may be readily and inexpensively manufactured. The container body and ends are made of sheet material capable of being worked by flanging, deforming, crimping and double-seaming operations, as is particularly the case with sheet metals such as sheet steel. It will also be noted that the steps and combination of steps constituting the present method are new.

This application is a division of my copending application Serial No. 610,906, filed August 17, 1945.



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Having thus described the present invention so that others skilled in the art may be able to understand and practice the same, I state that what I desire to secure by Letters Patent is defined in what is claimed.

What is claimed is:

1. The method of making a loaded container which comprises the steps of forming two flat container end members with axially extending circumferential flanges at their outer peripheries, the first of said members having a flange extending radially outward from the free end of its axially extending flange to constitute a stop flange, disposing said end members in axially spaced position with their axial flanges extending away from each other, coiling an elongated article about the axis of the container in the space between said end members, forming an open ended cylindrical shell having axially extending circumferential end portions to seat on said axial flanges of the end members and flanges extending radially outward from the free ends of said end portions, assembling said shell with said end members and coiled article by sliding the shell endwise thereover until one end flange of the shell abuts against said stop flange of the first said end member and the end portions seat on the axial flanges of said end members, deforming the shell into engagement with the inner side of the other said end member thereby fixing said member against axial movement toward the first said end member, outer double seaming together the radial flange of the shell adjacent to said deformation and the axial flange of the

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said other end member, and outer double seaming together said stop flange and the adjacent radial flange of the shell.

2. The combination of steps set forth in claim 1 in which the axial flange of the first said end member has a larger diameter than that of the said other end member and the end portions of the said shell have diameters corresponding to those of said axial flanges.

3. The combination of steps set forth in claim 1 in which the said shell is deformed by being indented inwardly at a plurality of circumferentially spaced places.

4. The combination of steps set forth in claim 1 in which the axial flange of the said first end member has a larger diameter than that of the said other end, the end portions of said shell have diameters corresponding to those of the axial flanges of the end members, and the shell is deformed inwardly at the inner side of the end member having the axial flange of smaller diameter.

FREDERICK R. SCHAEFER.

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