July 14, 1925.

J. E. JOHNSON

1,545,661

SHEET METAL CALENDER SHELL

Filed March 26, 1925

Fig. 1

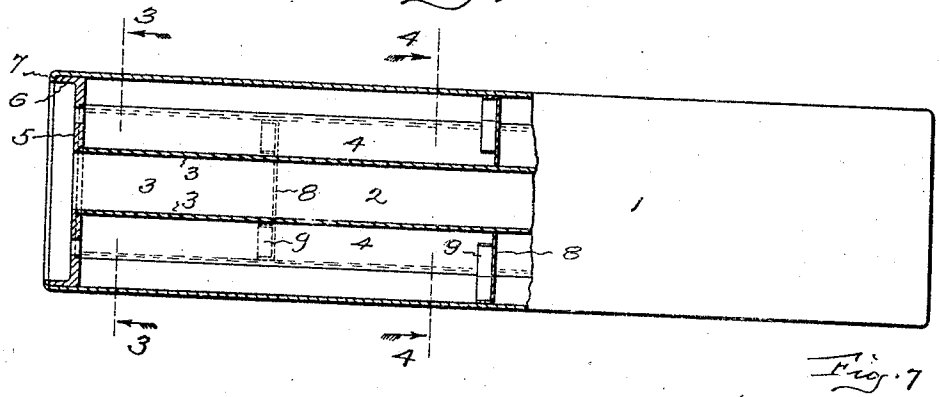


Fig. 2

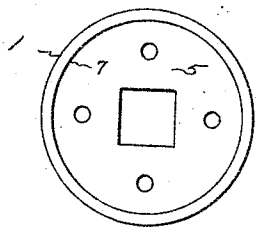


Fig. 7

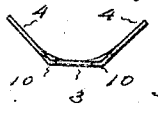


Fig. 8

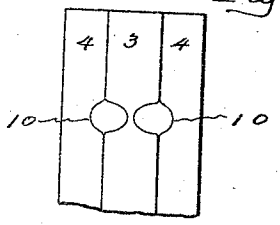


Fig. 3

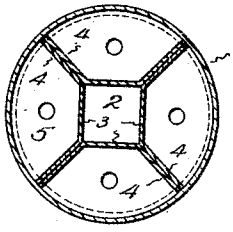
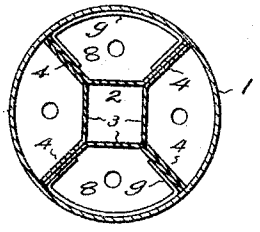


Fig. 4



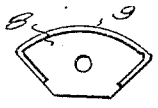
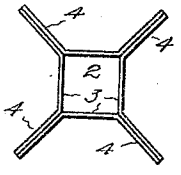


Fig. 6

Fig. 5



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UNITED STATES PATENT OFFICE.

JOHN E. JOHNSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE NEW HAVEN SHERARDIZING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SHEET-METAL CALENDER SHELL.

Application filed March 26, 1925. Serial No. 18,371.

To all whom it may concern:

Be it known that I, JOHN E. JOHNSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Sheet-Metal Calendar Shells, of which the following is a specification.

This invention relates to the construction of cylindrical shells formed from sheet metal of the type which are especially adapted for winding hot worked fabric, such as sheet rubber and the like into rolls.

The object of the invention is to provide an all metal structure of this character which is simple and inexpensive to build and which is light, strong and durable.

In attaining this end a cylindrical sheet metal outer shell is provided with an inner longitudinally extending core which is formed of sections so assembled that it braces and prevents the shell from collapsing or bending under heavy weights, and at the same time furnishes an angular axial opening for receiving the shaft by which the structure is supported and rotated, the sections of the core being held in position by circular heads that have angular openings for the supporting and rotating shaft and that are fitted into the ends of the shell and held securely, so that they cannot tip and will retain the core sections and strengthen the shell, by forming the edges of the shell over the rims of the heads. Bracing segments may also be located at suitable distances apart in the shell and fitted to the core sections to further brace the shell and retain the core sections in position, or the core sections may be indented or corrugated at intervals to increase their rigidity.

In the accompanying drawings Fig. 1 shows a side view of a shell that embodies the invention with a portion cut in central longitudinal section to expose the interior. Fig. 2 shows an end view of the structure. Fig. 3 is a transverse section on the plane of dotted line 3—3 on Fig. 1 looking in the direction indicated by the arrows. Fig. 4 is a transverse section on the plane of dotted line 4—4 on Fig. 1 looking in the direction indicated by the arrows. Fig. 5 is an end view of the sectional core. Fig. 6 is a side view of one of the bracing segments. Fig. 7 is an end view of one of the core sections that has been indented to increase its stiffness. Fig. 8 is a face view of the indented core section.

The outer wall of the structure is a cylindrical shell 1 formed of sheet metal. Extending longitudinally through the shell is the core 2 which is also formed of sheet metal. This core is made up of four channel-shaped pieces with sloping side walls. The channel pieces are put together so that their bottoms 3 form an angular opening of a size and cross sectional shape to receive the usual shaft by which the structure is supported and rotated when in use. The sides 4 of the adjacent channels, when the sections of the core are assembled, fit face to face and extend radially outward such a distance that their edges fit against the inner wall of the outer shell 1 for nearly the entire length of the shell. These channel sections which make up the core may be held together in any desired way.

In each end of the shell is a circular head 5 the rim of which has a flange 6 that is fitted to the inner wall of the shell. The inner faces of the heads have grooves shaped to receive the ends of the core sections, the length of which core determines the distance apart of the heads. After the core and heads are located in the outer shell the metal at the ends 7 of the shell is formed over the rims of the heads so as to tightly secure the parts in position. The core sections are desirably stiffened by forming indentations or corrugations 10 at intervals along the angular bends, as illustrated in Figs. 7 and 8.

For the purpose of further stiffening the shell segmental pieces 8 having flanges 9 at their edges may be located at desired distances along the core between the walls of the channels. The outer flanged edges of these segments are shaped to fit the inner wall of the outer shell, while the other edges of the segments are fitted to the openings in the channels which make up the core. These segmental braces are desirably arranged, as shown, in pairs diametrically opposite each other, but with the pairs staggered or arranged ninety degrees from each other. The heads and the segmental braces are perforated, as illustrated, in order to allow ventilation of the interior of the shell.

The channel-shaped pieces which form the

core of this structure are simple to shape and easy to assemble. When these section are put together to form the core their bases provide the angular axial opening for the driving and supporting shaft and their sides being placed face to face support each other and form stiff webs that extend practically the entire length of the shell and prevent it from collapsing or bending. The heads hold the ends of the core sections together and the core spaces the heads apart and prevents them from collaspsing inward, while the heads strengthen the ends of the shell and are themselves held in place by the formed over ends of the shell which not only holds the elements together but prevents the heads from collapsing outward. The simple bracing segments assist in holding the core sections from springing apart or buckling, and at the same time they strengthen the walls of the shell. As a result of the co-operative supporting and bracing relation of the several parts of this structure arranged as set forth a strong, durable, light calender shell may be formed of comparatively thin metal.

The invention claimed is:

1. A calender shell comprising a cylindrical outer shell, circular heads fitted into the ends of the shell, and a core extending in the shell from the head to head, said core being formed of sections assembled to provide an axially extended opening and webs that extend radially to and are fitted against the inner wall of the outer shell.

2. A calender shell comprising a cylindrical outer shell, circular heads fitted into the ends of the shell, said heads having angular central openings, and a core extending in the shell from head to head, said core having an angular axial opening and longitudinally extending webs that are fitted against the inner wall of the outer shell.

3. A calender shell comprising a cylindrical outer shell, circular heads fitted into the ends of the shell, the ends of the shell being formed over the rims of the heads and holding them against outward movement, and a core extending from head to head in the shell and holding the heads against inward movement, said core having webs that extend radially to and are fitted against the inner wall of the outer shell.

4. A calender shell comprising a cylindrical outer shell, circular heads fitted into the ends of the shell, and a core extending from head to head in the shell, said core being formed of channel-shaped pieces with the sides of the channels face to face and providing radial webs that extend to and brace the inner wall of the shell for substantially its length, and the bottoms of the channels furnishing an angular axial opening.

5. A calender shell comprising a cylindrical outer shell, a core extending substantially the length of and bracing the shell on the interior, and circular heads fitted into the ends of the shell against the ends of the core with the ends of the shell formed over the rims of the heads and securing the parts together.

6. A calendar shell comprising a cylindrical outer shell, a sectional core extending longitudinally in the shell and having radially extending webs that engage with the inner walls of the shell, and circular heads fitted into the ends of the shell, said heads having in the inner walls grooves for receiving the ends of the core sections.

7. A calender shell comprising a cylindrical outer shell, a core formed of trough-shaped sections the bottoms of said sections forming an angular opening and the sides of said sections forming webs that extend outward into engagement with the walls of the shell, and circular heads fitted into the ends of the shell and engaging the ends of the core sections.

8. A calender shell comprising a cylindrical outer shell, a core formed of longitudinally extending trough-shaped pieces assembled to provide an axial angular opening and webs that extend outward into engagement with the inner wall of the shell, segmental bracing members fitting the walls of the trough-shaped core pieces and the inner wall of the shell, and heads fitted into the ends of the shell and engaging the ends of the core.

9. A calender shell comprising a cylindrical outer shell, a core formed of longitudinally extending trough-shaped pieces assembled to provide an axial angular opening and radial webs that extend into engagement with the inner wall of the shell, and bracing pieces fitted at intervals along the length of shell to the walls of the core pieces and inner wall of the shell.

JOHN E. JOHNSON.