Oct. 30, 1928. 1,689,593

D. G. MAGILL

PROCESS AND APPARATUS FOR FORMING GREASEPROOF FIBER CONTAINERS

Filed Oct. 24, 1921 2 Sheets-Sheet 1

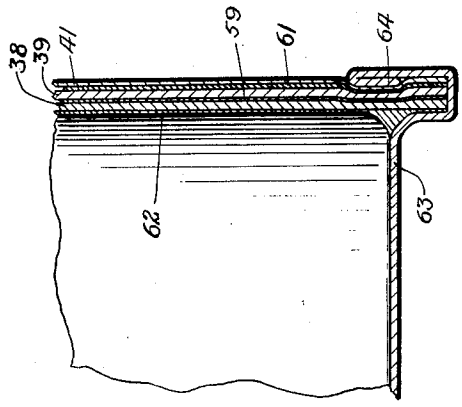


Fig. 3

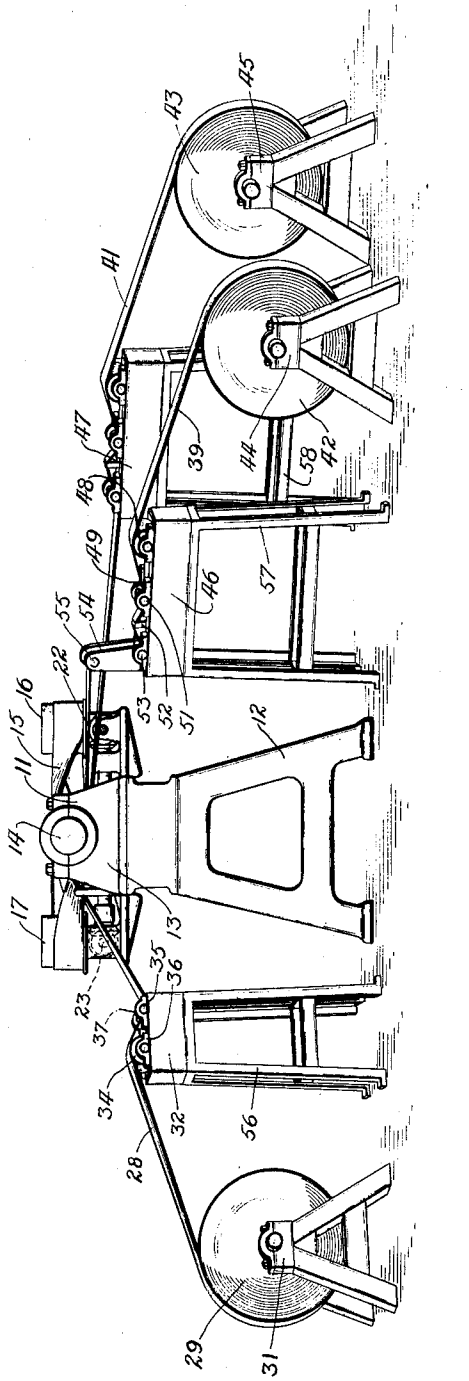


Fig. 1

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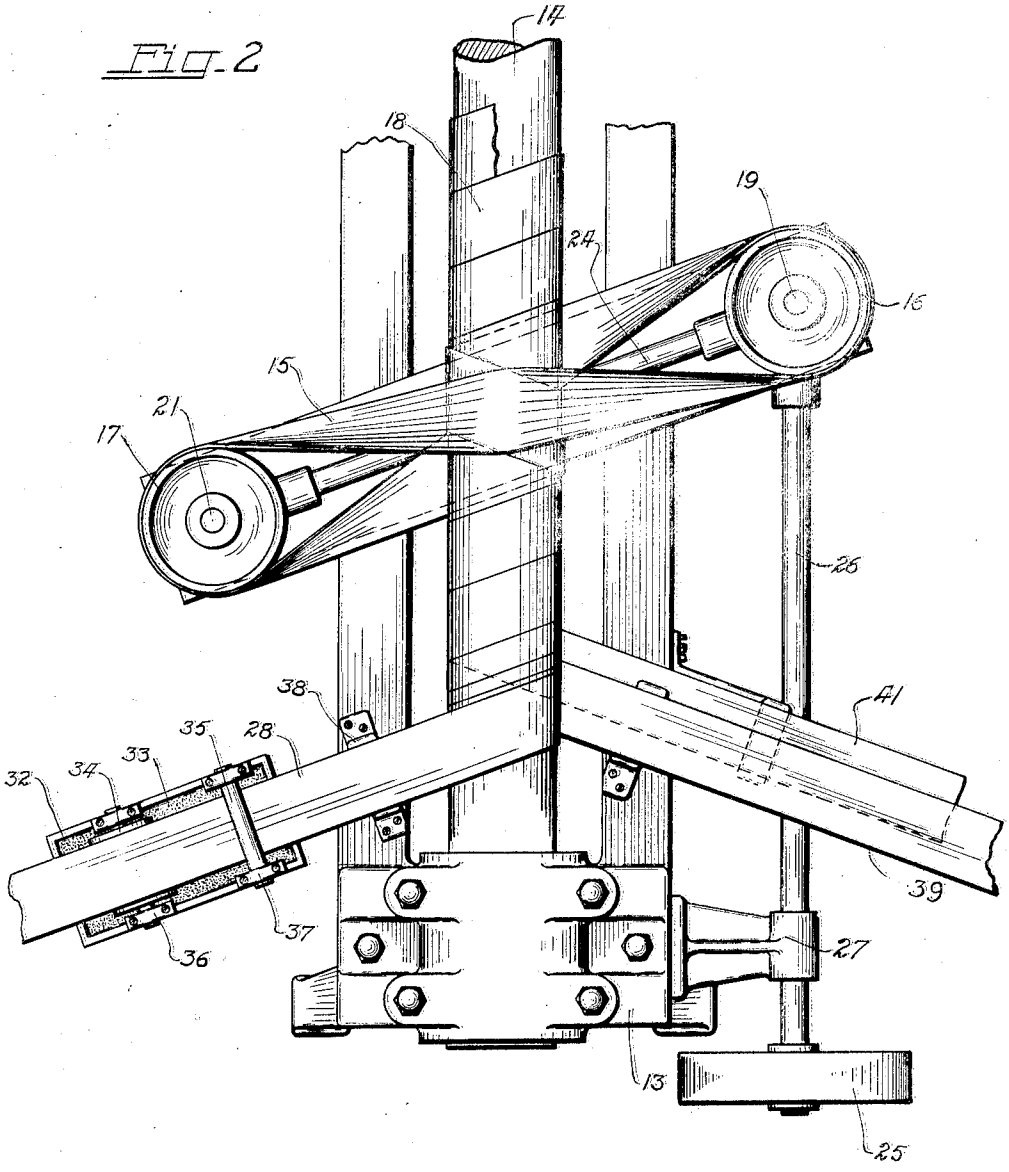
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Fig. 2



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UNITED STATES PATENT OFFICE.

DONALD G. MAGILL, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

PROCESS AND APPARATUS FOR FORMING GREASE-PROOF FIBER CONTAINERS.

Application filed October 24, 1921. Serial No. 509,937.

This invention relates in general to a process and apparatus for forming grease-proof fiber containers, and has more especial reference to the application of grease-proofing compound to a fiber layer or ply prior to its being wound into a can body form.

A principal object of the invention is the provision of an efficient process and apparatus for providing a coating of grease-proofing compound on the interior of a fiber container as a part of the process of forming the body of the container.

A further object of the invention is the provision of a grease-proofing process and means for carrying out the same, whereby the grease-proofing compound may be evenly and thoroughly applied throughout the inner ply of the container in such manner that the latter is completely impregnated.

Another and important object of the invention is the provision of simple and inexpensive apparatus for so directing a paper strip to be subsequently wound into the body of the container as to automatically apply the grease-proofing compound thereto without interfering with the feeding of such strip to the winding machine or necessitating any changes in the construction of the latter.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings,

Figure 1 is a perspective view of an apparatus adapted to the carrying out of my invention;

Fig. 2 is an enlarged fragmentary plan view of the winding apparatus and the means for applying the grease-proofing compound; and

Fig. 3 is a sectional detail of a part of a container manufactured in accordance with my invention.

By way of illustrating the invention, I have shown on the drawings a spiral winding machine, generally indicated by the reference numeral 11, and comprising primarily a pedestal support 12, an upper frame 13, a mandrel 14, and winding belts 15 trained about pulleys 16 and 17. This part of the apparatus may be of any usual or approved form and need not be particularly described other than to briefly outline the manner in which the body tubing 18 is produced on the mandrel 14. The paper strips from which the tubing is formed are fed onto the mandrel through an apparatus and in a manner to be hereinafter described, it being noted that the sources of supply are obliquely positioned with respect to said mandrel so that said strips are received thereon from an angle to permit, in the present instance, spiral winding of the tubing. The tubing is wound and advanced by the belts 15, extending thereabout in the manner indicated in Fig. 2, said belts being driven by the pulleys 16 and 17 mounted respectively on shafts 19 and 21, which are rotated by gearing generally indicated by the reference numerals 22 and 23, the driving gears being carried on an obliquely extending shaft 24 and the power being transmitted thereto from a pulley 25 through a shaft 26 mounted in bearings 27 and carrying a bevel gear meshing with one of the gears generally indicated by the reference numeral 22. The oblique arrangement of the belts 15 is for the purpose of advancing the tubing 18 on the mandrel, and it will be observed that said belts are so wound as to exert considerable pressure upon the strips so that they are formed into a compact body wall and the grease-proofing compound evenly and thoroughly applied, as will be hereinafter explained.

The inner ply 28 is fed from a roll 29 rotatably secured in a frame 31 and is passed through a receptacle 32 containing grease-proofing compound 33, which is applied thereto by directing the strip over a roller 34 and under a roller 35, said rollers being secured in bearings 36 and 37 respectively.

By "grease-proofing compound" I intend any known material or compound (not paraffine) suitable to be applied as above set forth to a layer of the paper tube and which is unaffected by grease and serves as a proof against the same. By "grease-proofing" I mean proof against grease. In this manner the inner surface of the strip 28 is brought into contact with the grease-proofing compound and receives an ample coating thereof. Thence the strip is directed over a guide 38 and onto the mandrel 14 with the grease-proofing material in contact with the surface of said mandrel. Strips 39 and 41, forming respectively the middle and outer plies of the can body, are fed from rollers 42 and 43 mounted upon supports 44 and 45 similar

to the support 31. These strips are coated with suitable adhesive material contained in receptacles 46 and 47. The receptacles 46 and 47 are similarly provided with directing rollers, only one set of which need be described.

Each strip passes from a large roller 48 downwardly at 49 beneath a roller 51, then upwardly over a guide 52 and downwardly beneath a third roller 53, the adhesive material being applied beneath the roller 51. The receptacle 46 is provided with arms 54 carrying a guide or roller 55 over which the strip 39 extends and whereby it is directed under the mandrel and above the strip 41 (Fig. 2). The receptacles 32, 46 and 47 are supported by pedestal frames 56, 57 and 58 respectively, or in any desired manner.

The action of the belts 15 winds the strips 28, 39 and 41, one upon the other, in the order specified, and unites them by means of the adhesive indicated in Fig. 3 by reference numerals 59 and 61. The pressure of said belts results also in squeezing the grease-proofing compound between the inner surface of the strip 28 and the face of the mandrel, permeating the inner ply and forming an even layer or coating 62 on the inside of the finished container.

The tubing 18 is cut off in desired lengths in any approved manner and ends 63 applied thereto, it being understood that this part of the container is also impregnated and rendered grease-proof. The ends 63 are secured to the wall of the container, in the present instance, by a seam generally indicated at 64, though it will be understood that this might be accomplished in any desired manner.

By use of the process and apparatus just described I am enabled to manufacture grease-proof containers in a very economical and efficient manner, since the grease-proofing compound is directly and automatically applied as a part of the formative operation and without requiring additional steps or extensive apparatus.

I am aware that paraffine has been applied as a lubricant to the inner ply of paper during the tube winding operation, to serve as a lubricant to prevent the sticking of the tube on the mandrel, and not serving as a grease-proofing means, and I do not intend my claims to be understood as extending to such use of paraffine.

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 form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

The process of forming grease-proof fiber containers, which comprises passing a strip of paper in contact with a quantity of grease-proofing compound, and then passing said strip onto a forming mandrel with the grease-proofing compound in contact with said mandrel, feeding other strips of paper coated with adhesive upon the mandrel and over said first mentioned strip and rotating and advancing the resulting tubing upon the mandrel, and causing by winding pressure the grease-proofing material to enter all interstices of the paper and to impregnate thoroughly the body of the paper forming the inner ply of the container.

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