No. 790,967. PATENTED MAY 30, 1905.

E. MOXHAM.

PROCESS OF MAKING PULP KEGS OR OTHER PACKAGES.

APPLICATION FILED JULY 23, 1904.

Fig. 1.

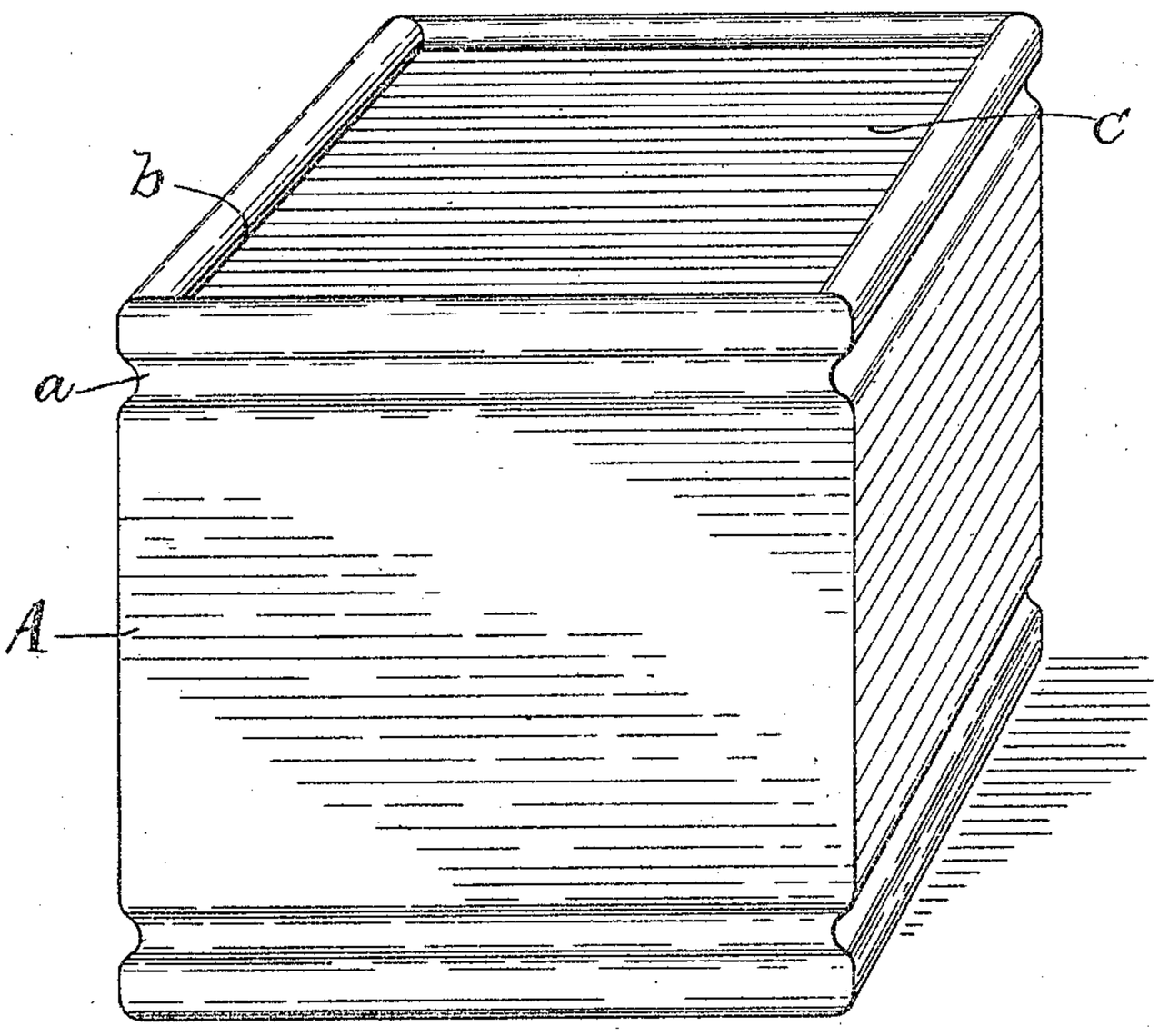
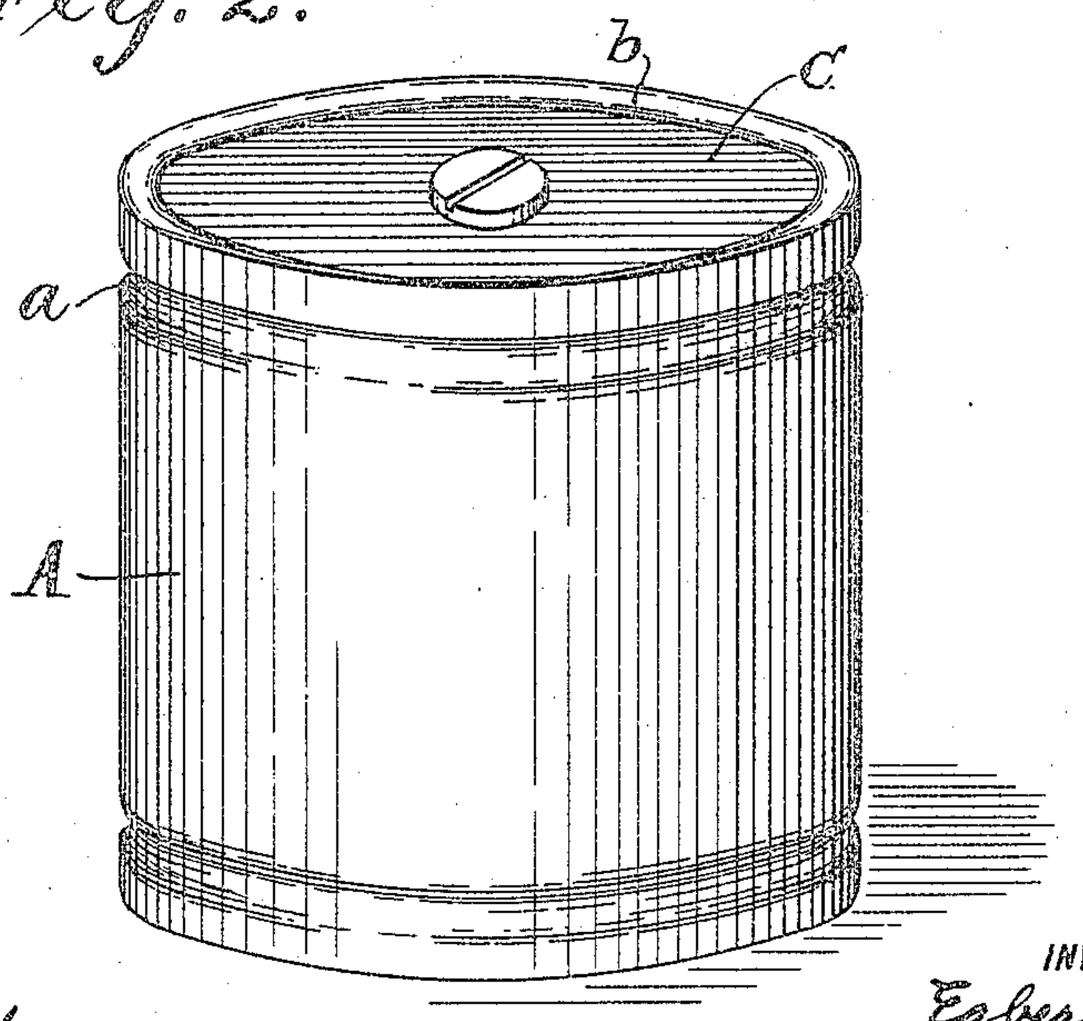


Fig. 2.



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No. 790,967. Patented May 30, 1905.

UNITED STATES PATENT OFFICE.

EGBERT MOXHAM, OF WILMINGTON, DELAWARE.

PROCESS OF MAKING PULP KEGS OR OTHER PACKAGES.

SPECIFICATION forming part of Letters Patent No. 790,967, dated May 30, 1905.

Application filed July 23, 1904. Serial No. 217,877.

To all whom it may concern:

Be it known that I, EGBERT MOXHAM, a citizen of the United States, residing at Wilmington, county of Newcastle, and State of Delaware, have invented a new and useful Improvement in Processes of Making Pulp Kegs or other Packages, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

In forming pulp packages as generally carried out the material after proper treatment is "beaten," as it is termed, when by the mechanical action of the beater, coupled with a large supply of water, the material is reduced to a condition of pulp. This pulp is pumped or otherwise delivered to a machine in which it is formed into the desired shape of the main body of the package—cylindrical, square, hexagonal, or any other desired shape. This form, after or during subsequent treatment, cut to proper lengths, constitutes the main body of the package. The two ends are then closed by heads which rest upon suitably-formed internal flanges, and the portions of the body extending beyond these heads are then bent or crimped down upon the heads, thus holding them in place. When the material first leaves the former or machine, it is so fluid that it has but slight tenacity and is incapable of withstanding the necessary handling. The practice heretofore has been to allow the material to dry until it has reached such consistency as will permit of this handling. It is very difficult to reach this point with certainty without the material becoming so dry that, while capable of considerable handling, it cannot be properly bent or crimped. Moreover, if the material be dry the effect of the shrinkage is lost, whereas if the heads absolutely dry be inserted into the body of the package before the same has dried the shrinkage of the body around the heads is a large factor in holding the same. In my improved product and process I avail myself of this action.

I have discovered that if pulp is used containing a binder or cementing material this binder will set sufficiently to knit or bind or cement the pulp fiber together before the water in the pulp has entirely passed off. It can therefore be worked while still in a moist condition and will stand the necessary handling for bending or crimping. Moreover, the moisture remaining in the pulp enables the head to be firmly grasped by the shrinkage of the body. The cementing material may be added to ordinary wood-pulp, or a material, such as bagasse, which contains mucilaginous matter, may be used to form the pulp. I form the pulp and body in the ordinary manner, using bagasse or adding mucilaginous matter to ordinary pulp if none be present. When the body is formed and allowed to rest, it will commence to dry, and the cementing material will at once commence to set and bind or cement the fibers of the material together. I take advantage of this cementing action at an early stage and before the material has become dry, and thus obtain a condition of body which is sufficiently flexible and plastic to permit proper crimping or binding, and at the same time, the fibers being knit together by the cementing material, the material has sufficient tenacity to allow necessary handling. I therefore permit the formed body containing the binder to remain at rest until cementation has proceeded far enough to reach this stage, at which times I insert the heads and crimp or bend over the protruding sides. The package thus prepared is then dried, and during the drying the cementation process continues. At the same time the surplus moisture is extracted and the package dried. I thus have a material and package in which the fibers are firmly bound or cemented together, making the same very strong, and at the same time the heads may be placed in position and the body may be readily bent or crimped. The material is also still moist enough to take advantage of the shrinkage in drying. The precise point at which the cementation produces sufficient tenacity in the material to produce this result is not determinable with precision for all cases. I have found with pulp containing a binder that after forming the body an exposure in air for forty-eight to fifty hours or in a kiln at 110° Fahrenheit for twenty-four to twenty-six hours will produce cementation sufficient

for the requisite tenacity and yet leave a considerable percentage of moisture. I have found with my improved material containing eighty-two per cent. of moisture if it has been exposed for forty-eight hours it is capable of successful handling and crimping, whereas if the material be taken directly and with no resting period with precisely the same amount of moisture it is incapable of either handling or crimping. There is thus necessity of allowing a rest for the material, so that the contained binder may set or partially set sufficient to hold or bind the fibers. As has been before stated, I use either a pulp made of material containing mucilaginous matter, such as bagasse, or if ordinary wood-pulp be used the binder is added either by mixing a proper amount of bagasse or the mucilaginous matter extracted from bagasse or adding in any desired manner a mucilaginous material which will set or act as a binder.

The accompanying drawings show, in Figure 1, a perspective of square box or package and in Fig. 2 a perspective view of a cylindrical keg or package.

The body A is formed of pulp containing the mucilaginous matter acting as a binder and is first formed without the flange *a* or crimping *b*. It is then allowed to rest until the binder has set sufficiently and the cementation has proceeded to an extent sufficient to give the fibers the tenacity requisite for handling, the material, however, being still moist. It is then taken and the internal flange *a* formed, the dry heads C placed so as to rest in these flanges, and the protruding portions of the body bent or crimped over at *b* upon these heads.

It is evident that while I have specifically described and illustrated my invention as applied to boxes or kegs it can equally be used for other shapes, such as bath-tubs, pails, or any desired article whatever.

The essential feature of the process and product is the admixture or use with the pulp of a cementing matter which will give the desired tenacity for subsequent handling or shaping during the process of manufacture and make the article stronger.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. The process of manufacturing articles from pulp, which consists in partially forming the body of the article from pulp in its fluid state containing cementing matter, then allowing the same to partially dry until partial cementation takes place, then completing the formation of the body of the article while still plastic or semiplastic due to the presence of moisture.

2. The process of manufacturing articles from pulp, which consists in partially forming the body of the article from pulp, in its fluid state containing cementing matter, then allowing the body to partially dry until the desired cementation takes place but leaving moisture in the body, then inserting the heads and then crimping or bending the body over on the heads.

3. The process of manufacturing articles from pulp, which consists in partially forming the article from pulp, in its fluid state containing cementing matter, then allowing the same to partially dry until the desired cementation takes place, but leaving moisture in the article, then completing the formation of the article.

4. The process of manufacturing the body of pulp kegs or other pulp packages, which consists in partially forming the article from pulp in its fluid state, containing cementing matter, then allowing the said body to partially dry until partial cementation takes place but leaving moisture in the body and then completing the formation of the body.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 20th day of July, 1904.

EGBERT MOXHAM.

Witnesses:
M. M. HAMILTON,
WILLIAM B. MARKS.