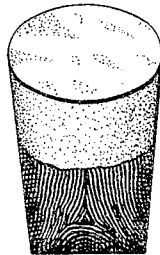


J. H. KETCHESON.  
PULP STOPPER OR THE LIKE.  
APPLICATION FILED NOV. 12, 1908.

959,225.

Patented May 24, 1910.



*Witnesses:*

*George Adams*  
*Nells R. Church*

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*By Baker & Co. Attorneys*

# UNITED STATES PATENT OFFICE.

JOHN H. KETCHESON, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNITED STATES FIBRE STOPPER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF SOUTH DAKOTA.

## PULP STOPPER OR THE LIKE.

959,225.

Specification of Letters Patent.

Patented May 24, 1910.

Original application filed May 22, 1908, Serial No. 434,403. Divided and this application filed November 12, 1908. Serial No. 462,248.

*To all whom it may concern:*

Be it known that I, JOHN H. KETCHESON, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Pulp Stoppers or the Like, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

The figure of the drawings shows an article embodying my invention.

This invention relates to a new and useful improvement in pulp stoppers or the like, the object being to completely impregnate the homogeneous body of the stopper with a resilient filler, such as rubber, whereby the stopper is not only rendered impervious to moisture, but is insoluble, resisting the action of acids and alkali, besides being resilient.

The method of forming my improved stopper is disclosed in a companion application, Serial No. 434,403, filed by me May 22, 1908.

In manufacturing my improved stopper, the pulp is reduced in water and deposited in a mold, where it is subjected to pressure, and as shown in the drawings, the greater number of the fibers of the stopper lie substantially parallel to the axis of the stopper, the fibers at the ends of the stopper lying at an angle to the axis of the stopper. This arrangement of the fibers is important in manufacturing my improved stoppers, because the fibers on all faces of the stopper lie substantially parallel to the adjacent faces, and consequently, while the stopper is compact it is also resilient. The fibers are interlocked and felted with each other and form a homogeneous mass, the matting or felting of the fibers throughout the body portion being the identity test for my unimpregnated stopper.

When the pulp stopper is formed having the above characteristics, it is treated according to my companion application aforesaid, by impregnating the same with a resilient filler, preferably rubber, which not only serves to render the stopper impervious to moisture, but makes the stopper tough and resilient. The impregnation of the stopper continues to such an extent that the interstices throughout the entire body are filled

with rubber. Some other material, or a mixture of other material with rubber, having the resilient properties of rubber, may be used in lieu of the rubber, but I prefer to use rubber on account of its cleanliness, resiliency and resistance to the action of acids and alkali.

I am aware of the Holmes Patent No. 512,705, dated January 16, 1894, wherein it is proposed to press pulp into the form of stoppers, which are afterward dipped in melted paraffin wax, preferably having gutta percha added thereto. This mixture, however, does not act as a filler, but leaves the stopper porous.

My improved stopper is different from that disclosed in the Holmes patent in that not only is the pulp formed as a homogeneous mass, but the impregnation of the filler is complete throughout the entire body portion of the stopper, making the stopper yieldingly solid and impervious.

My improved stopper will also withstand high temperatures, whereas the filling in the Holmes stopper will melt at less than the boiling point of water.

The Holmes stopper referred to will not respond to the identity tests to which my improved stopper may be subjected. If pulp is pressed into a mold to form the stopper, as described in the Holmes patent, the pulp will stratify, and when the stopper is dried, will, upon again being immersed in water, swell and separate along the lines of stratification.

My improved stopper, being formed in a homogeneous mass, will, after being dried and immersed in water, preserve its shape and exhibit only a slight swelling, the homogeneity of the fibers showing a smooth, unbroken surface, and when the stopper is broken open, no stratification of the fibers will be found present.

I am also aware of the British patent to Brockedon, No. 7,832 of 1838, in which sheet felt is rolled into cylindrical form and cut off into short lengths to form stoppers. Sheet rubber is pasted around the stoppers, the ends being inclosed by a disk of sheet rubber. In the event that a corkscrew is used in the Brockedon patent, a perforation is made in the interior through which water and moisture may enter, causing the stopper to swell and lose its shape.

So far as I am aware, it is broadly new with me to form a homogeneous pulp stopper and completely impregnate the same with a resilient filler to form an impervious yielding stopper.

5 What I claim is:

As a new article of manufacture, an impervious yielding stopper or the like, composed of a homogeneous mass of fibrous ma-

terial completely impregnated with a resilient filler. 10

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twenty seventh day of October 1908.

JOHN H. KETCHESON.

Witnesses:

WELLS L. CHURCH,

GEORGE BAKEWELL.