

UNITED STATES PATENT OFFICE.

BENTON DALES AND WILLIAM S. CABLE, OF AKRON, OHIO, ASSIGNORS TO THE B. F. GOODRICH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

METHOD OF MAKING MOLDED RUBBER ARTICLES, MOLD, AND LUBRICANT THEREFOR.

No Drawing. Original application filed November 17, 1924, Serial No. 750,473. Divided and this application filed November 20, 1924. Serial No. 751,161.

To all whom it may concern:

Be it known that we, BENTON DALES and WILLIAM S. CABLE, citizens of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Methods of Making Molded Rubber Articles, Molds, and Lubricants Therefor, of which the following is a specification.

This invention relates to hollow rubber articles which are formed and vulcanized upon mandrels or cores, such as battery jars and the like, and is a division of our copending application Serial No. 750,473, filed November 17, 1924.

This invention has for an object to provide an improved method of making rubber articles of the character designated which shall produce upon the vulcanized articles mandrel-formed surfaces to which sealing compounds normally employed in securing the covers thereto will tightly and permanently adhere. A further object is to provide an improved mandrel lubricant.

It has heretofore been the usual practice in the manufacture of battery jars and other one piece containers to coat the mandrel with soap or water-glass prior to the placing of the rubber stock about the mandrel. These mandrel lubricants, so-called, prevent the adhesion of the rubber to the mandrel during vulcanization, but have the objectionable feature, for use in the manufacture of battery jars and like containers, that they leave on the vulcanized article a water soluble film.

This disadvantage displays itself only after the jars are placed in service. Following the usual procedure, the covers are sealed into the jars, or containers, with a compound composed largely of pitch of some kind which forms an adequate seal as long as the jar is dry. When the acid solution is placed in the jar, however, the water works up along the water soluble films between the jar and the sealing compound which holds the cover. The result is that the sealing composition is so loosened that

jar leaks slowly and dissipates gradually the liquid content of the battery.

We have found that sugar cane wax is an excellent mandrel-lubricant, in that it effectively prevents adhesion of the vulcanized container to the mandrel, which readily slips from the jar after vulcanization, and, further, in that the film of the mandrel lubricant left on the jar is non-soluble in water and adheres firmly to the cover sealing compounds throughout the life of the jar.

In applying the sugar cane wax to the mandrel, we prepare a solution of the wax in benzol, gasoline or like solvent, a 5 per cent solution being satisfactory, and brush or spray the wax solution over the mandrel. Both the wax and the solvent should be substantially free of water soluble materials. When the solvent has evaporated, the rubber stock is formed about the mandrel and vulcanized in the usual manner. The mandrel is readily removed from the vulcanized container which has on the mandrel-formed surfaces a thin film of the the sugar cane wax.

In case the containers are to be subjected to an electrical leakage test before vulcanization, a solvent for the wax consisting in whole or in part of carbon tetrachloride should be used in order to prevent fires and explosions during test.

We claim:

1. The method of preparing surfaces of members contacting with rubber during vulcanization which consists in coating the surfaces at least in part with a substantially water-insoluble composition comprising sugar cane wax.

2. The method of preparing surfaces of members contacting with rubber during vulcanization which consists in coating the surfaces at least in part with a solution containing substantially water-insoluble materials including sugar cane wax.

3. A mold element coated at least in part with a substantially water-insoluble composition comprising sugar cane wax.

4. A mold element coated at least in part with a solution containing substantially

water-insoluble materials including sugar cane wax. consisting of film formed from a solution containing substantially water-insoluble ma- 10

5 5. A non-adherent coating for surfaces contacting with rubber during vulcanization materials including sugar cane wax. In witness whereof we have hereunto set our hands this 14th day of November, 1924.

6. A non-adherent coating for surfaces contacting with rubber during vulcanization

BENTON DALES.
WILLIAM S. CABLE.